

**RESTORATION ADVISORY BOARD MEETING
NAVAL WEAPONS INDUSTRIAL RESERVE PLANT (NWIRP), BETHPAGE
VIRTUAL MEETING
THURSDAY, NOVEMBER 19, 2020**

The forty-sixth (46th) meeting of the Restoration Advisory Board (RAB) was held online as a virtual meeting hosted by WebEx. Meeting attendees included representatives from the Navy (Brian Murray, Scott Sokolowski, David Todd, Melissa Forrest and Jeffrey Doepp), New York State Department of Environmental Conservation (NYSDEC) (Bill Fonda, John Swartwout, Don Hesler, and Jason Pelton), New York State Department of Health (NYSDOH) (James Sullivan and MinSook Kim), Nassau County Department of Health (NCDOH) (Richard Castle), Bethpage Water District (BWD) (Michael Boufis), Massapequa Water District (MWD) (Stan Carey), New York American Water (NYAW) (Lee Mueller, James Runzer, and Mike Nofi), Tetra Tech (David Brayack, Ernie Wu, Melissa Cushing, Vin Varricchio Beau Benfield, Melissa Felton, Will Yeung, and Lauren Donston), APTIM (Monica Smeal, Bill Hughes, and Bill Deane), and Town of Oyster Bay (Matthew Russo). RAB members in attendance were Sandra D’Arcangelo, Edward Olmstead, Bill Pavone, Rose Walker, Ethan Irwin and David Sobolow. There were approximately 25 additional attendees from Bethpage and neighboring communities in attendance. A local newspaper reporter was also in attendance. The meeting attendance sheet is provided in Appendix A. The Agenda and Definitions are provided in Appendix B.

WELCOME AND AGENDA REVIEW

The Tetra Tech representative Ms. Boltz began the meeting and identified call in users. The Navy representative, Mr. Murray welcomed everyone to the RAB meeting and presented the meeting agenda. Mr. Murray introduced the other Navy representatives, Mr. Sobolow, the RAB co-chair, Ms. Smeal (APTIM) and Mr. Brayack (Tetra Tech).

**OPERABLE UNIT (OU) 4 – SITE 1 FORMER DRUM MARSHALLING AREA
REMEDIAL ACTION CONSTRUCTION UPDATE**

Ms. Smeal, APTIM, provided an update of the NWIRP Bethpage Site 1- Former Drum Marshalling Area history and the remedial action in progress for the soil, soil vapor, and groundwater remedy. The Remedy consists of soil excavation, offsite disposal and capping, groundwater monitoring, and enhanced soil vapor extraction that is currently being implemented. Ms. Smeal reviewed the excavation, restoration and monitoring, progress to date, and remaining schedule for site restoration activities to be completed in Spring 2021. Future work consists of expanding the existing Soil Vapor Extraction System and installation of new groundwater monitoring wells. The presentation is included in Appendix C.

RE108 AREA HOTSPOT TREATMENT SYSTEM UPDATE

Mr. Brayack, Tetra Tech, provided an update on the RE108 Area Hotspot investigation and remediation. The presentation is included in Appendix C.

Phase I RE108 Area Hotspot Treatment System Update:

Mr. Brayack reviewed the Phase I status and provided a timeline for system design. The Phase I system, which addresses the northern portion of the Volatile Organic Compound (VOC)-impacted groundwater, will include an extraction well and double-wall piping from the RE108 Area Hotspot to the Navy's existing GM38 Area Hotspot Treatment System. The existing Nassau County (NC) 495 Recharge Basin currently being used for GM38 discharge will also be utilized for the Phase I RE108 Hotspot discharge. Pending access, the Phase I System is expected to start operation in 2020.

Phase II RE108 Area Hotspot Treatment System Update:

Mr. Brayack reviewed the Phase II status and also provided a timeline for system design. The Phase II system will include groundwater extraction, treatment, and a discharge system to capture the RE108 Area Hotspot groundwater near the downgradient edge. Water will be treated to drinking water standards via air stripping and granular activated carbon. The Navy is anticipating discharging into two recharge basins and are currently conducting infiltration testing and groundwater modeling to determine flow. The system should be in place by late 2022 or early 2023.

FIVE YEAR REVIEW SUMMARY AND OPERABLE UNIT 2 IMPACTED GROUNDWATER – PLANNED ACTIONS

Mr. Murray, Navy, provided a summary of the Navy Five Year Review evaluation and the Navy's planned actions for the OU2 impacted groundwater. The presentation is included in Appendix C.

Mr. Murray reviewed the proposed alternative stated in the NYSDEC Feasibility Study. The Navy plans to move forward with their planned remedial actions (Phase I and Phase II) in addition to implementing a Phase III remedial action to intercept the Southern Plume.

QUESTIONS AND COMMENTS

Following each technical presentation, the meeting was opened for follow-up questions and discussions for the RAB members. Following the last presentation, residents' questions were discussed. The discussion questions and answers are below:

Presentation OU-4 Site 1 Former Drum Marshalling Area Remedial Action Construction Update – APTIM (Bill Deane/Monica Smeal)

1. Mr. Sobolow inquired if trees were planted over the groundwater protection barrier; will roots will penetrate the barrier? Mr. Murray replied, you are referring to the soil vapor extraction system, the trees were planted on the berm, we avoided planting trees in that area to prevent roots from impacting the system.

2. Mr. Sobolow inquired if cameras were positioned along the fence line for security. Mr. Murray replied, cameras were not installed, we do not anticipate having to monitor with cameras, the site is very active during the day and is secured with a fence. Hopefully it would be noted if there was trespassing, this is not an open place someone can just walk in to.

3. Mr. Sobolow inquired if Site 1 was going to be turned into something for public use for the community. Mr. Murray replied that it will be turned over to Nassau County for public use, but confirmatory work needs to be completed, we need install groundwater monitoring wells and make sure there are not any ongoing releases. We do not have an exact timeframe of the transfer.

4. Mr. Sobolow inquired if the county envisions the transfer of Site 1 as part of Bethpage Community Park? Mr. Murray replied that we have not heard any interest in doing this, Site 2 is not typical of a park setting, it has lots of traffic and large trucks.

5. Mr. Olmstead inquired about the contaminants found in the soil at Site 1? Mr. Murray replied that the cesspools that were used for disposal were the source of the primary contaminants addressed in the OU4 ROD which were primarily PCBs, PAHs, and select metals such as chromium. The we were trying to remove all the highest concentration areas that we could down do depth. Essentially, we got to about 30 feet bgs.

6. Mr. Pavone inquired about the excavation depth and the top of the water table compared to the maximum depth of any contamination found. Mr. Murray replied the water table is about 50 ft bgs. There were contaminants that existed beneath the depths we were able to excavate to and that's why it was prudent to put that Geosynthetic Clay Liner (GCL) over residual contamination to contain leaching between the deepest soils and the water table.

Presentation RE108 Area Hotspot Treatment Update (Phase I [nothing new] Phase II- [land easement]– Tetra Tech (Dave Brayack)

7. Mr. Sobolow inquired about the location of the closest resident locations to the discharge basins. Mr. Murray referred to slide 10 that showed the residential areas and streets. Mr. Brayack explained the figure and where the residents are.

8. Mr. Sobolow inquired if there is a sound level exposure for the residents. Mr. Brayack replied that there is no noise issue. It will just be like a lake.

9. Mr. Sobolow inquired if fish live in these basins. Mr. Brayack replied that fish do not live in the basins. The basins are clean but do not contain any nutrients for the fish. Mr. Murray added that the extraction well pumps are about 500 to 600 below the surface, so you cannot hear them running at all. No disturbance or noise during operation.

10. Ms. Walker inquired about the residents in Levittown area have become more informed from meetings and was wondering when Patricia Court became part of the plan? Mr. Murray replied that since the last RAB meeting the Navy has tried other properties to the north that didn't work out and need to stay ahead of the leading edge of the hotspot. This cul-de-sac represents an open space for the well installation. It will essentially just be manhole covers in the pavement and maybe a pipe to the side. This is one of the most least intrusive ways, once they are installed, they will be quiet.

11. Ms. Walker inquired if the residents were aware of the construction? Mr. Murray replied if they attended the meetings, they would know about the upcoming construction but prior to drilling we will have another meeting to inform the residents. Same with residents around Boundary Ave. We did in person meetings for Seamans Neck Road and Wadsworth Avenue locations.

12. Ms. Walker added that we were under the impression a lot of this would have already been started, when do you anticipate doing the work? the building process could be a lot of noise and will affect those neighbors, when will this start? Mr. Murray replied that for each recovery well we will drill a VPB and that will be the start of the process. We are hoping to close with Nassau County for Seamen's Neck Road and Wadsworth Avenue within the next 2 weeks, hoping to be out in early to mid-December. Due to COVID and ability to collect information it has slowed us down but have had excellent help from Nassau County and the courthouse and the clerk's office to help keeping move this forward. We'll first mobilize to the RW7A/B area and start that work in early December.

13. Ms. Walker inquired once the work is started what is the timeframe? Mr. Murray replied that we will start at the three VPB locations first then RWs, early next year and late 2021 for actual pipelines. As we get closer, we will have more similar public meetings and will communicate the construction schedule.

14. Mr. Pavone inquired about the trenches for the RW7A pipelines is it single trench or two trenches, since there is going to be two sets of pipes? Mr. Murray

replied that both piped influent and effluent will be in same trench. Mr. Brayack added that one pipe will be carrying contaminated discharge one pipe will be carrying clean water, controls will be in place with fiber optics.

Navy CERCLA Five Year Review – Evaluation of NYSDEC Proposed Amended Record of Decision for OU2 and OU3 – Navy (Brian Murray)

15. Ms. Walker inquired to confirm what “to remediate to the maximum extent practicable” means? Mr. Murray replied the actual wording is to try to capture the plume to the extent practicable. We map the plume at 4 different horizons starting at the water table to almost 1,000 feet. This terminology recognizes the difficulty in capturing the entire plume and all the layers with the design we currently have. We try to capture the highest concentration intervals. The difficulty is in being able to completely remove all the contamination.

16. Ms. Walker inquired that everything will not rid us of this plume eventually, because there's all these parts or do we assume that if we are capturing it at the deepest level that eventually anything that was above will get down to that level. Mr. Murray replied that we are trying to remove maximum amount of mass that we can. For Phase II and Phase I, we expect them to start shrinking, as it matures over time. Hopefully we can capture it with the addition of another well. We will keep working at it by modifying and optimizing the systems. The Navy is addressing OU2 and Northrop Grumman is addressing OU3 plume.

17. Ms. Walker inquired in reference to the knowledge of the shallow plume was more recent or a plume the Navy had knowledge of. Mr. Murray replied we have known about the shallow plume for a while. There were two different mechanisms for this plume to be where it is now. The NWIRP discharged cooling water to discharge basins where it goes back into the aquifer. The contaminants we are dealing with are heavier than water. The shallow plume is better defined but is not fully delineated. We are focusing on deeper parts of the plume where most of the mass is.

18. Mr. Pavone inquired about the RE137 process is that water going to be tanked or returned to the aquifer through a recharge basin? Mr. Murray replied the water will be returned to aquifer at the recharge basin and will treat the discharge water at the same location.

19. Mr. Pavone inquired if there has been any discussion making RE137 a more permanent knowing it will be operational for a few years? Mr. Murray replied we want to activate the Phase II system and see if it's capture area extends to the RE137 area. If we don't see this then the activation of RE137 certainly is a possibility. It would

take another phase of design and construction to get a pipeline from RE137 extended to GM38.

Phase III activities are in full swing. The plume could travel 1,500 feet in five years. Calculations are ready to forecast the plume migration and pathway of outpost wells.

20. Mr. Sobolow inquired about the difficulties of getting pipelines through the parking lot right-of-way for the Northrop Grumman pipeline, last time we discussed the possibility of eminent domain, is the current owner willing to provide an easement? Mr. Pelton replied that is related to Northrop Grumman RW21 for the eastern half of the OU3 plume. NYSDE is working closely Northrop Grumman and the Town of Oyster Bay to get access to that utility corridor for them to install some of their pipeline. They still do not have access and are continuing to work with the Town to get access it is owned by King Cullen and it looks like they are willing to provide them access to install the pipeline.

21. Mr. Sobolow inquired are we at a standstill in working with OU3? Mr. Pelton replied that access is being worked on, as Northrop Grumman has continued to pursue the design of their treatment plant. They have been installing the conveyance piping in other areas. There is a lot of different pieces moving at the same time with that. It is not stopping the project.

22. Mr. Pavone inquired that NYAW they are currently in process of transferring their assets to Liberty, is Navy aware? Mr. Murray replied the Navy is aware of the transfer it has no effect of the continued support to the Seamans Neck Road Plant, we will work with the new owners to keep the system running.

Questions from Chat Boxes

23. At Site 1, was the purpose of the liner installation to overlay soil contamination left in place? If so, please describe the extent of soil contamination remaining. Mr. Murray replied yes it was to overlay remaining contamination that could not be reached. The cover was placed over the lower concentration soil left in place. There are also low levels of COCs that will be further reduced by the soil vapor extraction system and there are other PAHs and some other metals will be left. The activities are detailed in the Record of Decision.

24. When do you believe the Explanation of Significant Difference will be available for public review and comment? Mr. Murray replied the ESD will be available in the near future, we are expecting NYSDEC comments soon. Once we resolve the comments, the Navy can issue the ESD, possibly within the next three months.

25. New York law requires alternative water supplies be considered to eliminate exposure and wellhead treatment be a measure of last resort. The DEC AROD calls for implementation of an alternative water supply. What has Navy/DEC done to address this? Mr. Pelton replied part of our selected remedy in the AROD we indicate there be an element for siting water supplies outside of the plume. Since December of 2019 when we released the final remedy we have been negotiating with the Navy and Northrop Grumman about the water supplies and are very close in completing the negotiations.

Additional Questions

26. Mr. Sobolow inquired about an article in Newsday that spoke about additional soil contamination Northrop Grumman uncovered, does the Navy have any feedback on where that stands? Did this contamination come from the drum marshalling area on NWIRP property? Mr. Pelton replied that is another Northrop Grumman project related to OU3, in that former ball field area. In August they started thermal remedy to address contamination inside the ballfield area. Right before they completed drilling, they identified on the edge in parking lot towards ice rink. They installed 53 soil borings, they were able to eliminate a lot of the contamination, but additional work needs to be performed to fully define the extent of contamination. We have a meeting planned to discuss with them the next steps and to address this contamination.

The Navy property was further to the west and that area was formerly used for sludge drying beds. This contamination probably originated from past Northrop Grumman operations.

27. Mr. Schwartz-Can Brian Murray please explain why, after decades of saying that full containment wasn't feasible and comments last year that the state's plan was unnecessary, the Navy is now looking at containment and additional mass removal? Mr. Murray replied the Navy is looking at additional mass removal which is why recovery well RW7 was added. Phase III is intended to capture the plume to the extent practical. We are looking at plume capture not plume containment but have recognized that the Navy can do more for migration.

28. Mr. Russo- The RE137 boring what basin is that located and who owns it. Mr. Murray replied that is NC basin 305 owned by Nassau County, located on the western shoulder of Highway 107.

29. Mr. Russo for the ESD, once you get your comments addressed from the DEC, your public comment period, when that's finalized does that become your agreement to the DEC AROD, or is that only a portion of Navy's commitment to

the AROD? Mr. Murray replied it is the Navy's decision document like the navy's 2003 ROD and it's a companion document that expands the 2003 ROD. It's not a replacement for the NYSDEC AROD.

30. Mr. Russo is there the potential for further Navy work within the plume relative to the NYSDEC AROD or do you know to the extent that the Navy is going to be doing work here? Mr. Murray replied we recognize that there's value in some of the wells that they have designed and there could be future wells that the Navy could evaluate in terms of the plume restoration. But once you start a system and realize a well is not ideally located, another well can be added. There are components of the AROD that the Navy can look at in the future once we have these systems up and running for a while.

31. Mr. Schwartz do you have a cost estimate for what the financial commitment for the Navy will be on the treatment system for the capture zone? Mr. Murray replied the estimated cost to construct the phase II treatment system with plant and miles of pipeline and recovery wells is approximately \$20,000,000 plus dollars. It will be operational for a long period of time. To operate GM38 it is less than \$1,000,000 per year, which is probably an under estimation of the actual cost for Phase II.

32. Mr. Sobolow inquired if there are any funding issues held up by congress? Mr. Murray replied not at this time.

CLOSING REMARKS

At the conclusion of the meeting, Mr. Murray thanked the attendees for their participation and reminded everyone additional questions must be submitted by November 22nd by email or voicemail. Mr. Murray further comment that the additional questions would be captured in the RAB minutes. The next RAB meeting was planned for Spring 2021. The meeting was then adjourned.

APPENDICES

APPENDIX A
19 NOVEMBER 2020 RAB MEETING ATTENDEE LIST

Attendees for November 19, 2020

1	Armwood, Garrett
2	Benfield, Beau
3	Black, Theresa
4	Boltz, Jackie
5	Boufis, Michael
6	Brayack, David
7	Carey, Stan
8	Castle, Richard
9	Cushing, Melissa
10	D'Arcangelo, Sandra
11	Das, Soma
12	Deane, William
13	Doepp, Jeffrey
14	Donston, Lauren
15	Esposito, Adrienne
16	Felton, Melissa
17	Florio, Denise
18	Foley, Joanne
19	Fonda, Bill
20	Forrest, Melissa
21	Gordon, Greg
22	GRECO, SALVATORE
23	Hesler NYSDEC, Don
24	Hughes, Bill
25	Humann, Richard
26	Irwin, Ethan
27	J, S
28	Kensie, Elayne
29	Kim, Min-Sook
30	LaRocco, Paul
31	Lauren Shirley, Captioner
32	Lehtinen, mike
33	MISUT, PAUL
34	Mueller, Lee
35	Murray, Brian
36	Napoli, Paul
37	Nofi, Mike
38	Olmsted, Edward
39	Pavone, Bill
40	Pelton NYSDEC and NYSDOH, Jason
41	Putnam, Robin

42	Rigano, Nicholas
43	Rizzo, Frank
44	Rogers, Cindy
45	Runzer, James
46	Russo, Matthew
47	Schwartz, David
48	Smeal, Monica
49	Sobolow, David
50	Sokolowski (NAVFAC), Scott
51	Sullivan NYSDOH, James
52	Swartwout, John
53	Todd, David
54	Varricchio, Vincent
55	Walker, Rose
56	Wu, Ernie
57	Yeung, William

APPENDIX B
RAB MEETING AGENDA AND DEFINITIONS



Agenda for Restoration Advisory Board

Naval Weapons Industrial Reserve Plant Bethpage

Date: November 19, 2020
By Internet: <https://tinyurl.com/BPRAB1120>
By Telephone: +1-408-418-9388 **Access Code:** 132 690 3536

Time: 7:00 PM

Location: Virtual

RAB Presentations: 7:00 PM to approximately 8:30 PM

- Ground Rules – Tetra Tech
- Introduction of RAB members and Regulators –Brian Murray
- OU-4 Site 1 Former Drum Marshalling Area Remedial Action Construction Update – APTIM (Bill Deane/Monica Smeal)
- RE108 Area Hotspot Treatment Update (Phase I [nothing new] Phase II- [land easement]– Tetra Tech (Dave Brayack)
- Navy CERCLA Five Year Review – Evaluation of NYSDEC Proposed Amended Record of Decision for OU2 and OU3 – Navy (Brian Murray)

RAB questions following presentations: 8:30 PM to approximately 9:30 PM

- Questions – Community Co-Chair
- Closing remarks – Navy

Copies of information can be found at the document repository located at the Bethpage Public Library, 47 Powell Avenue, Bethpage NY 11714 (516-931-9307) or online at <http://go.usa.gov/DyXF>

Definitions and Clarification of Terms, Acronyms and Abbreviations For the Bethpage Restoration Advisory Board (RAB)

- **Basic:**

- Aquifer
 - an underground layer of water-bearing permeable rock or unconsolidated materials
- BGS - Below Ground Surface
- BWD Plants- Bethpage Water District Plants
- Capture Zone
 - Area of water whose flow direction is influenced by pumping
- Down gradient
 - The direction of groundwater flow
- Effluent
 - Is an outflow of water from a treatment source
- Free Product
 - Substance (usually oil or gasoline) that exists in its own state-it is not dissolved in water.
- Ground Water
 - Water flows through open pore spaces of soil
- HDPE - high density polyethylene (HDPE) pipe with
- Hot spot
 - Area where trichloroethylene is at a concentration greater than 1000 parts per billion
- NG- Northrop Grumman
- No. 6 Fuel Oil- tar
- NWIRP-Naval Weapons Industrial Reserve Plant
- OU- Operable Unit
- PAH- polynuclear aromatic hydrocarbons
- PCB- Polychlorinated Biphenols (used as transformer cooling fluid)
- Plume
 - An area that impacts from chemicals are detected in
- Raritan Clay Layer
 - A geologic horizon - Clay that is approximately 800-100 feet below ground surface– accepted to be the bottom of the Magothy aquifer
- RCP – reinforced concrete pipe
- Soil Vapors
 - Gases contained in the pore spaces of soil
- Trichloroethylene (TCE)-
 - Volatile organic compound of concern (used as a degreaser in manufacturing)
- VOC--Volatile Organic Compounds:
 - Chlorinated solvents (typically used as degreasers in manufacturing)

- **Data Gathering:**

- Delineate- define boundaries
- Gauging- measurement of ground water levels from top of ground surface
- In-situ – in place
- Monitoring Well- (typically 2-6 inches in diameter) a well used to provide a “snapshot” of water quality when sampled
- ppm – parts per million
- VPB- Vertical Profile Boring

- **Treatment Technologies:**

- Advanced Oxidation Process (AOP)
 - AOP system is based on the combination of hydrogen peroxide and ultraviolet (UV) light, which forms a very local and short-lived oxidizer (hydrogen radical)
- Air Stripping
 - Removal of dissolved volatile organic compounds from water by transferring it into air
- Biodegradation
 - Reduce a chemical by changing conditions so that bacteria can break down the chemical
- Biosparging
 - Removal of chemicals by breaking them down with bacteria
- Equalization Tank
 - Tank for mixing
- EX- NYSDEC Mass flux extraction wells
- GCL – geosynthetic clay liner
- HC- NYSDEC Hydraulic Containment
- Land Use Controls
 - Action that restricts what land can be used for
- Liquid Phase Granular Activated Carbon Polishing
 - Removal of remnants of a volatile chemical by passing liquid through carbon; used to remove trichloroethylene
- On-site Containment Treatment System (ONCT)
 - Series of wells that remove and treat groundwater at the southern edge of the former Northrop Grumman property
- Recharge basin
 - Sandy basin that receives storm water and allows water to filter down into the ground
- Recovery Well (RW)
 - (Typically larger diameter 12 to 36 inches) a well used to recover oil or water containing chemicals
- Steam Injection/Free Product Recovery
 - Heating of oil that has a tar like consistency with steam to make it flowable (syrup like consistency) so that it may be removed
- SVECS—Soil Vapor Extraction Containment System
 - Vacuum for volatile chemicals trapped in the air between soil particles; used to remove trichloroethylene
- Vapor Phase treatment-
 - Removal of a chemical from gas; used to remove trichloroethylene from air vapor

- **Regulatory:**
 - AROD- Amended Record of Decision
 - Compliance sampling- collection of samples to demonstrate that chemicals are below regulatory levels
 - CERCLA- **Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)** – the legal mechanism for cleaning up inactive hazardous waste sites at DOD (Depart of Defense) facilities, this is the defining regulation for the Navy’s Environmental Restoration (ER) Program at NWIRP Bethpage under NYSDEC authority.
 - ESD- Explanation of Significant Differences
 - Feasibility Study- collection of data used to determine if a remedy will work
 - Five-Year Review (FYR)- required by CERCLA and is prepared in accordance with USEPA guidance. To evaluate the effectiveness of the remedies to determine if they continue to protect human health and the environment in accordance with the requirements set forth in the Record of Decision (ROD).
 - NYSDEC- New York State Department of Environmental Conservation(NYSDEC)
provides regulatory review and approval of Navy actions at NWIRP Bethpage
 - NYSDOH- **New York State Department of Health (NYSDOH)** assists NYSDEC.
 - PDI- Pre-Design Investigation
 - Proposed Plan- Plan of action that is sent to the state for approval prior to the Final Record of Decision
 - RCRA- **Resource Conservation and Recovery Act (RCRA) Corrective Action** – a statutorily required cleanup program, similar to CERCLA, that addresses active solid waste management units and contaminated media as a condition of RCRA permits - NWIRP Bethpage has a RCRA Permit with NYSDEC
 - ROD –Record of Decision
 - SR- selected remedy
 - USEPA- **United States Environmental Protection Agency (USEPA)** Provides federal review of the Navy actions.

APPENDIX C

PRESENTATIONS

NWIRP BETHPAGE Restoration Advisory Board



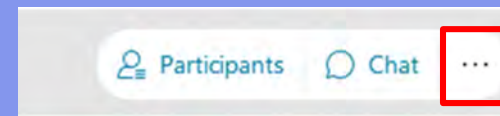
November 19, 2020 - Meeting Agenda

- **Welcome**
- **Introductions**
- **Presentations (available at <https://go.usa.gov/DyXF>)**
- **Q&A Session**
- **Updates**

Thank you for joining us. The meeting will begin at 7:00pm.

If you are experiencing technical difficulties, contact WebEx by telephone at 1-866-779-3239.

Closed Captioning: Select Panel Options icon (3 dots in lower right of screen) and select Multimedia Viewer.



WELCOME



NAVAL WEAPONS INDUSTRIAL RESERVE PLANT BETHPAGE RESTORATION ADVISORY BOARD

VIRTUAL MEETING NOVEMBER 19, 2020 7:00 P.M.

VIRTUAL MEETING INSTRUCTIONS

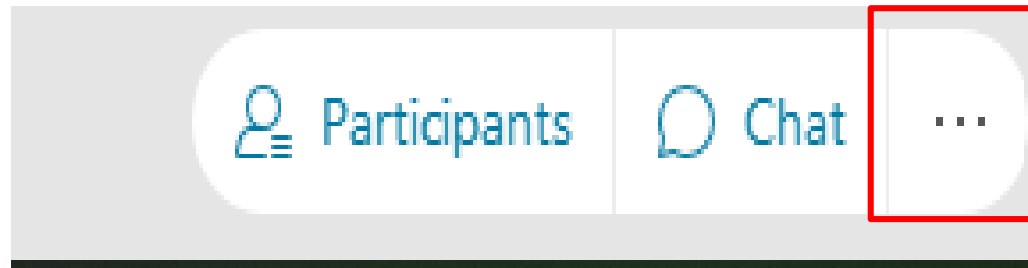


- **Attendee cameras are not being used; no attendees will be viewed by others**
- **Attendee microphones will remain muted except when recognized for questions**
- **Webinar sign-in names will be used for the record**
- **RAB Members will have 10 minutes following each presentation to ask questions**
- **Attendees will have an opportunity to ask questions or comments after all presentations are complete**
- **Please be respectful of others, even if you don't agree with their comments**

Q&A OPTIONS

Ask a question by typing it in the **Q&A box**.

Click three white dots "More Options" icon in bottom right of screen to open the Q&A box.



AGENDA



- Welcome and Virtual Meeting Instructions - Jacqueline Boltz, Tetra Tech
- Welcome and Agenda Review, Brian Murray, NAVFAC Mid-Atlantic RPM, & David Sobolow RAB Co-chair
- Community Update, David Sobolow, RAB Co-chair
- Technical Progress (RAB Members will have 10 minutes for Q&A after each presentation)
 - OU-4 Site 1 Former Drum Marshalling Area Remedial Action Construction Update – APTIM Federal Services (Bill Deane/Monica Smeal)
 - RE108 Area Hotspot Treatment Update - Phase I and Phase II – Tetra Tech (Dave Brayack)
 - Navy CERCLA Five Year Review – Evaluation of NYSDEC Proposed Amended Record of Decision for OU2 and OU3 – NAVFAC (Brian Murray)
- Attendee Questions and Answers until 10pm
- Closing Remarks, Brian Murray, NAVFAC Mid-Atlantic

RAB CO-CHAIRS

David Sobolow

Brian Murray

RAB MEMEBERS

Sandra D'Arcangelo

Robert Horan

Ethan Irwin

Jeanne O'Connor

Ed Olmsted

Bill Pavone

Irene Shapiro

Roy Tringali

Rose Walker

PANELISTS



NAVY

Brian Murray, David Todd, Melissa Forrest, Jeff Doepp, Scott Sokolowski

NYSDEC

Don Hesler and Jason Pelton

NYSDOH

James Sullivan

TETRA TECH

Kristi Francisco, David Brayack, Ernie Wu, Melissa Cushing, Lauren Donston, and Jacqueline Boltz

APTIM

Bill Deane and Monica Smeal

Restoration Advisory Board (RAB)
Department of Navy Update
Site 1 – Former Drum Marshalling Area
Remedial Action Construction Update
Naval Weapons Industrial Reserve Plant Bethpage
Bethpage, New York

19 Nov. 2020

Presentation Outline



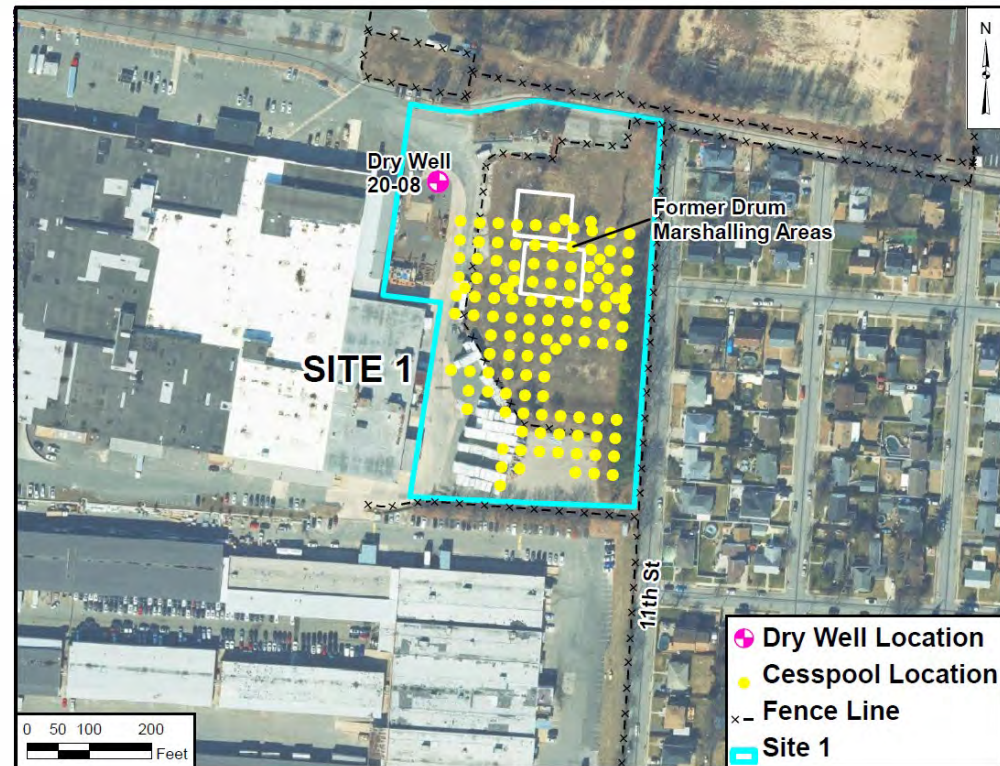
- Site 1 History
- Progress to Date
- Schedule



Site 1 History



- Two former drum marshalling pads
- 120 abandoned cesspools for sanitary waters from Plant 3
- Former drywell 20-08 used for the storm water management system is included in the Site 1 Remedial Action Construction
- Soil contaminants include: Polychlorinated biphenyls (PCBs), chlordane, polynuclear aromatic hydrocarbons (PAHs), and metals



Site 1 Remedial Action focuses on soil removal

-
- PHASE I
- PHASE II
- PHASE III
- PHASE IV
- PHASE IIB
(DRY WELL 20-08)
- LEGEND
- DESIGN EXCAVATION 0-2 LIMIT
 - DESIGN EXCAVATION 3-10 LIMIT
 - DESIGN EXCAVATION 10-20 LIMIT
 - DESIGN EXCAVATION 20-30 LIMIT
 - ACTUAL PHASE EXCAVATION LIMIT
- 117th STREET
- SYDMORE AVE

Reporting & Follow On Action

- Submit a Draft Completion Report for NYSDEC review. The Report will include:
 - Sample results
 - Final construction documents with excavation depths
 - Waste disposal summaries
 - Certification of destruction/proper disposal
 - Photographic logs
- Proposed Land Use Control Remedial Design will be submitted for NYSDEC review
 - Protection of the cover and limitation to future activities outside of current use
 - Limited groundwater use
 - Future land use is anticipated to be consistent with current land use, which is primarily open space.
- Post Construction Maintenance – 30 months to ensure establishment of plantings and grasses
- Ongoing coordination with Steel Equities (Adjacent Tenant at former NWIRP Property)
- Ongoing progress updates to the Restoration Advisory Board

Progress to Date – Excavation Complete

- Totals: 45,000 cubic yards (cyds) of contaminated soil removed
- Truckloads: 2,934 shipped off-site



Steel sheet piling was installed approximately 50-feet in the ground, and steel struts and beams were welded to safely support the Phase IIB (Dry Well 20-08) excavation as the depth increased to 30-feet.

Progress to Date – Transportation & Disposal Complete



Soil Disposal:

- Gloucester County Landfill in Swedesboro, NJ: 16,076 tons Non-Hazardous Soil
- Fairless Landfill in Morrisville, PA: 24,047 tons Non-Hazardous Soil
- US Ecology Michigan Landfill in Belleville, MI: 24,643 tons TSCA Hazardous
- US Ecology York Landfill in York, PA: 487 tons RCRA Hazardous
- ESOI Landfill in Oregon, OH: 761 tons TSCA/RCRA Hazardous



Progress to Date – Transportation & Recycling Complete



- Concrete Recycling – 2,115 cyds
 - Cesspool debris
 - Parking area concrete
 - Settling tanks debris
 - Sampled prior to disposal



- Asphalt Recycling – 636 tons
- Tree Stumps Recycling – 270 cyds

Progress to Date – Installation of GCL Complete

- Geosynthetic Clay Liner (GCL) was installed over the 20-foot and 30-foot deep excavation areas.
- GCL acts a barrier preventing water from infiltrating the soil beneath.



Progress to Date – Backfilling Complete

- Imported clean soil and reused clean Site 1 soil as fill material
- Each 8-inch layer was compacted with a vibratory roller
- Each layer was tested for compaction to prevent future settling



Progress to Date – Site Restoration

- The berm was restored along the 11th Street border of the site.
- Six inches of topsoil was placed over all areas to be seeded.
- The area was hydroseeded with a native grass seed mixture.



Progress to Date – Site Restoration

- Chain link fence was reinstalled around the site perimeter, in addition to wooden fence along the 11th street boundary.
- Maple and oak trees were planted along 11th Street and the berm.
- APTIM is working with a certified arborist to design an evergreen tree planting plan to be implemented within Site 1 along the 11th Street.



Post-Construction Maintenance and Tree Planting

- Post-construction maintenance will be performed for a period of 30 months.
 - Mowing grass
 - Reseeding or replanting trees as needed
 - Erosion control maintenance
 - Fence repairs as needed
 - Routine site inspections



Schedule



- Restoration: Substantially completed August 2020; paving to be completed Spring 2021 and additional evergreens to be planted Spring 2021
- Draft Operation and Maintenance Plan Submitted August 2020
- Draft Construction Completion Report is in progress
- Future work includes expansion of the existing of the Soil Vapor Extraction system and installation/monitoring of new groundwater monitoring wells



Restoration Advisory Board (RAB) Department of Navy Update on RE108 Area Hotspot Treatment System

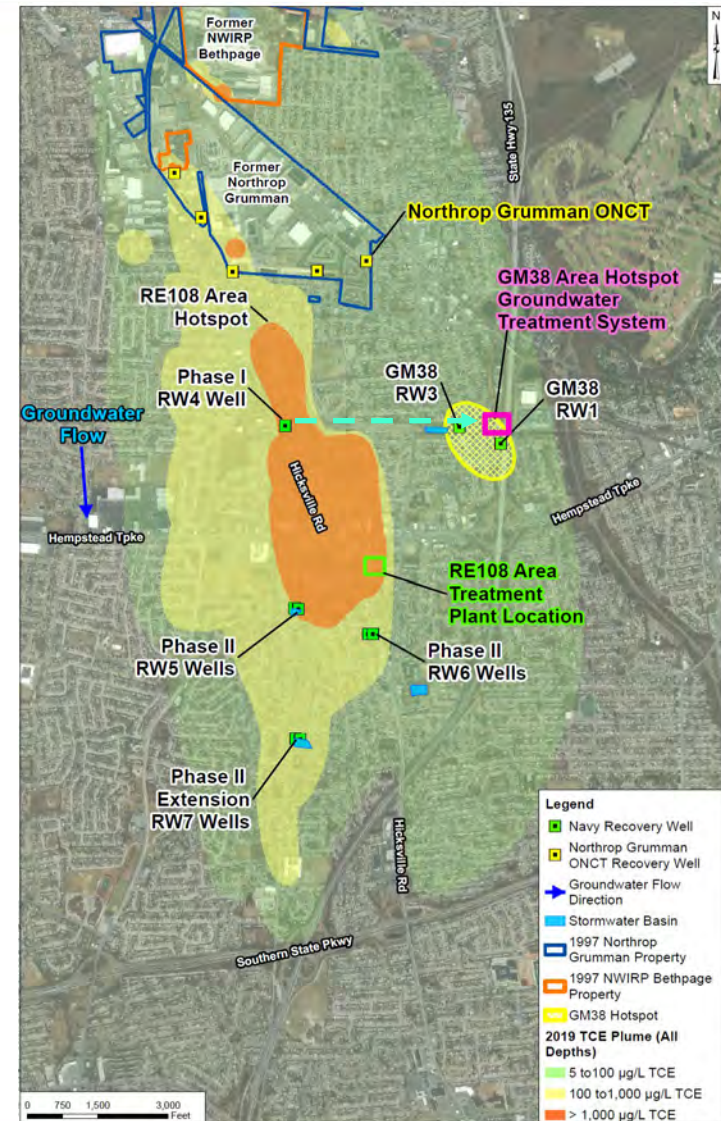
Naval Weapons Industrial Reserve Plant
Bethpage, New York

19 Nov. 2020

GM38 and RE108 Area Hotspot Treatment Systems - Overview



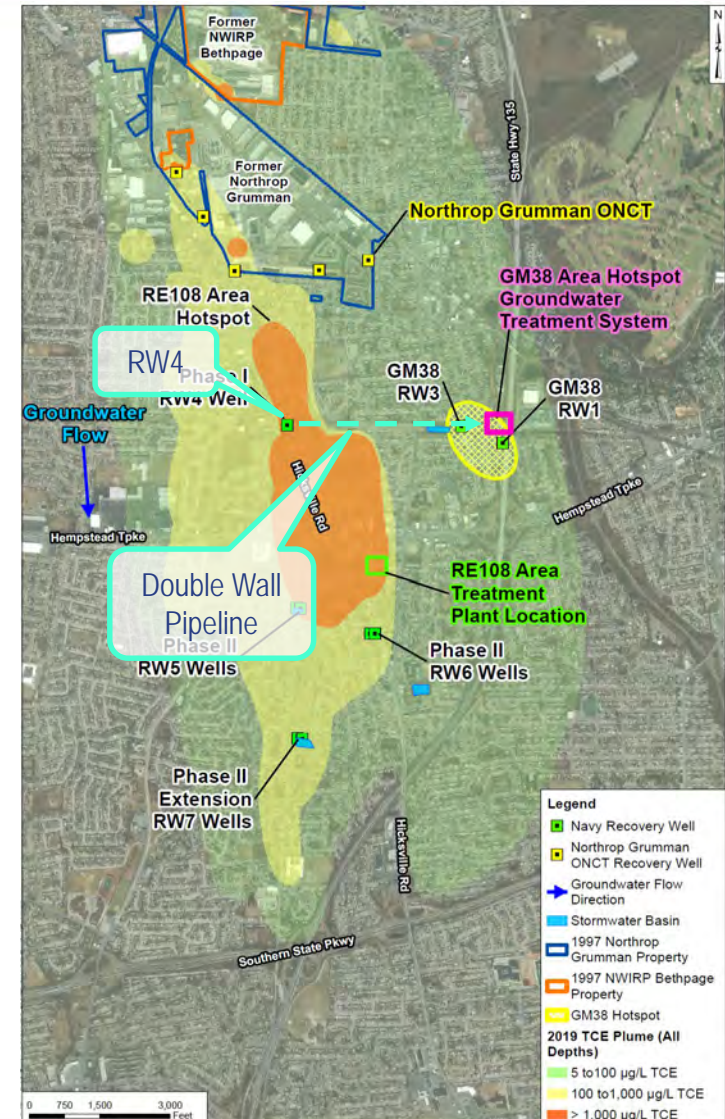
- ROD Hotspots - Groundwater with greater than 1 part per million (ppm) of Volatile Organic Compounds (VOCs)
- GM38 Area Hotspot first identified in the 1990s,
 - Treatment system started operation in 2009 and continues to operate
 - Treated over 5 billion gallons of water to drinking water standards
- RE108 Area Hotspot
 - Identified in the mid 2010s
 - Construction divided into two phases



RE108 Area Hotspot Treatment System – Phase I



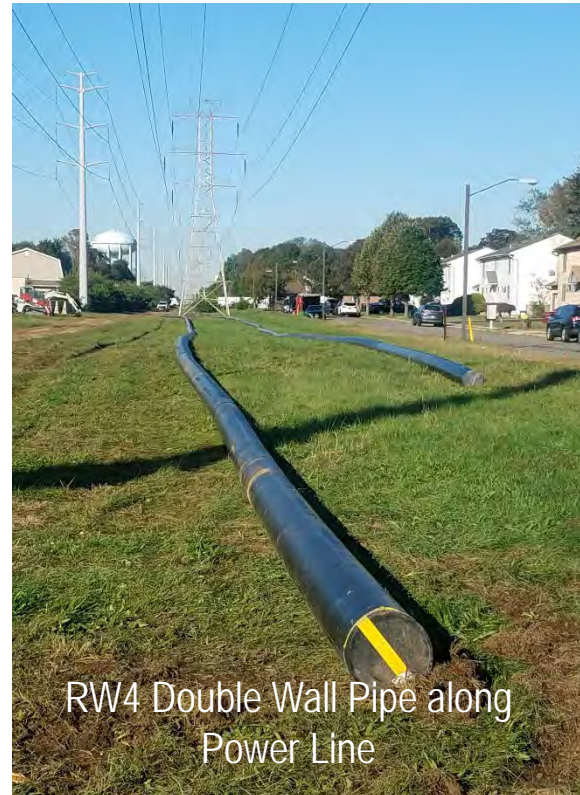
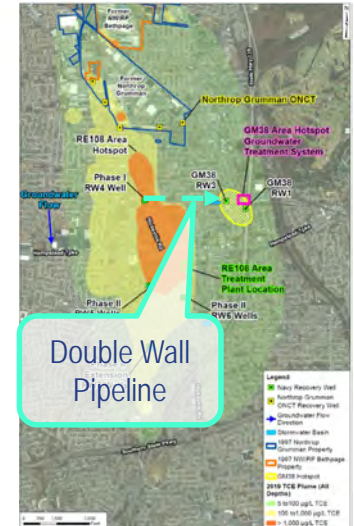
- Phase I System Recovery Well RW4, located near Hicksville Road
 - 12-Inch well, screened at a depth of 570 to 670 feet, which is the depth at which water is extracted
 - Well was constructed in October 2020, installed in a vault
 - RW4 pump is anticipated to extract 200 to 450 gallons per minute of water for the next 50 years
 - Above ground power and control panel (pending)



RE108 Area Hotspot Treatment System – Phase I Pipeline



- Phase I System Conveyance Pipeline
 - Water would be conveyed to the GM38 Treatment System, approximately 4,500 feet to the east
 - Pipe will be double wall, with leak detection system between the walls



RE108 Area Hotspot Treatment System – GM38 Upgrade

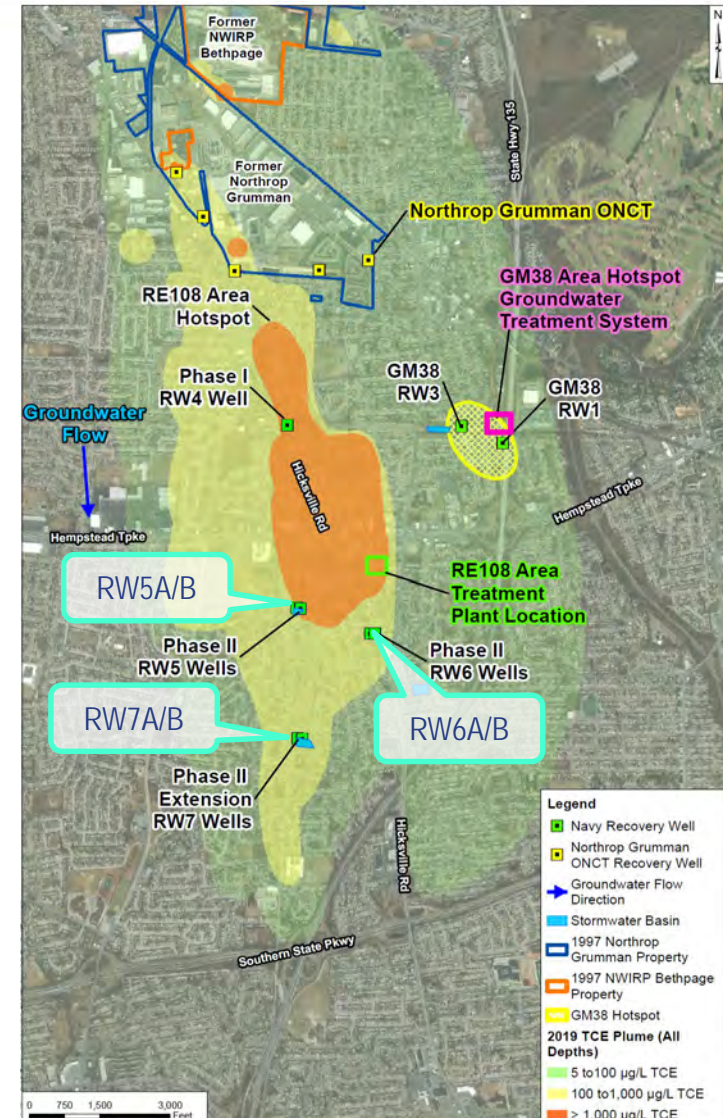


- GM38 Treatment System Upgrade
 - Advanced Oxidation Process (AOP) will be used to treat for higher levels of trichloroethene (TCE) and 1,4-dioxane
 - AOP system is based on the combination of hydrogen peroxide and ultraviolet (UV) light, which forms a very local and short-lived oxidizer (hydrogen radical)



RE108 Area Hotspot Treatment System – Phase II Overview

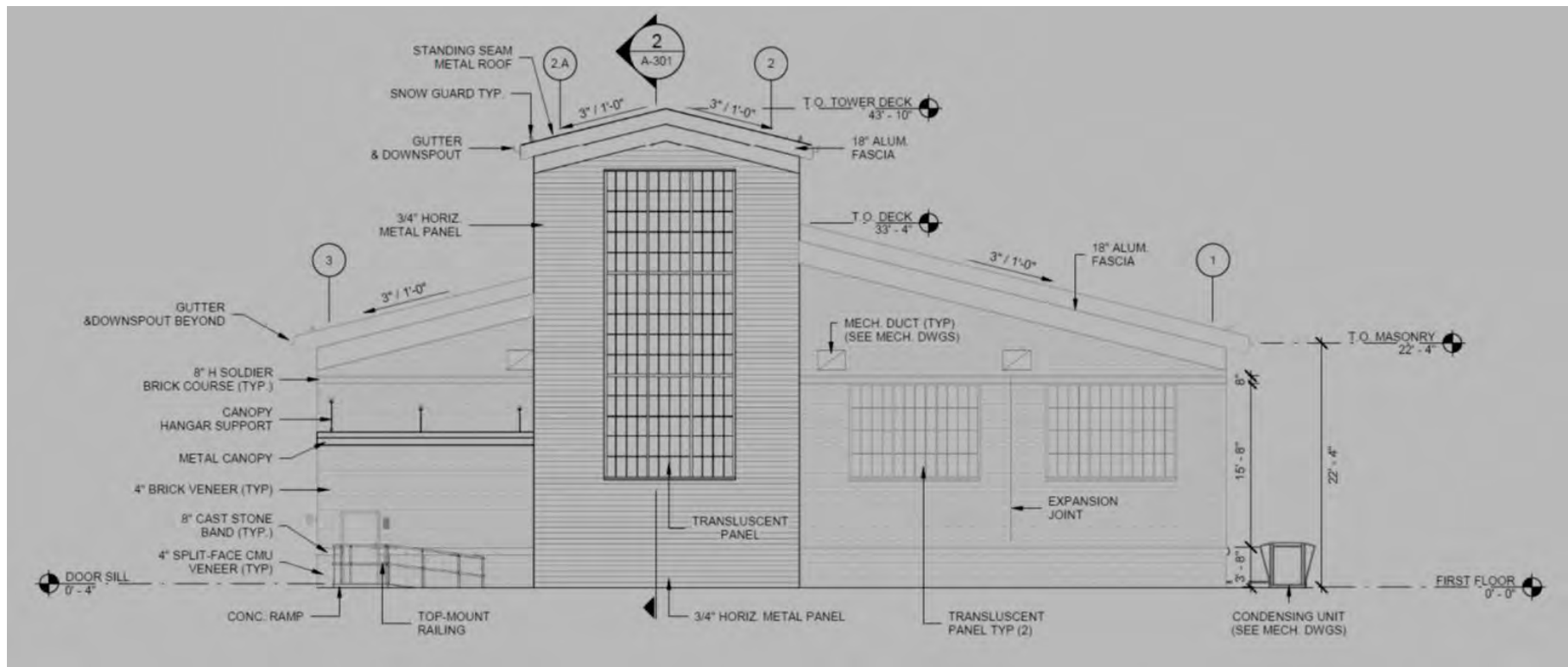
- RE108 Area Hotspot Phase II System would intercept water not captured by the Phase I System
- Six new recovery wells (RW5A/B, RW6A/B, RW7A/7B) to be installed ahead (south) of the core of the groundwater plume
- Recovery wells will be installed in underground concrete vaults
- Groundwater treatment plant property under design
- Water will be treated to drinking water standards and re-introduced to the aquifer through stormwater basins
- New building is approximately 100 feet by 120 feet
- Roof line at 33 feet, with build up for air stripping tower at 44 feet



RE108 Area Hotspot Phase II – Treatment Building



- Building façade designed to be consistent with fire station east of property
- Although industrial, site will be fenced and include asphalt pavement to conform to surrounding commercial/residential area

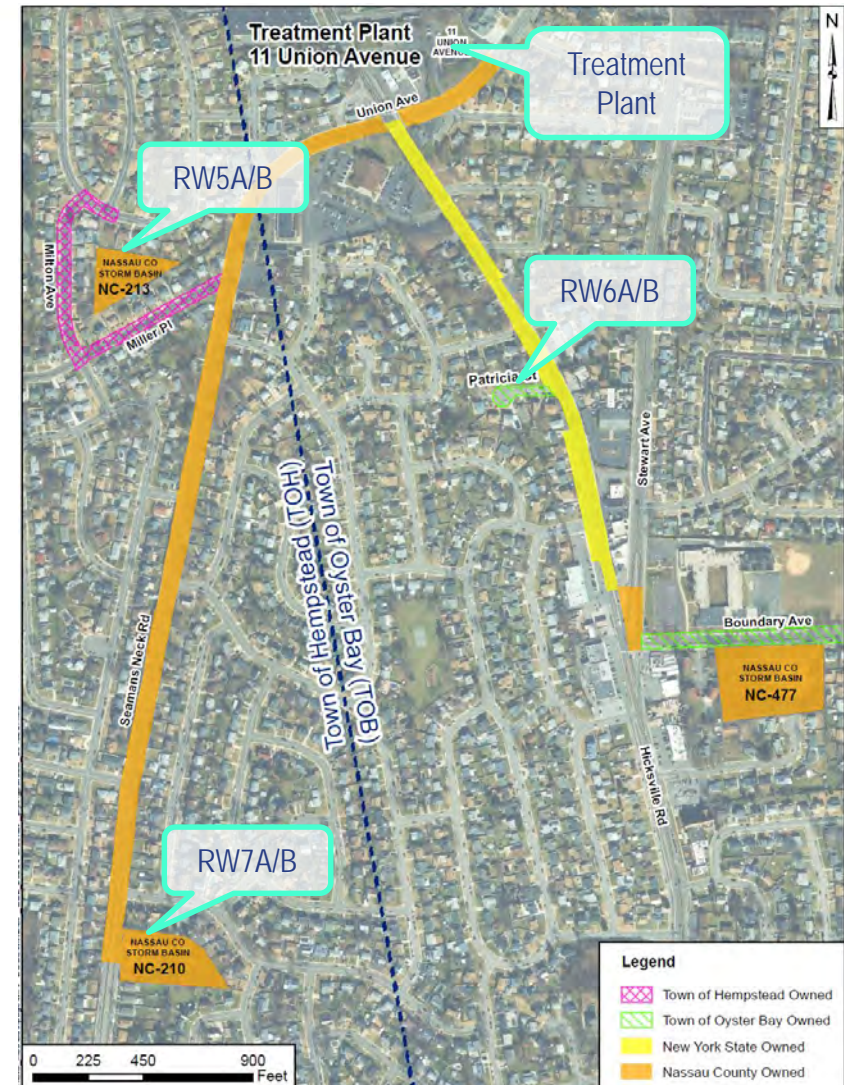


RE108 Area Hotspot Treatment System – Phase II

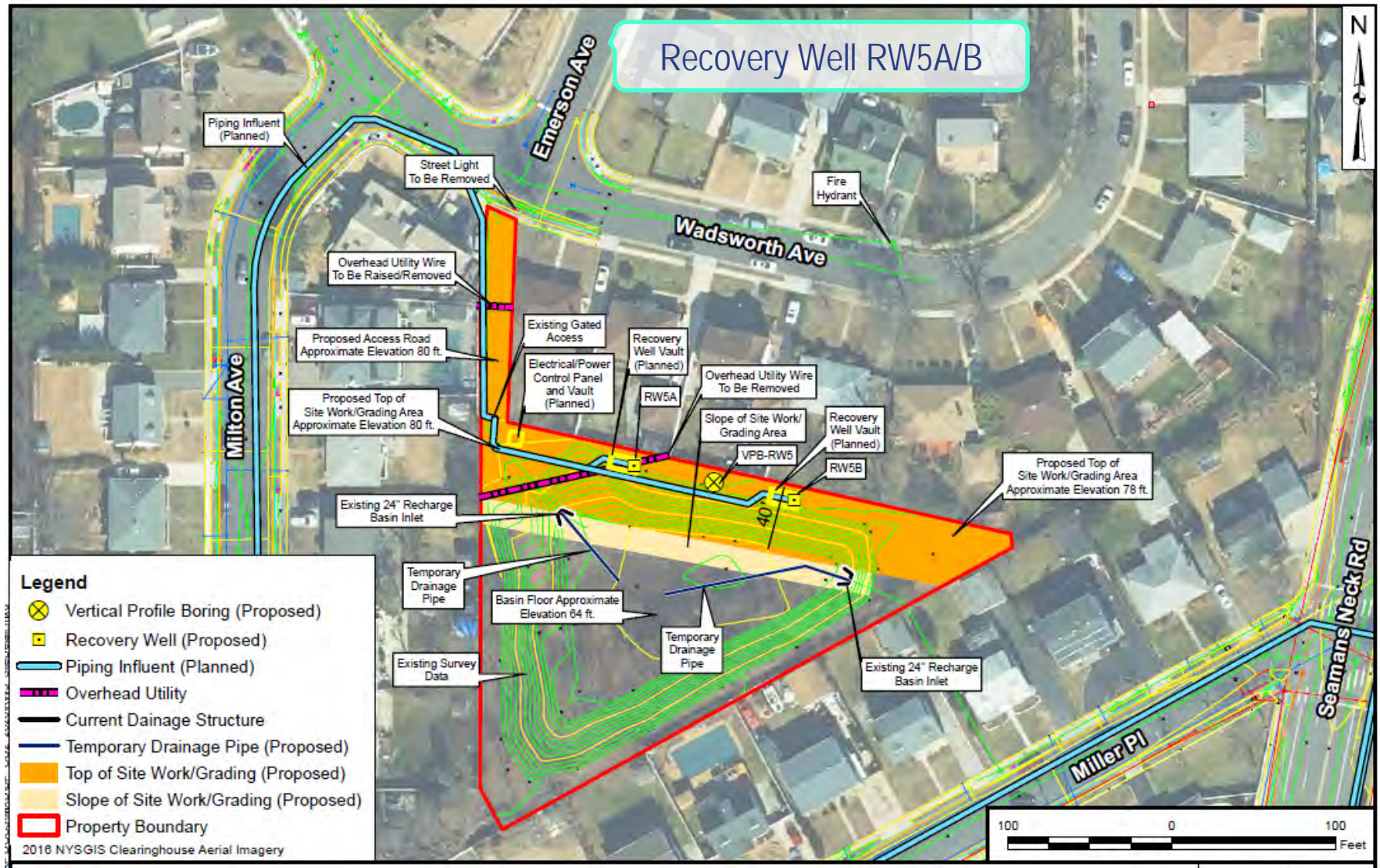
Recovery Wells RW5A/B, RW6A/B, and RW7A/B

- Recovery wells will be installed in underground concrete vaults
 - Two recovery well pairs in Nassau County Stormwater Basins (NC-213 and NC-210)
 - One recovery well pair on Town of Oyster Bay roadway (Patricia Court)
- Untreated water from recovery wells – double wall high density polyethylene (HDPE) pipe with leak detection
- Recovery well installation to start in 2020

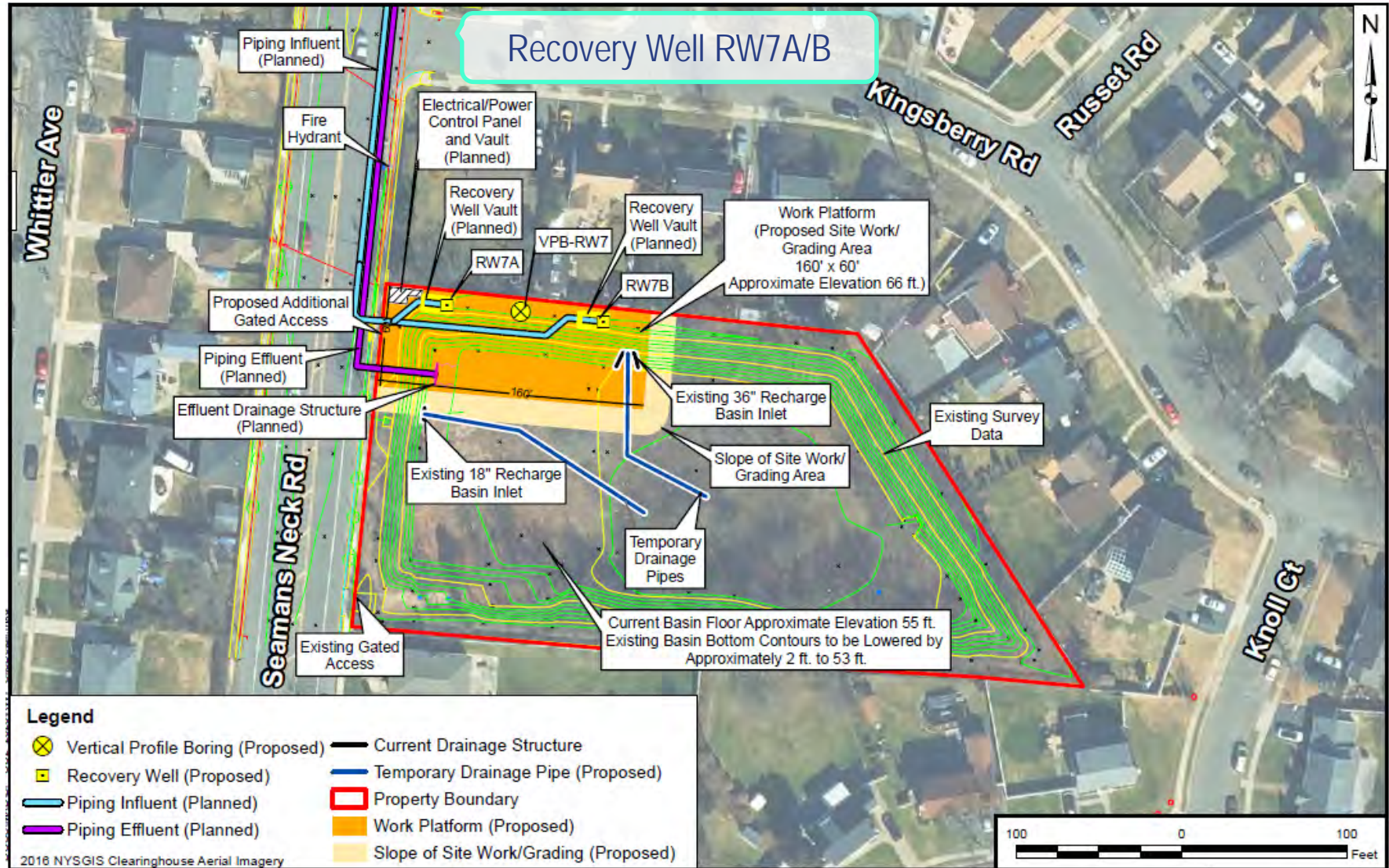
Patricia Court (RW6A/B)



RE108 Area Hotspot Treatment System – Phase II Recovery Wells RW5A/B



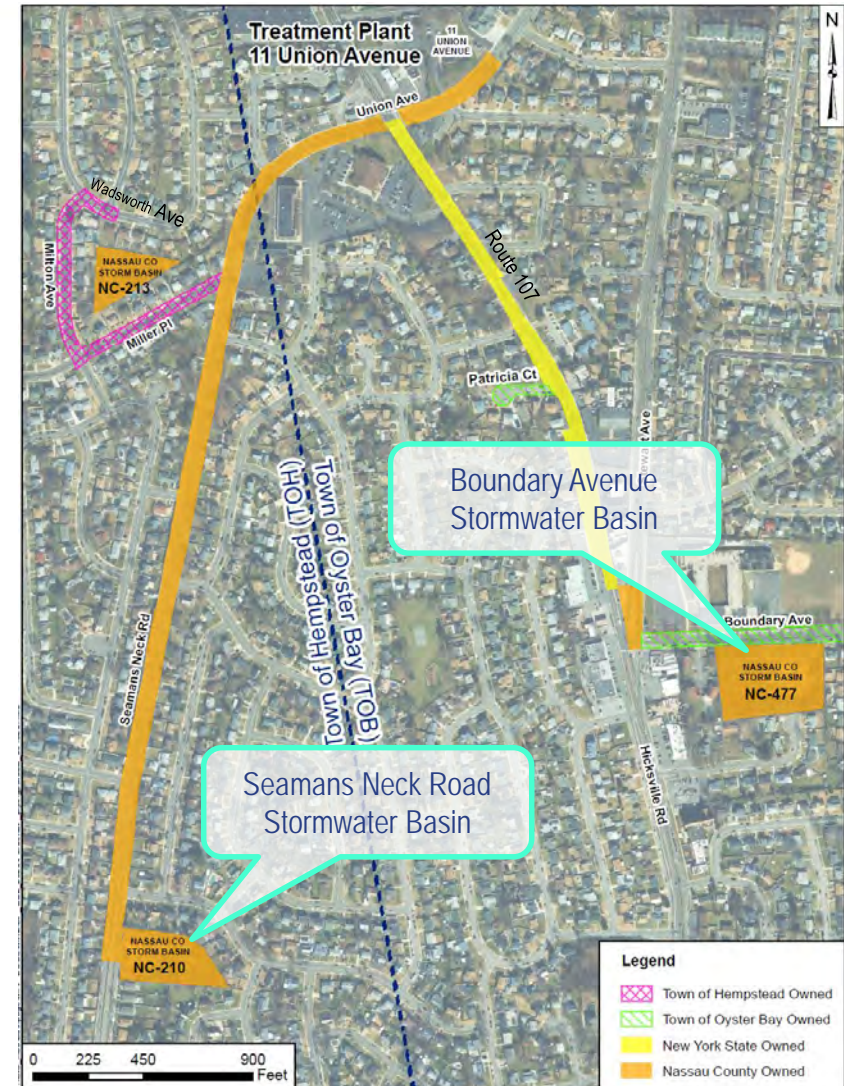
RE108 Area Hotspot Treatment System – Phase II Recovery Wells RW7A/B



RE108 Area Hot Spot Treatment System – Phase II Pipeline Routes



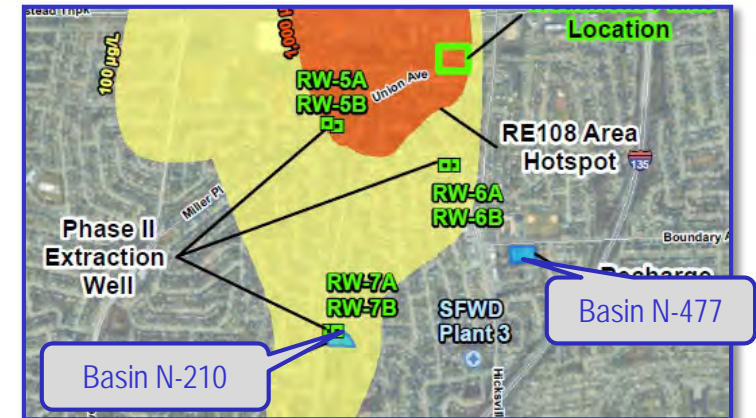
- Pipeline routes would follow existing roadways
 - Nassau County – Seamans Neck Road, Union Avenue, Stewart Avenue
 - New York State – Route 107
 - Town of Oyster Bay – Boundary Avenue and Patricia Court
 - Town of Hempstead – Miller Place, Milton Avenue, and Wadsworth Avenue
- Installed in trenches approximately 6 to 10 feet deep, in sections
- Untreated water from recovery wells– double wall HDPE pipe with leak detection system
- Clean water from treatment plant– single wall Reinforced Concrete Pipe (RCP)



RE108 Area Hotspot Treatment System – Phase II Storm Water Basins N-210 and N-477



- Pipeline will carry clean water (drinking water quality) from the treatment plant, along Seamans Neck Road and Hicksville Road to basins
- Pipeline construction anticipated to start 2021
- Advanced notice will be provided to residents



RE108 Area Hotspot Treatment System – Phase II Stormwater Basins N-210 and N-477 Improvements



Stormwater Basins N-210 and N-477

- Construction of a small concrete structure to receive water
- Basins will be excavated to provide net zero change in capacity for stormwater flows
 - Includes baseline water level after system is online
 - Lower basin bottom to offset work on side of bank and recharged water
- Basin water levels will be monitored to prevent flooding
- Periodic maintenance to ensure performance



RE108 Area Hotspot Treatment System – Phase II

Pipeline Routes Along Roadways

Pipeline Construction

- Traffic management plan will be implemented
- Anticipated disruptions:
 - Temporary blocking of driveways
 - Temporary relocation of vehicles off the street for less than one day
 - Temporary road closures
- Pipeline construction anticipated to start 2021

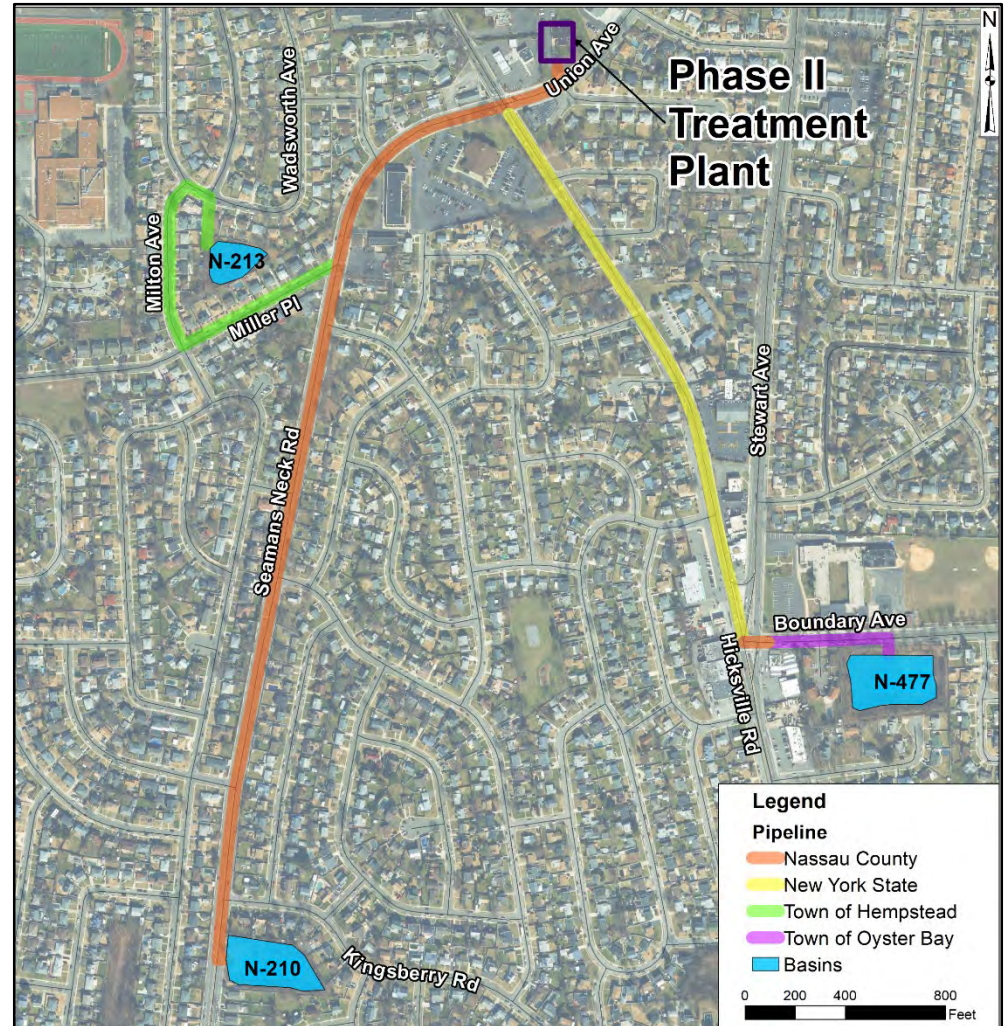


RE108 Area Hotspot Treatment System – Phase II To Basins N-210 and N-477



Stormwater Basins N-210 and N-477

- Basin work will coincide with pipeline construction, which is anticipated to start 2021
- Advanced notice will be provided to residents around the basins
- Anticipated disruptions:
 - Vehicle access into and out of basins
 - Noise and dust, with mitigation actions



RE108 Area Hotspot Treatment System – Phase II



- The Phase II System design and construction is on schedule with completion anticipated in late 2022 or early 2023
- Pre-design testing (basin infiltration testing, geotechnical boring) and surveying are in progress
- Detailed design is at approximately 60 percent and is being distributed to effected government entities for review and comment
- Treatment Plant – Union Avenue property purchased, with demolition of existing building in the planning stages
- Treatment system will be designed to handle potential future flow rates and treatment requirements

Department of Navy Restoration Advisory Board Meeting Five Year Review Summary and Operable Unit 2 Impacted Groundwater - Planned Actions

Naval Weapons Industrial Reserve Plant
Bethpage, NY

19 Nov. 2020

Presentation Topics



- Summary of Five Year Review Evaluation
- Dept. of Navy Planned Actions from Five Year Review for Operable Unit 2 (OU2) Impacted Groundwater (Navy-Northrop Grumman Plume)
- Finalization of an Operable Unit 2 Explanation of Significant Differences Document
- Ongoing and Planned Navy Actions

NWIRP Bethpage CERCLA Five Year Review Summary

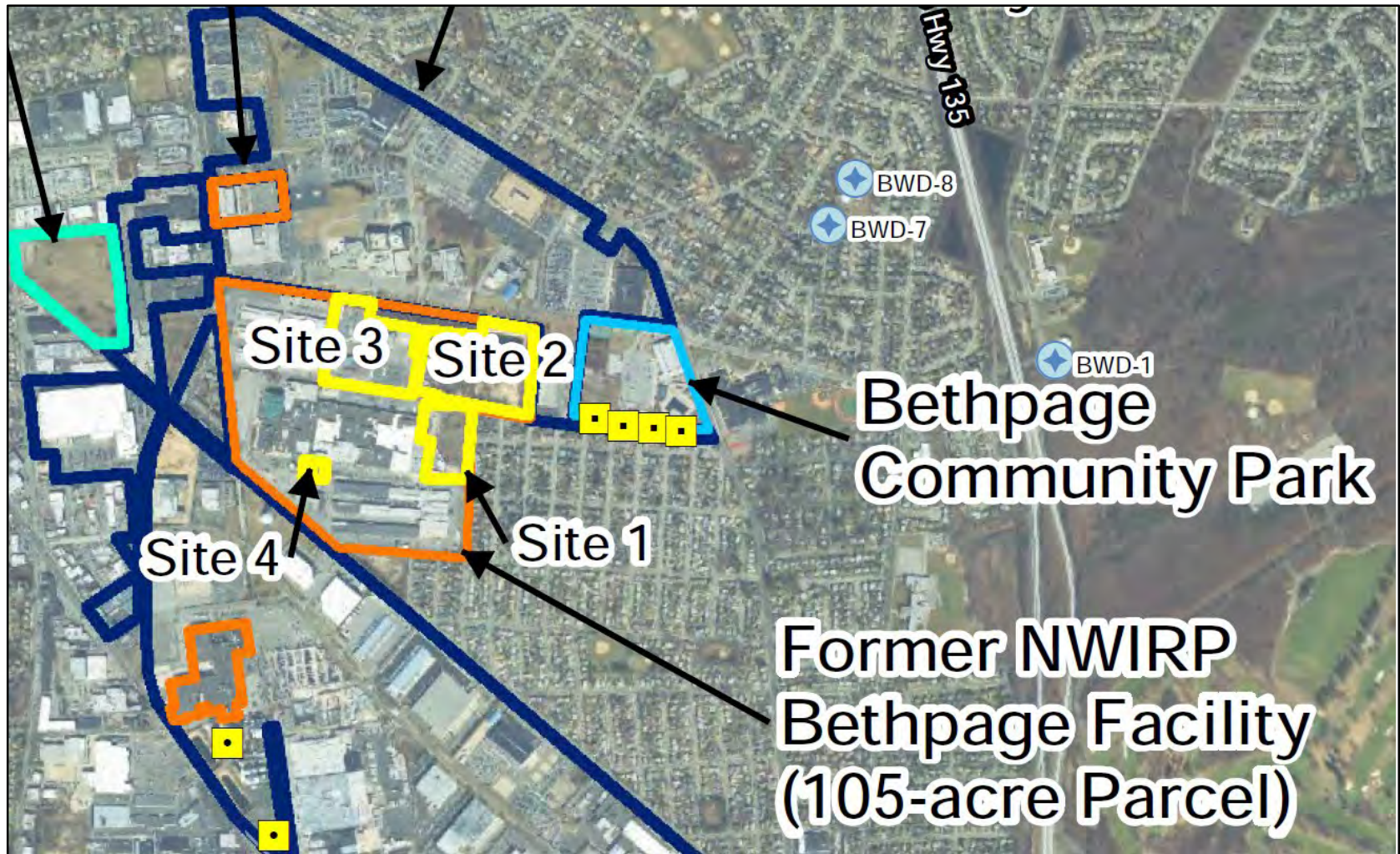


- Five Year Review (FYR) is required by CERCLA and is prepared in accordance with US EPA guidance
- The objective is "to evaluate the effectiveness of the remedies to determine if they continue to protect human health and the environment in accordance with the requirements set forth in the Record of Decision (ROD)".
- In addition to evaluation of current Navy remedies, the FYR process was used to evaluate the NYS Dept. of Environmental Conservation (NYSDEC) Amended Record of Decision (AROD) for Operable Units 2 and 3 (April 2019) and its Selected Remedy (SR)
- The review includes all NWIRP Bethpage environmental restoration sites with a Record of Decision:

Operable Unit	Site Number	Site Name
1	1	Former Drum Marshalling Area
	2	Recharge Basin Area
	3	Salvage Storage Area
2	1	Impacted Groundwater
3	4	Former Underground Storage Tanks
4	1	Former Drum Marshalling Area



NWIRP Bethpage Sites



Site 1 Former Drum Marshalling Area (OU1)



Decision Document:	ROD 1995
Source of Contamination:	Solvent/plating drum marshalling/spills, cesspools, transformers, and sludge drying beds
Impacted Media:	Soil, soil vapor, shallow groundwater
Remedy:	Excavation w/ off-property disposal, gravel cover, air sparge/soil vapor extraction, monitoring, and land use controls
Remedy in Place:	Yes, as implementable
Recommendations:	None
Protectiveness Determination:	Protective
Current Use:	Vacant, fenced, site restoration ongoing



Site 1 Former Drum Marshalling Area (OU4)

Decision Document:	ROD 2018
Source of Contamination:	Solvent/plating drum marshalling/spills, cesspools, autoclave/transformers, and sludge drying beds
Impacted Media:	Soil, soil vapor, shallow groundwater
Remedy:	Soil excavation w/ off-property disposal, reduced permeability cover, air sparge/soil vapor extraction, monitoring, and land use controls
Remedy in Place:	In progress
Recommendations:	None
Protectiveness Determination:	Short Term Protective
Current Use:	Vacant, fenced, site restoration ongoing



OU 4 ROD was prepared to address the significantly greater than expected volume of contaminated soil identified in the 1995 OU 1 ROD.

Site 2 Recharge Basin Area (OU1)

Decision Document:	ROD 1995
Source of Contamination:	Sludge drying beds, process rinse water/spills
Impacted Media:	Soil
Remedy:	Excavation and off-property disposal, permeable cover, and land use controls
Remedy in Place:	Yes
Recommendations:	None
Protectiveness Determination:	Protective
Current Use:	FedEx Hub / Recharge Basins



Site 3 Salvage Storage Area (OU1)

Decision Document	ROD 1995
Source of Contamination:	Parts storage, incidental releases, drum marshalling/spills
Impacted Media:	Soil
Remedy:	Soil/asphalt cover and land use controls
Remedy in Place:	Yes
Recommendations:	None
Protectiveness Determination:	Protective
Current Use:	FedEx Hub / Parking



Site 4 Former Underground Storage Tanks (OU3)

Decision Document:	ROD 2015
Source of Contamination:	Petroleum commingled with solvents
Impacted Media:	Soil and groundwater
Remedy:	Injection of steam with free product recovery, biosparging of soil and groundwater, soil and groundwater monitoring, and land use controls
Remedy in Place:	Yes
Recommendations:	None
Protectiveness Determination:	Short Term Protective
Current Use:	Storage, response action equipment, and field office



2019 TCE Plume (All Depths)

Legend

- Proposed Recovery Well
- Existing Navy Recovery Well
- Existing NG Recovery Well
- NYSDOC Proposed EX and HC Wells
- Public Water Supply Well
- Groundwater Flow Direction

2019 TCE Plume (All Depths)

- 5 to 100 µg/L TCE
- > 100 to 1,000 µg/L TCE
- > 1,000 µg/L TCE
- GM38 Groundwater Treatment Plant
- RE108 Phase II Treatment System

Notes:

- BCP: Bethpage Community Park (OU3)
- NG: below ground surface
- BWD: Bethpage Water District
- EX: Mass Flux Extraction Well
- HC: Hydraulic Containment Extraction Well
- HR: Hooker Ruco Superfund Site
- HWD: Hempstead Water District
- LWD: Levittown Water District
- MWD: Massapequa Water District
- NG: Former Northrop Grumman Facility
- NYWIRP: Former Naval Weapons Industrial
- NYAW: New York American Water
- OU: Operable Unit
- SPWD: South Farmingdale Water District
- TCE: Trichloroethylene

Map Labels:

- Deep Eastern Plume (OU3)
- RE21 Area Hotspot (OU3)
- GM38 Area Hotspot (OU2)
- RE108 Area Hotspot (OU2)
- Deep Western Plume (OU2)
- Shallow Plume (OU2)
- Shallow Plume (OU3)
- GM38 Groundwater Treatment Plant
- RE108 Phase II Treatment System
- Proposed Phase III Treatment Plants
- South Oyster Bay ~ 3.6 Miles

Scale: 2,000 Feet

NAVFAC

PLANNED AND POTENTIAL OU2 & OU3 GROUNDWATER INFRASTRUCTURE NYWIRP BETHPAGE, NEW YORK

Figure Number: NIS2019-16-D-9008-WE18

Drawn By: DATE

Checked By: DATE

Figure Number:

Five Year Review Evaluation of OU2 Remedy

The Navy used the FYR as a mechanism to assess the current OU2 remedy in terms of three questions:

A. Is the remedy functioning as intended by the Decision Document (i.e., 2003 ROD)?

Question A required re-visiting each of the OU2 ROD Remedial Action Objectives which are:

- *Eliminate, to the extent practicable, site-related contaminants from the affected public water supplies and to prevent, to the extent practicable, the future contamination of public water supplies through implementation of off-site groundwater remediation.*
- *Eliminate, to the extent practicable, exposures to contaminated groundwater.*
- *Eliminate, to the extent practicable, off-site migration of contaminated groundwater and, where practicable, to restore the groundwater to pre-disposal conditions.*
- *Eliminate, to the extent practicable, exceedances of applicable environmental quality standards related to releases of contaminants to waters of the state.*
- *Eliminate, to the extent practicable, detections of site-related VOC contamination for affected drinking water supplies using USEPA Method 502.2 to a detection limit of 0.5 microgram per liter (µg/L).*

B. Are the exposure assumptions, toxicity data, cleanup levels and remedial goals used at the time of the remedy selection still valid?

C. Has any other information come to light that could call into question the protectiveness of the remedy?

Evaluation of OU2 Remedy

- To answer Question A, a Five Year Review requires examination of the remedy and use of recent data and/or other relevant information
- As 'relevant information', NYSDEC's 2019 AROD Selected Remedy* was thoroughly evaluated
- NYSDEC's Selected Remedy addresses a larger plume area than OU2 plume (i.e., wherever their Standards, Criteria, and Guidance (SCG) values are exceeded in groundwater); portions of the AROD remedy address non-OU 2 contamination
- Navy performed extensive groundwater flow modeling, running six scenarios that evaluated each Navy Phase (I, II, II Extension, and III) with and without NYSDEC hydraulic containment (HC) and mass flux extraction (EX) wells operating
- Navy and NYSDEC held several productive technical meetings to discuss the inclusion of select components of their design into Navy OU2 remedial actions
- Navy remedial actions for OU2 address only NWIRP-sourced contaminants

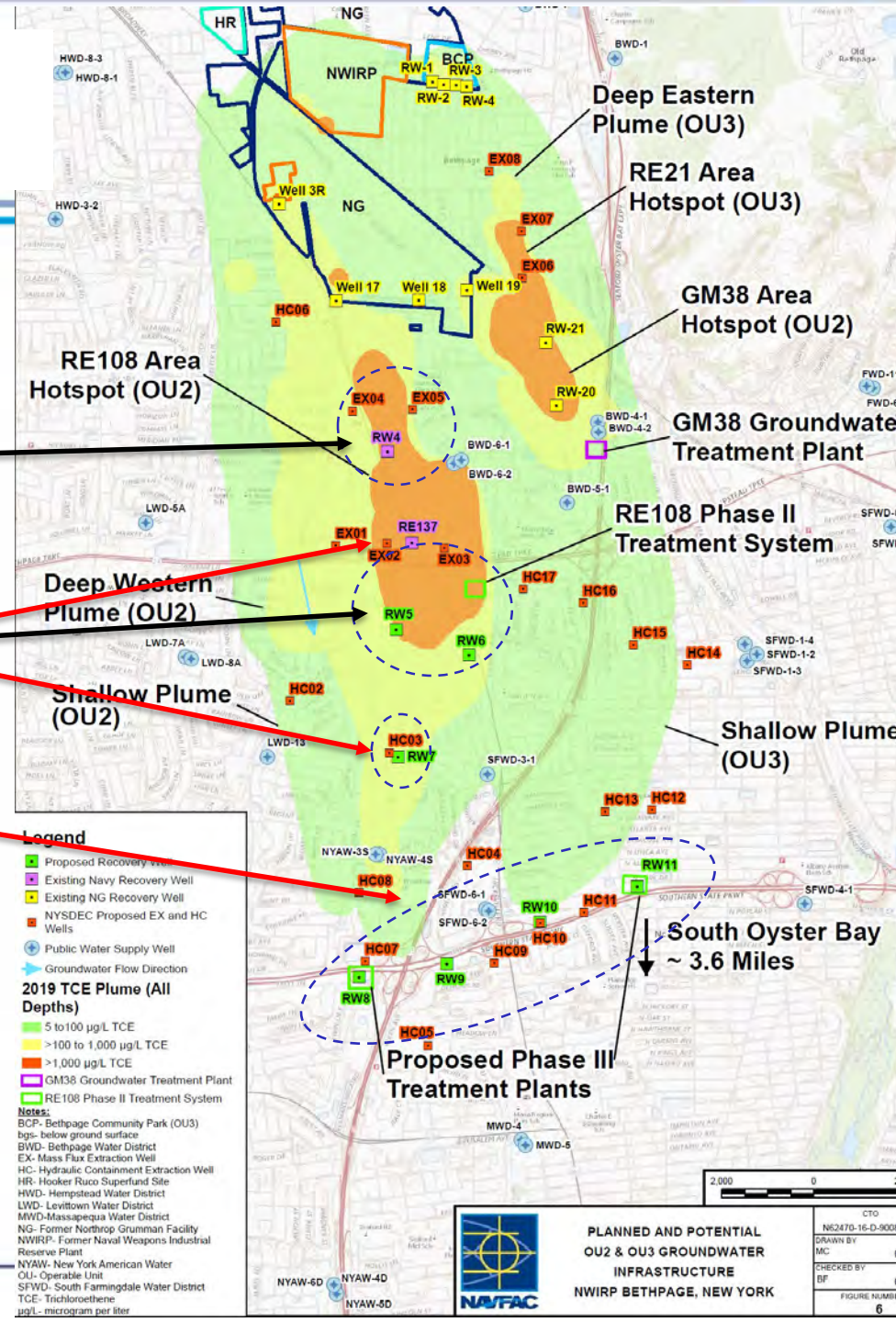
*Alternative 5B - Hydraulic Containment of Site Contaminants Above SCGs Combined with Mass Flux Remediation – Centralized Treatment Plants with a Centralized Recharge Basin

Navy Planned Actions from Five Year Review for OU2 Groundwater

Navy planned action prior to FYR →
Navy action resulting from FYR →

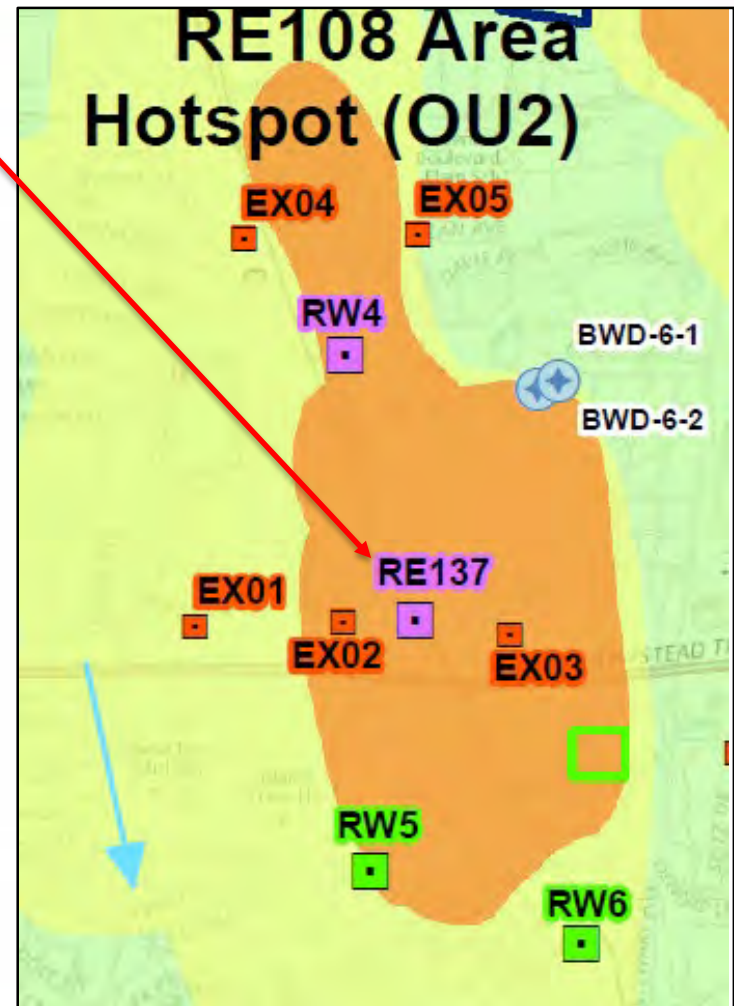
- ✓ RE108 Hotspot Area – Phase I
- ✓ Phase II Plume Capture Test
- ✓ RE108 Hotspot Area – Phase II
- ✓ RE108 Hotspot Area – Phase II Extension
- ✓ Southern Plume Interception – Phase III

- Plume map is an overlay of all mapped intervals
- Orange-labeled wells are NYSDEC hydraulic containment well (HC) and mass flux removal (EX) wells as placed in their design



RE108 Area Hotspot Phase II Plume Capture Test

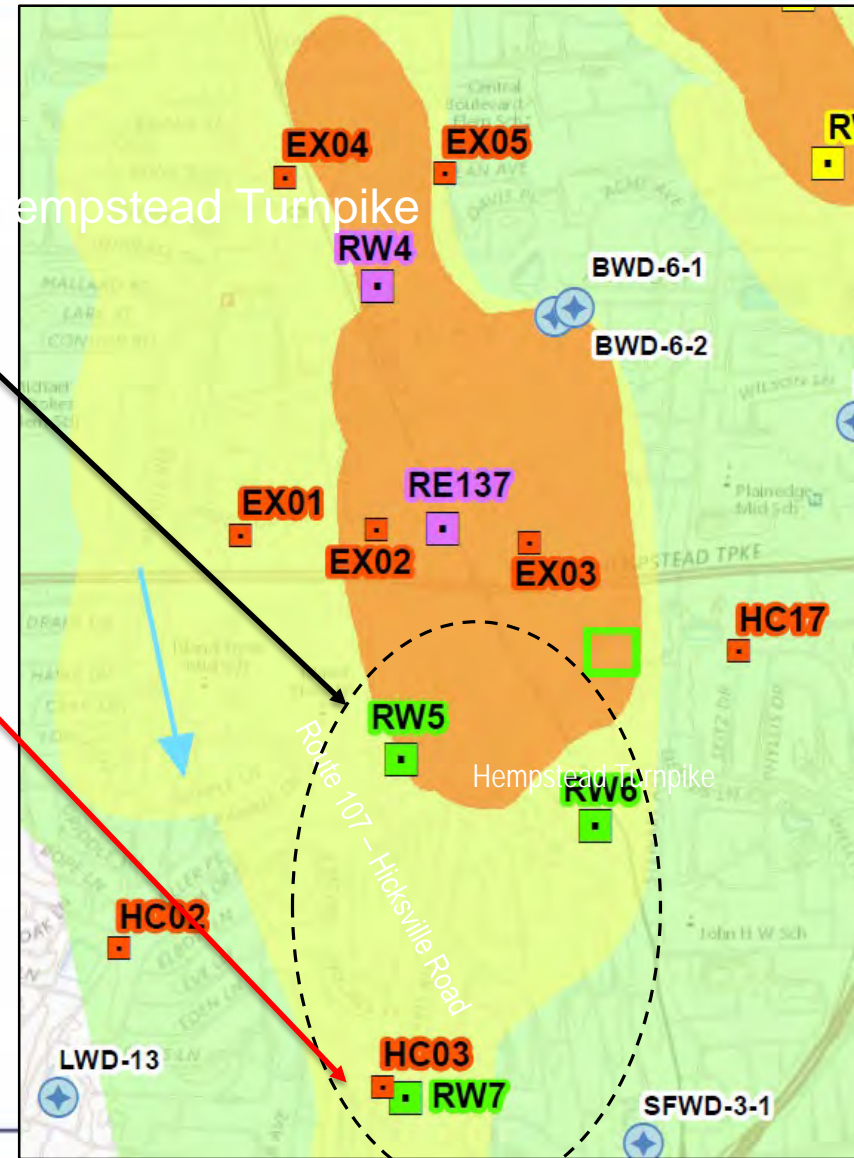
- Navy will implement an interim contaminant mass removal system at existing test well RE137
- RE137 was constructed in 2017 as a pumping test well (TCE concentrations greater than 1,000 µg/L)
- For Phase II evaluation, RE137 well testing will be conducted primarily to further evaluate capture zone, monitoring well VOC trend analysis, and support groundwater modeling
- In addition, the pumping will also provide significant mass removal of TCE and other VOCs with initial removal estimates of 100 to 200 pounds per month
- RE137 test well is in the vicinity of the NYSDEC EX02 well and would provide a similar function to that well
- March 2021 - planned start for RE137 plume capture test using portable treatment system



RE108 Area Hotspot Phase II Extension

RE108 Area Hotspot Phase II System would intercept groundwater not captured by the Phase I System

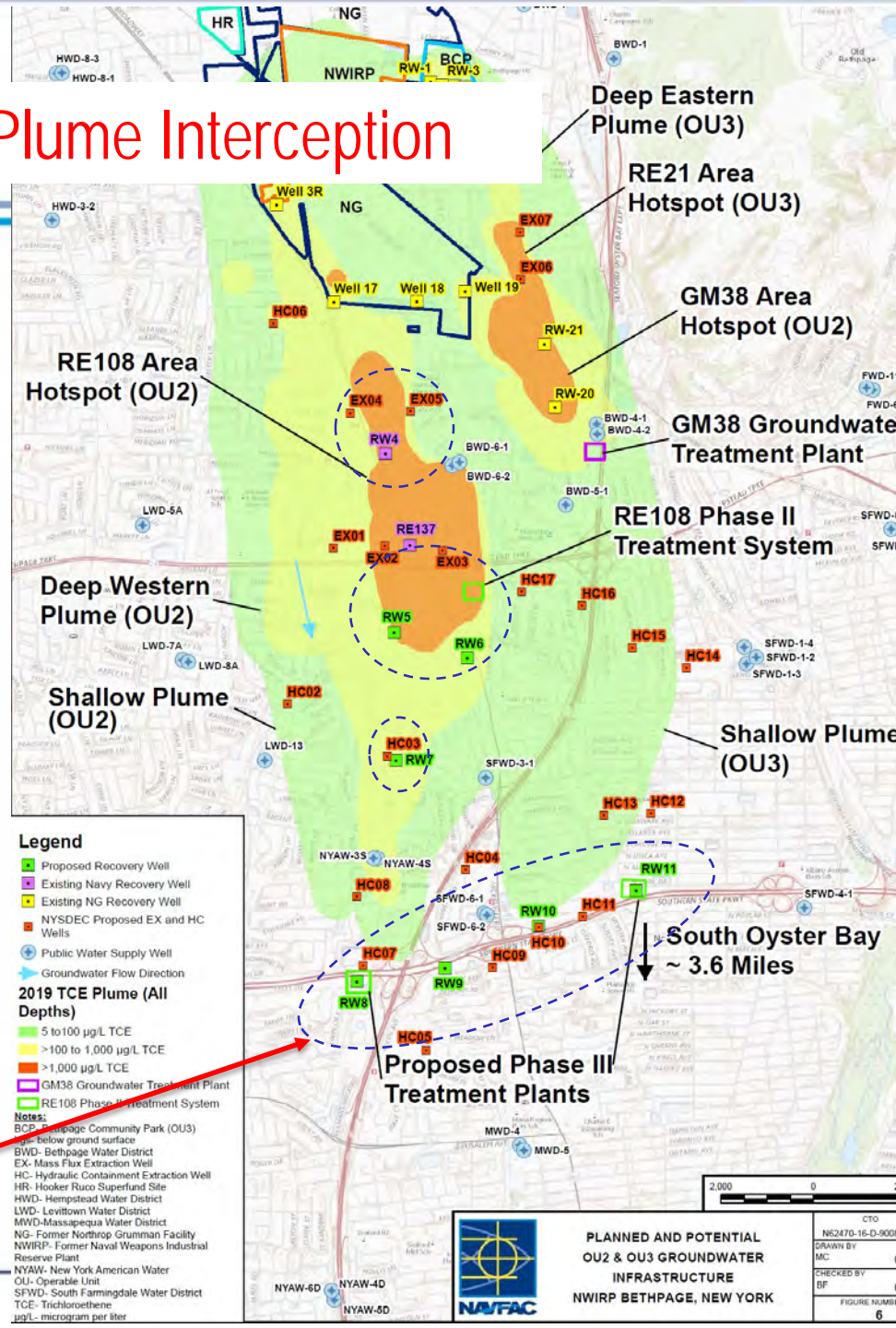
- Four new groundwater Recovery Wells (RW5A/B and RW6A/B) to be located near the leading edge of plume hotspot area
- A third well downgradient of hotspot can be added as a contaminant removal well
- DON selected a well location for RW7A/B that coincides with NYSDEC HC03 well and would serve as its replacement
- Modeling indicates addition of RW7A/B improves OU2 plume contaminant mass capture by an additional 16%



Phase III - Southern OU2 Plume Interception

- Phase III System would add up to four RWs and one or two treatment systems to intercept, as practicable, the OU2 plumes
- Current groundwater flow modeling indicates four RWs (two shallow and two deep) can intercept and capture OU2 plume
- RWs will be constructed to intercept the OU2 plume intervals and extract OU2 contaminants (not other SCG exceedance contaminants)

Southern OU2 Plume Interception – Phase III



Phase III – Pre-Design Investigation (PDI)

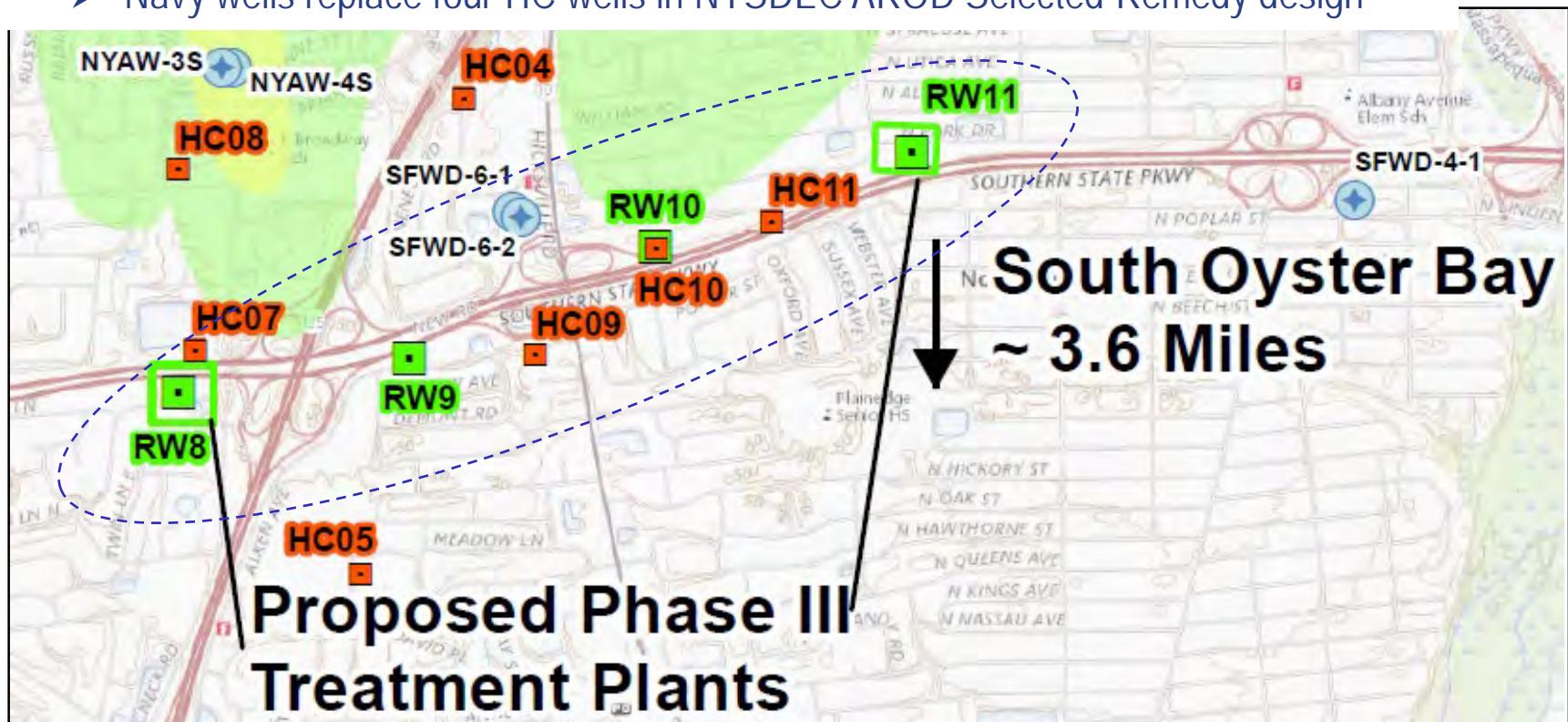
- A data gap exists in the Southern State Parkway area and to the south, therefore a series of vertical profile borings (VPBs) are needed
- VPBs will collect data to assess full vertical profile of aquifer and plume, from shallow to deep as the start of the Phase III Pre-Design Investigation
- Phase III Basis of Design will incorporate PDI results and use groundwater flow modeling for RW location areas (as constrained by available land and proximity to discharge basins)
- Navy will approach the NYS Dept. of Parks and Recreation for access to their property along Southern State Parkway for Phase III

Phase III – Layout Along Southern State Parkway

Southern extent of plume is currently north of Southern State Parkway

Phase III System current plans:

- Two deep extraction wells (RW8 and RW9)
- Two shallow extraction wells (RW10 and RW11)
- Navy wells replace four HC wells in NYSDEC AROD Selected Remedy design

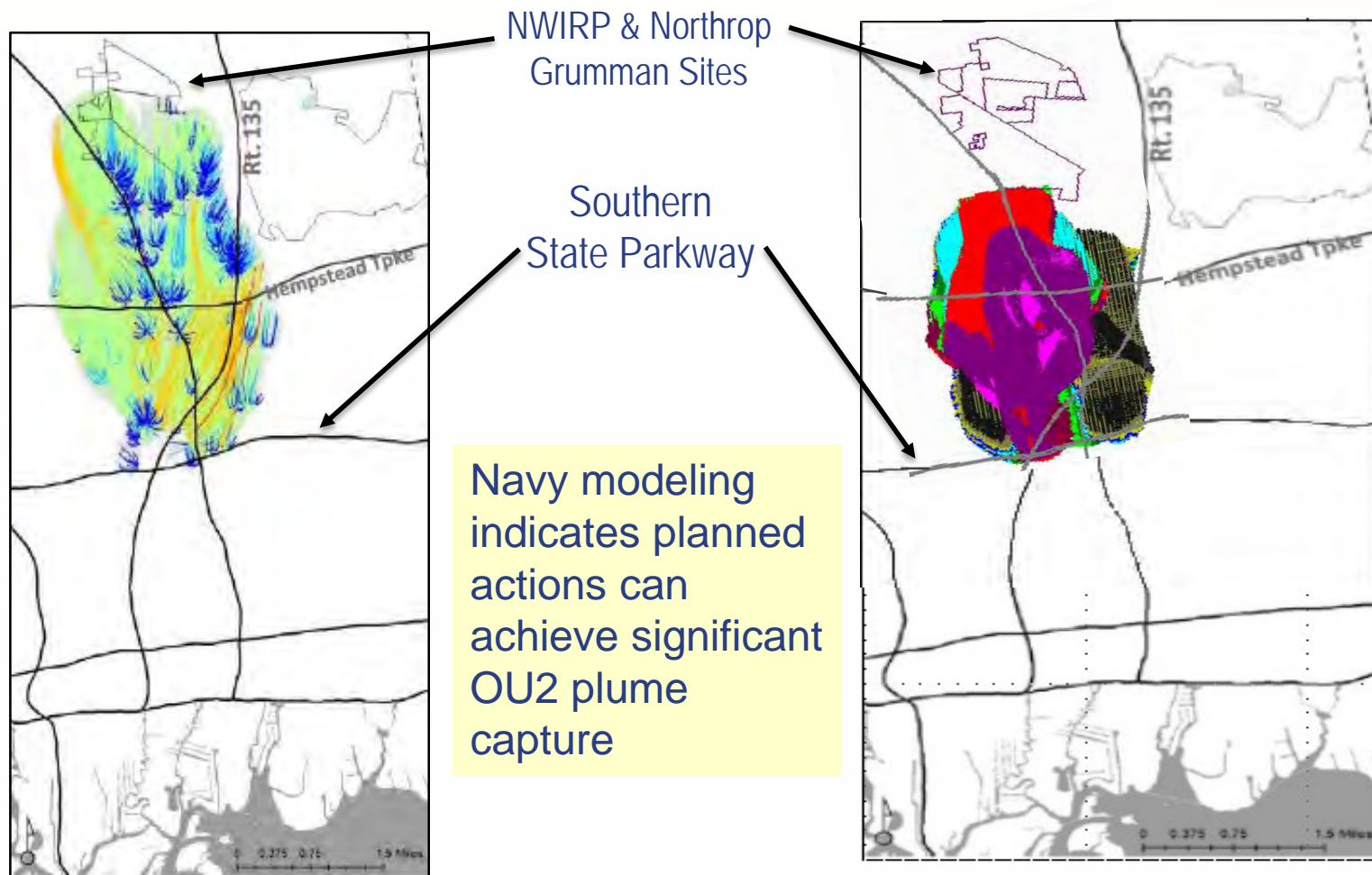


Navy Actions vs. NYSDEC Selected Remedy – Particle Capture Modeling



USGS Groundwater Flow Model
Plume Capture Depiction*

Dept. of Navy Groundwater Flow
Model Plume Capture Depiction**



*NYSDEC Proposed AROD Presentation, pg.44

**Dept. of Navy Five Year Review, Appendix D,

Figure D-87, Scenario 5

Next Step – Finalization of an Operable Unit 2 Explanation of Significant Differences Document



- Navy issued a Draft Five Year Review to NYSDEC in April 2020
- Navy addressing NYSDEC comments provided September 2020
- A CERCLA Explanation of Significant Differences (ESD) is a decision document that documents changes to an existing ROD
- Navy issued Draft ESD for OU2 ROD to NYSDEC on 29 Sept. 2020 – NYSDEC is to provide a comment letter to Navy
- ESD will be made available for public comment
- Five Year Review will be posted to NWIRP Bethpage website when finalized



Naval Facilities Engineering Command Mid-Atlantic
Norfolk, Virginia

Draft
Explanation of Significant Differences
Operable Unit 2 Record of Decision

Former Naval Weapons Industrial Reserve Plant
Bethpage, New York

September 2020

DRAFT

This document is pre-decisional and is, or portions are, exempt from release under the Freedom of Information Act (FOIA), P.L. 93-502 (5 U.S.C. § 552), by Exemption 5, 5 U.S.C. § 552(b)(5). Do not release without prior specific approval of the originator or higher authority.

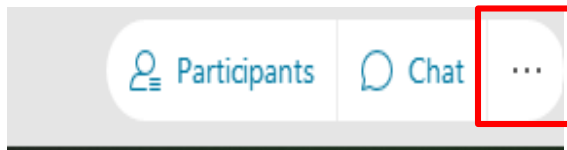
Ongoing and Planned Navy Actions

- Navy is moving forward with Phase II Extension, RE137 capture test, and Phase III design investigations
- Continued upgrading of groundwater flow model to handle fate and transport of contaminants and incorporate recent evaluation of subsurface geology using principles of environmental sequence stratigraphy (report provided to NYSDEC (USGS) and Northrop Grumman)
- A focused well installation/sampling program to close a data gap that exists in mapping the extent of the shallow plume
- Data sharing and meetings with NYSDEC and Northrop Grumman to aid their remedial design investigations
- Continued investigation of aquifer response – redeploy downhole data loggers to measure water level changes during operation of RE137 extraction well and new RW4 to assess plume capture
- Ongoing routine sampling of monitoring wells to assess plume extent and concentration

Q&A OPTIONS

1. **Ask a question** by typing it in the **Q&A box**.

Click three white dots "More Options" icon in bottom right of screen to open the Q&A box.



2. **Raise your hand** to be recognized and have your microphone unmuted.

Raise Hand  in the **Participants** panel to signal a question

3. **Phone-only attendees** can dial *3 to raise their hand and have the opportunity to ask a question.

Q&A



QUESTIONS/ANSWERS
UNTIL 10:00 P.M.

POST MEETING



- Questions can be submitted 1 week after the RAB (November 22, 2020)
- Submit question to the Navy PAO (NAVFAC_ML_PAO@navy.mil) or leave a message at 800-747-7168
- Similar questions will be combined
- The post meeting Q&A will be available at the Navy's website and captured in the RAB meeting minutes
- The Navy's website: <https://go.usa.gov/DyXF>