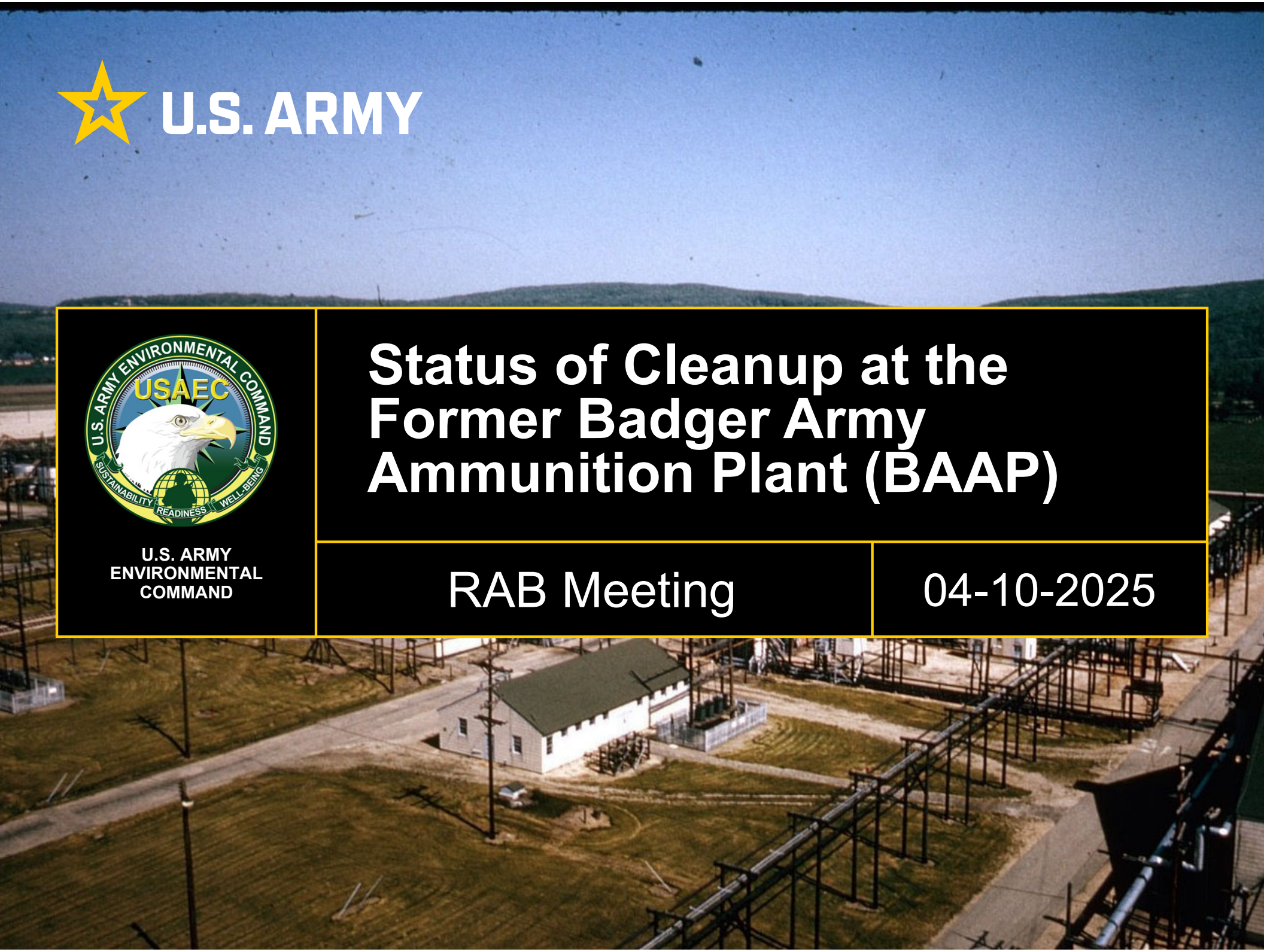

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Status of Cleanup at the Former Badger Army Ammunition Plant (BAAP)

RAB Meeting

04-10-2025

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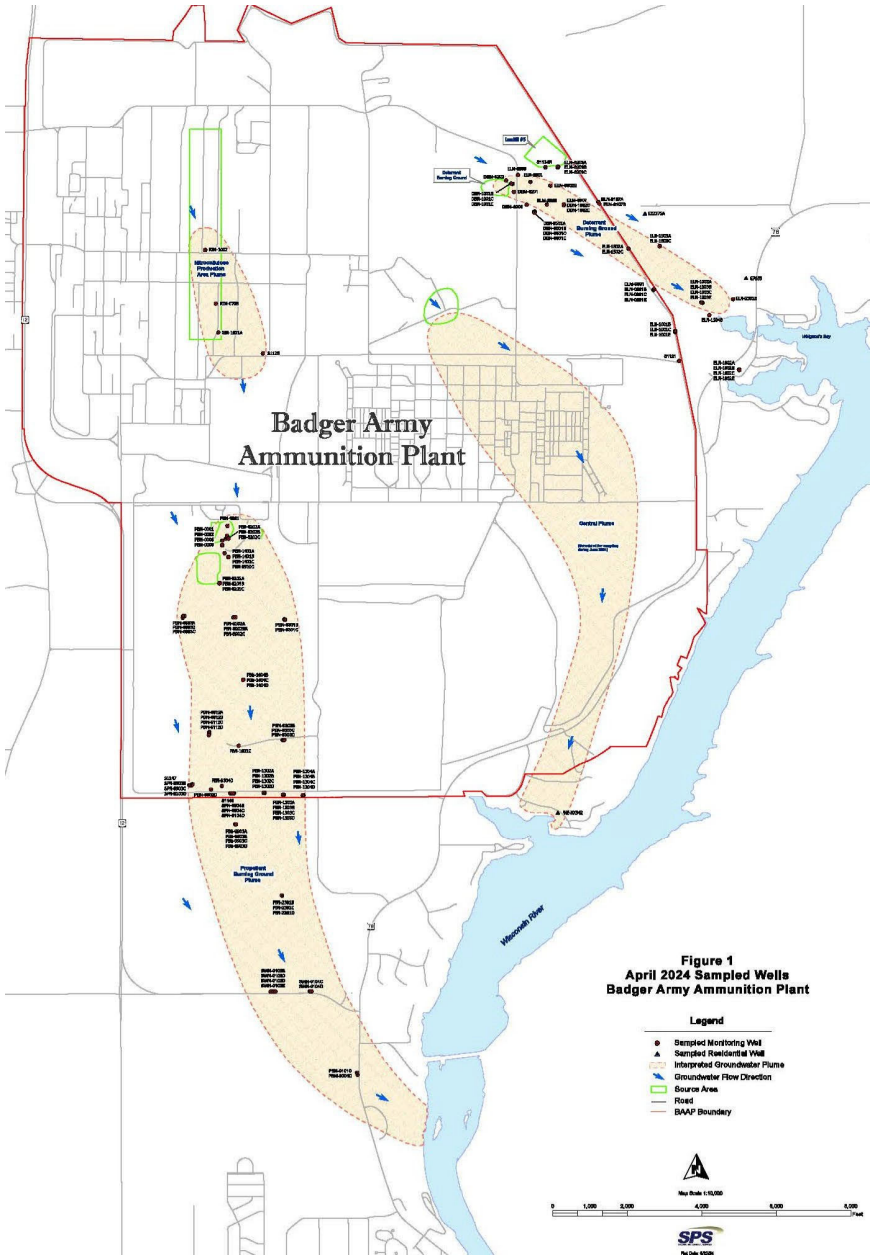
Agenda – April 10, 2025

- Welcome and Opening Remarks
- Roll Call
- Review of the Minutes from January 2025 RAB
- RAB Membership
- Site-Wide Groundwater Proposed Plan Updates
- Settling Ponds Expanded Site Inspection
- Gruber's Grove Bay Data Gap Investigation
- PFAS Remedial Investigation
- Future Meeting Dates

Welcome/Opening Remarks

Site-Wide Groundwater Proposed Plan Updates

- Public comment period December 16, 2024 to February 28, 2025
- Open house conducted January 16, 2025
- Army currently reviewing comments received
- Pilot scale test of the proposed remedy under consideration
- Record of Decision will be delayed; Army will provide responses to public comment received in the interim



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Settling Ponds Site Inspection

- **Objective – Determine the presence or absence of soil contamination**
- Included Final Creek, Settling Ponds 1 & 3, and Spoils Disposal Areas I, II, III, IV, & V
- Soil sampling performed in November - December 2024
- Settling Pond 4 will be sampled in the future

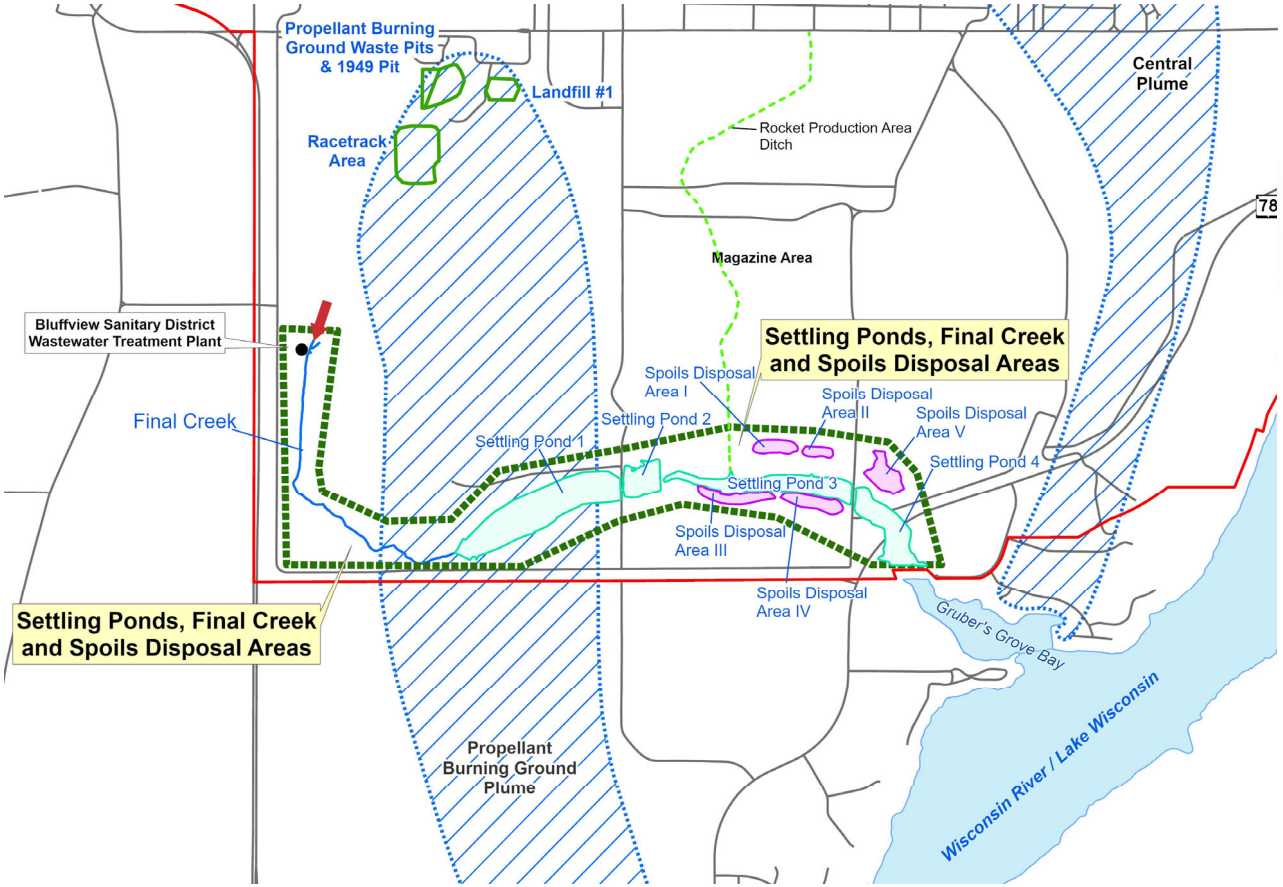

Figure 1
Site Location
Settling Ponds
Former Badger Army Ammunition Plant

Legend

- Process Sewer Outfall
- Source Area
- Interpreted Groundwater Plume
- Wisconsin River
- Spoils Disposal Area
- Settling Pond
- Road
- Former Badger Army Ammunition Plant Boundary

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Settling Ponds Site Inspection

- 186 Soil samples were collected from 64 locations
- Soil sample depths typically ranged from 0.5 to 5 feet
- Eight soil samples were collected between 8 to 11 feet deep to evaluate spoils locations
- All soil samples were lab analyzed for:
  - Explosives (e.g., 2,4-DNT, 2,6-DNT & nitroglycerin)
  - Semi-volatile organic compounds (e.g., 2,4-DNT, 2,6-DNT, di-n-butylphthalate & diphenylamine)
  - Metals (aluminum, arsenic, chromium, lead, mercury, tin & zinc)
- 19 Soil samples were also analyzed for:
  - Nitrocellulose
  - Volatile organic compounds (VOCs)

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Settling Ponds Site Inspection

- Laboratory results were compared to EPA Regional Screening Levels (RSL) for Industrial Soil
- No soil RSL exceedances for VOCs or nitrocellulose
- Site Inspection found the presence of soil contamination (RSL exceedance):

Compound	Industrial Soil RSL (mg/kg)	Maximum Concentration (mg/kg)
2,4-DNT	7.4	750
2,6-DNT	1.5	63
Nitroglycerin	82	390
Arsenic	3	43

mg/kg = milligrams per kilogram or parts per million

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Settling Ponds Site Inspection

- Either 2,4-dinitrotoluene (DNT) or 2,6-DNT exceeded the soil RSL in 27 locations within:
  - Final Creek
  - Settling Pond 1
  - Settling Pond 3
  - Spoils Disposal Area II
  - Spoils Disposal Area III
- No DNT exceedances occurred within:
  - Spoils Disposal Area I
  - Spoils Disposal Area IV
  - Spoils Disposal Area V
- Shallow soil samples (0.5 - 1.5 feet) had the most DNT exceedances
- Deepest soil sample with a DNT exceedance (15.6 mg/kg) was SP1-24-03-5.0 (5 feet)
- Maximum 2,4-DNT concentration = 750 mg/kg at SP1-24-11-0.5 (0.5 feet)
- Maximum 2,6-DNT concentration = 63 mg/kg at SP1-24-11-0.5 (0.5 feet)

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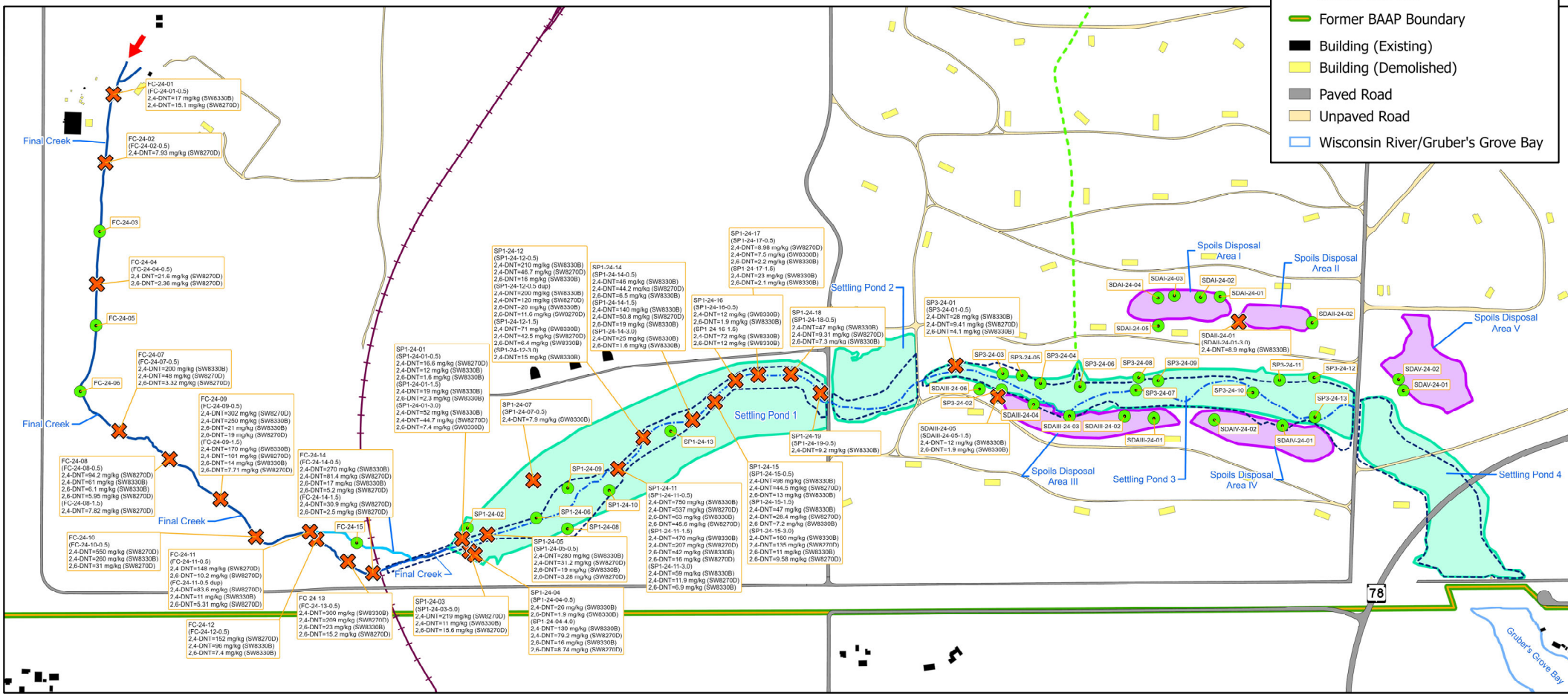
2,4-DNT and 2,6-DNT Soil Exceedances



Settling Ponds Site Inspection

- Nitroglycerin exceeded the soil RSL in three (3) locations within:
  - Settling Pond 1
- No nitroglycerin exceedances occurred within:
  - Final Creek
  - Settling Pond 3
  - Spoils Disposal Area I
  - Spoils Disposal Area II
  - Spoils Disposal Area III
  - Spoils Disposal Area IV
  - Spoils Disposal Area V
- Soil samples from 1.5 & 3 feet had the nitroglycerin exceedances
- Maximum nitroglycerin concentration = 390 mg/kg at SP1-24-15-3.0 (3 feet)

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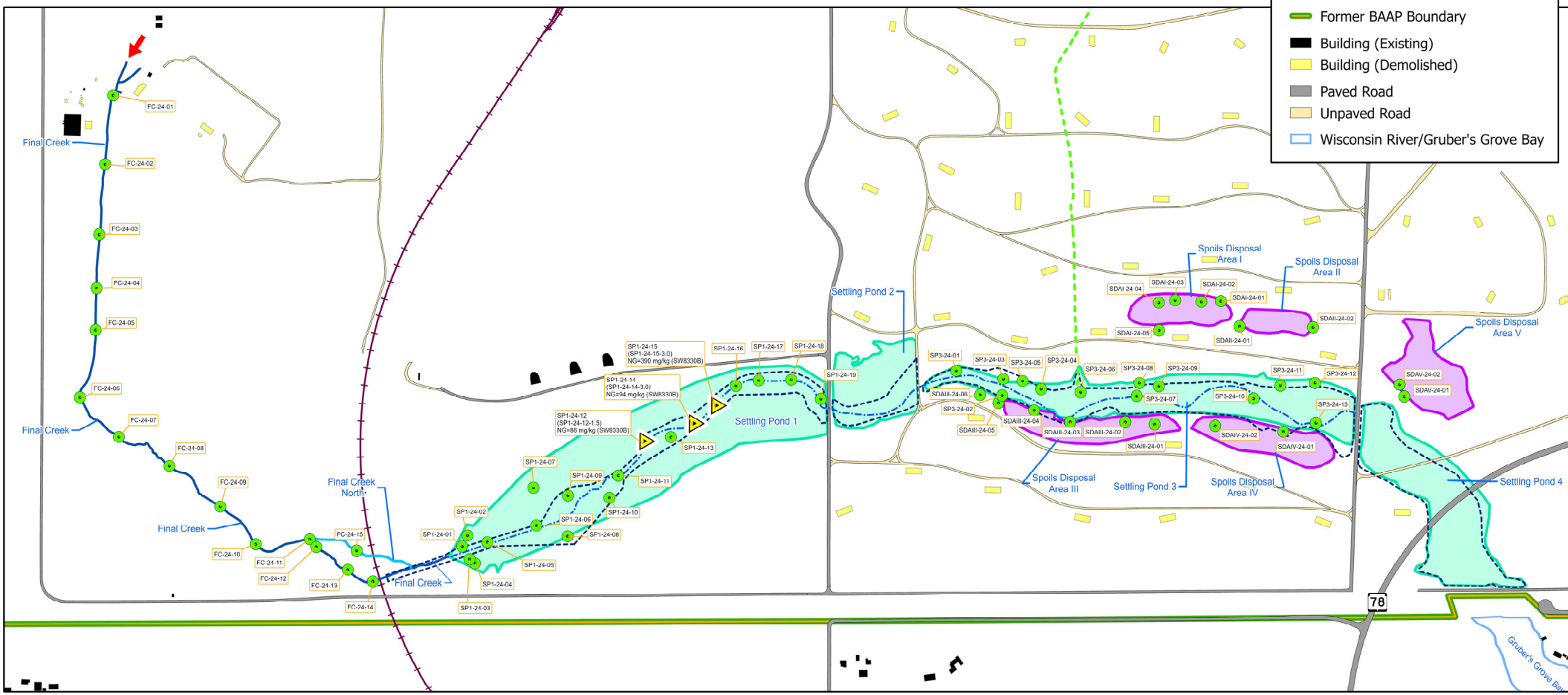
Nitroglycerin Soil Exceedance



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Settling Ponds Site Inspection

- Arsenic exceeded the soil RSL in 49 locations within:
  - Final Creek
  - Settling Pond 1
  - Settling Pond 3
  - Spoils Disposal Area I
  - Spoils Disposal Area II
  - Spoils Disposal Area III
- No arsenic exceedances occurred within:
  - Spoils Disposal Area IV
  - Spoils Disposal Area V
- Shallow soil samples (0.5 - 1.5 feet) had the most arsenic exceedances
- Deepest soil sample with an arsenic exceedance (5.6 mg/kg) was SP3-24-05-8.0 (8 feet)
- Maximum arsenic concentration = 43 mg/kg at SP3-24-02-0.5 (0.5 feet)

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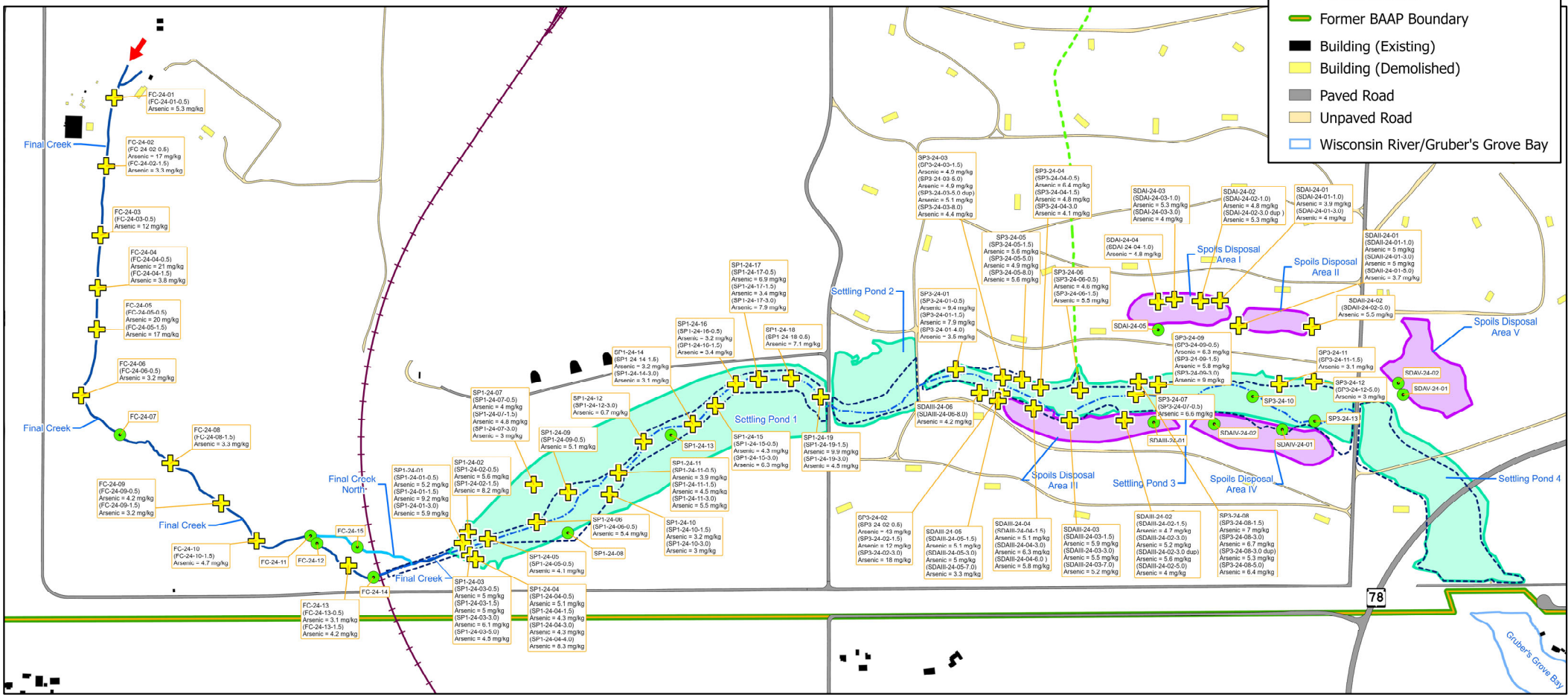
Arsenic Soil Exceedances



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Propellant Grains

- Propellant grains or smokeless powder was made at BAAP
- Propellant grains were observed in Final Creek and Setting Pond 1
- They were found at the surface down to 1.5 feet deep
- The process sewer water discharged to Final Creek, including the grains

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Settling Ponds Site Inspection

- Plan to collect soil samples from Settling Pond 4
- Complete Site Inspection Report in 2025
- Work with property owners
- Evaluate the installation of site signs
- Evaluate the next steps of the CERCLA process

Gruber's Grove Bay Progress Summary
Data Gap Investigation & Treatability

Former Badger Army Ammunition Plant RAB

April 10, 2025

Delivering a better world

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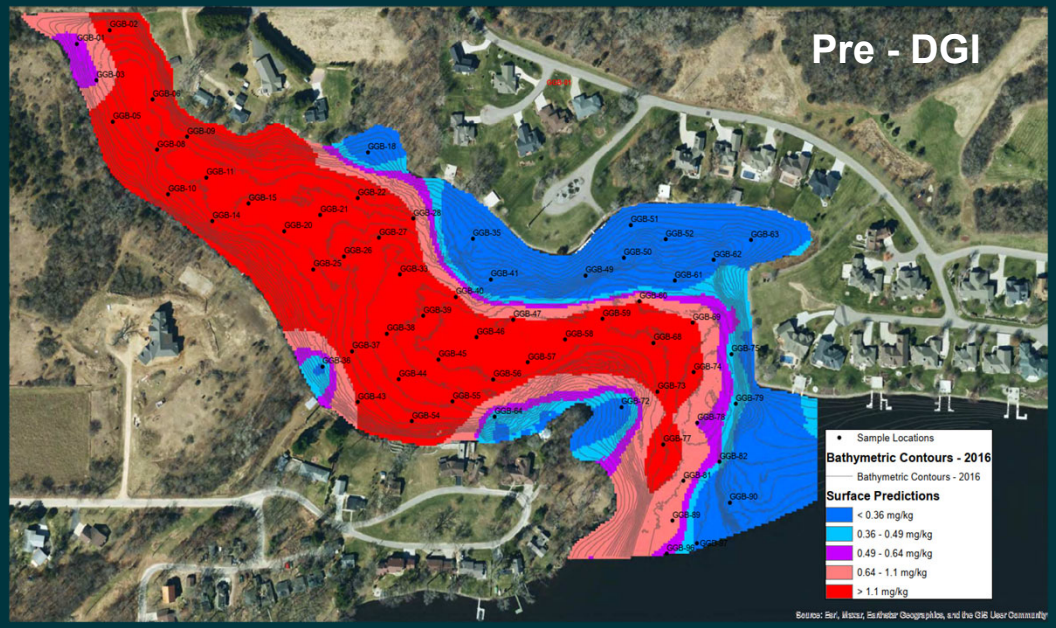
Agenda

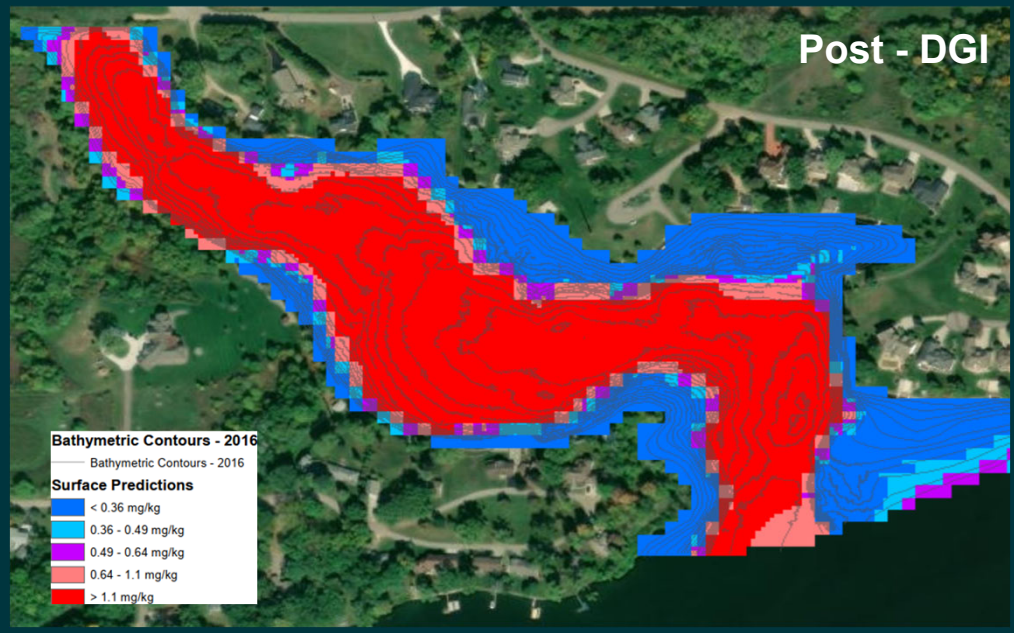
- Sediment Sampling Summary
- Delineation Modeling
- Treatability Tests Completed
- Next Steps

Sediment Sampling Summary

- **Purpose** was to delineate extent of mercury in areas of identified data gaps from the Desktop Supplemental RI.
- **11 sediment sample locations** (GGB-100 to GGB-110); total of 44 samples analyzed for total mercury.
- **Delineation modeling** of the sediment plume
- **Treatability tests** of gelatinous sediment were completed to evaluate sediment management alternatives.

Modeled Distribution of Elevated Mercury Concentrations in Surface Sediments (0 – 0.5 feet)





Kriging of mercury concentrations (mg/kg) at pre-DGI sampled locations

Models developed using R Statistical Software

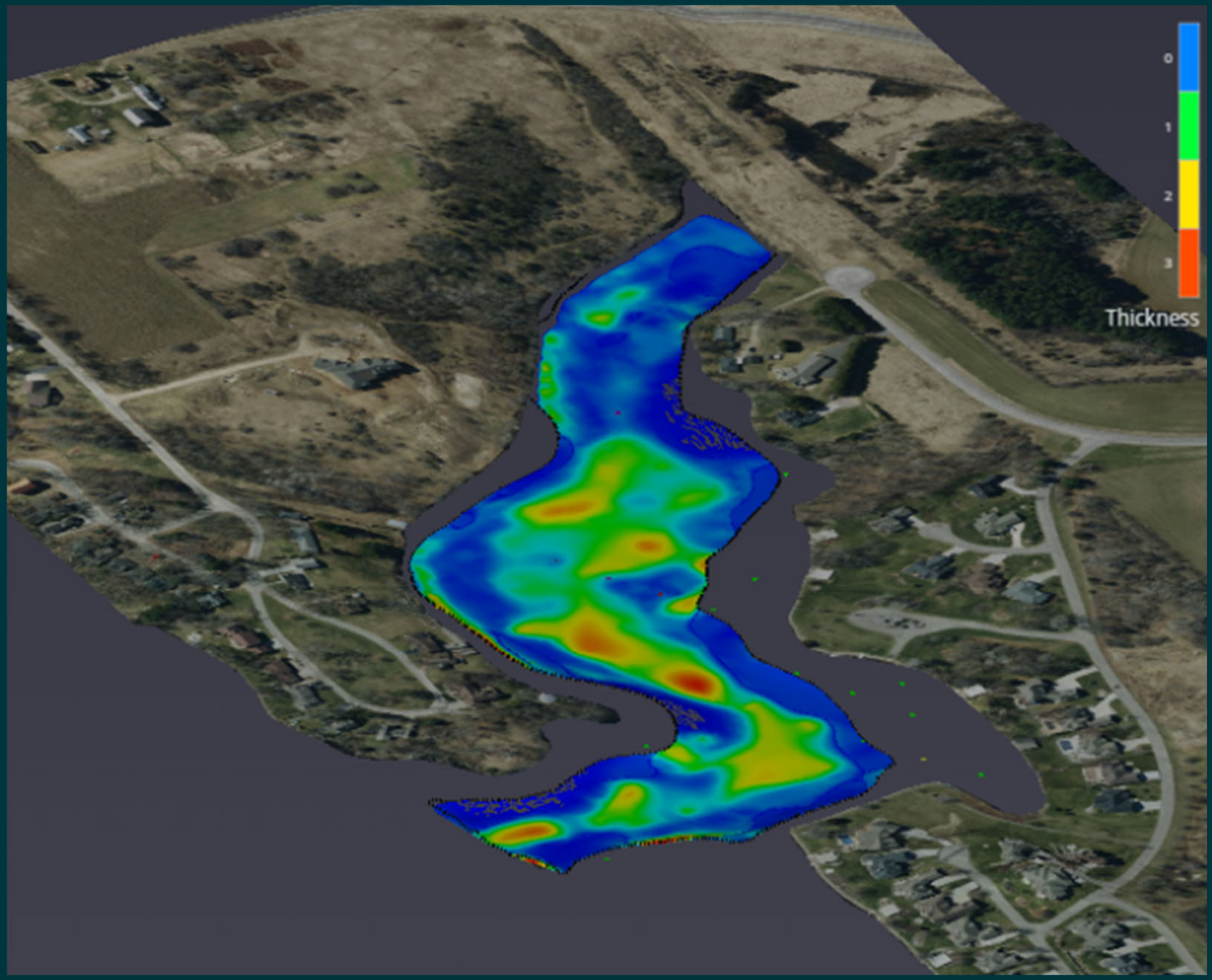
Universal kriging built on regression model of mercury concentrations (mg/kg) at pre + post-DGI sampled locations vs:

- **Average elevation (- correlation)**
- **Average slope (-)**
- **Western half of Bay = 0, eastern half of Bay = 1 (-)**

Delineation Modeling

Estimated Mercury Plume Volume

- 12,498 Cubic Yards
- Suggest including NW corner of the Bay during dredge prism development.



Treatability Tests Completed

Treatability Tests	Dredging and Dewatering Strategy
Stacking/gravity filtration tests	Mechanical dredge
Passive dewatering tests	Hydraulic dredge
Geotextile tube efficacy w/ filter tests, hanging bag tests and/or pillow tests	Hydraulic pump Mechanical dredge and subsequent slurrying of sediment (full-scale efficacy calculated from passive dewatering efficacy results)
Solidification/stabilization (s/s) treatability tests •**Dewatering** •**Strength improvement** •**Contaminant leachability**	Mechanical dredge Filter cake from passive dewatering (e.g., CDF or geotextile tubes) that doesn't meet T&D criteria

Next Steps -

DGI

- *DGI Report submitted to WDNR*

Feasibility Study

- Screen alternatives
- Define, evaluate and cost definitive alternatives
- Develop process flow and mass balance for recommended alternative based on treatability results
- Develop conceptual plans and schematics for recommended alternative
- Complete and submit the FS report

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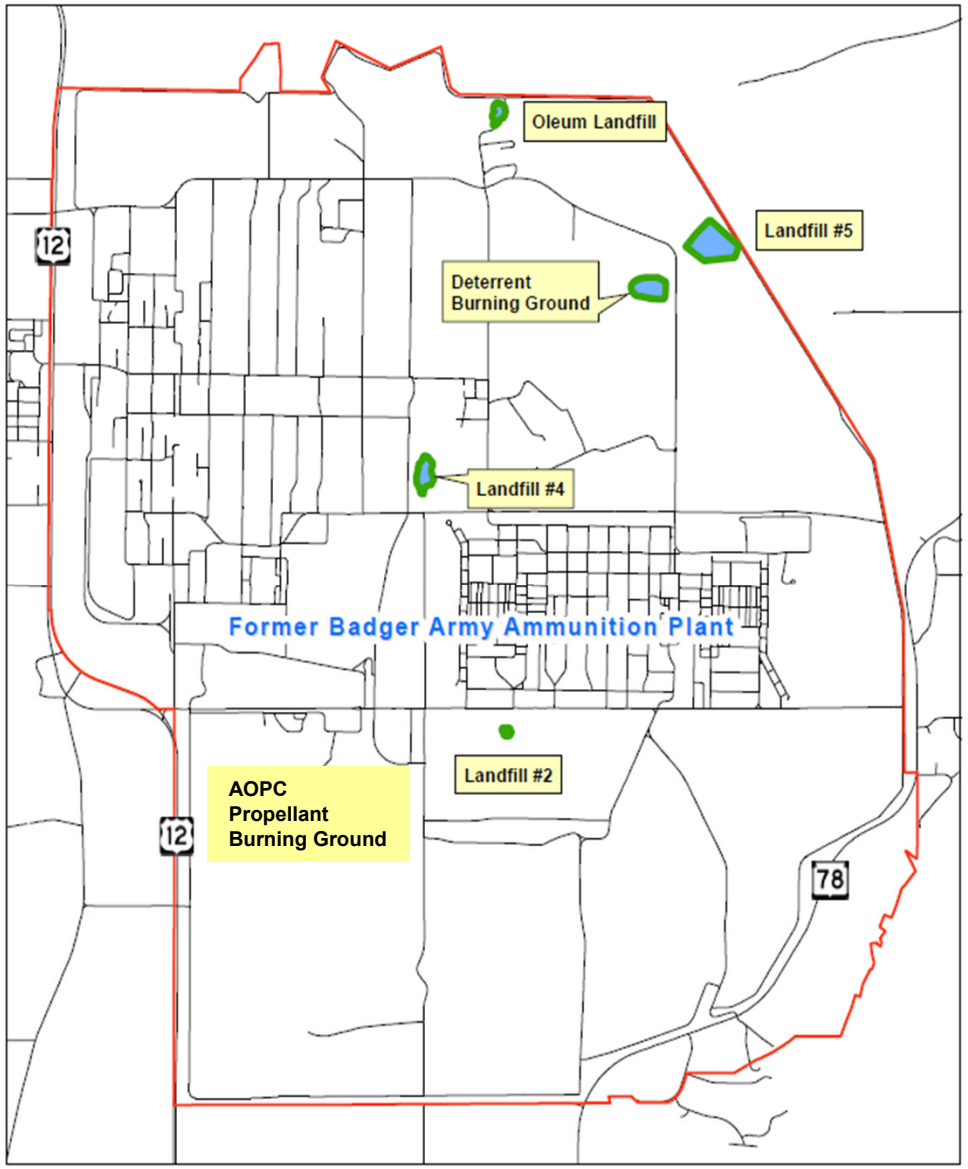
PFAS Remedial Investigation

Per- and Polyfluoroalkyl Substances (PFAS) Remedial Investigation (RI) for Propellant Burning Ground

- Acquisition of a PFAS RI contract completed
- The planned contract incorporates WDNR recommendations to investigate five additional areas: Deterrent Burning Ground, Landfill #2, Landfill #4, Landfill #5, and Oleum landfill
- RI field activities pending award of contract and availability of funds
- Most recent January 21, 2025 OSD Policy added TFSI, PFPrA, PFDA compounds
- For more information on the Department of Defense PFAS cleanup strategy, please see the Office of the Secretary of Defense (OSD) PFAS website at https://www.acq.osd.mil/eie/eer/ecc/pfas/



Future Meetings

- 17 July 2025
- 16 October 2025
- 15 January 2026
- 16 April 2026

Questions??
Public Comments
Closing Remarks

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RAB Resources

ASD (EI&E)
Per- and Polyfluoroalkyl Substances (PFAS)

Groundwater Quality at Former Badger Army Ammunition Plant Updates