NAVFAC
Naval Facilities Engineering Command
NAVFAC MID-ATLANTIC

Site 1 Facilitated Technical Meeting No. 2 Naval Weapons Industrial Reserve Plant (NWIRP) Bethpage

NYSDEC, Albany, NY
December 3, 2007

December 2007

AGENDA

1. Meeting Goals / Introductions / Ground Rules (Susan/Steve) – 5 minutes
2. Bethpage Land Transfer Status (Susan) – 5 minutes
3. NEBA Effort (Susan/Dave) – 5 minutes
4. OU2 Status – SFWD & NYWS (Jim/Susan) – 5 minutes
5. TAC Meeting Status (Steve) – 5 minutes
6. Site 1 Historical Quick Review (Dave/Jim) – 20 minutes
7. Innovative Technology Review (Dave/Dan) – 60 minutes
8. ARAR Review (Dave/Steve) – 15 minutes
9. Action Item / Parking Lot Review (Susan/Steve/All) – 15 minutes
10. Sep 17 Meeting Minutes Review (Susan/Steve/All) – 10 minutes
11. Closing/Next Meeting (Susan) – 5 minutes

GROUND RULES

1. Stay on Topic
2. Treat Each Other with Respect
3. Take Turns Speaking (One at a Time)
4. Listen
5. Be Honest
6. Have an Open Mind
7. Participate
8. Focus on Issues (Not on People)
9. Identify a Problem AND a Possible Solution
10. Make Progress/Move Forward

BETHPAGE LAND TRANSFER

- 96 Acre Parcel - Transfer for January 2008 ?
- 9 Acre Parcel - Lease for January 2008 ?
- Navy - Continue remediation efforts on 9 Acre Parcel (Site 1 and AOC 22)
- Navy – Continuing to pursue GSA disposal route

- Contemplated use of site (Site 1)
- Send me figure of piping - IN ACAD for Recharge Basins

NEBA/FEASIBILITY STUDY

- **Net Environmental Benefit Analysis (NEBA) – provides a concise view of remedial choice vice benefits and money spent**
- **NEBA will be developed as a joint effort with NYSDEC**
- **Feasibility study will be developed concurrently with these facilitated, technical meetings and NEBA efforts**

For site 1.

Send Brookhaven (SUNY StonyBrook)

OU2 (OFF-SITE GROUNDWATER)

- South Farmingdale – discussions are continuing between DOJ and SF attorneys - Moving Forward?
- After agreement is reached – funding will be allocated
- Agreement will likely contain requirements for technical review by Navy and partial payments based upon milestones reached
- New York Water Service – NYWS letter sent to Navy for temporary treatment; Navy preparing to refer to DOJ

TECHNICAL ADVISORY MEETING (TAC) STATUS

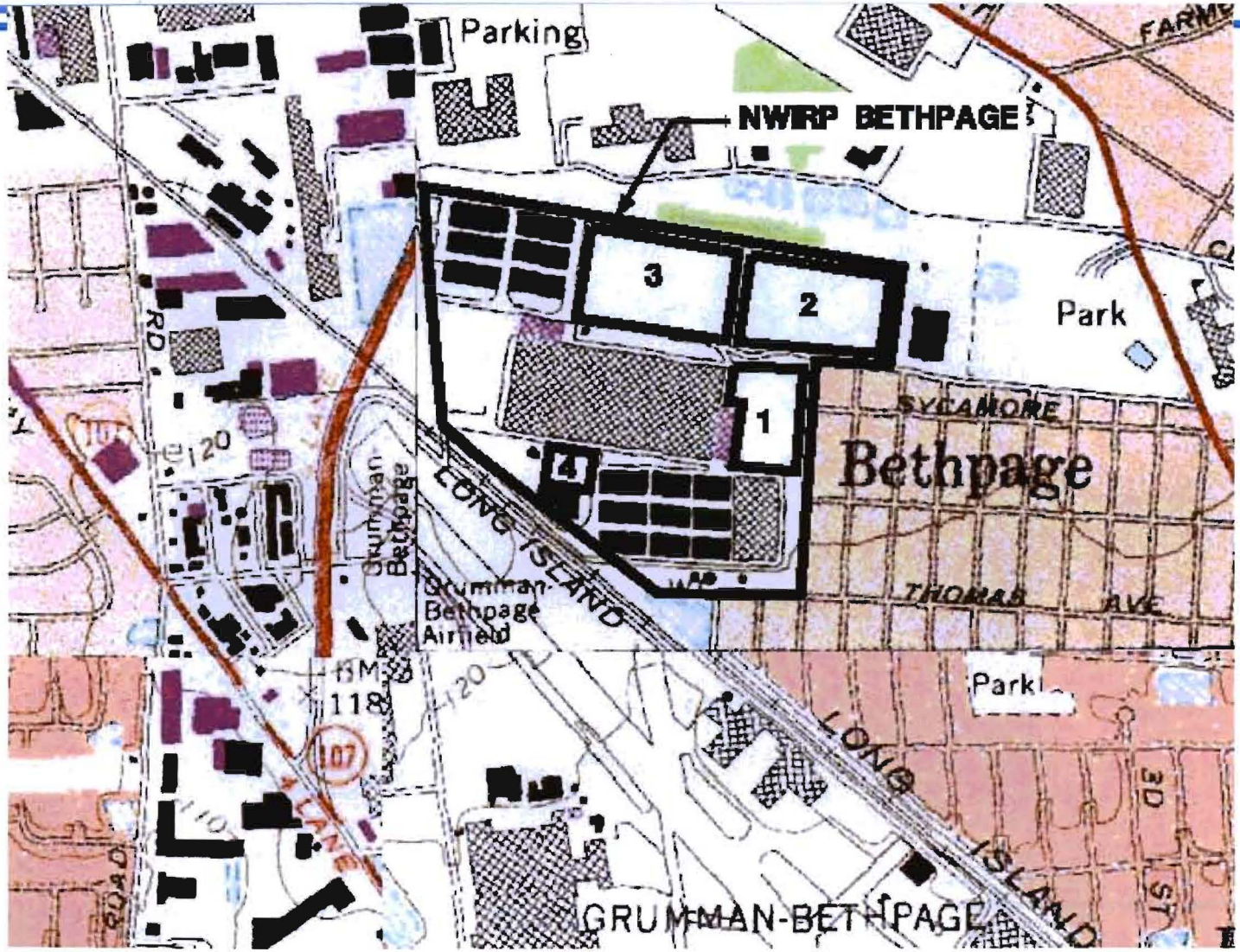
- **TAC Meeting Purpose**
- **TAC Meeting Schedule**
  - Outpost wells
  - Long term monitoring
  - Treatment Districts
    - GM-38
    - GM-75

wells
what sampling for

SITE 1 HISTORICAL REVIEW

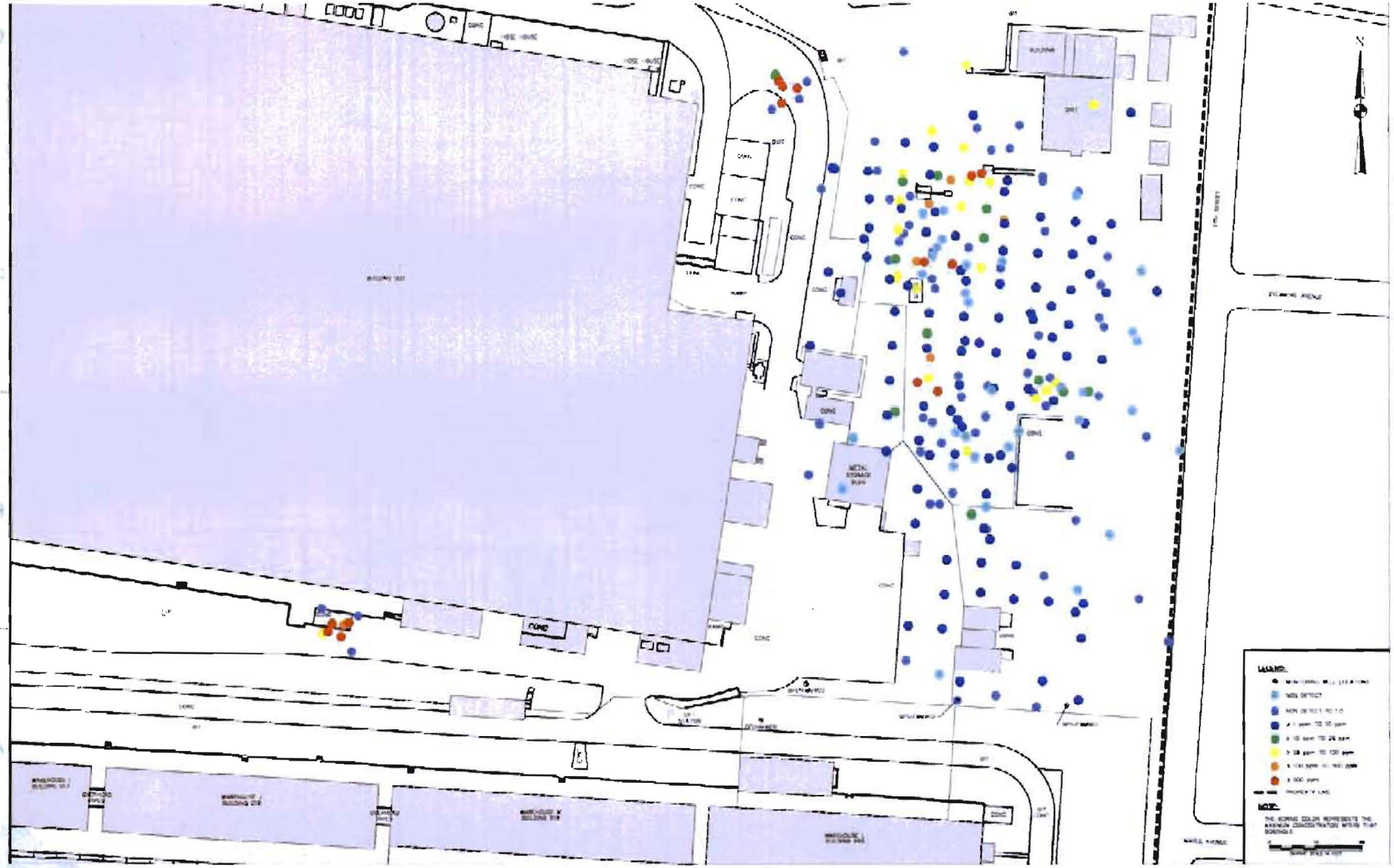
- Northrop Grumman Operations from 1940s to 1998
- Navy Caretaker Status from 1998 to present
- Initial Assessment Study 1986
- Remedial Investigations 1991 to 1993
- Feasibility Study 1994
- OU 1 (Soils) Record of Decision 1995
- Air Sparing/Soil Vapor Extraction System 1996 to 2001
- Pre-Remedial Design Soil Investigations 1995 to 2002
- Navy Re-evaluating Site 1 ROD Implementation 2003 to 2007
- Soil Vapor Intrusion Concerns 2008 - 01/08 will sample

SITE 1 LAYOUT

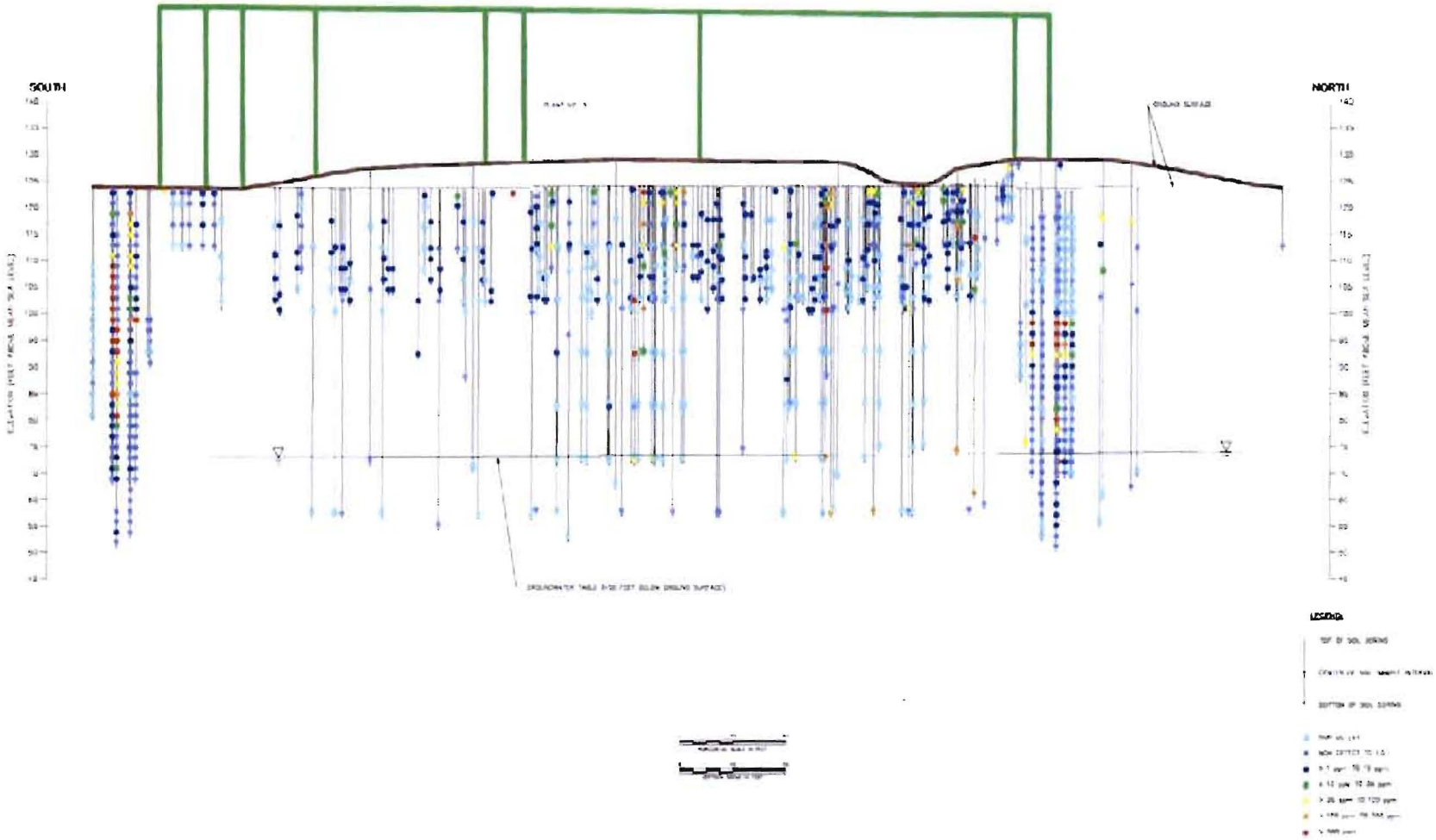


SITE 1 AERIAL

SITE 1 PCB RESULTS



SITE 1 PCB RESULT – CROSS SECTION



INNOVATIVE TECHNOLOGY SCREENING

Response	Technology/ Objective	Contaminant Class App	Technology Status	Representative Process	Applicability
NO ACTION	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**
EXISTING CONTROLS	**Institutional Controls – Control access of receptors to impacted soils** **Environmental Monitoring – Provide early warning of potential GW impacts**	**ALL**	**Conventional**	**•Environmental Easement** **•Zoning / Ordinance** **•Defined Site Use** **•Site Mgmt Plan** **•GW Monitoring** **•MNA**	**Applicable**

INNOVATIVE TECHNOLOGY SCREENING

Response	Technology/ Objective	Contaminant Class App	Technology Status	Representative Process	Applicability
Removal	**Mechanical Excavation**	**All**	**Conventional**	**Backhoe and Clamshell Excavation Equipment**	**Applicable – for deep soils, shoring required** **Deep Saturated Soils-dewatering required**
Following Removal – On-Site Treatment and Placement of Treated Material	**•Ex-Situ Solid/Stabil**	**All**	**Emerging**	**Pug-mill or Excavator mixing w/Portland, bentonite, fly ash, slag, act carbon, blend**	**Possibly Applicable (Following Excavation)**
	•Biol Trtmt – destroy PCBs w/Fungal / bacterial trtmt in bioreactors / land-farming	**PCBs**	**Emerging**	**Anaerobic / Aerobic Dechlorination**	**N/A – emerging ex-situ processes requires time & land area**

INNOVATIVE TECHNOLOGY SCREENING

Response	Technology/ Objective	Contaminant Class App	Technology Status	Representative Process	Applicability
Following Removal – On-Site Treatment and Placement of Treated Material	**Chemical Treatment – destroy PCBs in soil**	**PCBs**	**Emerging**	**Oxidation – H2O2/Fenton's/Permanganate (KMnO4)** **Base Catalyzed Decomposition (BCA)**	**N/A – low effectiveness** **Possibly Applicable (Following Excavation)**
Following Removal – On-Site Treatment and Placement of Treated Material	**Chemical Treatment – destroy PCBs in soil**	**PCBs**	**Experimental** **Discontinued**	**Mechanical-Chemical Treatment** **Lime addition**	**N/A – experimental** **N/A – low effectiveness because of volatilization**

INNOVATIVE TECHNOLOGY SCREENING

Response	Technology/ Objective	Contaminant Class App	Technology Status	Representative Process	Applicability
Following Removal – On-Site Treatment and Placement of Treated Material	**Physical Treatment – Concentration of PCBs, Cadmium, Chromium to allow volume reduction**	**All**	**Experimental**	**Soil flushing / Surfactant Solvent Washing & Recovery**	**N/A – experimental; low effectiveness**
Following Removal – On-Site Treatment and Placement of Treated Material	**Combined Treatment – destroy PCBs in soil**	**PCBs**	**Experimental**	**Chemical Oxidation / Biological Treatment** **Surfactant Washing / Chemical Treatment**	**N/A – experimental; low effectiveness**

INNOVATIVE TECHNOLOGY SCREENING

Response	Technology/ Objective	Contaminant Class App	Technology Status	Representative Process	Applicability
Off-Site Treatment / Disposal	**Off-Site Treatment / Disposal in Permitted Facility**	**All**	**Conventional**	**Permitted Treatment and Disposal Facilities**	**Applicable (Following Excavation and Transport)**
In-Situ Treatment	**In-situ Solidification** **•Prevents contact between sat soils and GW** **•Possibly Cad/Chromium** **•PCBs tightly sorbed to soil, little benefit**	**Cadmium / Chromium**	**Emerging / Experimental for depths > 50 feet**	**Auger Rig Mixed w/ Portland Cement, bentonite, fly ash, slag, activated carbon, blend** **Pressure / Jet Grout w/ Portland Cement, bentonite, fly ash, slag, activated carbon, blend**	**No benefit because PCBs tightly sorbed** **No benefit because PCBs tightly sorbed-app to areas w/obstructions; beneath bldgs not advised because of damage**

INNOVATIVE TECHNOLOGY SCREENING

Response	Technology/ Objective	Contaminant Class App	Technology Status	Representative Process	Applicability
In-Situ Treatment (con't)	**In-situ Solidification** **•Prevents contact between sat soils and GW** **•Possibly Cad/Chromium** **•PCBs tightly sorbed to soil, little benefit**	**Cadmium / Chromium**	**Emerging** **Experimental**	**Bucket / Blender Mixed – Portland, bentonite, fly ash, slag, activated carbon, blend** **Chemical Fixation with Polymer**	**No benefit because PCBs tightly sorbed; applicable to surface soils only; low mixing effectiveness for deeper soils** **Not applicable – too experimental**
In-Situ Treatment (con't)	**In-situ Thermal Treatment – Removal of PCBs**	**PCBs**	**Experimental**	**Steam Stripping, Contained Removal of Wastes (CROW)**	**Not applicable – experimental for PCBs, low effectiveness**

INNOVATIVE TECHNOLOGY SCREENING

Response	Technology/ Objective	Contaminant Class App	Technology Status	Representative Process	Applicability
In-Situ Treatment (con't)	**Biological Treatment – destroy PCBs in sat soil using fungal or bacterial treatment**	**PCBs**	**Emerging**	**Sequential Anaerobic / Aerobic Dechlorination**	**Not Applicable – emerging ex-situ processes, low effectiveness**

INNOVATIVE TECHNOLOGY SCREENING

Response	Technology/ Objective	Contaminant Class App	Technology Status	Representative Process	Applicability
In-Situ Treatment (con't)	**Chemical Treatment of Saturated Soil**	**All**	**Experimental**	**Oxidation – H2O2 / Fenton's / Permanganate (KMnO4)** **Soil Flushing / Surfactant Solvent Washing & Recovery**	**N/A – low effectiveness** **N/A – experimental; insufficient hydraulic control**
In-Situ Treatment (con't)	**Chemical Treatment of Saturated Soil**	**All**	**Experimental**	**Chemical Fix / Stabilization** **Vitrification**	**N/A – Experimental & Impracticable**

INNOVATIVE TECHNOLOGY SCREENING

Response	Technology/ Objective	Contaminant Class App	Technology Status	Representative Process	Applicability
In-Situ Treatment (con't)	**Combined Treatment – destruction of PCBs in Saturated Soil**	**PCBs**	**Experimental**	**Chemical Oxidation / Biological Treatment** **Surfactant Washing / Chemical Treatment**	**Not applicable – experimental, low effectiveness**
Containment – Soil	**Capping** **•Physical barrier to direct contact** **•Decrease surface water infiltration to deeper soils**	**All**	**Conventional**	**Asphalt Cap** **Gravel** **Clay Cap** **RCRA Landfill Cap**	**Applicable**

INNOVATIVE TECHNOLOGY SCREENING

Response	Technology/ Objective	Contaminant Class App	Technology Status	Representative Process	Applicability
Containment – GW	**Containment Cell Bottom –** **In combo w/ vertical barriers; prevents contact between sat soils and GW**	**All**	**Experimental**	**Pressure Grouting w/ Portland, Bentonite or Blend; Cell bottom, placed in combo w/ vertical barriers and impermeable cap**	**Not applicable – not a proven technology at depths below 30 ft; N/A if cap is perm, due to "bathtub effect"**
Containment – GW	**Slurry Wall** **•In combo w/ cell bottom & impermeable cap, prevents contact between sat soils and GW;** **•prevents vapor migration in vadose zone**	**All**	**Conventional**	**Pumped – Portland, Bentonite or Blend**	**No GW benefit without impermeable cap and cell bottom**

INNOVATIVE TECHNOLOGY SCREENING

Response	Technology/ Objective	Contaminant Class App	Technology Status	Representative Process	Applicability
Containment – GW	**Grout Curtain** **•In combo w/ cell bottom & impermeable cap, prevents contact between sat soils and GW;** **•prevents vapor migration in vadose zone**	**All**	**Conventional**	**In-situ Solidification – Portland, Bentonite or Blend**	**No GW benefit without impermeable cap and cell bottom**
Containment – GW	**Sheet Pile Wall** **•In combo w/ cell bottom & impermeable cap, prevents contact between sat soils and GW;** **•prevents vapor migration in vadose zone**	**All**	**Conventional**	**Steel** **HDPE**	**No GW benefit without impermeable cap and cell bottom** **N/A – HDPE only better than steel in low pH GW; also required depth**

INNOVATIVE TECHNOLOGY SCREENING

Response	Technology/ Objective	Contaminant Class App	Technology Status	Representative Process	Applicability
Containment – GW	**Hydraulic Curtain – prevents potential migration of impacted GW**	**All**	**Conventional**	**Downgradient Pump & Treat Capture Zone**	**N/A to Surface Soil**

ARAR REVIEW

- Discussion of Applicable or Relevant and Appropriate Requirements (ARARs)

ACTION ITEM REVIEW
(FROM SEP 17, 2007 MTG)

1. Copy of FFSRA to State (completed during Sep 17 mtg)
2. Navy to Document all Actions/Findings Since Signing of ROD
3. Navy to Provide Preliminary Technology Screening Letter
4. Navy to Provide Additional Information regarding NEBA Process
5. TetraTechNUS to provide Clear and Concise Project Schedules
6. Reach Concurrence on ARARs
7. Schedule Meeting with Nassau County to Discuss LIFOC Issues for Remaining 9 Acres of Site 1
8. Brainstorm Funding Priorities
9. Schedule Regular Phone Conferences
10. Schedule Regular Face-to-Face Technical Meetings
11. Submit Comprehensive List of All Information to be Provided in Letter to State\
12. Send out Draft Meeting Minutes
13. Path Forward

PARKING LOT ITEM REVIEW
(FROM SEP 17, 2007 MTG)

1. OU2 Groundwater
2. AOC 22
3. GM-75 and GM-38
4. Wellhead Treatment
5. Vapor Intrusion
6. State Deadlines under State Requirements
7. Schedule Team Input for Future Budgets (FY09+)
8. Technical Advisory Committee Meetings
9. FFSRA Modification to Include Soil
10. Add GW Issues, AOC 22, etc. to our GANTT Charts

MEETING MINUTES REVIEW

- **Review Minutes from September 17, 2007 Meeting**