

FORT GEORGE G. MEADE

Overview of BRAC Cleanup Program at the Transferred Properties

September 11, 2008

Agenda

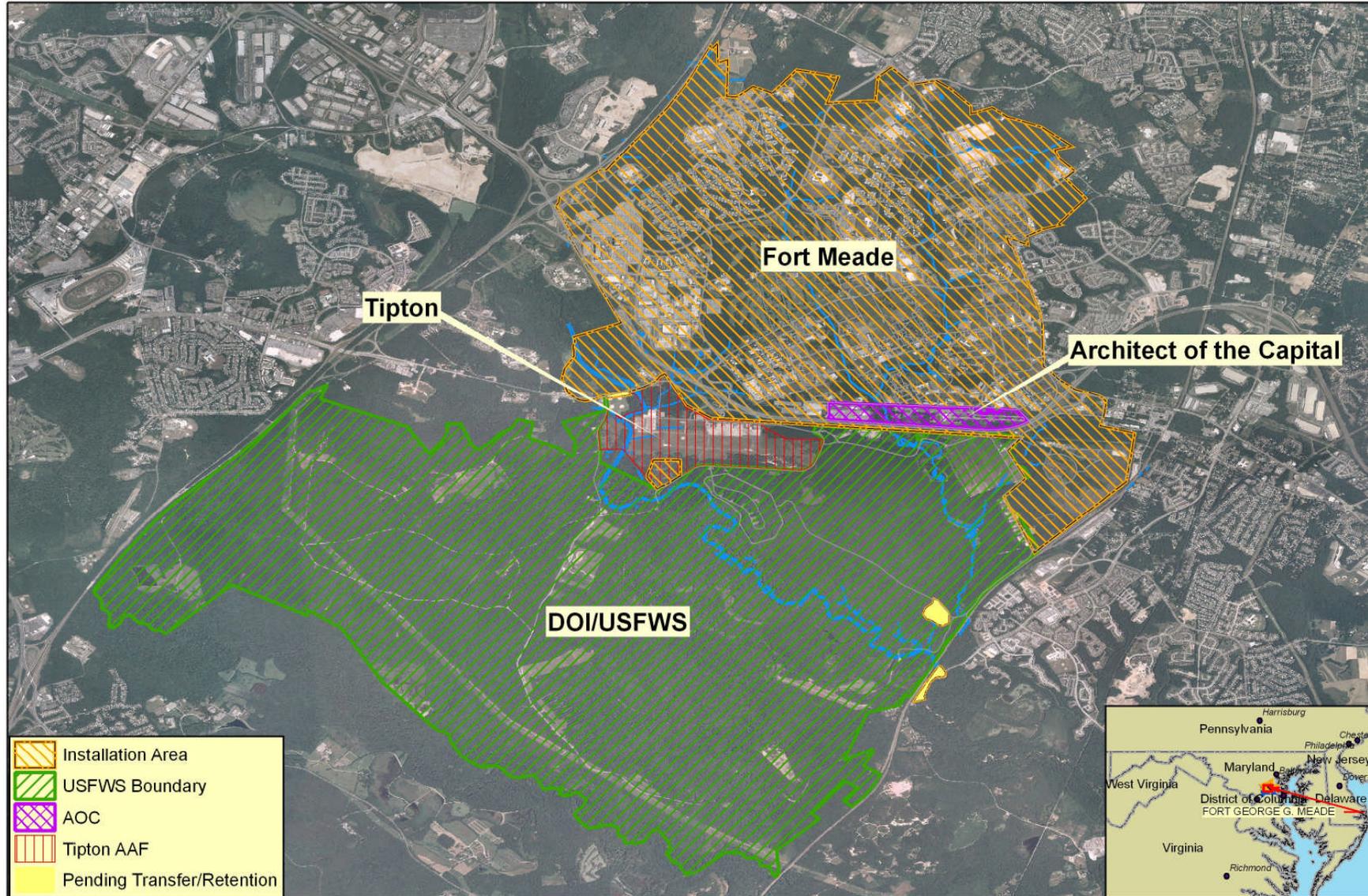
- Installation Background
- Active BRAC Restoration Program Sites
- Restoration Program Site Descriptions
- Questions
- Contact Information

Installation Background

- World War I Installation: approximately 13,500 acres
- BRAC 1988
- 8,398 acres transferred to DOI by legislative mandate (1991-1993)
- 100 acres transferred to Architect of the Capital by legislative mandate (1993)
- Fort Meade entered on National Priorities List (Jul 1998); 4 sites scored (none transferred)
 - On-post: 1) Post Laundry, 2) DRMO Salvage Yard,
 - Off-post: 3) Closed Sanitary Landfill, 4) Clean-fill Dump
- Tipton Army Airfield delisted from NPL (Nov 1999) and transferred to Ann Arundel County (Jul 2001)

FT George G. Meade

Current and Former Properties



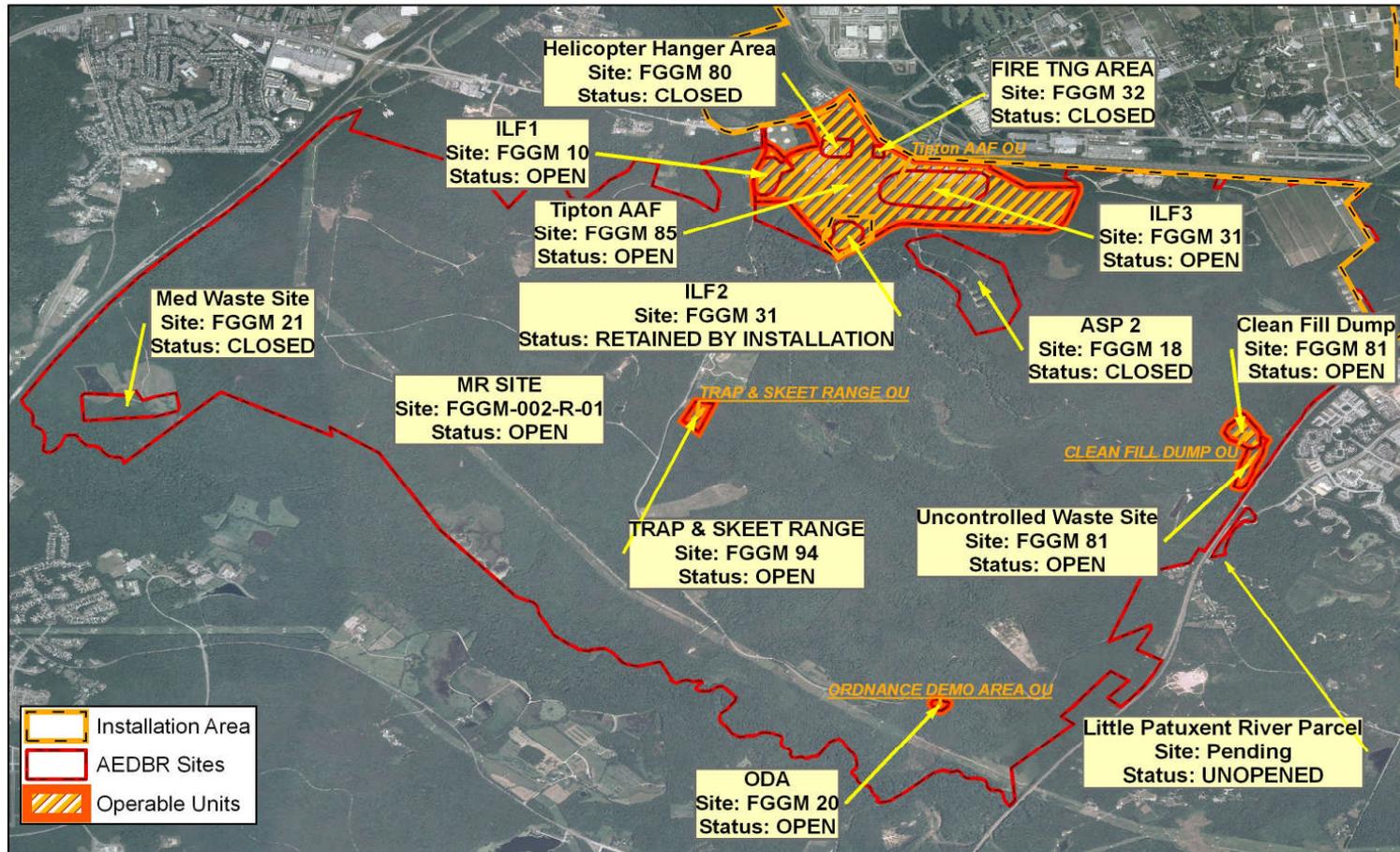
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Base Realignment and Closure Division (BRACD)
Data Source: Geographic Information System Repository (GISR),
BRACD and Fort George G. Meade



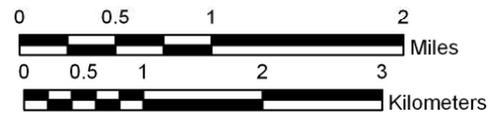
BRAC Active Restoration Program Sites

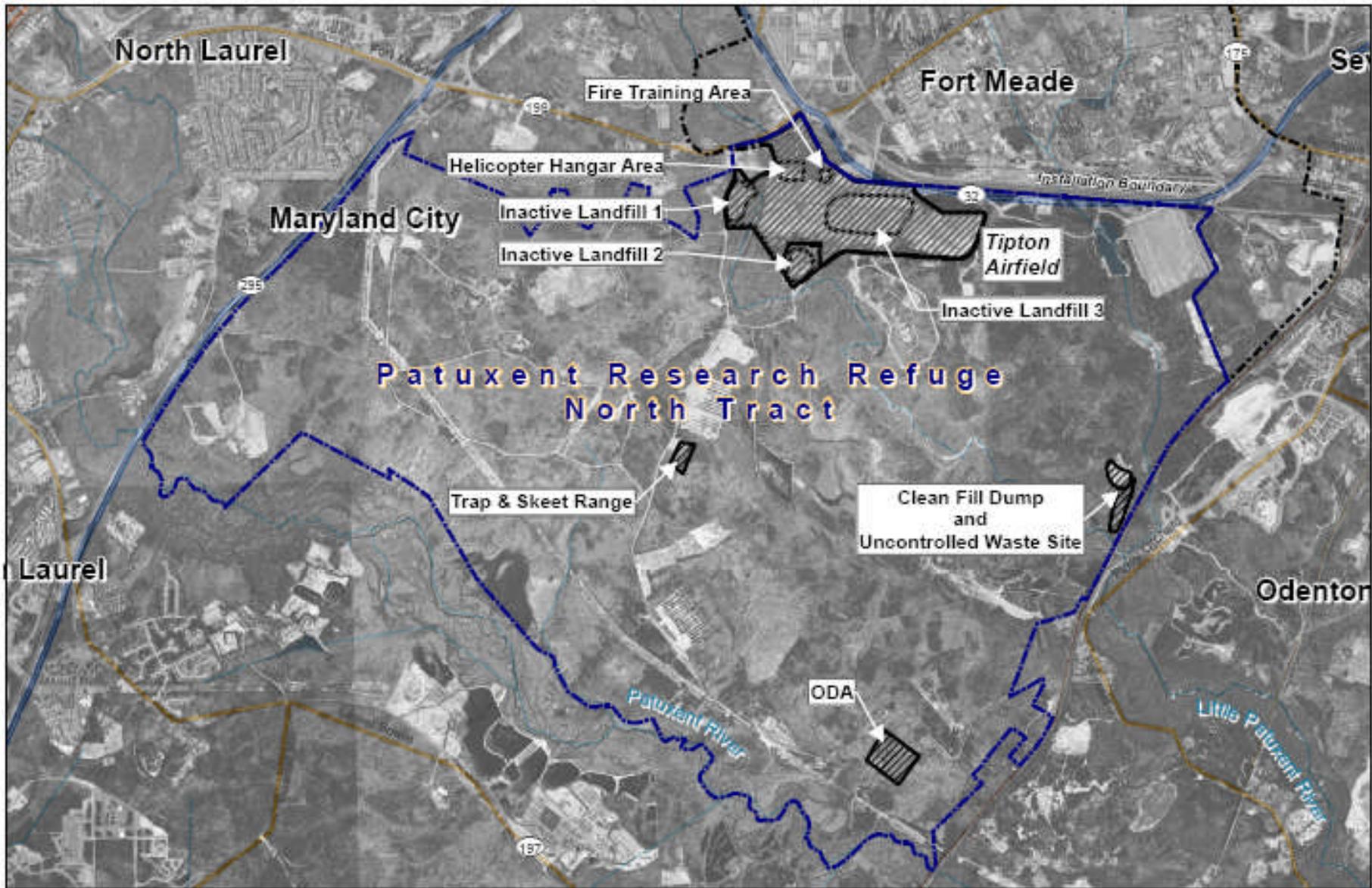
- Tipton Airfield Parcel (FGGM 85)
 - Groundwater LTM
 - Little Patuxent River Sweep Segment
 - Inactive Landfill 1 (FGGM 10)
 - Inactive Landfills 2 and 3 (FGGM 31)
- Clean Fill Dump & Uncontrolled Waste Site (FGGM 81)
- Ordnance Demolition Area (FGGM 20)
- Trap & Skeet Range (FGGM 94)

FT George G. Meade Environmental Restoration Sites: BRAC Parcels



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Office of the Assistant Chief of Staff for Installation Management (OACSIM)
Base Realignment and Closure Division (BRACD)
Data Source: Geographic Information System Repository (GISR) & DAIM-ODB





Tipton Airfield Parcel (TAP)

TAP Background

- Various ordnance-related surveys & removals
 - 1994 Ordnance Survey to 6-inch depth
 - 1995 through 1997 Ordnance Clearance
 - All accessible areas searched to 4-foot depth
 - Excluded: Inactive landfill areas, paved surfaces, and wetlands
 - 1,548 ordnance items and 33 tons of rubble debris recovered
 - 1998 ordnance removal from airfield swales previously flooded (420 items recovered)
- Removed 12 old storage tanks

TAP Background

- Record of Decision (December, 1998):
Addressed HHA, FTA, ILF3
- Record of Decision (June, 1999):
Addressed ILF1 and ILF2
- Required actions for TAP: GW monitored
natural attenuation, institutional controls,
5-year reviews
- Other Actions: River Sweep & Landfill
Inspections

TAP Sub-Areas

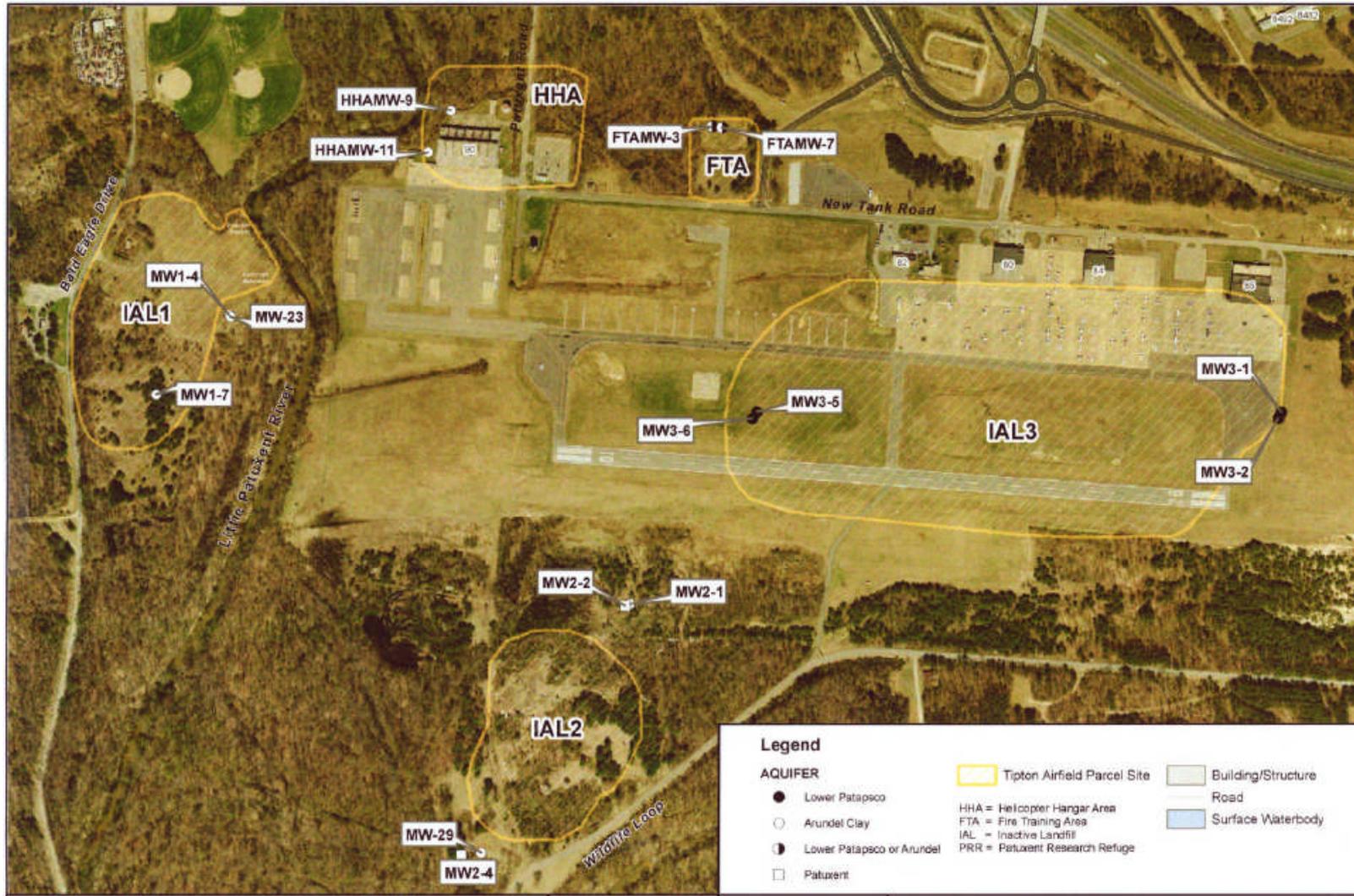
HHA; FTA; ILFs 1,2,3



TAP

Area-wide Groundwater MNA

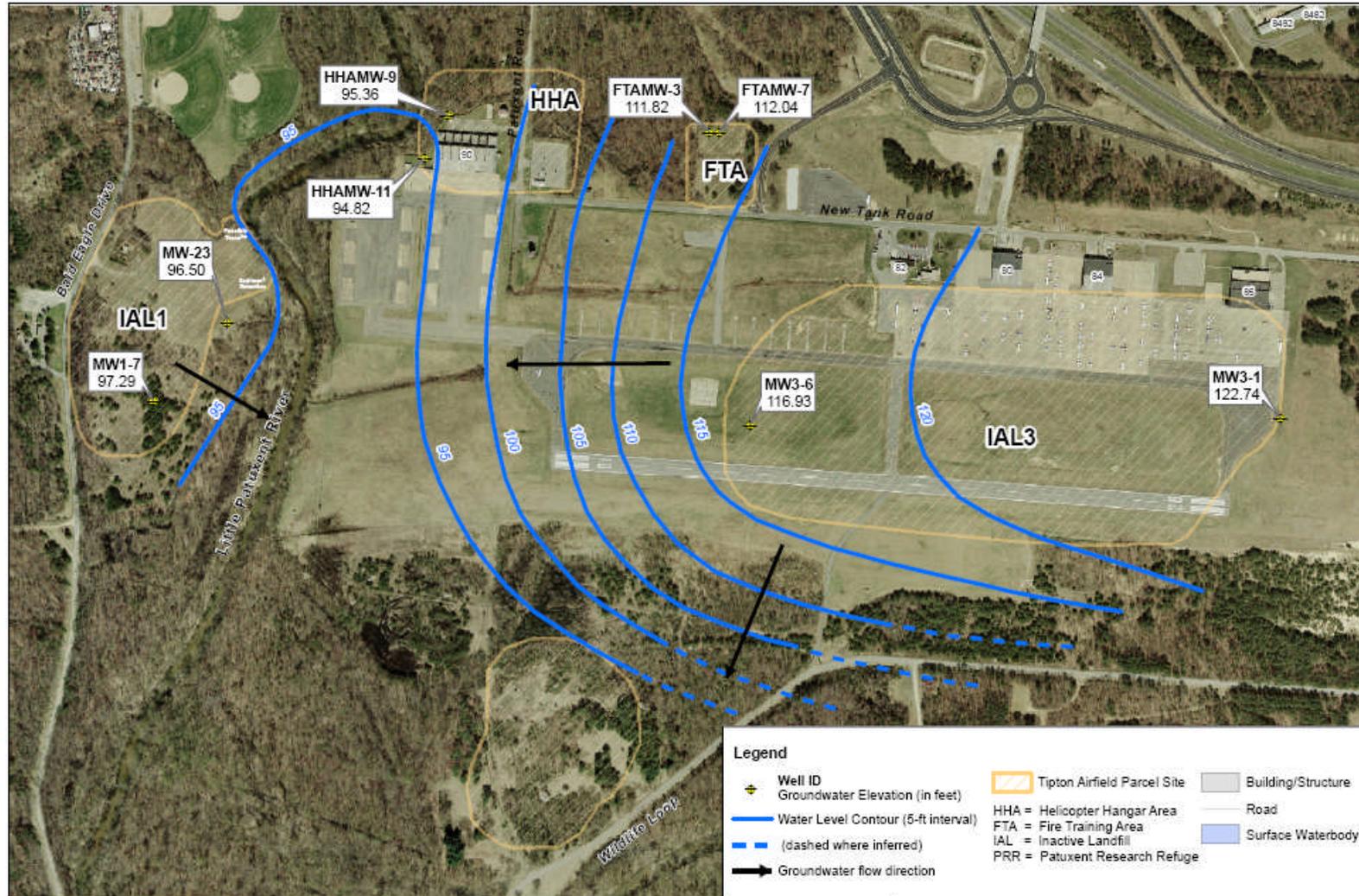
TAP Well Locations



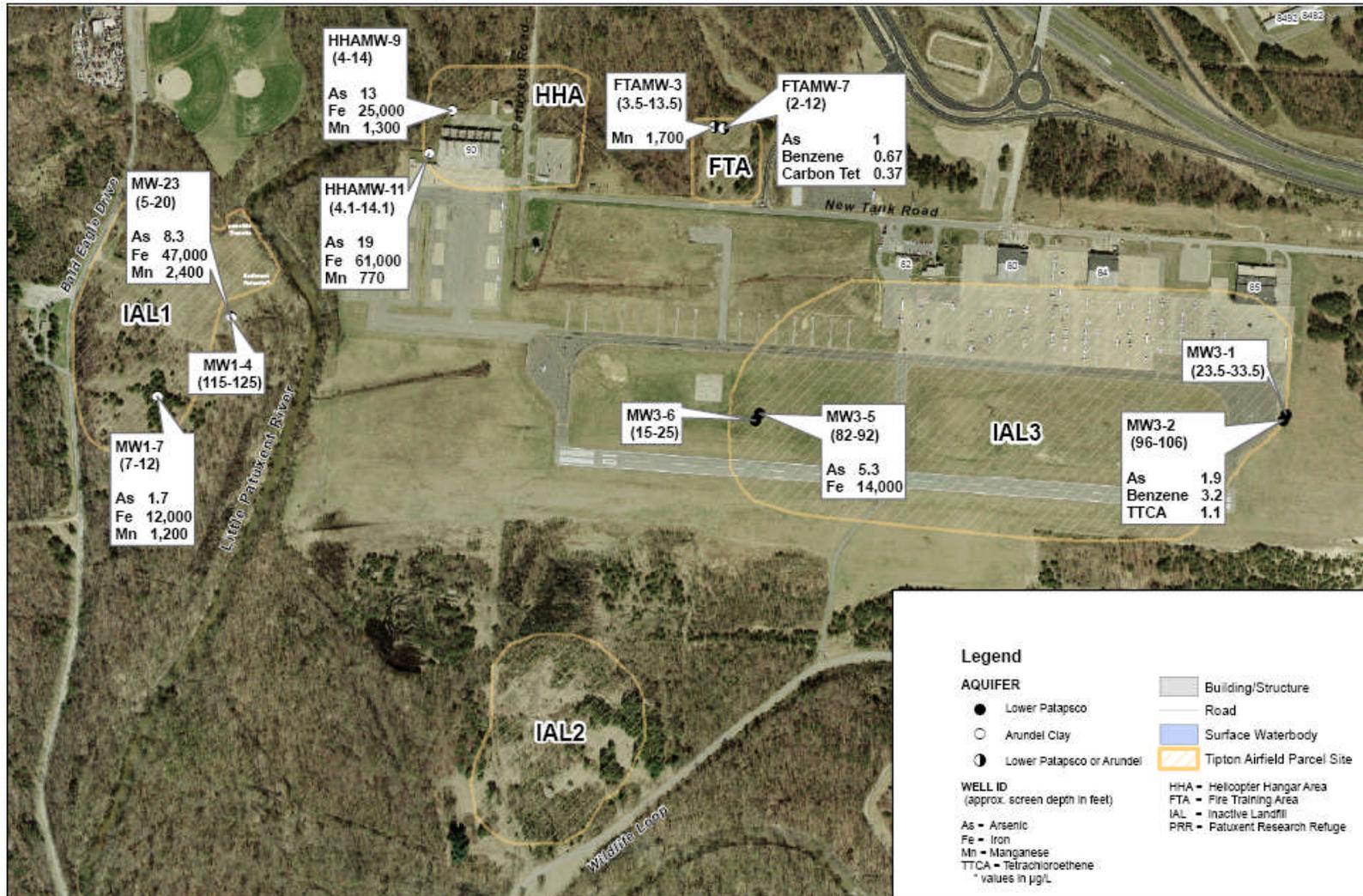
TAP Biennial GW Program

- Eleven Monitoring Wells
- Analytical Parameters (varies by well)
 - VOCs
 - benzene; 1,1,2,2-trichloroethane; carbon tetrachloride
 - Semi-VOCs
 - Naphthalene; bis-2-ethylhexylphthalate
 - Metals
 - arsenic; iron; manganese

TAP Shallow Groundwater Flow (2007)



TAP Screening Value Exceedances (2007)



TAP GW Organics Trends

Inactive Landfill No. 1								
Chemical	Results (µg/L)						Screening Criteria (µg/L)	
	SI 1992	RI 1998	LTGM 2001	LTGM 2003	LTGM 2005	LTGM 2007	MCL	RBC
<u>TCL SVOCs</u>								
Bis(2-ethylhexyl)phthalate		7.10 - 35.0	6.3	BDL	BDL	BDL	6	4.8

Fire Training Area								
Chemical	Results (µg/L)						Screening Criteria (µg/L)	
	SI 1992	RI 1998	LTGM 2001	LTGM 2003	LTGM 2005	LTGM 2007	MCL	RBC
<u>TCL VOCs</u>								
Benzene		16	2.2 to 12.8	0.91	0.5	0.67J	5	0.34
Carbon Tetrachloride	35	0.95	2.4 to 3.2	0.66	BDL	0.37J	5	0.16

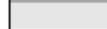
Inactive Landfill No. 3								
Chemical	Results (µg/L)						Screening Criteria (µg/L)	
	SI 1992	RI 1998	LTGM 2001	LTGM 2003	LTGM 2005	LTGM 2007	MCL	RBC
<u>TCL SVOCs</u>								
Benzene		8.7	9.4	5.4	0.58	3.2	5	0.34
1,1,2,2-tetrachloroethane		3.5	2.5	1.9	BDL	1.1	--	0.053
<u>TCL PAHs</u>								
Naphthalene			10	BDL	NS	NS	--	6.5

NOTES:

MCL Exceedance:



RBC Exceedance:



TAP GW Inorganics Trends

Inactive Landfill No. 1						
Metal	Results (µg/L)				Screening Criteria µg/L	
	LTGM 2001	LTGM 2003	LTGM 2005/06	LTGM 2007	MCL	RBC
Arsenic	--		7	8.3	10	0.045
Iron	40,300	43,000	42,000	47,000	--	11,000
Manganese	3,960	2,890	3,090	2,400	--	730

Inactive Landfill No. 3						
Metal	Results (µg/L)				Screening Criteria µg/L	
	LTGM 2001	LTGM 2003	LTGM 2005/06	LTGM 2007	MCL	RBC
Arsenic	--	--	--	5.3	10	0.045
Iron	17,600	3,730	6,300	14,000	--	11,000

Fire Training Area						
Metal	Results (µg/L)				Screening Criteria µg/L	
	LTGM 2001	LTGM 2003	LTGM 2005/06	LTGM 2007	MCL	RBC
Arsenic	--	--	--	1	10	0.045
Iron	33,600	11,800	15,200	10,000	--	11,000
Manganese	2,010	890	1,040	1,700	--	730

Helicopter Hangar Area						
Metal	Results (µg/L)				Screening Criteria µg/L	
	LTGM 2001	LTGM 2003	LTGM 2005/06	LTGM 2007	MCL	RBC
Arsenic	--	--	4	19	10	0.045
Iron	34,100	31,900	27,000	61,000	--	11,000
Manganese	2,640	1,860	857	1,300	--	730

NOTES:

MCL Exceedance: 

RBC Exceedance: 

TAP Landfills

Landfills Background

- Inactive Landfill 1
 - ~16 acres
 - Unlined sanitary landfill from 1950 to 1964
 - Ordnance clearance to 4-feet (1998-1999)
 - Un-cleared area (~5.5 acres) covered with 3-foot thick safety cover.
- Inactive Landfill 2 (retained by FGGM)
 - Initially a borrow area (WWII timeframe)
 - Subsequently used for rubble disposal
 - Ordnance clearance not conducted due to large amount of rubble debris and wetland conditions
 - Enclosed by a fence encompassing ~20 acres
- Inactive Landfill 3
 - ~78 acres
 - Initially a borrow area
 - 1940s and 1950s used as sanitary and leaf dump
 - Much removed during 1963 airfield construction

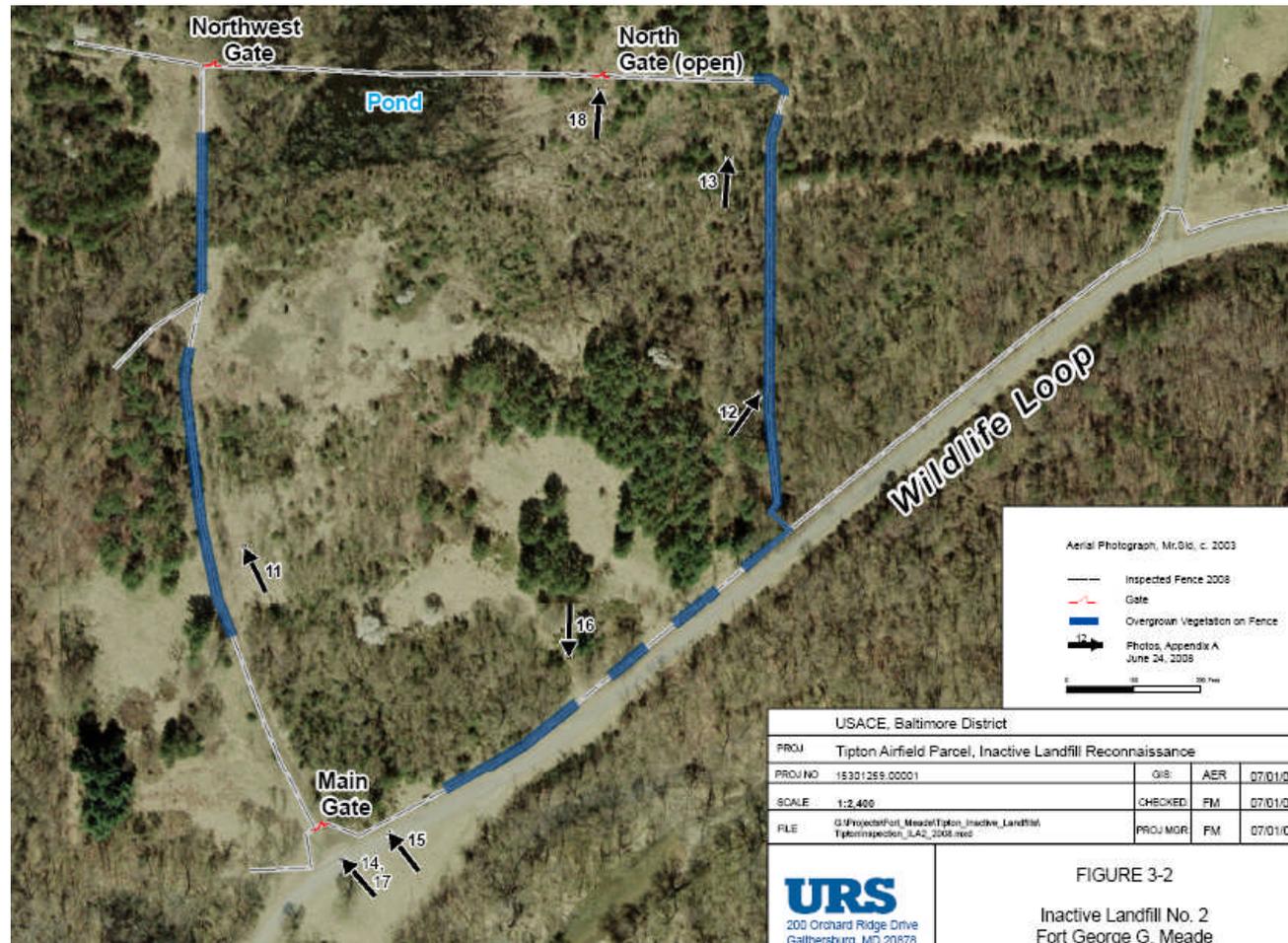
TAP

IAL1 Inspection



TAP

IAL2 Inspection



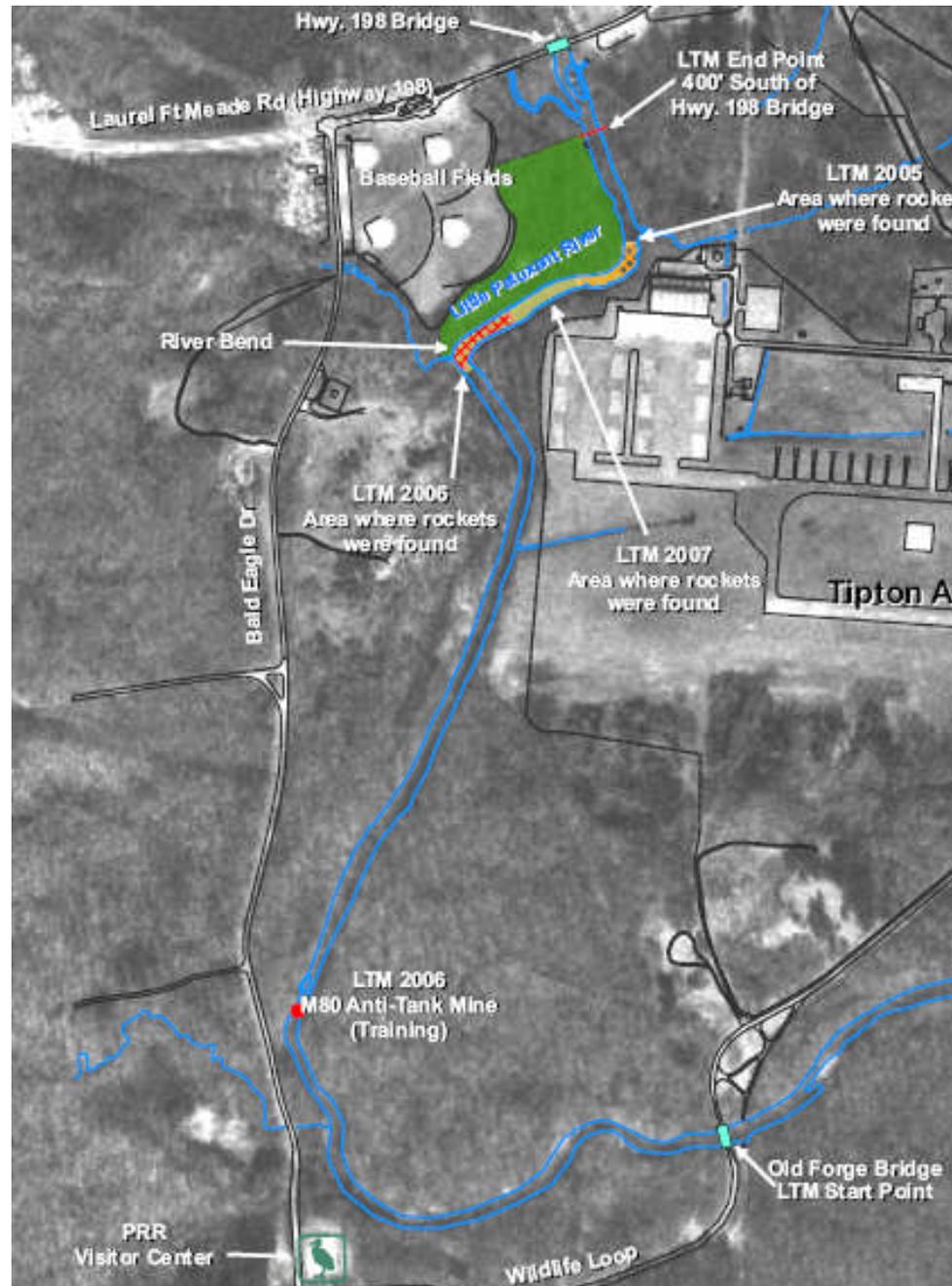
TAP

River Sweep

River Sweep

- Annual visual inspection of the banks and bottom of a segment of the Little Patuxent River, west of TAP
- Recovered items (2007 sweep)
 - M19 Antitank Mine (practice)
 - M7 Series 2.36-inch rockets (practice)
 - M9 Rifle rocket (practice)
 - Total weight ~40 pounds

River Sweep Segment



River Sweep UXO Techs



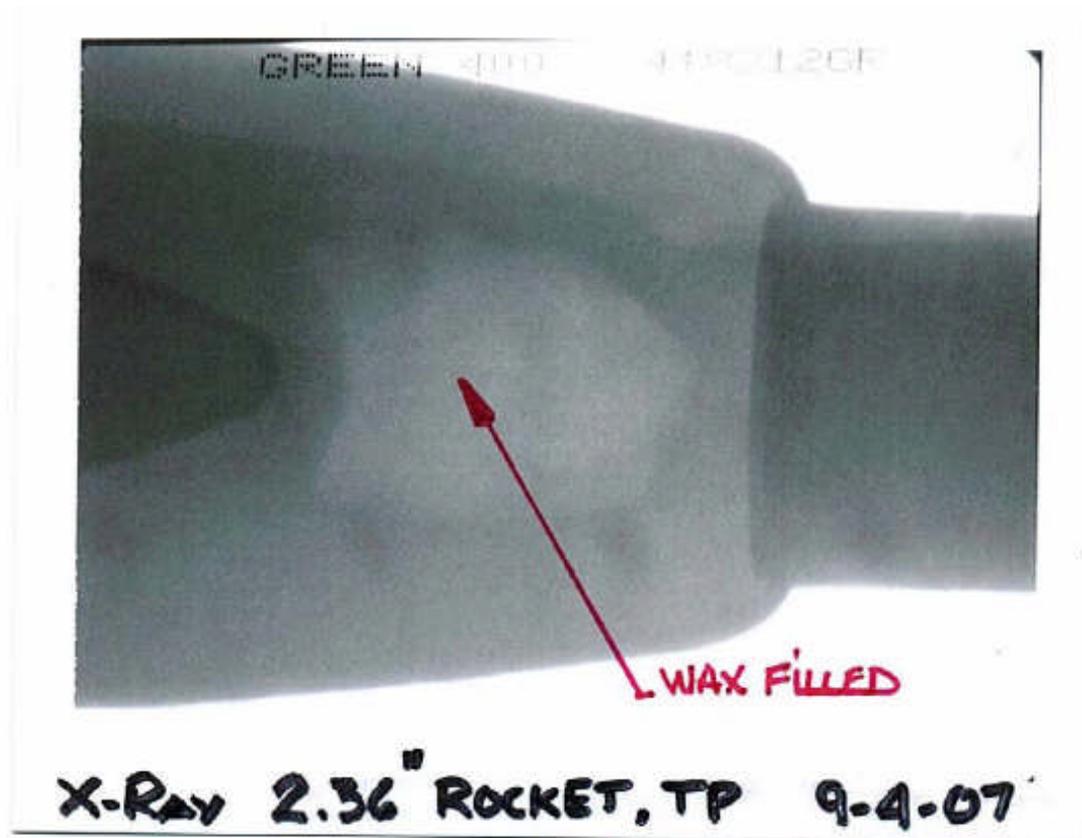
Picture 1-1: Little Patuxent River – Old Forge Bridge in the Background

River Sweep X-ray Operation



Picture 2-3: X-Ray of 2.36-inch Rocket - LTM 2007

River Sweep X-Ray Image



Picture 2-4: X-Rayed Image of 2.36-inch Rocket TP – Wax Filled

River Sweep Typical Inert Debris



Picture 2-7: Warhead Body and Cones of 2.36-inch Rocket TP (Munitions Debris)

River Sweep Typical Inert Debris



Picture 2-9: Rocket Motors (Munitions Debris)

ODA

Groundwater MNA

ODA Background

- Located in southeastern PRR
- ~40' x 80' (0.1 acre) pit used for ordnance demolition
- Pit surrounded by two berms (inner and outer) encompassing about 2.5 acres
- Explosive limit during operation was 5 lbs (target and donor)
- Shallow groundwater plume
 - VOCs: PCE, TCE chloroform
 - Metal: (cadmium)
 - Munitions constituents: RDX, TNT, DNTs

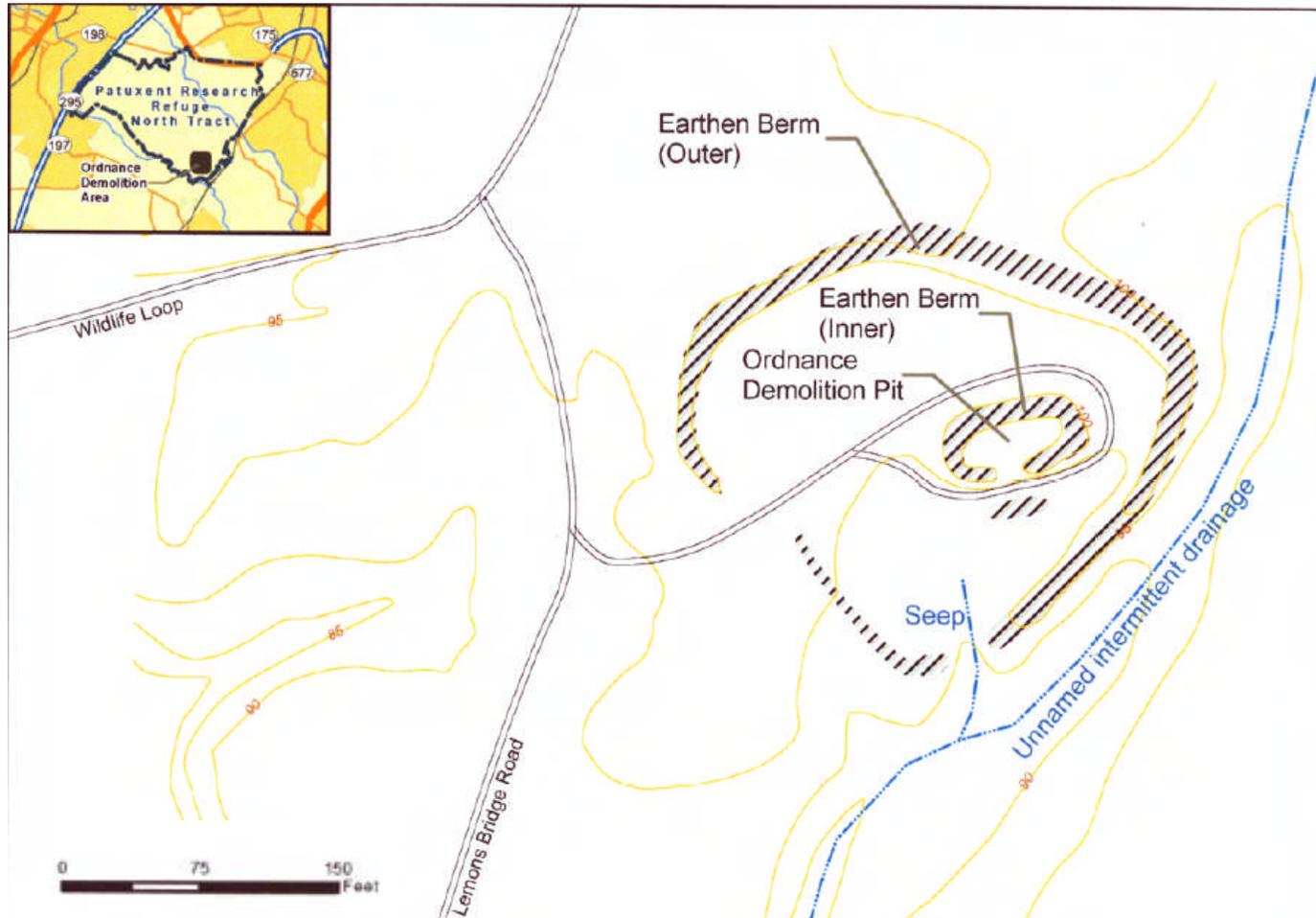
ODA Background

- Decision Document (2005)
 - GW contamination requires action
 - Selected remedy: monitored natural attenuation, institutional controls, 5-year reviews
 - Current plans:
 - Annual GW monitoring (through 2012)
 - Biennial GW monitoring (2013 through 2017)

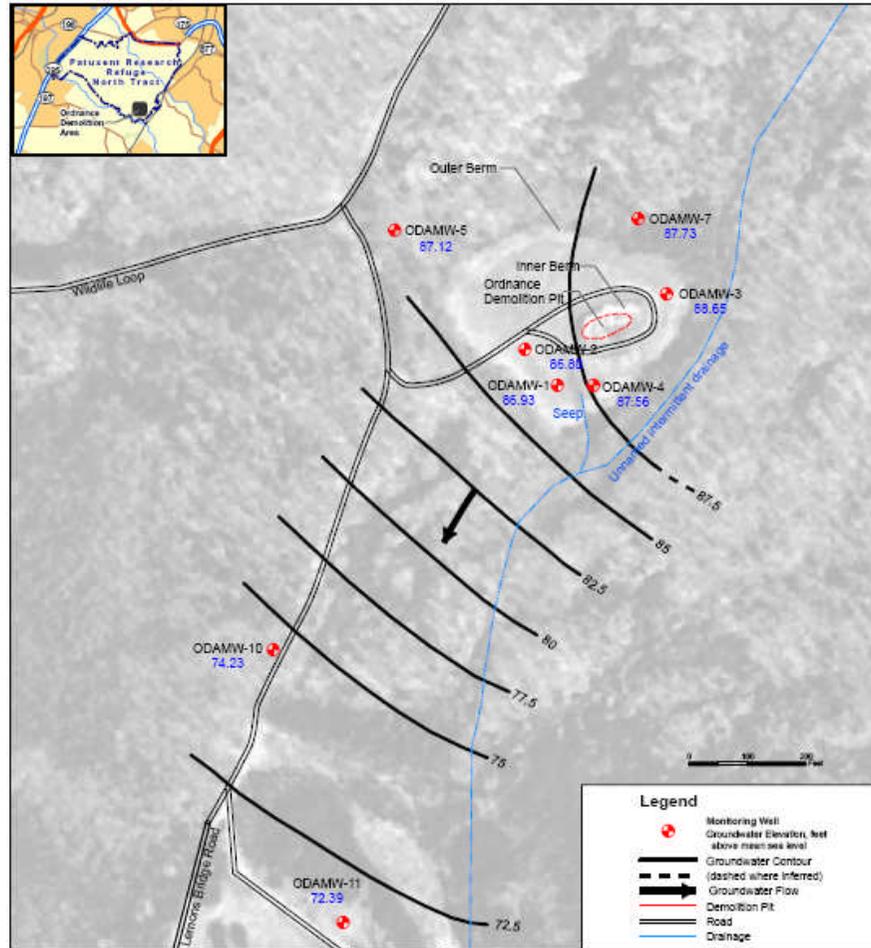
ODA Annual GW Program

- Eight Monitoring Wells
- Analytical Parameters
 - VOCs
 - PCE, TCE, chloroform
 - Explosives
 - RDX, TNT, DNTs
 - Metals
 - cadmium

ODA Setting



ODA Shallow GW Flow



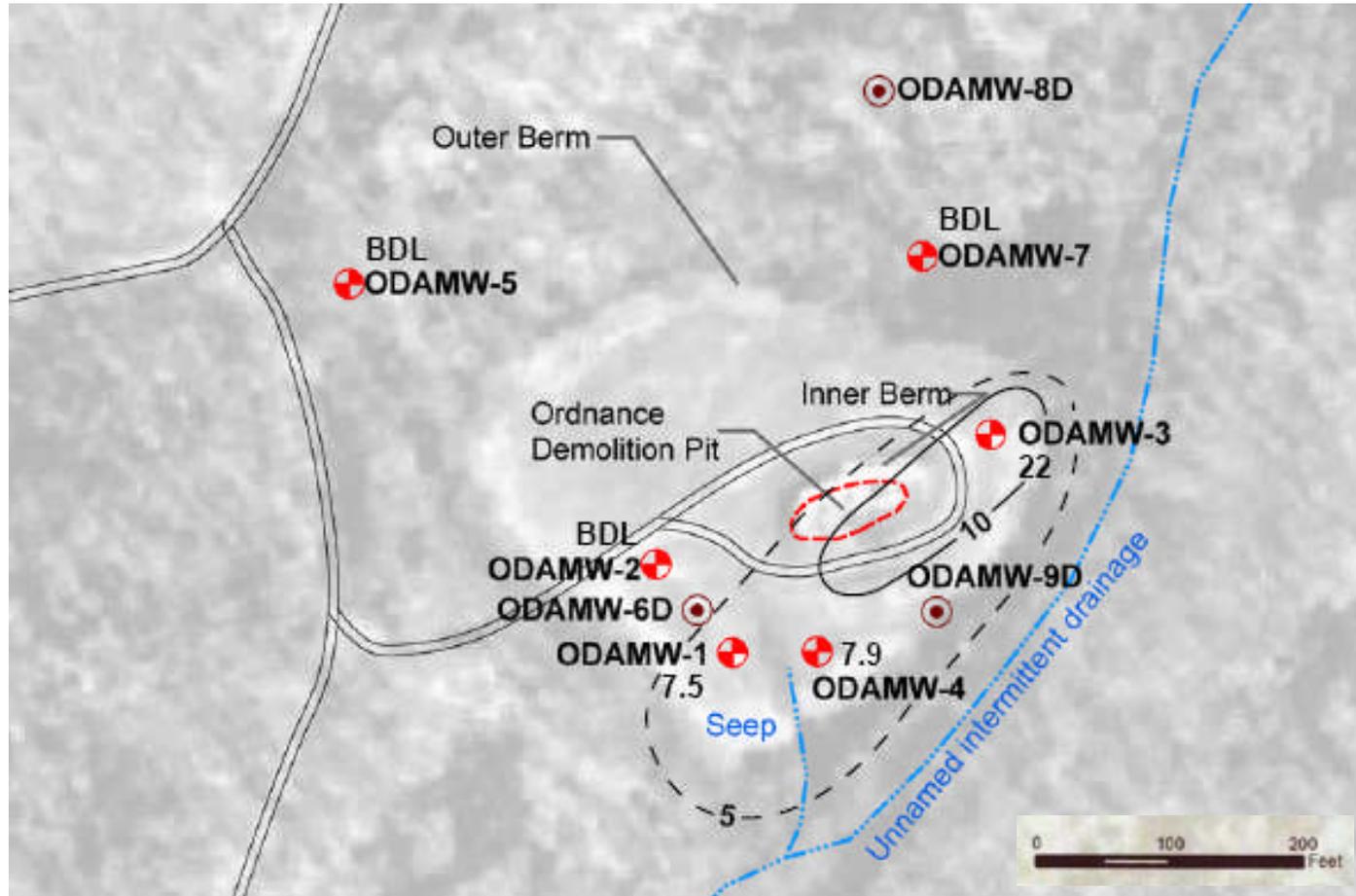
CFD

GW Chemistry Results (2008)

	RAO	ODAMW-1	ODAMW-2	ODAMW-3	ODAMW-4
PCE	5	7.5	<1	22	7.9
TCE	5	1.2	<1	5.6	1
Chloroform	2	<1	<1	<1	<1
RDX	20	20	1.9	0.6 J	9.9
TNT	3.4	< 0.7	< 0.7	< 0.7	< 0.7
2A46-DNT	0.8	0.7 J	< 0.8	< 0.8	< 0.8
4A26-DNT	0.8	0.98	< 0.7	< 0.7	< 0.7
Cadmium	5	0.6 J	0.2 J	3 J	0.8J

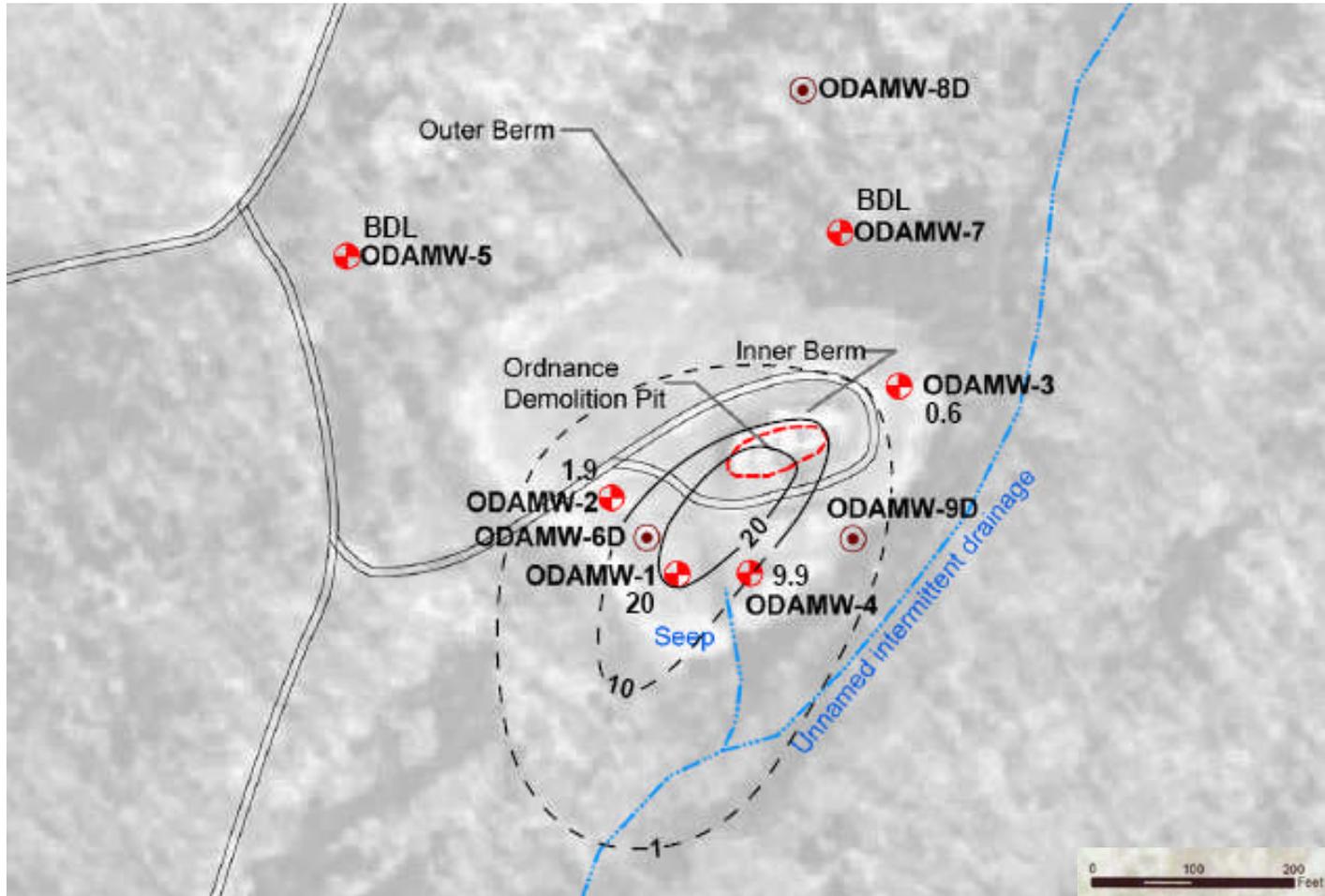
	RAO	ODAMW-5	ODAMW-7	ODAMW-10	ODAMW-11
PCE	5	<1	<1	<1	<1
TCE	5	<1	<1	<1	<1
Chloroform	2	<1	<1	<1	0.09 J
RDX	20	<0.7	< 0.7	< 0.7	<0.7
TNT	3.4	<0.7	< 0.7	< 0.7	<0.7
2A46-DNT	0.8	<0.8	< 0.8	< 0.8	<0.8
4A26-DNT	0.8	<0.7	< 0.7	< 0.7	<0.7
Cadmium	5	0.2 J	0.4 J	0.1 J	0.4 J

ODA PCE Contours (ug/l)



ODA

RDX Contours (ug/l)



CFD & Uncontrolled Waste Site Groundwater MNA

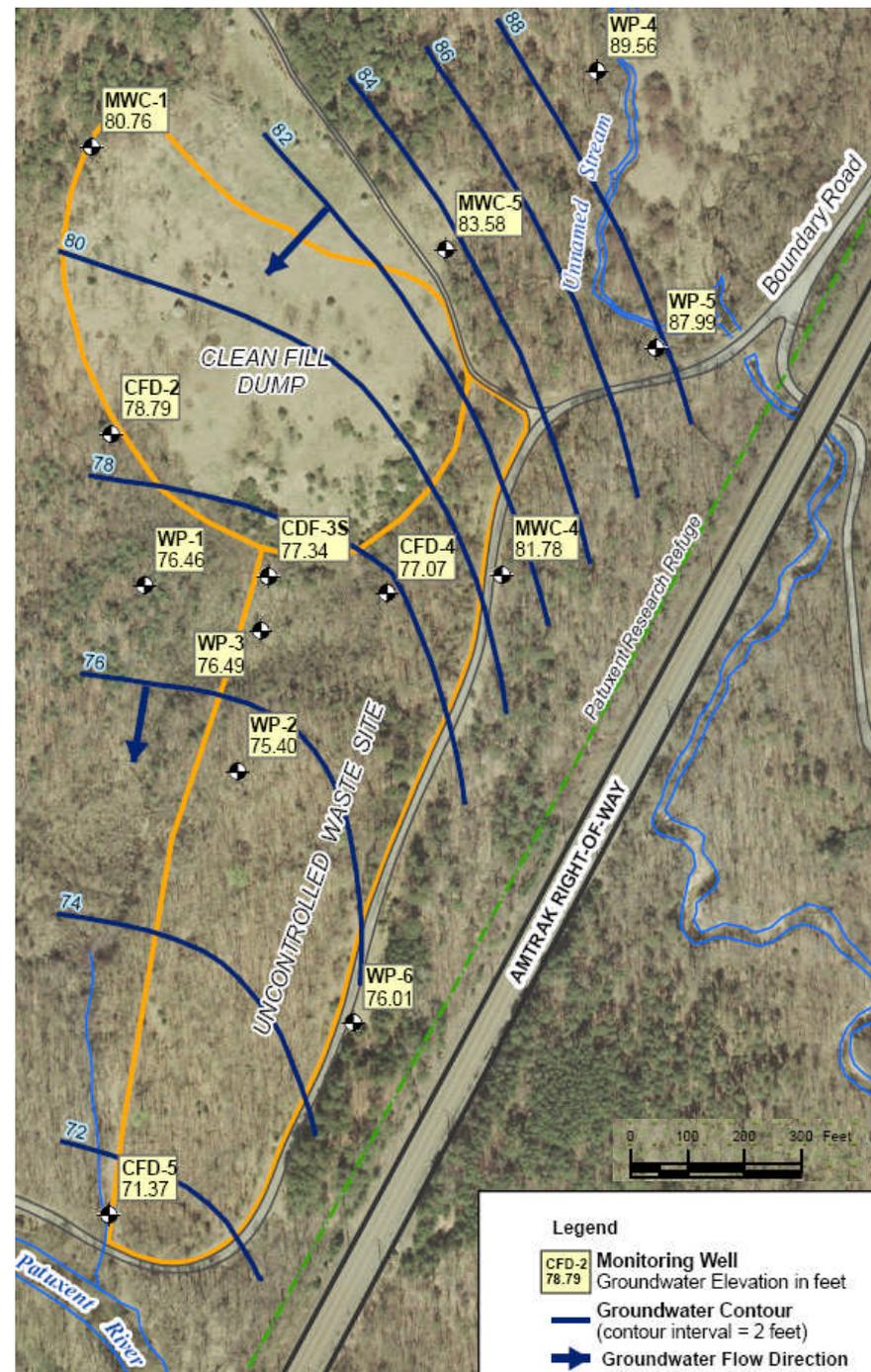
CFD Background

- Located in east-central PRR
- Disposed materials
 - CFD (1972 – 1985): garbage, food waste, cans, bottles, stumps, trees, logs, construction debris, old appliances and dirt
 - Uncontrolled Waste Site: tires, appliances, drums, auto parts, electrical equipment, construction debris and storage tanks
- Decision Document (2000)
 - GW contamination requires action
 - Selected remedy: no further action but with monitoring and land use restrictions
 - Current plans: Biennial GW monitoring through 2014

CFD Biennial GW Program

- Six Monitoring Wells
- Analytical Parameters
 - TCL VOCs
 - TAL Metals

CFD Well Locations & Shallow GW Flow



CFD

GW Chemistry Results (2006)

Well	Screened at Water Table				Screened Below Water Table	
	CFD-3S	CFD-5	MWC-5	WP-2	MWC-3	WP-6
Sample Collection Date	9/13/2006	9/13/2006	9/13/2006	9/13/2006	9/13/2006	9/12/2006
Screen Interval (in feet bgs)	4.5 - 9.5	3 - 8	31 - 41	2.5 - 5.5	29 - 39	44 - 54
Approximate screen depth below water table	--	--	--	--	--	--
Upgradient/Dowgradient (U/D)	D	D	U	D	D	D
<i>Volatile Organic Compounds</i>						
CHLOROFORM	ND	ND	0.33 J	ND	ND	ND
CIS-1,2-DICHLOROETHENE	9.3	2	ND	12	ND	ND
TETRACHLOROETHENE	18	ND	ND	17	ND	ND
TRANS-1,2-DICHLOROETHENE	ND	0.33 J	ND	0.27 J	ND	ND
TRICHLOROETHENE	9.5	1.1	ND	15	ND	ND
<i>Dissolved Metals</i>						
ALUMINUM	ND	ND	63 J	ND	ND	ND
ANTIMONY	ND	ND	ND	1.1 J	2.3 J	ND
ARSENIC	ND	27	ND	ND	ND	ND
BARIUM	25 J	21 J	63 J	36 J	20 J	6.6 J
BERYLLIUM	ND	ND	ND	ND	ND	0.72 J
CADMIUM	0.35 J	ND	0.44 J	ND	0.13 J	0.14 J
CALCIUM	3200 J	57000	3800 J	11000	3000 J	1300 J
CHROMIUM	ND	1.3 J	ND	ND	ND	ND
COBALT	19 J	7 J	28 J	16 J	6.5 J	5.5 J
COPPER	2.3 J	1.6 J	4.3 J	1.6 J	4.5 J	2.4 J
IRON	3100	12000	13 J	690	ND	680
LEAD	0.45 J	ND	ND	ND	ND	0.38 J
MAGNESIUM	2300 J	7200	5200	4700 J	2200 J	790 J
MANGANESE	89	190	78	92	25	23
NICKEL	24 J	6.8 J	23 J	6.7 J	6.7 J	12 J
POTASSIUM	1300 J	3600 J	3400 J	2000 J	1200 J	1000 J
SELENIUM	ND	ND	ND	ND	1 J	ND
SODIUM	4200 J	14000	7700	6200	8400	3600 J
ZINC	69	17 J	66	22	22	29

Notes:

All results are shown in ug/L or parts per billion.

Shaded results indicate exceedance of MCLs or RBCs.

MCL = National Primary Drinking Water Regulations, Maximum Contaminant Level, USEPA, April 2006.

Trap & Skeet Site

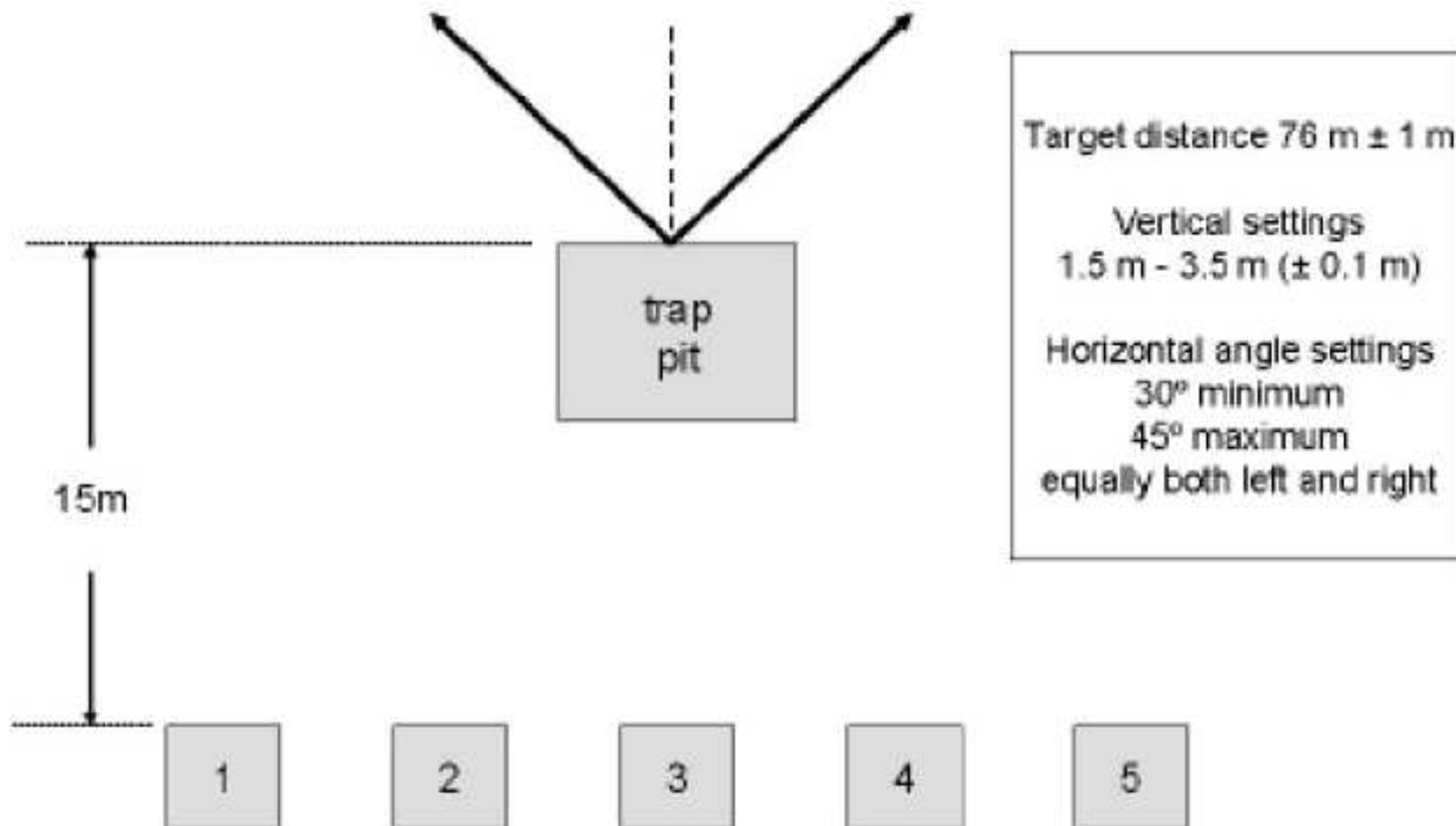
Trap & Skeet Aerial



Trap & Skeet Remnant Structures

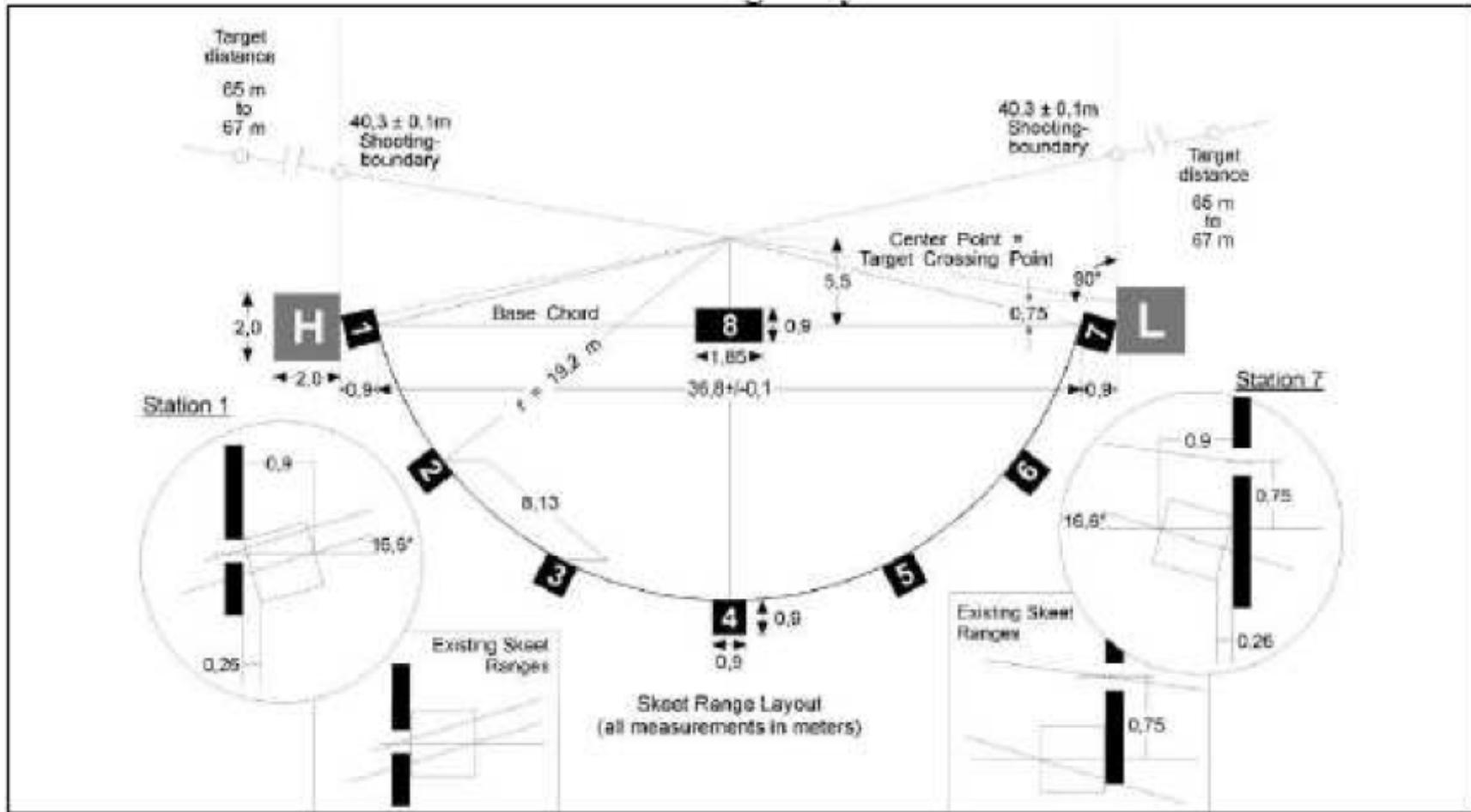


Trap & Skeet Trap Range Configuration

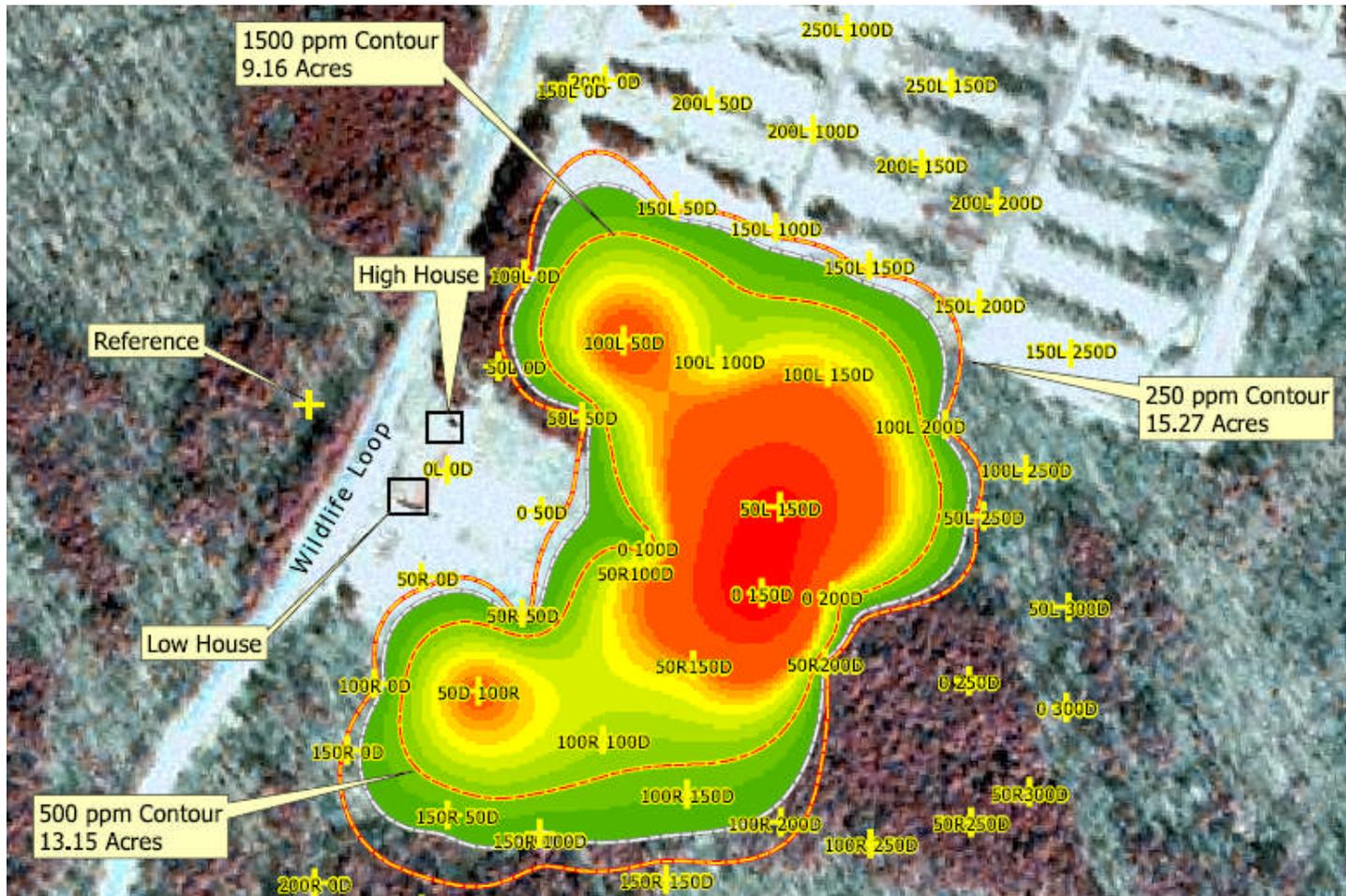


Trap & Skeet

Skeet Range Configuration



Trap & Skeet Soil Lead (mg/kg)



Trap & Skeet Lead Shot (pellets / ft²)



Trap & Skeet Soil Lead Action Level (mg/kg) Possibilities

- Human Health-based
 - 750
- Ecologic (USFWS) (NOAEL to LOAEL)
 - 46 to 260 (earthworm endpoint)
 - 35 to 320 (robin endpoint)
 - 44 to 440 (shrew endpoint)

Trap & Skeet Data Gaps

- Soil arsenic levels
- Better definition of lead shot distribution
- Groundwater status
- Pending: RI / FS / PP / ROD

QUESTIONS ?

Acronyms

BRAC	Base Realignment and Closure
CFD	Clean Fill Dump
DOI	Department of Interior
DRMO	Defense Reutilization and Marketing Office
DNT	Dinitrotoluene
FGGM	Ft George G. Meade
FTA	Fire Training Area
GW	Groundwater
HHA	Helicopter Hanger Area
ILF	Inactive Landfill
LOAEL	Lowest Observed Adverse Effect Level
LTM	Long Term Monitoring
MNA	Monitored Natural Attenuation
NOAEL	No Observed Adverse Effect Level
NPL	National Priorities List
ODA	Ordnance Demolition Area
PCE	Tetrachloroethylene
PRR	Patuxent Research Refuge
RDX	Cyclotrimethylenetrinitramine
TAP	Tipton Airfield Parcel
TCE	Trichloroethylene
TNT	Trinitrotoluene
UXO	Unexploded Ordnance
VOC	Volatile Organic Chemical

Points of Contact

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