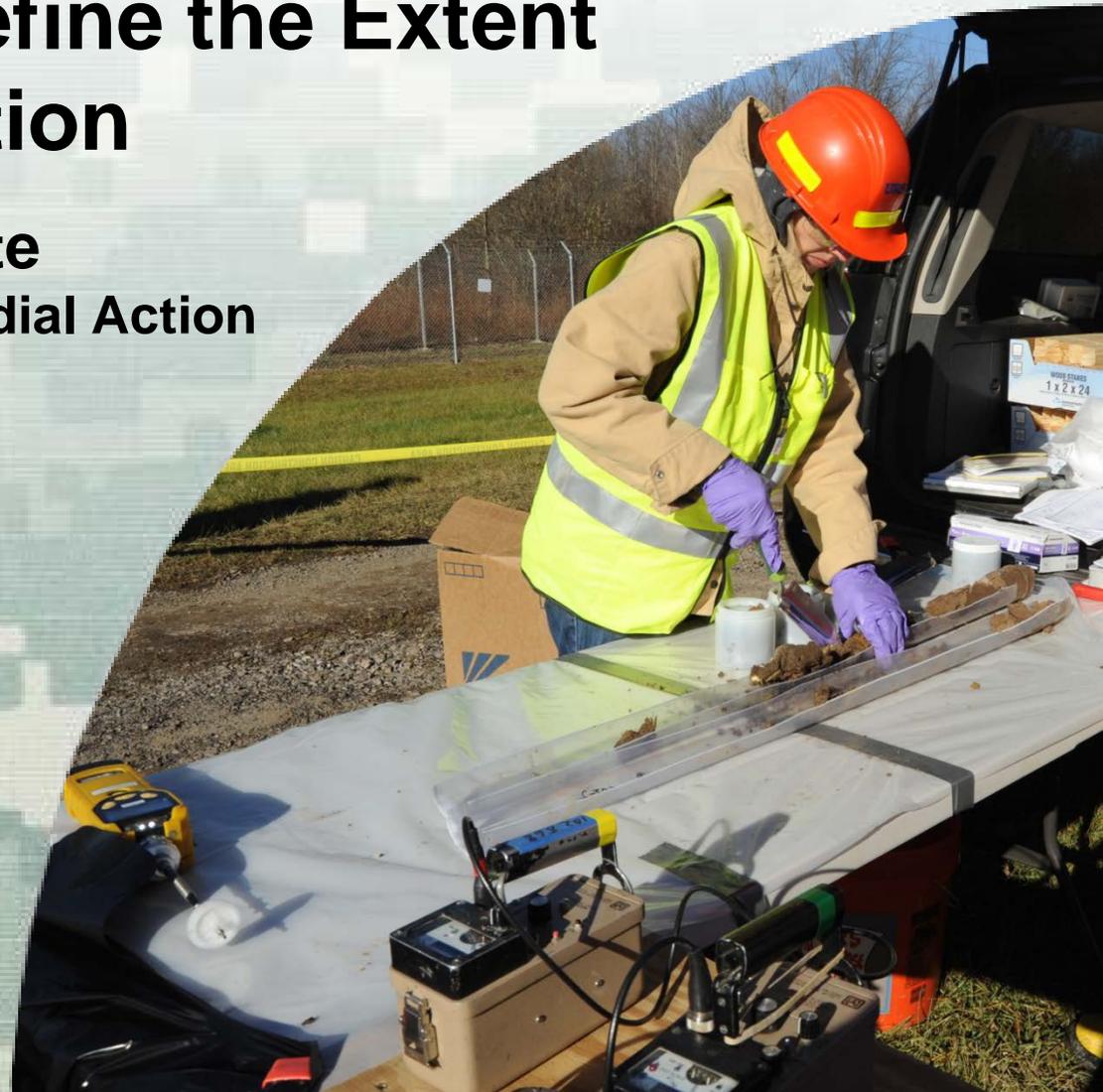


Balance of Plant Operable Unit

Investigation to Refine the Extent of Soil Contamination

Niagara Falls Storage Site
Formerly Utilized Sites Remedial Action
Program

Lewiston, New York
May 19, 2015



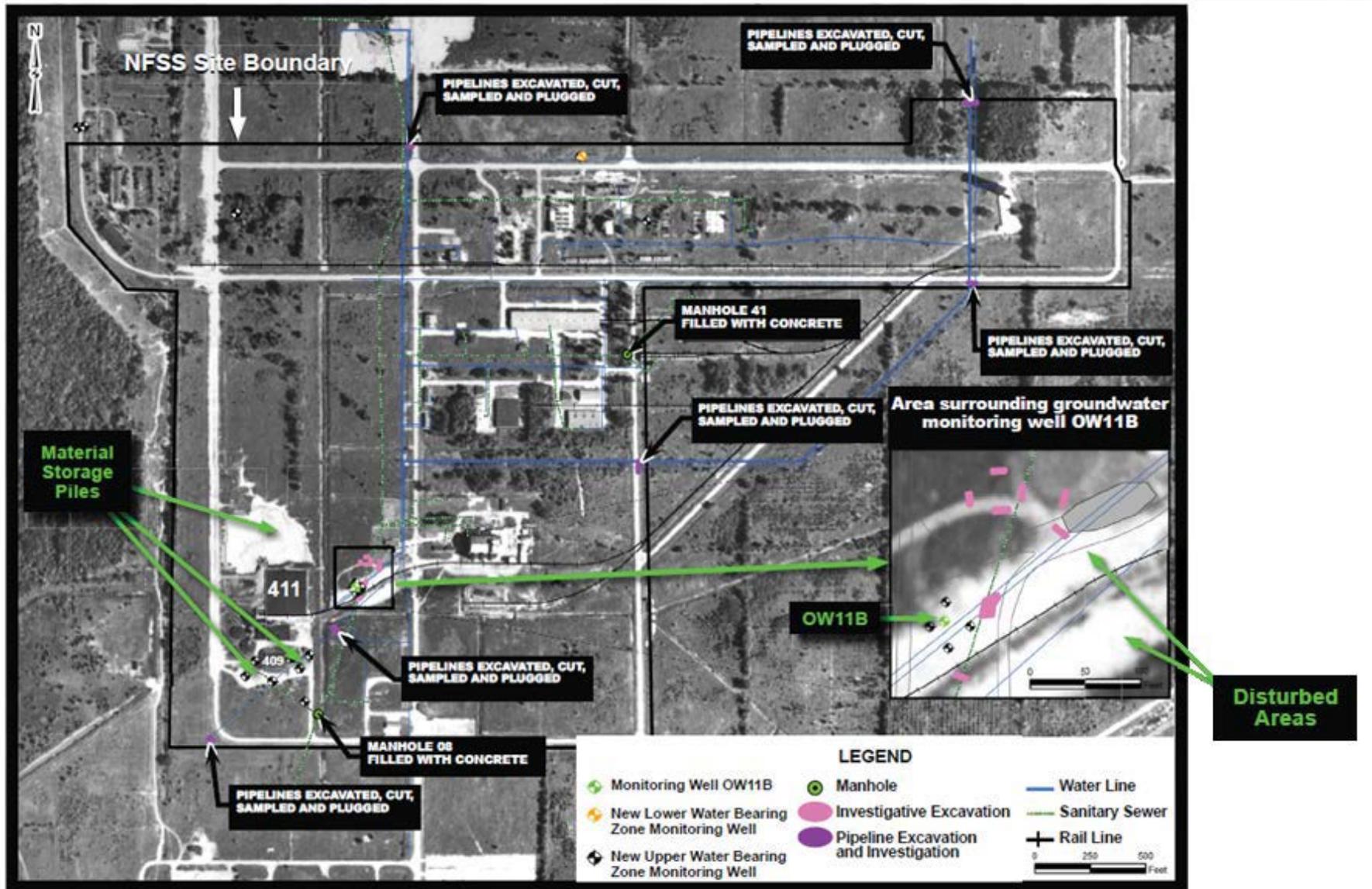
US Army Corps of Engineers
Buffalo District
BUILDING STRONG

2012 Investigation Scope and Objectives

- Address community and stakeholder questions concerning areas south of the Interim Waste Containment Structure (IWCS), pipelines and uranium concentrations in groundwater monitoring well OW11B
 - ▶ Delineate groundwater contamination in the northern portion of the site and around the southern portion of the IWCS
 - ▶ Identify the source of increasing uranium concentrations in groundwater monitoring well OW11B
 - ▶ Exposure and sealing of underground utilities leaving the site (that were not previously sealed) to eliminate the potential for off-site migration of contaminants in and around these pipelines
 - ▶ Exposure and sealing of an abandoned 10-inch water line near the southeast corner of the IWCS

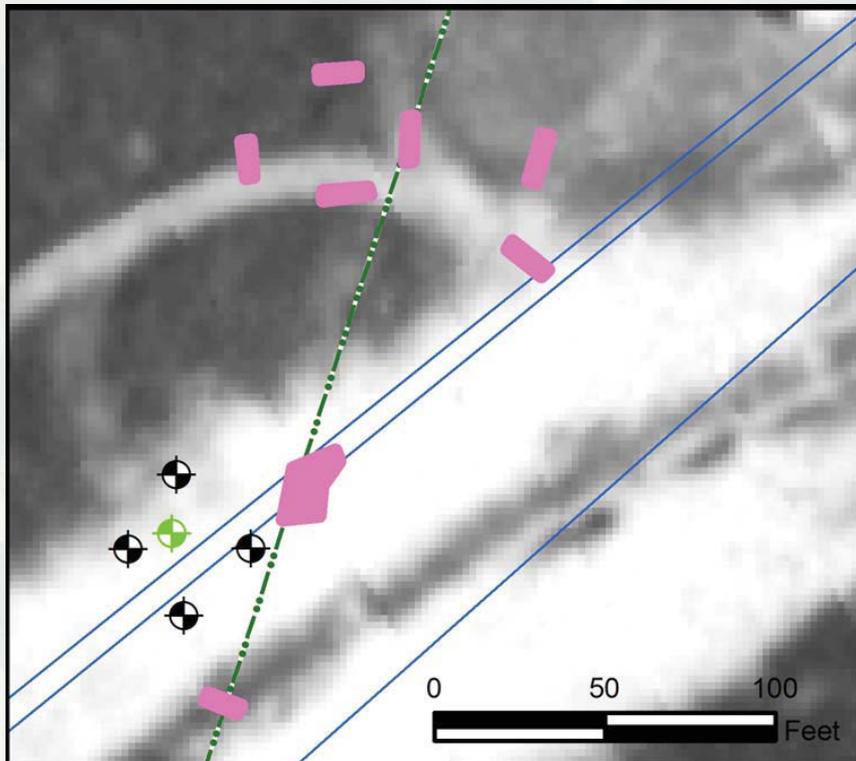


2012 Investigation

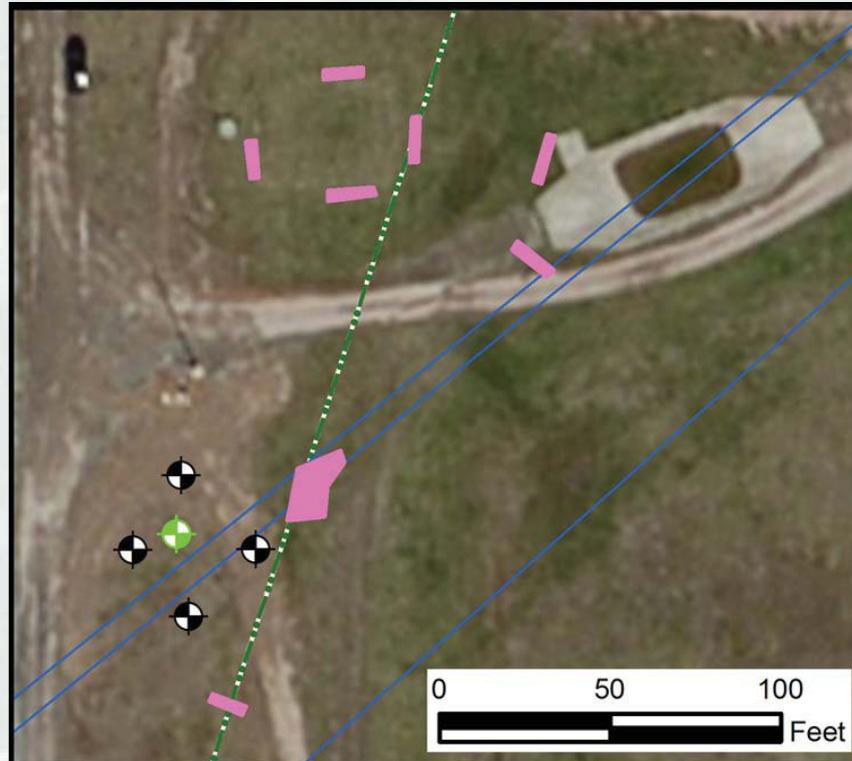


2012 Investigation

1963 Aerial



Current Aerial



LEGEND

-  Monitoring Well OW11B
-  New Upper Water Bearing Zone Monitoring Well
-  Investigative Excavation
-  Water Line
-  Sanitary Sewer



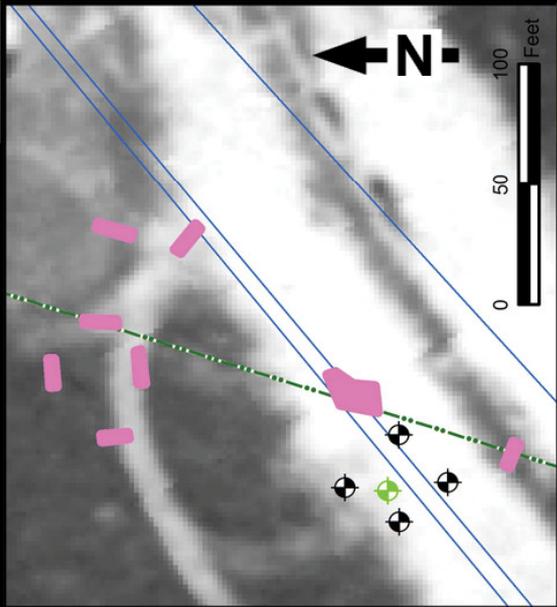
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2012: OW11B Area Investigation



LEGEND

- Monitoring Well OW11B
- New Upper Water Bearing Zone Monitoring Well
- Investigative Excavation
- Water Line
- Sanitary Sewer

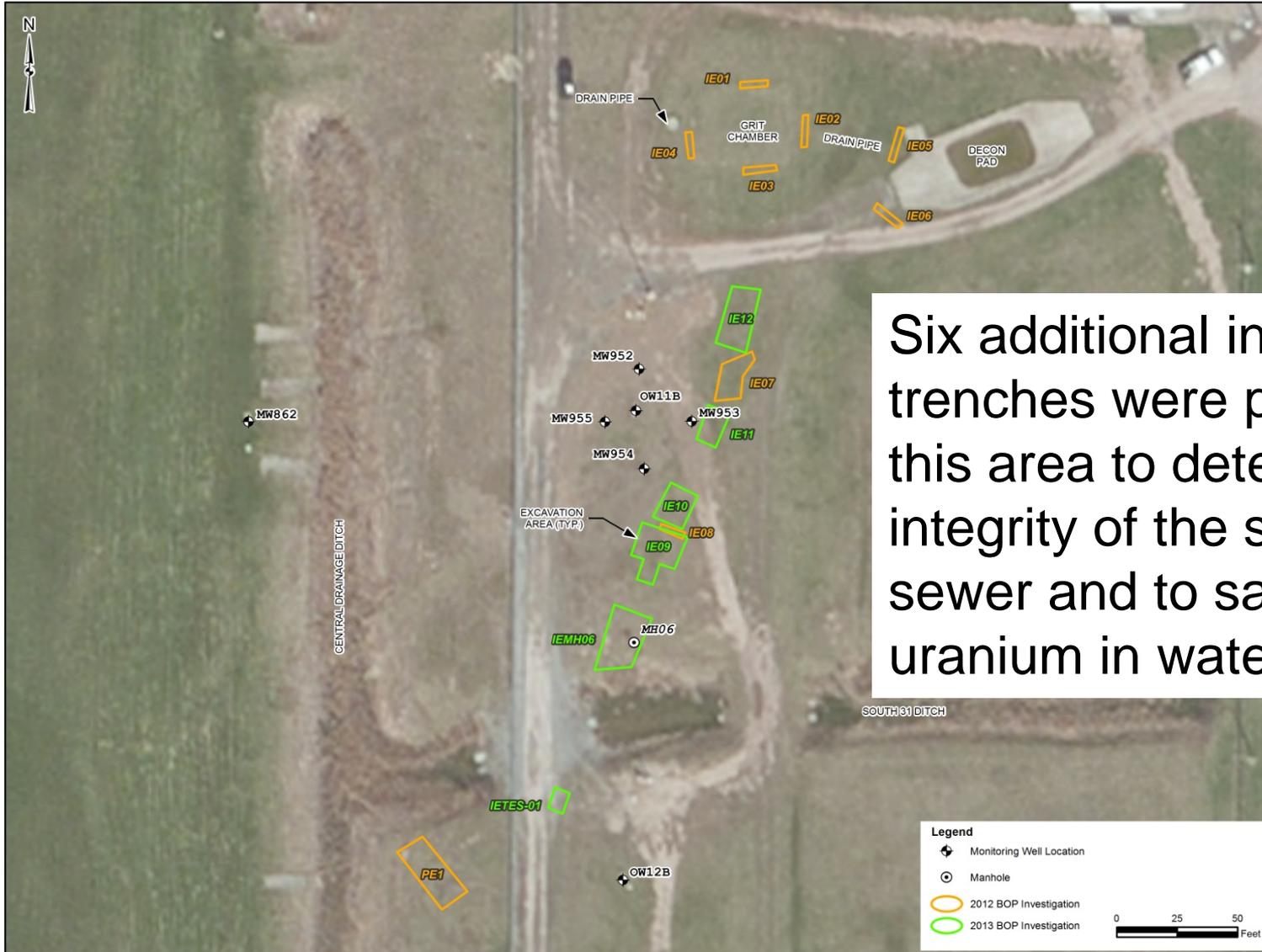


2013 Investigation

- Expose and evaluate the former Lake Ontario Ordnance Works sanitary sewer
- Delineate the vertical and horizontal extent of soil contamination by collecting samples at 478 locations



2013 Investigation



Six additional investigative trenches were placed along this area to determine the integrity of the sanitary sewer and to sample for uranium in water/soils.



Sanitary Sewer Investigation





Sanitary Sewer Investigation

Sanitary Sewer Investigation



Sanitary Sewer Investigation



Sanitary Sewer Investigation Conclusions

- The soil, groundwater, sediment, and utility sampling data show that:
 - ▶ Radionuclide impacts derived from ore-residue handling operations still exist.
 - ▶ Previous remedial activities in and around the grit chamber, decontamination pad, and OW11B and historical material storage piles discerned from photographic analyses are likely sources of groundwater impacts in this area.
 - ▶ The natural silty clay and absence of bedding material surrounding historic LOOW pipelines serves to inhibit groundwater migration along these pipelines.
 - ▶ No elevated radiation levels on the walls and bottoms of trenches were detected except for slightly elevated radiation measurements observed in IE9 along the north wall.

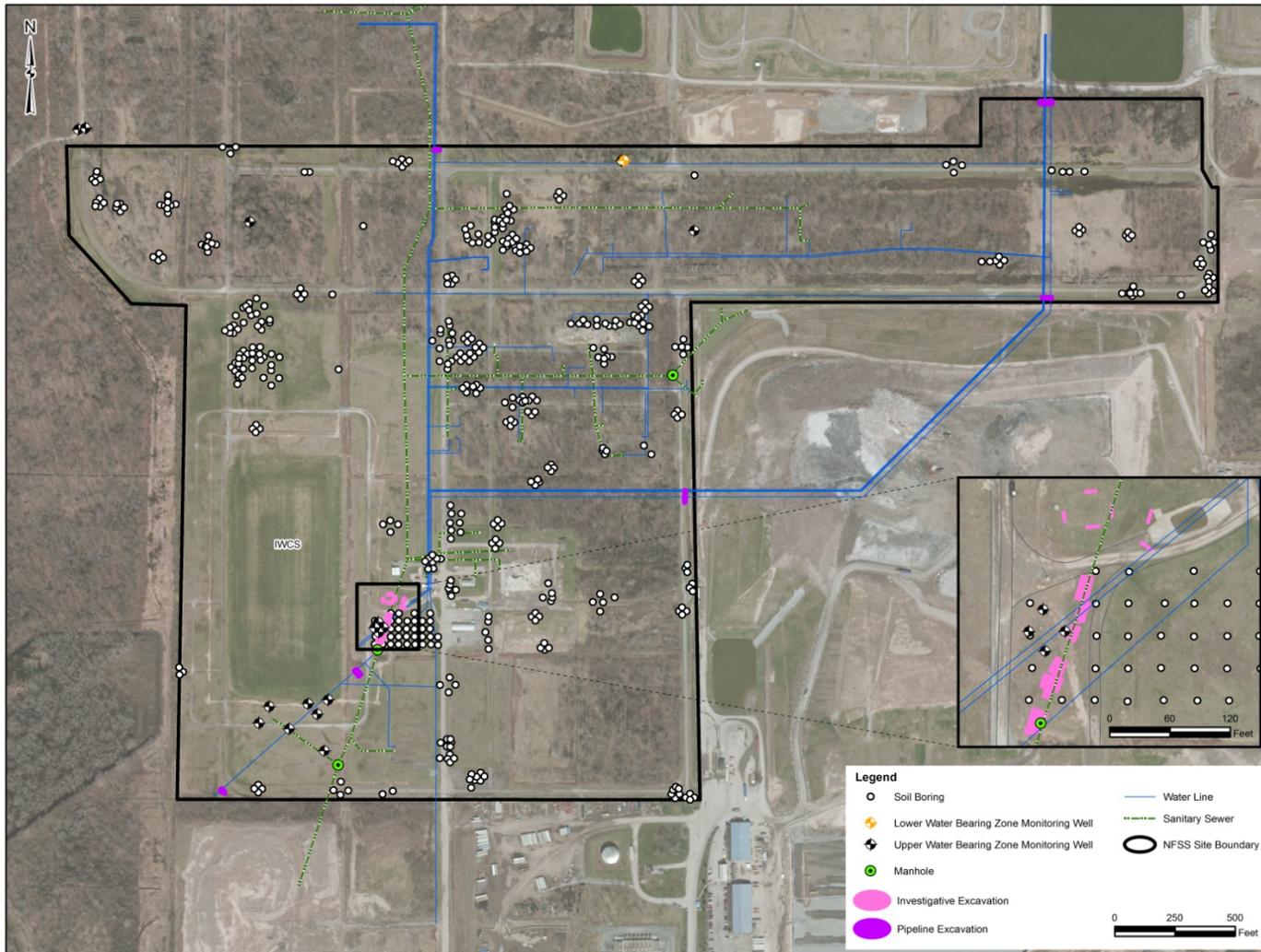


2013 Investigation

- Expose and evaluate the former Lake Ontario Ordnance Works sanitary sewer
- Delineate the vertical and horizontal extent of soil contamination by collecting samples at 478 locations



2013 Soil Boring Locations



Staked Soil Sample Locations North of IWCS



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Soil Sampling



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Soil Sampling



Soil Sampling

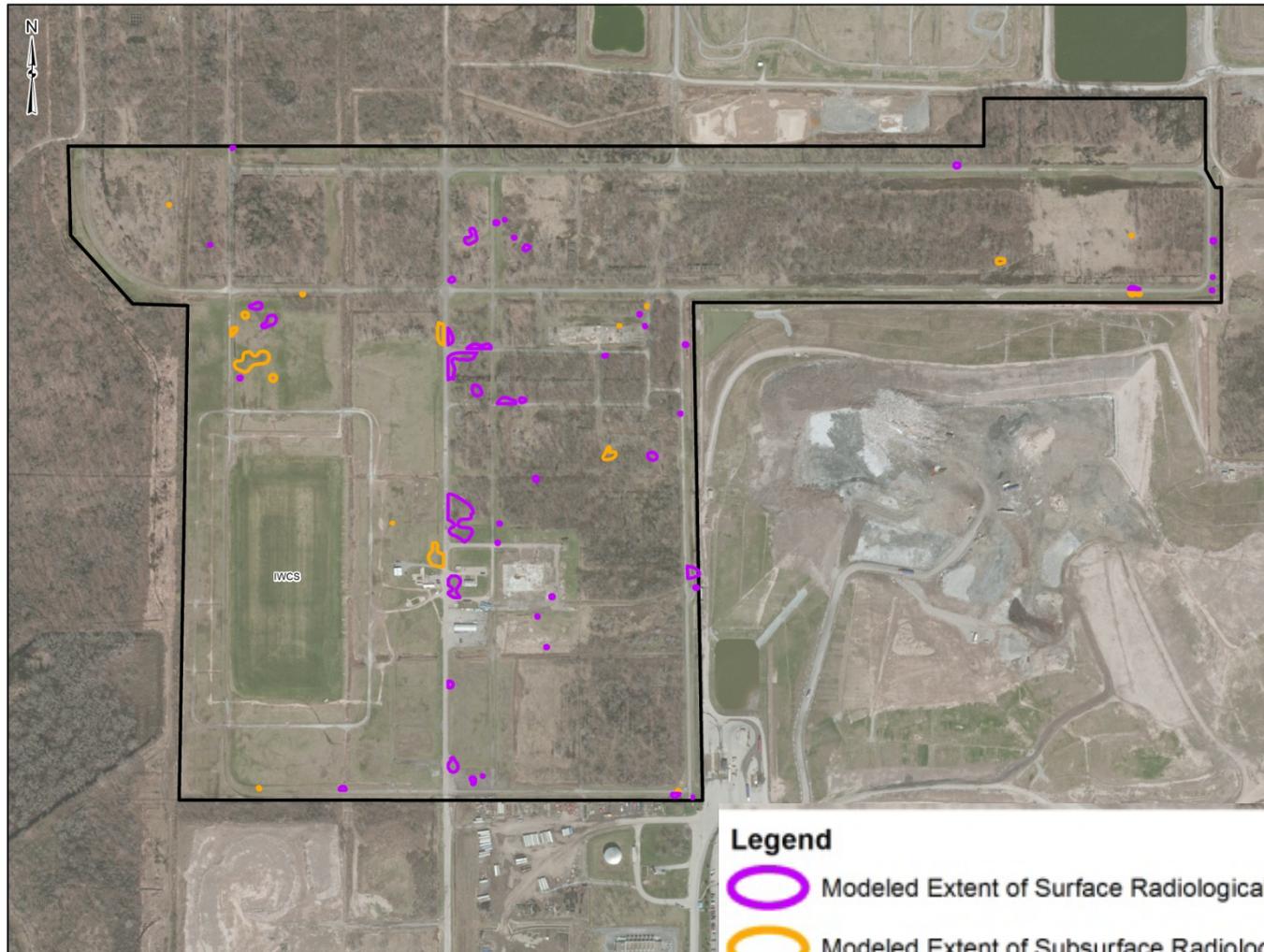


2013 Soil Delineation Investigation

- 461 borings advanced to better delineate radionuclide areas of concern
 - ▶ 1,569 samples analyzed for radionuclides
- 34 borings to better define polycyclic aromatic hydrocarbons (PAH) areas of concern
 - ▶ 110 soil samples analyzed for PAHs
- Data collected from 1999 through this investigation will support the Balance of Plant Operable Unit feasibility study by providing a reliable estimate of the volume of soil that may require excavation



Soil Contamination Locations



Legend

-  Modeled Extent of Surface Radiological Contamination
-  Modeled Extent of Subsurface Radiological Contamination
-  NFSS Site Boundary



Other 2013 Activity

- Geophysical Survey
 - ▶ Performed to confirm the locations of subsurface pipelines scheduled for cutting and plugging, and to identify the presence of utilities and other features that could potentially interfere with intrusive activities (e.g., drilling and excavation).



Geophysical Survey



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Geophysical Survey



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