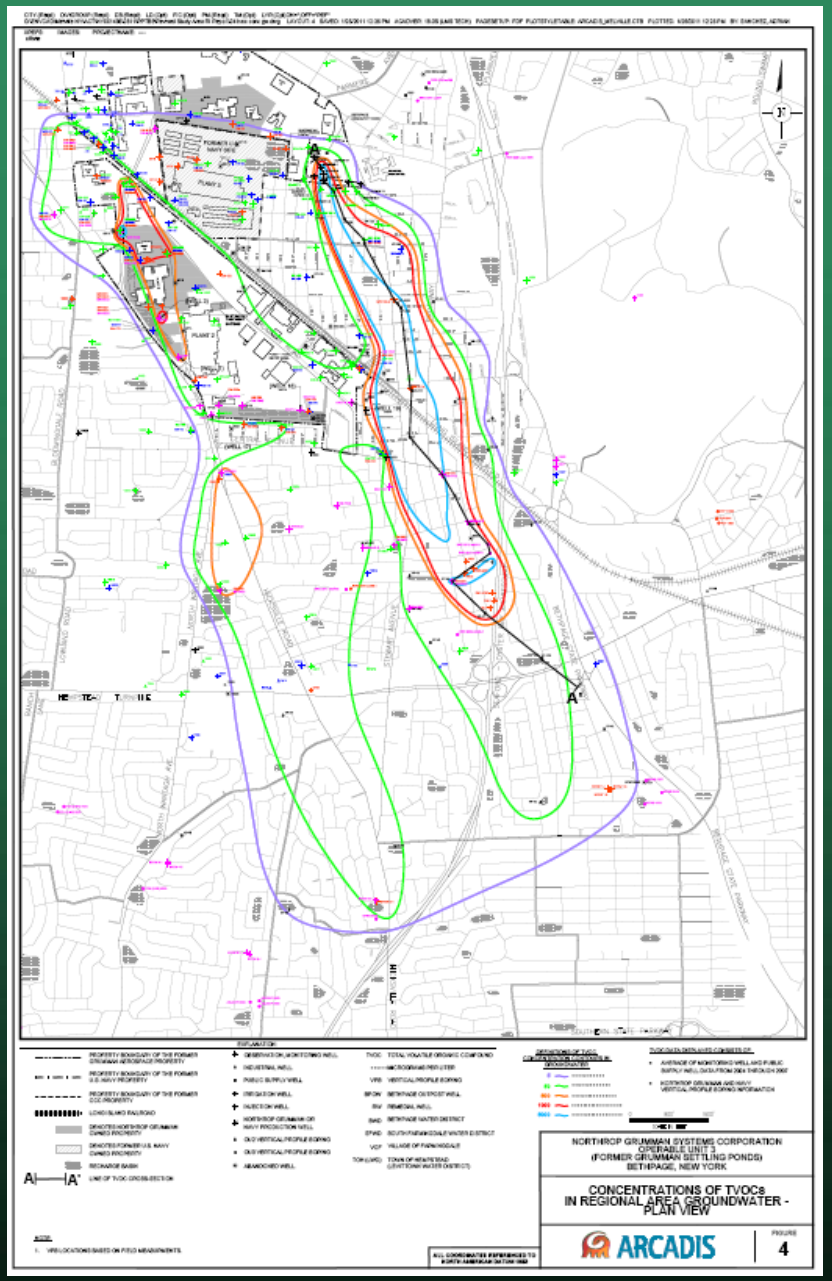
Northrop Grumman Site

Site No. 130003A
Proposed Remedial Action Plan
Operable Unit 3 (OU3)
Former Grumman Settling Ponds
June 2012

NYS Department of Environmental Conservation

Meeting Agenda

- **Introductions: Bill Fonda-Citizen Participation-NYSDEC**
- **James Harrington, Director NYSDEC Remedial Bureau A**
- **Site History and Description:**
  - **Steven Scharf, Project Manager-NYSDEC**
- **Remedial Investigation/Feasibility Study:**
  - **Steven Scharf, Project Manager-NYSDEC**
- **Proposed Remedial Action Plan:**
  - **Steven Scharf, Project Manager-NYSDEC**
- **Human Exposure Pathways:**
  - **Steven Karpinski, Public Health Specialist-NYSDOH**
- **Public Comment Period: Bill Fonda, Citizen Participation Specialist**



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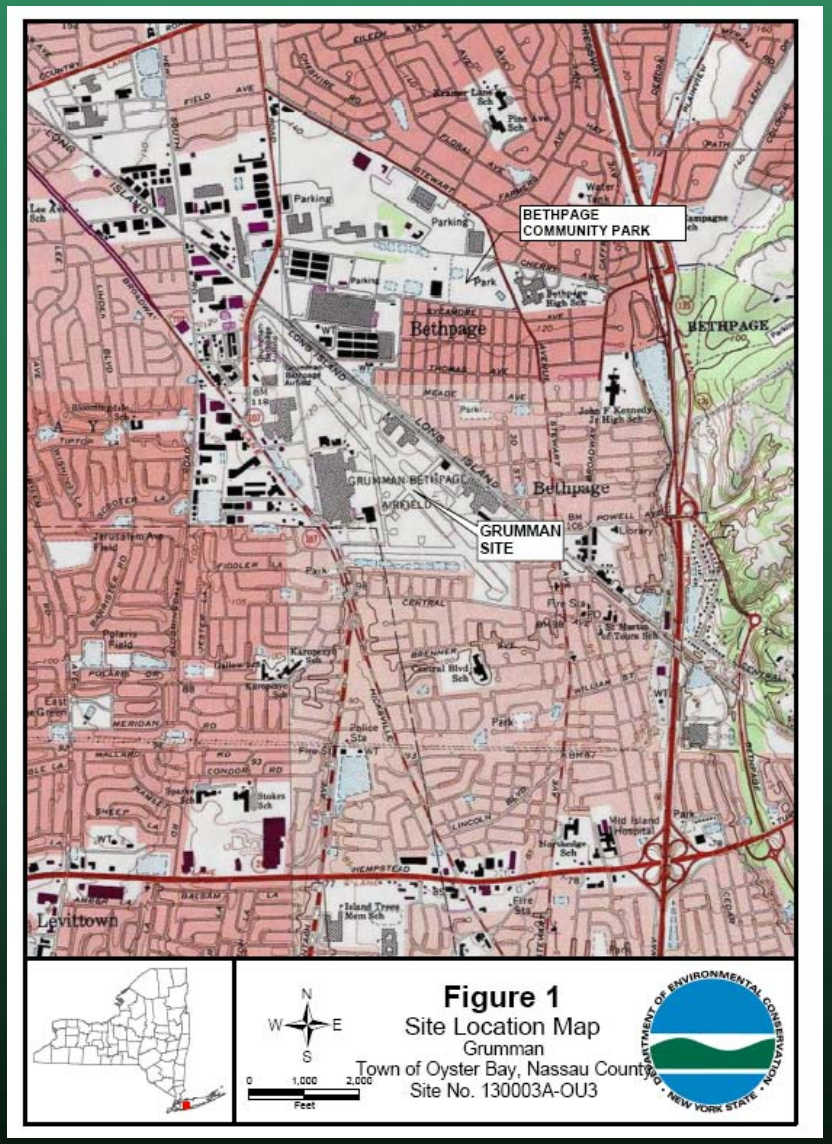
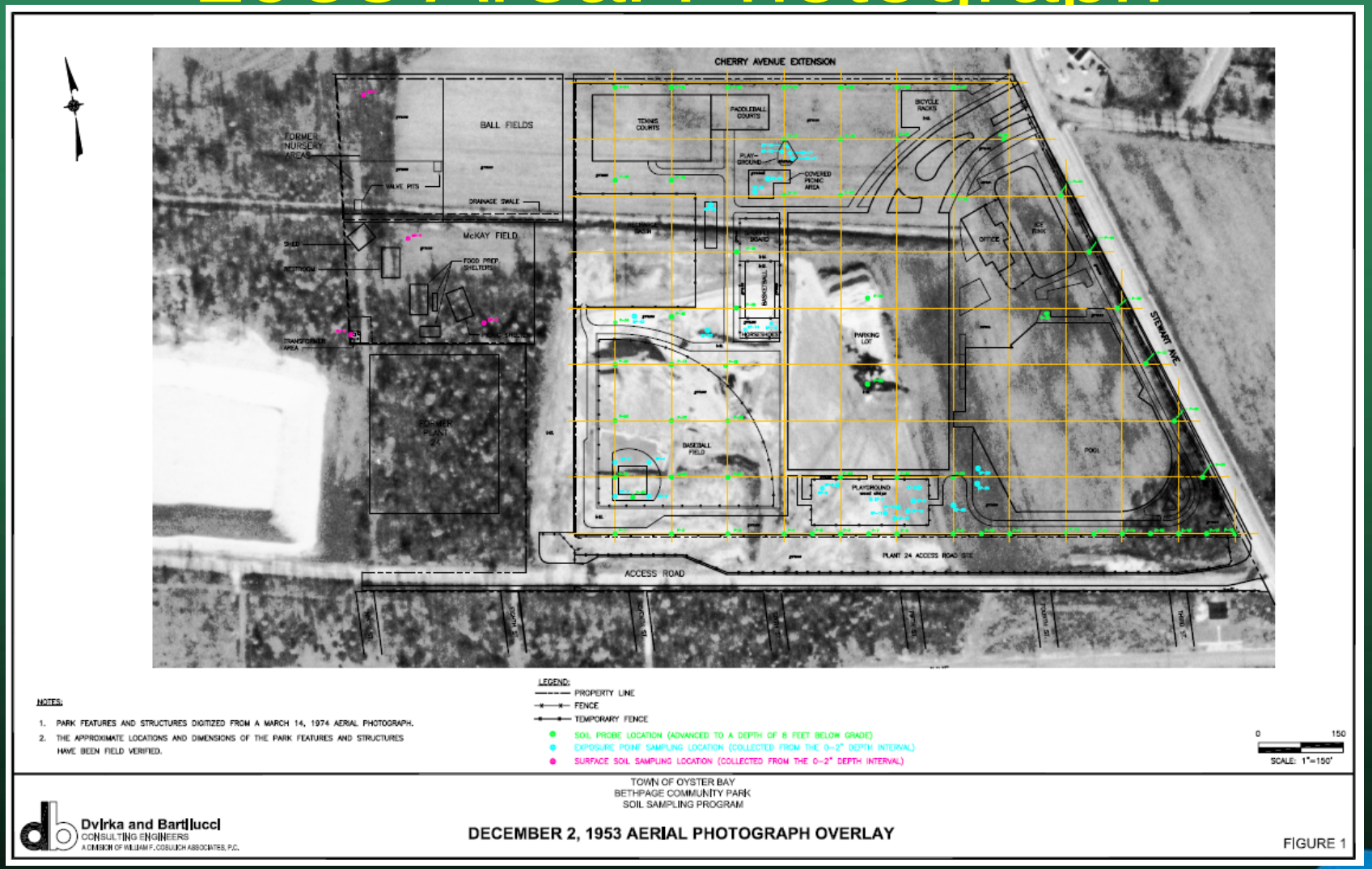
Site History and Description

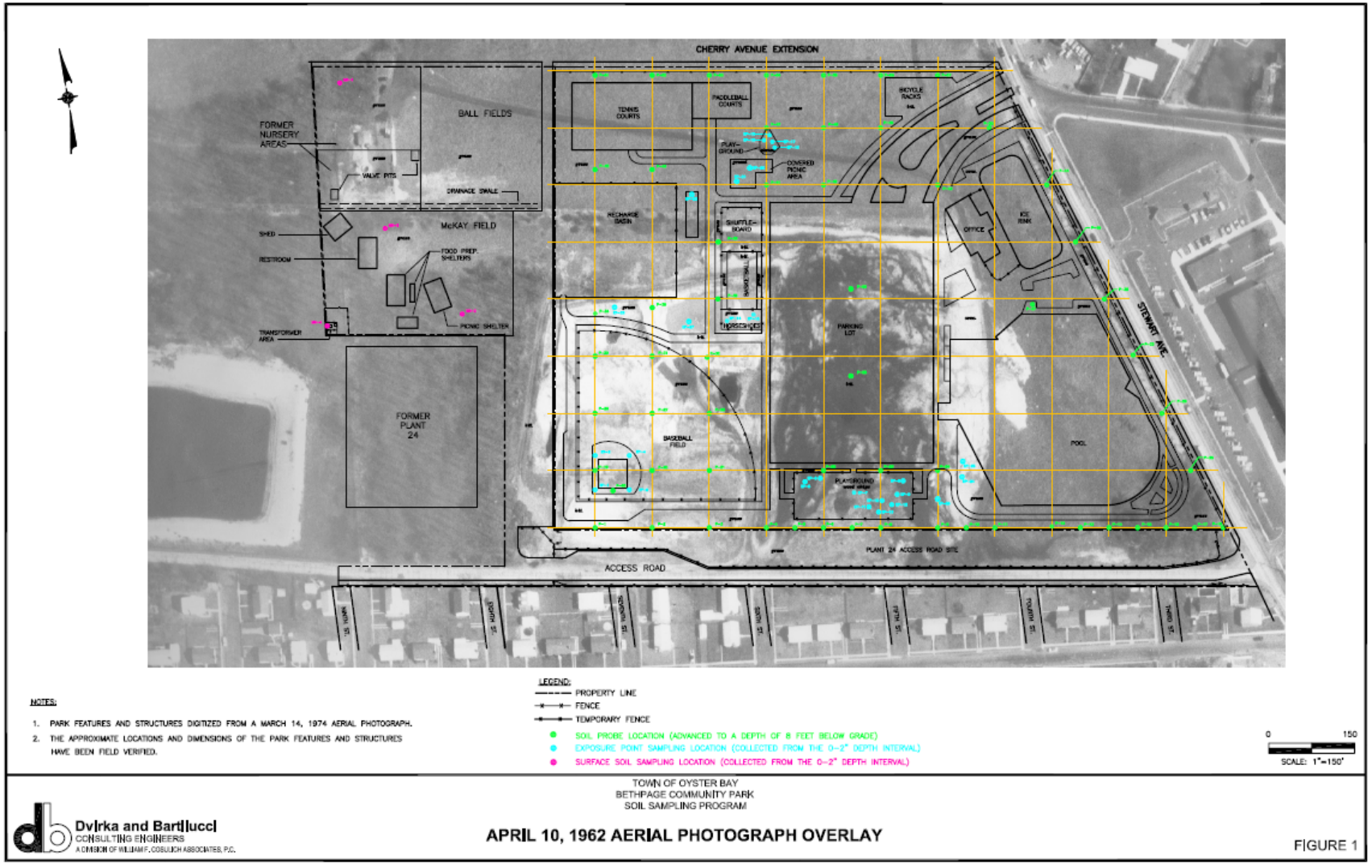


Grumman F6F Hellcat, Circa 1942

1953 Areal Photograph



1962 Areal Photograph



Site Area Circa 2004

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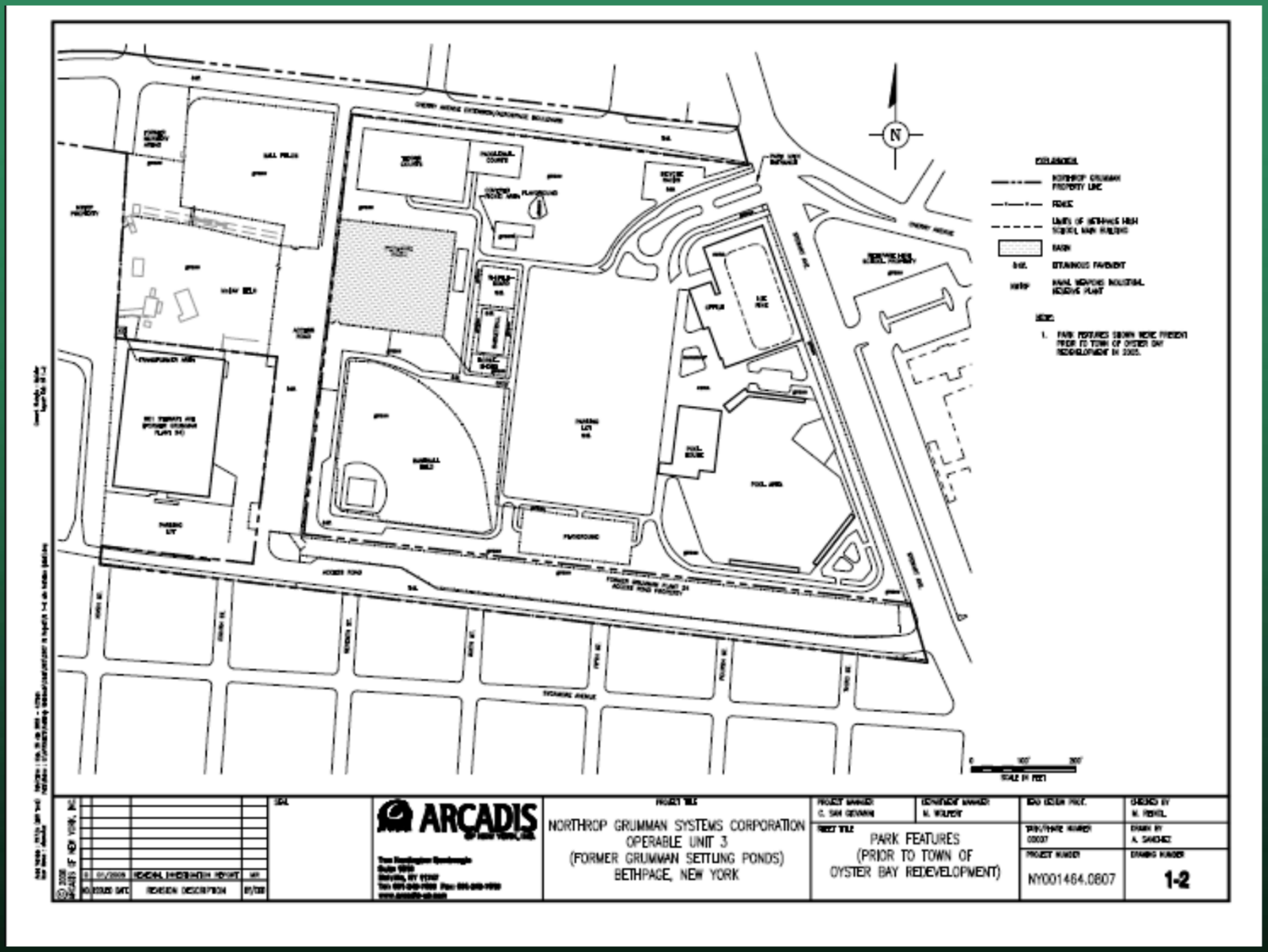


NYS Department of Environmental Conservation

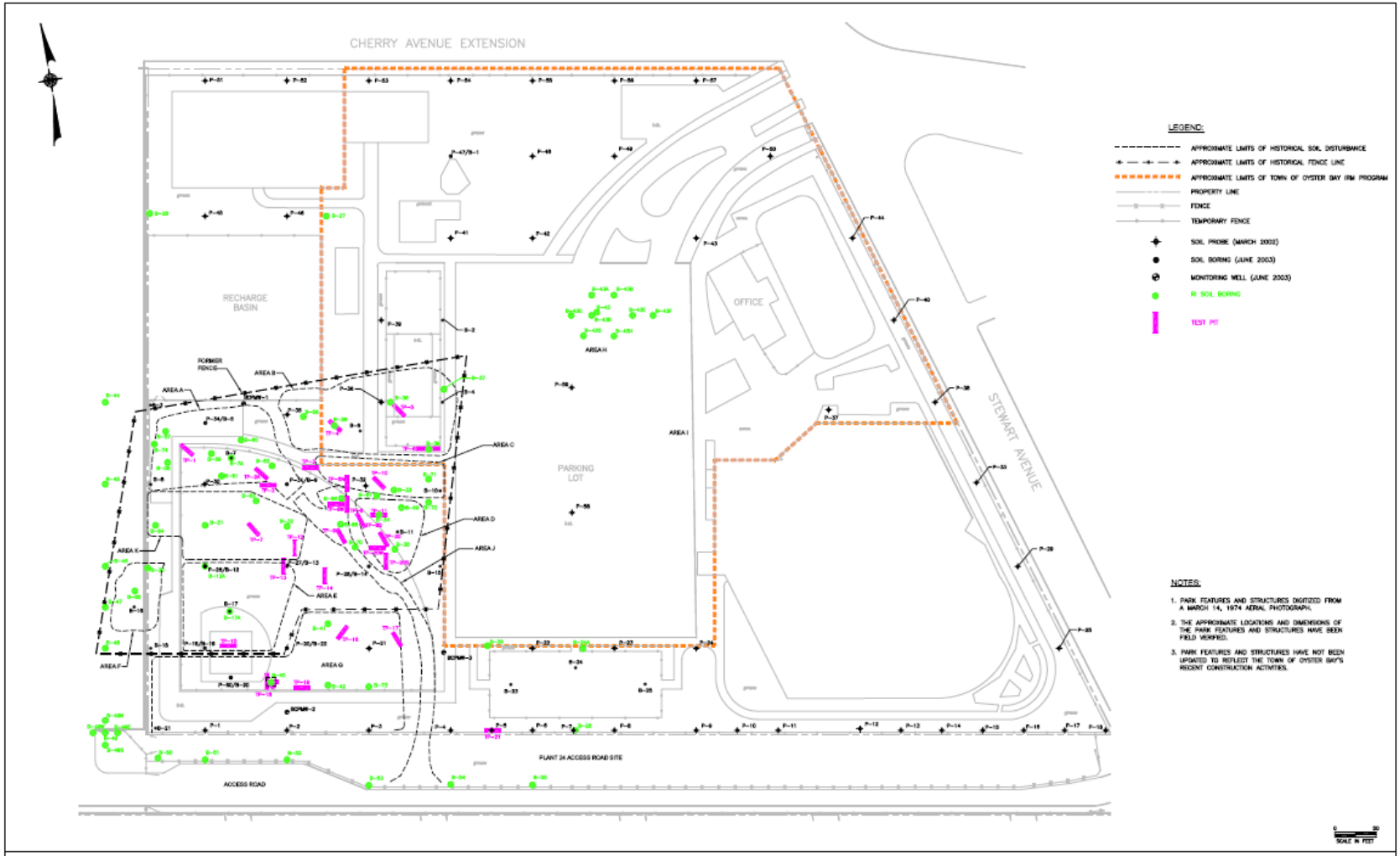
Current Potentially Responsible Parties

- Northrop Grumman Corporation
- Department of the Navy
- Town of Oyster Bay

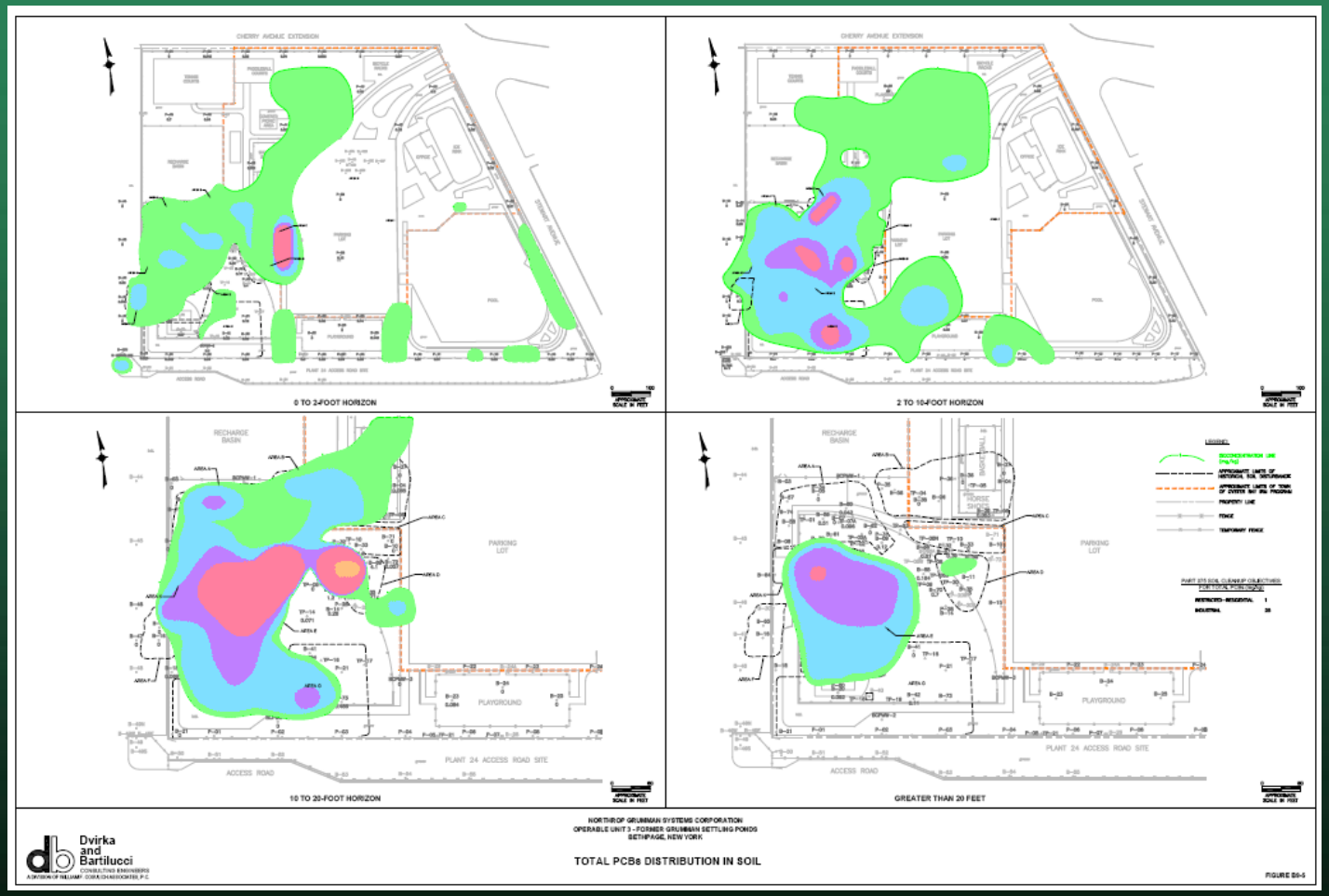
Remedial Investigation

- Historic Data and Report Search
- Geophysical Surveys: Ground Penetrating Radar, Terrain Conductivity & Resistivity
- Soil Borings: Over 100 in total
- Test Pits: More than 30
- Groundwater- Ongoing Sampling (>500)
- Soil Gas- 35 soil gas points

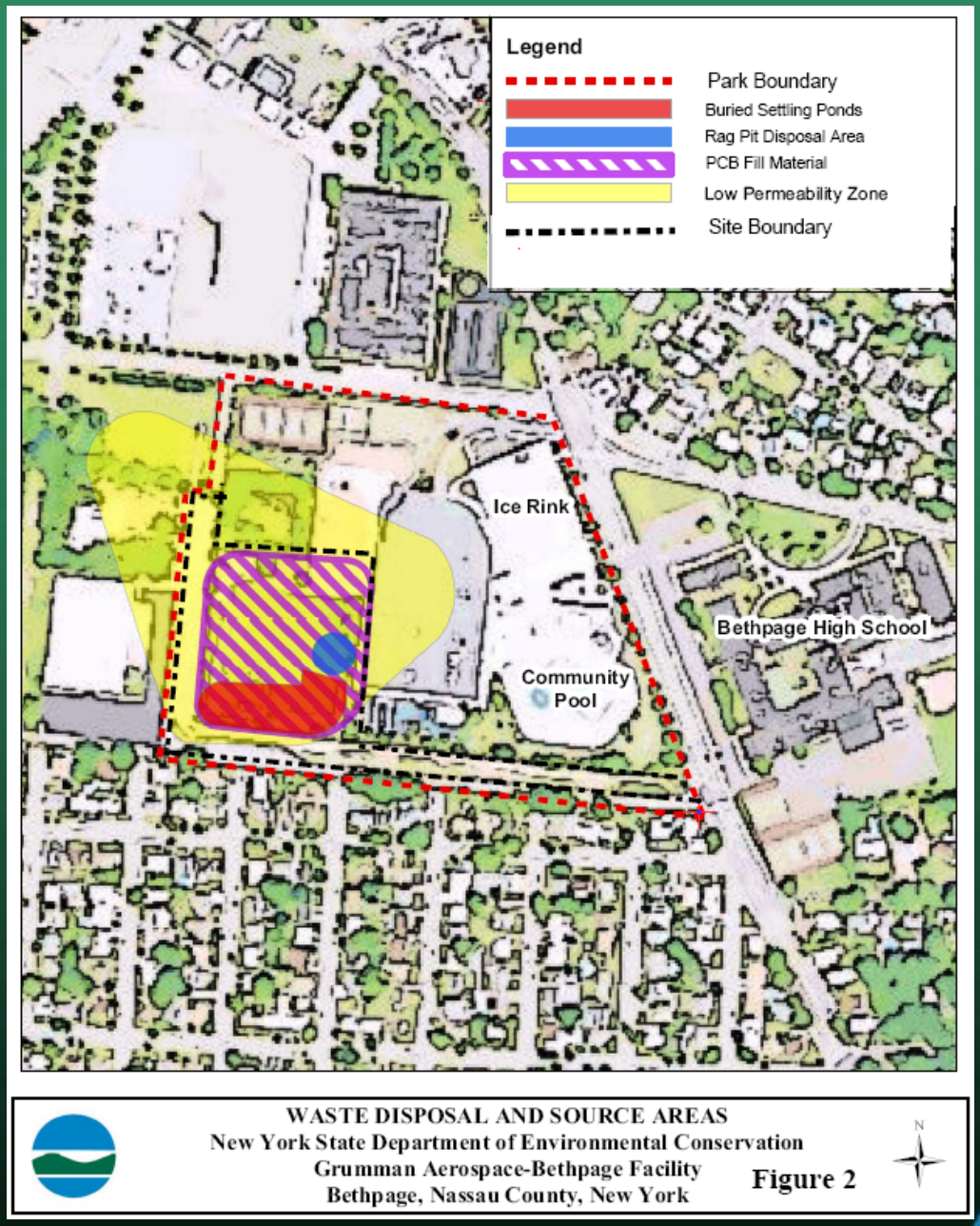
Test Pits and Soil Sampling



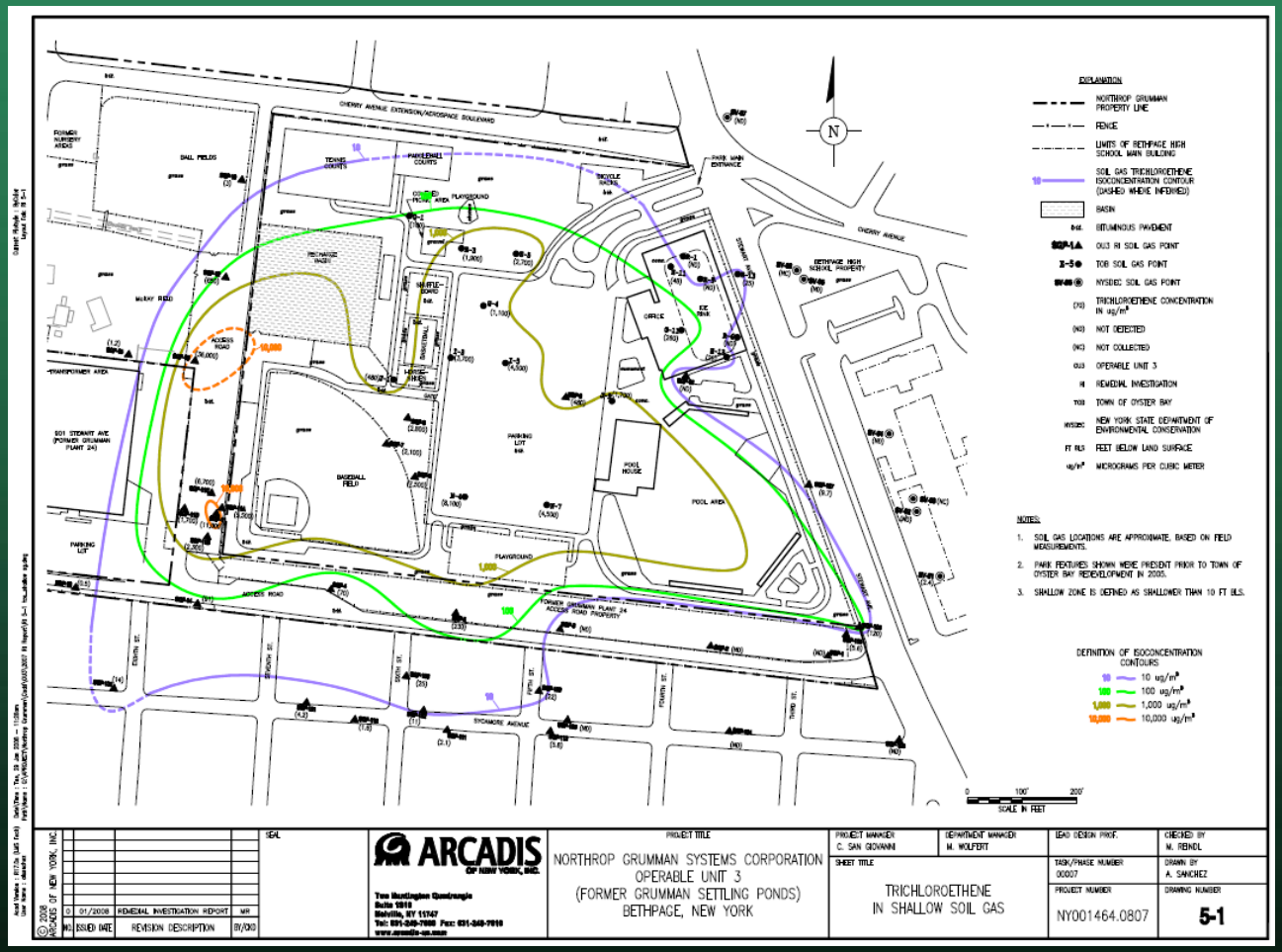
PCB Impacted Site Soils



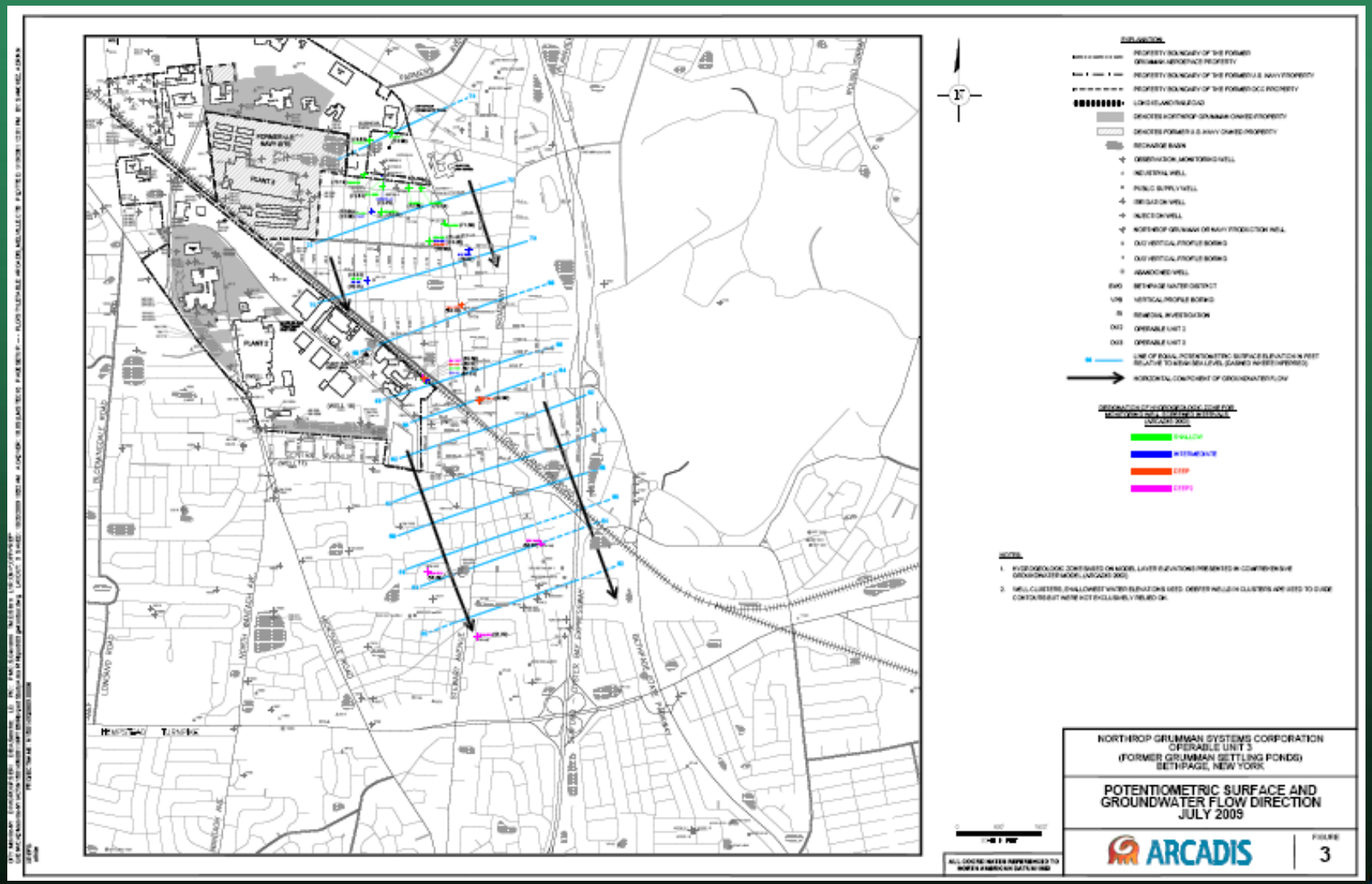
Waste Disposal and Source Areas



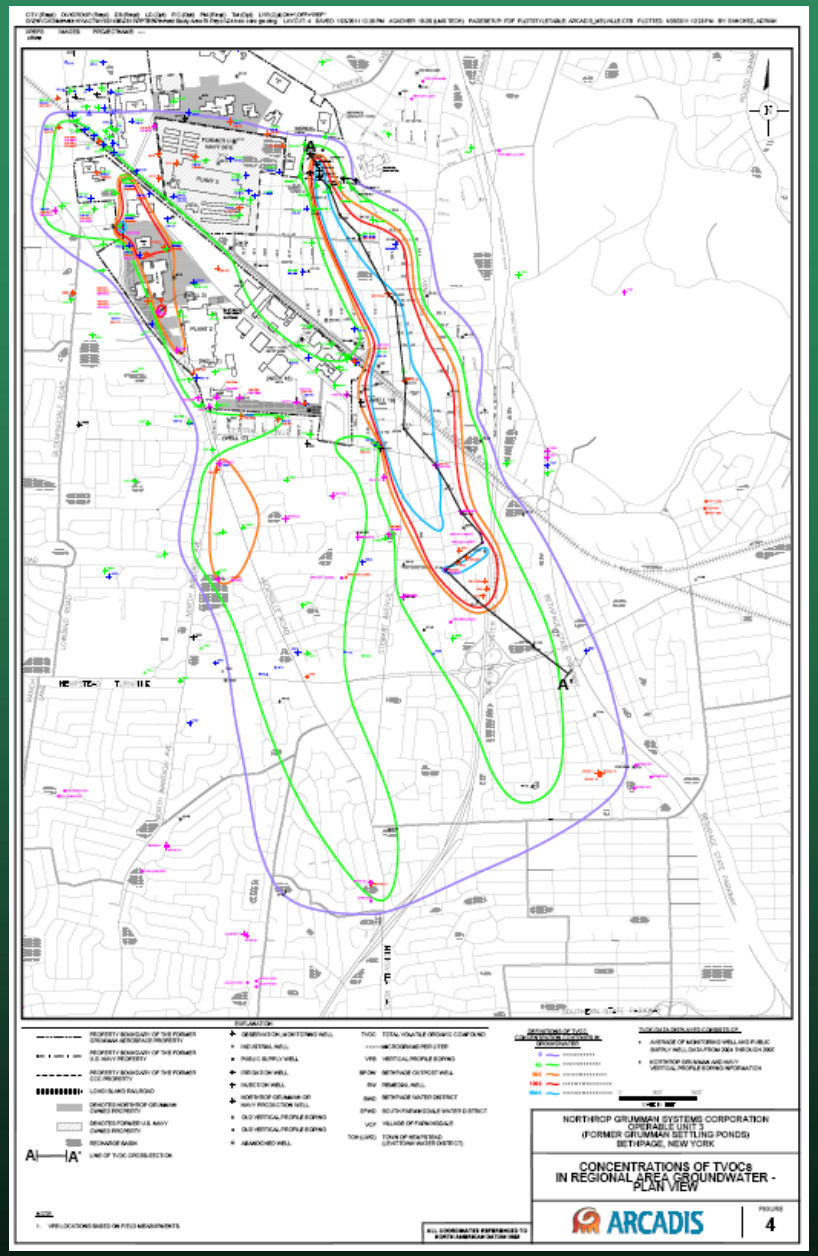
Soil Gas

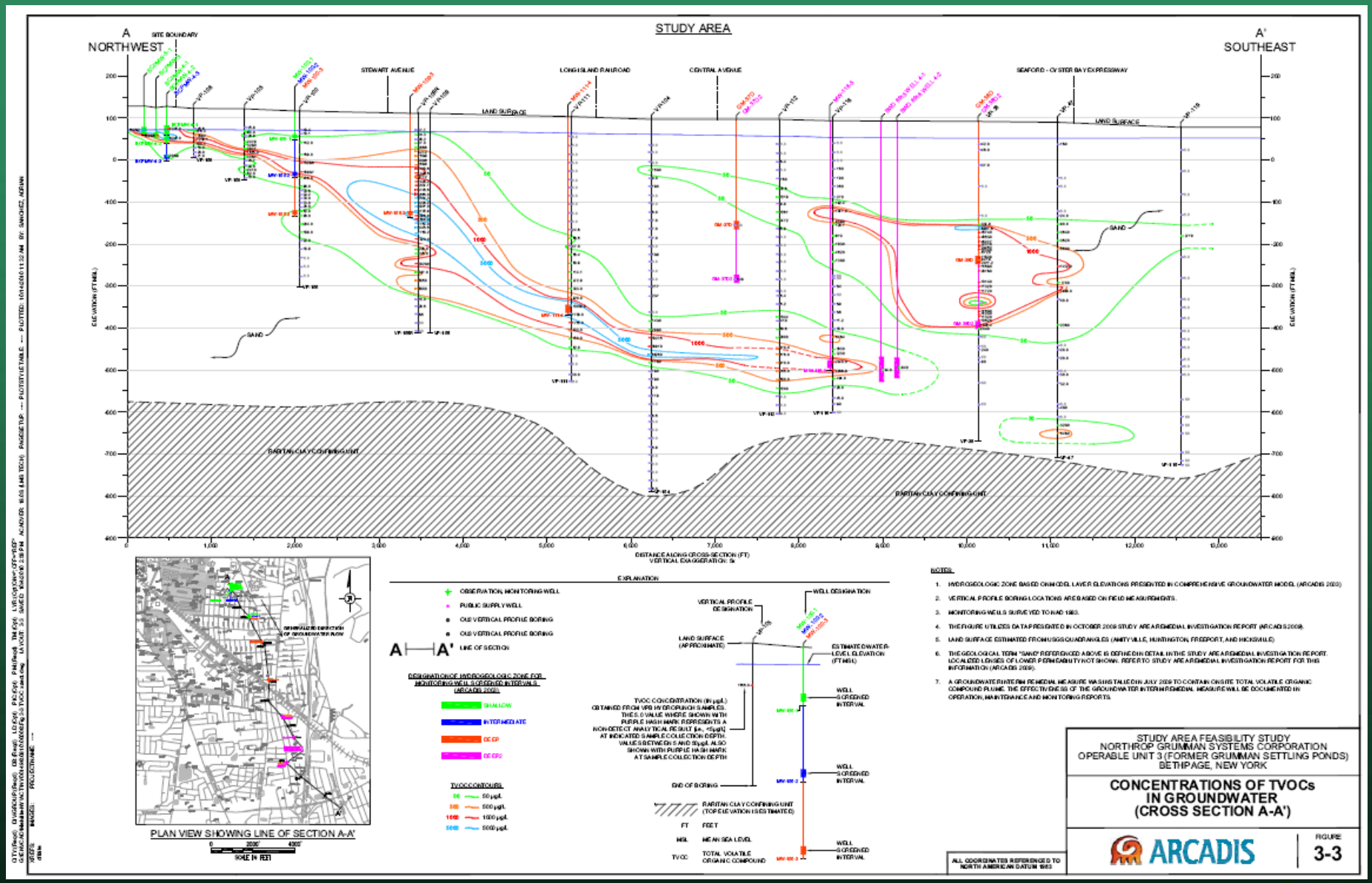

CHERRY AVENUE EXTENSION/ACROSPACE BOULEVARD
CHERRY AVENUE
SYCAMORE AVENUE
EXPLANATION
NORTHROP GRUMMAN PROPERTY LINE
FENCE
LIMITS OF BETHPAGE HIGH SCHOOL MAIN BUILDING
SOIL GAS TRICHLOROETHENE ISOCONCENTRATION CONTOUR (DASHED WHERE INFERRED)
BASIN
BITUMINOUS PAVEMENT
OU3 RI SOIL GAS POINT
TOB SOIL GAS POINT
NYSDEC SOIL GAS POINT
TRICHLOROETHENE CONCENTRATION IN ug/m³
NOT DETECTED
NOT COLLECTED
OPERABLE UNIT 3
REMEDIAL INVESTIGATION
TOWN OF OYSTER BAY
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
FEET BELOW LAND SURFACE
MICROGRAMS PER CUBIC METER
NOTES:
1. SOIL GAS LOCATIONS ARE APPROXIMATE, BASED ON FIELD MEASUREMENTS.
2. PARK FEATURES SHOWN WERE PRESENT PRIOR TO TOWN OF OYSTER BAY REDEVELOPMENT IN 2005.
3. SHALLOW ZONE IS DEFINED AS SHALLOWER THAN 10 FT BLS.
DEFINITION OF ISOCONCENTRATION CONTOURS
10 ug/m³
100 ug/m³
1,000 ug/m³
10,000 ug/m³
SCALE IN FEET
ARCADIS
NORTHROP GRUMMAN SYSTEMS CORPORATION
OPERABLE UNIT 3
(FORMER GRUMMAN SETTLING PONDS)
BETHPAGE, NEW YORK
TRICHLOROETHENE
IN SHALLOW SOIL GAS
NY001464.0807
5-1

Groundwater Flow



OU3 Plume within OU2 Plume




STUDY AREA
A
NORTHWEST
A'
SOUTHEAST
SITE BOUNDARY
STEWART AVENUE
LONG ISLAND RAILROAD
CENTRAL AVENUE
SEAFORD - OYSTER BAY EXPRESSWAY
LAND SURFACE
SAND
RARITAN CLAY CONFINING UNIT
ELEVATION (FT MSL)
DISTANCE ALONG CROSS-SECTION (FT)
VERTICAL EXAGGERATION: 5x
PLAN VIEW SHOWING LINE OF SECTION A-A'
SCALE IN FEET
EXPLANATION
OBSERVATION MONITORING WELL
PUBLIC SUPPLY WELL
OUS VERTICAL PROFILE BORING
OUS VERTICAL PROFILE BORING
LINE OF SECTION
DESIGNATION OF HYDROGEOLOGIC ZONE FOR MONITORING WELL SCREENED INTERVALS (ARCADIS 2009)
SHALLOW
INTERMEDIATE
DEEP
DEEP2
TVOC CONTOURS
50 µg/L
500 µg/L
1000 µg/L
5000 µg/L
VERTICAL PROFILE DESIGNATION
WELL DESIGNATION
LAND SURFACE (APPROXIMATE)
ESTIMATED WATER-LEVEL ELEVATION (FT MSL)
TVOC CONCENTRATION (IN µg/L) OBTAINED FROM VPB HYDROPUNCH SAMPLES. THIS SLOTTED VALUE WHERE SHOWN WITH PURPLE HASH MARK REPRESENTS A NON-DETECT ANALYTICAL RESULT (i.e., <5µg/L) AT INDICATED SAMPLE COLLECTION DEPTH. VALUES BETWEEN 5 AND 50µg/L ALSO SHOWN WITH PURPLE HASH MARK AT SAMPLE COLLECTION DEPTH
WELL SCREENED INTERVAL
END OF BORING
RARITAN CLAY CONFINING UNIT (TOP ELEVATION IS ESTIMATED)
FT FEET
MSL MEAN SEA LEVEL
TVOC TOTAL VOLATILE ORGANIC COMPOUND
NOTES:
1. HYDROGEOLOGIC ZONE BASED ON MODEL LAYER ELEVATIONS PRESENTED IN COMPREHENSIVE GROUNDWATER MODEL (ARCADIS 2009)
2. VERTICAL PROFILE BORING LOCATIONS ARE BASED ON FIELD MEASUREMENTS.
3. MONITORING WELLS SURVEYED TO NAD 1983.
4. THIS FIGURE UTILIZES DATA PRESENTED IN OCTOBER 2009 STUDY AREA REMEDIAL INVESTIGATION REPORT (ARCADIS 2009).
5. LAND SURFACE ESTIMATED FROM USGS QUADRANGLES (AMITYVILLE, HUNTINGTON, FREEPORT, AND HICKSVILLE)
6. THE GEOLOGICAL TERM "SAND" REFERENCED ABOVE IS DEFINED IN DETAIL IN THE STUDY AREA REMEDIAL INVESTIGATION REPORT. LOCALIZED LENSES OF LOWER PERMEABILITY NOT SHOWN. REFER TO STUDY AREA REMEDIAL INVESTIGATION REPORT FOR THIS INFORMATION (ARCADIS 2009).
7. A GROUNDWATER INTERIM REMEDIAL MEASURE WAS INITIATED IN JULY 2009 TO CONTAIN ONSITE TOTAL VOLATILE ORGANIC COMPOUND PLUME. THE EFFECTIVENESS OF THE GROUNDWATER INTERIM REMEDIAL MEASURE WILL BE DOCUMENTED IN OPERATION, MAINTENANCE AND MONITORING REPORTS.
ALL COORDINATES REFERENCED TO NORTH AMERICAN DATUM 1983
STUDY AREA FEASIBILITY STUDY
NORTHROP GRUMMAN SYSTEMS CORPORATION
OPERABLE UNIT 3 (FORMER GRUMMAN SETTLING PONDS)
BETHPAGE, NEW YORK
CONCENTRATIONS OF TVOCs IN GROUNDWATER (CROSS SECTION A-A')
ARCADIS
FIGURE 3-3

3 Interim Remedial Measures(IRMs)

- 1. Town of Oyster Bay: Investigation & Remediation- 7 of 11 Acres (2006-7)
- 2. Grumman Soil Vapor Extraction (2008)
- 3. Grumman Groundwater Pump and Treat Containment (2009)

Soil Gas Interim Remedial Measure

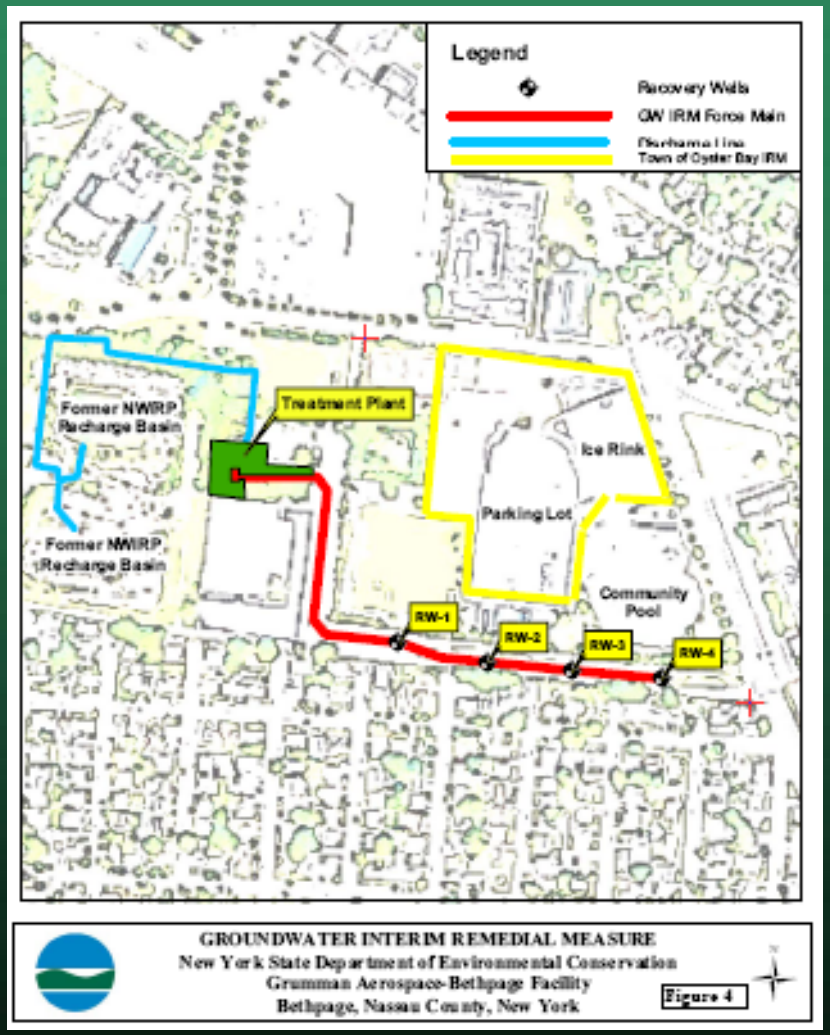
- **Objective:**
  - **Prevent off-site migration of VOCs in soil gas**

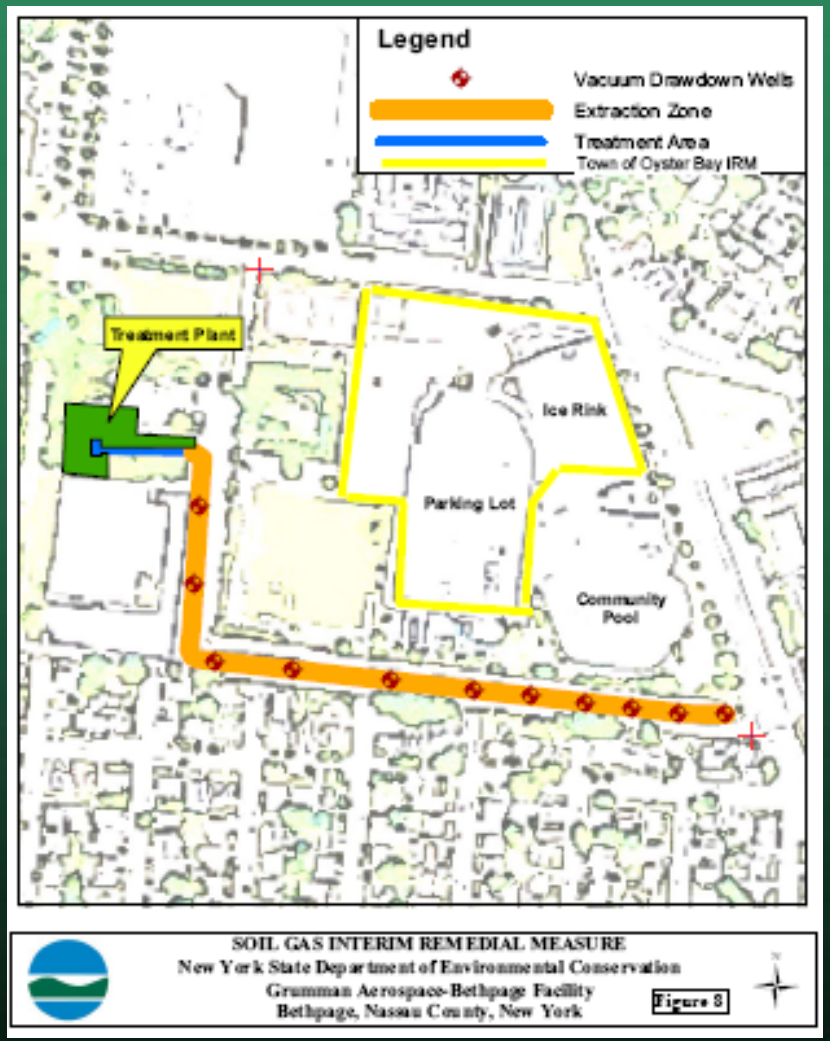
- **System components:**
  - **Depressurization/Monitoring Wells**
  - **Below-Grade Piping**
  - **Equipment Building (Blower/Electrical Systems)**
  - **Emissions Control (Vapor Treatment)**

Groundwater Interim Remedial Measure

- **Objectives:**
  - **Minimize off-site migration of VOCs in groundwater**
  - **Create/enhance VOC-free water-table lens south of Park**

Groundwater and Soil Vapor Extraction & TOB IRMs





Evaluation of Alternatives

The NYSDEC evaluates alternatives based on nine criteria:

1. Protection of human health and the environment
2. Compliance with standards, criteria and guidance
3. Short-term impacts and effectiveness
4. Long-term effectiveness and permanence
5. Reduction in toxicity, mobility and volume of contaminants
6. Implement ability
7. Cost effectiveness
8. Land use
9. Community Acceptance

Remedial Alternatives From the Proposed Plan

- Alternative 1- No Action
- Alternative 2- No Further Action
- Alternative 3- Complete Excavation- Complete GW Extraction
- Alternative 4- Site Capping, Groundwater Extraction

- * Alternative 5- Excavation to 10 feet

* Proposed Remedy

Basis for Alternative 5

- Results of the RI and the evaluation of alternatives.
- Alternative 5 provides the best overall response:
-
- Restoring Park soils and adjacent areas within the Park to restricted residential use to a minimum of 10 feet;

- Removal of all PCBs above 50 ppm-hazardous waste;
- Chromium sludge co-located source areas will be removed;

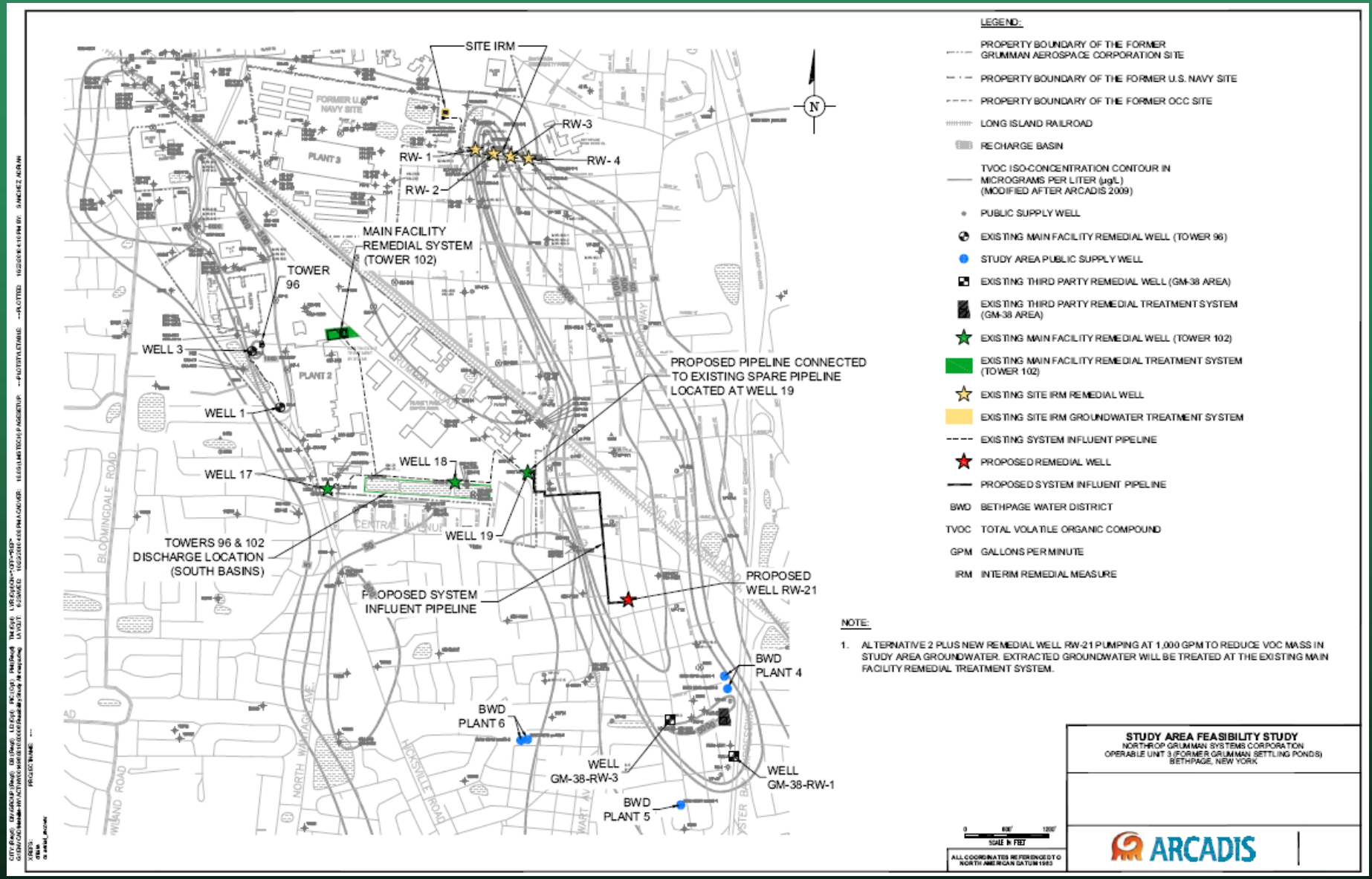
- Implementation of appropriate institutional controls in the form of an environmental easement;

- Treatment of soils above the Low Permeability Zone (LPZ) and former rag pit source area(s);

- Eliminate the off-site migration of contaminated groundwater.

Remedial Alternative Costs

Remedial Alternative	Capital Cost $)	Annual Costs ($)	Total Present Worth ($)
Alternative 1	$0	$0	$0
Alternative 2	$0	$ 650,000	$10,450,000
Alternative 3	$189,000,000	$3,500,000	$194,000,000
Alternative 4	$40,250,000	$1,100,000	$58,000,000
Alternative 5	$61,500,000	$1,250,000	$81,000,000


SITE IRM
RW-3
RW- 1
RW- 4
RW- 2
MAIN FACILITY
REMEDIAL SYSTEM
(TOWER 102)
TOWER
96
WELL 3
WELL 1
WELL 17
WELL 18
WELL 19
PROPOSED PIPELINE CONNECTED
TO EXISTING SPARE PIPELINE
LOCATED AT WELL 19
TOWERS 96 & 102
DISCHARGE LOCATION
(SOUTH BASINS)
PROPOSED SYSTEM
INFLUENT PIPELINE
PROPOSED
WELL RW-21
BWD
PLANT 4
BWD
PLANT 6
WELL
GM-38-RW-3
WELL
GM-38-RW-1
BWD
PLANT 5
BLOOMINGDALE ROAD
NORTH WINDSOR AVENUE
HICKSVILLE ROAD
CENTRAL AVENUE
LEGEND:
PROPERTY BOUNDARY OF THE FORMER GRUMMAN AEROSPACE CORPORATION SITE
PROPERTY BOUNDARY OF THE FORMER U.S. NAVY SITE
PROPERTY BOUNDARY OF THE FORMER OCC SITE
LONG ISLAND RAILROAD
RECHARGE BASIN
TVOC ISO-CONCENTRATION CONTOUR IN MICROGRAMS PER LITER (µg/L) (MODIFIED AFTER ARCADIS 2009)
PUBLIC SUPPLY WELL
EXISTING MAIN FACILITY REMEDIAL WELL (TOWER 96)
STUDY AREA PUBLIC SUPPLY WELL
EXISTING THIRD PARTY REMEDIAL WELL (GM-38 AREA)
EXISTING THIRD PARTY REMEDIAL TREATMENT SYSTEM (GM-38 AREA)
EXISTING MAIN FACILITY REMEDIAL WELL (TOWER 102)
EXISTING MAIN FACILITY REMEDIAL TREATMENT SYSTEM (TOWER 102)
EXISTING SITE IRM REMEDIAL WELL
EXISTING SITE IRM GROUNDWATER TREATMENT SYSTEM
EXISTING SYSTEM INFLUENT PIPELINE
PROPOSED REMEDIAL WELL
PROPOSED SYSTEM INFLUENT PIPELINE
BWD BETHPAGE WATER DISTRICT
TVOC TOTAL VOLATILE ORGANIC COMPOUND
GPM GALLONS PER MINUTE
IRM INTERIM REMEDIAL MEASURE
NOTE:
1. ALTERNATIVE 2 PLUS NEW REMEDIAL WELL RW-21 PUMPING AT 1,000 GPM TO REDUCE VOC MASS IN STUDY AREA GROUNDWATER. EXTRACTED GROUNDWATER WILL BE TREATED AT THE EXISTING MAIN FACILITY REMEDIAL TREATMENT SYSTEM.
STUDY AREA FEASIBILITY STUDY
NORTHROP GRUMMAN SYSTEMS CORPORATION
OPERABLE UNIT 3 (FORMER GRUMMAN SETTLING PONDS)
BETHPAGE, NEW YORK
SCALE IN FEET
ALL COORDINATES REFERENCED TO NORTH AMERICAN DATUM 1983
ARCADIS

Significant Components of the Proposed Alternative 5 Remedy Include:

– **For Soils:**

- Remove contaminated soil above SCO's to 10 feet;
- Remove all hazardous waste;
- Excavate soils from Grumman Access Road;
- Treatment of deep low permeability soils impacted with volatile organic compounds (VOCs) by in-situ thermal desorption and soil vapor extraction;
- Excavation of contaminated soil in residential yards near the Park;

For Soil Vapor:

- Continued operation of the soil vapor extraction system to prevent migration.

- **For Groundwater:**
- Continued operation of on-site groundwater with the pump and treat Interim Remedial Measure to prevent migration;

- Groundwater extraction and treatment of off-site groundwater with a goal of removing 90 percent of groundwater contaminant mass;

- The wellhead treatment contingency plan remains in effect.

- **Institutional Controls:** An environmental easement to restrict use of the site and contaminated groundwater on-site and require implementation of a site management plan.

Cost of Proposed Remedy

Present Worth

The estimated cost to construct the proposed remedy is: $61,500,000.

Operation, maintenance and monitoring would cost an additional $1,250,000 annually.

* Human Exposure Pathways
* Are People Being Exposed?

The DOH's Roll

Review available information

Evaluate if public health is being impacted by exposures to hazardous materials

Ensure that PRAP is protective of human health

Exposure

Contact with a hazardous material through:

- **Ingestion**
- **Inhalation**
- **Direct Contact**

If exposure does not occur – health cannot be impacted

Even if exposure does occurs – health may not be impacted

DOH Concurrence

- The DOH has determined that the proposed remedy is protective of public health

Northrop Grumman Former Grumman Settling Ponds

- Thank You For Your Input.

Contact Information

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Northrop Grumman Former Grumman Settling Ponds

Comment Period extended to July 30, 2012

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