Former GM Assembly Plant Site

Site No: C360070

Public Meeting on Proposed Decision Document

March 22, 2012

NYS Department of Environmental Conservation

Former GM Assembly Plant Site

C360070

AGENDA ITEM #1

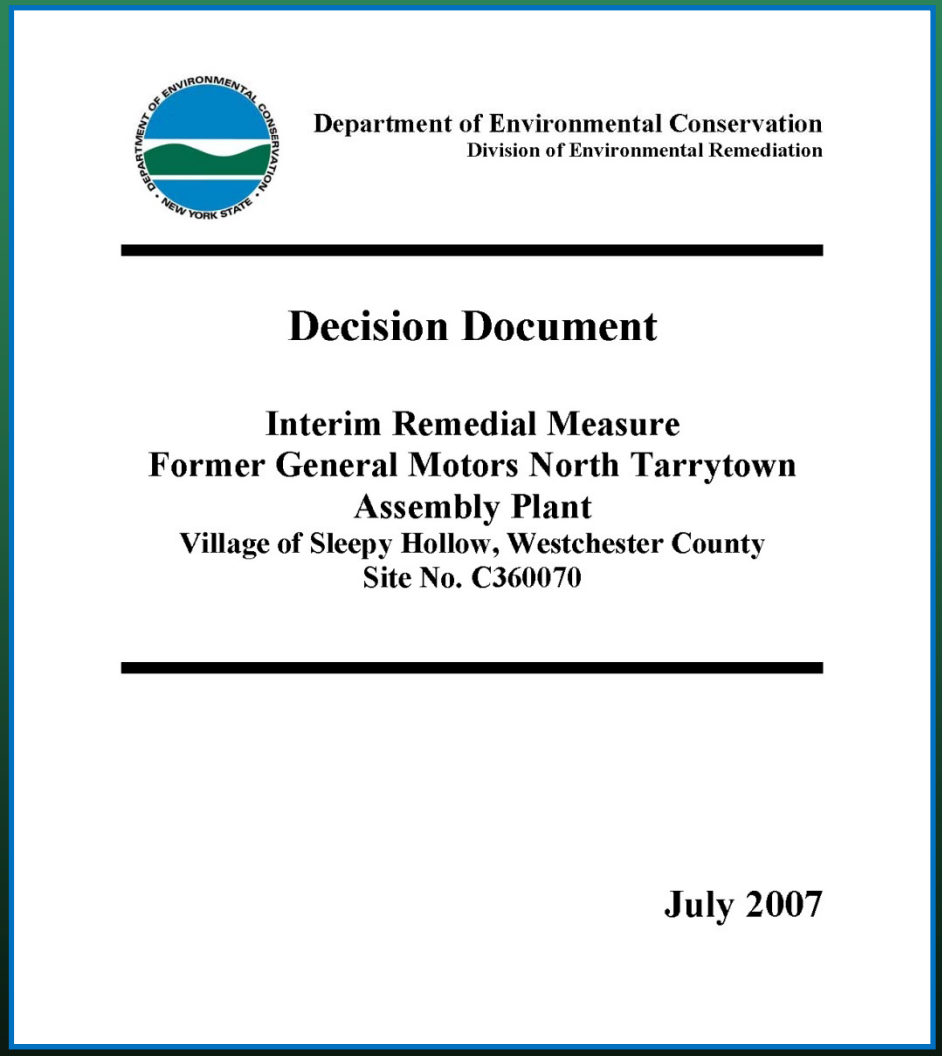
Introduction & Overview

March 22, 2012

NYS Department of Environmental Conservation

Objective I for Tonight:

Update on Status of 2007 IRMs



Department of Environmental Conservation
Division of Environmental Remediation

Decision Document

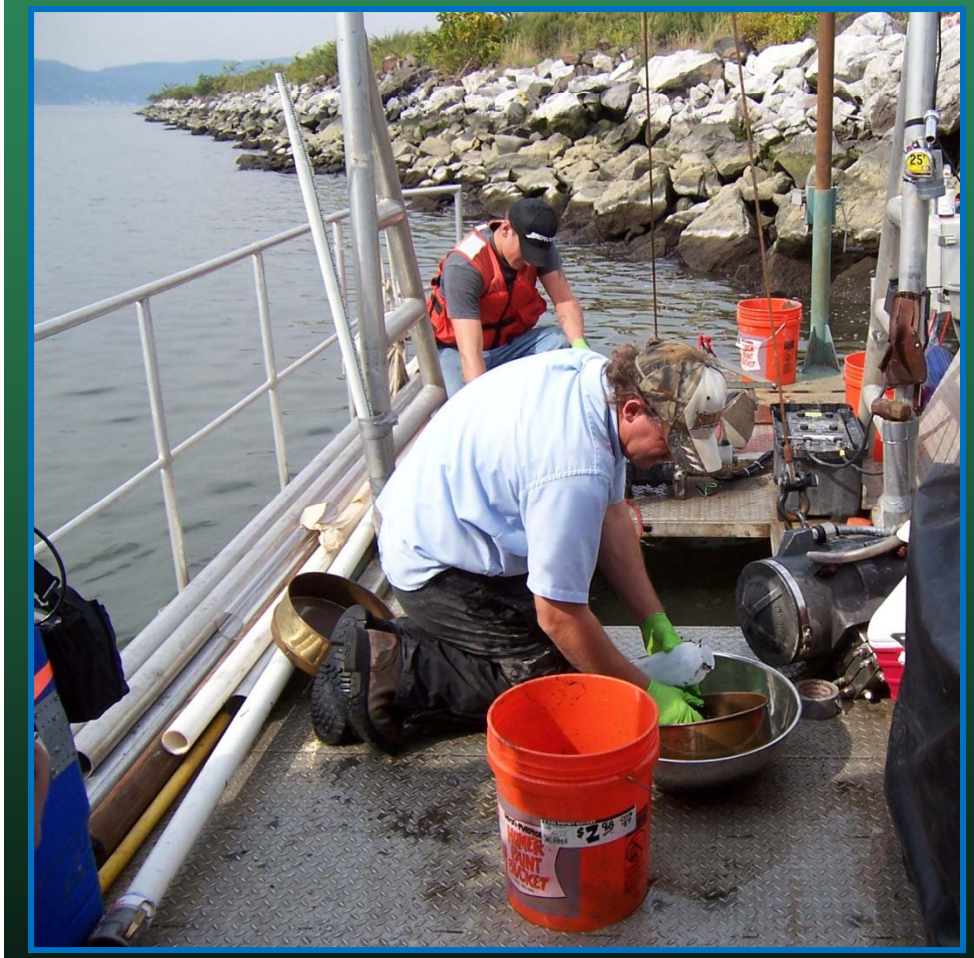
Interim Remedial Measure
Former General Motors North Tarrytown Assembly Plant
Village of Sleepy Hollow, Westchester County
Site No. C360070

July 2007

- IRM Public Meeting on March 28, 2007.
- Outlined cleanup plan for land-based portion of site.
- IRMs completed in late 2007.

Objective II for Tonight:

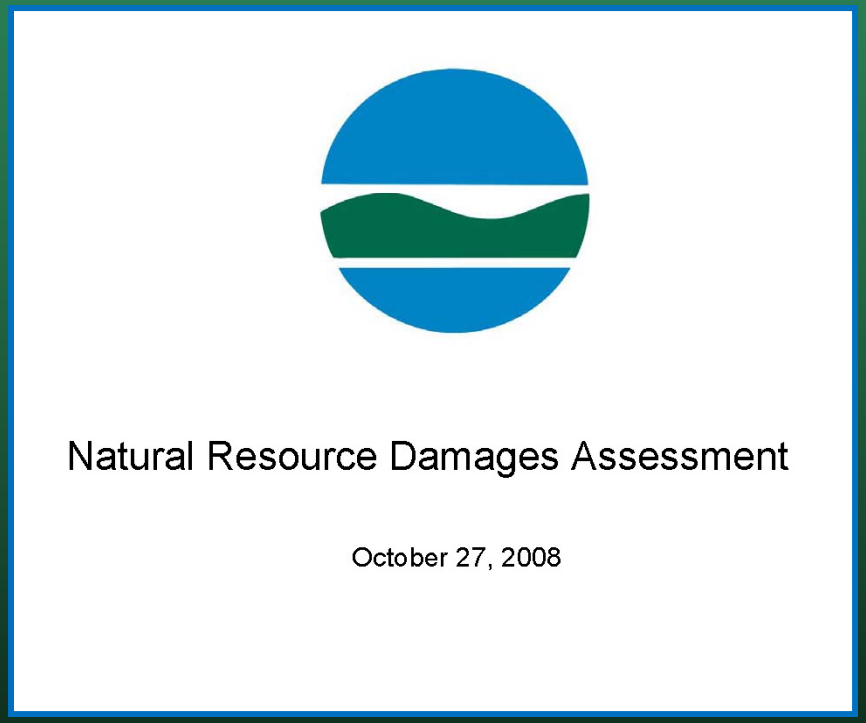
Presentation of Sediment Investigation Findings and Cleanup Plan



- Final RI report issued in January 2012.
- Results to be Presented Tonight.
- Plan to remove 4,400 cubic yards of sediment at cost of $3.7 million

Objective III for Tonight:

Overview of 2010 Natural Resources Damages Settlement



- NYSDEC and GM Settlement in 2010.
- Damages to Hudson River sediment.
- Settlement of $875,000.

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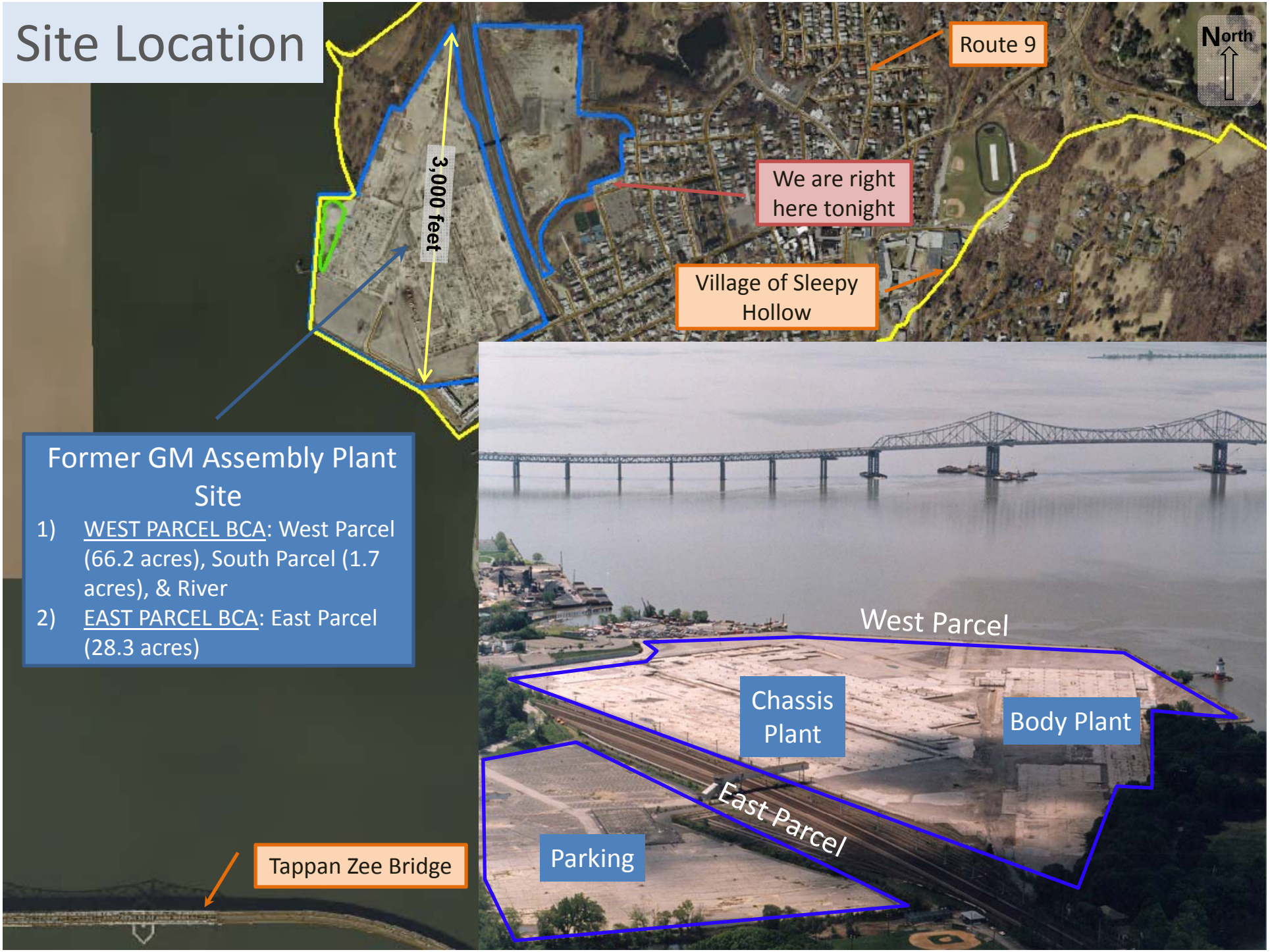
AGENDA ITEM #2

Site Location and Development History

March 22, 2012

NYS Department of Environmental Conservation

Site Location

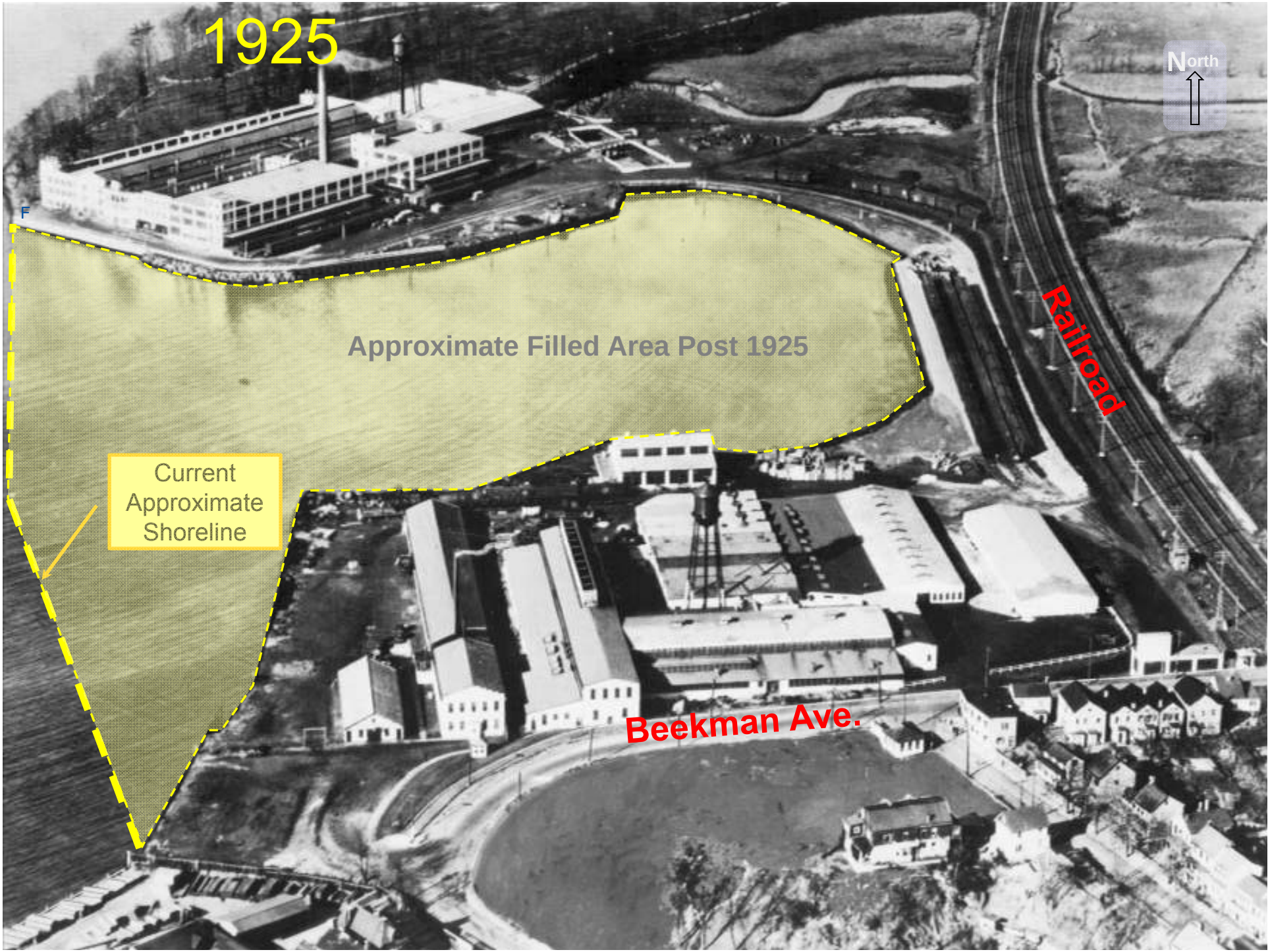


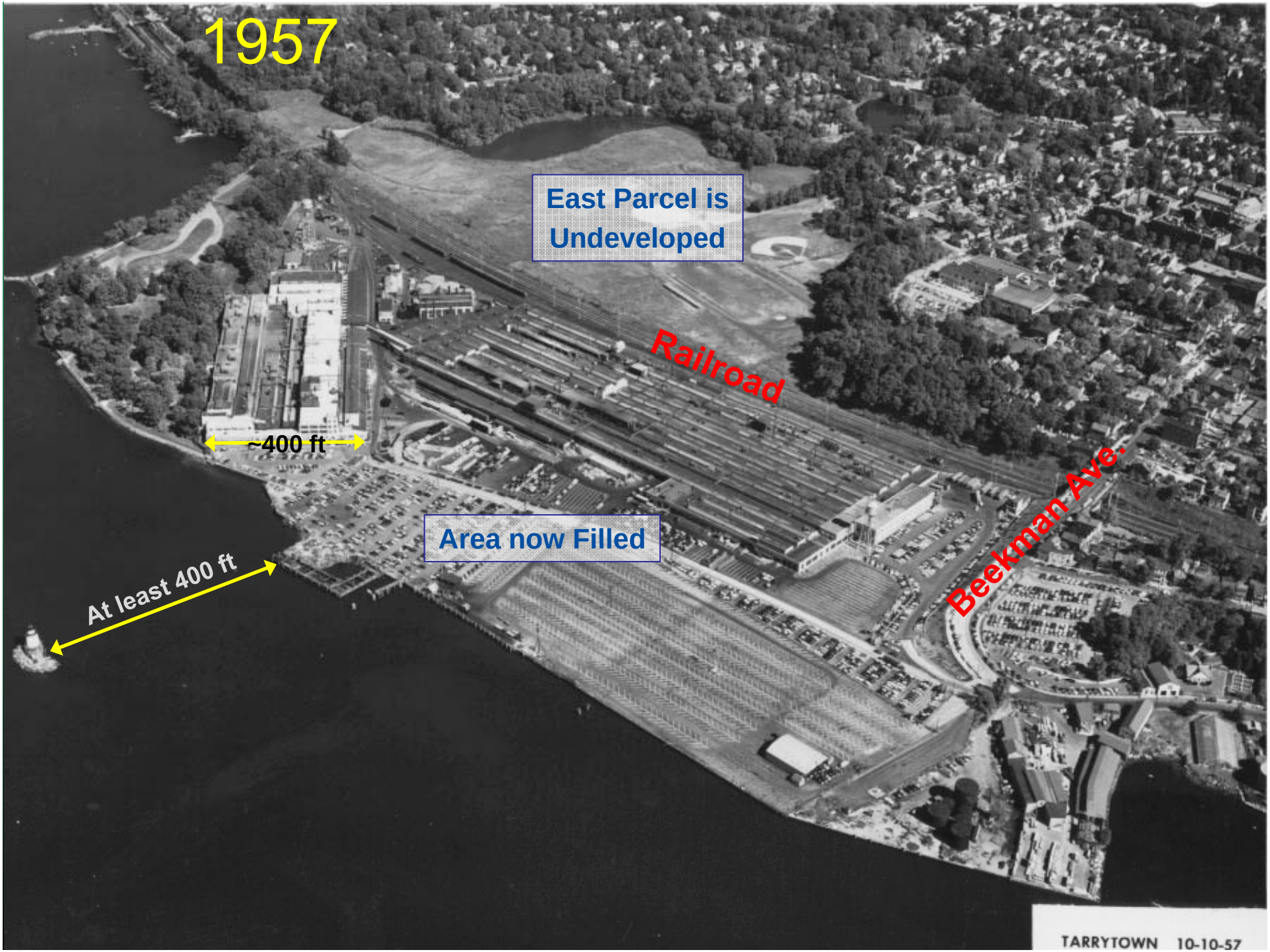
Former GM Assembly Plant Site

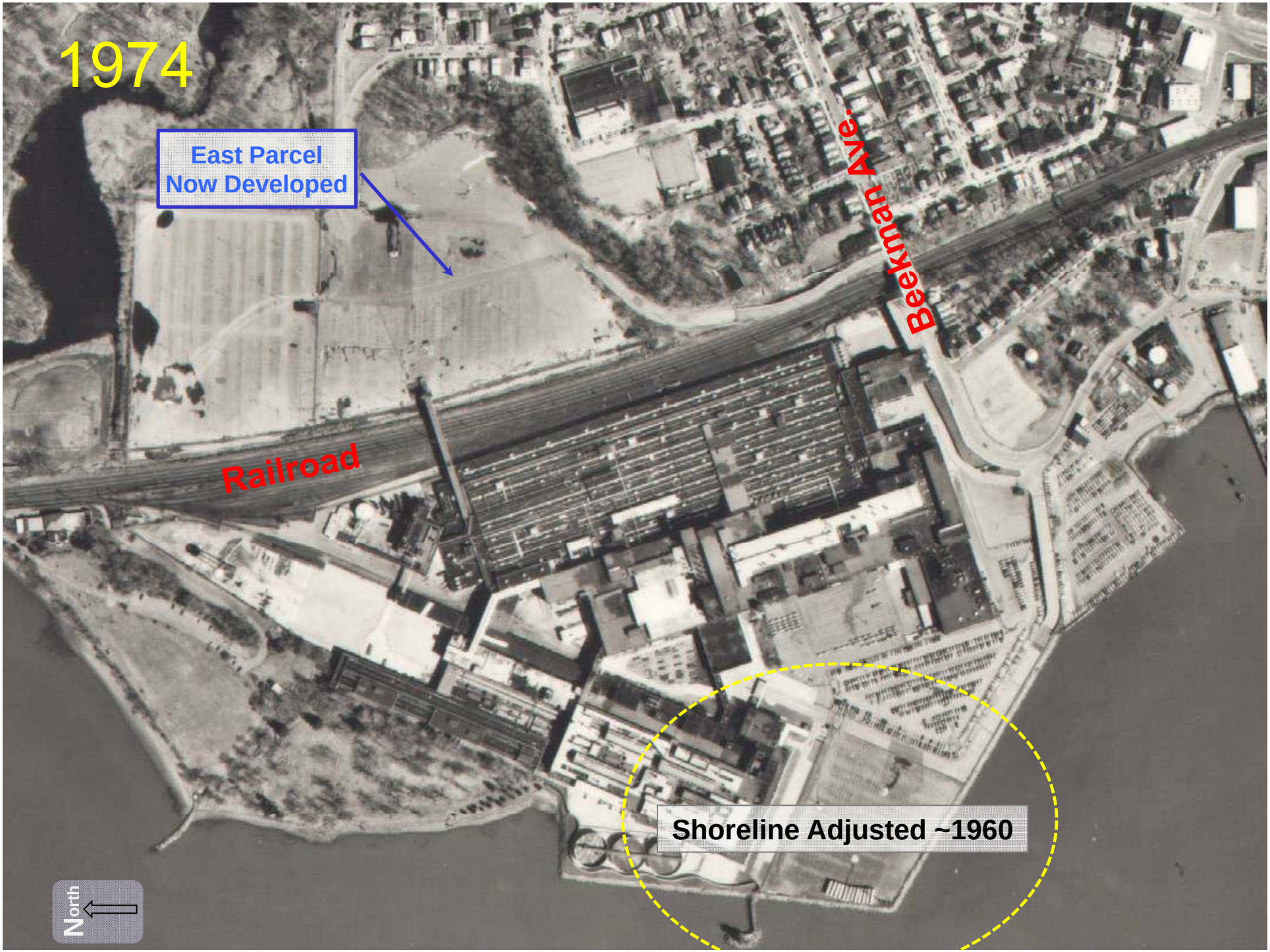
1) WEST PARCEL BCA: West Parcel (66.2 acres), South Parcel (1.7 acres), & River
2) EAST PARCEL BCA: East Parcel (28.3 acres)

SITE HISTORY

- 1800 – Early use was for agricultural purposes (Beekman Farm)
- Early 1800s – Industrial use began
- 1914 – GM automotive assembly operations began
- 1996 – GM Assembly Plant closes


1925
North
Approximate Filled Area Post 1925
Current Approximate Shoreline
Railroad
Beekman Ave.


1957
East Parcel is Undeveloped
Railroad
~400 ft
Area now Filled
At least 400 ft
Beekman Ave.
TARRYTOWN 10-10-57


1974
East Parcel
Now Developed
Railroad
Beekman Ave.
Shoreline Adjusted ~1960
North


1988

2000 – Current Site Conditions

DRAFT Redevelopment Concept Plan

- **Residential Units**
- **Retail Space**
- **Office Space**
- **Hotel**
- **Open Space**

SOURCE: Jones Lang LaSalle / GM Sleepy Hollow, NY Website

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AGENDA ITEM #3

Recap of Completed Site Activities

March 22, 2012

NYS Department of Environmental Conservation

Remedial Actions - Former General Motors Assembly Plant Site, Sleepy Hollow

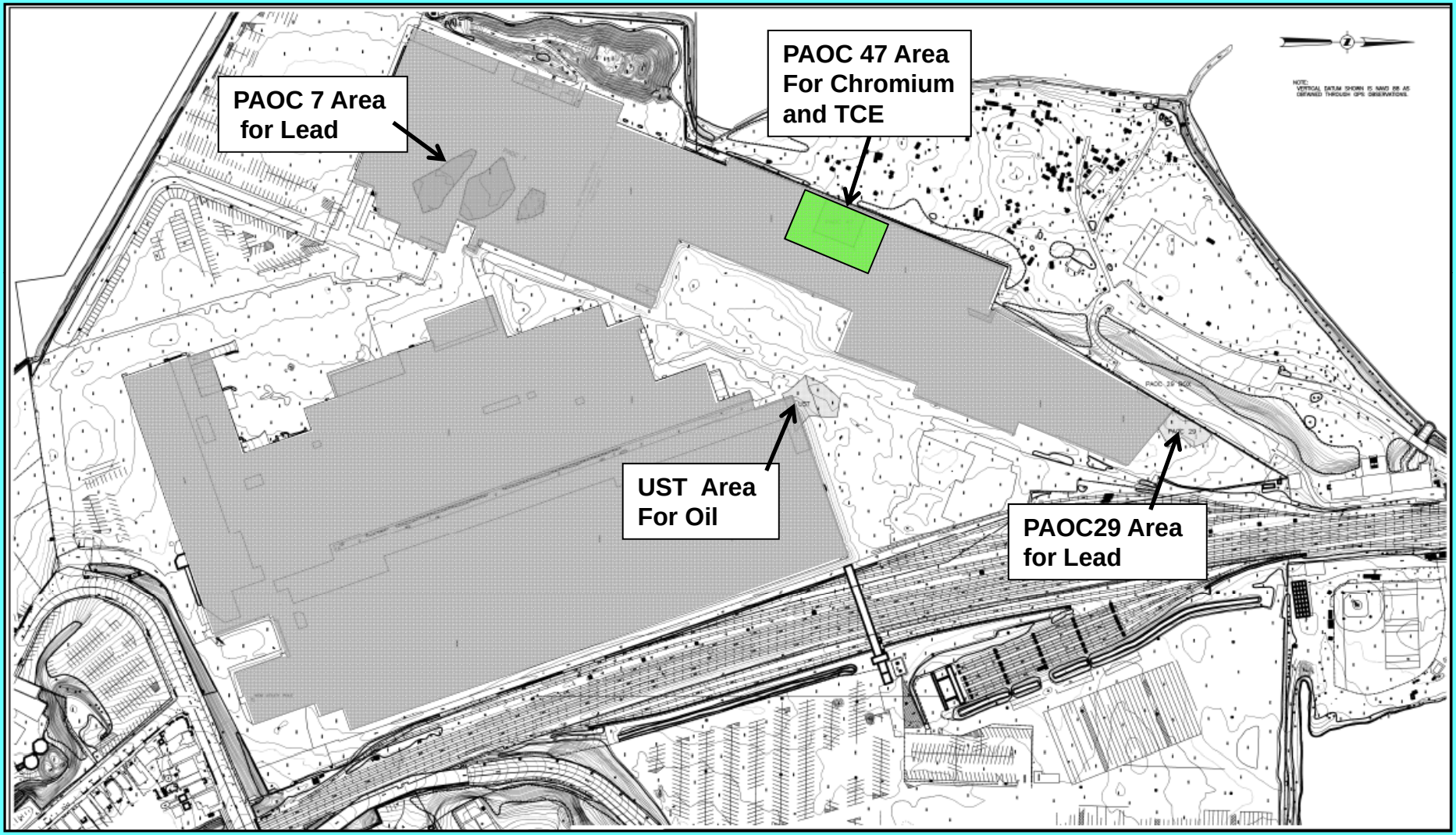
ARCADIS

Remedial Investigation
Former GM Site

Conclusions & Recommendations

- Site Characterization (1997-2006) meets BCP requirements
- Site-wide use-based remedial action recommended (2007)
  - Engineering controls
  - Institutional controls
- Location-specific remediation recommended (2007):
  - PAOC 7 & 29 – Source remediation for lead
  - PAOC 47 – Source remediation for chromium and TCE
  - UST Area – Source remediation for residual petroleum
  - PAOC 37 & 43 – Natural attenuation (monitoring only)
- All remedies approved in IRM Decision Document – July 2007

Location of Completed IRMs



ARCADIS

Removal of Lead Contaminated Soil from PAOC 7

3,700 cy of contaminated fill removed (2007)

ARCADIS

Removal of Lead Contaminated Soil from PAOC 29

1,100 cy of contaminated fill removed (2007)

ARCADIS

Removal of Chromium and TCE Contaminated Soil from PAOC 47

3,700 cy of contaminated soil removed (2007)

ARCADIS

Removal of Tanks & Petroleum Contaminated Soil from UST Area

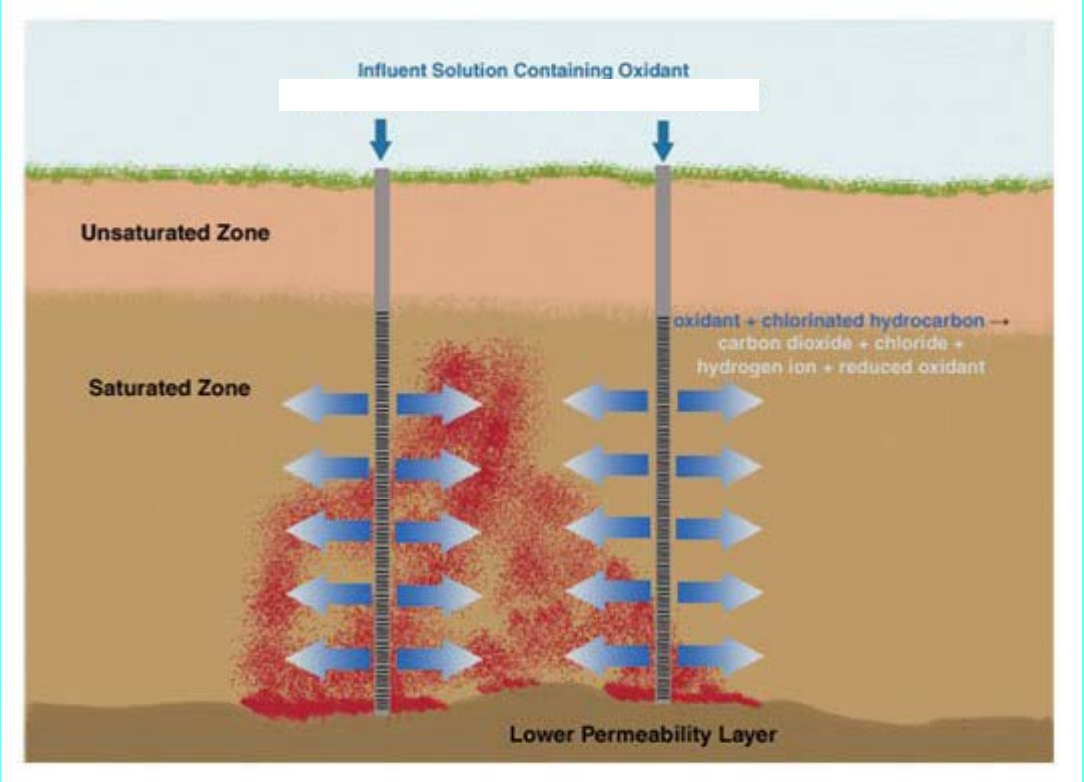
6,400 cy of contaminated fill and 3 fuel oil tanks removed (2007)

ARCADIS

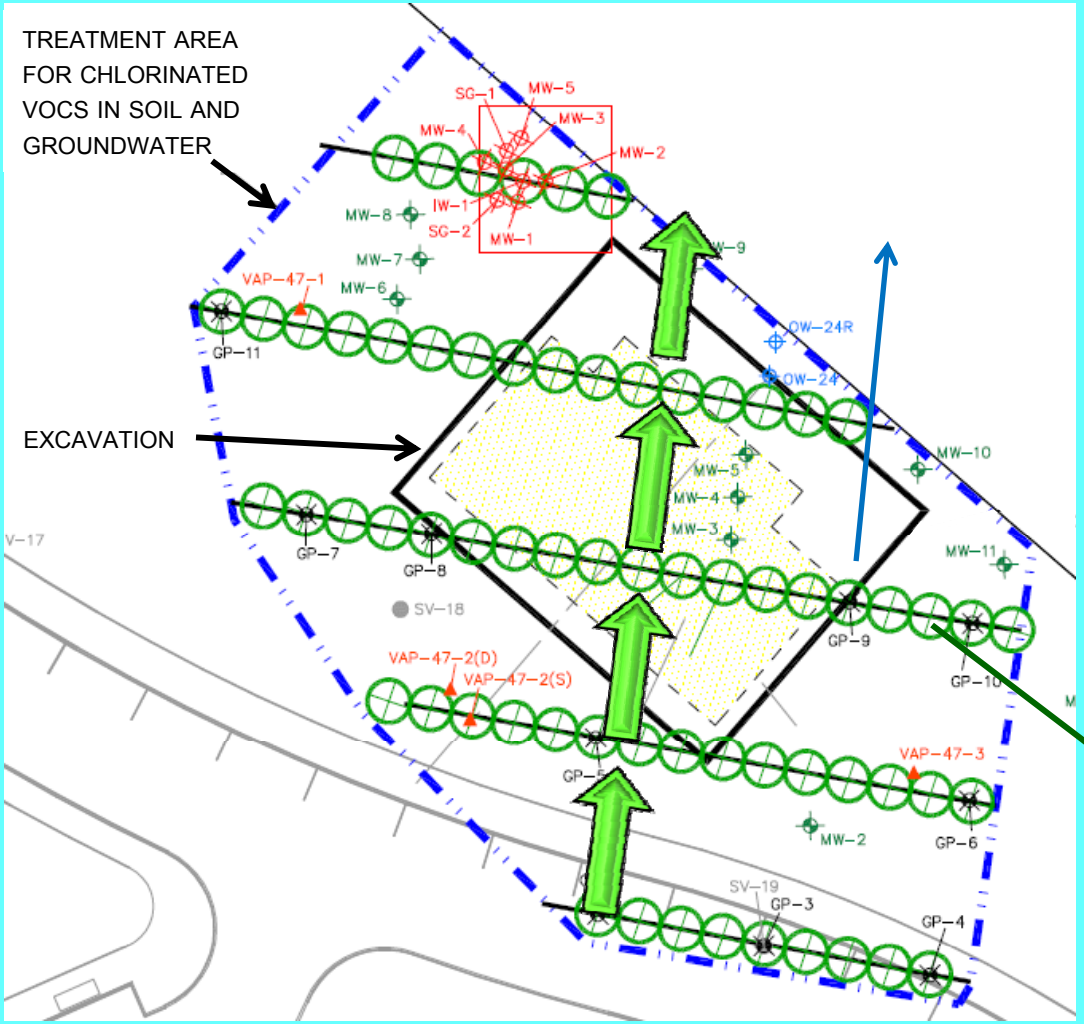
In-situ Chemical Oxidation (ISCO) 2008

- Addition of oxidant chemicals into the subsurface to facilitate the conversion of toxic compounds to carbon dioxide and water or to less toxic biodegradable intermediates

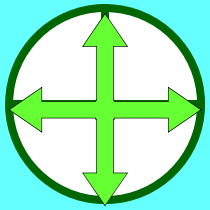
- Inject enough oxidant to overcome the natural oxidant demand of the aquifer & the contaminant oxidant demand



Groundwater Treatment (May 2008)

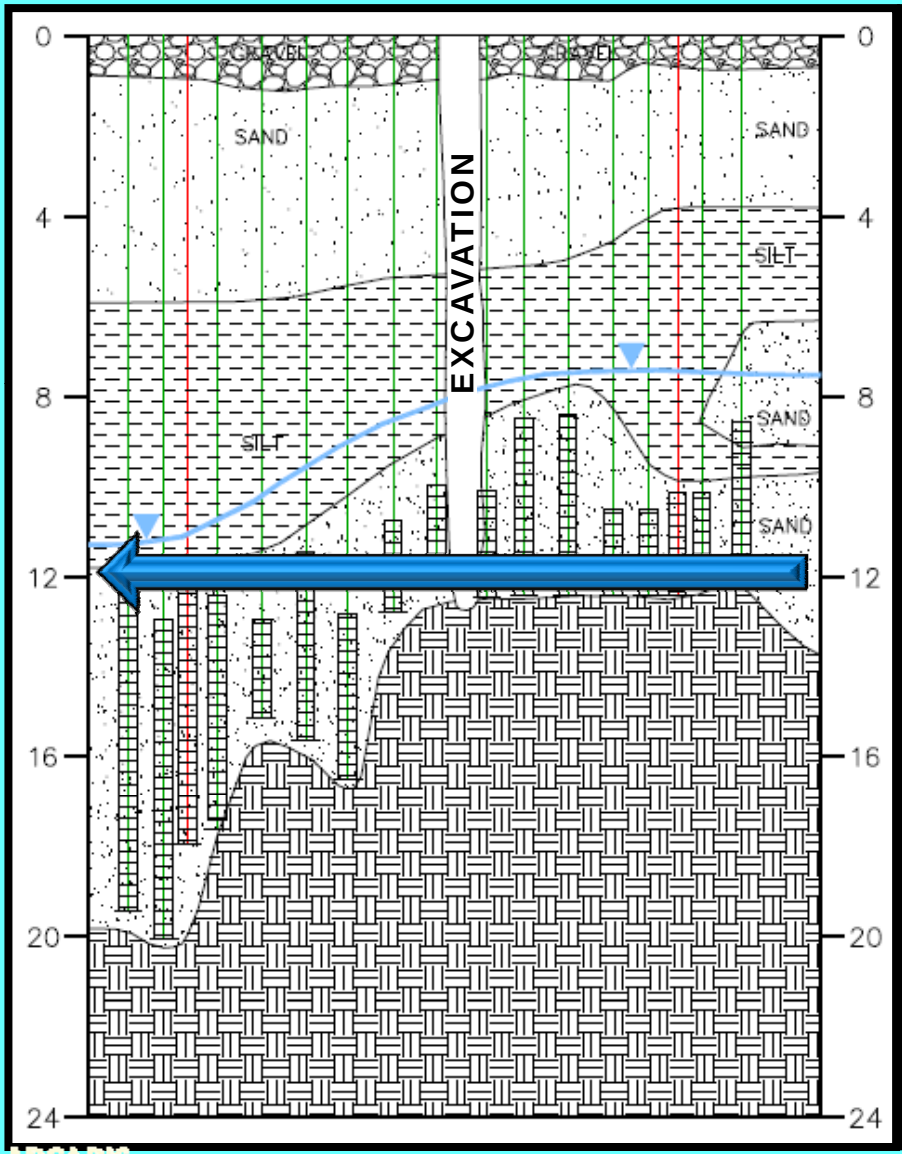


- Installed permanent wells in transects
- Relied on advective transport for distribution of oxidant
- Oriented transects perpendicular to groundwater flow
- **Spaced 10 feet on center with 5 foot radius of influence determined from pilot injection test**



ARCADIS

Depth of Treatment



ARCADIS

Post-Injection Monitoring

- Transport of injected oxidant for 6 weeks (May-June 2007)
- Groundwater quality for 3 years (2007- 2011)

Conclusions

- Groundwater remediation for TCE meets remedial goals
- No further action required for this source area
- Site-wide groundwater monitoring will be included in future Site Management Plan

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AGENDA ITEM #4

Hudson River Sediment Investigation

March 22, 2012

NYS Department of Environmental Conservation

Overview of Sediment Remedial Investigation Scope of Work and Findings

ARCADIS

Investigation History

1997 – Voluntary Work following Plant Closing

- Discharge from last industrial outfall (OF-1) ended in 1971
- 14 Historic wastewater metals identified for analysis
- Sampled upper 2-inchs at 106 locations
- Found widespread low levels of several metals throughout the area

2004 – Work Plan Approved under VCP

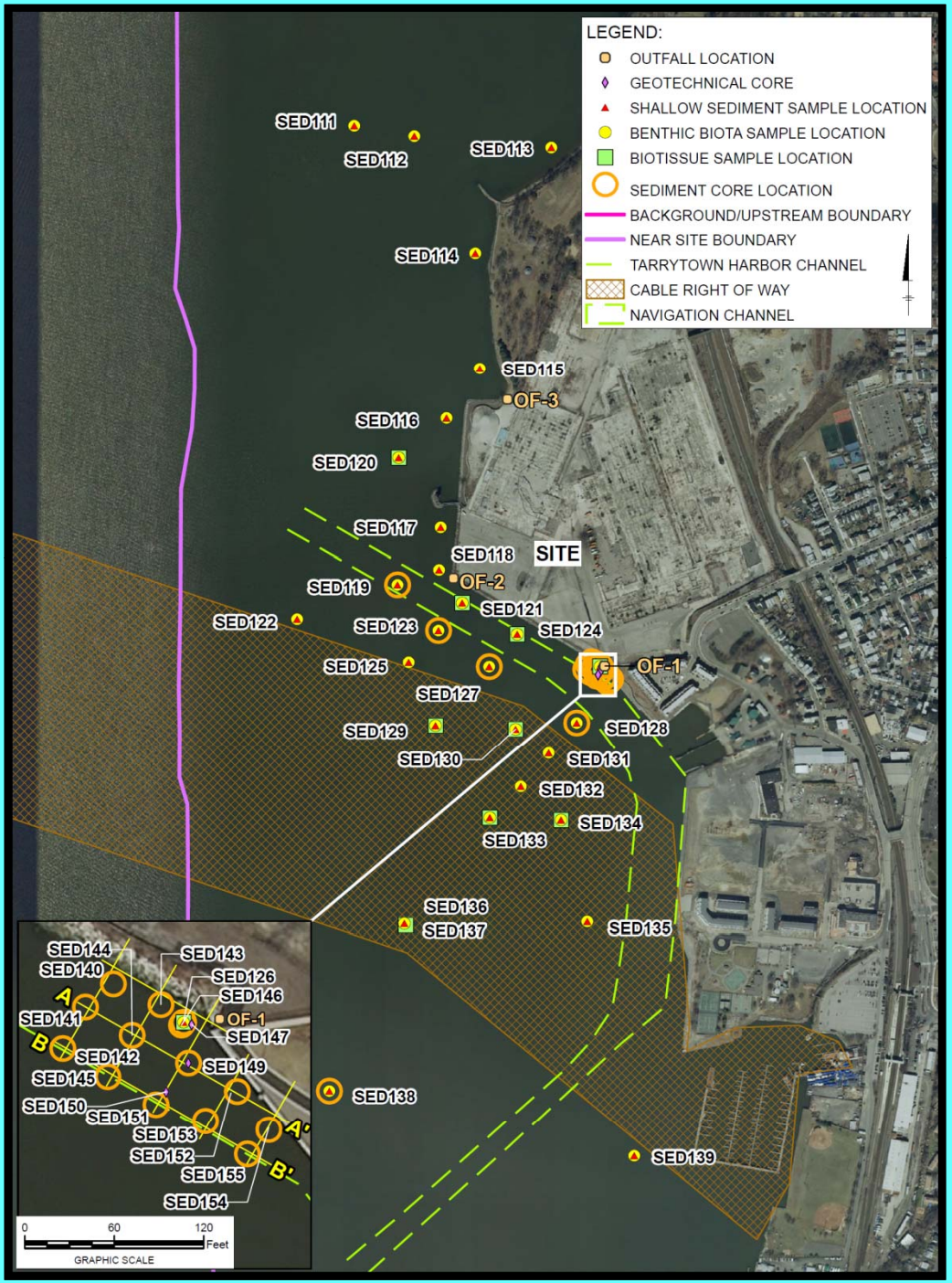
- Sampled 45 locations and focused on outfall areas
- Sampled at 2, 6 &12 inches for 11 metals, PCBs and PAHs
- Compared data to freshwater sediment criteria
- Eliminated PCBs and PAHs, reduced list of concern to 5 metals

2006 – Work Plan Approved under BCP

- Designed to evaluate impact of metals to benthic organisms
- Sampled sediment (6 inches) and biota at up to 56 locations
- Deep sampling assessment of OF-1 and other selected areas
- Findings(1997-2006) evaluated in Sediment RI Report

2006
Sediment Investigation
Near-Site Area

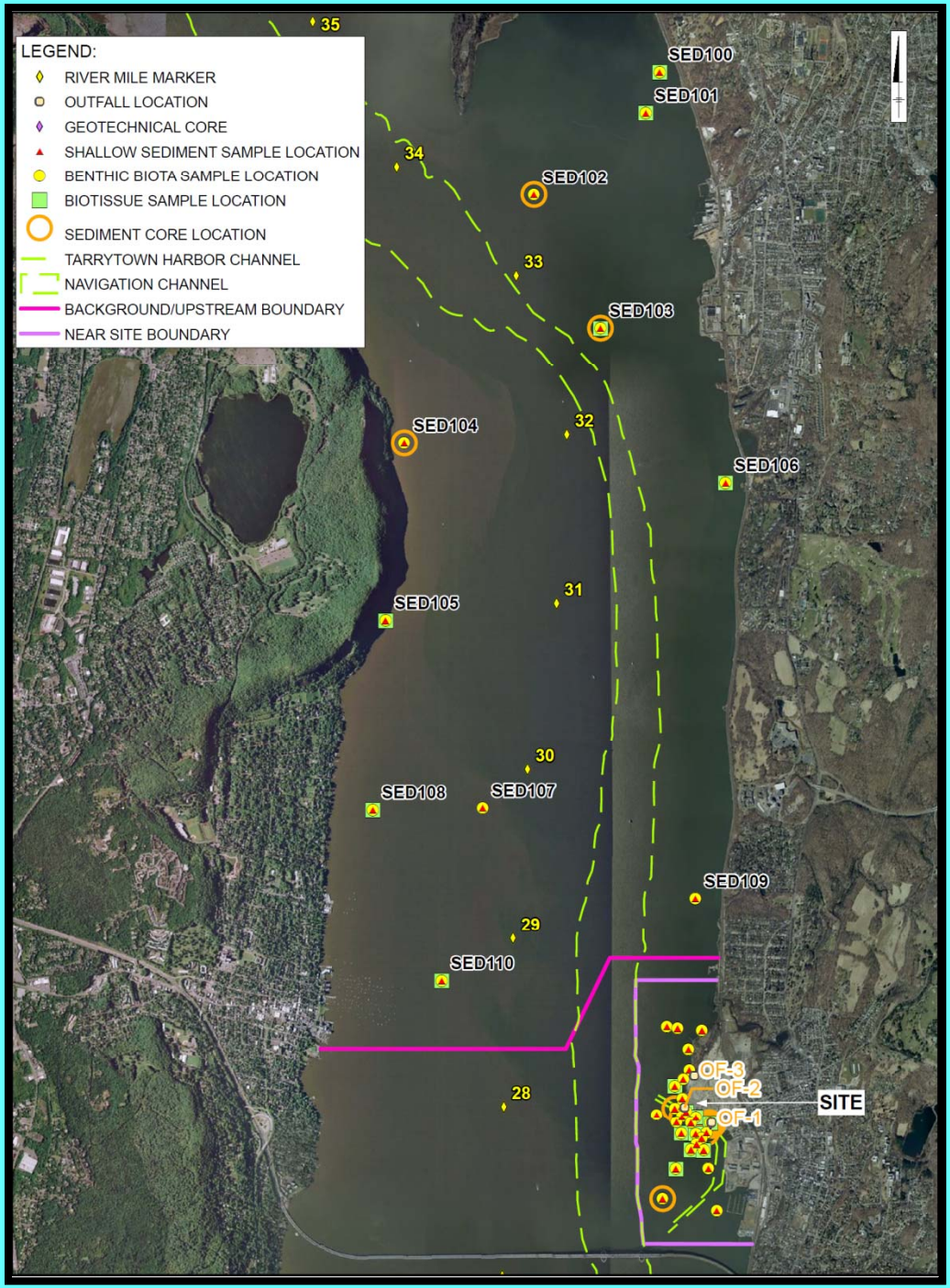
- 29 Stations from Kingsland Point Park to middle of Tarrytown Harbor
- Sampling as deep as 10 feet at select locations
- Deep sampling grid established at historic industrial wastewater Outfall (OF-1)



ARCADIS

2006 Sediment Investigation Background Area

- 11 background stations upstream to Croton Point in 2006
- Station selection based on data from 1997, 2004, and published regional 2000-2001 study



ARCADIS

2006 Sediment Investigation Activities

- Sediment Chemistry: 5 metals and natural immobilizing agents
- Sediment Pore Water: 5 metals in water extracted from sediments
- Toxicity Testing: 28-day sediment bioassays in the laboratory
- Tissue Sampling: Levels of metals in clams
- Benthic Community: Species identification and count
- Subsurface Sediment Chemistry: 1-foot sampling to 10 feet
- Sediment Geochronology: Deposition rates
- Sediment Physical Characteristics: Grain size, moisture, etc…

Sediment Sampling

ARCADIS

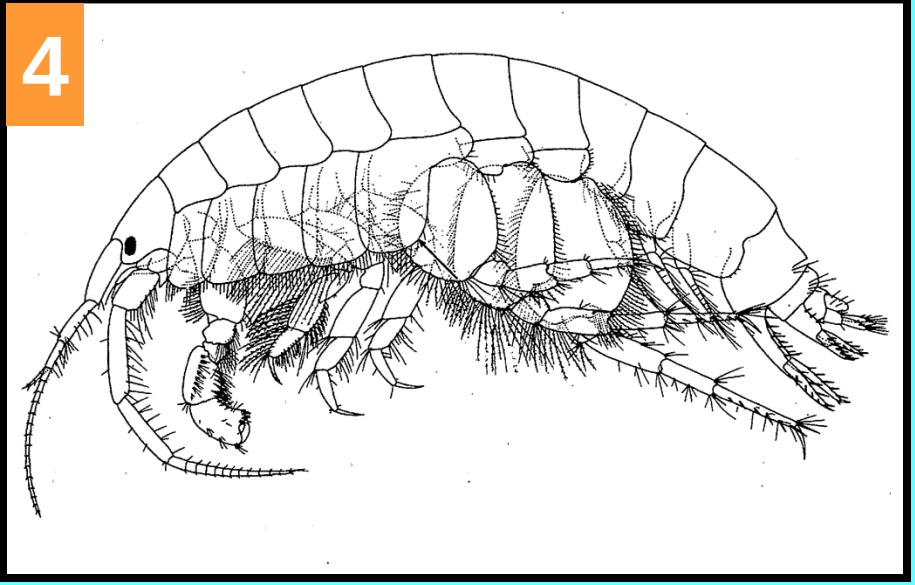
Biological Sampling

1

2

3

4



2006 Sediment Investigation
Question #1

- Are metals in Near-Site sediments impacting benthic organisms compared to background?
- Question evaluated by weight of evidence:
  - Toxicity predictors – immobilizing agents, metals in pore water
  - Toxicity indicators – bioassay (growth, reproduction, and survival) on collected sediments
  - Pathway confirmation – accumulation of metals in clam tissue
  - Benthic population differences – direct measurement
  - Relationship to metals – predicted or measured effects compared to concentration of metals in sediments

2006 Sediment Investigation
Answers to Question #1

Weight of evidence results compared to background:

- ☑ Toxicity is not predicted based on quantity of natural immobilizing indicators. Uncertainty at OF-1
- ☑ All metals, except copper, met water quality criteria in pore water, predicting no toxicity
- ☑ Toxicity indicators - near site (including OF-1) and background sediments yielded similar results, despite differences in sediment metals– indicating no toxicity from Site metals
- ☑ Pathway confirmation – levels in near-site tissues similar to background
- ☑ Benthic communities – highly variable, not related to metals, positive characteristics similar to or better than background

2006 Sediment Investigation
Question #1 - Conclusions

Are metals in Near-Site sediments impacting benthic organisms compared to background?

- Multiple lines of evidence indicate that elevated levels of metals in Near-Site sediments are not bioavailable or toxic to benthic organisms
- Benthic communities are not impaired relative to background

2006 Sediment Investigation
Question #2

Are there important differences in metal concentrations with depth?

- Question evaluated by sampling select areas to 10 feet:
  - Geochronology – measured radioisotopes at various depth intervals to estimate deposition rates and age of recent (post-1950s) sediments
  - Vertical concentration profiles – measured 5 metals in 1-foot depth intervals to determine general changes in concentration beneath the sediment surface, Near-Site and background areas
  - OF-1 Concentration Profiles – measured vertical and horizontal distribution of metals in 13 locations adjacent to OF-1 to characterize the extent of the highest metal concentrations

2006 Sediment Investigation
Answers to Question #2

Vertical evaluation indicated:

- ☑ Near-Site sediment deposition rates are variable but similar to background (less than 0.2 in/yr), except for the OF-1 area where deposition was greater

- ☑ In the OF-1 area, metal concentrations are variable, but typically peak between 3 to 7 feet below the sediment surface

- ☑ Within the rest of the study area, the vertical profiles are typically not as variable, with no continuation of very high concentrations further offshore of the OF-1 area

2006 Sediment Investigation
Question #2 - Conclusions

Are there important differences in metal concentrations with depth?

- The metals of potential concern in the Near-Site area :
  - Are most concentrated in a small area between OF-1 and the Tarrytown Harbor navigation channel
  - High concentrations extend deep into the OF-1 area sediments

Summary

- The Remedial Investigation concluded that the Near-Site Area does not exhibit biological community impact relative to background

- Despite the conclusions of the Remedial Investigation, NYSDEC has required removal of high metal concentration sediments at OF-1

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AGENDA ITEM #5

Natural Resources Damages

March 22, 2012

THE GOAL OF NRD:
Restoration of Injured Resources

Before

After

Other Goals of NRD

- To “make the public whole” following release of hazardous substances or oil
- To *restore, rehabilitate, replace, and acquire the equivalent* of the injured resources and their services
- NRD is compensatory , not punitive
  - It seeks money damages or other compensation

Legal Framework

- **Legal Bases**

  Federal: CERCLA, OPA, CWA

  State: Navigation Law, Common Law
- **NRD Claimants/Plaintiffs are "Trustees" (Federal, State, & Tribal)**
- **NRD Defendants are "Responsible Parties," who are liable for damages because they caused:**

  Injury to, destruction of, or loss of natural resources *or the services provided by those resources* (biological services or human uses)

  – **Releases: Discharge of Oil, Release of Hazardous Substance, release of pollutant**

Former GM Assembly Plant Site

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AGENDA ITEM #6

Proposed Cleanup Plan

March 22, 2012

NYS Department of Environmental Conservation

OVERALL REMEDIAL PROCESS

1) Remedial Investigation – collect data, understand nature & extent of contamination

2) Alternatives Analysis – evaluate cleanup options

3) Proposed Decision Document (PDD) – presents Department's proposed option

Now

4) Final Decision Document – finalizes remedy

End of March

CLEANUP GOALS

The remediation goals are to eliminate or reduce to the extent practicable:

1) Exposures of persons at or around the site to contaminants in soil, groundwater, and sediment;

2) The release of contaminants from the site into groundwater that may exceed groundwater standards; and

3) The release of contaminants from soil or groundwater beneath basements into indoor air through soil vapor intrusion.

EVALUATION CRITERIA

1. **Protection of Human Health & the Environment**
2. **Compliance with NYS Standards, Criteria, and Guidance**

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3. Short-Term Effectiveness
4. Long-Term Effectiveness and Permanence
5. Reduction of Toxicity, Mobility or Volume
6. Implementability
7. Cost Effectiveness
8. Land Use

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9. Community Acceptance

LAND-BASED AAR
Evaluated 2 Alternatives:

Alternative 1: Restoration to Pre-Disposal Conditions

- Excavate ~2.7x10^6 yd^3
- Disposal of ~5.5X10^6 tons
- Excavation Dewatering
- Backfill
- Cost: $777,000,000

Alternative 2: IC/EC (Track 4)

- Relies on IRM actions
- Engineering Controls (ECs): Final Barrier Cap, VI Mitigation
- Institutional Controls (ICs): Env. Easement for Restricted Residential, Site Management
- Cost: $6,300,000

SEDIMENT AAR
Evaluated 2 Alternatives:

Alternative 1: 77.55 Acres

- Metals > Sediment Screening Criteria defined by DEC F&W
- 840,000 yd^3 of sediment
- 14+ year remedial program
- $450 million

Alternative 2: 0.8 Acres at OF-1

- Metals >> Screening Criteria (Source Area)
- 4,400 yd^3 of sediment
- ~1 year remedial program
- $3.7 million

ALTERNATIVES CONSIDERED

LAND-BASED

Alternative 1: Soil Excavation to Achieve Unrestricted Use

- Excavate ~2.7x10^6 yd^3 of contaminated material
- Off-site disposal of ~5.5X10^6 tons
- Excavation Dewatering
- Cost: $777,000,000

Alternative 2: IC/ECs

- Relies on IRM remedial actions
- ECs: Final Barrier Cap
- VI Mitigation Measures
- ICs: Env. Easement for Restricted Residential, SMP
- Cost: $6,300,000

SEDIMENT-BASED

Alternative 1: Off-Shore Dredging Area

- 77.55 Acre Dredge Area to 7 ft
- 840,000 yd^3
- Cost: $450,000,000

Alternative 2: Near Shore Dredging Area

- 0.8 Acre Dredge Area
- 4,400 yd^3
- Cost: $3,700,000

NEXT STEPS

Activity	Estimated Time
1) Public Comment Period	Feb. 15 – Mar. 30, 2012
2) Distribute Final Decision Document describing accepted remedy	April 2012
3) Remedy Implementation	6 months to 1 year

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AGENDA ITEM #7

Public Health Discussion

March 22, 2012

Former GM Assembly Plant

Proposed Decision Document

New York State Department of Health

March 22, 2012

Contact Information

Fay S. Navratil

Public Health Specialist

New York State Department of Health

Bureau of Environmental Exposure Investigation

Phone: (518) 402 - 7880

Email: fsn01@health.state.ny.us

NYDOH Role

- NYSDOH assists NYSDEC during the investigation and cleanup of sites such as the Former GM site.
- Ensure that all potential exposure pathways to site-related contaminants have been evaluated during the investigation and addressed in the proposed remedial action.
- Make sure the community is protected during all remedial work.

What is Exposure?

- The physical contact with a chemical or substance through:

  - Inhalation (breathing)
  - Ingestion (eating/drinking)
  - Direct Contact (touching)

- One or more of these physical contacts must occur before a chemical has the potential to cause a health problem.

If there is…..

- No physical contact – there is no exposure.
- No exposure – then no health concerns.
- Note: Exposure to a substance does not necessarily mean that adverse health effects will occur.

Investigation Activities

Potential exposure pathways that were evaluated at the GM site:

- Breathing contaminated air
- Ingestion of contaminated groundwater, soil or sediment
- Direct contact with contaminated soil, sediment or groundwater

Inhalation of Contaminated Air

- In it's current state, inhalation of contaminated air is not expected.
- The proposed plan will address the potential for soil vapor intrusion to occur in future buildings.
- Any ground intrusive work conducted on the site will require the implementation of a Community Air Monitoring Plan (CAMP).

Ingestion of Contaminants

Is the community served by public water? → YES, so you are not drinking contaminated water.

Can the public ingest contaminated soil or sediment? → NO, most of the contaminated soil has been removed and/or is not accessible. The proposed plan will address contaminated sediments.

Direct Contact with Contaminants

Can the public come in direct contact with contaminated soil, sediment, or groundwater?

Direct contact is not likely to occur based on where the contamination is located. The proposed remedy will address contaminated sediments and future development of the property.

Future Use – Protection of Public Health

- Future construction of buildings will incorporate a vapor/methane mitigation system in their design.
- A site cover will be required to allow for restricted residential use of the site. The cover will consist either of buildings, pavement, sidewalks, or a minimum of two feet of clean fill.
- Contaminated sediments will be removed.
- Institutional controls will provide additional measures of protection for the community.

Overall Message

- There are no current exposures.
- The proposed remedy addresses the potential for future exposure by the general public and construction workers.
- The proposed remedy is protective of public health.

Former GM Assembly Plant Site

C360070

AGENDA ITEM #8

Questions and Comments

March 22, 2012

Comments/Questions

Jason Pelton
NYSDEC
625 Broadway
Albany, New York 12233-7017
Phone: 1-888-459-8667
Email: jmpelton@gw.dec.state.ny.us

Website:

http://www.dec.ny.gov/chemical/8676.html