

**Parker Street Waste Site
Public Information Plan (PIP) Meeting
Milestone Reports
for the
Acquired Residential Properties
Nemasket Street Lots
Wetland to the West of Keith Middle School**

September 21, 2011

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Agenda

- ❑ Phase II Comprehensive Site Assessments

- *Wetland to West of Keith Middle School*

- *Acquired Residential Properties and Nemasket Street Lots*

- ❑ Phase III – Identification, Evaluation, and Selection of Comprehensive Remedial Action Alternatives

- *Acquired Residential Properties and Nemasket Street Lots*

- ❑ Update for New Bedford High School (NBHS)

- *Interior polychlorinated biphenyls*

- *NBHS Soil Remediation and New Developments*

- *NBHS Dioxin Soil Sampling*

- *NBHS Immediate Response Action (IRA) for Volatile Organic Compounds (VOCs) in groundwater*

- ❑ Tentative Meeting Schedule

- ❑ General Q&A

- *Recent questions posed to the Department of Environmental Stewardship*

Phase II Comprehensive Site Assessment - Features

□ What is a Phase II Comprehensive Site Assessment?

- *Environmental investigation that collects, develops and evaluates sufficient information to support conclusions and opinions regarding:*
 - *The source, nature, extent, and potential impacts of releases of oil and/or hazardous material;*
 - *The risk of harm posed by the disposal site to health, safety, public welfare and the environment; and*
 - *The need to conduct remedial actions at the disposal site.*
- *The Phase II Report evaluates and discusses the findings and conclusions of the Phase II Comprehensive Site Assessment, and where applicable, provides the basis for identifying/evaluating remedies.*

Phase II Comprehensive Site Assessment Report

Key features of the Phase II report?

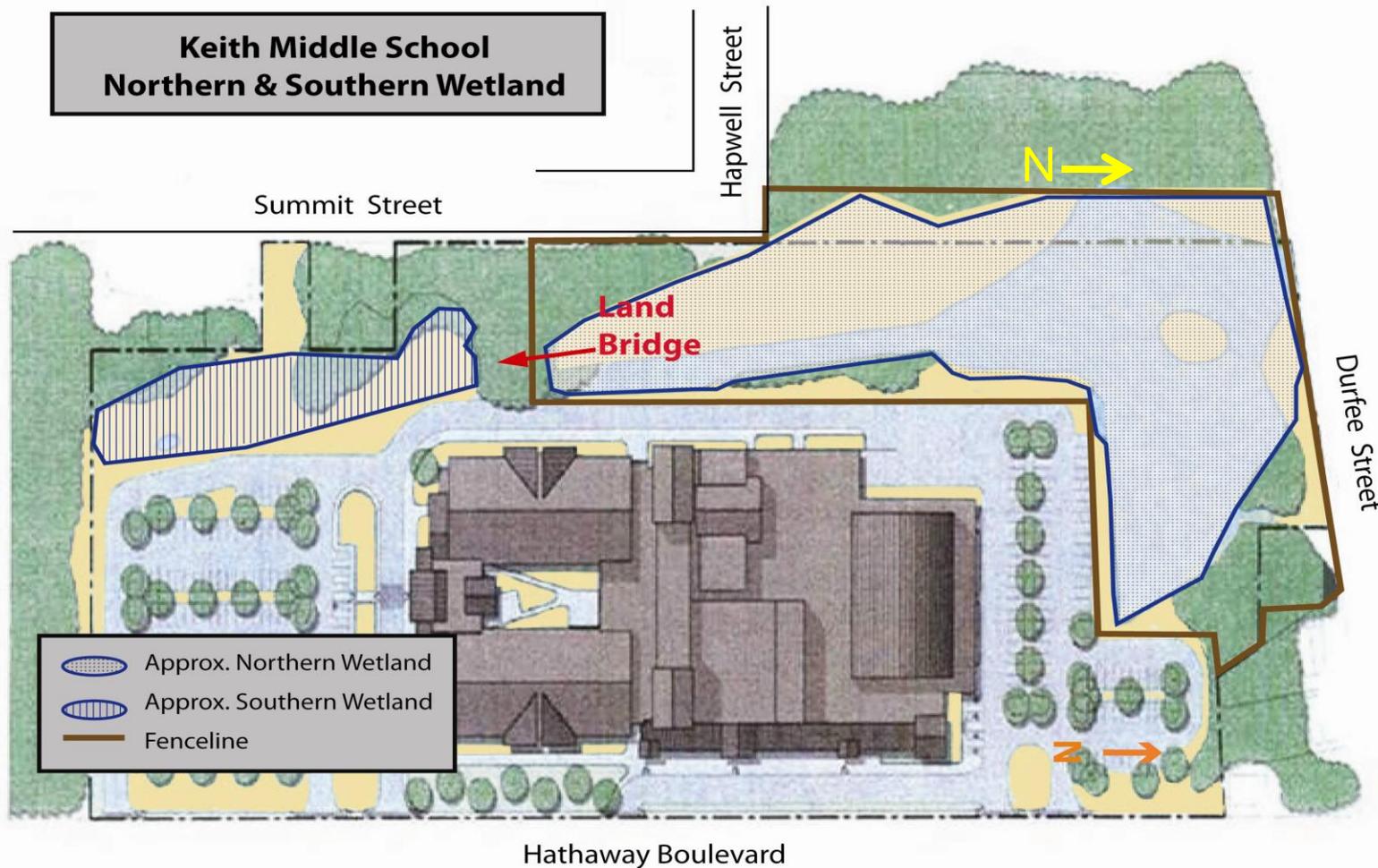
- *Disposal site name, location and locus map*
- *Disposal site map(s)*
- *Disposal site history*
- *Site hydrogeological characteristics*
- *Environmental fate and transport*
- *Nature and extent of contamination*
- *Risk characterization*
- *Conclusions*
- *Data tables, figures, and appendices of supporting materials*

Wetland to the West of Keith Middle School

Phase II Comprehensive Site Assessment Report

- **Presently available for public review.**
- **Comments due to City by October 11, 2011 (Tuesday)**

Wetland Phase II Study Area



Site Description

❑ *The Site*

- *The approximately 5 acre wetland to the west of the Keith Middle School*

❑ *Description*

➤ *Geography*

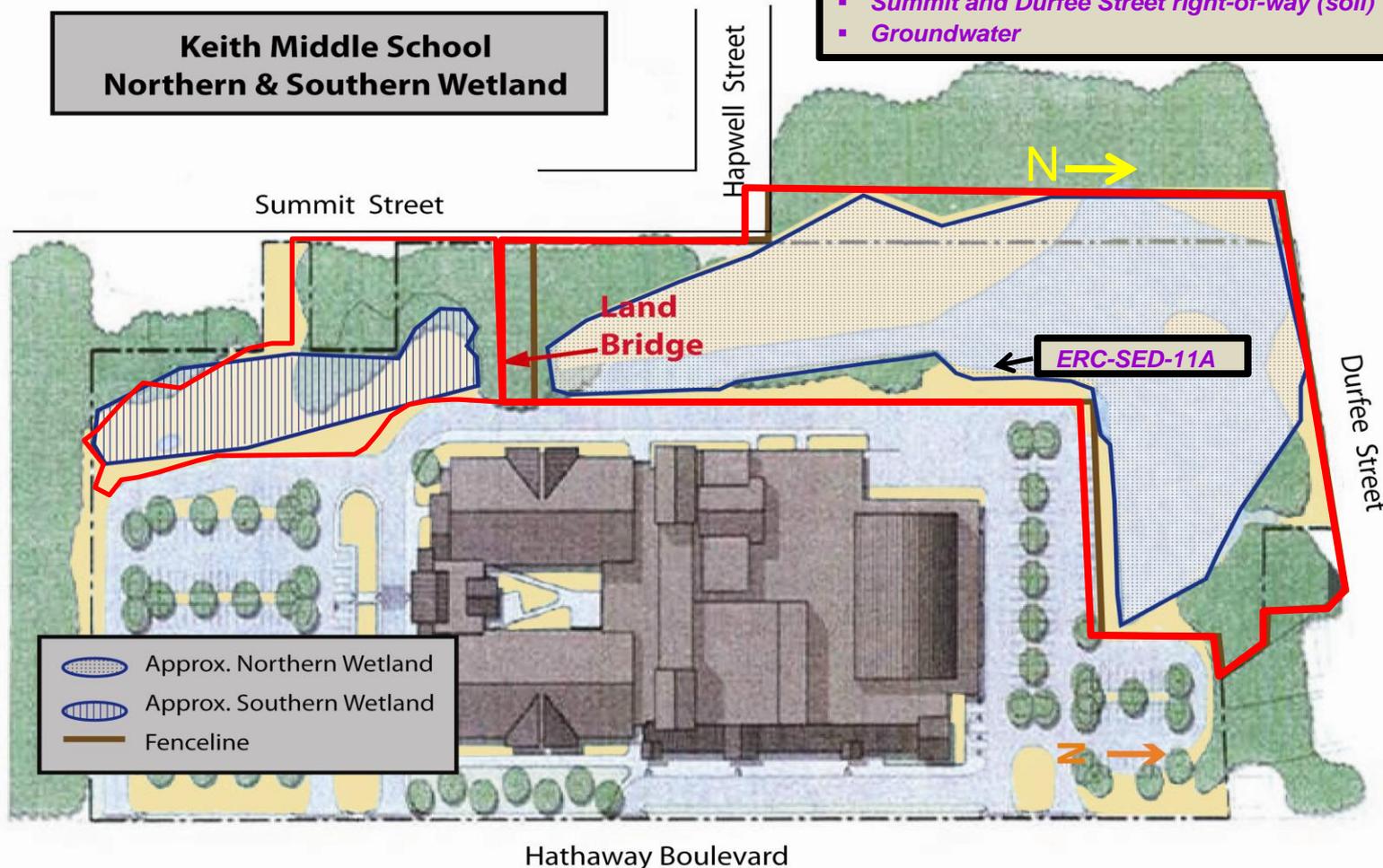
- *Northern end - Distinguished by an aquatic habitat (standing water body)*
- *Southern end - Little or no standing water*
- *Separated by “land bridge” (across from Auburn Street)*

Wetland Human Health Potential Exposure Points

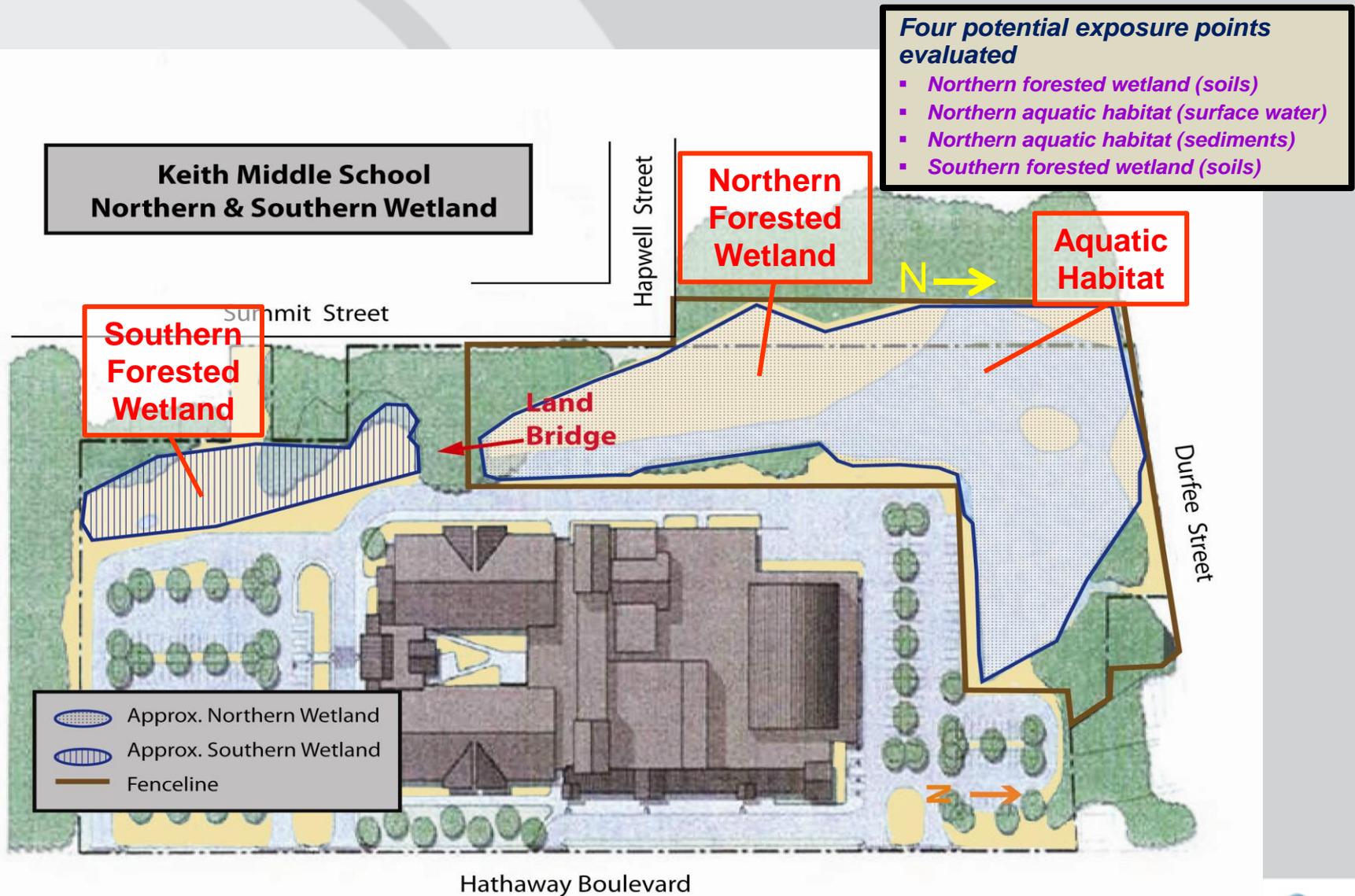
**Keith Middle School
Northern & Southern Wetland**

Five potential exposure points evaluated

- *Unfenced (southern) wetland (soil, sediment)*
- *Fenced (northern) wetland (sediment, soil, surface water)*
- *ERC-SED-11A location (sediment)*
- *Summit and Durfee Street right-of-way (soil)*
- *Groundwater*



Wetland Ecological Potential Exposure Points



Phase II – Summary of Key Elements

Comprehensive data analysis

- *Work conducted by VHB, BETA and TRC*
- *Hundreds of sediment and soil samples from across the wetland*
- *Surface water, groundwater, and biological data collection, too*

Evaluated sediment, soil, groundwater, surface water, and biological data:

Constituent	Sediment	Soil	Groundwater	Surface Water
Polychlorinated biphenyls (PCBs)	X	X	X	X
Metals	X	X	X	X
Pesticides	X	X		
Polyaromatic hydrocarbons (PAHs)	X	X	X	X
Hardness				X
Volatile organic compounds (VOCs)			X	

Biological - *Testing to evaluate impacts to representative invertebrates and fish exposed to wetland surface water*

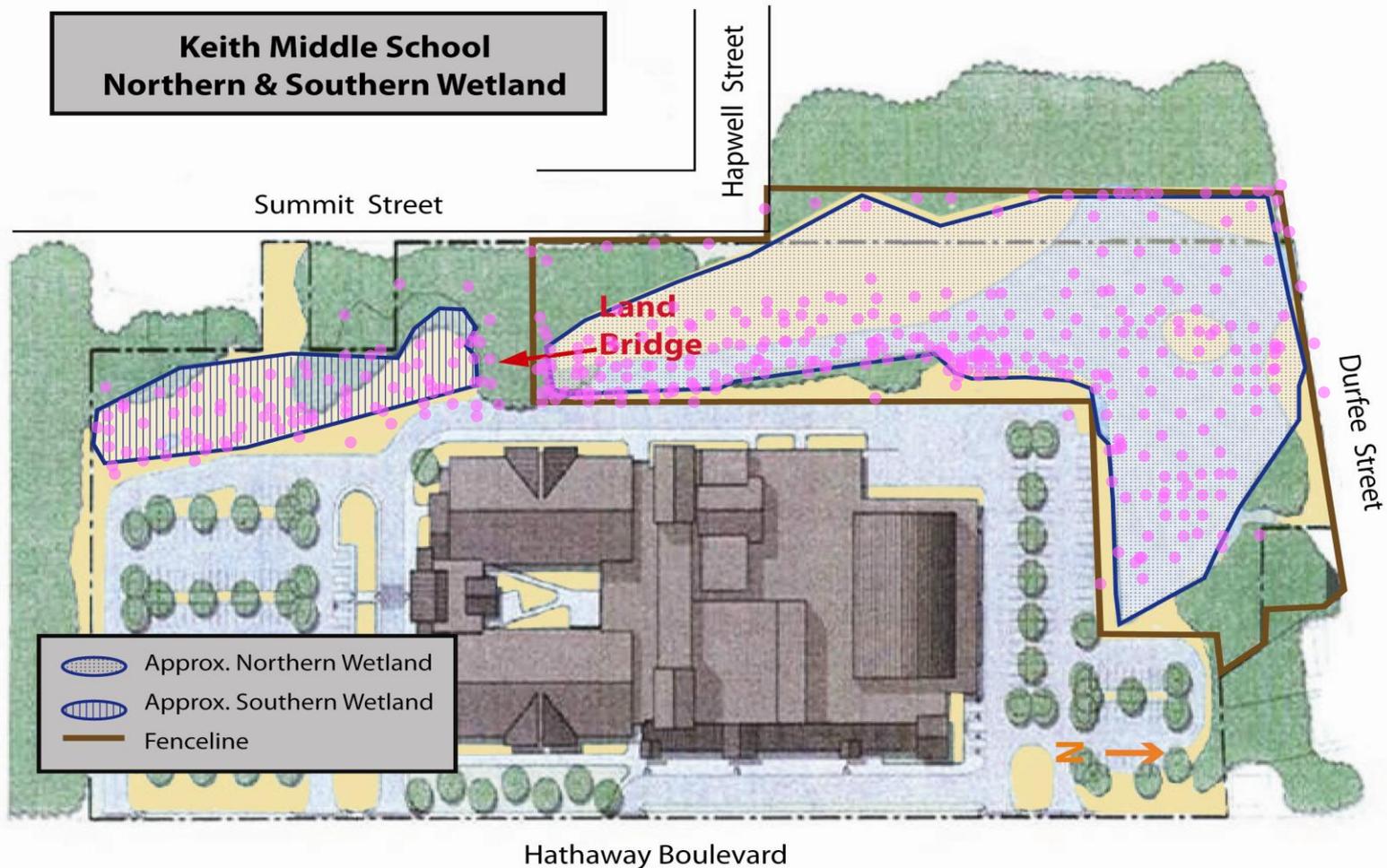
Phase II – Summary of Sampling

□ *Sampling summary –*

- *Over 1,250 sediment and soil samples*
- *24 surface water samples*
- *26 groundwater samples*
- *7 biological samples*

KMS Wetland Soil/Sediment Locations

• = Sampling Location



Phase II – Conclusions

- ❑ *Environmental media evaluated –*
 - *Sediment, soil, groundwater and surface water.*

- ❑ *Potential impacts -*
 - *Polychlorinated biphenyls (PCBs) in sediment.*
 - *Metal (zinc) and polyaromatic hydrocarbons (PAHs) for ecological receptors.*

- ❑ *Other –*
 - *No Imminent Hazard conditions exist at the Site (mitigated by fencing).*
 - *Groundwater results below MassDEP Drinking Water Standards/Guidelines*

Focus on Potential Exposure Points and Scenarios

Wetland West of KMS

Five Potential Exposure Points	Potential Current Scenarios ¹	Potential Future Scenarios ²
<i>Unfenced (southern) wetland (soil, sediment)</i>	Recreational visitor Adult groundskeeper	Recreational visitor Groundskeeper/commercial worker Excavation/utility worker
<i>Fenced (northern) wetland (sediment, soil, surface water)</i>	Adult groundskeeper (No current recreational exposure)	Recreational visitor Groundskeeper/commercial worker Excavation/utility worker
<i>ERC-SED-11A location (sediment)</i>	No current exposure	Recreational visitor
<i>Summit and Durfee Street right-of-way (soil)</i>	Recreational Visitor Adult groundskeeper	Recreational Visitor Groundskeeper/commercial worker Excavation/utility worker
<i>Groundwater</i>	No current exposure	Excavation/utility worker Drinking water exposure scenario

1 – Where soil exposure is involved, 0-3 feet.

2 – Where soil exposure is involved, 0-15 feet.

Human Health Risk Characterization

- ❑ ***Safe for maintenance staff and other officials to work on the land area (mow the grass, etc.) inside the fence, and it is safe for maintenance staff and residents to use the land outside the fence.***

- ❑ ***Southern wetland (south of land bridge)***
 - ***Condition of No Significant Risk – current and future use scenarios***

- ❑ ***Northern wetland***
 - ***Current Use Scenarios - Condition of No Significant Risk (groundskeeper)***
 - ***Future Use Scenarios - Condition of No Significant Risk with 1 exception:***
 - ***ERC-SED-11A area for polychlorinated biphenyls (PCBs)***
 - ***A Condition of No Significant Risk does not exist at the ERC-SED-11A area.***
 - ***Future recreational user scenario***

- ❑ ***Site groundwater***
 - ***Condition of No Significant Risk***

Ecological Risk Assessment

- ❑ **Stage I and Stage II Ecological Risk Assessment**
- ❑ **Environmental risk assessment summary by exposure point and receptor**
 - **Sediments – northern wetland only**
 - **Macroinvertebrates (midge larva) - PCBs, PAHs**
 - **Forested wetlands – northern wetland only**
 - **Birds/Mammals - PCB congeners, lead and/or zinc**
 - **Surface water – northern wetland only**
 - **Site-related hazardous material greater than Massachusetts Surface Water Standard.**
 - **13 out of 24 results below the criterion, and six out of seven 2010 results below as well.**
 - **Fish and macroinvertebrates not at risk based on laboratory testing**

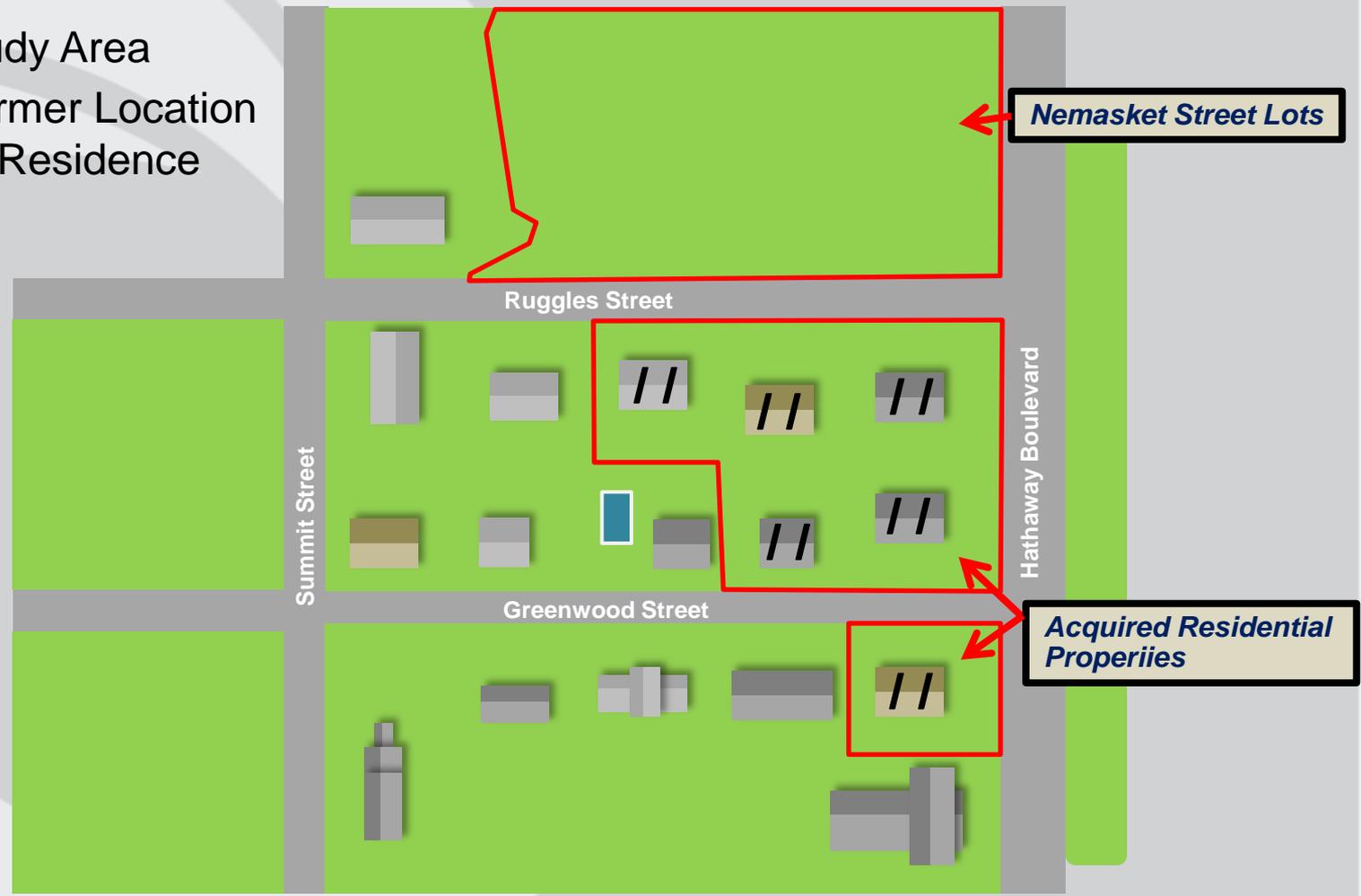
Acquired Residential Properties and Nemasket Street Lots

Phase II Comprehensive Site Assessment Report

- Presently available for public review.
- Comments due to City by October 3, 2011 (Monday)

Acquired Residential Properties & Nemasket Street Lots Study Area

-  = Study Area
-  = Former Location of Residence



Site Description

❑ *The Site*

- *The Acquired Residential Properties and Nemasket Street Lots*
- *Geography – East end of Greenwood & Ruggles Streets by Hathaway Boulevard*
- *Approximately 2.9 acres total*

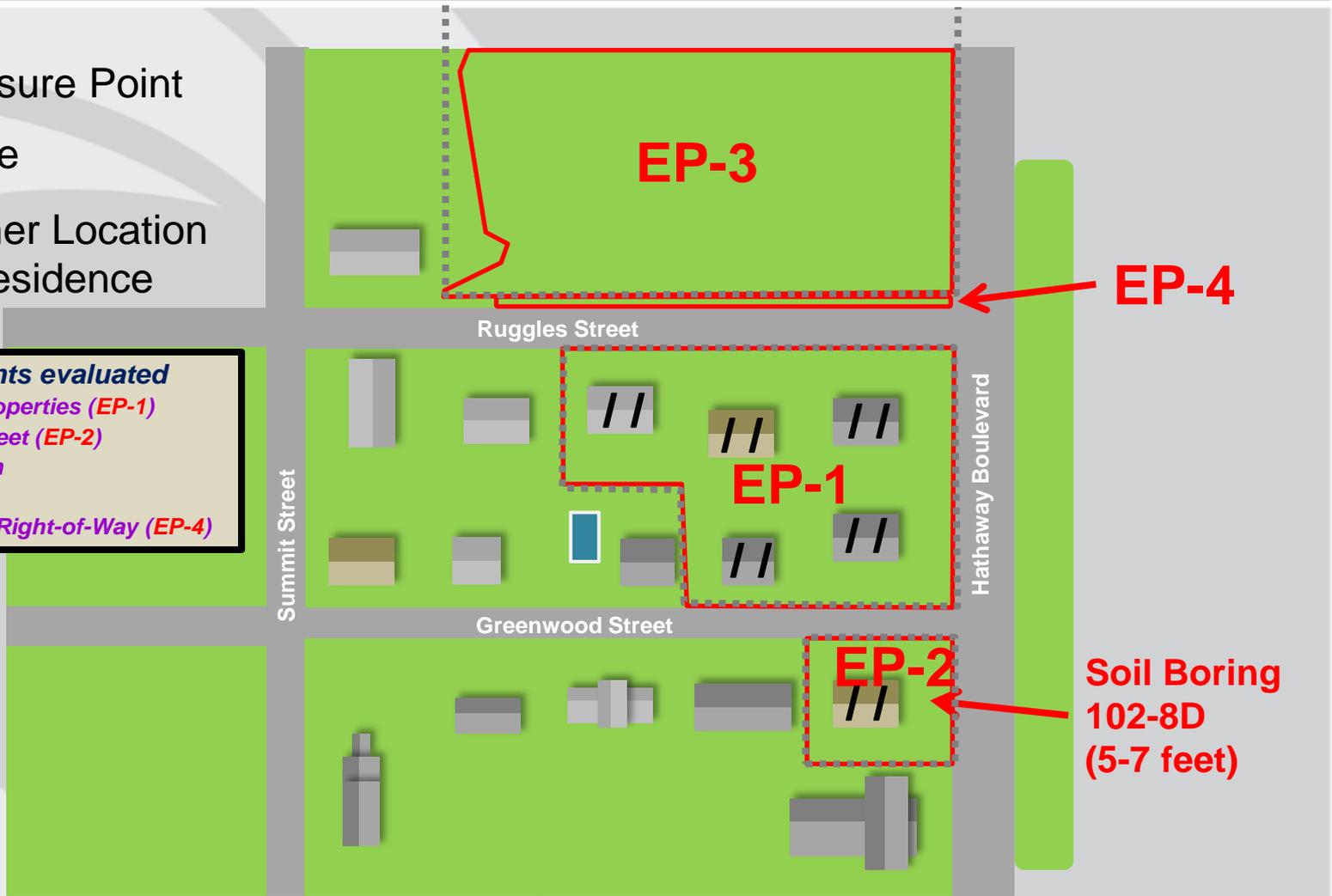
❑ *Description*

- *Acquired Residential Properties*
 - *Previously consisted of unoccupied former single family dwellings.*
 - *Dwellings demolished, foundations removed.*
 - *Surrounded by a chain link fence.*
 - *Three potential exposure points*
- *Nemasket Street Lots*
 - *Historically overgrown vacant parcels*
 - *Surrounded by a chain link fence (except portion of City right-of-way).*
 - *Two potential exposure points*

Acquired Residential Properties & Nemasket Street Lots Exposure Point (EP) Areas

-  = Exposure Point
-  = Fence
-  = Former Location of Residence

- Five exposure points evaluated**
- Five contiguous properties (EP-1)
 - 102 Greenwood Street (EP-2)
 - SB-102-8D Location
 - Fenced Lots (EP-3)
 - Unfenced Ruggles Right-of-Way (EP-4)



Phase II - Summary of Key Elements

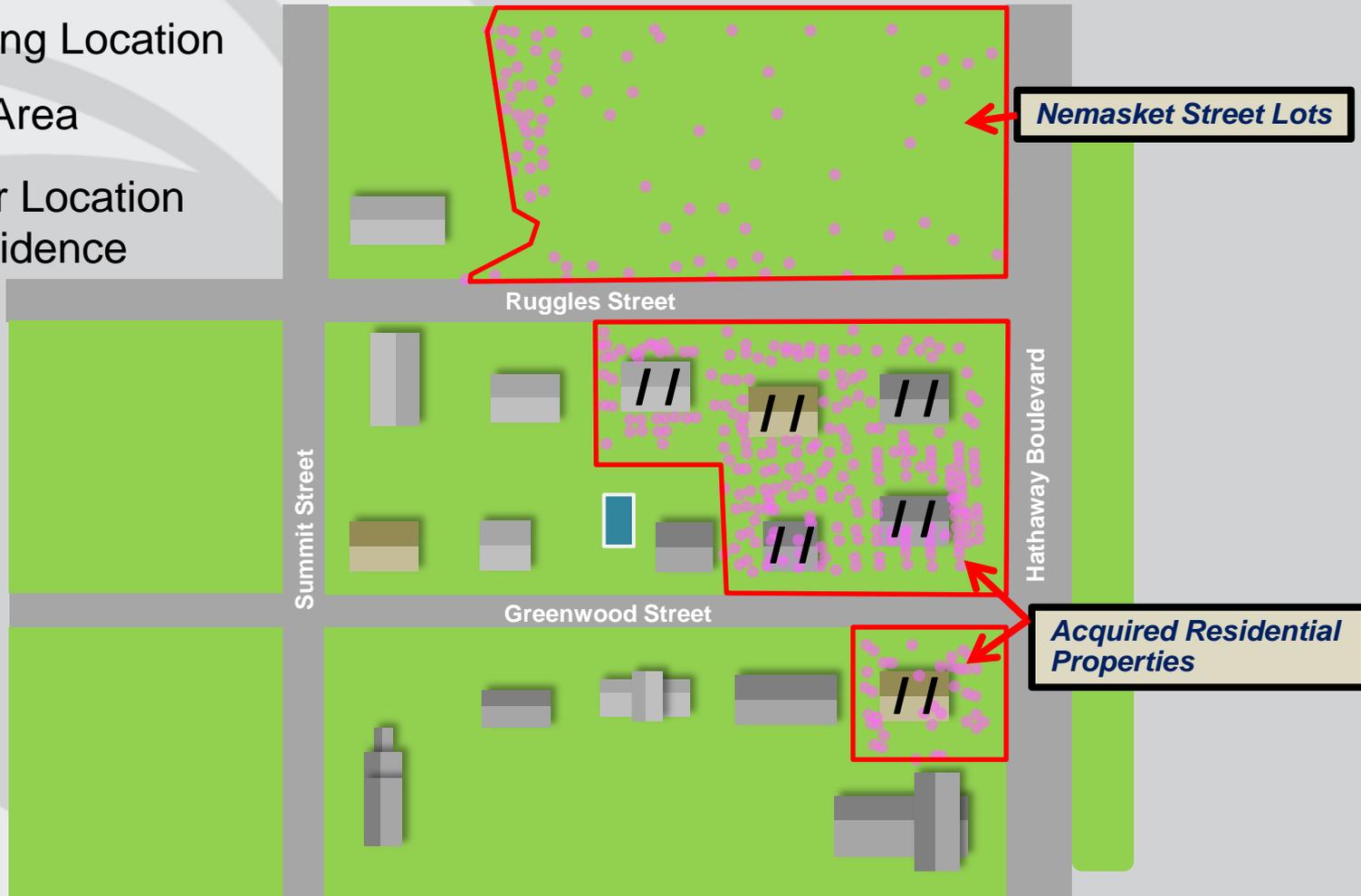
- ❑ *No significant risk with fence*

- ❑ *Comprehensive data analysis*
 - *Work conducted by BETA and TRC*
 - *Hundreds of soil samples across the site*
 - *Six groundwater monitoring wells - No groundwater results above MassDEP Drinking Water Standards and Guidelines*

- ❑ *Summary of sampling*
 - *Acquired Residential Properties*
 - *583 soil samples*
 - *3 groundwater monitoring wells*
 - *Nemasket Street Lots*
 - *219 soil samples*
 - *3 groundwater monitoring wells*

Acquired Residential Properties/Nemasket Street Lots Sampling Locations

- = Sampling Location
- = Study Area
- // = Former Location of Residence



Phase II – Conclusions

Environmental media evaluated –

➤ *Soil*

- Polychlorinated biphenyls (PCBs), metals, polyaromatic hydrocarbons (PAHs), and chlorinated dioxins/dibenzofurans in soil.
- PCBs at location SB-102-8D (102 Greenwood Street)

➤ *Groundwater*

- No groundwater results above MassDEP Drinking Water Standards and Guidelines

No Imminent Hazard conditions exist.

Focus on Potential Exposure Points and Scenarios

Acquired Residential and Nemasket

Five Potential Exposure Points	Potential Current/Future 0-3 Foot Scenarios	Potential Future 0-15 Foot Scenarios
<i>Five contiguous properties (EP-1)</i>	Child trespasser*, park visitor, grounds keeper/commercial worker	Park visitor, commercial worker, construction worker**
<i>102 Greenwood Street (EP-2)</i>	Child trespasser*, park visitor, grounds keeper/commercial worker	Park visitor, commercial worker, construction worker**
<i>SB-102-8D Location</i>	Child trespasser, park visitor, grounds keeper/commercial worker	Park visitor, commercial worker, construction worker**
<i>Fenced Lots (EP-3) - Nemasket</i>	Child trespasser*, park visitor, grounds keeper/commercial worker	Park visitor, commercial worker, construction worker**
<i>Unfenced Ruggles Right-of-Way (EP-4)</i>	Child pedestrian/trespasser*	Assumed combined with EP-3

* - Also evaluated for 0 to 1 foot soil interval in the potential current/future scenario.

** - Construction worker also evaluated for potential exposure to groundwater and exposure to trench air.

Risk Assessment Summary

☐ *Human health risk assessment summary*

➤ *Soil Exposure Point Concentrations (EPCs)*

- *No risk with fencing for current use scenarios.*
- *Lead, arsenic, benzo(a)pyrene, total PCBs, and dioxin TEQ may be associated with future risk for some anticipated future use scenarios.*
- *See Section 6.8 of the Phase II CSA (pages 6-16 and 6-17).*

☐ *Ecological risk assessment summary*

➤ *Stage I Environmental Risk Characterization*

- *Important/significant wildlife habitats are not present at Site.*
- *No significant soil exposure pathways likely for ecological receptors.*
- *Absent significant soil exposure pathways a condition of No Significant Risk to environmental receptors exists at the Site.*
- *See Section 6.8 of the Phase II CSA (page 6-21).*

Acquired Residential Properties and Nemasket Street Lots

Phase III - Remedial Action Plan

Identification, Evaluation and Selection of Comprehensive Remedial Action Alternatives

- Presently available for public review.
- Comments due to City by October 5, 2011.

Phase III Basic Features

□ What is a Phase III Identification, Evaluation and Selection of Comprehensive Remedial Action Alternatives?

- *Identifies and evaluates remedial action alternatives which are reasonably likely to achieve a level of No Significant Risk considering the media impacted and site characteristics.*
- *Recommends a remedial action alternative that is a Permanent or Temporary Solution. Permanent Solution includes measures that reduce, to the extent feasible, the concentrations of oil and hazardous material in the environment to levels that achieve or approach background.*
- *Describes and documents the information, reasoning and results used to identify and evaluate remedial action alternatives in sufficient detail to support the selection of the proposed remedial action alternative.*

Phase III Basic Features

Identification of Potential Remedial Technologies

- *No action*
- *File an Activity and Use Limitation*
- *In-situ treatment*
- *Ex-situ treatment/reclamation/recovery*
- *Containment via soil and/or pavement cap*
- *Removal*

Evaluation and Comparison of Remedial Solutions

Selection of Remedial Action Alternative

Phase III – Selected Approach

☐ **Combination of the following:**

- *Exposure barriers (e.g., soil/pavement)*
- *Excavation/disposal*
- *Activity and Use Limitation*

Update for New Bedford High School

- Polychlorinated Biphenyls (PCBs) Indoor Remediation
- PCB Indoor Air Monitoring
- Soil Remediation for NBHS Campus
- Dioxin
- Groundwater (Mechanical Room)

NBHS 2011 PCB Interior Remediation Synopsis

❑ Wall Paint –

- *Rooms B-230, A-211-3, and A-213-4*
- *Remedial approach (completed):*
 - Removal of the sheetrock false wall
 - Chemically strip paint from the surfaces until visual remnants are removed
 - Analytical testing to evaluate removal performance
 - Reinstallation of the false wall

❑ Auditorium Seats –

- *Foam seat cushions classified as PCB Remediation Waste in the Main Auditorium.*
- *Remedial approach and status:*
 - Remove and dispose of foam (completed), refurbish seats (in process/punch list phase).

❑ Fluorescent Light Fixtures –

- *Approximately 7,000 light fixtures assessed for impacts.*
- *Remedial approach (completed):*
 - 2,946 light fixtures removed (included 884 old ballasts), disposed, replaced in kind

PCB Indoor Air Sampling at NBHS

❑ *Comprehensive sampling round during 2011 February vacation*

- *59 interior air samples (largest effort to date)*
- *Three rooms (A-110-1, A-315-1, A-203-2) above 0.3 µg/m³ total PCBs.*
- *Five rooms (A-112-2, A-311-2, A-307-3, A-212-4, A-315-4) above 0.05 µg/m³*
- *15 were at or below 2008 results.*
- *The majority of the samples did not detect PCBs in indoor air.*

❑ *Focused /expedited April 2011 vacation sampling round following light tray removal*

- *Results similar to February 2011*
- *Rooms A-110-1, A-315-1, and A-203-2 closed until testing determines the levels are below 0.3 µg/m³ total PCBs*

PCBs in Indoor Air

❑ 2011 Post-Remedial Air Sampling

- *Focused on A-Block (August 23/24, 2011)*
- *One sample per house per floor for a total of 12 samples (3 per house)*
- *Includes all eight rooms that were above 0.05 µg/m³ Total PCBs*

❑ Summary of results

- *Six locations showed reductions ranging from approximately 38% to 63%*
 - *A-315-1, A-110-1, A-307-3, A-212-4, A-112-2, A-112-3*
- *Three locations showed essentially no change*
 - *A-311-2, A-315-4, and A-205-3*
- *Three locations showed increases*
 - *A-203-2, Locker 1579, A-110-4*
- *Rooms A-315-1, A-110-1, and A-203-2 to remain closed for further sampling, inspections, and measurements.*

NBHS Campus Soil Remediation 2011

Soil Excavation

- *Approximately 8,000 cubic yards removed since February 2011.*
- *Additional soil volume remains to be excavated (total volume dependent on final design, which is still being evaluated).*

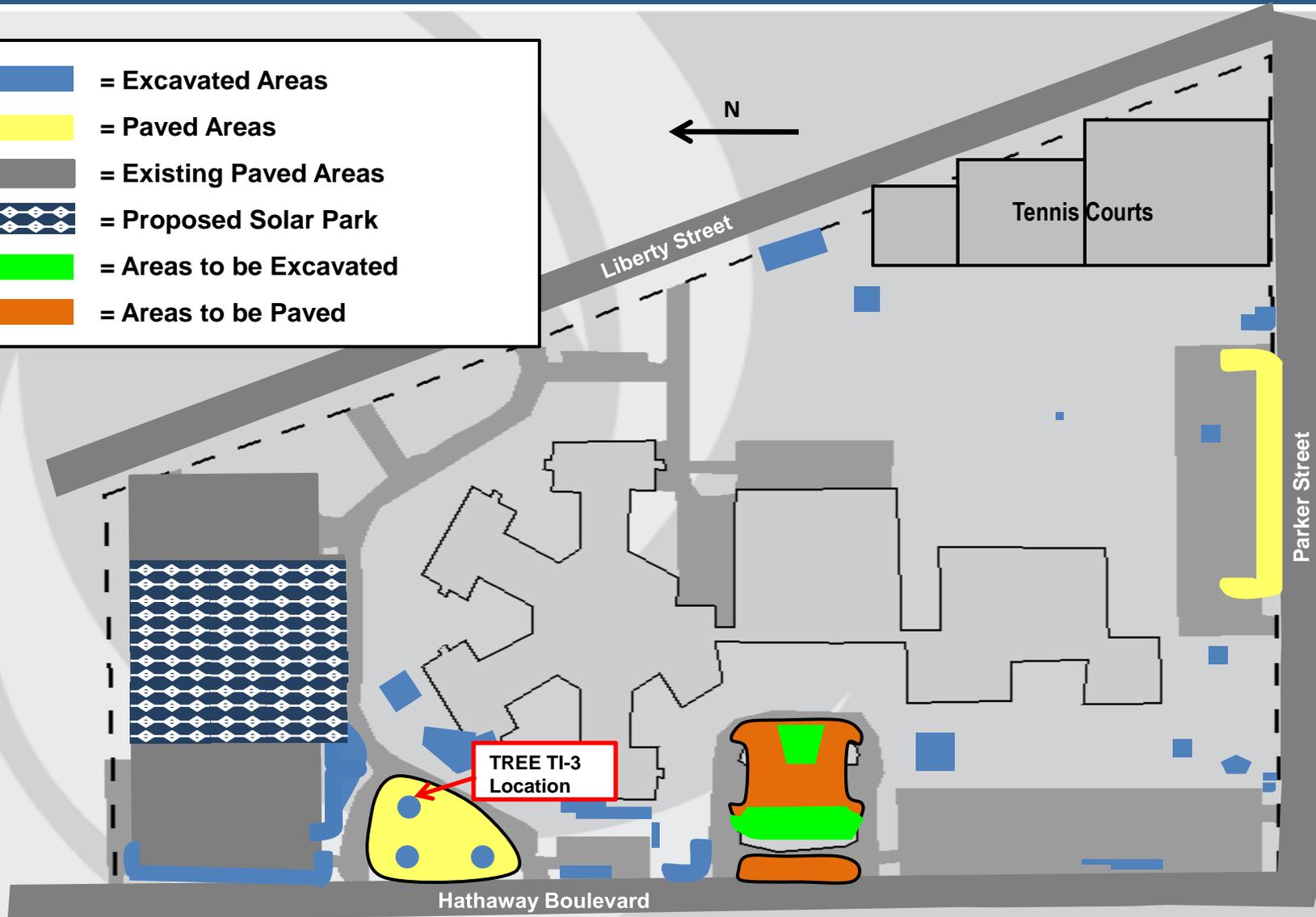
Paving/Other

- *Expand paving/exposure barriers to prevent direct contact with impacted soil.*
 - Earthwork and grading
 - Flag pole island modification
 - Other traffic islands and adjacent sidewalks
 - Solar power development north of school building (between north parking lots)

Considerable effort undertaken to preserve stands of trees

NBHS Campus Soil Remediation

-  = Excavated Areas
-  = Paved Areas
-  = Existing Paved Areas
-  = Proposed Solar Park
-  = Areas to be Excavated
-  = Areas to be Paved



Soil Related Immediate Response Action (IRA)

- ❑ **Follow-up PCB soil sampling at one tree-related excavation.**
 - **TREE-TI 3 location**
 - **Soil concentration regulated by EPA**
 - **Fenced during ongoing investigation**

- ❑ **Reported to MassDEP. Approval received for the following set of activities:**
 - **Further evaluation**
 - **Excavate, remove and/or cover**

- ❑ **Coordinating with EPA on approach**

June 2011 NBHS Dioxin Soil Sampling

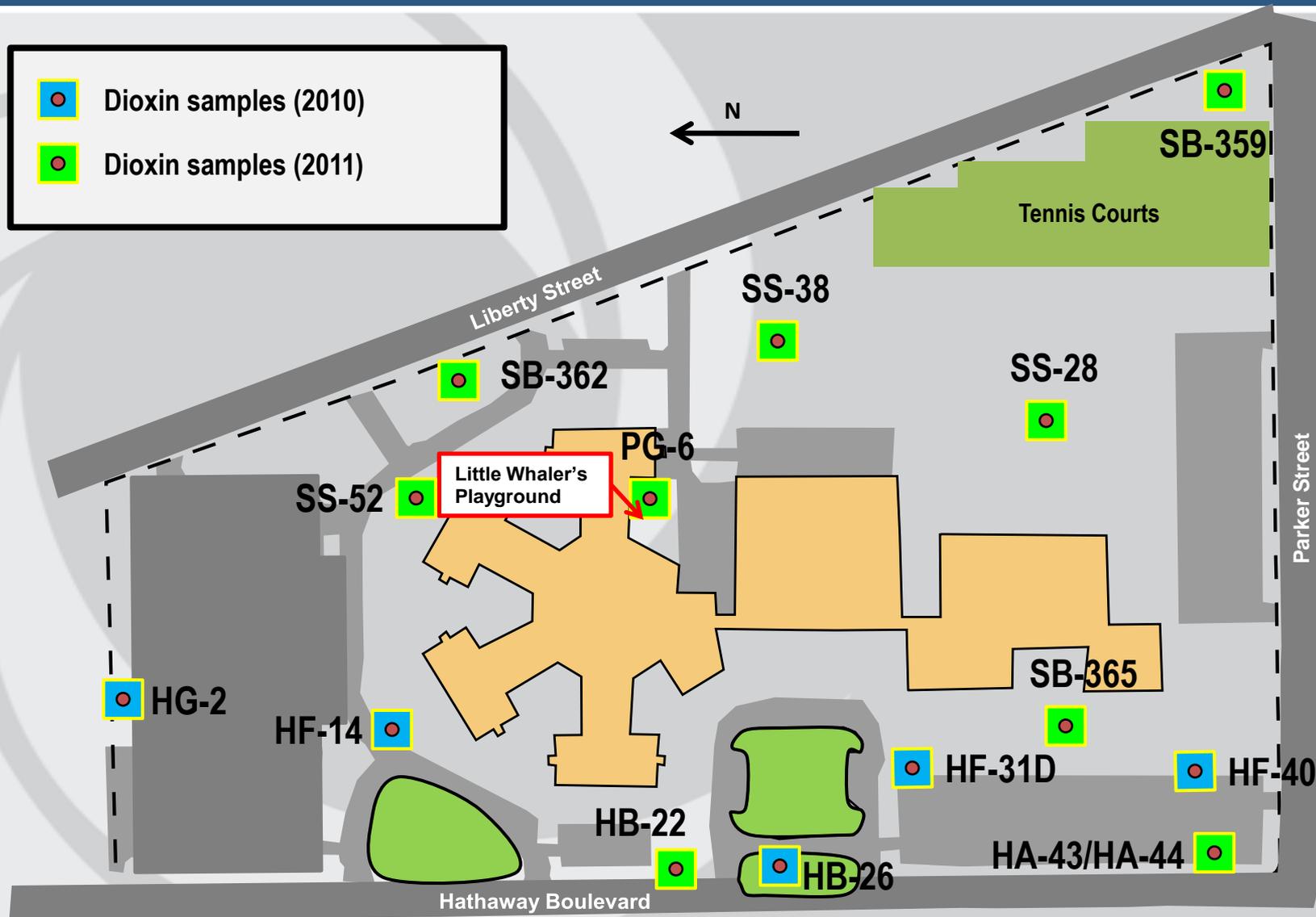
☐ TRC sampled 9 more locations (18 samples) in June 2011:

- *Northeastern traffic island*
- *Tennis court area*
- *Southwest corner of campus*
- *West-edge of campus (west of Houses)*
- *Little Whalers playground*
- *Fenced playing field (rear of gym)*
- *Unfenced playing field (rear of D-block)*
- *West side of NBHS gym*

June 2011 NBHS Dioxin Soil Sampling

- ❑ **Sampled soil for polychlorinated dibenzo-p-dioxins (dioxins), polychlorinated dibenzofurans (furans) and dioxin-like polychlorinated biphenyls (PCBs).**
- ❑ **Targeted remaining estimated worst-case scenario locations and wider coverage across the campus.**
- ❑ **Fifteen out of eighteen samples below Method 1 S-1 soil standards and below MassDEP background.**
- ❑ **Condition of No Significant Risk for top foot of soil.**

NBHS Approximate Dioxin Soil Sampling Locations



Mechanical Room

Immediate Response Action (IRA) Update

- ❑ **Chlorinated Volatile Organic Compound (VOC) groundwater impacts under Mechanical Room.**
 - **Remedy underway via Modified IRA Plan (January 2011).**

- ❑ **Currently safe to occupy NBHS and the surrounding campus.**
 - **No Significant Risk to the health of building occupants associated with the IRA condition.**

- ❑ **Potential exposure evaluation**
 - **No direct contact risk and no vapor intrusion impact to regularly occupied spaces.**

Mechanical Room

Immediate Response Action (IRA) Update

- ❑ *Pumping and vacuum extraction (Total Fluid Extraction [TFE]) at and near MW-27R in the Mechanical Room.*

- ❑ *Removed 2,600 gallons of chlorinated VOC-impacted groundwater to date.*
 - *Chlorinated VOC-impacted groundwater concentrations significantly reduced.*
 - *Additional remediation options under evaluation for Mechanical Room Area.*

- ❑ *New development*
 - *PCBs detected during disposal characterization in July 2011.*
 - *Further evaluation pending.*

Other Updates

Tentative Schedule of Future PIP Meetings

Site Area/Location	Report	Start of Public Comment Period	Likely Timeframe for Meeting
<i>New Bedford High School</i>	Partial Response Action Outcome Statement Report	December	January
<i>Acquired Residential Properties/Nemasket Street Lots</i>	Phase 4	February	February

Questions?

Question submitted to Environmental Stewardship

Q. Could Fish bone/calcium phosphate be used at the PSWS as a treatment for lead in soil?

A. Phosphate fixation is something we have used to facilitate soil disposal (treatment of soil piles). The main objective is to prevent leaching; this characteristic is evaluated using the Toxicity Characteristic Leaching Procedure (TCLP) test. At the PSWS, lead is not showing up in groundwater, so there is no need to use it for that objective at this site (the lead is already immobile). The remedies implemented at the PSWS include excavation and exposure barriers to arrive at a Condition of No Significant Risk. Utilizing this treatment for this site would add enormous cost with little to no benefit, since it would not eliminate the lead, and it does not help meet soil cleanup standards. Also, the phosphorous is mobile, so for example, you would not want to use this as a remedy at or near a the wetland (algae blooms).

Question submitted to Environmental Stewardship

- Q. *On the NBHS Fact sheet, page 3, 1st paragraph, last sentence, "...the results are close to, and in several cases below, MassDEP's publish background levels." What are the published background levels and where were the background levels taken from? What area?***
- A. *The MassDEP published background level for dioxin noted in the August 2011 NBHS Fact Sheet refers to a background concentration value used by MassDEP in the development of the Massachusetts Contingency Plan (MCP) soil cleanup standards. (See the MCP Numerical Standards Development Spreadsheets at <http://www.mass.gov/dep/service/compliance/riskasmt.htm>)***

It is derived from a U.S. EPA data set and is an estimated 90th percentile value for U.S. soil.

Thank You for Coming.

See you at the next meeting.