



Remedial Investigation/Feasibility Study (RI/FS) Project Update



Pepco Benning Road Facility

Presented by: Ravi Damera, AECOM Project Manager

April 2, 2016

Introduction

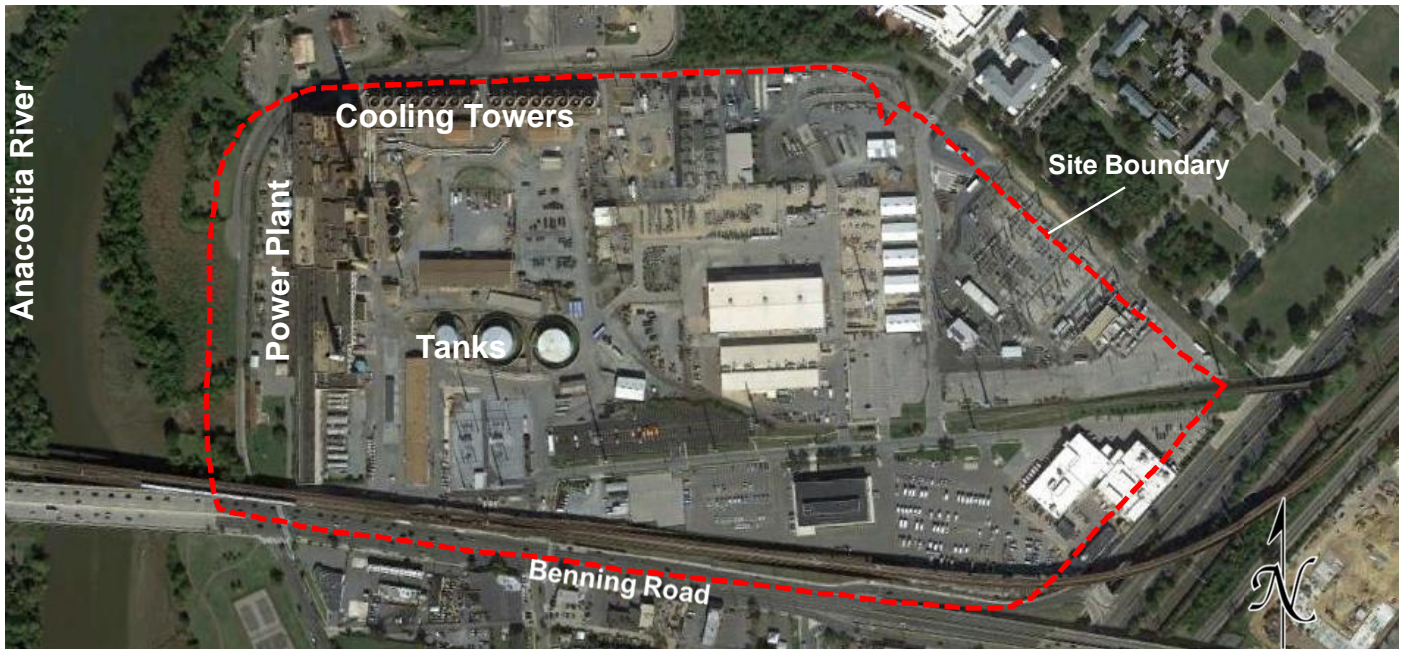
- Pepco has agreed to evaluate environmental conditions at the Benning Road Facility and adjacent portions of the Anacostia River.
- This evaluation is known as Remedial Investigation (RI).
- After the investigation phase, Pepco will evaluate possible clean up actions. This phase is known as Feasibility Study (FS).
- Pepco agreed to undertake this work and signed a consent decree with the District Department of Energy & Environment (DOEE). The consent decree was approved by the Federal District Court in December 2011.
- DOEE is overseeing Pepco's work and is soliciting public input and comments during the RI/FS process.

Investigation Summary – What We Know Today

- We have conducted an extensive investigation of the site and adjacent segment of the River, including field sampling, laboratory analysis, and detailed data evaluation.
- While some additional field investigation is necessary to complete the RI, so far the investigation has revealed no surprises. We have identified some areas of relatively low level contamination consistent with the historical industrial use of the Benning site and other sites along the river and the general urban character of the surrounding area.
- These conditions do not present any immediate health risk to people who live, work, or recreate in the area.
- Once the additional investigation is completed, we will proceed to identify and evaluate potential cleanup options and other actions as necessary to ensure there are no long term risks to human health or the environment as a result of Pepco's activities at the site.

Benning Road Facility

- Benning Road Facility occupies 77 acres in the northeast of the District of Columbia.
- Pepco has operated the facility for more than 100 years. The facility is currently home to the Benning Service Center.
- Benning Service Center supports Pepco's operation of its electric transmission and distribution system.
- The Service Center is a hub for approximately 700 employees working in buildings and facilities around the property.
- The facility was also used to be the site of a retired generating station. The generating station was shut down in June, 2012 and was completely demolished by May 2015.
- Benning Road Facility is separated from the Anacostia River by a bike trail, National Park Service Kenilworth Maintenance Yard, the DC Department of Public Works Solid Waste Transfer Facility and the Anacostia Avenue.



Before
Power Plant
Demolition



After
Power Plant
Demolition

Power Plant Demolition



After Power Plant Demolition

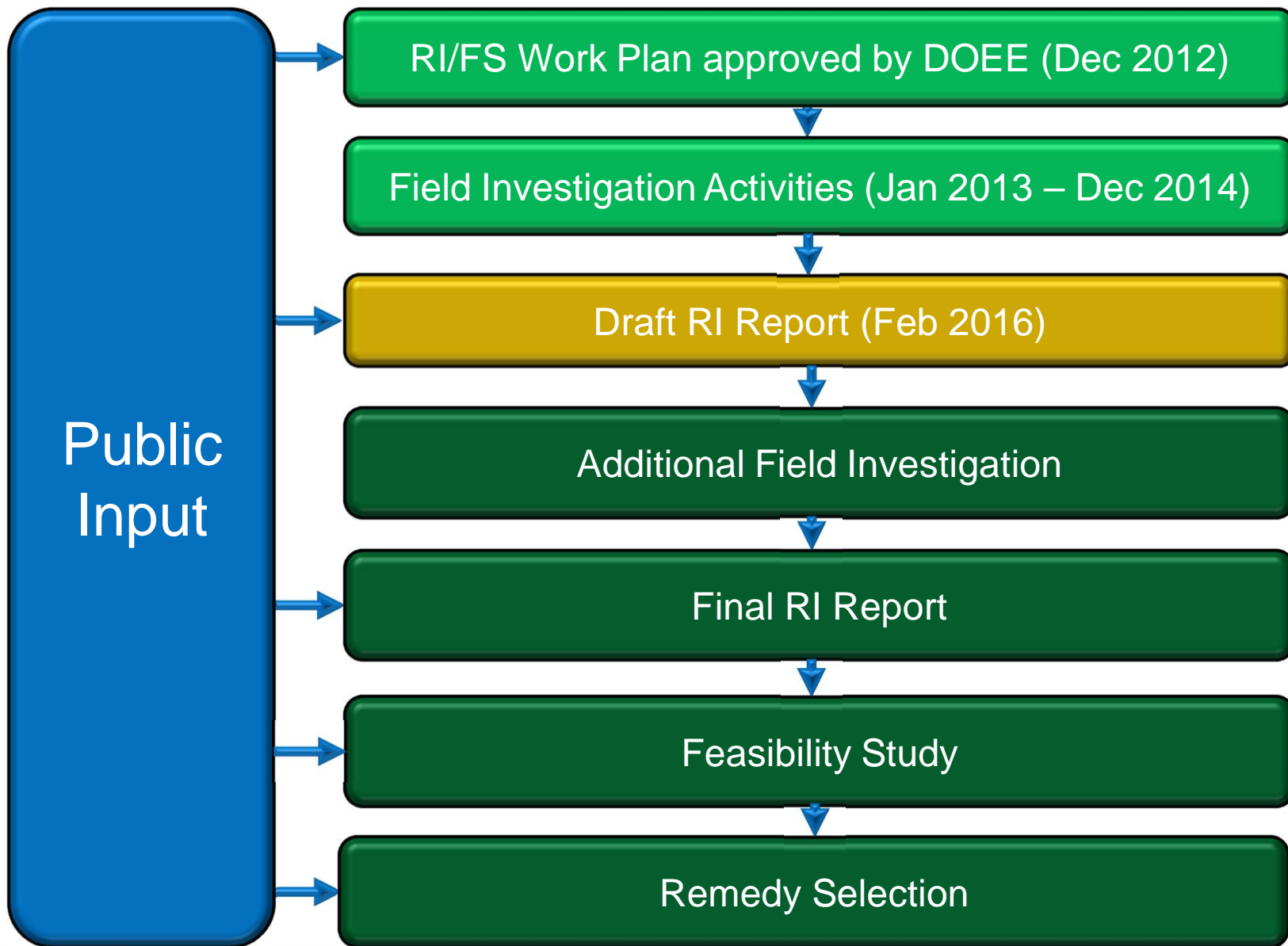


RI/FS Objectives

- The purpose of the RI/FS is to answer the following:
 - What are the environmental conditions on Pepco property and the adjacent portion of the Anacostia River?
 - Did past or present operations at Pepco's property cause or contribute to these conditions?
 - Do these conditions pose any unacceptable risks to human health and the environment?
 - If so, what are the appropriate cleanup options or other actions to address such risks?
- The RI Report addresses the first three questions. (**Today's focus**)
- The FS Report addresses the fourth question. (**Upon finalization of the RI Report**)

RI/FS is a phased process requiring regulatory review and approvals each step of the way.

Where are we in the RI/FS Process?



Why are we here?

- DOEE has released the Draft RI Report for public comment:
<http://doee.dc.gov/page/pepco-benning-road-facility-plans-and-deliverables>
- Draft RI and related documents are also available on Benning Service Center website:
<http://www.benningservicecenter.com/benning-consent-decree/documents.aspx>
- Purpose of today's meeting is to discuss findings from:
 - Field investigation activities (sampling and analysis) completed to date;
 - Preliminary human health risk assessment;
 - Preliminary ecological risk assessment; and
 - Next Steps

Public comment period: March 01 – April 18, 2016





★ Historical PCB Releases/
Cleanup Areas

★ Suspect Location of PCB Entry into the River Based On 2009 EPA Site Inspection Report

□ Target Investigation Areas

Target Contaminants

- Polychlorinated Biphenyls (PCBs) – manmade chemicals used in a variety of industries and products including electrical equipment, banned in 1979
- Polycyclic Aromatic Hydrocarbons (PAHs) - widespread in the environment – some natural, most come from fossil fuels
- Volatile Organic Compounds (VOCs) include solvents such as perchloroethylene (PCE) and gasoline components
- Semi-volatile Organic Compounds (SVOCs) – include PAHs and other organic compounds that do not evaporate easily
- Pesticides – manmade chemicals used for insect and pest control
- Dioxins – products of incomplete combustion
- Metals – present naturally in the environment and in many materials used in industrial, commercial and residential products

Landside Investigation

Landside Phase I – Focus on “Target Areas”



- 25 Surface soil samples to evaluate soil quality
- Electrical imaging along 10 lines to scan subsurface for utilities and gross contamination (e.g., oil-soaked soils)
- Eight water and four residue samples from storm drain inlets to assess surface water runoff quality
- Five soil borings to 60-100 ft below grade to supplement existing data
- Chemical, forensic, and geotechnical analysis of samples





Landside Phase II – Delineate impacts

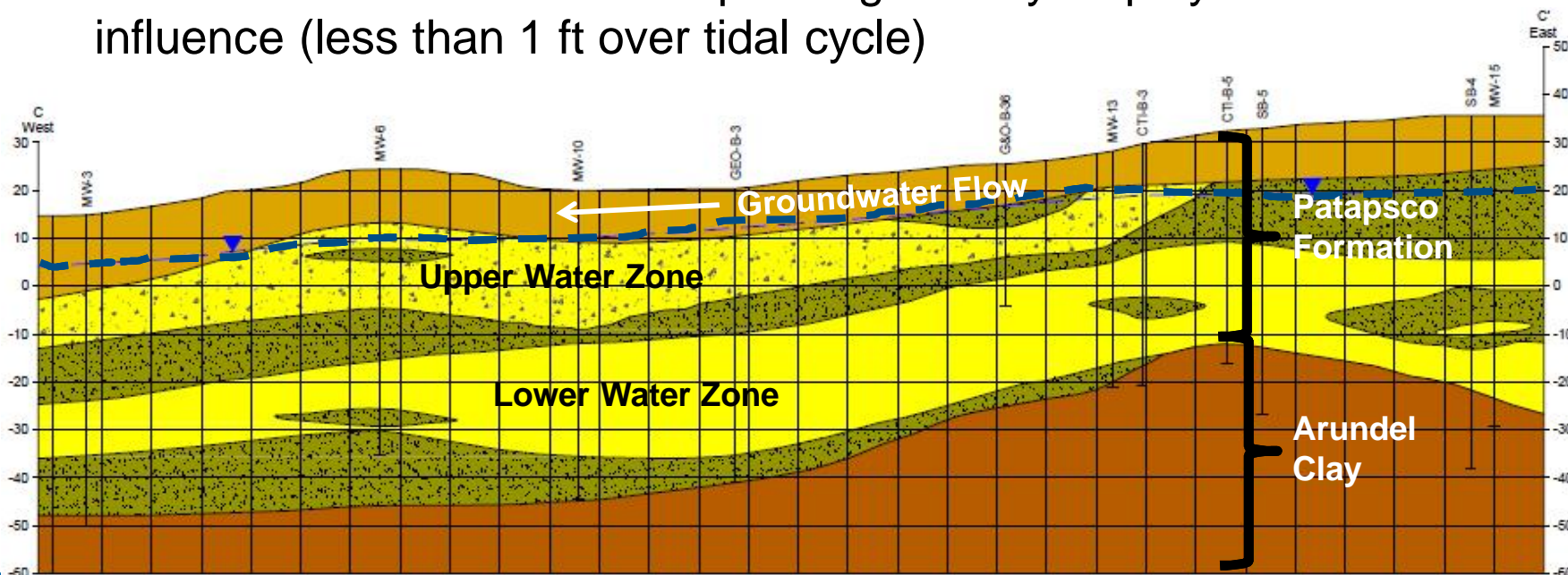
- 47 borings across the Site
- 142 subsurface soil and 58 groundwater samples collected for analysis

Landside Phase III – Groundwater Investigation

- 26 additional borings and on-site laboratory analysis used to delineate PCE plume per Work Plan Addendum #1 approved by DOEE
- Installation and sampling of 30 monitoring wells based on Phase II data per Work Plan Addendum #1 approved by DOEE
- Aquifer testing to determine aquifer properties and tidal influence monitoring to determine the influence of River tide on Site groundwater
- 207 additional soil samples beneath and around Cooling Tower concrete basins to investigate the extent of PCB contamination per Work Plan Addendum #2 approved by DOEE

What is beneath the Site?

- There are two groundwater zones (one upper and one lower) within the Patapsco formation separated by a silt-clay layer
- Arundel Clay unit (regional feature) is located at 45 to 85 ft below grade
- Depth to the top of water table is 9-16 ft below ground surface
- Groundwater flows in both zones generally westward and discharges to the Anacostia River
- Groundwater levels in both aquifers generally display minimal tidal influence (less than 1 ft over tidal cycle)

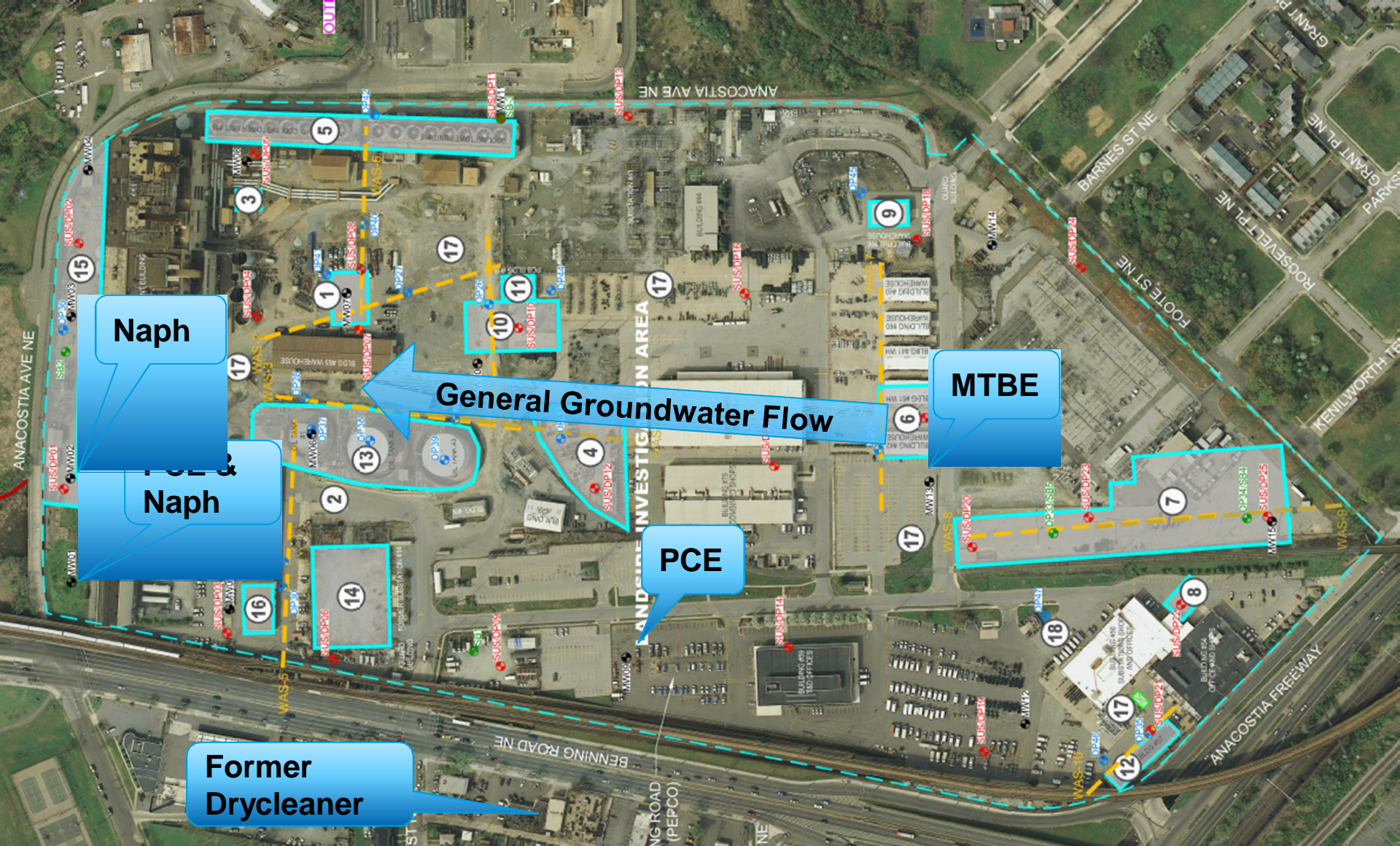


Preliminary Findings - Soils

- **Metals and PAHs** exceeded screening values in both surface and subsurface soil samples in most Target Areas.
- **Dioxins** exceeded screening values only in surface soil samples in most Target Areas.
- **PCBs** exceeded screening values in 8 out of 167 soil samples. Three of these exceedances were within the **former PCB cleanup areas**.
- Significant **PCB** contamination was detected in soils beneath and around the Cooling Tower concrete basins.
- Many of the observed chemicals (except PCBs) are likely to be found in background.
- **Additional field sampling** will be conducted to fill data gaps and confirm these findings.

Preliminary Findings - Groundwater

- A limited number of **metals, VOCs, PAHs, pesticides, dioxins,** and **PCBs** exceeded screening values in the groundwater samples.
- **MTBE** (a gasoline additive) exceeded screening values in the central portion of the Site.
- **PCE** (a common dry cleaning fluid and solvent) exceedances were detected in two locations. PCE detected along the southern Site boundary east of 34th Street appears to originate from a former off-site dry cleaner located across Benning Road. The source of PCE in the southwest corner of the Site, closest to the River is unknown.
- **Naphthalene** (a diesel component) exceeded screening values in two wells in the southwest portion of the Site.
- **Free or floating oil** was not detected in any of the groundwater monitoring wells.
- **Additional field sampling** will be conducted to fill data gaps and confirm these findings.



PCE, MTBE and Naphthalene (Naph) Exceedances in Groundwater Wells

Notes:

PCE – Perchloroethylene, a common dry cleaning fluid and solvent .

MTBE – Methyl-tert-Butyl Ether, a gasoline additive; Naph – Naphthalene, a diesel component

Preliminary Findings – Storm Drains

- **PAHs, TPH, low levels of pesticides and PCBs** were detected in water and residue samples collected from storm drain inlets.
- **PCB** levels in storm drain residue are lower than those reported by the 1997 EPA report.
- **PCBs** were detected in only one storm drain water sample (at a low concentration).
- Detections may be related to accumulation of sediment in the drains.
- Accumulated sediments were removed from the storm drains at the Site in July and August 2015.

Waterside Investigation

Waterside Phase I – Understand River Bottom

- River bottom survey to determine location and depth of river channel and identify buried utilities and debris.

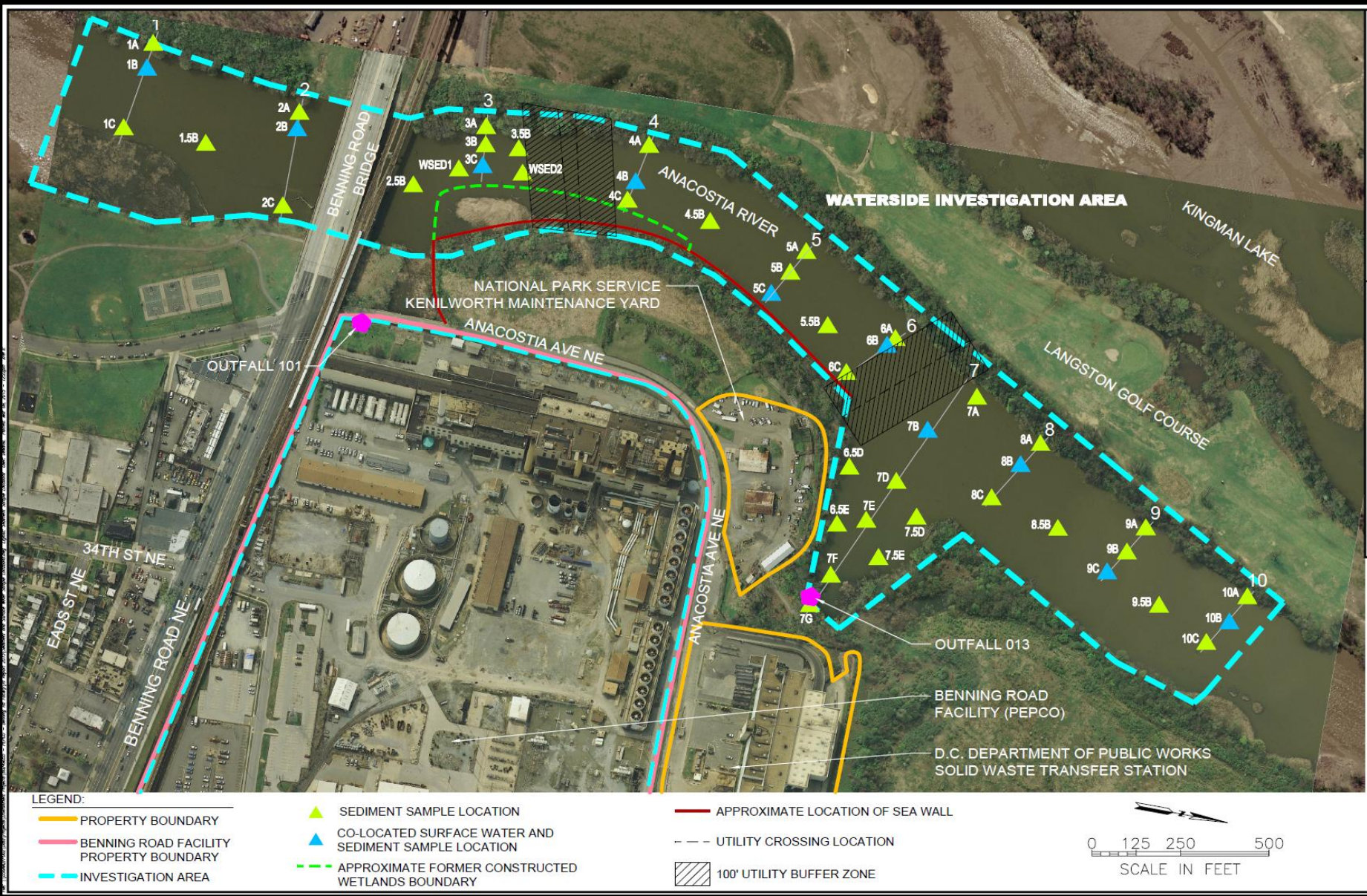
Waterside Phase II – Delineate Nature and Extent of Contaminants

- Collected 20 water samples and 267 sediment samples.
- Water and sediment sampling using barge or boat mounted equipment to ~ 8-10 ft below the mudline.
- Chemical, geotechnical and forensic analysis of samples.





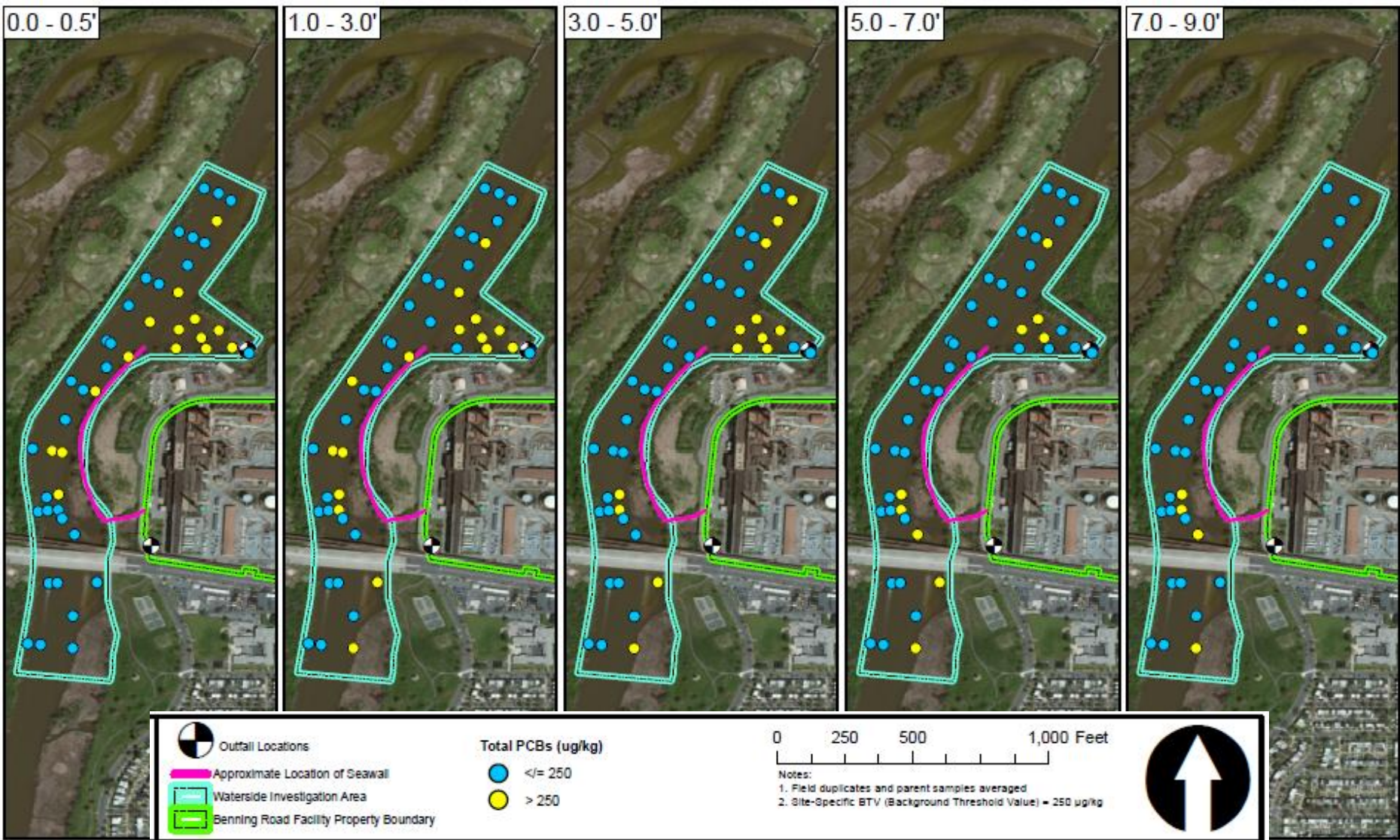
Manual sediment coring on Anacostia River mudflats in the winter of 2014



Investigation targets ~ 1,000 ft to the north and ~2,800 ft to the south of Pepco's main outfall (Outfall 013)

Preliminary Findings - Anacostia River Sediment and Water

- ***PCBs, pesticides, PAHs, dioxins and several metals*** exceeded screening values (e.g., PCB screening values ~ 26 Parts Per Billion or PPB for ecological and 120 PPB for human receptors) in the Study Area sediments. Certain metals, PCBs and dioxins exhibit elevated concentrations within the Outfall 013 cove.
- ***PCBs*** in the vast majority of sediment samples are consistent with preliminary background data collected in the River.
- ***PAHs*** detected in the sediment samples are consistent with background conditions in the River. The maximum ***PAH*** levels were detected in the background sediment samples.
- ***Some pesticides and dioxin levels are slightly*** elevated compared to the preliminary background dataset.



PCB Distribution in the River Sediments
Elevated PCB levels were detected in the Outfall 013 area and along the eastern shoreline

Preliminary Findings - Anacostia River Sediment and Surface Water

- Several **metals** (cadmium, chromium, copper, lead, nickel, and zinc) appear above preliminary background levels.
- A much shorter list of chemicals exceeded screening values in the river water. Except for dioxins, several of these chemical levels are comparable to preliminary background levels.
- **PCBs** were not detected in surface water.

Notes:

Low effect level refers to a level below which no effects are expected on the majority of population

Probable effects level refers to a level above which harmful effects are expected to occur frequently



Lead Distribution in Surface Sediment

- No exceedance
- > Low Effect Ecological Screening Value (31 ppm)
- > Probable Effect Ecological Screening Value (128 ppm)

Possible Sources of Contamination

(Preliminary forensic analysis findings subject to revision based on additional field investigation)

- Distribution of PAHs in the samples collected at upstream locations show that Benning facility may not be a significant source of PAHs in the Anacostia River.
- The majority of PCB types observed in the River sediment samples were different from the ones observed in the soil samples collected at the Site. The River PCB types, however, match a small set of soil samples. Additional sampling is needed to confirm these findings.
- Outfalls associated with Benning facility may have historically contributed to PCBs in the Study Area sediments. Additional investigation is necessary to confirm this finding.
- The Benning facility does not appear to be a significant continuing source of PCBs to the River.

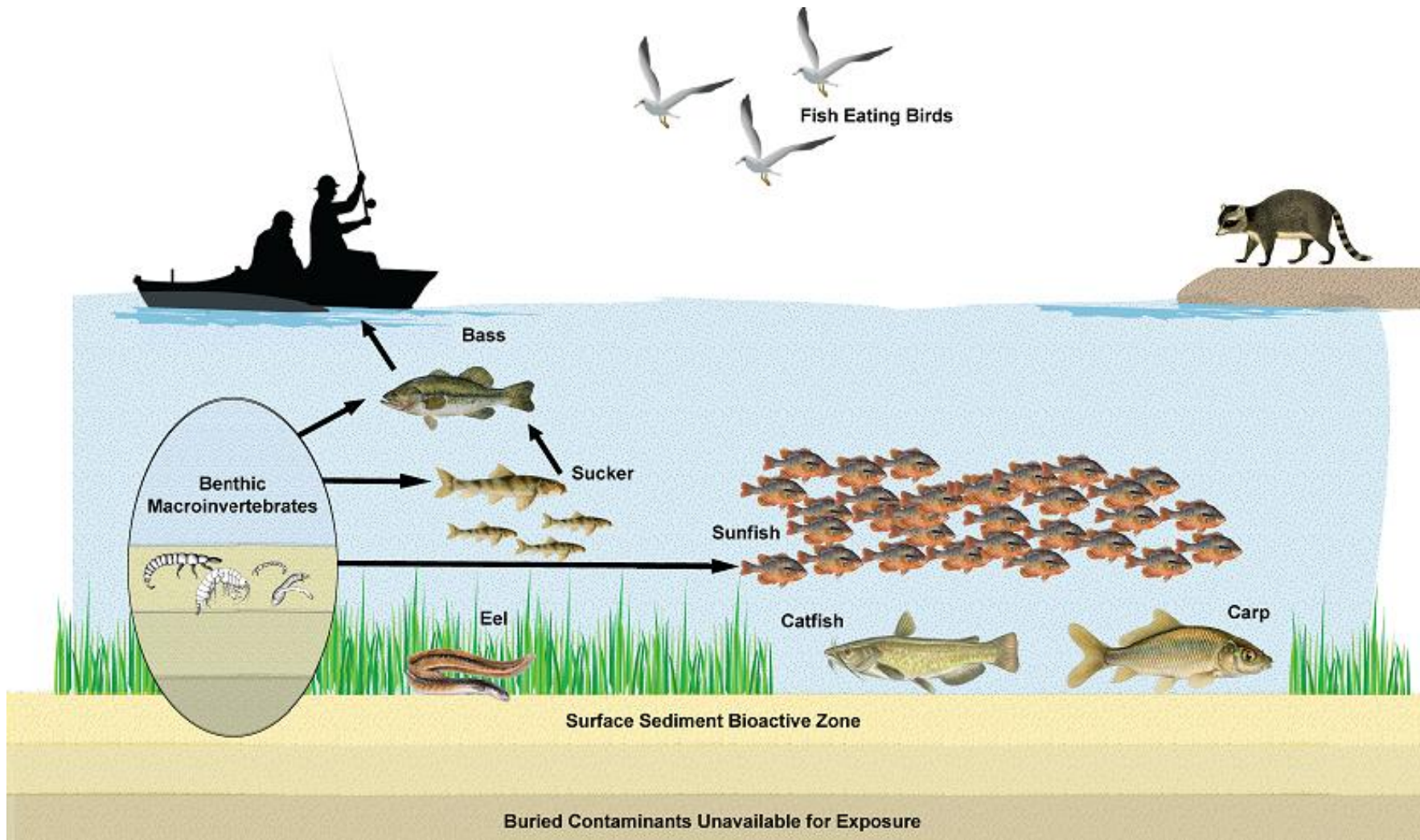
Risk Assessments

Risk Assessment

- Two types of risk assessments: Baseline Human Health Risk Assessment (BHHRA) and Baseline Ecological Risk Assessment (BERA)
- Objective: To evaluate exposure to chemicals in –
 - Landside soil and groundwater
 - Anacostia River surface water, sediment, and fish
- Followed EPA Human Health and Ecological Risk Assessment Guidance for Superfund sites
- Results are preliminary; risk assessments will be updated following the additional field investigation



Potential Receptors and Exposure Pathways



Preliminary BHHRA Findings

- No potential current landside risks; existing controls such as fences, paving, and safe operating procedures minimize exposure
- Sampling results from the RI activities indicated that additional future use scenarios need to be evaluated in the revised BHHRA
 - Current and future construction workers
 - Future recreational users
 - Future industrial worker
- No unacceptable risk from contact with Anacostia River surface water and sediment
- Potential unacceptable risk from consumption of fish
 - PCBs in fillet tissue
 - Risks present throughout river to varying degrees

Preliminary BERA Findings

- Limited potential risk to:
 - Benthic macroinvertebrates (i.e., worms) near Outfall 013 cove due to several metals and organic compounds
 - Fish due to PCBs found in fish tissue throughout the River
 - Risks for fish due to other chemicals to be evaluated in the revised BERA
- Many chemical concentrations are consistent with background conditions
- No potential risk to wildlife from PCBs
- Ecological risk assessment to be updated following the completion of additional field investigation

Next Steps

Cleanup Actions Already Underway or Completed

- Closed-circuit television inspection of the facility storm drain system was conducted to determine current conditions. Based on the investigation, Pepco removed accumulated sediments from the drainage system (which may have been a continued source of contamination), and repaired minor structural defects (***Completed in August 2015***)
 - 47 cubic yards of sediment was removed. The sediment was tested and found to be non-hazardous based on regulatory definition for waste disposal
 - Disposed of at an approved off-site facility
- Cooling Tower concrete basins and impacted soil removal (***Scheduled to begin in April 2016***)
 - Complete removal and off-site disposal of concrete basins – approximately 4,600 tons of PCB-contaminated concrete
 - Excavation and off-site disposal of approximately 7,900 tons of PCB-contaminated soil

Storm Drain Interior Before and After Sediment Removal

Before Cleaning



After Cleaning



Storm Drain Interior Before and After Sediment Removal

Before Cleaning



After Cleaning



Next Steps

- Hold a public meeting to update the community on Draft RI Report findings (*today's meeting*)
- Complete additional field investigation to fill data gaps and confirm the preliminary findings (*Pepco and DOEE*)
- Finalize the RI Report (*Pepco and DOEE*)
- Conduct Treatability Studies as needed and submit Treatability Study Report (*Pepco*)
- Submit Draft Feasibility Study Report to DOEE per Consent Decree schedule (*Pepco*)
- Submit the Final FS report after DOEE review of and public comment on the Draft FS Report (*Pepco*)
- Select remedy and prepare Record of Decision (*DOEE*)

Pepco is working with DOEE to finalize a schedule for the steps identified above. This schedule will be posted to BSC website when finalized.

Draft RI Report Public Comment

- DOEE and Pepco are inviting public comments.
- Use the following form to submit your comments via email to Ms. Apurva Patil, Remedial Project Manager, DOEE at apurva.patil@dc.gov
- Public Comment period closes on April 18, 2016.

Comment Form

Pepco Benning Road: Draft Remedial Investigation Report Comments

INSERT YOUR NAME: XXX		ORGANIZATION: XXX
Section/Table/Figure Nos.	Page No.	DRAFT RI REPORT COMMENTS
Section 2.1.1	6	
Figure 2.	8	
Table 6	20	

Questions and Comments

