



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



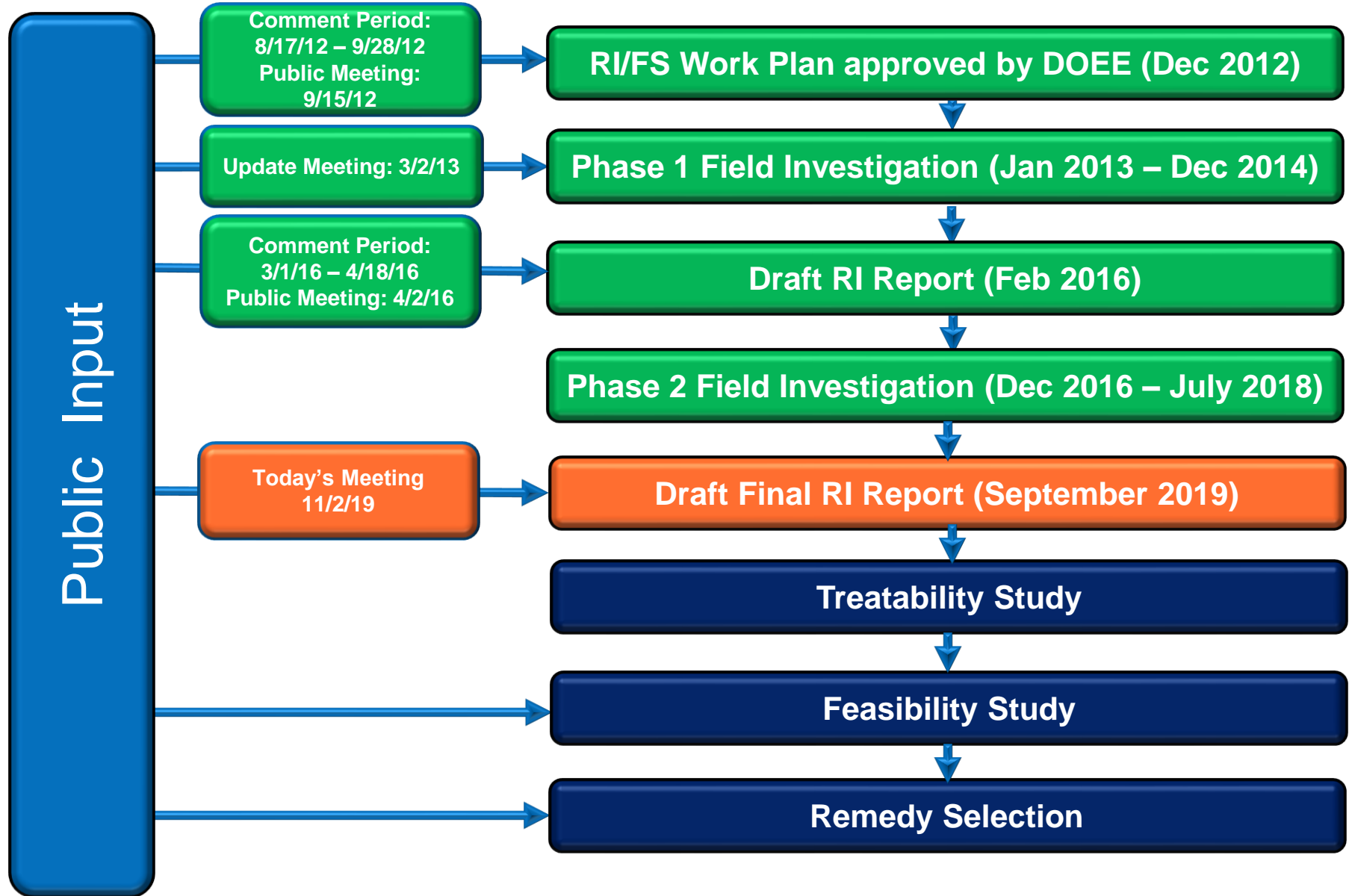
## Pepco Benning Road Facility

Presented by: Ravi Damera, AECOM Project Manager  
Betsy Ruffle, AECOM Lead Risk Assessor

# Introduction

- Pepco has recently completed an evaluation of 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 in accordance with a court-approved 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.

# Where are we in the RI/FS Process?



# Why are we here?

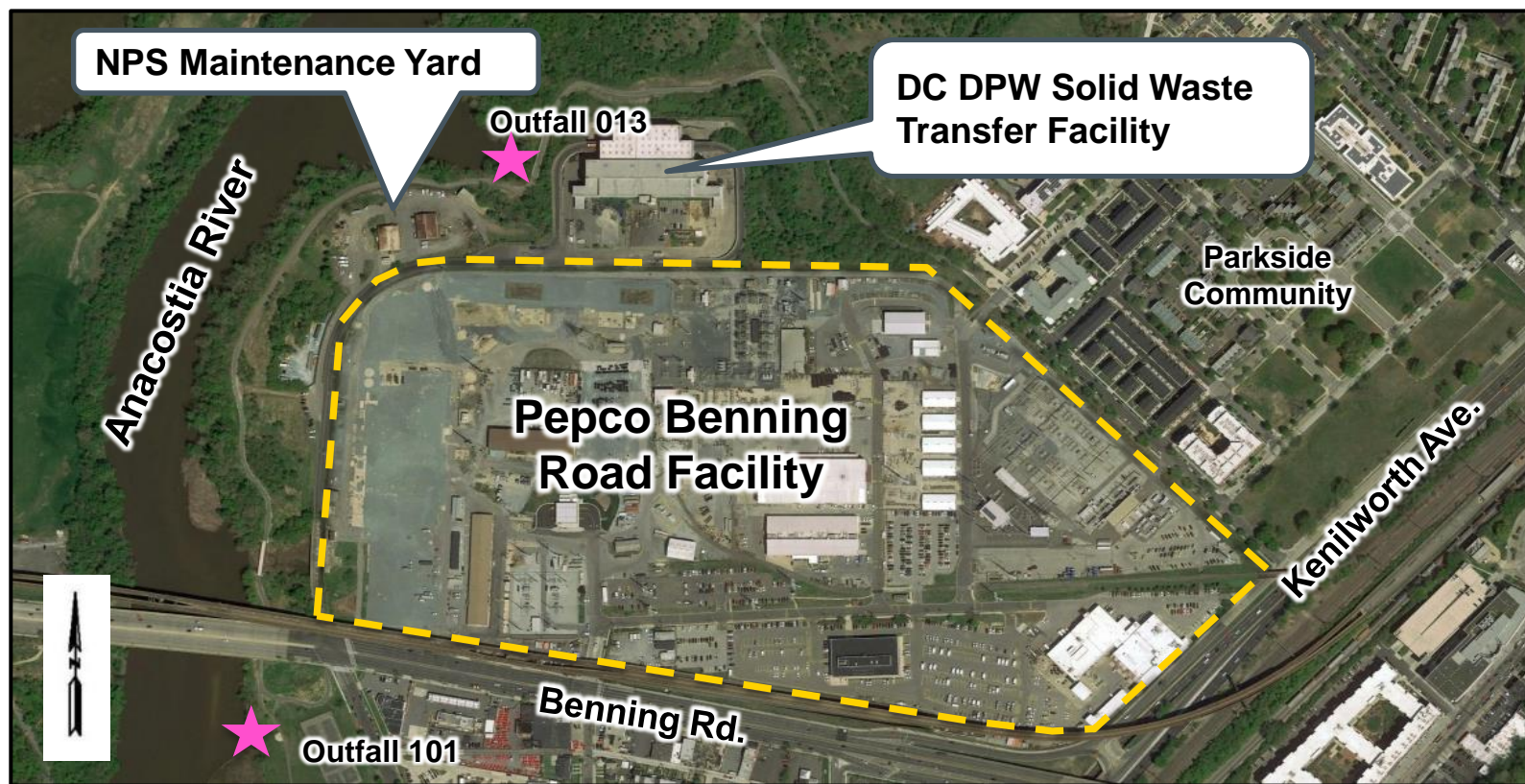
- DOEE has released the Draft Final RI Report for public comment: <https://doee.dc.gov/page/pepco-benning-road-facility-plans-and-deliverables>
- These documents are also available on Benning Service Center website: <http://benningservicecenter.com/benning-consent-decree/documents.aspx>
- Hard copies are available for review at five public libraries (Francis A. Gregory, Deanwood Public Library, Dorothy Height/Benning Library, Anacostia Library and Rosedale Library)
- Purpose of today's meeting is to discuss findings from:
  - Field investigation activities (sampling and analysis);
  - Baseline human health risk assessment;
  - Baseline ecological risk assessment; and
  - Next Steps

***Public comment period: October 04 – November 18, 2019***



# Benning Road Facility

- Pepco has operated this facility for more than 100 years. The facility is currently home to the Benning Service Center, which supports Pepco's operation of its electric transmission and distribution system.
- The facility historically housed a power generating station. The generating station was shut down in June 2012 and was completely demolished by May 2015.



# RI/FS Objectives

- The purpose of the RI/FS is to answer the following:
  1. What are the environmental conditions on the Benning site and the adjacent portion of the Anacostia River?
  2. Did past or present operations at the Benning site cause or contribute to these conditions?
  3. Do these conditions pose any unacceptable risks to human health and the environment?
  4. 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 will address the fourth question. (**Following final approval of the RI Report**)

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

# Investigation Summary

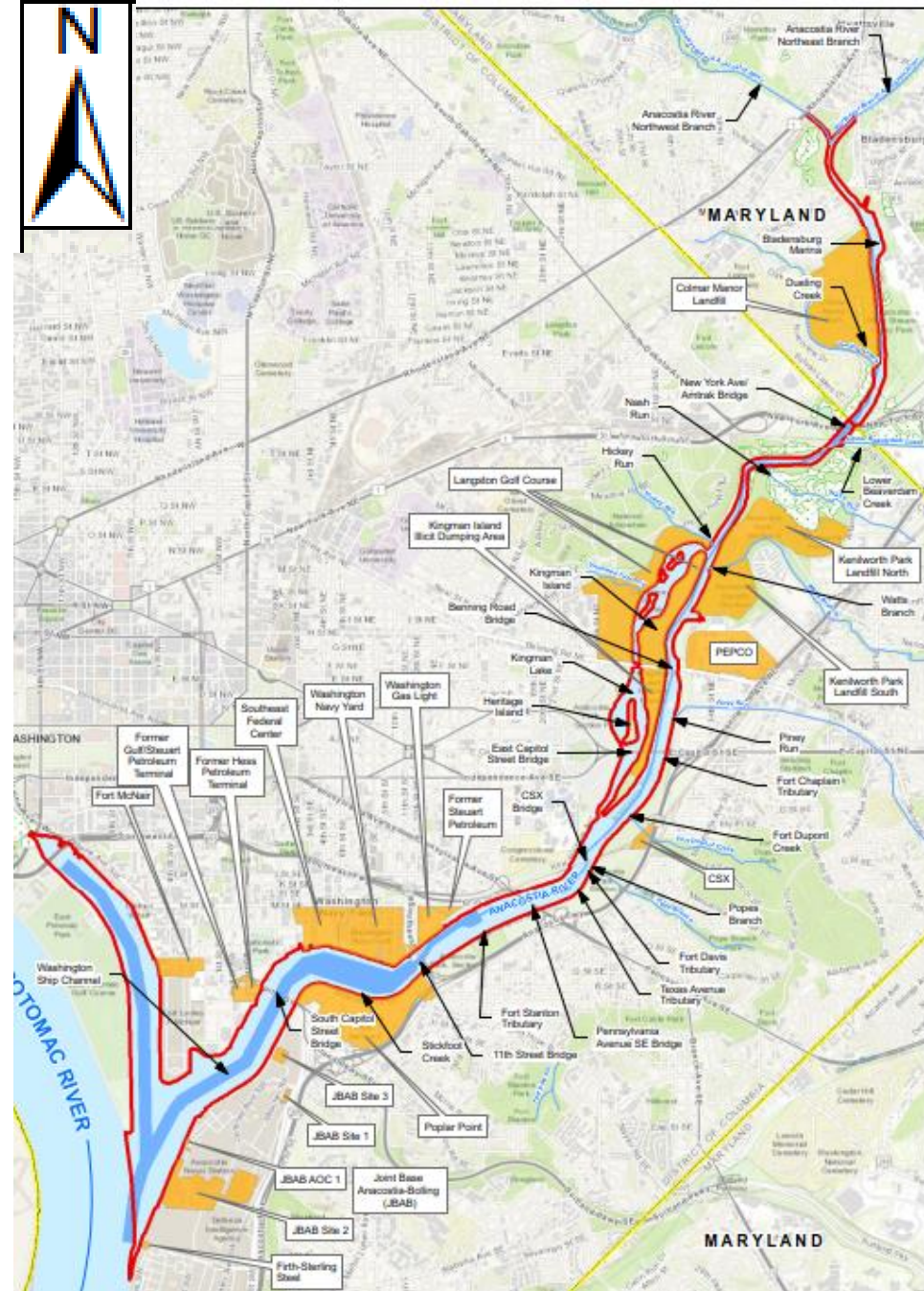
- We have conducted an extensive investigation of the Benning site and adjacent segment of the River, including field sampling, laboratory analysis, detailed data evaluation, and human health and ecological risk assessments.
- The investigation has identified some areas of contamination at the site and in the River sediments 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.
- There is unacceptable risk from fish consumption over an extended period of time. Otherwise, the site conditions do not present any immediate health risk to people who live, work, or recreate in the area.
- Next, 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.

# Remedial Investigation Overview

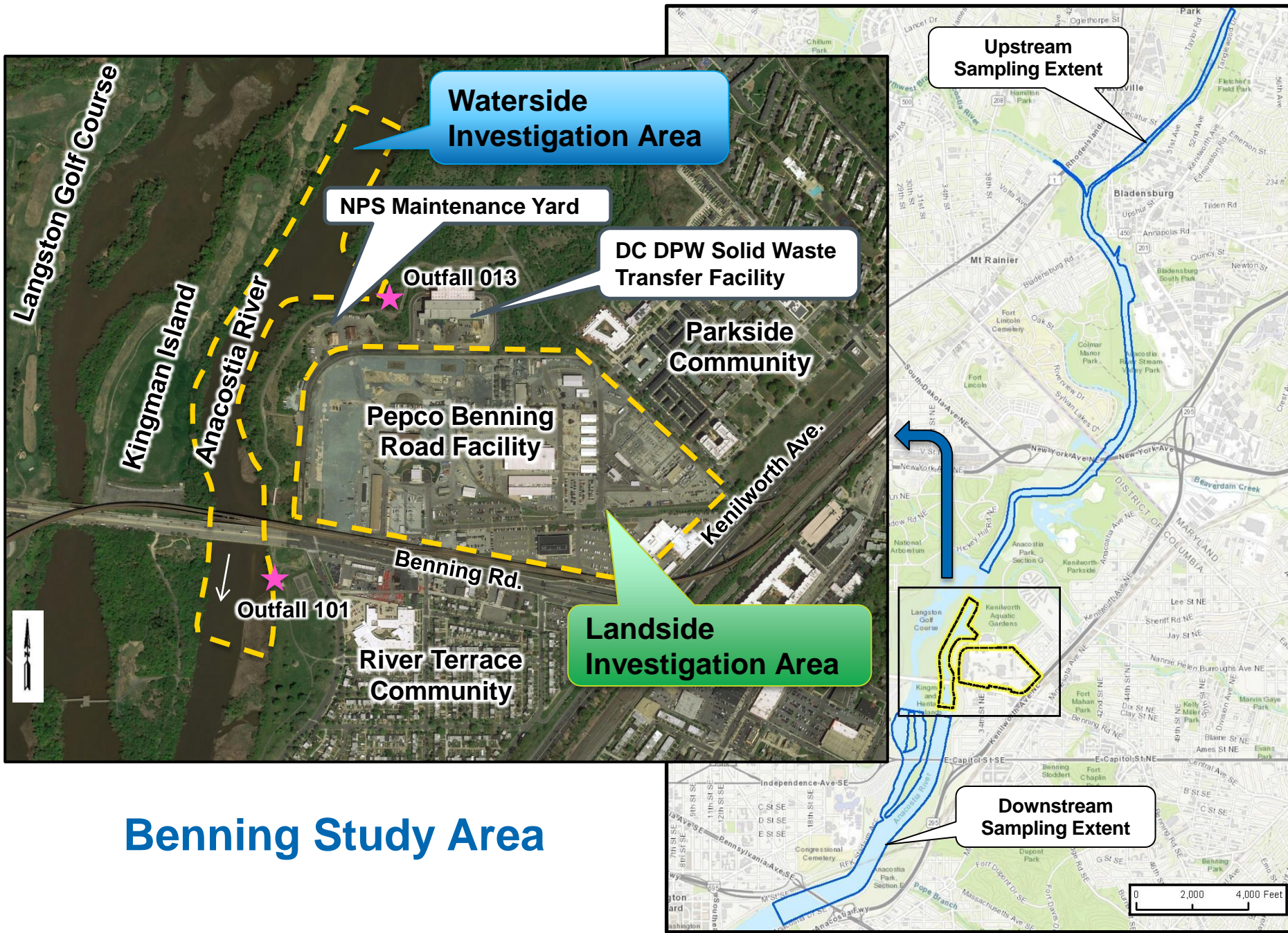


# Regional Context

- The Anacostia River begins in Bladensburg, MD, at the confluence of the Northwest Branch and the Northeast Branch.
- It flows a distance of approximately 8.4 miles and joins the Potomac River.
- DOEE has identified 15 Potential Environmental Cleanup Sites (PECS) along the River.
- Pepco Benning Road Site is one of these 15 PECS.
- For addition information visit <https://doee.dc.gov/release/public-comment-period-remedial-investigation-report-anacostia-river-sediment-project>







## Benning Study Area

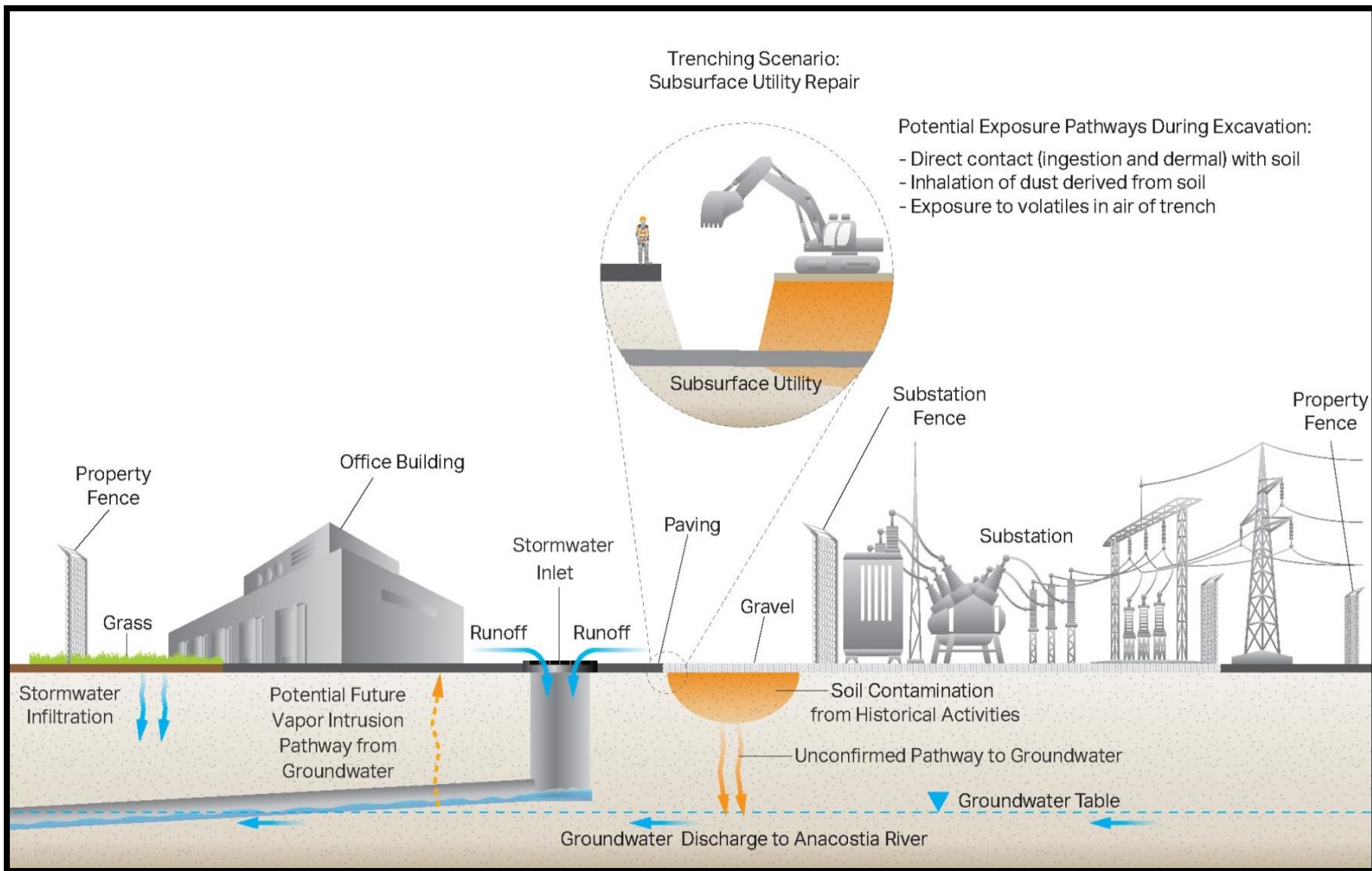
# Target Contaminants

- 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 Conceptual Site Model





## Landside Investigation

- Identified twenty Target Areas (TAs) and eight historical and current Operational Areas (which in most cases overlap with the Target Areas).
- A total of approximately 306 borings and 30 monitoring wells were installed to collect approximately 1,267 soil and 235 groundwater samples from the Target and Operational Areas.
- A “step-out” sampling approach was used to characterize locations exceeding conservative screening levels.
- Landside sampling activities also included sampling of sediment residue and water from site storm drains.
- Background soil and groundwater samples collected in park lands around the Benning facility.



NPS Maintenance Yard

Outfall 013

DC DPW Solid  
Waste Transfer  
Facility

Pepco Benning  
Road Facility

ANACOSTIA RIVER

FORMER POWER PLANT

BENNING ROAD

**LEGEND**

— STORM WATER UTILITY  
AST ABOVE GROUND STORAGE TANK  
UST UNDERGROUND STORAGE TANK  
CT COOLING TOWER

**TARGET AREA KEY:**

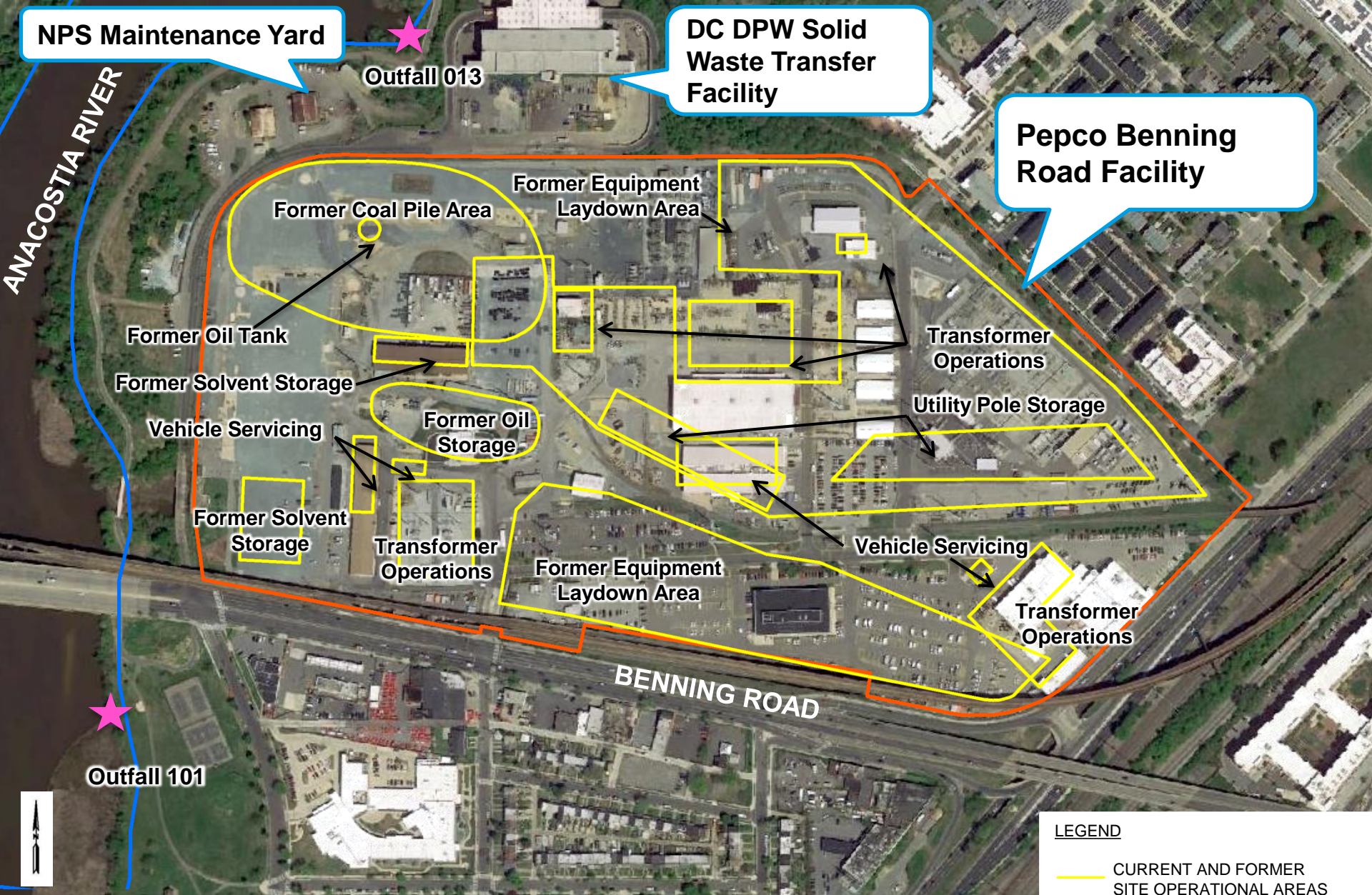
- ① FORMER SLUDGE DEWATERING AREA
- ② BENNING FUELING ISLAND
- ③ FORMER 50,000 GAL. AST AND 15,000 GAL. UST No. 2 FUEL OIL
- ④ 2003 SALVAGE YARD INVESTIGATION
- ⑤ FORMER CTs - 1995 & 2017 CLEANUP AREA
- ⑥ 1991 CLEANUP AREA

- ⑦ 1988 PARKING LOT CLEANUP AREA
- ⑧ 1985 EXCAVATION AREA
- ⑨ GREEN TAG STORAGE AREA
- ⑩ RED TAG STORAGE AREA
- ⑪ BUILDING #68 (PCB BUILDING)
- ⑫ BUILDING #57

- ⑬ FORMER BULK STORAGE ASTs WITH LOADING RACK 550 GALLON FUEL OIL UST AND 2,000 GALLON USED OIL UST
- ⑭ FORMER RAILROAD SWITCHYARD
- ⑮ GENERATING STATION TRANSFORMERS
- ⑯ PRINT SHOP
- ⑰ STORM DRAIN SYSTEM
- ⑱ KENILWORTH FUELING ISLAND MTBE PLUME
- ⑲ PCE AND NAPHTHALENE IN GROUNDWATER
- ⑳ PAHs IN SOIL

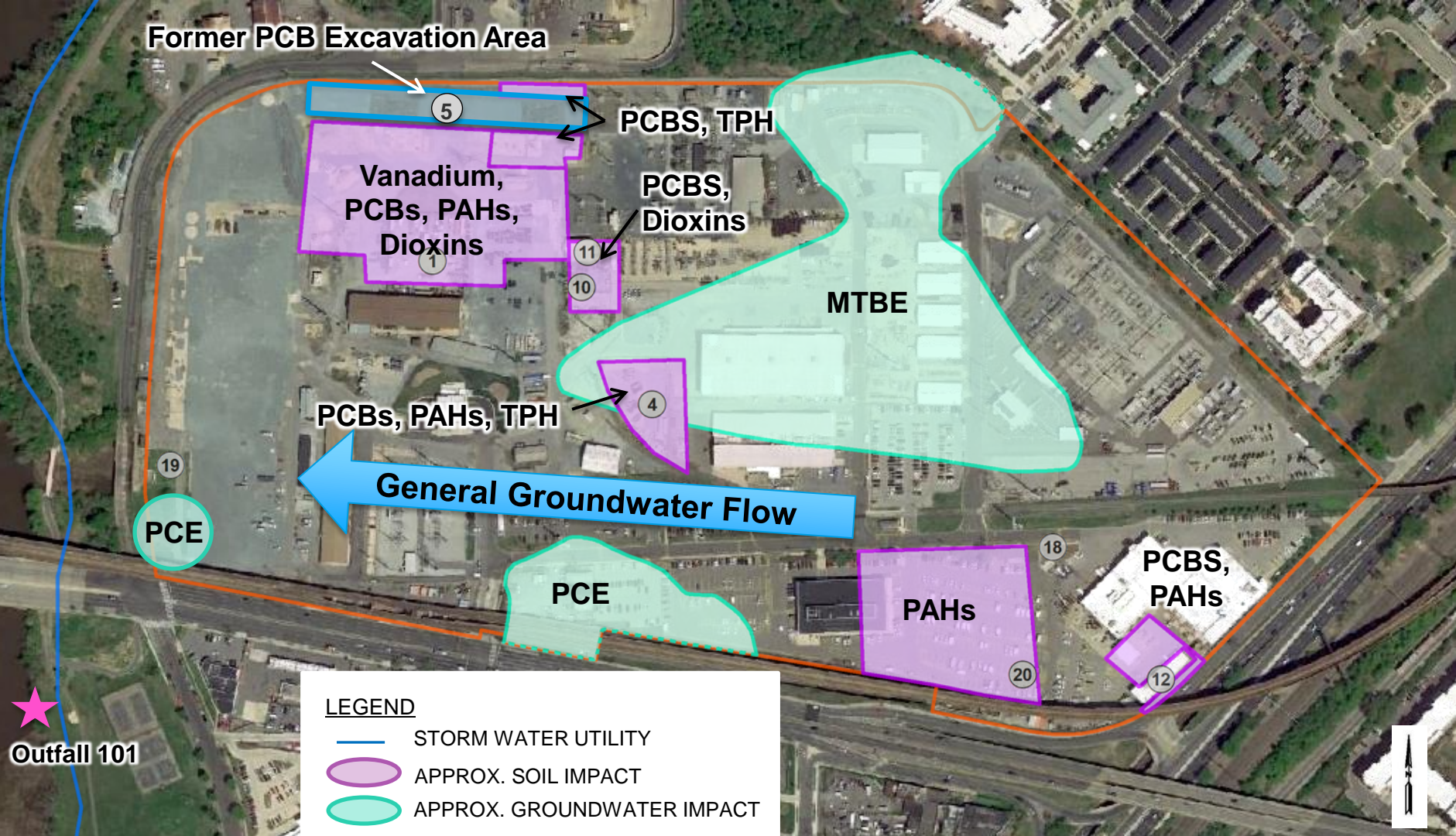
Outfall 101







Former PCB Excavation Area



# Soil and Groundwater Impacts

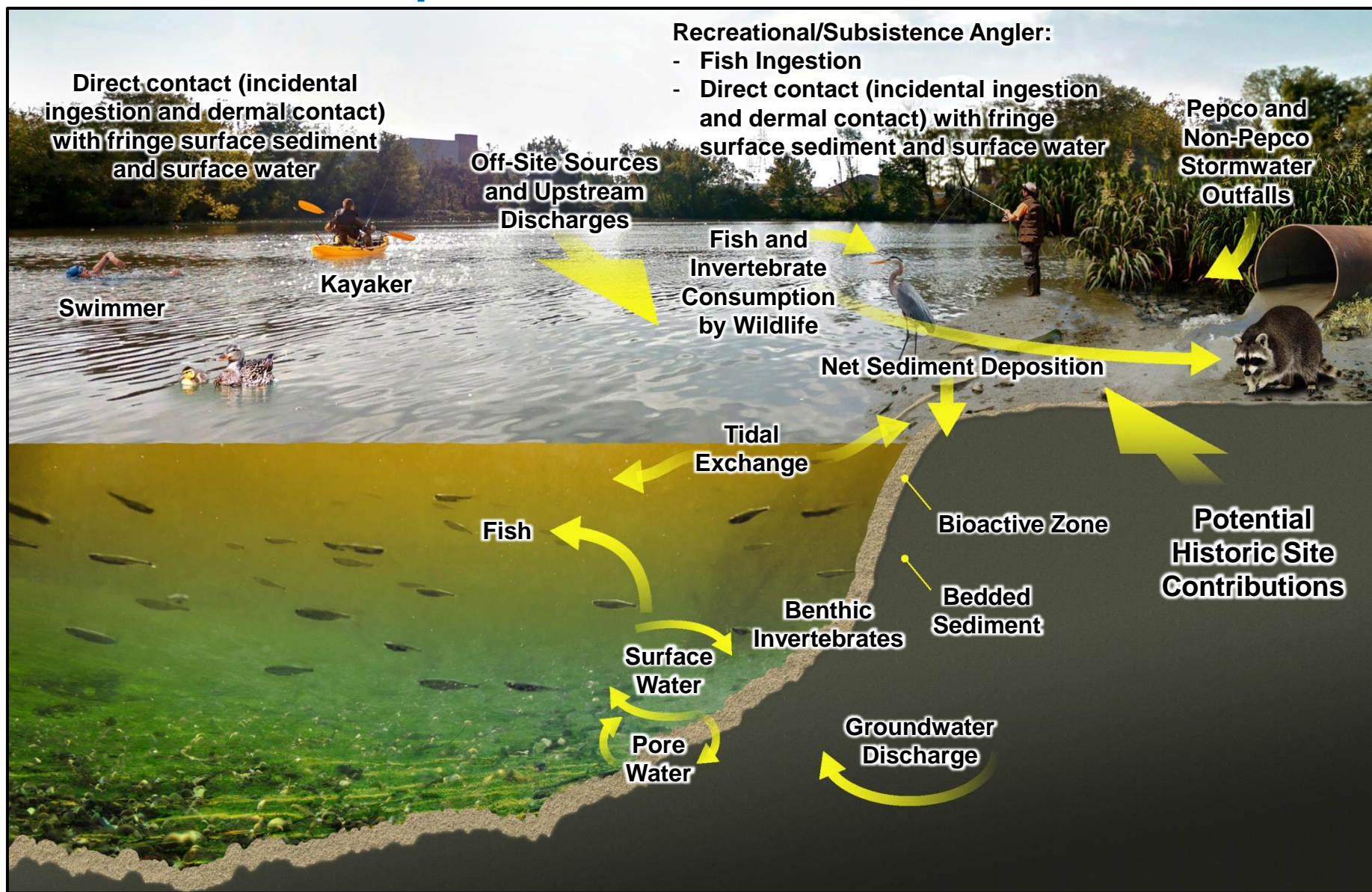
## Landside Summary

- **Free** or **floating oil** was not detected in any of the soil borings or groundwater monitoring wells.
- **Metals, PCBs, PAHs, Dioxins,** and **Petroleum Hydrocarbons** were detected in soils in several Target Areas in excess of screening levels.
- With the exception of **vanadium** in soils, metals in soil and groundwater are generally consistent with or below background levels.
- **MTBE** (a gasoline additive) and **PCE** (a common dry cleaning fluid and solvent) exceeded screening values in groundwater.
- Neither current nor historical groundwater discharges from the site to the River are a significant pathway for migration of contaminants.
- Storm drain residues sampled during the RI reflect accumulated sediments over a period of several decades. Presence of PCBs in these samples suggests discharges from Outfall 013 may have contributed to PCB impacts in the Cove.
- These detections and the CSM framework are further subjected to a risk assessment to determine risks due to landside contamination.

# Waterside Investigation



# Waterside Conceptual Site Model

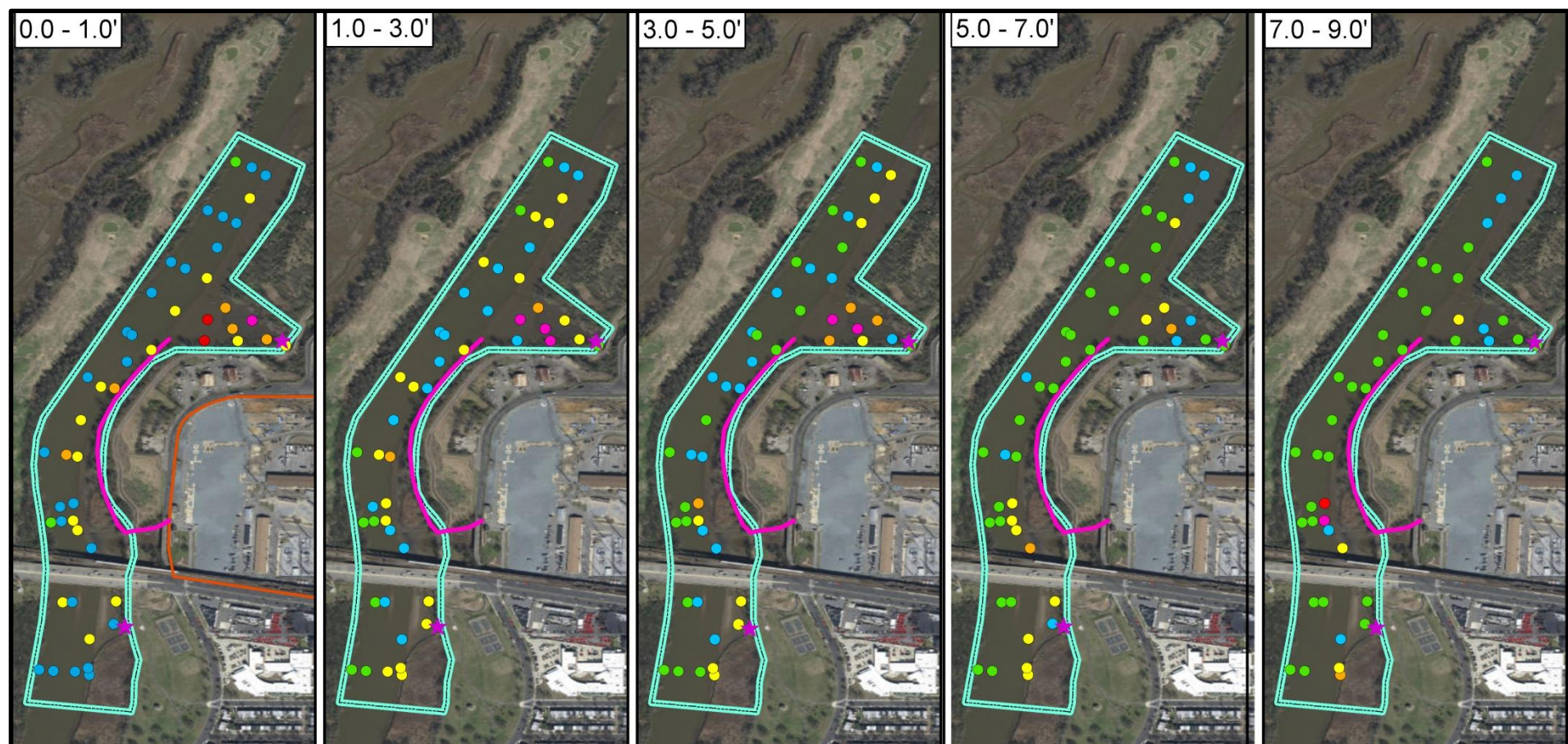




## Waterside Investigation

- River bottom survey to determine location and depth of river channel and identify buried utilities and debris.
- Collected 20 water samples and approximately 449 sediment samples from over 90 locations.
- Water and sediment sampling using barge or boat mounted equipment to ~ 8-10 ft below the mudline.
- Conducted pore water sampling, benthic macroinvertebrate surveys, and toxicity testing at 20 locations within the waterside investigation area and upstream background locations.





**Total PCBs (ug/kg)**

● <26.0 (Less than PSL)

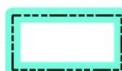
● 26 - 186

● 186 - 676

● 676 - 1,000

● 1,000 - 2,000

● >2,000



Waterside Investigation Area



Benning Road Facility Property Boundary



Approximate Location of Seawall



Outfall Location



***PCB Distribution in the Waterside Investigation Area  
Elevated PCB levels were detected in the Cove***



## Waterside Investigation Summary

- Surface water concentrations generally below screening levels and generally consistent with background conditions.
- Concentrations of several metals, pesticides, PAHs, and PCBs exceeded ecological screening levels in sediment in the Waterside Investigation Area. The highest concentrations of these constituents are generally located in the River Cove, into which Outfall 013 from the site and three other pipes not associated with the site discharge.
- Concentrations of most chemicals in surface sediment are consistent with background conditions, but surface sediment PCBs, particularly in the Cove, exceeded site-specific background concentrations.
- Waterside Investigation Area including the Cove is net depositional.
- These detections and the CSM framework are further subjected to a risk assessment to determine risks due to waterside contamination.

*The Anacostia River is an urban waterway with numerous off-site and upstream contaminant sources.*

# 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
- Conducted in accordance with guidance issued by the U.S. Environmental Protection Agency (EPA) for Superfund sites



# Baseline Human Health Risk Assessment

BHHRA evaluated two types of potential health effects:

- Cancer risks are expressed in terms of probability that exposure to a carcinogen will result in cancer.
  - EPA acceptable cancer risk level is 1 chance in one million to 1 chance in ten thousand ( $10^{-6}$  to  $10^{-4}$ ).
- Noncancer hazards are effects other than cancer, such as heart or liver disease.
  - Noncancer hazard is estimated using a Reference Dose (RfD), which is the amount of chemical a person (including sensitive individuals) could be exposed to on a daily basis without developing adverse health effects.
  - Comparison of the Site exposure estimate to the RfD establishes a Hazard Index (HI).
  - An HI greater than 1 suggests that an adverse effect is possible.



# Potential Human Receptors and Exposure Pathways

		LANDSIDE			
		Potential Human Receptors/Exposure Pathways			
Media	Potential Exposure Pathways	Current On-Site Worker	Current/ Future Construction Worker	Current/ Future Recreational Visitor	Future On-Site Worker
Soil	Ingestion, Skin Contact, Inhalation of Outdoor Air	○	●	●	●
Groundwater	Ingestion, Skin Contact, Inhalation of Outdoor Air	○	●	○	○
	Inhalation of Indoor Air	○	--	--	(a)

		WATERSIDE			
		Potential Human Receptors/Exposure Pathways			
Media	Potential Exposure Pathways	Current/ Future Swimmer	Current/ Future Wader	Current/ Future Angler	Current/ Future Shoreline Worker
Surface Sediment	Ingestion and Skin Contact	●	●	●	●
Surface Water	Ingestion and Skin Contact	●	●	●	●
Fish Tissue	Ingestion	○	○	●	○

- Potentially complete exposure pathway
- Exposure Pathway considered to be incomplete or insignificant
- Not Applicable
- (a) There are no current exposures. A screening level evaluation of the potential for vapors in groundwater to enter the indoor air of a hypothetical future building was conducted.

# Findings of Baseline Human Health Risk Assessment

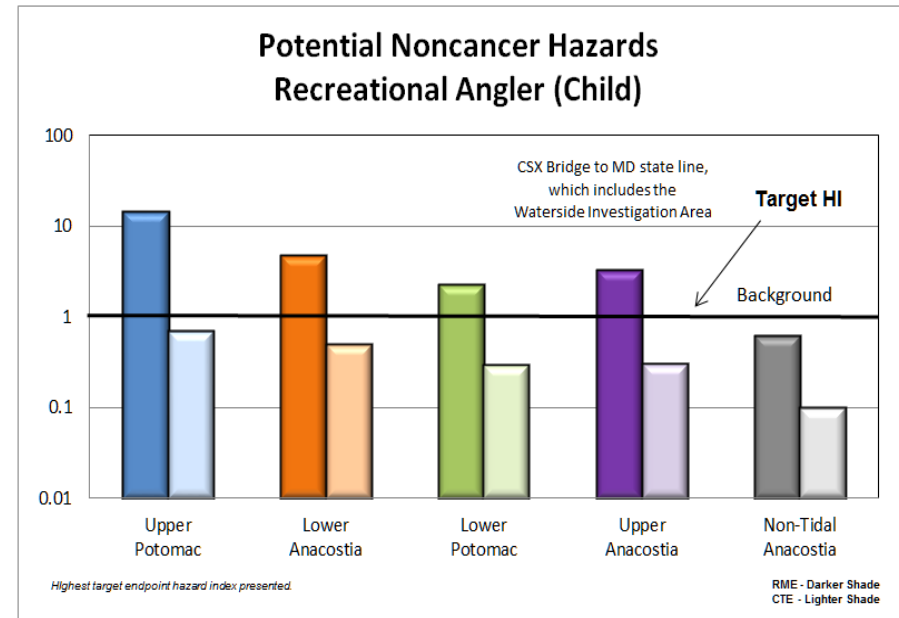
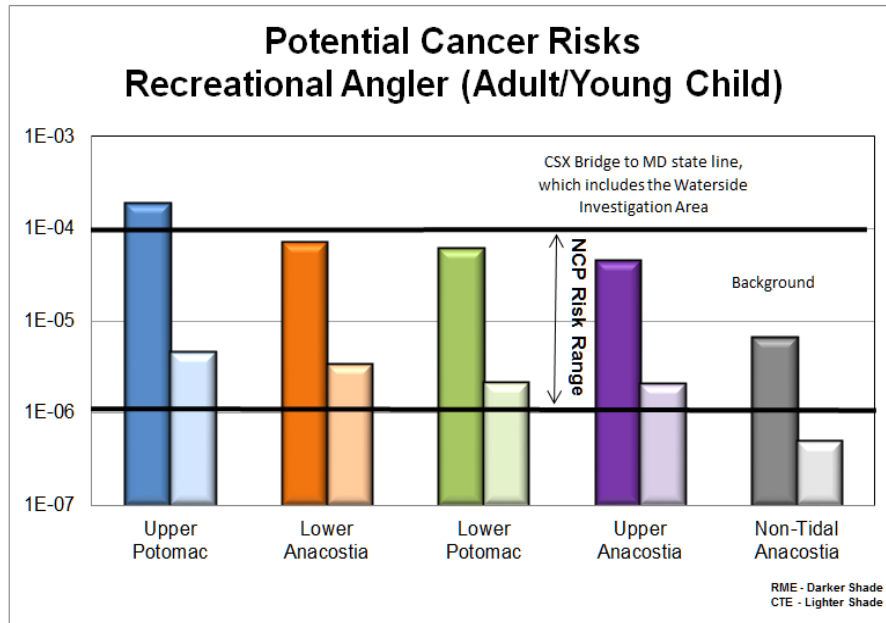
## Landside

- No unacceptable risks/hazards for all receptors under current conditions
- No unacceptable risk/hazard for future recreational visitor
- Risk/hazard for future workers exceeds acceptable risk benchmarks in limited areas
- Potential unacceptable risk/hazard from hypothetical future vapor intrusion pathway

## Waterside

- No unacceptable surface water risks/hazards for all receptors
- Slight sediment contact risk for worker, angler, and wader
  - Risk  $> 10^{-6}$  but less than  $10^{-5}$
- Fish consumption risk/hazard exceeds acceptable risk benchmarks
  - Fish samples from 3-mile stretch of Upper Anacostia River
  - Similar to risks/hazards for Lower Anacostia River and Potomac River

# Comparison of Regional Fish Consumption Risks



## Notes:

Upper Potomac River: Upstream of the 14th Street bridge

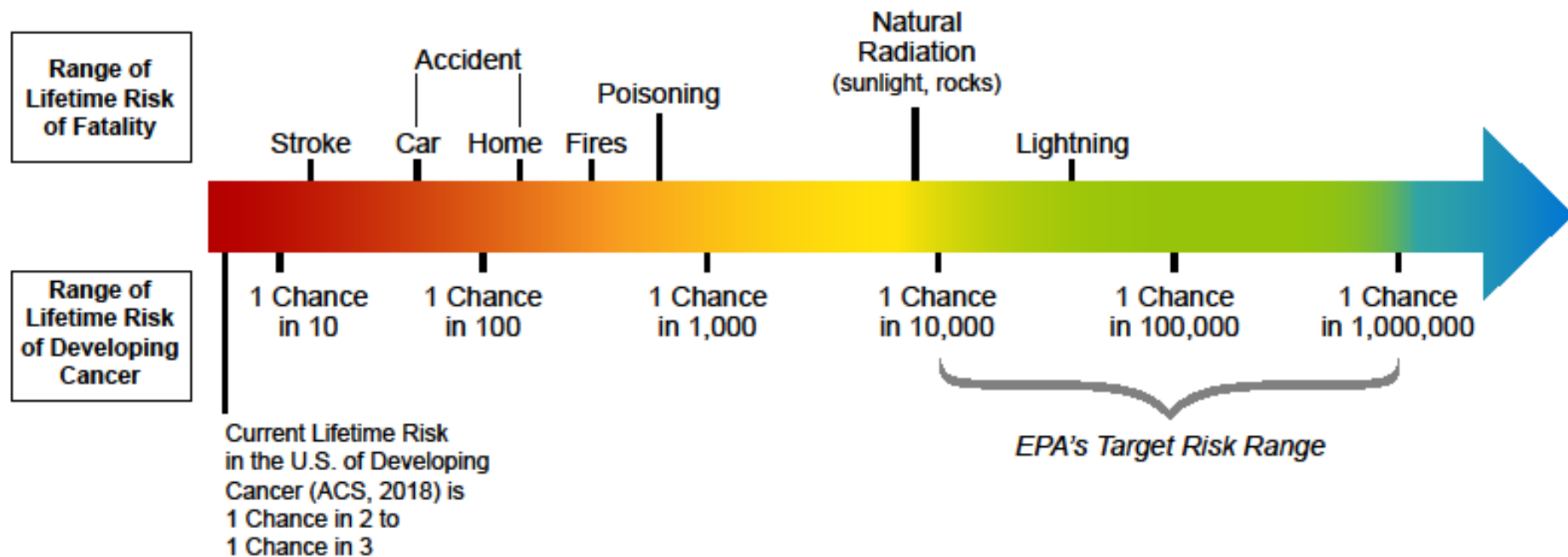
Lower Potomac River: Downstream of the 14th Street bridge

Upper Anacostia River: Upstream of the CSX bridge

Lower Anacostia River: Downstream of the CSX bridge

Non-Tidal Anacostia: Upstream of the Maryland state line

# Risks in Perspective



- Adapted from U.S. EPA 450/3-90-022, Mar. 1991, [http://www.epa.gov/air/oaqps/air\\_risc/3\\_90\\_022.html](http://www.epa.gov/air/oaqps/air_risc/3_90_022.html) (1996)

- American Cancer Society. 2018. *Cancer Facts and Figures 2018*.

<http://www.cancer.org/acs/groups/content/@nho/documents/document/acspc-024113.pdf>

# Baseline Ecological Risk Assessment

BERA evaluated:

- Direct contact with sediment and pore water by benthic macroinvertebrates (e.g., worms, insects)
- Ingestion of contaminated food sources and exposure to contaminated sediments and surface water by fish
- Ingestion of contaminated prey items (fish) and sediment by birds and mammals

## Findings of Baseline Ecological Risk Assessment

- No receptors evaluated in the BERA exhibited a high potential for ecological risk.
- For the majority of receptors, the BERA found no potential for ecological risk.
- For benthic macroinvertebrates, the BERA found a low potential for risk near the cove, however, similar risks were found for the upstream background area.
- No potential risk was identified to fish.
- No potential risk was identified to wildlife.



## Next Steps

## Cleanup Actions Already Underway or Completed

- Closed-circuit television (CCTV) inspection of the facility storm drain system was conducted in 2015 and repeated in 2018. Based on the investigations, Pepco performed cleanout of the storm drain system and carried out repairs.
  - Removed 47 cubic yards of accumulated sediments (which may have been a continued source of contamination) (**Completed in August 2015**)
  - An additional 9.5 tons of sediment was removed (**Completed in 2018**)
  - Storm drain repairs and replacements (**Completed in 2018 and 2019**)
- Installed various stormwater treatment measures (biofilters, physical media filtration and adsorption to remove metals and suspended solids [**Completed in 2017 and 2018**]).
- Cooling Tower concrete basins and impacted soil removal (**completed in 2017**).
  - Complete removal and off-site disposal of concrete basins – approximately 6,666 tons of PCB-contaminated concrete
  - Excavation and off-site disposal of approximately 9,923 tons of PCB-contaminated soil

## Next Steps

- Hold a public meeting to update the community on Draft Final RI Report findings (*today's meeting*)
- Address public comments and finalize the RI Report (*Pepco and DOEE, February 2020*)
- Conduct Treatability Studies and submit Treatability Study Report to DOEE (*Pepco, October 2020*)
- Submit Draft Feasibility Study Report to DOEE per Consent Decree schedule (*Pepco, February 2021*)
- Submit the Final FS report after DOEE review of and public comment on the Draft FS Report (*Pepco, September 2021*)
- Select remedy and prepare Record of Decision (*DOEE*)

*Detailed schedule is available on the Benning Service Center website  
(<http://benningservicecenter.com/benning-consent-decree/documents.aspx>)*

# Draft RI Report Public Comment

- DOEE and Pepco are inviting public comments.
- Public Comment period closes on November 18, 2019.
- DOEE will accept comments in the following format.

[Comment Form](#)

**Pepco Benning Road: Draft Remedial Investigation Report Comments**

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## Questions and Comments

