Newtown Creek Superfund Site
CAG Technical Meeting
July 24th, 2018

Presentation Overview

- CSTAG Recommendations 2015
- In-depth look at progress made on CSTAG Recommendations
  - NAPL Delineation
  - NAPL Mobility
  - Shoreline Assessment
  - Ebullition
- Path Forward

Contaminated Sediments Technical Advisory Group (CSTAG) Meetings/Recommendations

- CSTAG Recommendations provided (July 2015)
- EPA response outlining goals (October 2015)
- Follow-up meeting with CSTAG (July 2017)
- Many CSTAG recommendation completed - some are ongoing.
- Summary of CSTAG recommendations and progress is summarized in the following slides

Summary of 2015 CSTAG Recommendations

- Recommendation 1/4/9 – Potential sources of recontamination and their significance
- Recommendation 3 – Coordination with NYSDEC
- Recommendation 5 – Lines of evidence for assessing sediment deposition
- Recommendation 6/14 – NAPL impacts and evaluation strategies
- Recommendation 7 – Analyses for evaluating benthic risk
- Recommendation 10 – Approaches for establishing background concentrations
- Recommendation 11/15 – Collection and use of fish contamination data and baseline sampling

Recommendation 1 – Identify all piped conveyances and estimate contributions to contaminant loadings

- Completed point source and groundwater investigations (Dec. 2015)
- Initial modeling of point source loadings and groundwater submitted with Draft RI Report (Nov. 2016). Under revision by the NCG.

Recommendation 4 - Refine Conceptual Site Model (CSM) to more accurately quantify significance of other sources (erosional shorelines, groundwater, and leaking bulkheads)

- Erosional shoreline sediment and shoreline seep sampling conducted in October 2017.
- Round 2 groundwater seepage measurements completed by USGS in June 2017. Report will be used to refine groundwater loading estimate and support groundwater modeling.
- Erosional and seepage data will be incorporated into the revised Draft RI.
- Review of existing upland data/reports to identify potential upland sources in progress.

Recommendation 9 – Develop plan for evaluation of NYCDEP CSO data and non-EPA-approved data

- EPA reviewed NYCDEP CSO data
- NYCDEP CSO dataset is similar to that collected under EPA oversight
- Non-EPA-approved data is evaluated on a case-by-case basis

Recommendation 3 – Increase collaboration with NYSDEC's Clean Water Act program

- NYSDEC participates in project conference calls, meetings, and reviews major documents
- Coordinating with EPA CWA, NYSDEC, and New York City on path forward under Superfund program.

Recommendation 5 – Multiple lines of evidence for assessing sediment deposition

- CSTAG felt sedimentation rates were too high and needed to be reviewed and refined
- Modeling technical working group developing site erosion/deposition rates for various reaches of the creek
- Lines-of-evidence approach being used

Recommendation 6 – Consider using removal action to more quickly remediate NAPL sources

- Ongoing evaluation of the RI data
- NAPL refinement and mobility field work completed in Spring 2018
- EPA is currently assessing potential upland sources

Recommendation 14 – Evaluate ebullition as transport mechanism and NAPL delineation .

Field Investigations:

- Qualitative and Quantitative ebullition surveys ongoing
- Further NAPL delineation and NAPL mobility assessment (completed in Spring 2018)

Recommendation 7 – Analyses for evaluating benthic risk

- Revised Draft BERA to include robust discussion of potential impacts to benthic invertebrates
- Revised draft to be distributed
- This could be a topic discussed in detail at future CAG meetings

Recommendation 10 – Approaches for establishing background concentrations

- Fourteen candidate reference areas, representing four categories, were identified, sampled, and evaluated
- BERA
  - Four areas representing different categories were selected for the BERA
  - All reference areas sampled for contaminants of concern, and physical parameters
  - Newtown Creek data were compared to each individual reference area and to a combined "Reference Envelope" using all four areas as one data set
- RI
  - Background concentration evaluation used all 14 reference areas
  - EPA is currently evaluating background values for the RI

Recommendation 11/15 – Collection and use of fish contaminant data and baseline sampling

- Round 1 biota sampling completed in Spring/Summer 2014
- Round 2 biota sampling is in progress - Spring/Summer 2018
- All rounds include collection fish, crab, and bivalve tissue samples

Recommendation 2 – Meaningful community involvement and outreach efforts

- Community Involvement Plan completed
- Working with CAG on independent meeting facilitator
- Worked with the CAG to install Fishing advisory signage and provide outreach materials in multiple languages

Recommendation 8 – Develop a data management plan

- Data is delivered to Region 2 in accordance with EPA Regional Electronic Data Deliverable (EDD) guidelines
- Data is uploaded to EQuIS environmental database, reviewed, and evaluated

Recommendation 12 – Division of site into smaller decision units

- Site divided in reaches in RI Report for data evaluation (e.g., main stem, turning basin, tributaries)
- Division into smaller decision units will be done in the FS

Recommendation 13 – Bulkheads contribution to contamination and potential for improvements

- Currently being addressed on case-by-case basis
- Collapses/bulkhead modifications under purview of NYSDEC and USACE. EPA coordinates with NYSDEC and USACE on Superfund aspects
- To be evaluated in detail as part of the FS

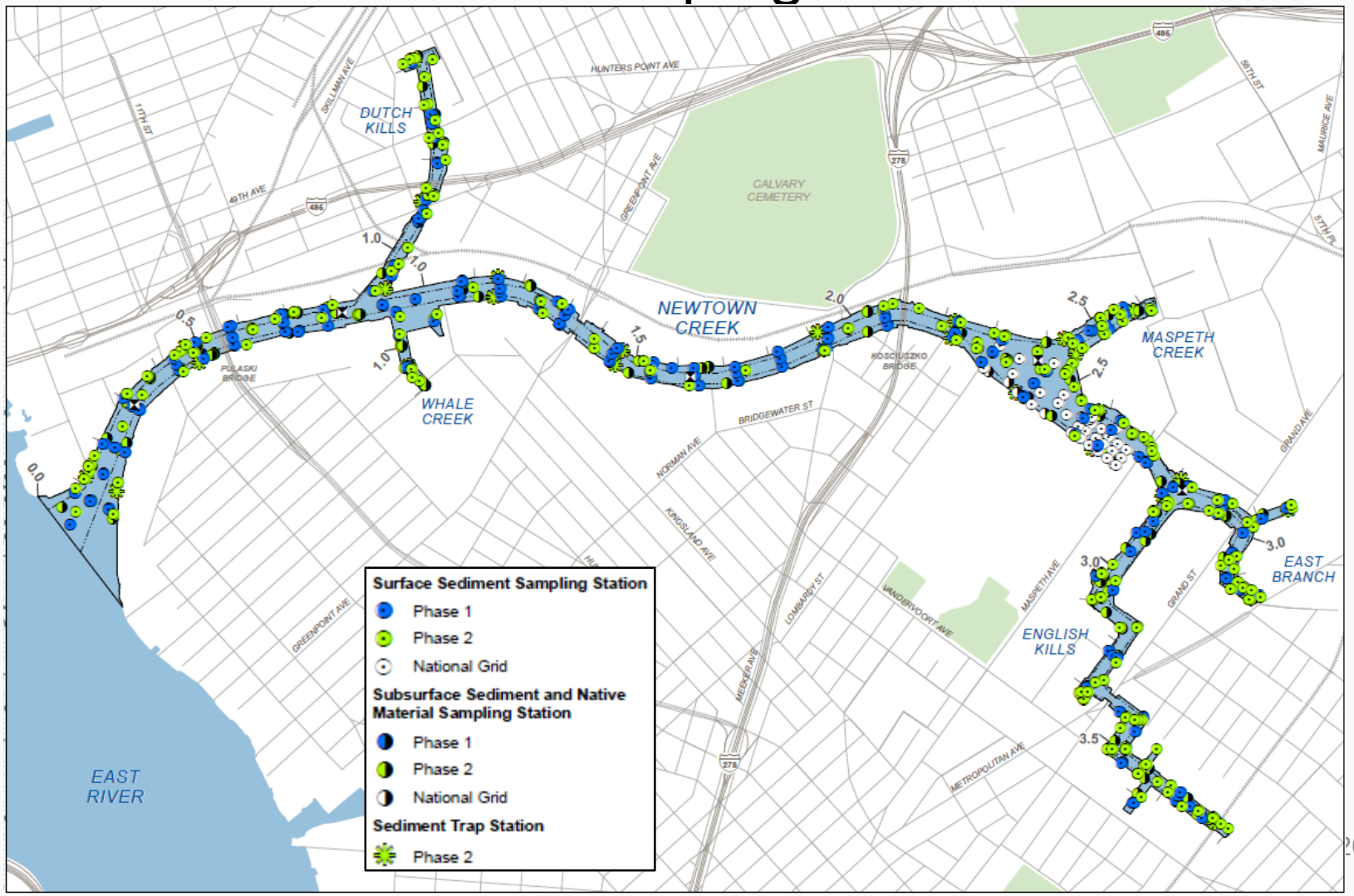
In-depth look at progress

- NAPL Delineation
- NAPL Mobility
- Shoreline Assessment
- Ebullition

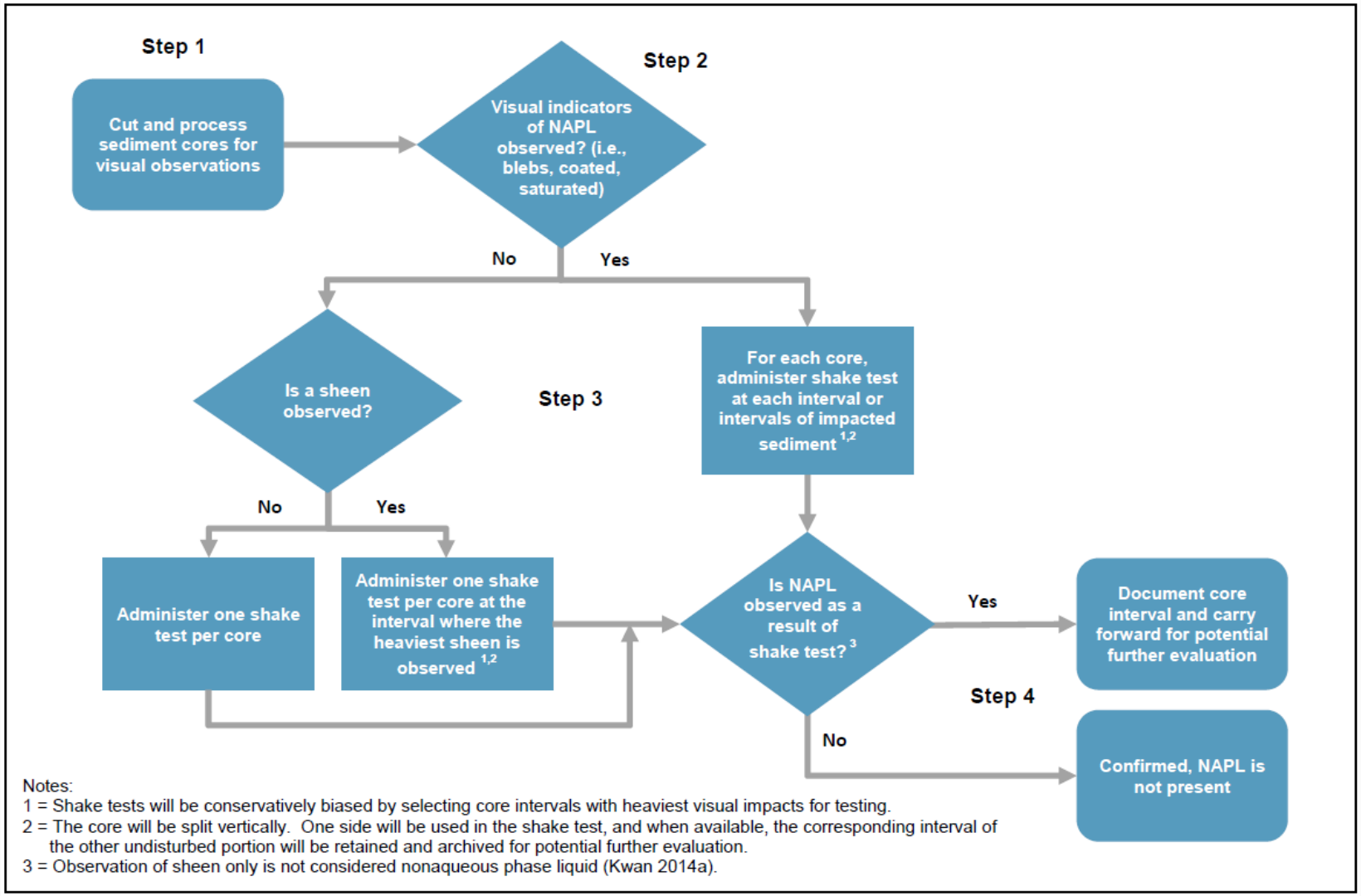
NAPL Delineation

- Phase 1 - Visual observations of cores showed evidence of NAPL in some creek areas
- Phase 2 -
  - Refined NAPL identification process and included standard NAPL visual identification methods and shake testing
  - Developed process for categorizing NAPL in cores (shake test and visual observations)
  - Evaluated Phase 2 NAPL data and Identified key NAPL areas (Category 2/3 areas)
- FS Field Work – Required collection of additional NAPL cores to refine the vertical and horizontal distribution of NAPL in Category 2/3 areas

NAPL Delineation – RI Sampling Locations

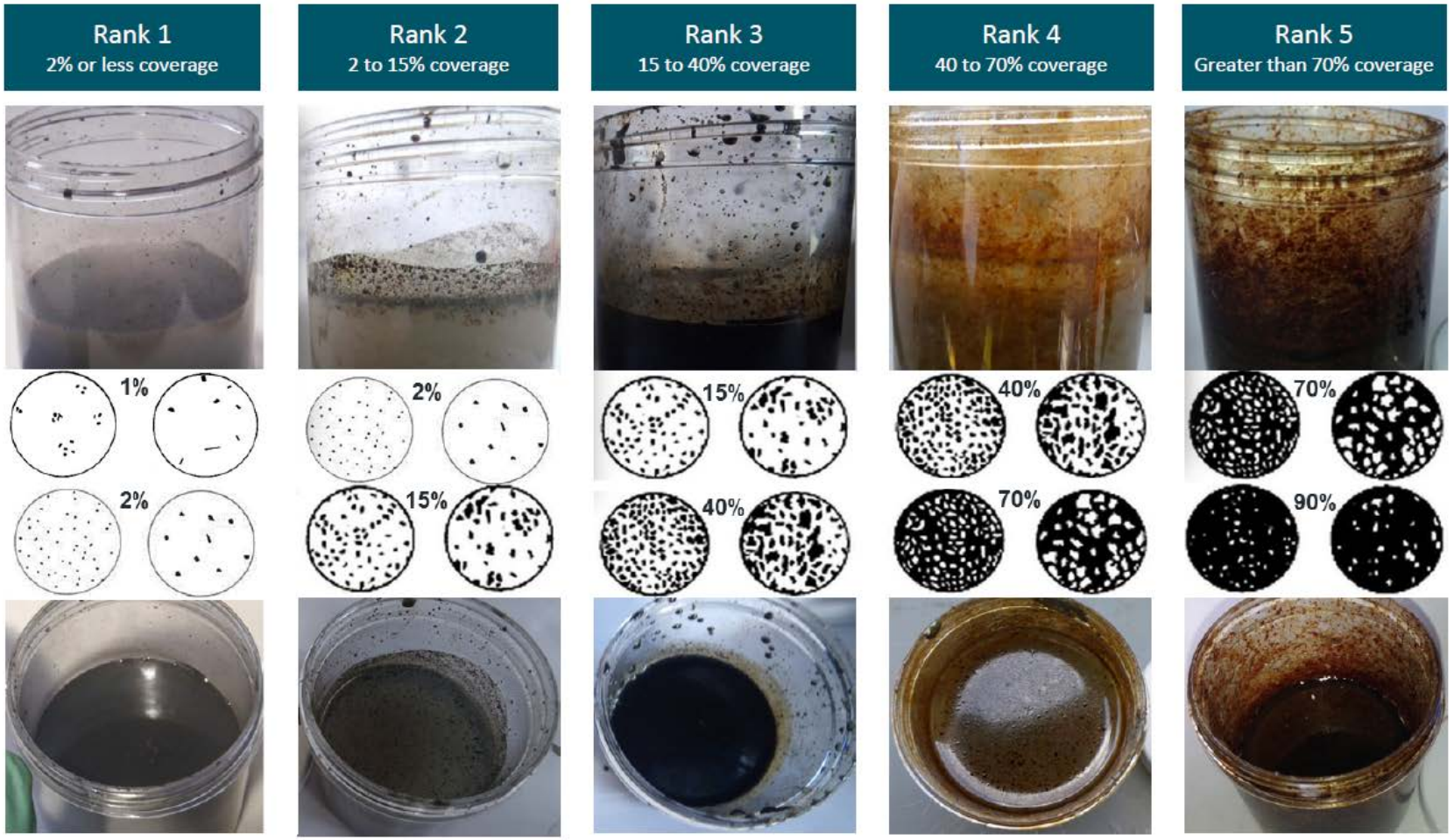


NAPL Delineation – Flow Chart for Field Identification of NAPL



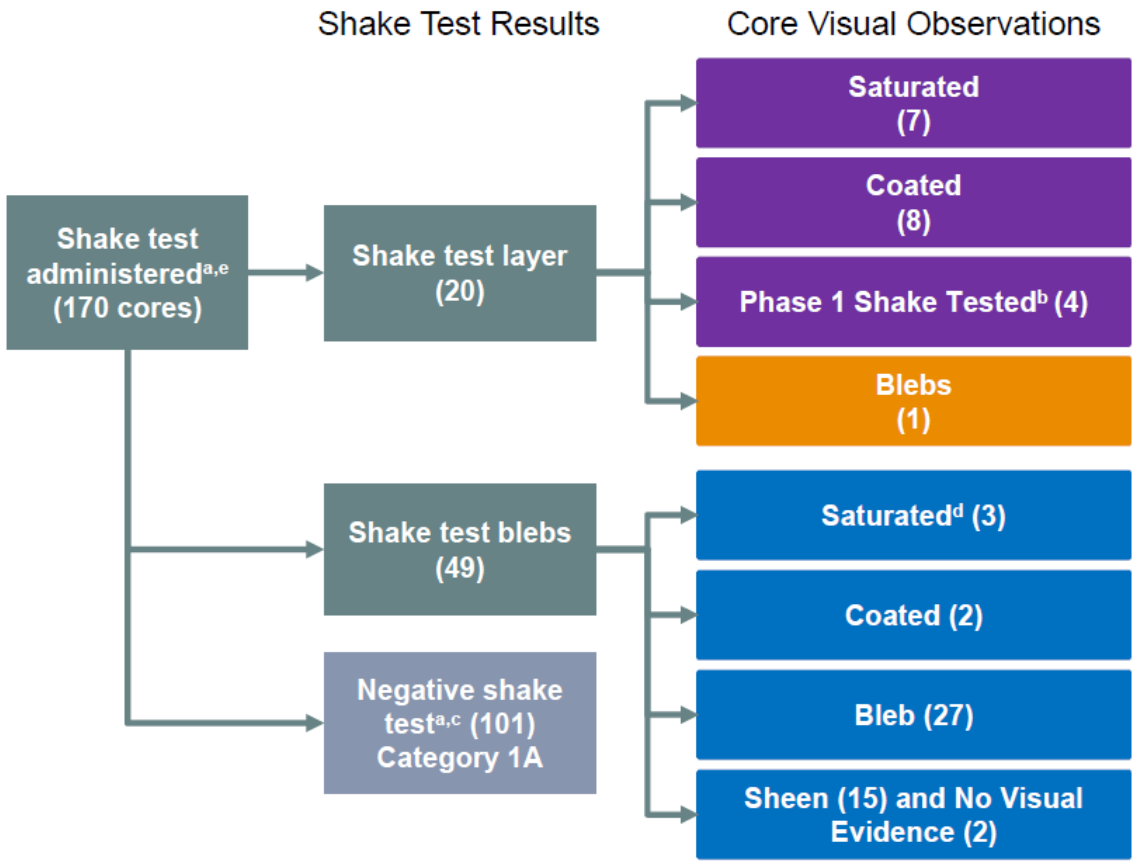
Notes:
1 = Shake tests will be conservatively biased by selecting core intervals with heaviest visual impacts for testing.
2 = The core will be split vertically. One side will be used in the shake test, and when available, the corresponding interval of the other undisturbed portion will be retained and archived for potential further evaluation.
3 = Observation of sheen only is not considered nonaqueous phase liquid (Kwan 2014a).

NAPL Delineation – Shake Test Bleb Rank Scale



Note: Comparison charts for visual estimation depicted above from the *Manual of Field Geology* (Compton 1962).

NAPL Delineation – Flow Chart for Shake Test Evaluation

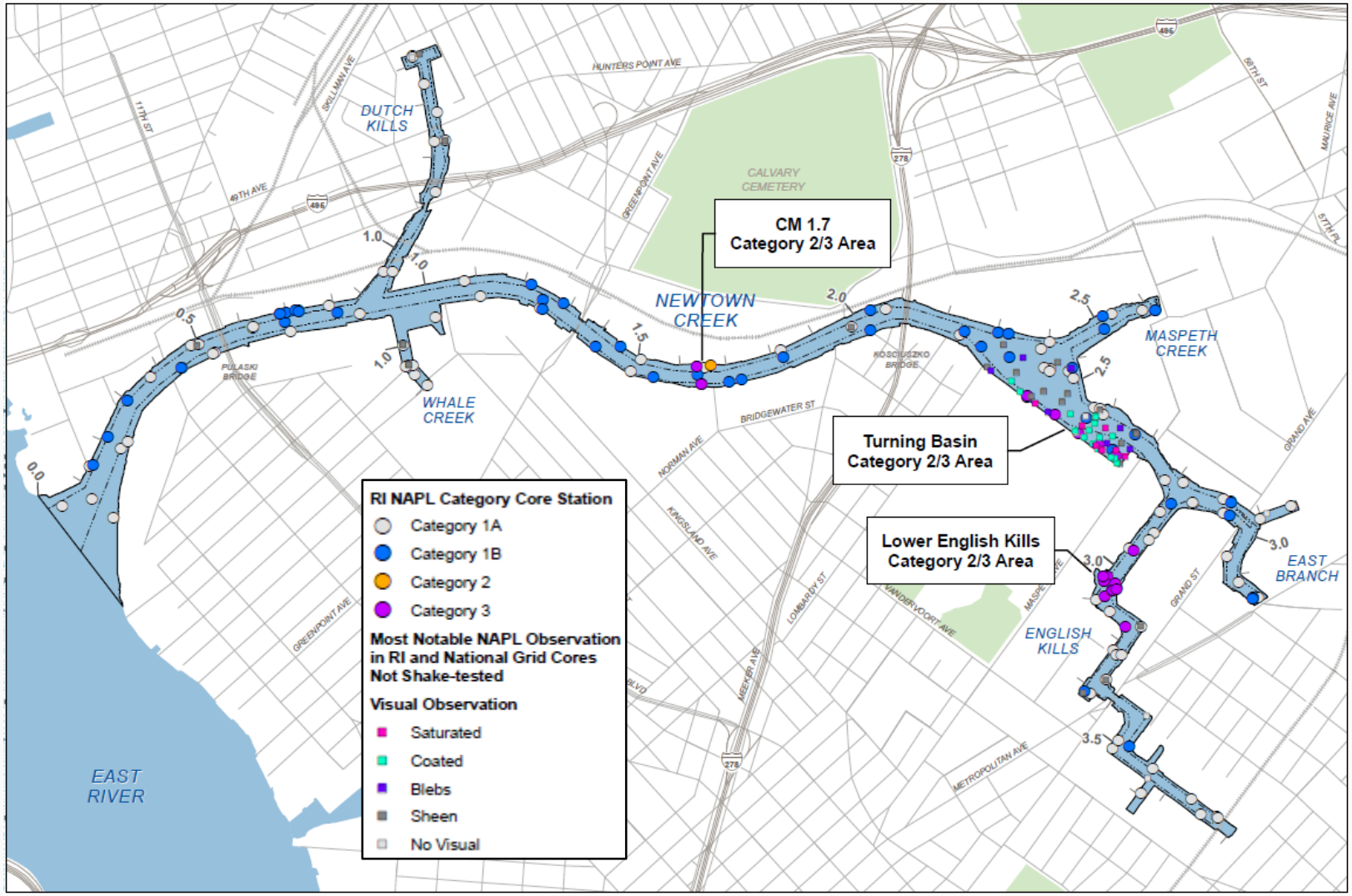


Notes:
a = Includes four additional cores with no visual evidence that were not shake tested—referred to as Phase 2 deviation cores.
b = Phase 1 visual observations include oil-coated and oil-wetted. Cores will be treated as Category 3.
c = Count includes one Phase 1 core with a negative shake test.
d =Three Category 1B cores have saturated visual observations. The shake test for one of these cores (EK093SC-A) was not performed on the saturated visual observation interval. EK093SC-A was evaluated as part of the English Kills area Category 2/3 process.
e =Count includes 19 Phase 1 archive cores processed in Phase 2.

Categories:

3, 2	Further evaluation
1B	Targeted evaluation
1A	No further evaluation

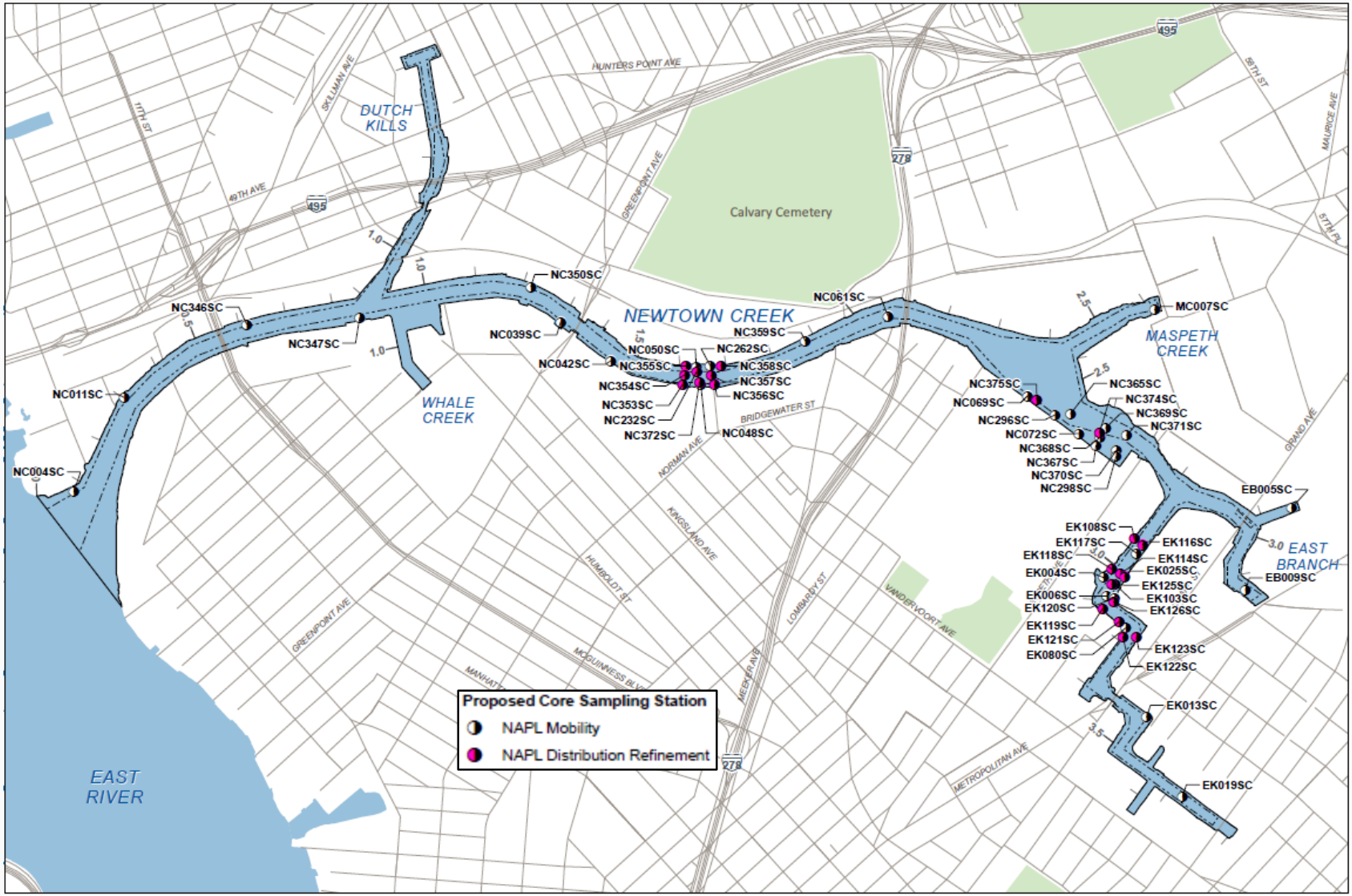
NAPL Delineation – RI NAPL Categories



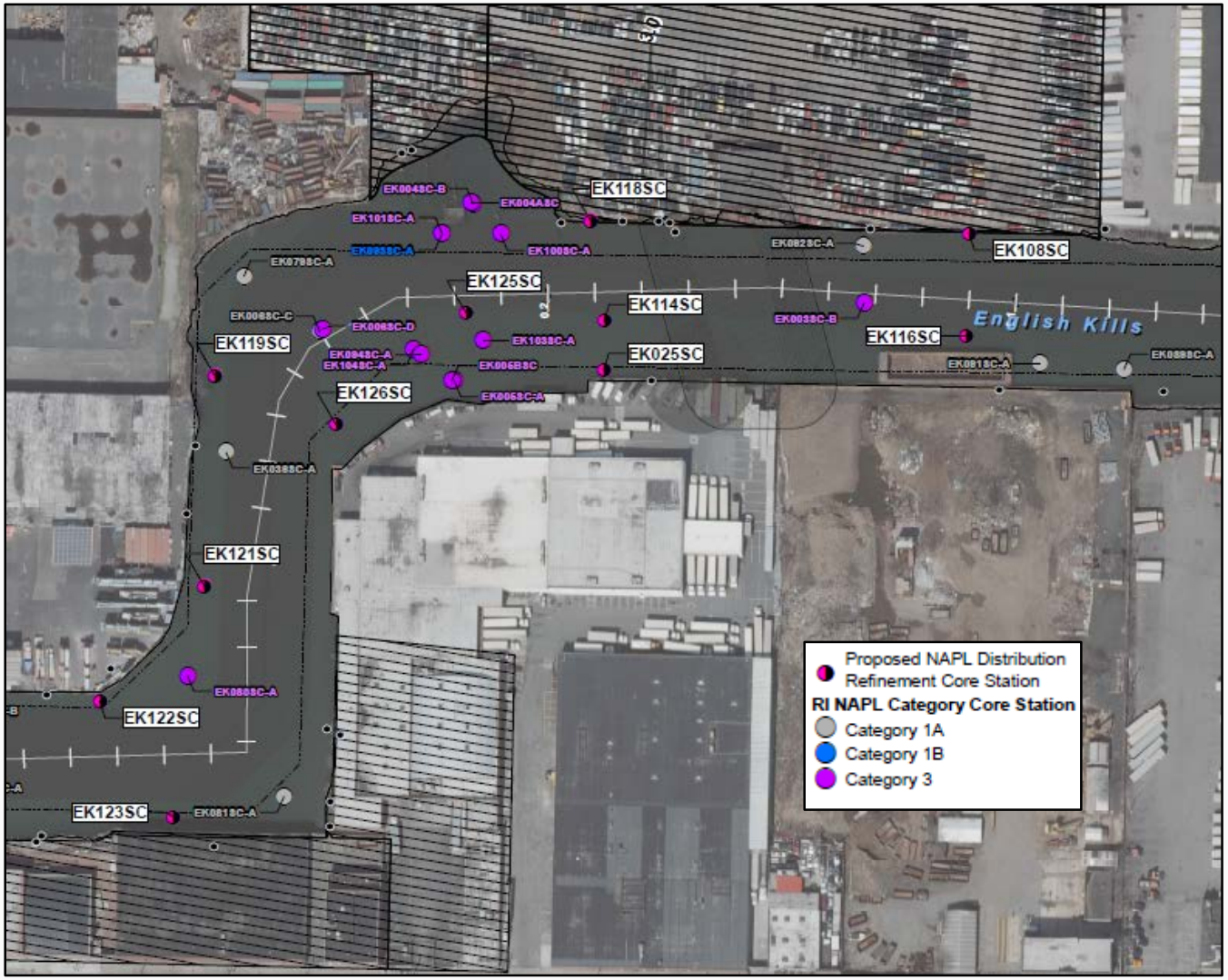
NAPL Distribution Refinement

- Collect and process additional cores in NAPL Category 2/3 areas
- Refine the lateral and vertical boundaries of NAPL in Category 2/3 areas
- Includes core collection, visual observations, and shake tests
- Data will be used to support evaluation of remedial alternative in the FS.

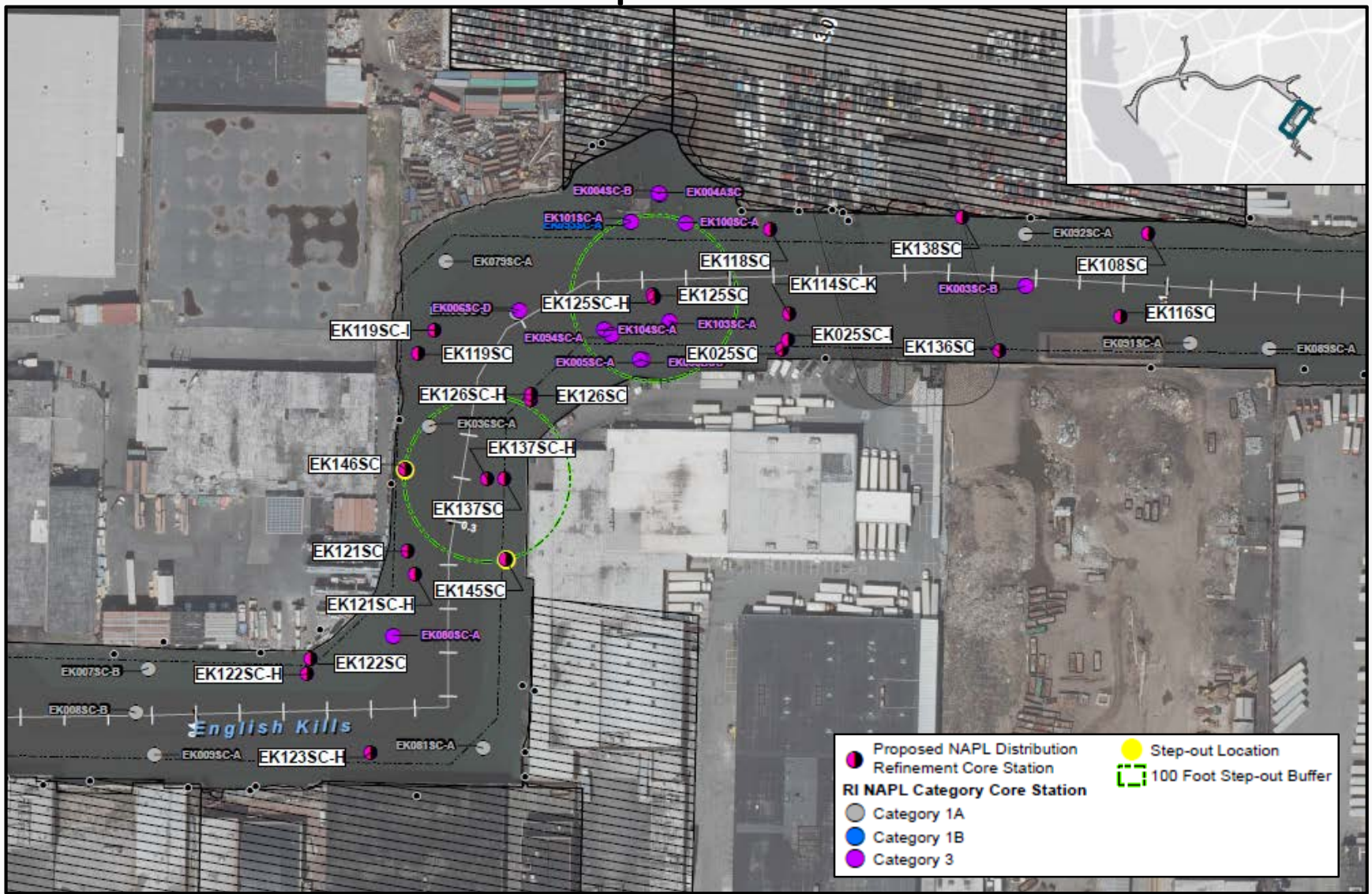
NAPL Refinement – Sampling Locations



NAPL Refinement – Sampling Locations (example English Kills)



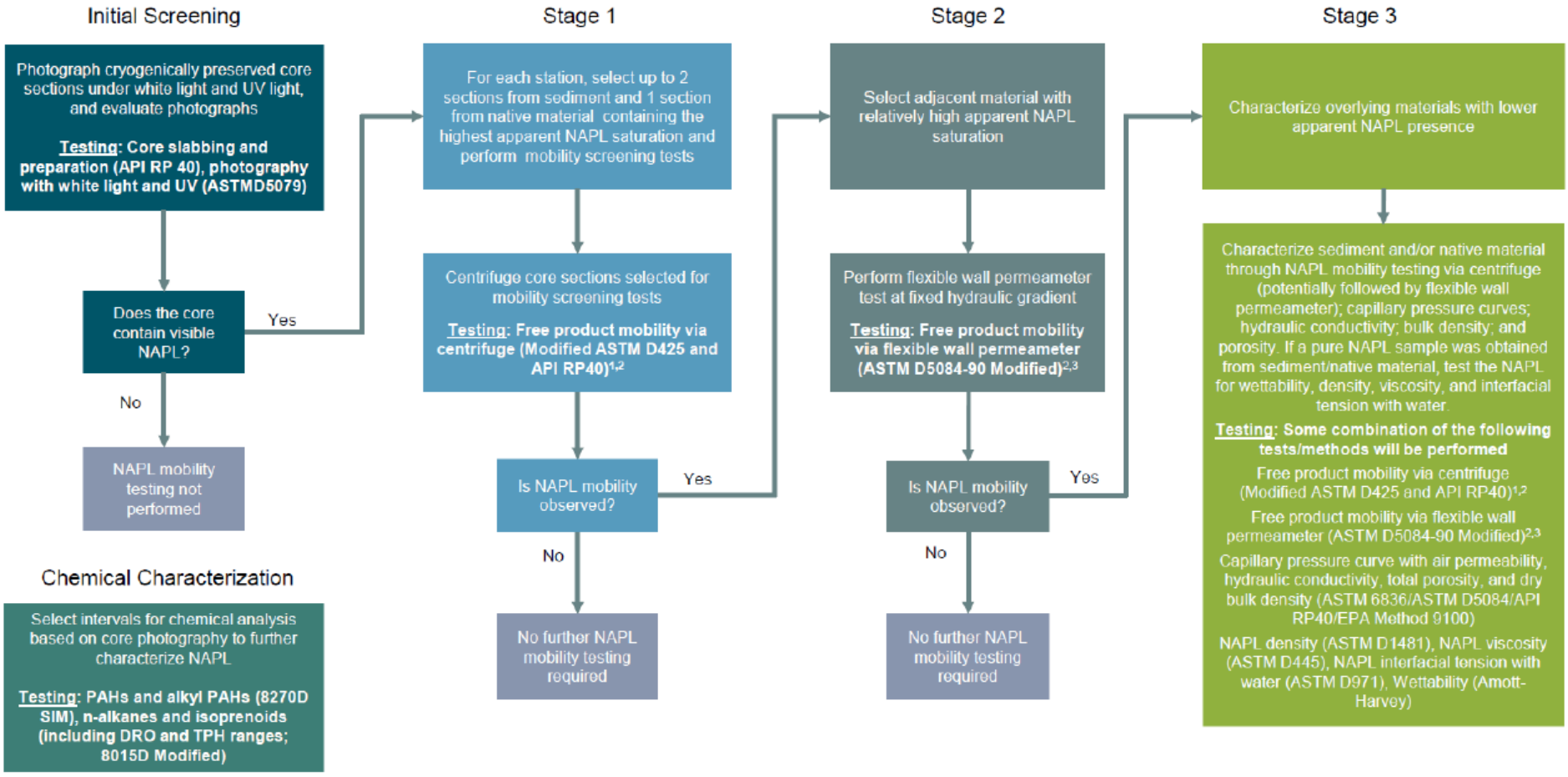
NAPL Refinement – Step-out Cores



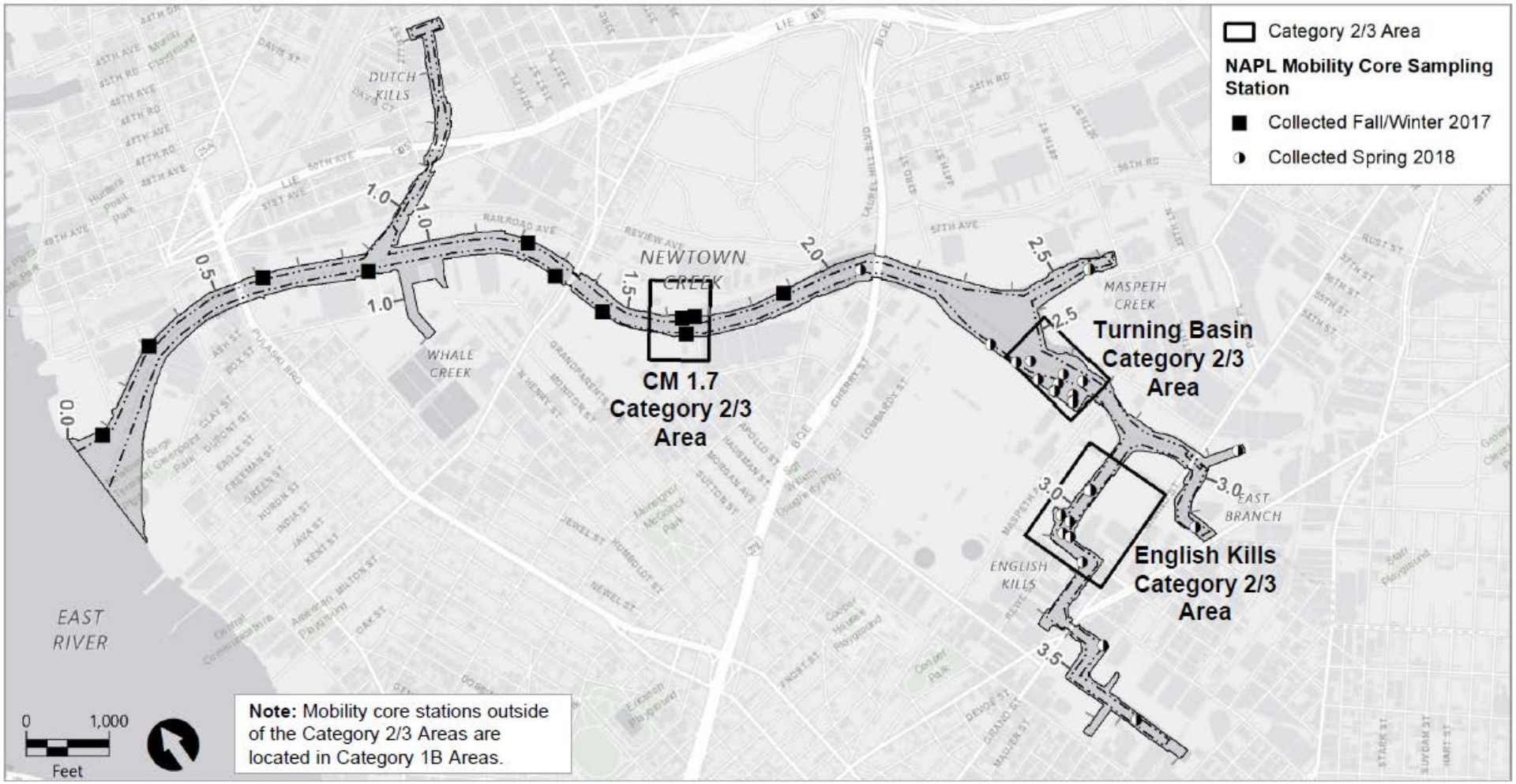
NAPL Mobility

- Characterize NAPL mobility and other physical parameters
  - Characterize potential for mobility in areas most likely to contain potentially mobile NAPL
  - Confirm lack of mobility in areas where RI indicated mobility is unlikely

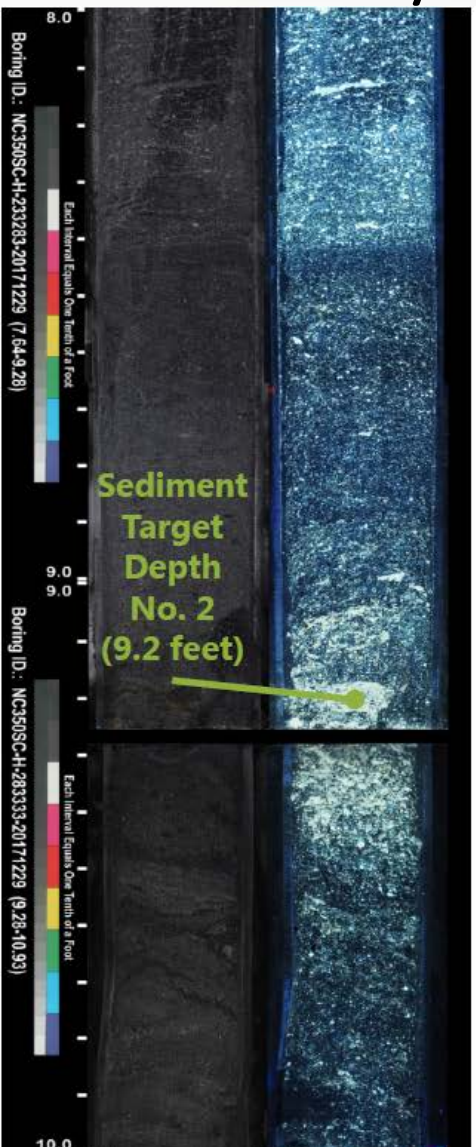
NAPL Mobility – Staged Approach for Testing

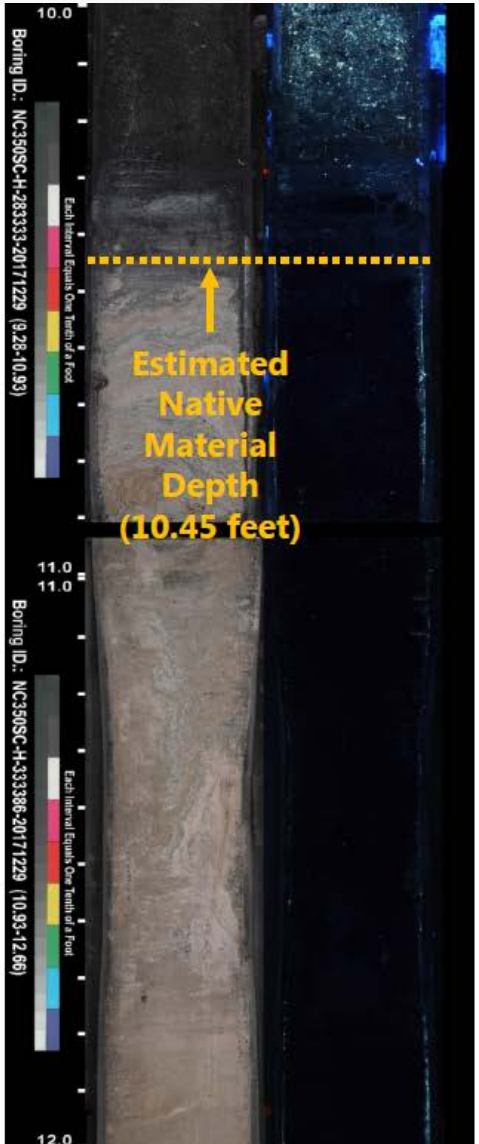


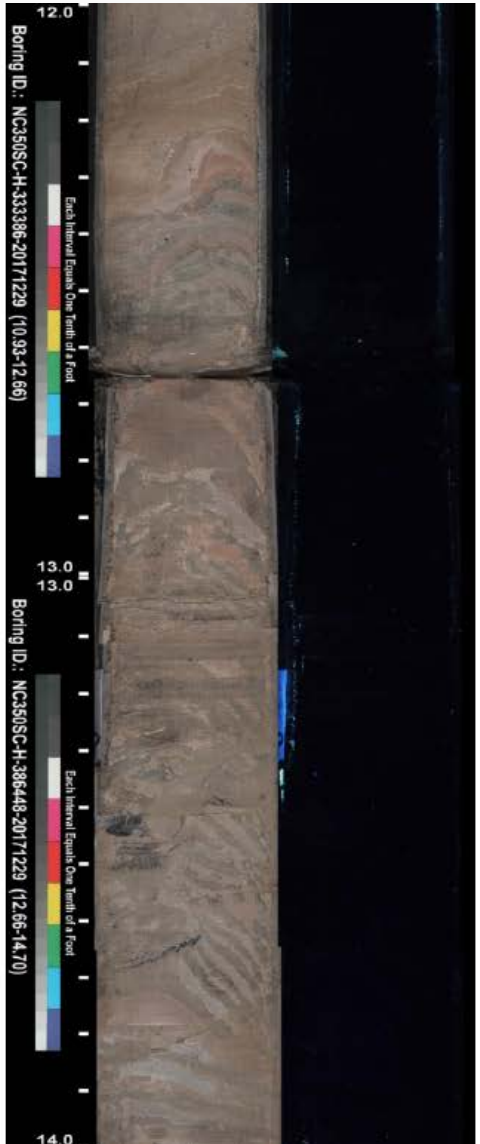
NAPL Mobility – Core Stations

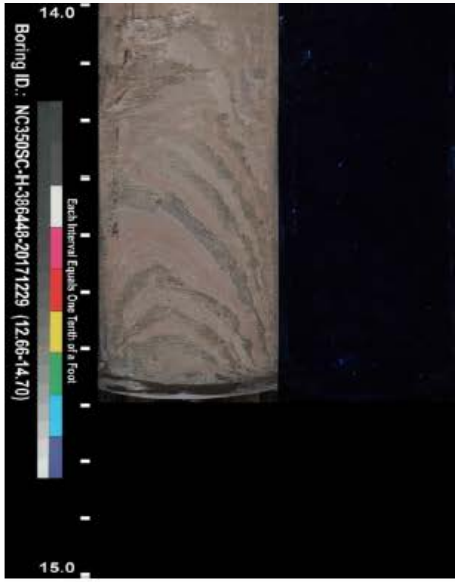


NAPL Mobility









NAPL Mobility Testing Results

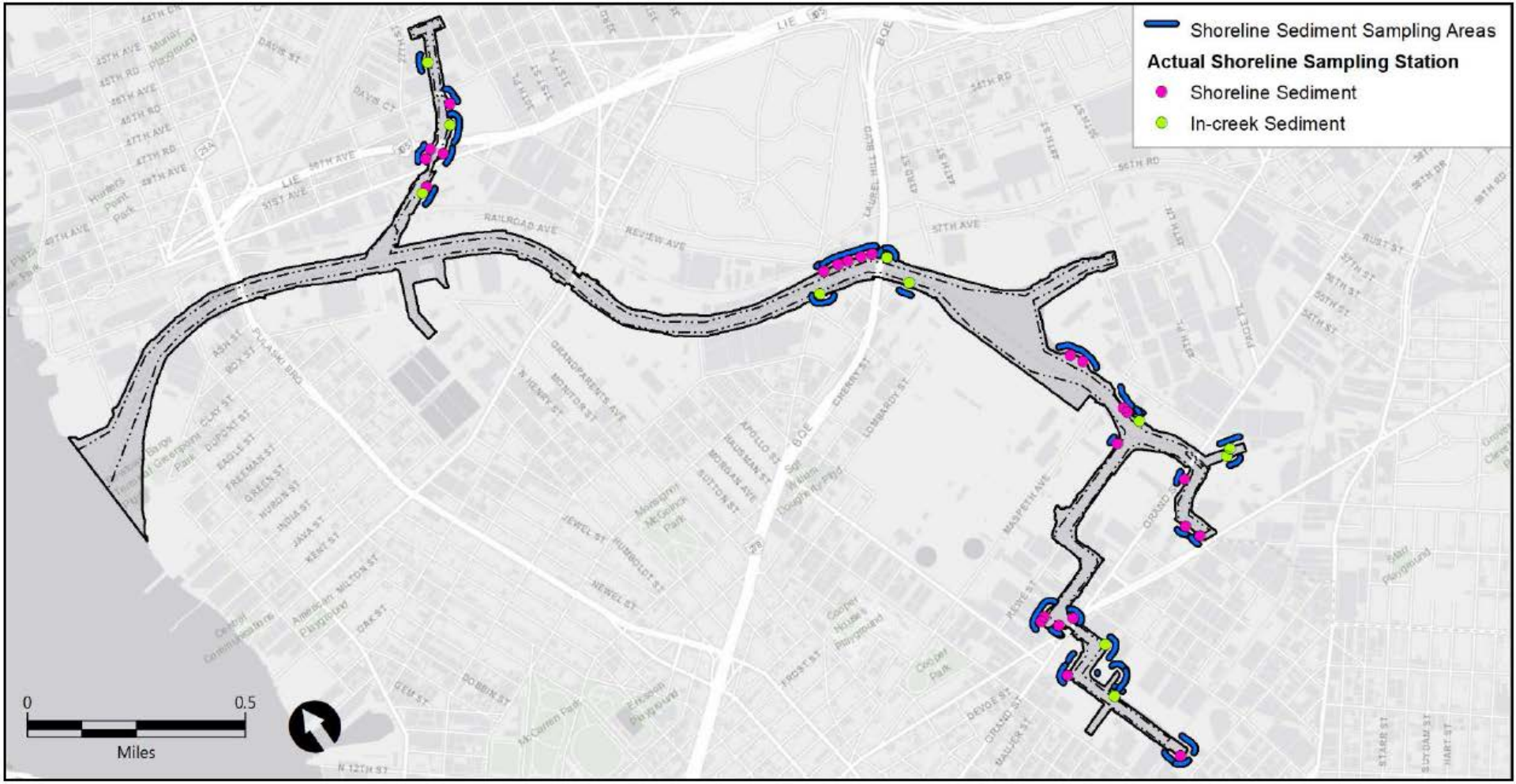
- Initial testing including centrifuging sample at 25 times gravity for 10 hours.
- Initial testing results did not indicate mobile NAPL in the cores tested.
- Testing of cores from other areas of the creek are currently being conducted.

Shoreline Assessment

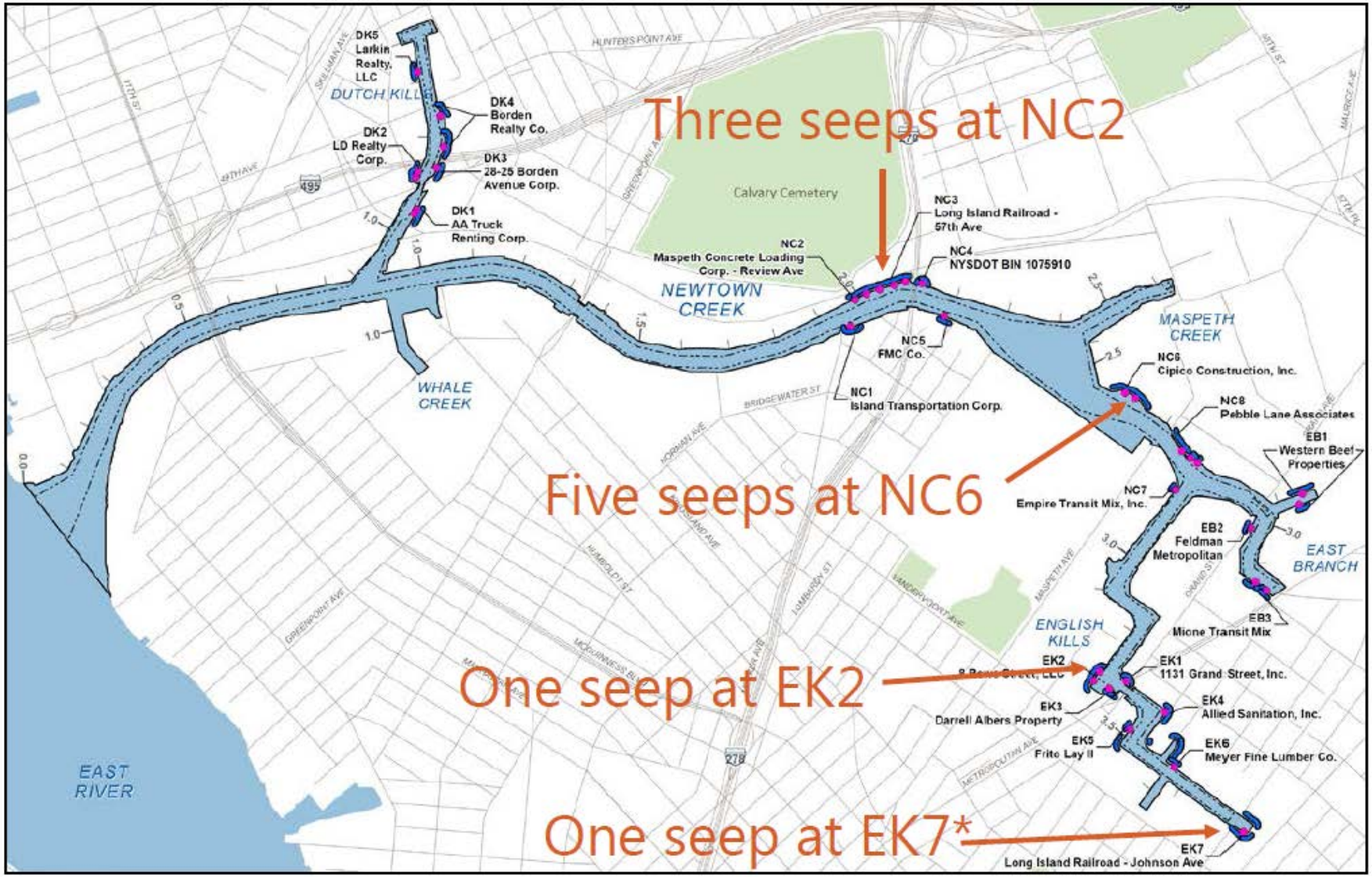
Goal: Further characterize contaminant distributions in and near potentially erodible shorelines and identify potentially significant source areas

- Sediment sampling
  - Prioritized areas of elevated sediment concentrations or data gaps
  - Sampling complete at 23 selected sites (total of 35 samples)
- Opportunistic Seep
  - Nine seeps were sampled

Shoreline Assessment – Sediment Sampling



Shoreline Assessment – Seep Sampling



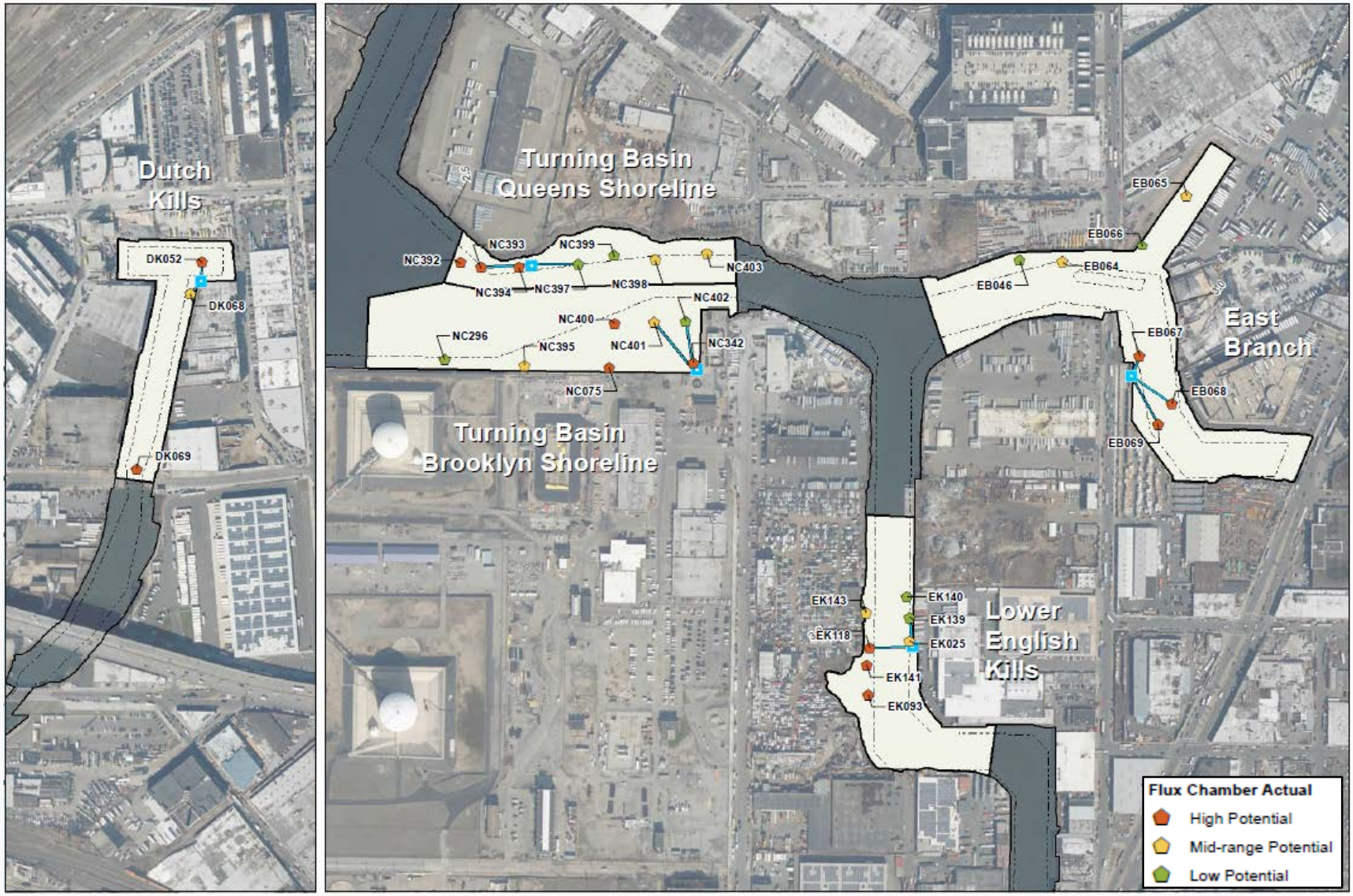
Ebullition

- Goals:
  - Measure upward fluxes of gas and NAPL/contaminants from the mudline to the surface water
  - Evaluate the effect of environmental conditions on gas ebullition-facilitated NAPL/contaminant transport
- Rationale for selecting areas
  - Survey areas were selected to represent the parts of the Creek with the highest gas ebullition-facilitated NAPL transport potential

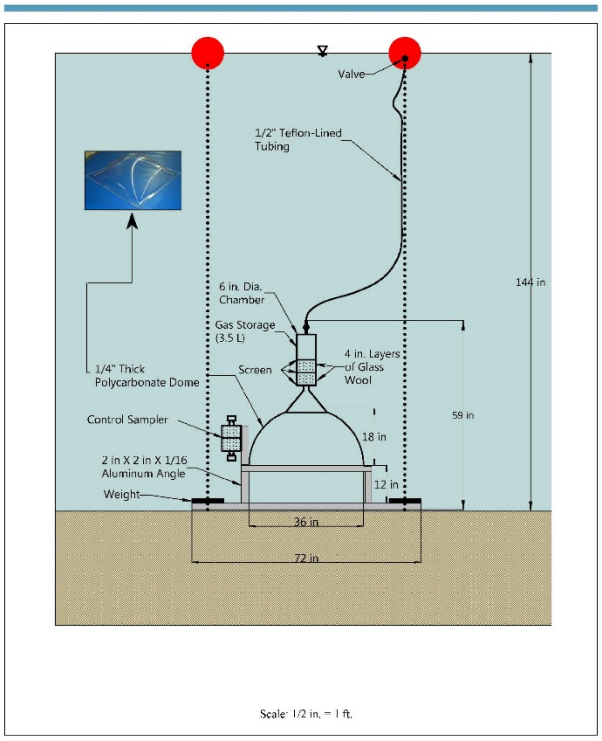
Ebullition Survey and Pilot Study

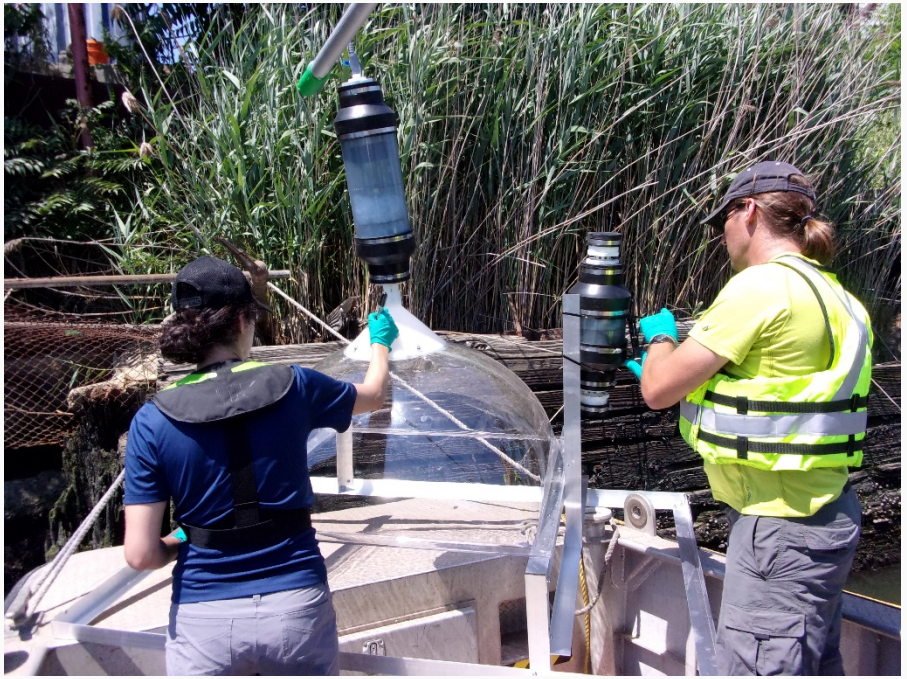
- Completed two qualitative ebullition surveys (2015, 2016)
- Quantitative ebullition pilot test completed in Sept 2017
- First Event of full-scale ebullition quantitative investigation July 2018
- Second full-scale ebullition event scheduled for fall 2018.

FS Field Investigation - Ebullition

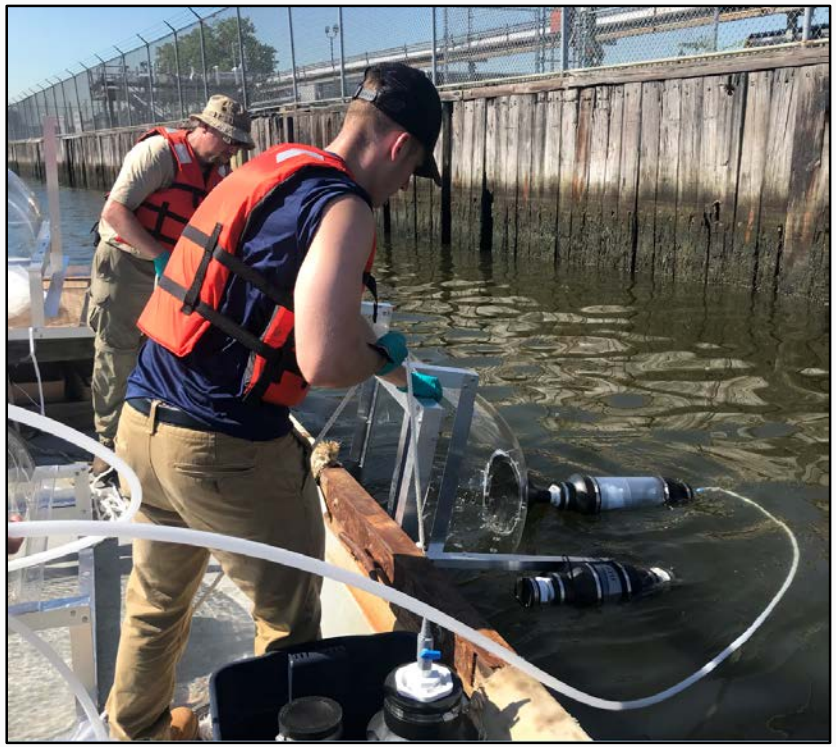


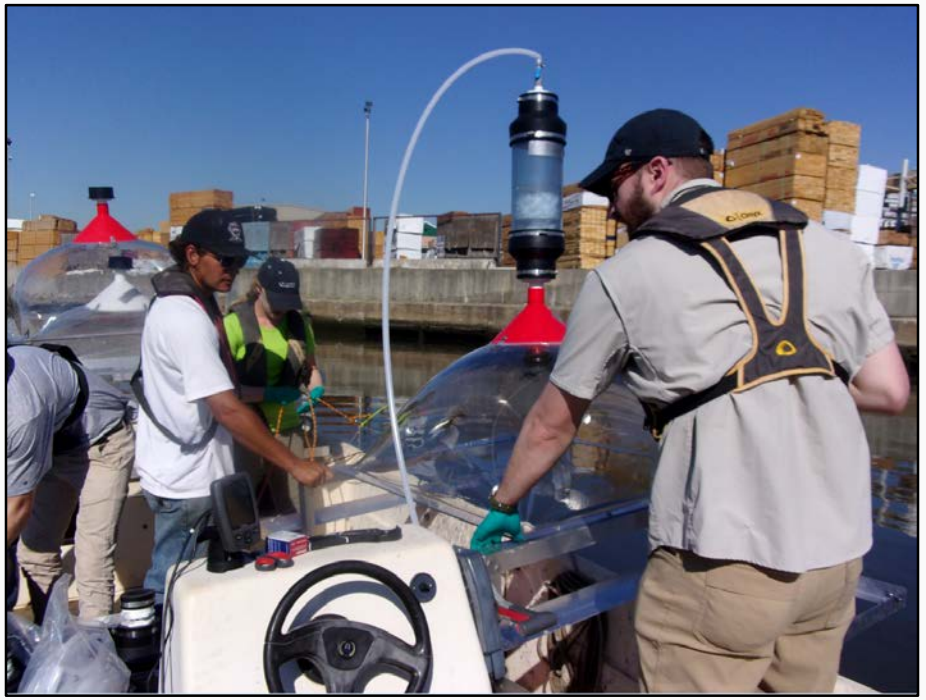
Flux Chambers:





FS Investigation - Ebullition





Next Steps

- RI Report – Final Draft
- RI Modeling – Hydrodynamics and Sediment Transport – Final Draft
- BHHRA – Final
- BERA – Revised Draft

Questions??????