



Newtown Creek Superfund Site Supplemental Characterization of Shallow Lateral Groundwater Discharge





Outline

- Introduction
- Objectives and Guiding Concepts
- Definition of Shallow Lateral Groundwater Discharge
- Proposed Elements of Supplemental Data Collection
- Proposed Work Elements and Schedule Goals



Introduction

- Need for additional characterization of shallow lateral groundwater (GW) discharge
 - Improve estimates of groundwater discharge rates
 - Address uncertainty regarding contaminant loading via shallow lateral groundwater discharge
 - Improve conceptual site model for groundwater
 - Importance of shallow lateral GW discharge
- Why supplemental characterization is needed
 - Groundwater flow and its contaminant loading can be a significant percentage of total discharge to Study Area
 - Current RI-based characterization of groundwater discharge relies upon seepage meters that measured vertically upwards groundwater seepage through Study Area sediments



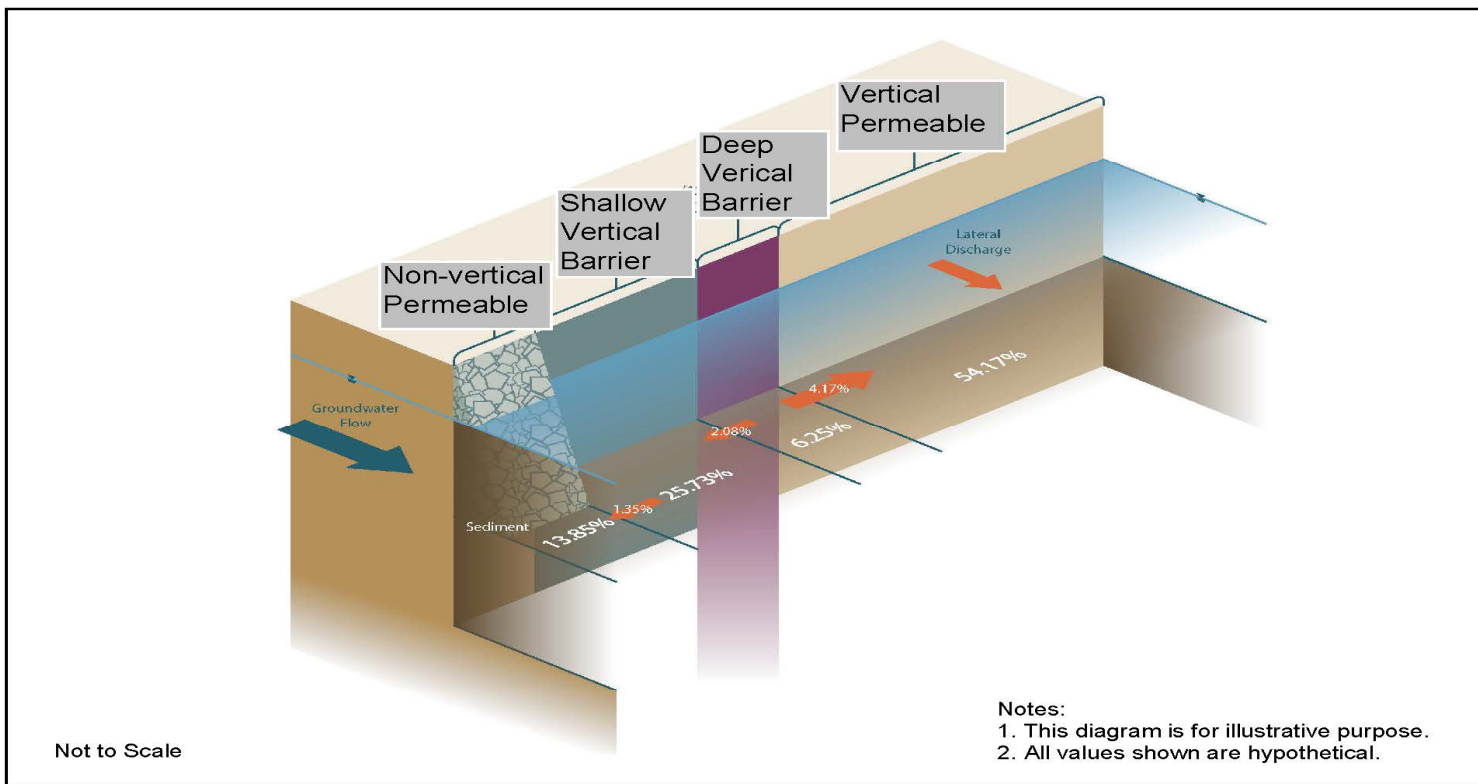
Objectives and Guiding Concepts

- EPA will collect supplemental data, analyze and evaluate the data, and report results
- This will help produce:
 - Updates to the Conceptual Site Model (CSM) for groundwater
 - Supporting information for the FS

Note: Info now being shared is subject to revision as EPA develops plans with technical input from stakeholders including NCG/NYCDEP/NYSDEC/etc.

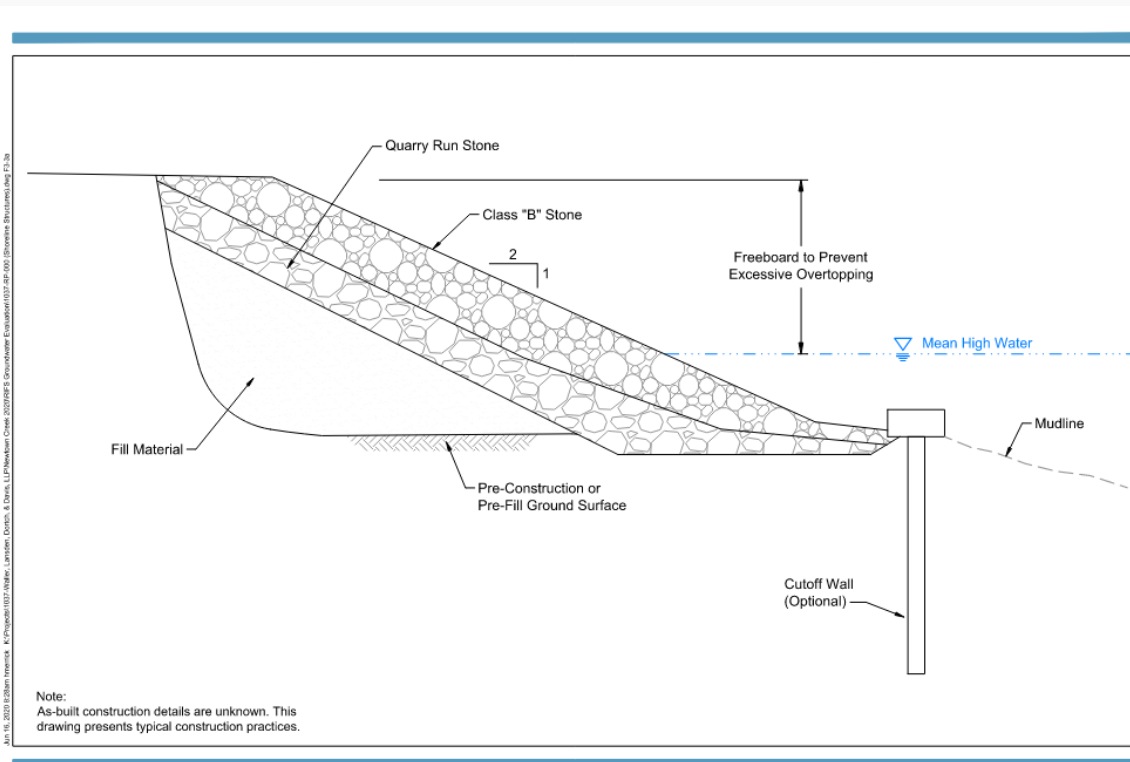
Definition of Shallow Lateral Groundwater Discharge

General Shoreline Types



General Shoreline Types

Example of Rip Rap Permeable Shoreline Type Shown in Cross-Section (several other types exist)



Definition of Shallow Lateral Groundwater Discharge

Schematic (Left) and Example (Right) Cross-Sections

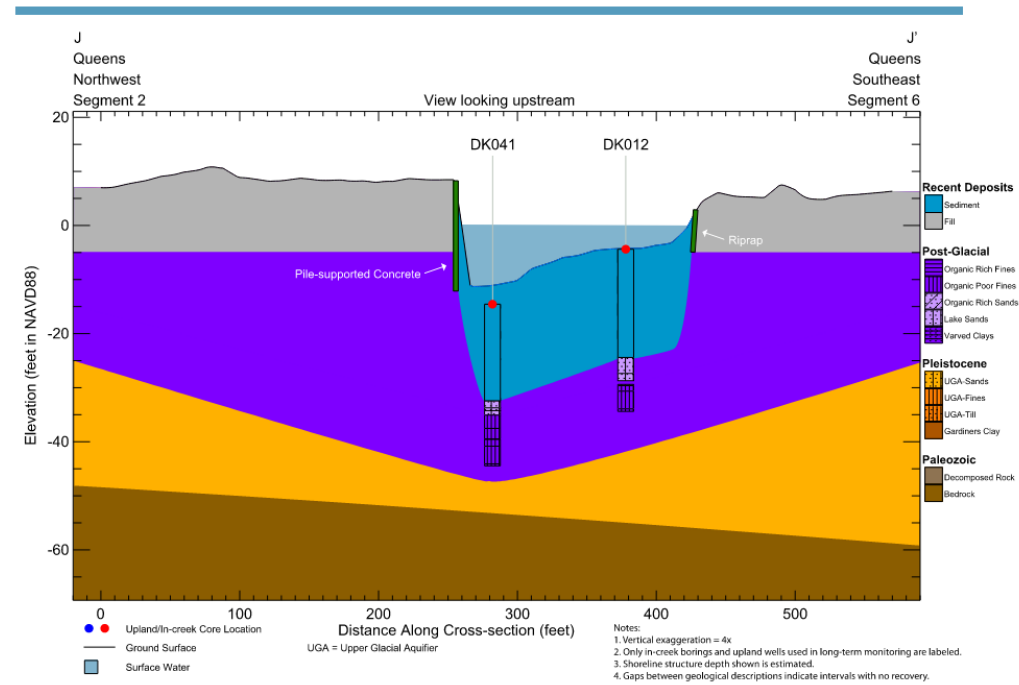
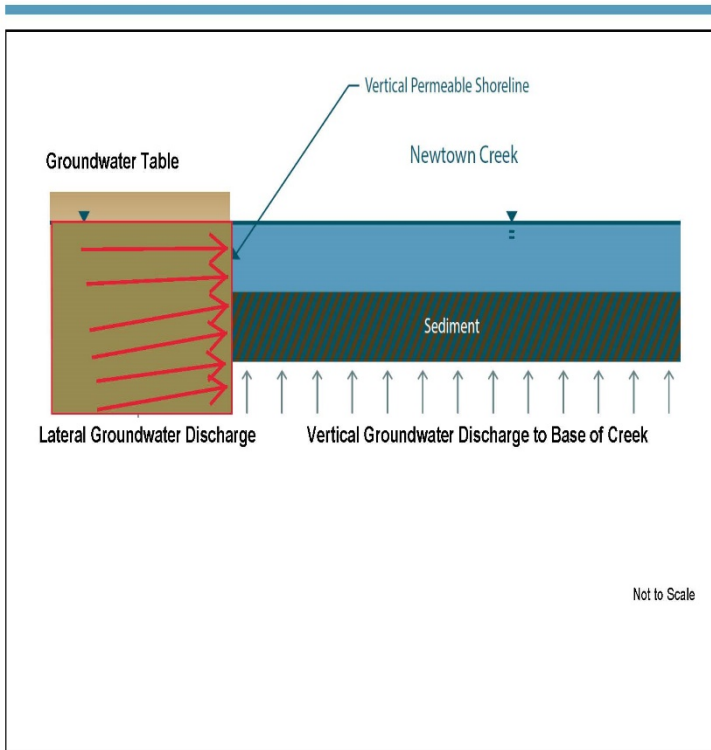


Figure F-11a
 Cross-Section J-J': Dutch Kills CM 0.95
 Groundwater Evaluation
 Newtown Creek RI/FS

Cores projected up to 325 feet from cross-section lines. Bottom of the UGA was estimated by creating a surface using elevations for top of bedrock, top of Gardiners Clay, and top of Raritan Clay as interpreted from local and regional boring logs.

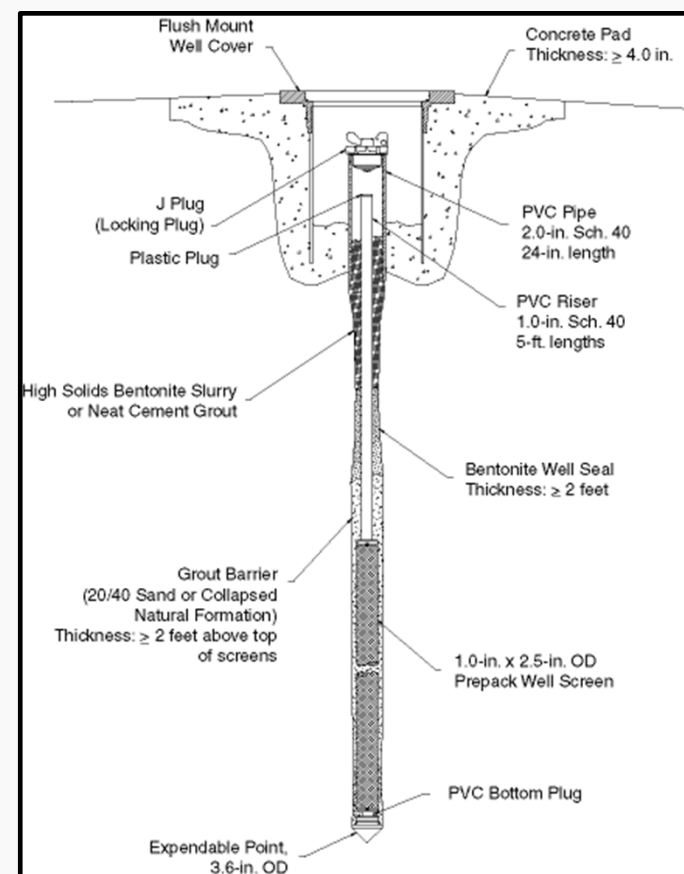
Lateral Groundwater Discharge
 Groundwater Evaluation
 Newtown Creek RI/FS



Proposed Elements of Supplemental Data Collection

- Monitoring Wells – install new or use existing ones
 - Establish locations along shoreline areas
 - Regular grid of unbiased locations spaced about 0.4 mi apart for total of 32 locations
 - Representative shoreline conditions
 - One well near shoreline, another ≤ 300 ft inland
 - Well couplets (shallow/deeper) at some locations
 - Evaluate use of existing wells per acceptance criteria

Example Diagram of Monitoring Well

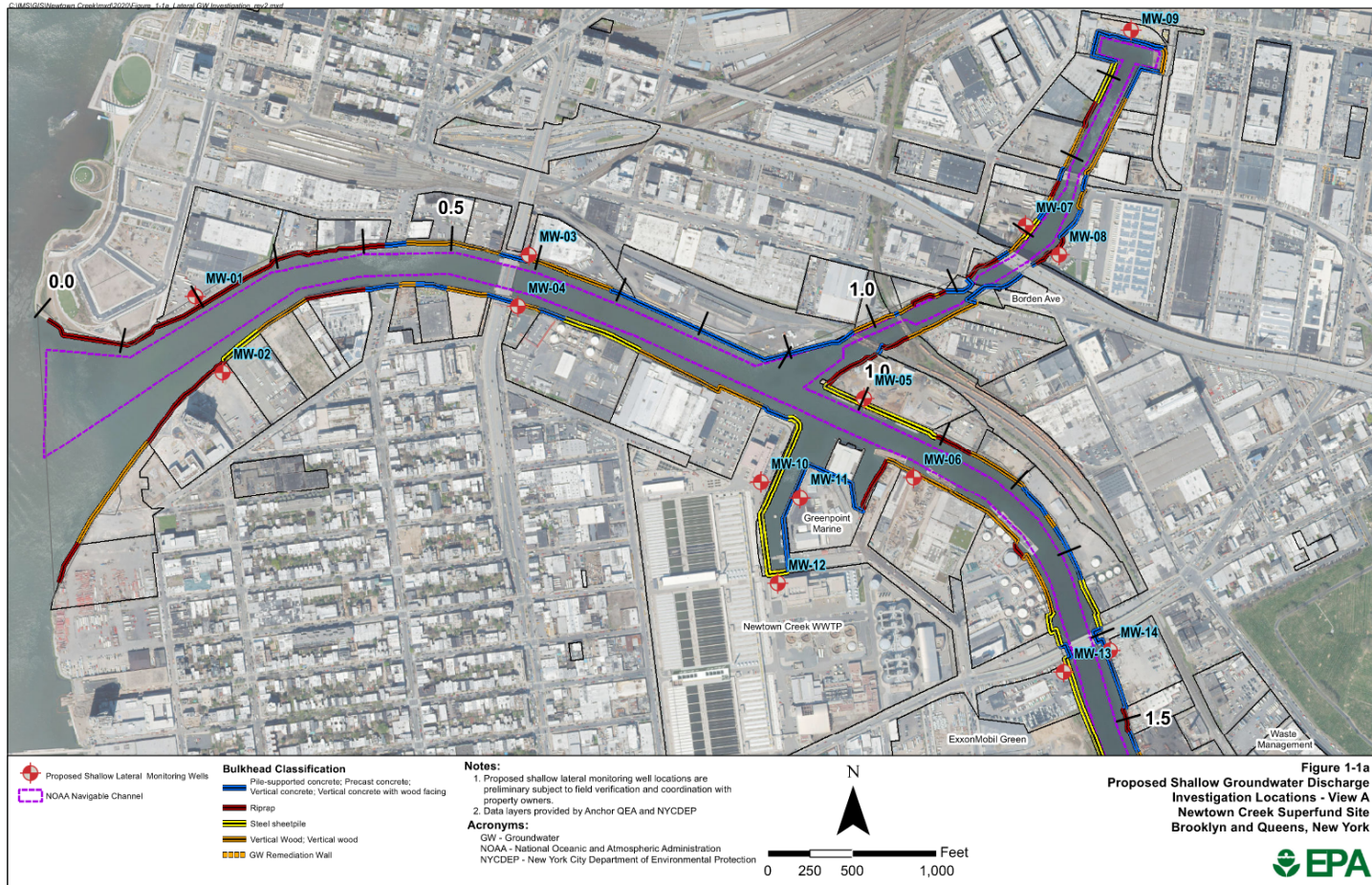


from EPA Clu-In newsletter

<https://clu-in.org/characterization/technologies/dpgroundwater.cfm>

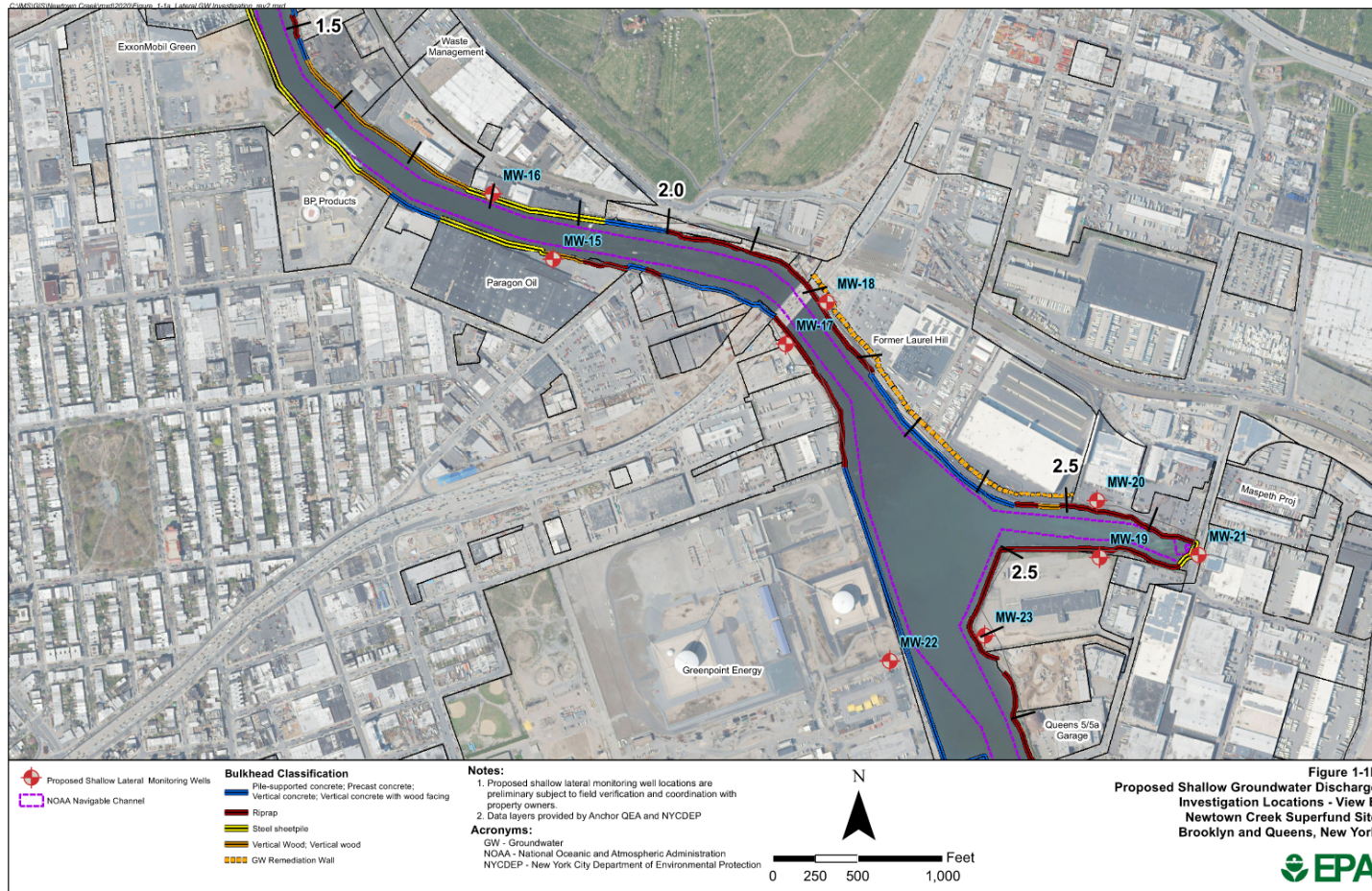


Preliminary Shoreline Locations – Lower Creek



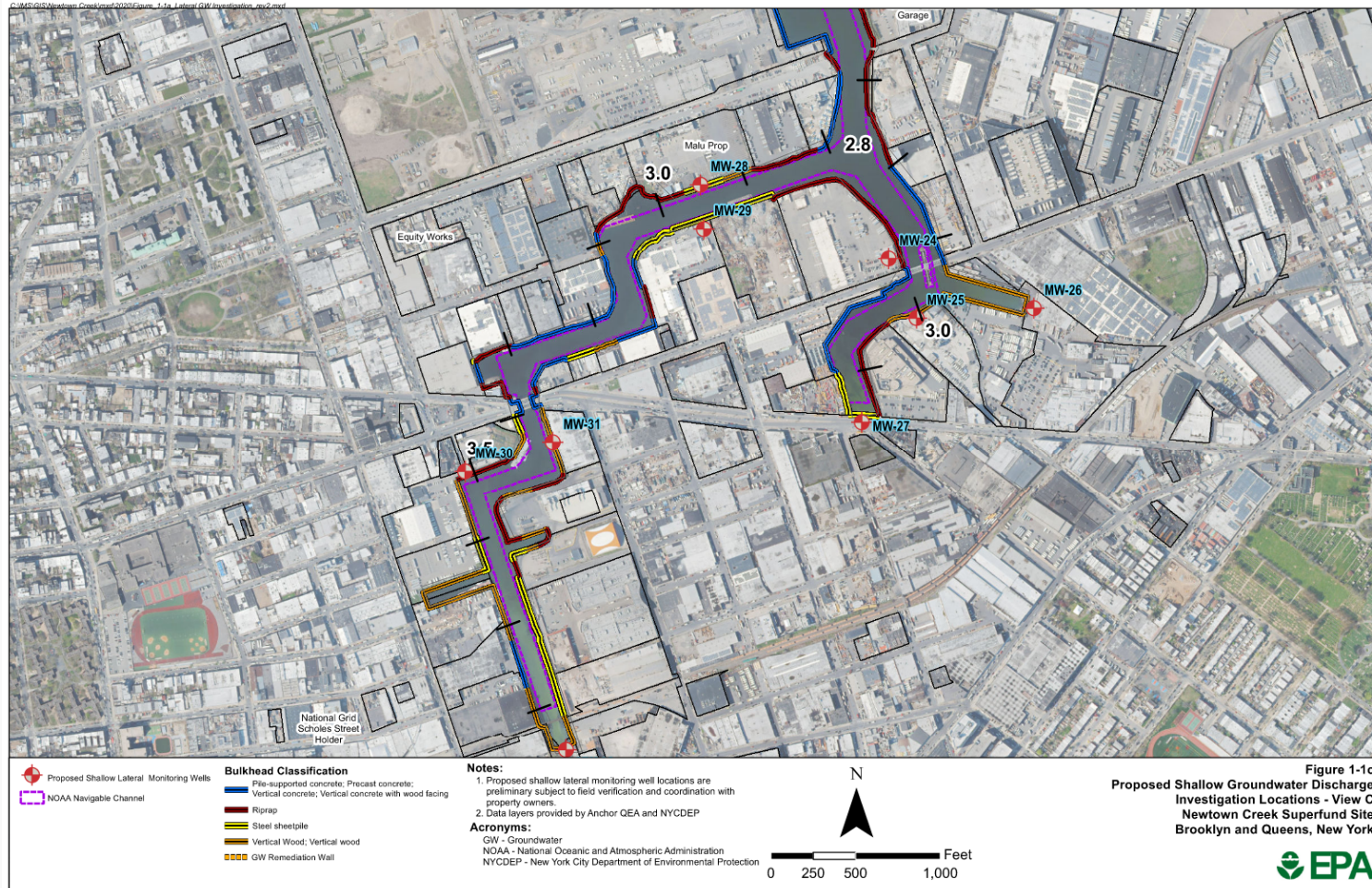


Preliminary Shoreline Locations – Middle Creek





Preliminary Shoreline Locations – Upper Creek





Proposed Elements of Supplemental Data Collection (cont'd)

- Groundwater Level Monitoring
 - Monthly rounds during 3 seasons
 - Continuous recording in representative subset
- Tide Gauge – continuous surface water levels



Proposed Elements of Supplemental Data Collection **(cont'd)**

- Hydraulic Characterization
 - Hydraulic tests in monitoring wells
 - Analysis of tide-induced variations
 - Estimation of in-situ hydraulic conductivity
 - Evaluation of measured gradients



Proposed Elements of Supplemental Data Collection **(cont'd)**

- Data-Collection in Monitoring Wells
 - Hydraulic tests to establish permeabilities
 - Groundwater velocity measurements
- Shallow GW Quality
 - Full set of chemical analyses and field parameters
 - Each one of the 3 seasons



Proposed Elements of Supplemental Data Collection (cont'd)

- Shallow Lateral Seepage Water Quality Sampling
 - Techniques being considered:
 - Seepage/flux meters for continuous-composite sampling
 - Wells or well-points for one time / low-tide samples
 - Conduct sampling during one or more of the 3 seasons
 - Analyze for full set of Superfund and field parameters



Proposed Work Elements and Schedule Goals

- Develop work plan including Technical Workshops with and input from NCG/NYCDEP/NYSDEC/etc. (ongoing)
- Review/finalize field planning documents (Spring 2021)
- Conduct field work and collect data during 3 seasons
 - Start field work in Summer 2021
 - Complete field work within 1 year
- Evaluation and Reporting (following field work completion)
 - Process data and analyze results
 - Develop draft and final reports
- Include report as an Appendix to the OU1 FS Report