



Pearce Creek DMCF Exterior Monitoring Post-Placement Sampling Fall 2023 Results

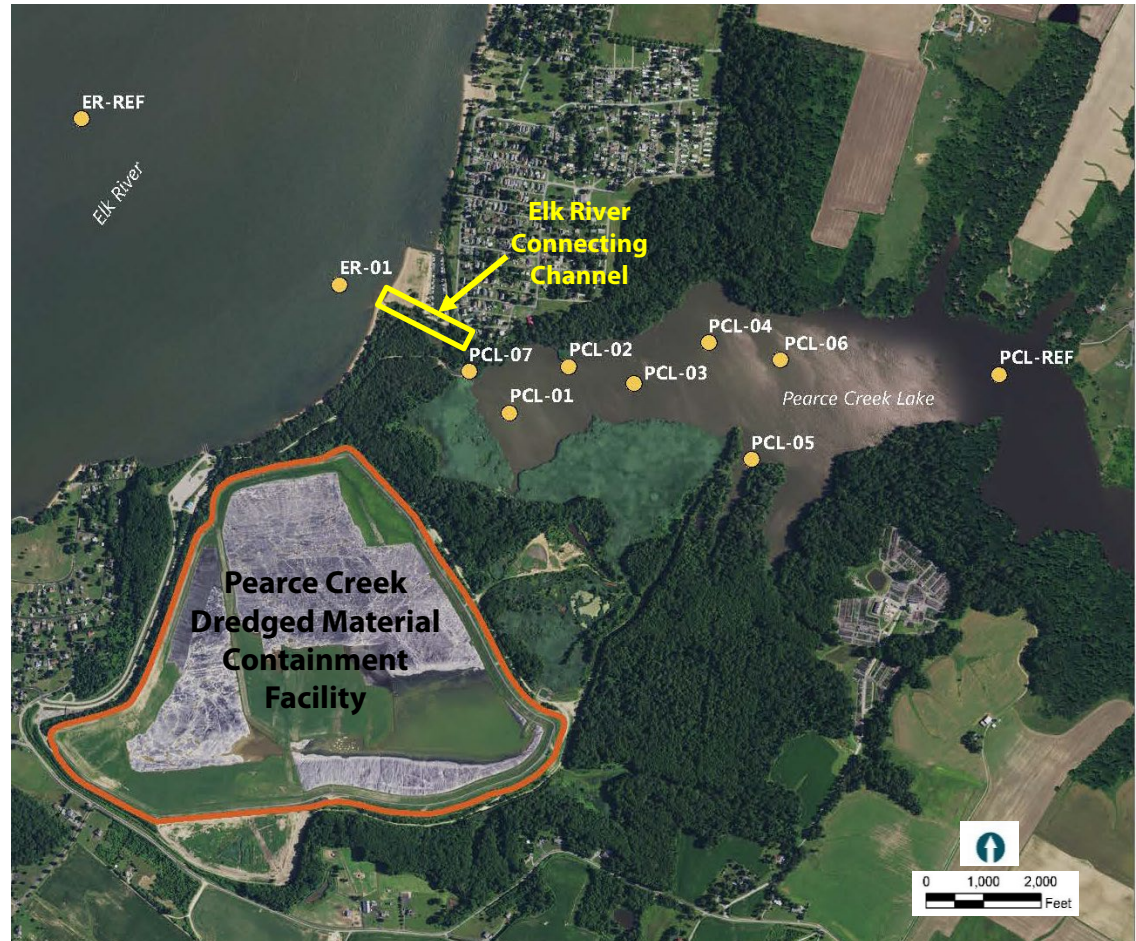
Pearce Creek Implementation Committee
May 2024

Project Overview

- Objective: Collect post-placement data from locations to monitor environmental conditions after dredged material placement
- Baseline sampling events were conducted in Fall 2015, Spring and Fall 2016, and Spring 2017
- Dredged material placement has occurred annually since the 2017/2018 dredging cycle
- Post-placement monitoring has occurred since Spring 2018; samples for Fall 2023 were collected September 18 to 19, 2023
- Fall 2023 Sampling program included:
 - Surface water quality
 - Sediment chemistry – testing of target chemicals
 - Benthic community – Identification of bottom-dwelling organisms, including number of species (diversity) and number of organisms (abundance)

Sampling Overview – Fall 2023

- 10 Sampling Locations:
 - 7 Pearce Creek Lake monitoring locations
 - 1 Pearce Creek Lake reference site
 - 1 Elk River monitoring location
 - 1 Elk River reference site
- Reference sites represent areas that are outside of the influence of the DMCF



Surface Water Results

- Data comparable between the reference and the monitoring locations
- Data were also within the range of baseline concentrations
- Hardness in Pearce Creek Lake: higher than baseline, but data comparable between the reference and monitoring locations
- Chemical Testing - Metals
 - Low concentrations overall; consistent with results from previous sampling events
 - Within the range of concentrations observed during baseline monitoring events



Location PCL-05



Location PCL-07

Sediment Results

- Data comparable between the reference and the monitoring locations
- Data were also generally within the range or slightly above baseline concentrations
- Sediment Type
 - Pearce Creek Lake monitoring locations comprised of silts and clays, except PCL-07 (sands and silts)
 - Pearce Creek Lake reference location comprised of silts and clays
 - Elk River monitoring location was comprised of silts and clays
 - Elk River reference location was mostly silts and clays with some sand and gravel
- Nutrients: Naturally variable at all locations



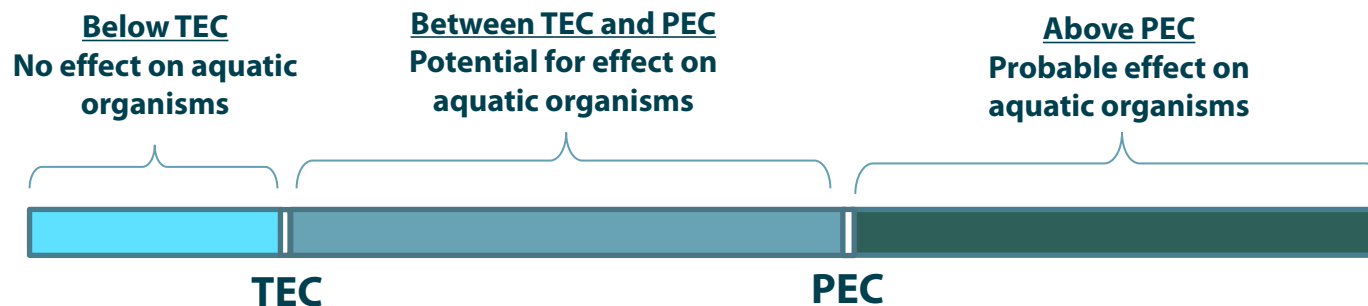
Elk River Connecting Channel – Elk River Outlet at High Tide



Elk River Connecting Channel – Elk River Outlet at Low Tide

Sediment Data Analysis - Metals

- Results of chemical testing were compared to freshwater sediment guidelines
 - Derived by scientific community, based on actual sediment concentrations
 - Each chemical has two values:
 - A threshold effect concentration (TEC)
 - A probable effect concentration (PEC)



- An “effect” means that an organism’s behavior is impacted, such as a slow down of organism growth rate
- “Effects” do not indicate mortality

Sediment Chemical Screening - Metals

- Results are generally consistent with the baseline data

- Pearce Creek Lake

- Monitoring Locations

- 6 metals between the TEC and PEC
 - Nickel exceeded the PEC

- Reference Site

- 4 metals were between the TEC and PEC
 - Nickel exceeded the PEC

- Elk River

- Monitoring Location

- 5 metals were between the TEC and PEC
 - Nickel exceeded the PEC

- Reference Site

- 5 metals were between the TEC and PEC
 - Nickel exceeded the PEC

- Nickel concentrations are consistent with sediment in the upper reaches of the Chesapeake Bay

- Nickel concentrations are consistent with baseline results, or slightly higher, and represent background levels for this site

Benthic Community Results

- Most of the metrics were within the range of the baseline data
- Abundance is consistent with the baseline data (within the range or slightly above data observed previously)
- Indicates that while there is localized variability, the overall benthic community condition has not substantially changed compared to baseline monitoring results



Exterior Monitoring Summary

- Eighth round of post-placement monitoring since placement at the Pearce Creek DMCF started again in December 2017
- Baseline data was collected from Fall 2015 through Spring 2017
- Results from all the testing – sediment, surface water, and benthic community – is consistent with previous sampling events



Adaptive Management

- Adaptive management is the periodic review of long-term monitoring programs and incorporates lessons learned to support decision-making
 - Sediment, surface water, and benthic community sampling will continue for Fall 2024

Questions/Discussion

