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## 2 NAPL SEDIMENT INVESTIGATION AND DATA COLLECTION ACTIVITIES

This section describes the NAPL sediment investigation activities conducted as part of the Newtown Creek RI and Part 1 of the FS field programs,<sup>4</sup> as well as other sediment investigations performed in the Study Area that were reviewed and evaluated for data usability to supplement the Remedial Investigation/Feasibility Study (RI/FS) data. The number of surface sediment grabs and cores that originated from the various programs discussed in this section are presented in Tables C2-1a and C2-1b, respectively.

The nature and extent of NAPL is evaluated on the basis of visual observations of NAPL in sediment and native material collected in surface sediment grabs and cores. The Phase 1 and Phase 2 investigations included extensive collection of sediment samples for chemical analysis to characterize contaminants of potential concern (COPCs) across broad reaches of the Study Area. While some Phase 1 and Phase 2 core intervals may have elevated COPCs due to the presence of NAPL, the sampling programs were not designed to specifically evaluate the influence of NAPL on the sediment sample COPC concentrations. Since the Phase 1 and Phase 2 sediment chemical data were not used to characterize NAPL, they are not included in this appendix.

### 2.1 Phase 1 Investigation

The RI field sampling was designed to be phased, so that the results of the initial sampling efforts could be used to inform, focus, and refine subsequent sampling efforts. The Phase 1 investigation was performed to broadly characterize conditions in the Study Area and to identify areas or features of interest for sampling during the Phase 2 field program.

#### 2.1.1 Phase 1 Field Methods for Describing Visual Observations

During Phase 1 of the RI, procedures were established for documenting general visual observations of cores during processing, consistent with the objective of broadly characterizing conditions in the Study Area. In the USEPA-approved FSAP (Anchor QEA

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<sup>4</sup> As discussed in Section 1.1 of this appendix, and in Section 2 of the RI Report, data from a subset of the FS field program (referred to as “Part 1 of the FS” or “FS Part 1”) are included as part of the RI dataset. As such, any general references in this report to the RI dataset implicitly include these FS Part 1 data, unless otherwise specified.

2011a), visual observations in sediment and native material were described in the following terms:

- No visual observations
- Sheen
- Oil-stained – visible brown or black stains on sediment (fine-grained sediment)
- Oil-coated – visible brown or black coating on sediment (coarse-grained sediment)
- Oil-wetted – visible brown or black wetting on sediment, appearing as a liquid not held by sediment grains (pool)

Phase 1 terms were used to describe the general appearance of the sediment in 185 surface sediment grabs (see Figure C2-1) and 142 cores (see Figure C2-2). During Phase 1 of the RI, when visual observations such as the presence of an oil-like material on sampling equipment suggested that NAPL may be present, a shake test was performed. During core processing, a “yellow coating” was observed on sample spoons while processing 5 of the 142 Phase 1 cores. In each instance, the yellow coating on the spoon was coincident with interbedded layers or small pockets of coarser material where oil-wetted or oil-coated materials were observed. Shake tests were performed on sediment from the interval where the yellow coating was observed. A NAPL layer was observed on the shake test water surface for four of the five cores (NC048CSC, NC050ASC, EK004ASC, and EK005BSC). In the fifth shake test, NC071CSC, only a sheen was observed on the shake test water surface. In total, shake tests were only performed on 5 of 142 Phase 1 cores. These tests were performed on an *ad hoc* basis and were not conducted using a standardized procedure.

The locations of Phase 1 surface sediment grabs are shown in Figure C2-1. The locations of Phase 1 cores are shown in Figure C2-2. The locations of the five Phase 1 shake-tested cores are shown in Figure C2-3.

The Phase 1 field investigation was described in the following USEPA-approved documents:

- RI/FS Work Plan (AECOM 2011)
- WPA (Anchor QEA 2012e)

- FSAP (Anchor QEA 2011a) and associated FSAP addenda (Anchor QEA 2012a, 2012b, 2012c, 2012d, 2013a, 2013b, 2013c)
- QAPP (Anchor QEA 2011b)

The *Phase 1 Remedial Investigation Field Program Data Summary Report – Submittal No. 3* (Anchor QEA 2013d; included in Appendix Bi of the RI Report) provides more detail on Phase 1 field programs and sample collection methods.

Attachment C-A provides the field collection information and visual observations for the Phase 1 surface sediment grabs and cores. Phase 1 field methods for documenting visual observations were not designed to specifically investigate the presence and extent of NAPL. As described in Attachment C-A, due to the lack of relationship between Phase 1 and Phase 2 visual observations to support the use of the Phase 1 visual observations in defining NAPL, the Phase 1 visual observations are noted in Section 5, but were not used in the evaluation of NAPL in Section 5. However, the five Phase 1 cores where shake tests documented the presence or absence of NAPL are included in the evaluation of NAPL in Section 5. The field collection information, Phase 1 visual observations, and shake test results for the five Phase 1 shake-tested cores included in the evaluation of NAPL are provided in Section 3.

### **2.1.2 Phase 1 USEPA-Identified Cores**

Following review of the Phase 1 core visual observation logs, USEPA identified 18 Phase 1 locations where they believed that NAPL may be present and further characterization was required (see Figure C2-4).<sup>5</sup> USEPA selected these locations based on the following considerations (Kwan 2014):

- Phase 1 visual observations
- A comparison of Phase 1 chemical concentrations to screening concentrations selected by USEPA for total polycyclic aromatic hydrocarbon (17) (TPAH [17]); total

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<sup>5</sup> Sampling locations are also referred to as sampling stations. In some cases, multiple surface sediment grabs and/or cores were collected at a sampling location. Surface sediment grabs and/or cores collected from the same sampling location are referred to as collocated.