APPENDIX D
LOWER PASSAIC RIVER STUDY AREA
RM 10.9 REMOVAL ACTION

I. INTRODUCTION

A. Purpose

The purpose of this Statement of Work is to provide a framework under which the Settling Parties will develop work plans, design and other supporting documents to perform a Time Critical Removal Action (TCRA) which includes removing, capping, performing bench-scale sediment treatment and/or decontamination tests, and, potentially, pilot-scale tests, on a portion of the sediments on the eastern side of the Lower Passaic River in the vicinity of RM 10.9 where a detailed investigation was conducted as part of the Lower Passaic River Study Area (LPRSA) Remedial Investigation/Feasibility Study (RI/FS). The RM 10.9 study area extends approximately 2,380 ft, from RM 10.65 to RM 11.1, along an inside bend of the river upstream of the DeJesse-Avondale Street Bridge and includes the mudflat and point bar in the eastern half of the river channel. Sediments within this area of interest contain chemicals of potential concern (COPCs) including polychlorinated dibenzo-p-dioxins/polychlorinated dibenzofurans (PCDD/PCDFs), polychlorinated biphenyls (PCBs), mercury, polyaromatic hydrocarbons (PAHs) , pesticides and metals, as well as other contaminants.

The TCRA is being performed to reduce exposure of receptors to, and prevent potentially significant migration of contamination from, a portion of the RM 10.9 study area hereinafter referred to as the Removal Area, defined as the approximately 5-acre area delineated in Figure 1, which has been found to contain highly elevated concentrations of multiple COPCs. In addition to addressing these time-critical concerns, sediments removed from the Removal Area will be used to conduct sediment treatment and/or decontamination bench-scale tests. Based on the results of these tests and the overall timing of the work, and at the discretion of the Settling Parties, ex-situ treatment and/or decontamination pilot-scale tests may be conducted as well.

To meet the objectives of the TCRA, the Settling Parties will remove approximately 2 feet of sediment from the Removal Area and then cap this area. The volume of material to be removed is expected to be approximately 16,000 cubic yards; this number will be refined during the design. If pilot tests are not conducted, the removed sediment will be disposed of at an EPA-approved off-site facility. In the event that pilot tests are conducted, then the final disposition of the treated sediment will be determined as part of the pilot test work plans.

B. Project Description

The Settling Parties shall perform all actions necessary to remove sediment from the Removal Area, place a cap over this area, provide for the conduct of bench-scale tests on sediment from this area, and properly dispose of the removed material. The Removal Area is bounded on the west by the eastern navigational channel limits and bounded on the east by the mean high water limits. The actual lateral and vertical extent of the Removal Area may be refined based on the results of the pre-design investigation and the design needs of the cap.

The TCRA will reduce exposure to elevated COPCs present in the Removal Area. Removal and capping of the contaminated sediment will significantly decrease surface sediment COPC levels and thereby reduce exposure of human and ecological receptors contacting surface sediments, including river recreators (e.g., waders, boaters, anglers), who may incidentally ingest, or come into contact with, the surface sediments present in the Removal Area. Surface sediment COPC levels will be reduced to site-wide concentration levels, or lower, following sediment removal and subsequent capping of the Removal Area. The TCRA will also prevent migration of contamination from the Removal Area to other parts of the river.

C. Description of the Removal Action and Capping

The Settling Parties shall remove approximately 16,000 cubic yards (top two feet) of in-place contaminated sediment from the Removal Area. During the design of the removal action, the Settling Parties shall evaluate the means and methods for sediment removal, including best practices to minimize the potential release of COPCs during the removal. A protective cap will be designed, constructed, monitored, and maintained over the Removal Area. The Settling Parties shall conduct performance monitoring and Operations and Maintenance (O&M) of the cap to determine whether it continues to meet performance standards, and to insure that its integrity is maintained pending the selection of a remedial action addressing the full LPRSA, which includes the Removal Area. Data from the performance monitoring effort may also help inform future decisions and/or remedial designs in the LPRSA. The cap shall be constructed using suitably protective capping designs which may include the use of activated carbon layers or other materials to reduce bioavailability and migration of COPCs as well as cap armoring to protect portions of the Removal Area subject to higher shear stresses from potential erosion.

D. Description of Bench-Scale Tests, Pilot-Scale Tests, and Disposal of Sediment

The Settling Parties have identified sediment treatment vendors who are interested in conducting bench/pilot-scale tests on contaminated sediment from RM 10.9 with the objective of advancing technologies available for the treatment

of large quantities of contaminated sediments from maintenance or environmental dredging projects.

The Settling Parties shall contract with treatment vendors to perform bench-scale testing on representative samples of sediment, to determine the overall feasibility and economics of specific treatment technologies. The bench-scale tests shall be conducted during development of the work plans to conduct the removal. The Settling Parties shall provide to EPA a full evaluation of the findings of the bench-scale testing, including the Settling Parties' rationale and decision for conducting pilot-scale testing of specific technologies and/or directly transporting and disposing of the sediments from the Removal Area at an appropriately permitted, EPA-approved disposal facility. Should the bench-scale tests suggest that a technology is not effective or feasible, the Settling Parties' findings will document the basis for the decision to not conduct pilot-scale testing for that technology.

If the decision is made to proceed with pilot-scale tests, the Settling Parties shall transport the removed sediment to the pilot study vendor(s)' treatment locations; conduct of the pilot-scale tests shall not impact the implementation schedule of the removal and capping activities. Otherwise, the Settling Parties shall dispose of the material at an appropriately permitted, EPA-approved disposal facility. The results of the bench-scale tests and, if conducted, information obtained from pilot- scale test(s), may help inform the remedy selection process for the LPRSA and Newark Bay.

II. WORK TO BE PERFORMED

The work flow for this SOW is provided in Figure 2.

A. Removal and Capping Activities to be Completed Prior to May 30, 2012

1. RM 10.9 Quality Assurance Project Plan (QAPP) Addendum A and Data Collection Activities

   The Settling Parties shall prepare an addendum to the RM 10.9 QAPP, as defined in the Settlement Agreement, to collect additional samples to refine the delineation of the extent of the Removal Area, and collect these samples. At a minimum, additional sediment cores will be collected from the northern end of the Removal Area, as currently delineated, and sediment samples will be collected on-shore, along the edge of the Removal Area.

2. Data Gap Analysis and Data Collection QAPP

   The Settling Parties shall conduct a Data Gap Analysis of the RM 10.9 study area to identify additional data (including, but not necessarily limited to, geophysical and groundwater data) needed to support the removal and capping design needs. A Data Collection QAPP shall be prepared providing the details of the collection of these additional data.

B. Removal and Capping Activities to be Completed after Effective Date of Settlement Agreement

1. Removal and Capping Work Plan/Basis of Design Report

The Settling Parties shall submit the Removal and Capping Work Plan/Basis of Design Report (BODR) to EPA for review and approval. The Work Plan portion of this submission shall include, at a minimum, the following:

- Description of Removal and Capping activities
- Tasks necessary to prepare the Pre-Final/Final Designs as required to implement the removal and capping
- Responsibility and authority of all organizations and key personnel
- Overall management strategy for completion of the tasks
- A project schedule including all major activities and deliverables

The BODR shall be prepared based on the results of data collected pursuant to the RM 10.9 QAPP and the Capping and Removal Pre-Design activities. The BODR (30% design) submittal shall include, at a minimum, the following:

- Results of studies and additional field sampling and analysis conducted after the initial RM 10.9 study area investigation, if available
- Preliminary plans, drawings, and sketches
- Methods of sediment removal including resuspension/turbidity control, transport, offloading, stockpiling, and treatment; treated sediment disposal; process water treatment and discharge; capping; cap materials transport, and cap placement
- Design assumptions and parameters, including design constraints, capping performance criteria, and preliminary design calculations
- Outline of implementation specifications
- Proposed siting/locations of staging and processing
- Real estate and easement requirements
- River traffic control procedures
- Weather and river conditions monitoring
- Substantive requirements of ARARs
- Implementation contracting strategy
- Preliminary project schedule
- Anticipated long-term monitoring

The Settling Parties shall submit the Removal and Capping Work Plan/BODR to EPA for review and approval. Once EPA approves the Removal and Capping Work Plan/BODR, the Settling Parties shall implement the Removal and Capping Work Plan and begin work on the Pre-Final Design in accordance with the approved schedule.

2. Removal and Capping Pre-Final and Final Designs

   The Settling Parties shall submit the Pre-Final Design when the overall design effort is 90% complete. The Pre-Final Design shall fully incorporate EPA comments made to the Removal and Capping Work Plan/BODR .The Pre-Final Design shall include, at a minimum, the following:

   - Results of studies and additional field sampling and analysis, if any, completed after submittal of the 30% design
   - Design assumptions and parameters, including design constraints, capping performance criteria, and design calculations
   - Implementation plans and drawings
   - Implementation specifications
   - Implementation Quality Assurance Project Plan
   - Implementation Health and Safety Plan including community health and safety concerns
   - Sediment Dredge Plan (including resuspension/turbidity control) and Pre- and Post-Bathymetry Surveys
   - Sediment Transport Plan
   - Sediment Offloading Plan
   - Sediment Treatment Plan
   - Process Water Treatment and Discharge Plan
   - Sediment Transport and Disposal Plan
   - Sediment Capping Plan (including materials transport and staging)
   - Implementation Quality Control Plan
   - Permits and other legal requirements, unless work will occur entirely on-site, in which case the submittal shall address substantive requirements of ARARS/TBCs documentation
   - Implementation contracting strategy
   - River traffic control procedures
   - Weather and river conditions monitoring
   - Project schedule
   - Long-term Monitoring and O&M Plan

   The Settling Parties shall submit the Final Design when the design effort is 100% complete. The Final Design shall fully incorporate EPA comments. The Final Design submittals shall include those elements listed for the Pre-Final Design.

3. Removal and Capping Implementation Activities

   The Settling Parties shall acquire and/or lease property, construct facilities necessary to conduct the “in-water” work (removal/capping), and transport sediment to treatment vendor(s) and/or disposal location(s). Final disposal of the sediment shall be in an appropriately permitted, EPA-approved offsite

facility. The Settling Parties shall begin mobilization and implementation of the removal action upon approval of the Final Design. The Settling Parties shall monitor all sediment dredging, processing, and final disposal activities in accordance with the approved Implementation Quality Control Plan.

4. Removal and Capping Long-Term Monitoring and O&M

   The Settling Parties shall implement the approved Long-Term Monitoring and O&M Plan, and provide reports to EPA as determined by this Plan.

C. Bench-Scale Testing and Report

The bench-scale tests will provide information to prepare a preliminary evaluation of the potential effectiveness and implementability of each technology at the pilot scale. These bench-scale tests may include, for example, jar testing, laboratory-scale (e.g., 1/12 pilot-scale) batch unit optimization, and process validation. The bench-scale test results will also provide a basis for the vendor(s) to develop estimates of pilot-scale implementation unit costs to meet performance standards.

The Settling Parties shall provide a report with the findings of the bench-scale tests to EPA. The report shall contain the results of the bench-scale tests, including the efficacy and efficiency of treatment, and the vendor's proposal to conduct the pilot-scale test. The report shall also contain the Settling Parties rationale and resulting decision of whether the technologies will be taken to the pilot-scale.

D. Pilot-Scale Testing

If the Settling Parties decide to proceed with Pilot-Scale Tests, the Settling Parties shall, in coordination with the vendor(s) selected, submit the Pilot-Scale Tests Work Plan to EPA for review and notice to proceed. The Work Plan submittal may include the following:

- Pilot-Scale Testing Objectives/Purpose
- Pilot Scale Testing success criteria
- Permits and other legal requirements, unless work will occur entirely on-site, in which case the submittal shall address substantive requirements of ARARs
- Pilot-Scale Testing assumptions and design constraints
- Proposed siting/locations of staging areas and treatment processes
- Real estate and easement requirements
- Methods and details of the proposed Pilot-Scale Test activities including sediment offloading, stock piling, screening, sediment preparation, sediment treatment and disposal, and water treatment

- Treatment process performance criteria, treatment unit processes, representativeness of removed material, expected removal or treatment efficiencies (concentration and volume), mass balances and design calculations
- Drawings and technical specifications
- Details of measurements and observations to be conducted for the pilot-scale testing
- Details of environmental monitoring to be conducted (i.e., odor, noise and water discharge)
- Responsibility and authority of all organizations and key personnel
- Overall management strategy for completion of the tasks
- A project schedule including all major activities and deliverables

Once EPA provides notice to proceed, the Settling Parties may implement the Pilot-Scale Tests Work Plan in accordance with the Work Plan's schedule. The Settling Parties may terminate the pilot test(s) at their discretion and inform the EPA of their rationale in a written report. Final disposal of the sediment shall be in an appropriately permitted, EPA-approved offsite facility.

III. PROJECT SCHEDULE/WORK MILESTONES

A. Removal and capping activities milestones are established for the project:

Prior to the Effective Date of the Settlement Agreement, or no later than May 30, 2012, the Settling Parties shall submit to EPA a RM 10.9 QAPP Addendum A and complete the sediment collection activities outlined in this QAPP addendum.

Prior to the Effective Date of the Settlement Agreement, or no later than May 30, 2012, the Settling Parties shall submit to EPA the Data Gap Analysis and Data Collection QAPP

45 days after the Effective Date of the Settlement Agreement, the Settling Parties shall submit to EPA the Removal and Capping Work Plan/BODR

60 days after EPA approval of the Removal and Capping Work Plan/BODR, the Settling Parties shall submit to EPA the Removal and Capping Pre-Final Design

60 days after EPA approval of the Removal and Capping Pre-Final Design, the Settling Parties shall submit the Final Design

Immediately upon EPA approval of the Removal and Capping Final Design the Settling Parties shall begin Contractor mobilization to implement the Final Design.

60 days after EPA approval of the Removal and Capping Final Design, the Settling Parties shall begin implementation of the Final Design.

B. Bench-Scale Testing including QAPP, Results report

Prior to the Effective Date of the Settlement Agreement, or no later than May 30, 2012, the Settling Parties shall submit RM 10.9 QAPP Addendum A for collecting sediments for bench-scale testing and complete the sediment collection activities outlined in the QAPP addendum.

1 day after the Effective Date of the Settlement Agreement, the Settling Parties shall submit, for EPA's information, the Bench-Scale Test QAPP for each Vendor.

90 days after EPA receives the Bench-Scale Test QAPP, the Settling Parties shall submit to EPA the Bench-Scale Tests Report of Findings and Pilot-Scale Test Proposals and their decision on whether to pursue pilot test(s) or dispose of the material in an approved facility(ies).

c. Pilot-Scale Testing

Within 60 days after EPA's acknowledgement of the Settling Parties proceed/not proceed decision for Pilot-Scale Testing, if the Settling Parties have chosen to conduct Pilot-Scale Testing they shall submit the Pilot-Scale Test Work Plan.

Within 90 days after receiving EPA notice to proceed on the Pilot-Scale Test Work Plan, the Settling Parties will begin Contractor mobilization and implementation of the Pilot-Scale Test(s).

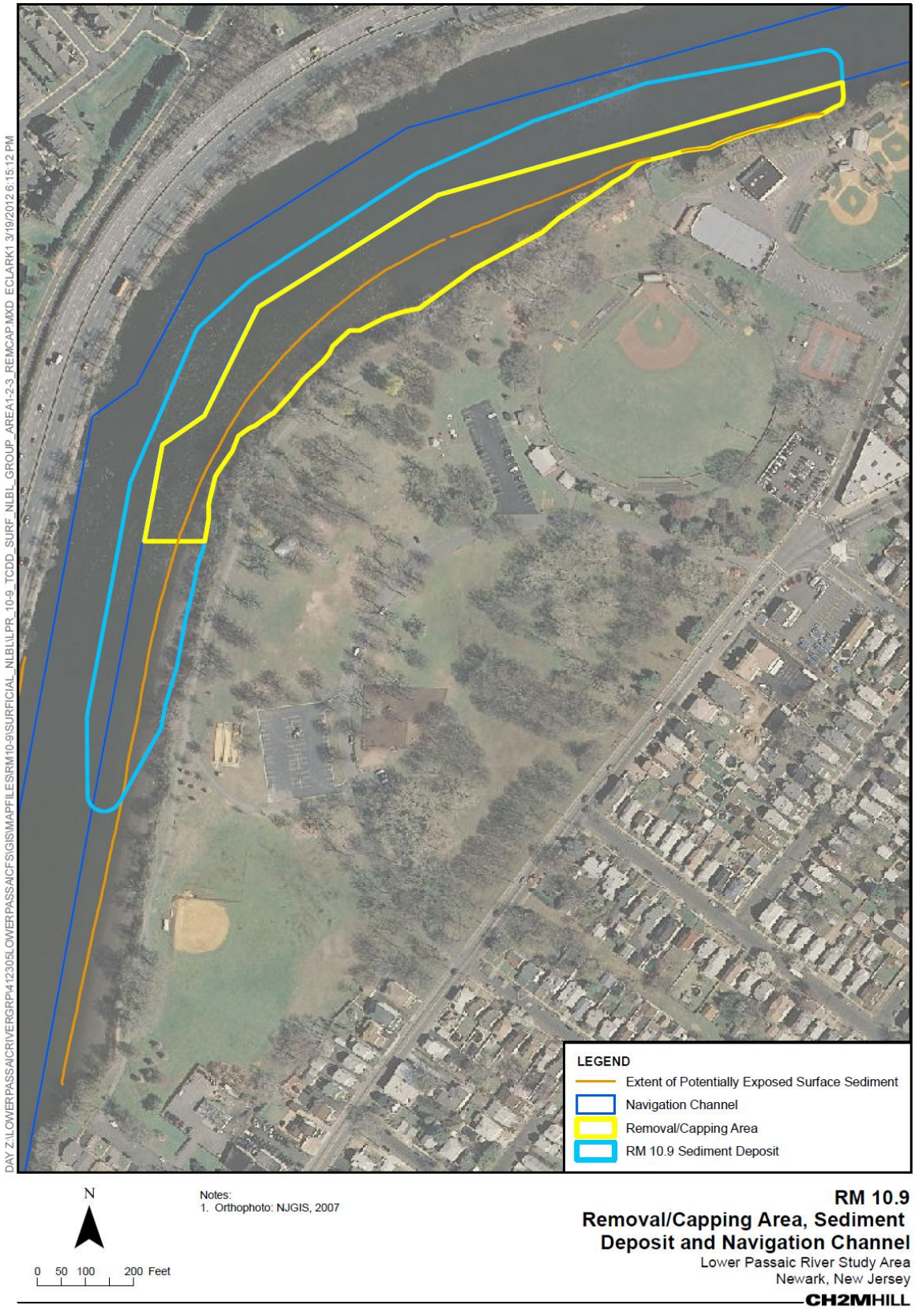
D. Final Reports

The Settling Parties shall submit a final report summarizing the removal and capping work 90 days after the completion of the activities set forth above in Section IIA and II.B(1) – (3).

If Pilot Scale Tests are performed, then the Settling Parties shall submit a summary report of this activity 90 days after the treatment and disposal of the sediment subject to Pilot-Scale Tests.

Long Term monitoring and O&M of the capping area will be described in the Long-Term Monitoring and O&M plan.

Figure 1. The RM 10.9 Sediment Deposit and Removal Area.



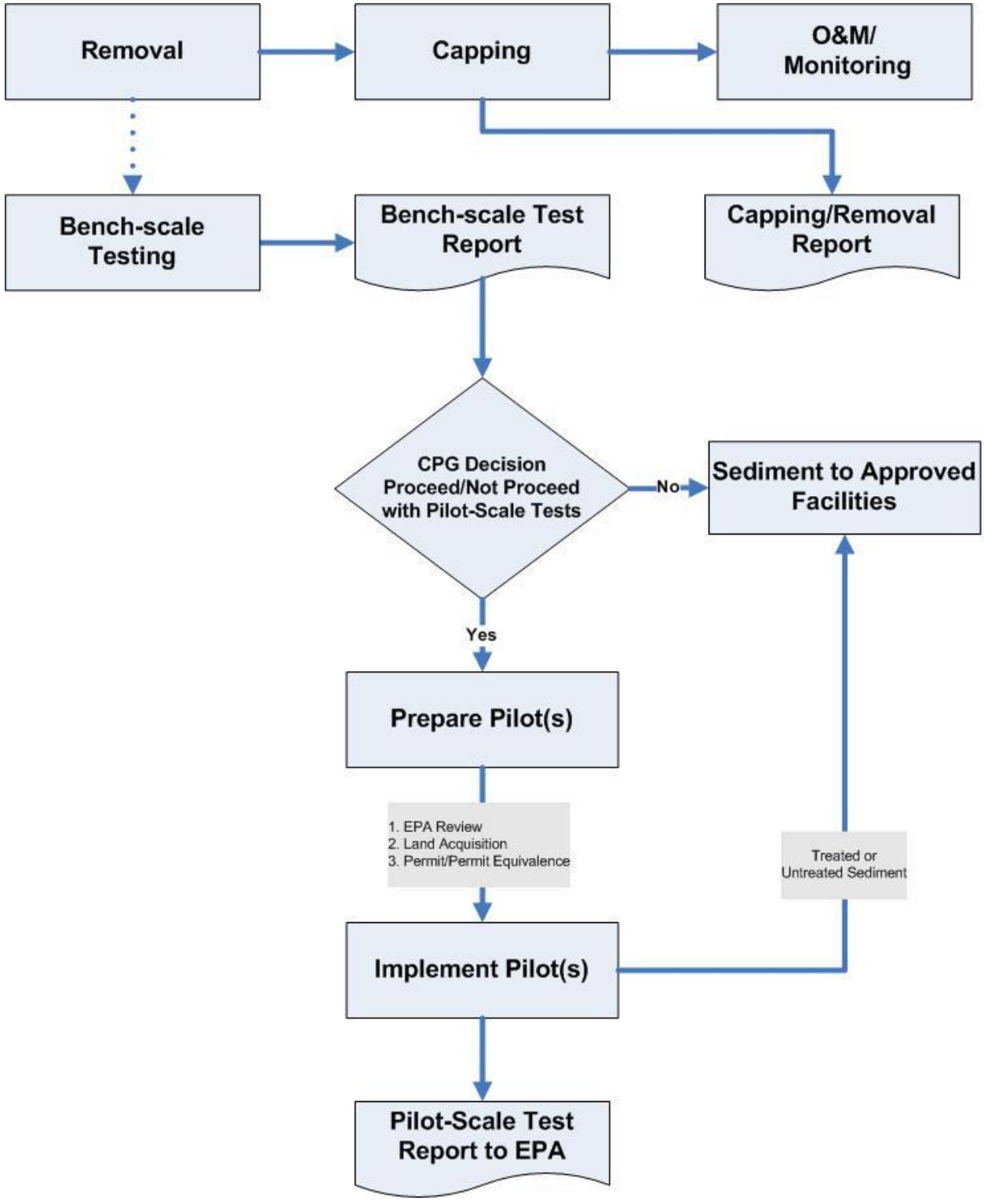


Figure 2. RM 10.9 Statement of Work flow chart.