CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN DIEGO REGION

MONITORING AND REPORTING PROGRAM NO R9-2004-0295
FOR
THE PORT OF SAN DIEGO
CAMPBELL SHIPYARD BAY SEDIMENT CAP
CLOSURE AND POST CLOSURE MAINTENANCE
SAN DIEGO BAY

A. MONITORING PROVISIONS

1. Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge. All samples shall be taken at the monitoring points specified in this Order and, unless otherwise specified, before the effluent joins or is diluted by any other waste stream, body of water, or substance. Monitoring points shall not be changed without notification to and the approval of the Executive Officer.

2. Monitoring must be conducted according to United States Environmental Protection Agency or California Department of Health Services approved test procedures as described in the current Title 40, Code of Federal Regulations (CFR), Part 136 and 261; the current California Code of Regulations, Title 22, Article 11; or in the U.S. Environmental Protection Agency (USEPA), *"SW-846: Test Methods for Evaluating Solid Wastes Physical/Chemical Methods"* (Version 5, dated April 1998), as appropriate, unless other test procedures have been specified in this Monitoring and Reporting Program.

3. All analyses shall be performed in a laboratory certified to perform such analyses by the California Department of Health Services or a laboratory approved by the Regional Board Executive Officer.

4. Monitoring results must be reported on discharge monitoring report forms approved by the Regional Board.

5. If the discharger monitors any pollutants more frequently than required by this Monitoring and Reporting Program, using test procedures as specified in Item No. 2 above, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the discharger's monitoring report(s). The increased frequency of monitoring shall also be reported.

6. The discharger shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this Order, and records of all data used to complete the application for this Order. Records shall be maintained for a minimum of five years from the date of the sample, measurement, report or application. This period

may be extended during the course of any unresolved litigation regarding this discharge or when requested by the Regional Board.

7. Records of monitoring information shall include:

   (a) The date, exact place, and time of sampling or measurements, or observations;
   (b) The individual(s) who performed the sampling, measurements, or observations;
   (c) The date(s) analyses were performed;
   (d) The individual(s) who performed the analyses;
   (e) The analytical techniques or method used; and
   (f) The results of such analyses.

8. All monitoring instruments and devices, which are used by the discharger to fulfill the prescribed monitoring program, shall be properly maintained and calibrated as necessary to ensure their continued accuracy.

9. The discharger shall report all instances of noncompliance not reported under Standard Provision E.6 of Order No. R9-2004-0295 at the time monitoring reports are submitted.

10. The monitoring reports shall be signed by an authorized person as required by Report and Record Keeping Requirement F.8 of Order R9-2004-0295.

11. A grab sample is an individual sample of at least 100 milliliters collected at a randomly selected time over a period not exceeding 15 minutes.

B. INITIAL REPORT

The discharger shall notify the Regional Board by letter prior to starting their project. The notification shall be received by the Regional Board at least three days before any dredging work begins.

C. MONITORING DREDGING OPERATIONS

The discharger shall submit as part of their monitoring report the following information:

1. Estimates of the daily volume (in cubic yards) of dredge material and the location from which the material was removed.

2. The total volume (in cubic yards) of dredged material removed during the project and the total volume (in cubic yards) of material deposited at each final disposal location.

D. VISUAL OBSERVATIONS

1. *Dredging Operations*: During any monitoring conducted pursuant to this monitoring and reporting program, visual observations shall also be made and recorded and submitted as part of the required reports. The following observations inside and outside of the silt curtain shall be made, recorded, and submitted monthly:

   (a) speed and direction of the currents;

   (b) tidal stage;

   (c) appearance of rubbish or refuse (including cans, bottles, paper, plastic, etc.), garbage, trash or any other solid waste;

   (d) appearance of oil or other materials of petroleum origin;

   (e) discoloration and extent of any visible turbidity plume; and,

   (f) odors.

2. *Monitoring of Engineered and Habitat Caps*: To ensure the caps maintain their integrity, the caps shall be monitored by divers in SCUBA gear. The divers shall perform visual inspections to ensure long-term integrity and identify areas that require periodic maintenance.

   (a) Bathymetric survey: The discharger shall conduct a bathymetric survey of the engineered and habitat caps. Results of the bathymetric survey shall be reported in the first monitoring report.

   (b) Probing the sand cap (on the habitat cap) to measure its thickness to determine whether the cap has eroded or if additional sediment has been naturally deposited at the site. Divers shall inspect the cap and side slopes for damage, including cracks-in the sediment, gashes from boat keels, localized erosion, debris penetrating the cap, bioturbation, slope failure, or other visual evidence of damage.

   (c) The perimeter berm shall be inspected for damage such as settling, slope failure, etc. Berm monitoring requires a survey of the average elevation of the crest of the berm and the average width at both the base and crest of the berm. The dimensions of the berm shall be measured using surveys with a fathometer.

   (d) Divers shall verify navigational warning buoys are in good condition and that the warning signs mounted on the buoys are intact and legible.

   (e) If possible, the same divers should conduct each visual inspection to more easily identify changes. Prior to conducting the inspections, the divers should review the

design of the cap and the results of previous inspections.

(f) Separate visual inspections shall be conducted following construction of the habitat cap to monitor recolonization of eelgrass on the cap. Monitoring shall determine both the areal extent of eelgrass and shoot density of plants on the habitat cap. The schedule for monitoring of eelgrass habitat shall be conducted at indicated for LONG-TERM MONITORING AND REPORTING FOR CAP SYSTEM (Section I.2) and REPORTING (Section K) of this Monitoring and Reporting Program.

(g) Photographs of the top deck and side slopes, for both engineered and habitat caps shall be taken to document the condition of the sand cap, perimeter berm, eelgrass, and other associated facilities. Photographs and a narrative description of the inspection results shall be included in the next regularly scheduled monitoring report submitted to the Regional Board.

E. RECEIVING WATER MONITORING

Dredging Site

Sampling shall occur at three sampling stations. Station A is at 500 feet updrift of the dredging activities and outside any visual plume. Station B is inside any visual plume at the dredging site and/or within the silt curtain if possible. Station C is at 500 feet downdrift of the dredging activities inside any visual plume if possible. At these stations, a Secchi Disc or turbidity meter shall be used each day during dredging activities to sample turbidity. If turbidity at Station C increases more than 20% over the turbidity at Station A, the dredging operations shall be suspended and appropriate measures taken, the Regional Board Executive Officer notified and remedial measures shall be implemented.

F. SEDIMENT SAMPLING

1. *Engineered Cap Sampling Stations*

(a) The discharger shall establish stations for collecting sediment samples from beneath the armoring layer of the cap, within the top portion of the engineered cap chemical isolation layer (i.e., the 2-foot thick sand layer). The specific method to be used in collecting, preserving and analyzing the sediment samples shall be proposed in the "Sampling and Analysis Plan" as required in Section F.1(b) of this Monitoring and Reporting Program.

(b) The discharger shall provide the Regional Board with a technical report containing a sampling and analysis plan (SAP) for sediment samples representative of the top portion of the engineered cap chemical isolation layer. The samples shall be collected

from network of sampling stations.. At a minimum, the SAP shall describe the rationale for the proposed number and location of monitoring points (stations) for the purpose of collecting sediment samples from the engineered and habitat caps. The SAP may also include information on additional sampling and analysis proposed by the discharger. The minimum topics to be addressed in the "Sampling and Analysis Plan" are listed in Attachment No. 1 to this Monitoring and Reporting Program.

(c) The discharger shall provide the Regional Board with a technical report containing a Quality Assurance Project Plan (QAPP) that is consistent with the QAPP template developed for the Surface Water Ambient Monitoring Program (SWAMP) (**http://www.swrcb.ca.gov/swamp/qapp.html**). The QAPP will serve as the project specifications for data quality and quantify requirements needed for the study as well and procedures that will be used to collect, analyze, and report those data. The minimum topics to be addressed in the "Quality Assurance Project Plan" are listed in Attachment No. 2 to this Monitoring and Reporting Program.

(d) The discharger shall propose a monitoring program, including locations and frequency, for identification and sampling of sediments that accumulate upon the top of the armored layer of the engineered cap. The rationale and details of the sediment accumulation monitoring program shall be included in the "Sampling and Analysis Plan" required in Section F.1(b) of this Monitoring and Reporting Program.

(e) Sampling stations shall be identified, surveyed and the coordinates recorded in the final Construction Quality Assurance (CQA) report submitted to the Regional Board.

2. *Habitat Cap Sediment Sampling Stations*

(a) Sediment samples shall be collected from locations in the habitat cap as proposed by the discharger in the SAP [see Section F.1(b) of this Monitoring and Reporting Program] and approved by the Regional Board. Sediment samples shall be collected using an aluminum core tube, with a recommended length of 1 foot and a diameter of 2 inches, inserted into the surface of the cap. The tube should be pushed down until it is six-inches above the geotextile layer. The depth of penetration of the core tube at each sample location shall be recorded and reported. After the core tubes are withdrawn, they should be checked to verify that the sediment remained in the tube, and then capped at both ends.

(b) Three samples shall be collected from each core tube; from the bottom, middle, and top of the sediment column. Each sample shall be a 3-inch segment of sediment from their respective location in the core tube. The bottom and top segments are to be analyzed first. Detection of contaminants of concern (COCs) above action level concentrations in the bottom sample would suggest leakage through the gravel layer into the capping sediment. COCs detected above action level concentrations only in

the top sample may indicate possible settling from sources outside the cap system. The middle sample will be held, but not analyzed, unless the analyses of the top or bottom samples reveal concentrations of COCs at the action level concentrations (by dry weight) or greater. Analysis of the middle sample will indicate the extent of recontamination of the sediment if COCs are detected above action level concentrations in the top or bottom sample.

(c) Sample collection, handling, and custody shall be performed using protocols and techniques appropriate for sampling COC-contaminated materials. Personnel handling the samples shall decontaminate sampling equipment after each use to avoid potential cross-contamination or direct contact.

G. COMPLIANCE STATEMENTS

1. The discharger will submit statements indicating compliance or noncompliance of the former Campbell Shipyard dredging and capping project with the requirements of Order No. R9-2004-0295. Compliance statements will be submitted monthly until the dredging project is completed.

2. The discharger shall submit statements indicating compliance or noncompliance of the Engineered and Habitat Cap System with the requirements of Order No. R9-2004-0295 and whether any large storms or earthquakes were experienced. Large storms and earthquakes are defined in Section J of this Monitoring and Reporting Program. Compliance statements shall be submitted annually for each year in which monitoring occurs.

3. Signatures on all reports shall be required as indicated in Section D.8 of Order R9-2004-0295.

H. FINAL REPORT FOR COMPLETION OF DREDGING

1. The discharger will notify the Regional Board by letter upon completion of the project. Project completion is considered to be the date on which all dredged material has been deposited at its final disposal location. The Regional Board should receive the letter within 30 days of the completion of the project.

2. The discharger shall provide the Regional Board with a final Construction Quality Assurance (CQA) Report within **120-days** after the completion of constructing the cap system. The final CQA Report shall contain the following minimum information:

(a) A delineation of the CQA management organization, including the chain of command

of the CQA inspectors and contractors.

(b) A detailed description of the level of experience and training for the contractor, the work crew, and CQA inspectors for every major phase of construction, in order to ensure that the installation methods and procedures required in the containment system design will be properly installed.

(c) A description of the CQA testing protocols for preconstruction, construction and post construction including:

i. Daily Summary Reports of backfilling and capping locations and operations. The minimum information shall include the date, period covered by the report, and results of all inspection, survey and monitoring activities. Daily summary reports shall be provided in an appendix to the final CQA Report and organized in chronological order. The Daily Summary Reports will provide the chronological framework for identifying and recording all other reports.
ii. A discussion of the size method, location and frequency of sampling, sample procedure for laboratory testing, the soils or geotechnical laboratory to be used, calibration of laboratory equipment, and quality assurance and quality control of laboratory procedures. Tabulation or inclusion of test results in an appendix to the final CQA Report.
iii. A discussion of the pass/fail criteria for sampling and testing methods to achieve the containment system design.
iv. Descriptions of corrective procedures in the event of a test failure.
v. Observations related to the transportation, handling, and storage of geosynthethic materials.
vi. Evaluation of the personnel and equipment to used to inspect and install the geosynthetic materials and pass/fail criteria and corrective procedures for material and installation procedures.
vii. Narrative description and photographic results from initial visual inspection of cap construction as required by Section I.1 of this Monitoring and Reporting Program.

(d) Final CQA Report of Testing, Reporting, and Certification: The discharger shall provide evidence that they analyzed an adequate number of test sample(s) of source materials imported for use as capping and habitat backfill materials, for the following:

i. Grain Size Distribution (American Society for Testing and Materials [ASTM] Method D422-63)
ii. In-situ Moisture Content (ASTM Method D2216)
iii. Priority Pollutant Metals (U.S. Environmental Protection Agency [EPA] publication SW846, the 6000/7000 method series)

iv. Volatile Organic Compounds (EPA publication SW846, Method 8260 as modified by Puget Sound Estuarine Protocols [PSEP])
v. Semivolatile Organic Compounds (EPA publication SW846, Method 8270 as modified by PSEP)
vi. Polychlorinated Biphenyls (PCBs) (EPA publication SW846, Method 8082 as modified by PSEP)
vii. Total Organic Carbon (Standard Methods [SM] Method 5310B)

(e) The discharger shall submit certification statements and supporting analytical results (in an appendix to the final CQA Report) from samples supporting their determination that cap and backfill materials are below the required concentrations specified in waste discharge requirements [Order R9-2004-0295, Specification C.2(f)] for constituents of concern (copper, zinc, lead, TPH, TPAHs, and PCBs). The discharger shall provide reports that the results were determined to be acceptable within the criteria indicated above. The results shall be compiled in chronological order and provided in an appendix to the final CQA report form. The reports in that appendix shall clearly identify the following:

i. Source of samples
ii. Sampling dates
iii. Chain of custody
iv. Sampling locations
v. Discharger's certification that the samples tested and the results provided are representative of materials that were delivered to the site

I. LONG-TERM MONITORING AND REPORTING FOR CAP SYSTEM

1. Visual inspections and sediment sampling shall be accomplished within 60 days of the completion of the engineered and habitat caps. The results of initial monitoring shall be reported to the Regional Board within 60 days after completing the visual monitoring.

2. All sampling for annual monitoring shall be accomplished in March of each year in which monitoring is required following completion of the cap installation. Monitoring shall be conducted every year for the first seven years after cap construction. The seventh year after construction, only visual inspections and biological sampling shall be accomplished. The full monitoring program shall again be completed ten, fifteen, and twenty years after cap construction. The monitoring program shall continue at five-year intervals beyond the twentieth year unless the Regional Board determines that a reduced monitoring program is appropriate or that monitoring is no longer necessary. The following table demonstrates the monitoring schedule:

Year	2005	2006	2007	2008	2009	2010	2011	2012	2015	2020	2025
Years following construction	0	1	2	3	4	5	6	7	10	15	20
Visual Inspection	X	X	X	X	X	X	X	X	X	X	X
Sediment Sampling: **ANNUAL**			X	X	X		X	X			
Sediment Sampling: **QUARTERLY**	X	X				X			X	X	X
Biological Sampling		X		X		X		X	X	X	X
Habitat Restoration [a]	X	X	X	X	X						
Compliance Statements	X	X	X	X	X	X	X	X	X	X	X

a. Habitat Restoration monitoring to be conducted during months 0, 3, 6, 12, 24, 36, 48, and 60, during the post-planting period.

3. If an inspection or sampling indicates that the cap has in some way been breached, then the sampling schedule shall revert to once per year following any needed repair. Subsequent sampling shall be based on the same intervals given above (1,2,3,4,5,6,7,10, 15, and 20 years after repair).

4. The frequency and due dates for Technical Reports and Monitoring Reports are specified in Section K [REPORTING] of this Monitoring and Reporting Program.

J. CONTINGENCY MONITORING PLAN

1. If a potential breach in or other damage to the cap system (in either the engineered or habitat areas) is identified:

   (a) Sediment samples shall be collected and analyzed for COCs to determine the extent of any potential breach. The number of samples to be collected will depend on the extent of damage.

   (b) The extent of damage shall be measured including area(s) and thickness of sand, gravel and/or armoring stone missing, and the area of exposed gravel.

(c) Biological tissue sampling shall be conducted in the area of the potential breach or other damage.

(d) If the surface of the cap system is found to contain COCs, above the Action Levels identified in Discharge Specification C.2(f) of Order R9-2004-0295, which do not appear to be from a breach in the cap, additional samples shall be collected and analyzed to determine the extent, and potentially identify the source. The discharger shall also collect and analyze sediment samples from the outfall of the existing 30-inch storm drain and the outfall from Switzer Creek (at the TAMT). The analytical results, supporting laboratory documentation, sample plot plan, a narrative interpretation of the results, conclusions and recommendations shall be provided to the Regional Board in the next monitoring report.

(e) Visual inspections shall be conducted within two weeks of a major earthquake, tsunami, or a storm event with winds of strong gale or higher (47 mph or higher); however, in certain cases of devastating disaster, the Regional Board Executive Officer may extend the two week requirement at his or her discretion. For purposes of this monitoring program, a. major earthquake is one that inflicts significant damage to property in the metropolitan San Diego area, and/or measures 5.5 or greater on the Richter scale within 30 miles of the San Diego Convention Center. A major tsunami is one that inflicts significant damage to property in San Diego Bay.

2. If biological tissue sampling indicates any species within the habitat cap contains COCs significantly above the levels of the same species at the reference site, then additional samples of the particular species shall be collected to determine the extent of potential recontamination, as well as to identify possible sources (inside or outside of the former Campbell Shipyard leasehold). Sediment samples shall also be collected in the area where the contaminated organisms were found and analyzed for COCs to further determine whether the source of the contaminants is the capped sediment.

3. Any potential breach in the cap system shall be reported to the Regional Board by telephone, by voice mail, or by fax within 24 hours from the time that 1) the discharger has knowledge of the potential breach, 2) notification is possible, and 3) notification can be provided without substantially impeding cleanup or other emergency measures. Regional Board office hours are between the hours of 8:00 a.m. to 5:00 p.m., Monday through Friday, excluding state holidays. Regional Board voice mail and fax machine are on-line 24 hours a day, 7 days a week. The initial report should include information on when the potential breach was discovered, how it was discovered, potential causes, and planned corrective or investigative actions.

4. Any corrective action taken and/or repair done to the cap shall be reported in writing to the Regional Board Executive Officer within 30 days of when the discharger becomes aware of damage to or a potential breach in the cap. Subsequent written reports shall be submitted monthly in accordance with the following schedule until the damage or potential breach has been repaired or otherwise resolved.

K. REPORTING

Monitoring reports shall be submitted to the Executive Officer in accordance with the following schedule:

Frequency	**Report Period**	**Report Due**
Monthly Monitoring Reports	January, February, March, April, May, June, July, August, September, October, November, December	By the 30th day of the following Month
Quarterly Monitoring Reports	January 1 to March 31 April 1 to June 30 July 1 to September 30 October 1 to December 31	April 30 July 30 October 30 January 30
Annual Monitoring Report	April 1 to March 31	April 30
Sampling and Analysis Plan (SAP)		December 31, 2004
Quality Assurance Plan (QAPP)		December 31, 2004
Construction Quality Assurance (CQA) Report		120 days after construction of cap system completed

The discharger shall notify the Regional Board Executive Officer by letter of the date dredging activities subside in April and the date activity resumes in September.

All Technical and Monitoring Reports shall be submitted to:

Monitoring and Reporting
Program No. R9-2004-0295

October 13, 2004

Executive Officer
California Regional Water Quality Control Board
San Diego Region
9174 Sky Park Court, Suite 100
San Diego, California 92123-4340

Ordered by: 

JOHN H. ROBERTUS
Executive Officer
October 13, 2004

ATTACHMENT 1

ORDER R9-2004-0295
SEDIMENT AND BIOLOGICAL
SAMPLING AND ANALYSIS PLAN (SAP) FORMAT

A. Introduction and Background Information
1. Site history
2. Regulatory framework
3. Summary of previous investigations of the site
4. Location and characteristics of any current and/or historical wastewater or storm water discharges at the site.
5. Information on on-site waste disposal practices or chemical spills in the local area.
6. Site map showing adjacent area(s).
7. Site map showing site features, engineered cap, and habitat cap locations.

B. Objectives and Design of the Monitoring Program
1. Objectives of the monitoring program for the engineered and habitat cap systems.
2. Overall design of the monitoring program for the engineered and habitat cap systems.
3. Chemical analytes, including a description of their relevance to the objectives and regulatory framework.
4. Biological tests, including description of their relevance to the objectives and the regulatory framework.
5. Monitoring Station Locations
    a. Discussion of rationale for horizontal and vertical position of sediment monitoring stations (habitat cap and accumulated sediment on engineered cap).
    b. Site map(s) showing sampling locations and other pertinent features (e.g., bathymetry and current regime, outfall(s), waste disposal and spill site(s), other activities that may have affected sediments.
    c. Identification of proposed reference stations.
        i. Reference station(s) for sediment samples.
        ii. Reference station(s) for biological samples.
    d. Table showing water depth at each proposed station.
    e. Proposed depth below the surface of the cap where sediment samples will be collected. Representative cross-sections to illustrate monitoring station and sampling interval within the cap.

ATTACHMENT 1- Continued
ORDER R9-2004-0295

C. Field Sampling Methods
   1. Discussion of monitoring station positioning method(s) (e.g., GPS, theodolite, etc.).
   2. Discussion of sampling equipment.
      a. Sediment sampling.

      b. Biological sampling.

   3. Discussion of decontamination procedures.
   4. Discussion of sample containers and labels.
   5. Description of field documentation procedures.
   6. Procedures for management and disposal of contaminated media.

D. Sample Handling Procedures
   1. Sample storage requirements (e.g., conditions, maximum holding times, preservation) for each type of sample.
   2. Chain-of-custody procedures.
   3. Delivery of samples to analytical laboratory(ies).

E. Laboratory Preparation and Analytical Methods
   1. Description of preparation method(s) used on samples prior to analysis.
      a. Sediment samples.

      b. Biological samples.

   2. Description of chemical analyses, identification of specific analytical method(s), and target detection limits.
      a. Sediment samples.

      b. Biological samples.

   3. Description of corrective action procedures.

F. Quality Assurance (QA) and Quality Control (QC) Requirements
   1. QA/QC for preparation procedures.
   2. QA/QC for chemical analyses.
   3. Data quality assurance and review procedures.

ATTACHMENT 1- Continued
ORDER R9-2004-0295

G. Data Analysis, Record Keeping, and Reporting Requirements

1. Analysis of sediment data.
2. Analysis of biological data.
3. Data interpretation.
4. Record keeping procedures.
5. Reporting procedures.

ATTACHMENT 2

ORDER R9-2004-0295
QUALITY ASSURANCE PROJECT PLAN (QAPP) FORMAT

A. Description of the project organization and responsibilities.

1. Project team members and specific responsibilities.
2. Statement of qualifications.

B. Definition of project specific data quality objectives.

C. Sampling, analysis and measurement procedures (SAP).

D. Instrument calibration procedures.

E. Procedures for recording, reducing, validating, and reporting data.

F. Procedures for performing quality assurance verification and internal quality control checks.

G. Preventive maintenance schedules.

H. Specific routine procedures to evaluate, precision, accuracy and completeness.

I. Definitions of deviations and appropriate corrective actions.

J. Information on appropriate training of personnel.