

**SOUTHERN CALIFORNIA COASTAL WATER RESEARCH PROJECT
PROPOSAL FORM**

**LOS ANGELES CONTAMINATED SEDIMENTS TASK FORCE
CONFINED AQUATIC DISPOSAL SITE LONG-TERM MONITORING
PROGRAM**

June 20, 2002

I. INSTRUCTIONS TO BIDDERS

The Bidder's complete Proposal to provide the services detailed, are to be enclosed in a sealed envelope and marked "LA CSTF Assessment of Market Potential for Treated Sediments" and addressed to:

Bryan Nece
Administrative Officer
7171 Fenwick Lane
Westminster, CA 92683-5218

All supplemental materials requested within this Proposal must be attached to the Proposal. Any unauthorized conditions, limitations, or provisions attached to this Proposal may be considered cause for rejection.

If a Bidder wishes to withdraw its Proposal, the Bidder may do so without prejudice by delivering a written notice of withdrawal to the Administrative Officer at any time before the time fixed for the opening of bids.

Sealed bids will be received at SCCWRP's offices, 7171 Fenwick Lane, Westminster, CA, up to the hour of 9:00 am on Wednesday, July 24, 2002, at which time, the bids will be opened by the Administrative Officer. The right is reserved to award the contract for work within (30) days after the date listed above for receipts of bids. Bids received by facsimile or E-mail will not be accepted.

SCCWRP will be holding a Request of Proposal Conference to discuss this bid and document at 2:00 p.m. on Monday, July 8, 2002, at SCCWRP's office in Westminster. This meeting gives the Bidders the opportunity to ask questions and to request clarifications in the document. This conference is not mandatory. SCCWRP's response to the questions will be sent to the Bidders by E-mail and posted on the SCCWRP web site (www.sccwrp.org). All Bidders must inform SCCWRP in writing of their intention to submit a bid by Monday, July 8, 2002.

This solicitation for proposals shall not be construed as obligating SCCWRP to award a contract or pay any compensation for the information solicited.

II. SCOPE OF WORK

Dredging of contaminated sediments results in a need for disposal of the dredged material. The Los Angeles Basin Contaminated Sediments Task Force (CSTF) currently is evaluating several treatment and disposal alternatives. One of these options is confined aquatic disposal (CAD), where dredged material is placed in a pit and capped with clean sediments.

In August 2001, approximately 100,000 cubic meters of contaminated sediment was mechanically dredged from the mouth of the Los Angeles River Estuary (LARE) in the city of Long Beach (see Figure 1). The dredge material was transported via bottom-dump barge to a large borrow pit located in the Long Beach harbor where it was deposited into a test cell termed the North Energy Island Borrow Pit (NEIBP). After allowing the approximately 2.5 meter layer of LARE material to consolidate in the disposal pit for three months, clean cap material was dredged from a second borrow pit (termed the South Energy Island Borrow Pit (SEIBP)) and used to cover the LARE material with a 1.0 to 1.5 meter cap layer. Capping operations were initiated in mid-December 2001 and completed in early January 2002. Figure 2 shows a representative diagram of the aquatic cap components.

The dredging, placement, and capping activities were extensively monitored. Monitoring activities included chemical characterization of the dredged and cap sediments, water quality surveys, bathymetric surveys (pre- and post-capping), and chemical analysis of the cap. Results of the monitoring studies are not yet available, but a report will be released within six months. The CSTF and U.S. Army Corps of Engineers intend to study the long-term effectiveness of aquatic capping at the NEIBP location. A 10-year monitoring program to investigate the physical, chemical, and biological conditions at the site is being developed.

The objective of this project is to conduct the first two years of monitoring at the NEIBP CAD site. Work during the first two years of monitoring will include 4 types of activities: studies of cap integrity, chemical analyses of the cap, measurement of biological recolonization of the cap, and monitoring following extreme seismic or storm events. These activities are described below. Additional information related to the design of the long-term monitoring program is contained in the final work plan for the NEIBP CAD site long term monitoring program, which is available at <http://www.coastal.ca.gov/sediment/sdindex.html>.

Description of Work

Site Description. The NEIBP is an “L” shaped depression, one of a group of depressions created in the 1960’s by excavating large borrow pits for constructing a series of islands to house oil and gas production facilities (Figure 3). The surrounding area varies from –7 to –8 meters MLLW. Prior to disposal of the LARE material, the NEIBP had an average elevation of about –17.5 meters MLLW, with some lower areas at the southern edges of the site that dropped to –19.3 meters MLLW. The sides along most of the NEIBP had a

slope of about 1 vertical to 2 horizontal (1V:2H); the slope at the north end was about 1V:4H.

After depositing approximately 100,000 cubic meters (~2.5 meter thick layer) of LARE material into the NEIBP the final surface elevation within the pit was raised to approximately -15.5 meters MLLW. With the addition of a 1.0 to 1.5 meter cap over the surface (approximately 60,000 cubic meters in volume), the final surface elevation at the completion of the project was approximately -14.5 to -15.5 meters MLLW.

Task 1. Documentation of cap integrity.

The aquatic cap for the NEIBP site was designed to be effective in containing chemical contaminants despite potential physical (e.g., wave action, ship traffic) and biological (e.g., bioturbation) disturbances. A key component of the LTMP is to monitor the long-term integrity of the cap surface, and thickness of the mixed layer (the interface between the cap and LARE material that formed during the initial disposals of the cap material). Monitoring for long-term changes in the thickness and integrity of the cap layer will be accomplished via coring and bathymetric methods.

Video surveying. Prior to conducting any core or grab sampling activities, underwater video photography will be taken of the cap surface to evaluate for the presence of ghost shrimp burrows or other evidence of bioturbation. The surveys will also provide general information on the status of the cap.

Video surveys will be conducted over the general extent of the cap. Specific transects or coverage areas will not be specified. Hand held diver video camera or a towed video system may be employed. Because of the low visibility typically encountered in the NEIBP, diver deployed video may be the only feasible method for obtaining useful video. Ghost shrimp or other bioturbation burrows, if present, will be identified from the mounding or other disturbances of sediments on the surface of the cap. Organism abundance will be estimated from the number of burrows observed in the surveys. These data will be evaluated to determine whether more quantitative evaluations of bioturbation are needed. If numerous large burrows are present on the surface of the cap, samples of the mounded material should be collected and stored so that limited chemical analysis may be conducted at a later date to determine if the LARE material has been penetrated.

Visual Assessment of cores. Core samples will be collected at nine stations within the CAD site (see Task 2) and examined visually to record the thickness of the cap, the depth of bioturbation (if visible), and the depth of the mixed layer between the cap and the LARE material. Sediment core samples will be collected via SCUBA diver by hand using clear (e.g., Lexan®) tubes so that visual observations can be made both before and after the tubes are extruded. Visual observations (including the presence and amount of recently deposited sediments on the surface) shall be conducted and recorded both manually and electronically (photo or Video) each time sediment core samples are collected.

Bathymetric surveys. A bathymetric survey will be conducted of the entire NEIBP disposal cell and surrounding area (to a minimum of 50 meters beyond the top edge in all directions) during each annual monitoring event using a multi-beam sonar device such that a maximum 0.1 meter vertical resolution is obtained. The bathymetric surveys shall use station and horizontal positioning based on State Plane Coordinates referenced to NAD 83 California Zone 5 in meters. All soundings shall be measured in meters and tenths and refer to MLLW 1993 as determined from BM “Tide Gage”, elevation 4.15m MLLW 1993.

Task 2. Chemical analyses of the cap.

In addition to ensuring that the cap remains physically intact over the LARE material, a key aspect of the monitoring program will be to ensure that chemicals are not migrating through the cap at concentrations that exceed potential aquatic risk levels. Chemical advection and diffusion potential was estimated and accounted for during cap design. Monitoring for chemical advection shall be accomplished by measuring sediment contaminant concentrations for select parameters in distinct layers of a core sample. This method relies on the theory that a portion of mobilized chemicals from the contaminated layer will partition onto the cap particles where they can be analyzed. In a sense, the cap acts as a filter for the chemicals, trapping them at an increasing concentration gradient as they move upward in the cap layer.

Core sampling procedures. Sediment core samples will be collected by hand using SCUBA diving equipment from nine stations within the CAD site (Figure 4). The cores should be acrylic or similar material and be sufficiently wide in diameter to ensure that the minimum sample size can be achieved with no more than a 6-inch depth interval. The core length will be sufficient to pass through the cap layer and penetrate at least 6-12 inches into the LARE material. Core samples will be processed the same day as collected by either splitting the core tube or extruding the material and storing sub-samples in noncontaminating containers.

A total of three sample intervals will be collected for each core. The exact width of the sample interval will be determined after completing a project specific Quality Assurance Project Plan (QAPP) and calculating the minimum sample size required to meet the target detection limits. However, for the purposes of discussion, a 6-inch sample interval is assumed. Thus, the three sample intervals are: the top 6 inch layer of the cap (top), the bottom 6-inch layer just above the cap/LARE mixed layer (bottom), and the 6-inch interval at the mid-point in between the two previous depths (mid).

If a significant amount of newly settled material is present on the cap surface (e.g., >5 cm), this upper layer will be removed from the top core sub-sample and placed in a separate container for analysis. The remainder of the top sub-sample, representing the original cap surface, will be saved for chemical analysis. This will allow the issue of chemical migration to be analyzed separately from potential recontamination due to deposition on the cap surface.

The remainder of the core should be stored in a suitable manner (i.e., preserve the orientation, integrity, and chemical composition of the core) such that if questions arise from the three initial samples, it will be possible to analyze additional samples for chemical or physical parameters.

Chemical analysis. Each sample will be analyzed for sediment moisture, grain size, bulk density, organic carbon content, metals, and PAHs. Metals and PAHs were selected because they represent contaminants of concern in the LA River material and include analytes that are most susceptible for migration. The chemical analytes and detection limits are listed in Table 1.

In addition to the chemical analyses, sediment moisture, grain size, bulk density, and organic carbon content will also be measured for each sample interval. If needed, a second core sample may be collected for all of the above except for moisture content, which must be taken on the same sample as the chemical analyses.

Task 3. Recolonization studies.

In addition to the video surveys described in Task 1, benthic sampling and analyses will be conducted to monitor biological changes at the study site.

Benthic community composition. The benthic macrofauna (sediment-dwelling invertebrates retained by a 1mm-mesh sieve) will be collected, identified to the lowest practical taxon, and counted. The data will be summarized to describe the abundance of each species, species richness, and diversity of each sample. Comparisons to the fauna of nearby reference stations will be presented and used to describe recolonization of the cap. Data analyses should include a description of the abundance of major bioturbator species, organisms capable of burrowing more than a meter below the sediment surface.

A total of 20 sample stations will be sampled for the benthos: 10 stations from within the CAD site and 10 stations from the surrounding areas (within the borrow pit). Sample stations will be randomly located along a 10-meter grid laid over the study area. One sample will be collected at each of the 10 stations. All sample stations shall be located and recorded using a differentially corrected Global Position System (GPS). Attempts should be made to return to within 5 meters of the same sample stations each year.

Sampling will be conducted using a 0.1 m² modified Van Veen grab. The grab will be operated following procedures described in U.S.EPA (2001). Each sample will be evaluated for acceptability criteria defined in U.S.EPA (2001) including adequate depth of penetration. If the sample does not meet all of these criteria, it should be rejected.

Procedures for processing samples will follow those detailed in U.S.EPA (2001). In summary, each complete replicate sample, including overlying water, will be sieved through a 1000-micron (1 mm) screen. Organisms and debris on the screen will be transferred to sample containers with a label placed on the inside of the container.

Benthic organisms will be subjected to a suitable relaxant for a period of 30 minutes and then fixed with 10-15 percent borax-buffered formalin. After an appropriate fixing period (minimum 24 hours, maximum seven days), the samples will be rewashed with tap water through a 500-micron or smaller screen. The samples will be rinsed in 70 percent ethanol/water solution and then stored in sample containers in 70 percent ethanol/water solution with internal and external labels.

Samples will be sorted from sediment/debris into major taxonomic groups, which will then be stored in separate vials for each sample. Wet-weight biomass determination will be made for each major taxonomic group. Qualified taxonomists will identify and enumerate organisms to the lowest practical taxonomic level.

To ensure that juvenile bioturbators potentially present in the samples do not pass through the 1 mm screen, 5 of the 20 sample stations will be randomly selected by the project leader and re-sampled using a 500-micron screen instead of the 1000-micron screen. All other procedures will remain the same.

Task 4. Event-related monitoring.

In addition to the specific activities scheduled for each of the first three years of monitoring, additional sampling shall be instituted in the event of a major storm or catastrophic natural disaster within the region. Two examples include a major seismic event (defined by the USGS as above 5.5 on the Richter scale within 25 miles of the site) or a 25-year or greater storm event. Should either of these events occur, an initial bathymetric survey will be promptly conducted to determine if structural failure, erosion, etc. has occurred to the cap surface. The CSTF members will then meet to review the results and decide if additional monitoring is necessary. The cost and scope of any additional monitoring will be described in an amendment to this project. The cost for these additional monitoring activities should not be included in this bid.

Task 5. Quality assurance and quality control plan.

Prior to initiating field sampling or laboratory analyses, a Quality Assurance Project Plan (QAPP) will be submitted to ensure that data collected is of sufficient quality to meet the objectives of the study. The QAPP shall mirror EPA's guidelines (U.S. EPA 1993, 1995, 1998) and include the following category elements:

- **Project management**
 - Title and approval sheet
 - Table of contents and document control format
 - Distribution list
 - Project/task organization and schedule
 - Problem definition/background
 - Project/task description
 - Quality objectives and criteria for measurement data
 - Special training requirements/certification

- Documentation and records
- **Measurement/data acquisition**
 - Sampling process diagram
 - Sampling methods requirements
 - Sample handling and custody requirements
 - Analytical methods requirements
 - Quality control requirements
 - Accuracy of positioning equipment
 - Instrument calibration and frequency
 - Data acquisition requirements
 - Data management
- **Assessment/oversight**
 - Assessment and response actions
 - Reports to management
- **Data validation/usability**
 - Data review, validation, and verification requirements
 - Validation and verification methods
 - Reconciliation with data quality objectives

The QAPP must describe the proposed analytical methods and indicate whether these methods are standard (e.g. SW-846 or such) or modified methods (this includes preparation methods and analysis methods). The Standard Operating Procedures for the method(s) shall also be provided. The QAPP must include a Laboratory Quality Management Manual (LQMM), or equivalent document, which describes the quality assurance system in place at the laboratory. The LQMM must include resumes or training summaries for the laboratory personnel who will be involved with the project. The laboratory must provide information in the QAPP that demonstrates that the methods are applicable to the project specific matrices. For example, the laboratory must generate a project matrix-specific Method Detection Limit study according to EPA guidelines that clearly shows the laboratory's ability to meet project detection requirements. The laboratory must submit spike recovery acceptance criteria that are consistent with the project data quality objectives. With the demonstration of method applicability, the laboratory should provide data that demonstrates previous experience with application of the method to the project specific matrices or similar matrices. This demonstration may be in the form of completed, acceptable NELAP performance testing samples, project matrix-specific control charts of spiked analyte recovery, or other appropriate results.

The laboratory must provide documented corrective actions with the final results report for any deviation from project requirements. The final results report must also include, for all project samples and batch quality control samples, all calibration curves, instrument run logs, raw data in an electronic format approved by SCCWRP, sample preparation logs, chains of custody, and any other information required for complete reconstruction and recalculation of results.

Task 6. Reporting

The sampling, chemical, and biological data resulting from this study will be formatted and entered into the CSTF sediment quality database. In addition, draft and final written reports that describe the results will be produced after each year of monitoring.

Data evaluation methods for long-term monitoring data and specific criteria for determining the integrity of the cap will be determined by the members of the CSTF.

At minimum, data reporting for each annual monitoring report should include a comparison of each parameter monitored (e.g., sediment core chemistry concentrations) to the results of the previous monitoring event. Bathymetric records exist for the CAD site elevation and cap thickness at the completion of cap construction. This data, along with visual records from post-construction core sampling, should be compared to the ongoing bathymetry and core sample data to determine if additional consolidation and/or deposition has occurred. Sediment core chemical concentrations collected post-cap construction should be compared to newly collected samples to monitor for upward migration of contaminants through the cap. Finally, the benthic community composition data shall be compared to each successive year of monitoring to assess changes in the macrofauna community of cap.

Schedule

Sampling for Tasks 1-3 shall occur during July-September of 2002 and 2003. Prior to the first sampling activities, a QAPP (Task 4) must be approved by SCCWRP. Monitoring following a major storm or seismic event shall occur within 2 weeks of the event.

A draft annual monitoring report and electronic database shall be submitted within 4 months of completion of sampling (i.e., no later than January 31 of the year following sampling). A final report shall be submitted within 30 days of receiving comments from SCCWRP.

III. SPECIAL REQUIREMENTS AND INSTRUCTIONS

Bidders will be required to comply with the following special requirements and instructions during the performance of services rendered under this project.

General

Bidders are required to comply with all general terms and conditions, certifications, assurances, provisions, laws, regulations, statutes and standards set by the awarding governmental agency of this program, which is the State Water Resources Control Board. This information is available on the Internet at www.dgs.ca.gov/contracts.

Insurance

Bidders shall, at their sole expense, maintain in effect the following insurance coverage and include SCCWRP as an additional insured on their policy:

Workers' Compensation insurance shall be held and maintained by the Bidders as required by applicable laws of the State of California with a minimum amount and limit of One Million Dollars (\$1,000,000) for each accident.

General Liability insurance shall be held and maintained by the Bidders covering all operations by or on behalf of the Bidders providing insurance for bodily injury liability and property damage liability. The combined single limits of liability for bodily injury or property damage shall be One Million Dollars (\$1,000,000) for each occurrence, and One Million Dollars (\$1,000,000) aggregate.

Automobile Liability (Bodily Injury and Property Damage Liability) insurance shall be held by the Bidders, including coverage for all owned, hired, and non-owned automobiles. The combined single limit of liability shall be Two Hundred Fifty Thousand Dollars (\$250,000) for any one accident or loss.

Retention

SCCWRP shall have the right to retain from the Bidders' earnings for each period for which payment is made an amount equal to ten percent (10%) of such earnings, pending satisfactory completion of the agreement.

IV. PROPOSAL SUBMISSION

Bids

A separate bid for each task is required. Each bid should describe the total price for completing two monitoring cycles (e.g., analysis and reporting for two summer samplings, plus initial monitoring for a single Task 4 event). The following form must be used for submission of bids.

Task 1. Documentation of cap integrity.

Price to complete the activities described in Task 1. \$ _____

Task 2. Chemical analyses of the cap.

Price to complete the activities described in Task 2. \$ _____

Task 3. Recolonization studies.

Price to complete the activities described in Task 3. \$ _____

Task 4. Event-related monitoring.

Price to complete the activities described in Task 4 for one event. \$ _____

Task 5. Quality assurance and quality control plan.

Price to complete the activities described in Task 5. \$ _____

Task 6. Reporting

Price to complete the activities described in Task 6. \$ _____

V. ADDITIONAL INFORMATION TO ACCOMPANY PROPOSAL FORM

The following additional information must accompany this Proposal Form as detailed below. This additional information should not exceed fifteen (15) single-sided pages, exclusive of resumes.

1. Statement of Qualifications

Bidders are required to submit a Statement of Qualifications detailing the following information pertinent to the tasks being bid. The document should include the following:

- Description of the firm;
- Listing of relevant sediment monitoring activities performed in southern California and other locations within the last five years;
- Listing of personnel (and their duties) that will perform the work (include brief resumes). This listing should also include subcontractors performing key duties, such as analysis of benthic community composition.

2. Description of Chemistry Laboratory Qualifications . Bidders are required to submit documentation of the capabilities of the analytical chemistry laboratory that includes the following:

- Description of the methods to be used for each analyte (indicate whether these are standard or modified methods);
- Documentation, using data generated by the laboratory, that the methods are appropriate for the matrices to be encountered in this study. This documentation could include matrix-specific Method Detection Limits that exceed the requirements of this study, spike recovery data, prior experience with the project-specific matrices, a description of quality assurance procedures in place at the laboratory, and the results of recent NELAP or equivalent performance test samples that show acceptable results for the target analytes in this study.

VI. BID EVALUATION PROCESS AND CRITERIA

Following the opening of bids, a review panel will evaluate and score the bids received. The review panel will be comprised of SCCWRP staff and CSTF members. The bids for all tasks will be considered as a package and used to make a single evaluation, using the following criteria and scoring system. A maximum score of 100 points is possible

1. Qualifications (25 pts). Each bid will be rated on a scale of 0 to 25 points, based upon the capabilities of the organization to excel in this project. Factors to be considered in this portion of the score will include: ability to excel in conducting the field and laboratory activities specified in the Description of Work, number of personnel, and list of equipment available for use on this project.
2. Experience (25 pts). Each bid will be rated on a scale of 0 to 25 points, based upon the experience of the organization on this type project. Factors to be considered in this portion of the score will include: qualifications of the personnel that will be working on the project, and previous relevant experience in southern California.
3. Price for Tasks 1-4 (25 points). The submitted prices for Tasks 1-4 will be summed. The lowest total price for this project will receive the maximum score of 25 points, with higher bids receiving scores proportional to the lowest bid price.
4. Price for Tasks 5&6 (25 points). The submitted prices for Tasks 5&6 will be summed. The lowest total price for this project will receive the maximum score of 25 points, with higher bids receiving scores proportional to the lowest bid price

The qualifications and experience of the bidder will be evaluated by the review panel in order to determine whether the proposal meets the minimum requirements of the review panel for consideration. Only proposals that meet the minimum requirements will receive a full evaluation according to the criteria listed above.

The bidder receiving the highest total score for all tasks will be awarded a contract to perform the work.

VII. REFERENCES

- U.S.EPA (U.S. Environmental Protection Agency). 1993. Data Quality Objectives Process for Superfund – Interim Final Guidance. EPA Office of Emergency and Remedial Response. Document Number EPA540-R-93-071. September 1993.
- U.S.EPA. 1995. QA/QC Guidance for Sampling and Analysis of Sediments, Water, Tissues for Dredged Material Evaluations – Chemical Evaluations. EPA Office of Water. Document Number EPA-B-95-001
- U.S.EPA. 1998. EPA Guidance for Quality Assurance Project Plans. EPA Office of Research and Development Document Number EPA/600/R-98/018. February 1998.
- U.S.EPA. 2001. Methods for Collection, Storage, and Manipulation of Sediments for Chemical and Toxicological Analyses: Technical Manual. EPA Office of Water. EPA-823-B-01-002. October 2001.

Table 1. Sediment constituents to be measured in core and grab samples.

Metals	MDL ug/g dry wt	PAHs	MDL ng/g dry wt
Aluminum	0.1	<i>MDL 5 (ng/g dry wt.)</i>	5
Antimony	0.1	Acenaphthene	5
Arsenic	0.1	Acenaphthylene	5
Barium	0.1	Anthracene	5
Beryllium	0.1	Benz[a]anthracene	5
Cadmium	0.02	Benzo[a]pyrene	5
Chromium	0.1	Benzo[b]fluoranthene	5
Copper	0.1	Benzo[e]pyrene	5
Iron	0.1	Benzo[g,h,i]perylene	5
Lead	0.1	Benzo[k]fluoranthene	5
Mercury	0.02	Biphenyl	5
Nickel	0.1	Chrysene	5
Selenium	0.1	Dibenz[a,h]anthracene	5
Silver	0.02	Fluoranthene	5
Zinc	0.1	Fluorene	5
		Indeno(1,2,3-c,d)pyrene	5
		Naphthalene	5
		Perylene	5
		Phenanthrene	5
		Pyrene	5
		2,6-Dimethylnaphthalene	5
General Constituents		1-Methylnaphthalene	5
Sediment grain size		2-Methylnaphthalene	5
Total organic carbon		1-Methylphenanthrene	5
Moisture		1,6,7-Trimethylnaphthalene	5
Density			

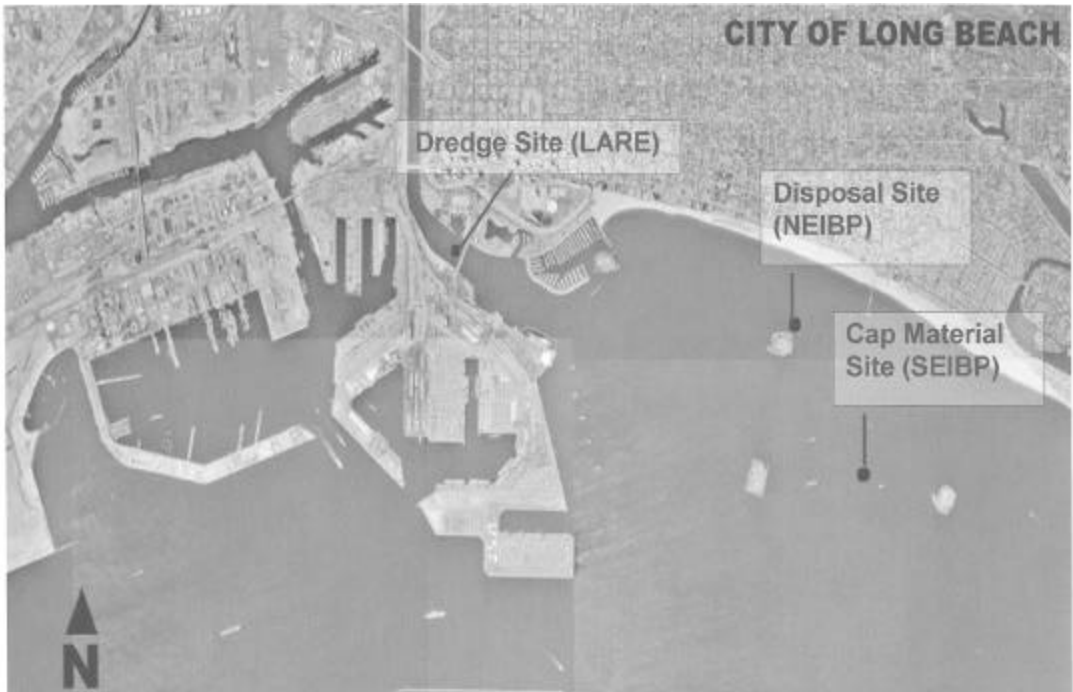


Figure 1. Location of NEIBP CAD site.

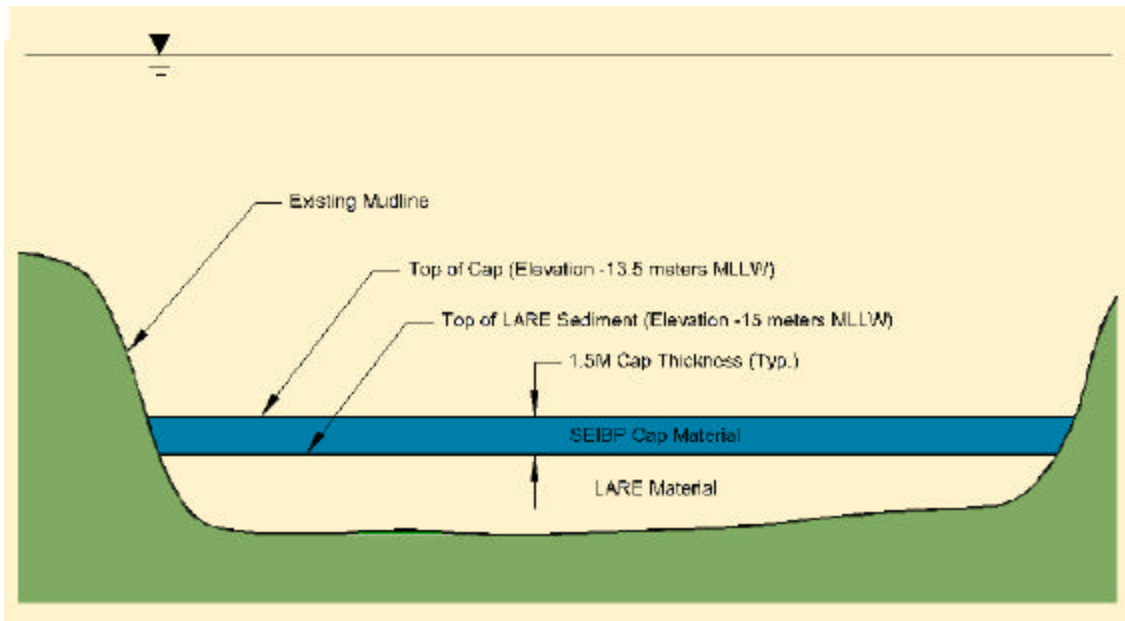


Figure 2. Diagram of aquatic cap components (actual elevations may vary).

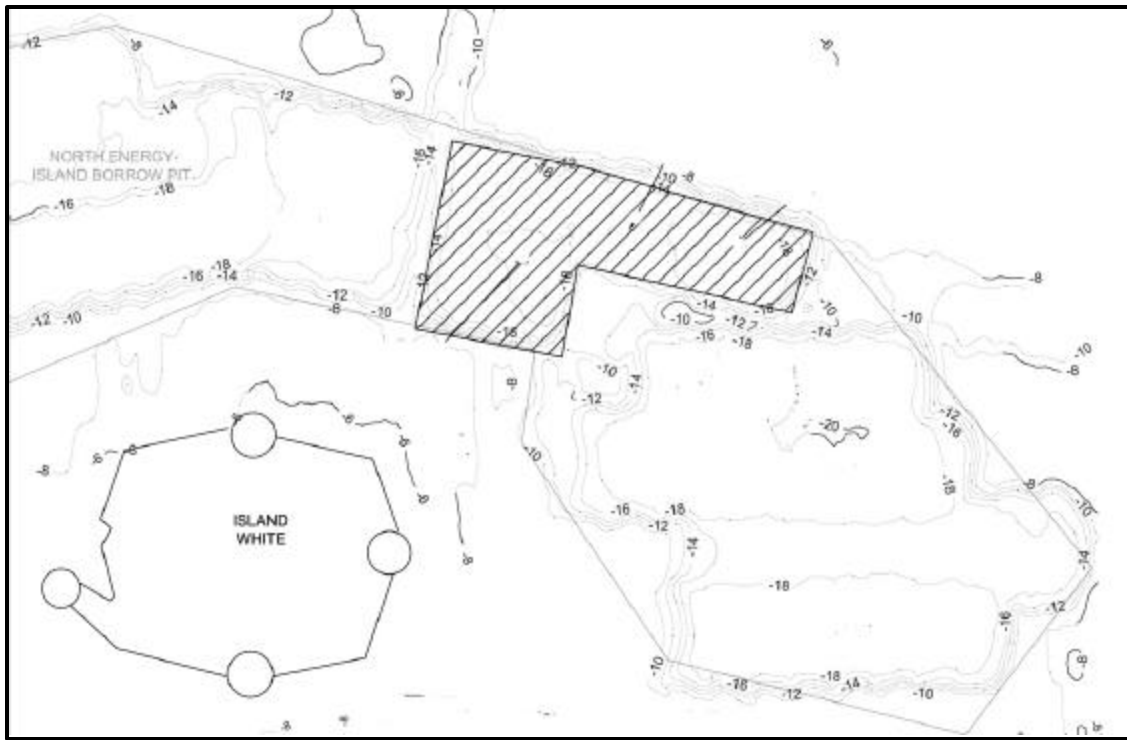


Figure 3. NEIBP site location.

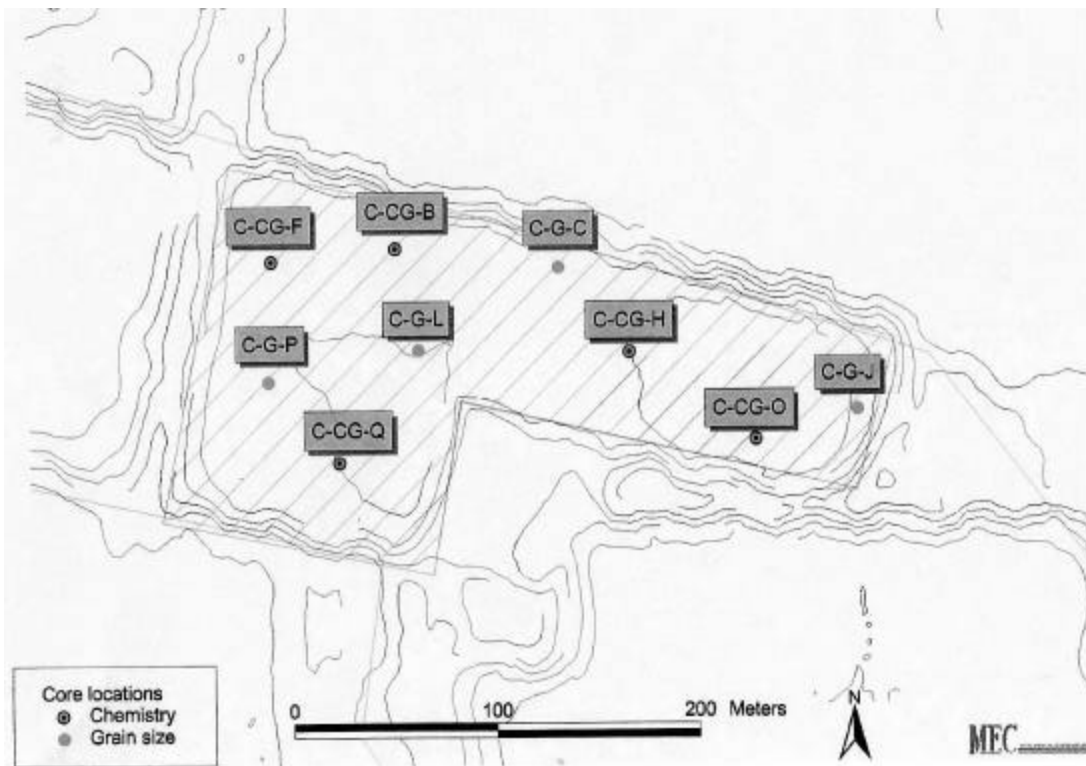


Figure 4. Sediment core locations.