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DATE: October 26, 2004

TO: Coastal Commissioners And Interested Parties

FROM: Peter Douglas, Executive Director
Jack Gregg, Water Quality Supervisor

RE: Los Angeles Regional Contaminated Sediment Task Force
Draft Long-Term Management Strategy Report
Public Review through December 6, 2004

In response to a Senate Bill (SB 673), sponsored by Senator Betty Karnette of Long Beach and signed into law on October 12, 1997, a Contaminated Sediments Task Force (CSTF) was formed to develop a long-term strategy for managing contaminated sediments within the coastal zone of Los Angeles County. The CSTF has provided a forum for diverse stakeholders including dredging proponents, state and federal regulators and advocates for protection of Los Angeles' coastal resources to evaluate options for managing contaminated sediments. The participants have worked together over the last seven years to develop procedures for minimizing potential adverse environmental impacts associated with contaminated sediments. The results have been documented in this CSTF Long-Term Management Strategy, and include regional coordination of sediment management efforts, agreement on the process for evaluating contaminated sediment projects, a proposed long-term goal of beneficially reusing all contaminated sediment and a commitment to collaborate on future treatment and reuse issues.

The CSTF is led by the California Coastal Commission and the Los Angeles Regional Water Quality Control Board and regular participants include the U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, Port of Long Beach, Port of Los Angeles, City of Long Beach, Los Angeles County Department of Beaches and Harbors, California Department of Fish and Game, National Marine Fisheries Service, Southern California Coastal Water Research Project, and Heal the Bay. The CSTF encourages public review of the Strategy and will accept written comments until December 6, 2004. The report is available at the CSTF web site (www.coastal.ca.gov/sediment/CSTF-Draft-Final-Strategy.pdf). Written comments should be

submitted to Michael Lyons, Los Angeles Regional Water Quality Control Board, 320 W. 4th Street, Suite 200, Los Angeles, California 90013.

The CSTF Long Term Management Strategy (Strategy) provides information on how state and federal regulators evaluate dredging, disposal and reuse projects so the process is clear to regulatory and resource agencies, dredgers and other stakeholders. The CSTF participants recognize that while recent conditions have allowed for beneficial reuse of contaminated sediments in constructed fills, such opportunities are less likely to be available within a few years as the ports run out of potential fill locations. The Strategy proposes a plan to develop a site near the Los Angeles coastline for treatment, storage or reprocessing of contaminated sediments, so that beneficial reuse of these materials can provide an economically competitive alternative to lower cost options such as aquatic disposal.

The CSTF evaluated a pilot study for confined aquatic disposal of contaminated sediments and found that there were no short-term adverse environmental impacts. Nevertheless, aquatic disposal is the least preferred method of dealing with contaminated sediments because of the difficulty of designing, building, permitting and monitoring an aquatic disposal site that adequately reduces the long-term risks to the aquatic environment. Several important issues require further study including development of regional sediment quality objectives, refinement of best management practices for managing contaminated sediments and continuing efforts to beneficially reuse all contaminated sediments. The CSTF has agreed to continue quarterly meetings of the Management Committee to continue implementation of the Strategy.

The members of the CSTF agreed in 1999 that the Strategy would consider confined aquatic and upland disposal, sediment treatment, beneficial re-use, contaminant source control and other management techniques. In addition, the CSTF identified five basic goals to be accomplished in preparing the Strategy. These goals are as follows:

1. Identify the locations, sources, approximate quantities, and nature of contaminated sediments that may be dredged in the five-year period following the completion of the Strategy. The Task Force will update these estimates annually.
2. Identify environmentally preferable and feasible management and disposal alternatives for the Los Angeles County region, including multi-user disposal sites and beneficial reuse.
3. Develop a unified set of policies that the various resource and regulatory agencies will need to evaluate dredging of contaminated sediments.
4. Promote and implement region-wide efforts at source reduction through watershed management.
5. Seek funding for additional studies and implementation of the Strategy.

The Strategy addresses each of these goals and CSTF exceeded expectations in addressing several of the goals. There were also several important additions to the initial project objectives including: pilot studies of beneficial reuse alternatives funded by the Corps of Engineers; market studies of beneficial reuse products; commitments to ongoing coordination among the Task Force members and development of a long-term goal of 100% beneficial reuse of contaminated sediments. Other elements of the Strategy, despite significant efforts, did not meet expectations. For example, the CSTF sponsored work for staff at the Southern California Coastal Water Research Project to conduct extensive evaluations of regional sediment chemistry and toxicity data in an attempt to develop regional contaminated sediment screening thresholds. They found that the available data did not provide a definitive tool for directing contaminated sediment disposal or reuse alternatives.

The Executive Summary of the Strategy, provided as an attachment to this memorandum, contains a summary of the achievements of the CSTF, including results specific to each of the five goals referenced above. The nature of the coastal resources potentially impacted by contaminated sediments, the evaluation of management alternatives, the results of numerous field and literature studies and the recommendations of the CSTF are contained in the full Strategy Report which is available on the Coastal Commission website (<http://www.coastal.ca.gov/sediment/CSTF-Draft-Final-Strategy.pdf>).

The work of the CSTF has led to the development of a number of recommended policy changes for the participants, including a long-term goal of 100% beneficial reuse of contaminated sediments. And in support of that goal, the CSTF has recommended the development of a facility for the treatment, storage and reprocessing of contaminated sediments. It has developed a flow chart to inform stakeholders of the regulatory decision process for contaminated sediment projects (CSTF Decision Tree) and a toolbox of Best Management Practices (BMP) to reduce the impacts of dredging on water quality. The CSTF has also developed recommendations for improved monitoring of contaminated sediment dredging projects and work on this subject will continue over the next year. The CSTF recognizes the efforts by the Los Angeles Regional Water Quality Control Board's stormwater and total maximum daily load (TMDL) programs to control sources of contaminated sediments. The CSTF recommends continued collaboration with these programs, so that the improvements of upstream source control are realized in coastal waters. As mentioned above, the CSTF has recommended that the participants continue to meet on a quarterly basis to conduct long range planning for reuse and, where necessary, disposal of contaminated sediments and to promote implementation of the Strategy. In addition, the CSTF Advisory Committee will continue to meet, as needed, to evaluate and make recommendations on individual contaminated sediments projects.

Balanced Management Approach and the Goal of 100% Beneficial Reuse of Contaminated Sediments

The CSTF recommends a balanced approach for managing contaminated sediments in the Los Angeles region, whereby aquatic and upland disposal options are balanced with treatment and reuse options for dredge material. The long-term goal of the CSTF is to achieve 100 percent beneficial reuse of contaminated sediments, eliminating the need for aquatic disposal. Achieving this goal, however, will require that several key initiatives be implemented. These initiatives include ongoing tracking of contaminated sediment dredging and beneficial reuse efforts, development of one or more regional treatment, storage and reprocessing facilities for contaminated sediments, and promotion of effective upland source control programs.

At present the Ports of Los Angeles and Long Beach are able to reuse most of their contaminated sediments as construction fill material in large projects to create new land and facilities for port expansion. In this way, the contaminants are isolated from the environment through engineered construction controls, and the reuse of the contaminated sediment reduces the need for imported fill. While this alleviates the need for more expensive treatment or reuse options at this time, it also reduces the economic incentives for development of treatment or reuse alternatives. In early 2004, the CSTF members prepared a forecast of expected dredging needs vs. port fill opportunities over the next five years, in part, to determine how long the port fill alternative will continue to be adequate for contaminated sediment disposal needs. The group found that the need for additional reuse or disposal alternatives could be expected to occur during the next five years as port fill opportunities become less available. In order to fulfill the long-term goal of 100% beneficial reuse of contaminated sediments, actions to develop other alternatives need to be initiated immediately.

Regional Sediment Treatment/Storage/Reprocessing Facility

The CSTF found that an early action supporting most of reuse or treatment alternatives mentioned in the Strategy Report would be the development of one or more facilities where contaminated sediments could be treated, stored or reprocessed. This type of facility would help to mesh schedules of dredging projects and treatment or reuse projects. Storage capacity would also help to provide a steady throughput to any treatment process, minimizing down time for treatment processes and thereby reducing treatment costs. Given the sporadic nature of most dredging work, achieving a steady stream of materials to be treated requires adequate storage facilities. The CSTF determined that one or more areas for treatment, storage or reprocessing (TSR) of dredged material are necessary to achieve the goal of 100% beneficial reuse. The CSTF has proposed an action plan for development of a TSR site in order to support this vital effort.

The CSTF investigated the development needs for a new multi-user disposal or reuse site in the Los Angeles area and found several critical characteristics (ownership, liability, operations and management, monitoring, fee structure) for each of these types of sites that would determine

their feasibility and environmental effectiveness. Currently the existing opportunities for using contaminated sediments in port fill projects ensure that there is little incentive for potential responsible parties to address these difficult issues.

The CSTF Management Committee reached consensus that development of a TSR was critical to achieving the goal of 100% beneficial reuse. As such, the CSTF prepared an action plan for development of a TSR site with specific milestones and proposed completion dates. The Action Plan proposes to have a TSR operational by the end of 2009. This schedule assumes completion of the Action Plan efforts over the next few years and the current levels of commitment by stakeholders. The Management Committee will be tracking the progress in TSR site development, since delays could result in increased pressure to dispose of contaminated sediments in the aquatic environment.

Los Angeles CSTF Decision Tree for Contaminated Sediment Management

In order to clarify the process used by regulators in evaluating disposal and reuse alternatives and to promote beneficial reuse, the CSTF developed a Decision Tree for Contaminated Sediment Management. The Decision Tree clarifies that, while seeking the least environmentally damaging alternative through the Clean Water Act Section 404 (b) 1 guidelines, regulators will typically consider beneficial reuse of contaminated sediments in a manner that provides the least risk to the environment as the preferred alternative. Where reuse is not possible, treatment to stabilize the contaminants or disposal in an approved upland location are usually recommended for typical Los Angeles region contaminated sediments. Aquatic disposal of contaminated sediments has been previously used in the Los Angeles region, however the Strategy identifies it as the least preferred alternative because of the difficulty of designing, building, permitting and monitoring an aquatic disposal site that adequately reduces the long-term risks to the aquatic environment. As such, aquatic disposal of either clean or contaminated sediments is considered only as a last option, after attempts have been made to beneficially reuse or treat the material.

BMP Toolbox

Several tools were developed to assist dredgers and regulators in making informed decisions regarding contaminated sediment dredging projects. A BMP Toolbox was developed to assist in selecting appropriate dredge equipment and operational methods to minimize water quality impacts associated with dredging. The CSTF recommends that dredgers use this toolbox to determine which methods are most suitable for the specific location and/or site conditions and to minimize impacts of the project. The Advisory Committee will review each individual project based on the site-specific conditions, the current status of information on the impacts of dredging contaminated sediments and recommend appropriate changes to the BMPs or monitoring plan. If there is disagreement between the dredger and the regulatory agencies regarding the BMPs and monitoring plan, the Advisory Committee guidelines allow the dredger to bring the project back for further review and guidance.

Source Control

The CSTF Watershed Management and Source Reduction subcommittee participated in regional studies of polluted runoff, as well as the development of stormwater permits and several Total Maximum Daily Load (TMDL) plans that could help reduce discharges of contaminated sediments to the ports and harbors of the Los Angeles Region. The subcommittee concluded that the ongoing generation of pollutants within the watershed is a significant source of contaminated sediments. To minimize future needs for contaminated sediment management, the CSTF strongly supports ongoing source control and treatment activities in the watershed to reduce the discharge of contaminants to Los Angeles region ports and harbors, as well as discharges to Santa Monica and San Pedro bays.

Since the formation of the CSTF, there have been significant advances in source control efforts in the watersheds upstream from the ports and harbors of the Los Angeles region. The municipal stormwater program has held the inland communities to stricter standards for the polluted runoff discharged through their stormdrain systems and currently requires implementation of structural and nonstructural BMPs to reduce nonpoint source pollution impacts. In addition, the Los Angeles Regional Water Quality Control Board has approved several TMDL plans for the region that will require communities to reduce the discharge of trash, pathogens, metals and other pollutants. The CSTF has agreed to continue to review and comment on stormwater permits and TMDLs that may have a significant impact on sediment quality in Los Angeles region port and harbors.

CSTF Advisory Committee

One of the initial objectives of the CSTF was to consider the development of a Dredged Material Management Office with periodic meetings to review dredging projects. While this model has been successful in other areas of the country, it was decided that for the Los Angeles region, the small number of controversial projects did not warrant a formal office or periodically scheduled meetings. Instead, the CSTF convened the Advisory Committee to meet on an as-needed basis to review and comment on dredging or disposal projects that may have significant adverse environmental impacts. The CSTF developed guidelines for this Advisory Committee that include procedures for notifying CSTF participants of projects that may impact aquatic resources and procedures for requesting that the Advisory Committee be convened. The guidelines also clarify the dredger's responsibilities for managing contaminated sediment projects; including use of the BMP Toolbox to appropriately design their project to minimize aquatic impacts.

In addition, the guidelines recommend the use of the Los Angeles Region CSTF Consolidated Permit Application. This single application includes the information required for use by each of the regulatory agencies overseeing dredging projects in the Los Angeles region. The

application facilitates the review of projects by bringing together all the requirements of each agency and making that information available to all reviewers.

CSTF Ongoing Work

The Strategy includes recommendations for ongoing work of the CSTF Management Committee to minimize the impacts of contaminated sediments on water quality and coastal resources. This work will require additional funding and staff work from the CSTF participants and possibly additional legislative support. The ongoing coordination through the CSTF Management Committee will initially require quarterly meetings to support the implementation of the strategy. This continuing work will include: coordination efforts to maximize beneficial reuse by coordinating dredging, disposal, treatment and reuse efforts; ongoing work on technical issues (monitoring methods, BMP development); reevaluation of sediment quality guideline development; and the development and promotion of beneficial reuse opportunities.

Conclusion

The CSTF has provided a forum over the last seven years for dredging proponents, state and federal regulators and advocates for protection of Los Angeles' coastal resources to meet on a routine basis. The participants have worked together to develop procedures to minimize the risk of adverse environmental impacts from contaminated sediments. The results have been documented in this CSTF Long Term Management Strategy. They include regional coordination of sediment management efforts, agreement on the process for evaluating contaminated sediment projects, a proposed long-term goal of beneficially reusing all contaminated sediment and a commitment to continue working on the remaining issues.

The CSTF Long Term Management Strategy provides information on how state and federal regulators evaluate dredging, disposal and reuse projects so the process is clear to regulatory and resource agencies, dredgers and other stakeholders. The CSTF participants agreed that while recent conditions have allowed for beneficial reuse of contaminated sediments in constructed fills, these conditions could change within a few years since dredging needs may not continue to coincide with port expansion projects.

The Strategy proposes a plan to develop a site near the Los Angeles coastline for treatment, storage or reprocessing of contaminated sediments, in order to promote contaminated sediment reuse as an economically competitive option to less environmentally desirable alternatives such as aquatic disposal. The CSTF evaluated a pilot test of aquatic disposal of contaminated sediments and found that there were no short-term adverse environmental impacts. Nevertheless, aquatic disposal is the least preferred method of managing contaminated sediments because of the difficulty of designing, building, permitting and monitoring an aquatic disposal site that adequately reduces the long-term risks to the aquatic environment. More work is needed for several issues, such as sediment quality objectives, best management practices for contaminated sediments and the ongoing work to beneficially reuse all

contaminated sediments. The CSTF has agreed to continue quarterly meetings of the Management Committee and to convene the Advisory Committee as-needed to support implementation of the Strategy.

The CSTF encourages public review of the Strategy and will accept written comments until December 6, 2004. Written comments should be submitted to Michael Lyons, Los Angeles Regional Water Quality Control Board, 320 W. 4th Street, Suite 200, Los Angeles, California 90013. The report is available at the CSTF web site (www.coastal.ca.gov/sediment/CSTF-Draft-Final-Strategy.pdf).

Attachment: (1) Executive Summary of the Draft Los Angeles Regional Contaminated Sediment Task Force Long-Term Management Strategy Report

**Los Angeles Regional Contaminated Sediment Task Force
Draft Long-Term Management Strategy Report
EXECUTIVE SUMMARY**

In response to a Senate Bill (SB 673), sponsored by Senator Betty Karnette of Long Beach and signed into law on October 12, 1997, a Contaminated Sediments Task Force (CSTF) was formed to develop a long-term strategy for managing contaminated sediments within the coastal zone of Los Angeles County. The CSTF has provided a forum for dredging proponents, state and federal regulators and advocates for protection of Los Angeles' coastal resources. The participants have worked together over the last seven years to develop procedures for minimizing potential adverse environmental impacts associated with contaminated sediments. The results have been documented in this CSTF Long-Term Management Strategy, and include regional coordination of sediment management efforts, agreement on the process for evaluating contaminated sediment projects, a proposed long-term goal of beneficially reusing all contaminated sediment and a commitment to continue working on future treatment and reuse issues.

The CSTF Long Term Management Strategy (Strategy) provides information on how state and federal regulators evaluate dredging, disposal and reuse projects so the process is clear to regulatory and resource agencies, dredgers and other stakeholders. The CSTF participants recognize that while recent conditions have allowed for beneficial reuse of contaminated sediments in constructed fills, such opportunities could be less available within a few years as the ports run out of potential fill locations. The Strategy proposes a plan to develop a site near the Los Angeles coastline for treatment, storage or reprocessing of contaminated sediments, so that reuse of these materials can compete favorably with lower cost alternatives such as aquatic disposal.

The CSTF has evaluated a pilot study for confined aquatic disposal of contaminated sediments and found no short-term adverse environmental impacts, but this is the least preferred method of dealing with contaminated sediments due to uncertainties regarding the long-term environmental consequences. More work is needed for several issues, such as sediment quality objectives, best management practices for contaminated sediments and the ongoing work to beneficially reuse all contaminated sediments. The CSTF has agreed to conduct quarterly meetings of the Management Committee and as-needed for the Advisory Committee, to continue implementation of the Strategy.

Background

The CSTF is led by the California Coastal Commission and the Los Angeles Regional Water Quality Control Board and regular participants include the U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, California Department of Fish and Game, National Marine Fisheries Service, Southern California Coastal Water Research

Project, City of Long Beach, Los Angeles County Department of Beaches and Harbors, Port of Long Beach, Port of Los Angeles, and Heal the Bay.

Structurally, the CSTF is comprised of Executive and Management committees, and a series of technical subcommittees (Upland Disposal and Beneficial Reuse, Aquatic Disposal and Dredge Operations, Watershed Management and Source Reduction, Implementation, and Sediment Screening Threshold Development), each charged with developing specific recommendations to form the basis of an overall management approach. The result of this seven-year process is the development of a Los Angeles Contaminated Sediment Long-Term Management Strategy, which is summarized in this document. Copies of the numerous technical studies and reports prepared during this process are provided as appendices to the Strategy Document.

The Management Committee considered information generated by technical studies and recommendations of the subcommittees during a two year long report development process. The result is a long-term management strategy that recognizes the potentially high cost of treating and beneficially reusing dredged material, as well as the environmental benefits of reuse. The strategy provides guidance to dredgers and regulators that allows for upland or aquatic disposal, but promotes and facilitates beneficial reuse. As stated above the Management Committee, made up of dredgers, regulators and Heal the Bay, reached consensus that 100% beneficial reuse of contaminated sediments is a reasonable long-term goal. To meet this long-term goal, several key initiatives were identified for development, and are discussed below.

The members of the Task Force agreed in 1999 that the CSTF Strategy would consider confined aquatic and upland disposal, sediment treatment, beneficial re-use, other management techniques, and contaminant source control. The Task Force identified five basic goals to be accomplished in preparing the Strategy. These goals are as follows:

1. Identify the locations, sources, approximate quantities, and nature of contaminated sediments that may be dredged in the five-year period following the completion of the Strategy. The Task Force will update these estimates annually.
2. Identify environmentally preferable and feasible management and disposal alternatives for the Los Angeles County region, including multi-user disposal sites and beneficial reuse.
3. Develop a unified set of policies that the various resource and regulatory agencies will need to evaluate dredging of contaminated sediments.
4. Promote and implement region-wide efforts at source reduction through watershed management.
5. Seek funding for additional studies and implementation of the Strategy.

The Strategy addresses each of these goals. The Task Force was able to go beyond expectations in addressing some goals. For example, the initial project objectives did not include the pilot studies of beneficial reuse alternatives that were funded by the Corps of Engineers, the market studies of beneficial reuse products, commitments to ongoing coordination among the Task Force members or a long term goal of 100% beneficial reuse of contaminated sediments.

Other elements of the Strategy, despite significant efforts, have not met expectations. For example, the CSTF sponsored work for staff at the Southern California Coastal Water Research Project to conduct extensive evaluations of regional sediment chemistry and toxicity data in an attempt to develop regional contaminated sediment screening thresholds. Unfortunately, they found that the available data did not provide a definitive tool for directing contaminated sediment disposal or reuse alternatives.

The following is a summary of the results that were achieved by the CSTF, specific for each of the five goals referenced above.

Goal 1: Identify the locations, sources, approximate quantities, and nature of contaminated sediments that may be dredged in the five-year period following the completion of the Strategy.

In an effort to characterize the contaminated sediments of the Los Angeles region, the CSTF assembled information from monitoring of historical dredging and disposal operations and from the state's Bay Protection and Toxics Cleanup Program. The wide range of sediment characteristics and contaminant sources are documented in Section 3 of the report. One of the key tasks completed by the CSTF was the development of a regional sediment quality database containing the physical, biological and chemical test results for all sediments collected within the region for disposal suitability determinations over the last decade. The database has been used to investigate the suitability of various sediment quality guidelines for application in the Los Angeles region and to help with development of plans to beneficially reuse contaminated sediments. The database is available to the public through the Southern California Coastal Water Research Program website (www.sccwrp.org).

As part of its overall strategy, the CSTF identified development of region-specific Sediment Quality Guidelines as one of the highest priority needs for the development of a management strategy. The Sediment Screening Threshold subcommittee compiled a database of regional sediment chemistry and bioassay data and conducted a comparison of this data to existing sediment quality guidelines from other areas of the nation to determine accuracy of the cause and effect relationships between chemistry data and

biological response. One conclusion of this work was that sediment chemistry alone could not be used to accurately predict toxicity for the vast majority of dredging projects in the Los Angeles Region. The regulators primarily responsible for determining if a dredged material can be disposed in an aquatic environment (USACE, EPA and RWQCB) concluded that the guidelines developed could only be used in conjunction with other lines of evidence. The results of this study are found in Section 4 of the Strategy.

Another initial goal of the CSTF was to predict future quantities of contaminated sediments requiring dredging over a five year period in order to plan for reuse or disposal. The CSTF Implementation subcommittee, through the efforts of the Los Angeles regional ports and harbors and the USACE developed a five-year schedule that is included in the Strategy as Table 3-11. This schedule is dependent on many factors and is expected to change over time. Nevertheless, in order to promote beneficial reuse and to begin the planning for treatment, storage, reprocessing and disposal efforts, this schedule is a critical tool. Although the initial goal was to develop these estimates on an annual basis, the CSTF now plans to update them twice per year to better track upcoming reuse opportunities and potential conflicts.

Goal 2: Identify environmentally preferable and feasible management and disposal alternatives for the Los Angeles County region, including multi-user disposal sites and beneficial reuse

The CSTF, in cooperation with the Corps of Engineers, investigated the feasibility of a wide variety of contaminated sediment management alternatives including treatment, disposal and reuse alternatives (Sections 6 and 7). The investigations ranged from literature reviews to testing of treatment and disposal alternatives at a pilot scale level. The alternatives were evaluated using a set of criteria developed by the CSTF and those determined to be feasible for the Los Angeles region are described in the report, along with information about costs, appropriate use of each alternative and potential obstacles to the alternatives.

The Upland Disposal and Beneficial Reuse subcommittee considered treatment alternatives ranging from simply dewatering the material for use as fill to the conversion of highly contaminated materials to inert materials, such as glass. Treatment alternatives were narrowed to those appropriate for typical projects in the Los Angeles region and local sediment characteristics. Three treatment technologies were brought forward from the evaluation stage to pilot testing including cement stabilization, sediment washing and sediment blending.

The CSTF considered reuse alternatives ranging from landfill daily cover, stabilized fill material, manufactured soil, construction aggregate and cement-based products. A market evaluation study was conducted to review potential regional opportunities related to upland reuse of dredge materials, including a survey of potential vendors. This study found that several hurdles limit reuse opportunities such as the cost of contaminated sediment treatment, general liability issues surrounding transfer of ownership of the contaminated material, cost of permitting and potential impacts of placing saline marine sediments in upland reuse locations. While these hurdles may be overcome in the future, at present most contaminated sediments dredged in the Los Angeles region are of a quality that can be safely isolated within port fill projects and for the last few years these projects have been available for this purpose. As such, there is little motivation to develop other more costly treatment or reuse alternatives at this time. Other reuse alternatives that may be feasible on a case-by-case basis are landfill daily cover and stabilized fill for projects near the ports. At the present time, the production of manufactured soil, aggregate and cement-based products do not appear to be viable alternative reuses of dredged material, except under very specific circumstances.

The CSTF evaluated a list of upland and aquatic disposal alternatives for use in the region, including confined aquatic disposal, nearshore confined disposal facility, upland confined disposal facility, and landfill disposal. Evaluations of each of these alternatives are detailed in Sections 6 and 7 of the report. To provide additional information on confined aquatic disposal, the USACE, Los Angeles District, sponsored a full scale field pilot study to test the effectiveness of confined aquatic disposal using a borrow pit located in Long Beach Harbor. Approximately 100,000 cubic meters of contaminated sediment from the Los Angeles River Estuary were deposited in the North Energy Island Borrow Pit (NEIBP) and capped with a 1 to 1.5 meter layer of clean sand from an adjacent borrow pit. The preliminary results of a three-year monitoring study indicate that the CAD site appears to be successfully isolating the contaminated sediments and providing a clean surface area suitable for recolonization by benthic organisms.

Upland disposal alternatives involve placing contaminated dredge material in an upland facility constructed with containment measures such as lining, diking, and covering. Disposal of contaminated sediments at upland (Class III) commercial landfills is not currently authorized by the State of California Water Resources Control Board due to concerns about chloride and contaminant leaching into the groundwater. Other issues associated with landfill disposal of contaminated sediments include reducing landfill capacity; and infrastructure impacts related to transporting the material to the landfill. A more optimal alternative would be to attempt to beneficially reuse the material as daily landfill cover, which is currently evaluated on a case-by-case basis by the Los Angeles Regional Water Quality Control Board.

Goal 3: Develop a unified set of policies that the various resource and regulatory agencies will need to evaluate dredging of contaminated sediments

The work of the CSTF has led to the development of a number of recommended policy changes for the participants. The CSTF has recommended guidelines for concurrent review of dredging and disposal projects involving contaminated sediments. It has developed a toolbox of Best Management Practices (BMP) to reduce the impacts of dredging on water quality and developed recommendations for improved monitoring of contaminated sediment dredging projects. The CSTF has recommended finding ways to make reuse of contaminated sediments more feasible and that the participant agencies adopt a long-term goal of 100% beneficial reuse of contaminated sediments. And in support of that goal, the CSTF has recommended the development of a facility for the treatment, storage and reprocessing of contaminated sediments.

Advisory Committee

Early on it was recognized that given the multiple state and federal agencies involved in the regulation of contaminated sediments that coordination of dredging projects would lead to better and more timely reviews. It had been found in other areas of the country that sequential reviews by many agencies sometimes caused permit applicants to conduct multiple sampling and reporting efforts to answer similar questions for agencies with different authorities. By conducting concurrent reviews in face-to-face meetings, agencies can discuss and agree on the data needed in a more efficient manner.

One of the initial objectives of the CSTF was to consider the development of a Dredged Material Management Office with periodic meetings to review dredging projects. While this model has been successful in other areas of the country, it was decided that for the Los Angeles region, the small number of controversial projects did not warrant periodic meetings. Instead, the CSTF convened the Advisory Committee to meet on an as-needed basis to review and comment on dredging or disposal projects which may have significant adverse environmental impacts. The CSTF developed guidelines for this Advisory Committee (included in the appendices of this report). The guidelines include procedures for notifying CSTF participants of projects that may impact aquatic resources and procedures for requested that an Advisory Committee meeting be held. The guidelines also clarify the dredger's responsibilities for managing contaminated sediment projects; including use of the CSTF BMP toolbox to appropriately design their project to minimize aquatic impacts (see below).

In addition, the guidelines recommend the use of the Los Angeles Region CSTF Consolidated Permit Application. This single application includes the information required for use by each of the regulatory agencies overseeing dredging projects in the Los Angeles region. The application facilitates the review of projects by bringing

together all the requirements of each agency and making that information available to all reviewers.

BMP Toolbox

Several tools were developed to assist dredgers and regulators in making informed decisions regarding contaminated sediment dredging projects. A BMP toolbox was developed (Section 5.3) to assist in selecting appropriate dredge equipment and operational methods to minimize water quality impacts associated with dredging. Potential dredgers can use this toolbox to evaluate which methods are most suitable given their specific location and/or site conditions for minimizing impacts. The CSTF has recommended that dredgers with contaminated sediments use the BMP toolbox to help design a program of BMPs that are appropriate for the reuse or disposal location and the contaminated sediment characteristics. The Advisory Committee will review each individual project based on the site-specific conditions, the current status of information on the impacts of dredging contaminated sediments (including information in the CSTF database) and recommend any needed changes to the BMPs or monitoring plan. If there is disagreement between the dredger and the regulatory agencies regarding the BMPs and monitoring plan, the Advisory Committee guidelines allow the dredger to bring the project back for further review and guidance.

Los Angeles CSTF Decision Tree for Contaminated Sediment Management

In order to clarify the process used by regulators in evaluating disposal and reuse alternatives and to promote beneficial reuse, the CSTF developed a Decision Tree for Contaminated Sediment Management (Section 8). The Decision Tree clarifies that, while seeking the least environmentally damaging alternative through the Clean Water Act Section 404 (b) 1 guidelines, regulators will typically consider beneficial reuse of contaminated sediments in a manner that provides little risk to the environment as the preferred alternative. Where reuse is not possible, either treatment to stabilize the contaminants or disposal in an approved upland location would usually be recommended for typical Los Angeles region contaminated sediments. While aquatic disposal of contaminated sediments has been used in the past, it is one of the least preferred alternatives, because of the difficulty of designing, building, permitting and monitoring an aquatic disposal site that adequately reduces the risks to the aquatic environment. As such, aquatic disposal of either clean or contaminated sediments is considered only as a last option, after attempts have already been made to beneficially reuse the material or to treat the material.

Balanced Management Approach and the Goal of 100% Beneficial Reuse of Contaminated Sediments

The CSTF recommends a balanced approach for managing contaminated sediments in the Los Angeles region, whereby aquatic and upland disposal options are balanced with treatment and reuse options for dredge material. The long-term goal of the CSTF is to

achieve 100 percent beneficial reuse of contaminated sediments, eliminating the need for aquatic disposal. Achieving this goal, however, will require that several key initiatives be implemented. These initiatives include ongoing tracking of contaminated sediment dredging and beneficial reuse efforts, development of one or more regional treatment, storage and reprocessing facilities for contaminated sediments, and promotion of effective upland source control programs.

At present the Ports of Los Angeles and Long Beach are able to reuse most of their contaminated sediments as construction fill material in large projects to create new land and facilities for port expansion. In this way, the contaminants are isolated from the environment through engineered construction controls and the use of the contaminated sediment reduces the need for imported fill. While this alleviates the need for more expensive treatment or reuse options at this time, it also reduces the motivation for development of treatment or reuse alternatives. In early 2004, the CSTF members prepared a forecast of expected dredging needs versus port fill opportunities over the next five years, in part, to determine how long the port fill alternative will continue to be adequate for contaminated sediment disposal needs. The group found that the need for additional alternatives could be expected to occur during the next five years as port fill opportunities become less available. In order to fulfill the long-term goal of 100% beneficial reuse of contaminated sediments, actions to develop other alternatives need to be initiated immediately.

The CSTF found that an early action that would support most of reuse or treatment alternatives mentioned in the Strategy Report would be the development of one or more locations near the areas to be dredged where contaminated sediments could be treated, stored or reprocessed. This type of facility would help because most of the treatment and reuse options require some initial dewatering and providing an area for the storage of partially or fully treated sediments would help to mesh schedules of dredging projects and treatment or reuse projects. Storage would also help to provide a steady throughput to any treatment process, which helps to reduce treatment down time and thereby reduce treatment costs. Without adequate storage area, achieving a steady throughput can be difficult, given the sporadic nature of most dredging work. The CSTF determined that one or more areas for treatment, storage or reprocessing (TSR) of dredged material would greatly support the goal of 100% beneficial reuse and has developed an action plan for a TSR site (see below).

Regional Sediment Treatment/Storage/Reprocessing Facility

One of the steps identified by the CSTF as a critical need for successfully achieving the goal of providing 100 percent beneficial reuse of contaminated dredged materials is to locate and construct one or more regional processing facilities for contaminated marine sediments. The concept is to create a centrally located facility (relative to Los Angeles dredging efforts) where dredge materials can be stored and/or treated as a precursor for

beneficial reuse. This management technique, termed a Treatment, Storage, and Reprocessing (TSR) facility by the CSTF Management Committee, has been successful elsewhere because it allows the normally high capital costs of setting up one or more treatment facilities to be absorbed over larger timeframes and has been shown to produce a commercial product at the end, providing a margin of cost recovery to the process. The concept for TSR facilities includes a location central to regional dredging projects. Material could be offloaded to the facility either by derrick or hydraulically pumped if the facility was located a short distance inland from the waterfront. The dredge material could then be subjected to one or more treatment processes, depending on its characteristics, to provide a reusable product. For example, sediment from the Los Angeles River Estuary or Marina del Rey, which typically contain 50 to 75 percent sands, could be processed to separate out the clean sand that would then be shipped offsite for use as construction fill or for beach nourishment. The fine-grained material could then be treated with cement to bind the contaminants and produce a compactable nearshore fill material.

The CSTF investigated the development needs for a new multi-user disposal or reuse site in the Los Angeles area and determined that critical characteristics (ownership, liability, operations and management, monitoring, fee structure) for each of these types of sites would determine their feasibility and environmental effectiveness. Unfortunately, given the opportunities for using contaminated sediments in port fill projects over the last few years, there is currently little incentive for potential responsible parties to come forward and work on these difficult issues.

The CSTF Management Committee reached consensus that development of a TSR was critical for achieving the goal of 100% beneficial reuse. As such, the CSTF prepared an action plan for development of a TSR site with specific milestones and proposed completions dates. The Action Plan proposes to have a TSR operating by the end of 2009, assuming completion of the supporting actions planned over the next few years and the current levels of commitment. The Management Committee will be tracking and promoting the progress in development of a TSR site for the Los Angeles region, since delays in this development could result in efforts to dispose of contaminated sediments in the aquatic environment.

Goal 4: Promote and implement region-wide efforts at source reduction through watershed management

The CSTF Watershed Management and Source Reduction subcommittee participated in regional studies of polluted runoff. Members of the subcommittee participated in the development of stormwater permits and several Total Maximum Daily Load (TMDL) plans upstream from the ports and harbors. The subcommittee concluded that ongoing

generation of pollutants from the watershed is a significant source of contaminated sediments and that in order for the long-term strategy to be successful, watershed source control should be encouraged. Section 3 of this report provides a summary of identified potential sources as well as watershed-specific management plans proposed and/or implemented for each area.

In order to minimize future needs for contaminated sediment management, the CSTF strongly supports ongoing source control and treatment activities in the watershed to reduce the discharge of contaminants to Los Angeles region ports and harbors, as well as discharges to Santa Monica and San Pedro bays. Numerous activities are underway by federal, state and local agencies to reduce and eliminate sediment and chemical loading in the Ballona Creek, Dominguez Channel, and Los Angeles River watersheds.

Fortunately since the formation of the CSTF, there have been significant advances in source control efforts in the watersheds upstream from the ports and harbors of the Los Angeles region. The municipal stormwater program has held the inland communities more accountable for the polluted runoff discharged through their stormdrain systems and currently requires implementation of structural and nonstructural BMPs to reduce nonpoint source pollution impacts. In addition, the Los Angeles Regional Water Quality Control Board has approved several TMDL plans for the region that will require communities to reduce the discharge of trash, pathogens, metals and other pollutants. The CSTF has agreed to continue to review and comment on stormwater permits and TMDLs that may have a significant impact on sediment quality in Los Angeles region port and harbors.

Goal 5: Funding for development and implementation of the Strategy

The original funding for the CSTF was one million dollars of State of California general funds appropriated pursuant to Senate Bill 673 (Karnette). This funding supported the work of the task force and the management of the five technical subcommittees and coordination of the CSTF Management Committed during the consensus building process to complete this report. The State subsequently appropriated two million dollars to fund studies to fill data gaps necessary to develop the long-term management plan. This commitment by the state attracted funding and/or in-kind services from the CSTF signatories, Heal the Bay and others. The USACE worked to ensure that the information needs of the CSTF were taken into account as they planned their baseline studies for the Los Angeles regional Dredged Material Management Program. These efforts resulted in several million dollars being applied to answer technical and feasibility questions about disposal and reuse alternatives that were under consideration by the CSTF. In the course of determining that the local agencies had provided adequate local support, the USACE estimated that in-kind services provided by the Port of Los

Angeles, Los Angeles County Department of Beaches and Harbors and the City of Long Beach were on the order of two million dollars. In addition, the Port of Long Beach and the Port of Los Angeles each provided \$100,000 to support completion of the CSTF Strategy Report in 2002, when the legislature extended the report completion deadline without authorizing additional funds.

The CSTF Strategy includes recommendations for ongoing work to minimize the impacts of contaminated sediments on water quality and coastal resources. This work will require funding and staff work from the CSTF participants and possibly additional legislative support. The ongoing coordination through the CSTF Management Committee will initially require quarterly meetings to support the strategy implementation through continuing work on technical issues (monitoring, best management practices, etc.); development of the sediment quality database and possible generation of sediment quality guidelines; tracking of both contaminated sediments dredging and port fill projects; and the development and promotion of beneficial reuse opportunities. Advisory Committee meetings will be held on an as-needed basis to review contaminated sediment dredging or aquatic disposal projects that CSTF participants find to need site-specific oversight to minimize adverse environmental impacts. Advisory Committee meetings are expected to be held from two to four times per year.

Conclusion

The CSTF has provided a forum over the last seven years for dredging proponents, state and federal regulators and advocates for protection of Los Angeles' coastal resources to meet on a routine basis. The participants have worked together to develop procedures so that appropriate resources can be used to minimize the risk of adverse environmental impacts from contaminated sediments. The results have been documented in this CSTF Long Term Management Strategy. They include regional coordination of sediment management efforts, agreement on the process for evaluating contaminated sediment projects, a proposed long-term goal of beneficially reusing all contaminated sediment and a commitment to continue working on the remaining issues.

The CSTF Long Term Management Strategy provides information on how state and federal regulators evaluate dredging, disposal and reuse projects so the process is clear to regulatory and resource agencies, dredgers and other stakeholders. The CSTF participants agreed that while recent conditions have allowed for beneficial reuse of contaminated sediments in constructed fills, these conditions could change within a few years since dredging needs may not continue to coincide with port expansion projects.

The Strategy proposes a plan to develop a site near the Los Angeles coastline for treatment, storage or reprocessing of contaminated sediments, so that reuse of these materials can be compete favorably with other, less costly alternatives such as aquatic

disposal. The CSTF has evaluated a pilot test of aquatic disposal of contaminated sediments and found no short-term adverse environmental impacts, but this is the least preferred method of dealing with contaminated sediments due to uncertainties regarding the long-term environmental consequences. More work is needed for several issues, such as sediment quality objectives, best management practices for contaminated sediments and the ongoing work to beneficially reuse all contaminated sediments. The CSTF has agreed to conduct quarterly meetings of the Management Committee and as-needed for the Advisory Committee to continue implementation of the Strategy.