

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ORDER NO. 00-061

WASTE DISCHARGE REQUIREMENTS FOR:

**LEVINE-FRICKE RESTORATION CORPORATION AND
MONTEZUMA WETLANDS LLC, MONTEZUMA WETLANDS
RESTORATION PROJECT, SOLANO COUNTY**

The California Regional Water Quality Control Board, San Francisco Bay Region, hereinafter called the Board, finds that:

The Levine-Fricke Restoration Corporation and Montezuma Wetlands LLC, hereinafter referred to as the Discharger, has applied to the Board for issuance of a permit for discharge of pollutants (associated with sediment from Bay Area dredging projects) into State Waters. The Levine-Fricke Restoration Corporation submitted a report of waste discharge and application for Section 401 Water Quality Certification, dated November 1, 1999.

1. PURPOSE OF ORDER

These Requirements regulate the discharge of sediments, some of which may contain contaminants at levels that, if not managed properly, could pose a threat to beneficial uses of surface and groundwaters at or adjacent to the site, which are waters of the state. These Requirements also regulate the discharge of return-flow or "decant" water to Suisun Bay, a water of the State and the United States. The discharge of decant water is not subject to regulation under Section 402 of the Clean Water Act; therefore, the order is not an NPDES permit. This discharge has not been regulated previously.

2. SITE / PROJECT DESCRIPTION

The Discharger proposes to construct the Montezuma Wetlands Restoration Project (Project), a wetland restoration using dredged sediment. The Discharger also proposes to operate a sediment rehandling facility adjacent to the restoration site. The site is located due west and north of Collinsville, at the southeastern edge of the Suisun Marsh, Solano County, California (See map, Figure 1). The project as described in the final Environmental Impact Report/Environmental Impact Statement (EIR/EIS, July 1998) is as follows:

The purpose of the Montezuma Wetlands Project is to combine the commercial disposal of dredged materials with the restoration of a tidal wetland ecosystem, by using approved dredged materials to raise the subsided land to elevations suitable for restoration of tidal marsh. The project would use "cover" and "non-cover" dredged materials ... taken from the San Francisco Bay Area to restore Bay Area tidal marsh, including some seasonal wetland features. The applicant proposes to use approximately 17 million cubic yards of

dredged materials to restore 1,720 acres of tidal wetlands, create 109 acres of managed wetlands, and construct a commercial dredged sediment offloading and rehandling facility on a 2,394-acre site.

The Project would: 1) reconstruct a tidal and seasonal wetland complex that once was present at the site, 2) allow disposal of sediment from various Bay Area dredging projects, and, 3) allow stockpiling and processing of sediments for use at other locations (re-handle).

The site was diked for agricultural use at the turn of the century. The Project would contribute to the restoration of priority habitats (Ecosystem Habitat Goals Project Goals Report, 1999), including tidal perennial aquatic habitat, saline emergent wetland habitat, tidal sloughs, seasonal wetlands, and perennial grasslands. The generally accepted estimate is that 80 to 90 percent of the salt marsh originally present in the Bay-Delta system has been lost through diking, filling and other types of land conversion (CCMP, 1992, Goals Report, 1999). The restoration of these habitats on the Project site would provide ecological benefits for many target species, including delta smelt, split-tail, Chinook salmon, salt marsh harvest mouse, shorebirds, wading birds and waterfowl, and others. The marsh will likely be deeded or sold to one or more resource agencies (e.g., California Department of Fish and Game) once complete.

3. SITE GEOGRAPHY

The Project site is situated near Collinsville in the Suisun Marsh in Solano County. The site is located at the eastern edge of the marsh about 17 miles southeast of Fairfield. It is bordered on the south by the Sacramento River and Suisun Bay and on the west by Montezuma Slough. The Potrero Hills lie several miles north of the site and the Montezuma Hills are located to the east. Road access is via State Route 12, Shiloh Road, Birds Landing Road and Collinsville Road. The regional location is shown in Figure 1 and 2. Current land uses of the site consist primarily of sheep and cattle grazing, and some recreational pheasant hunting in the northern portion of the site. A small area at the southeast end of the site is used for oyster shell processing, and the State Department of Water Resources (DWR) operates the Montezuma Slough salinity control structure which is designed to regulate the flow of water through the Suisun Marsh. The purpose of the structure is to maximize fresh water within the entire Suisun Marsh system. The impacts of the project on the DWR effort are addressed in Finding 6. The Department also operates a Day Use Area adjacent to its control structure that is used for recreational fishing, boating, and picnicking.

4. HYDROLOGY

At Project completion the restored tidal marsh plain would be separated into high marsh and low marsh. High and low marshes are characterized by their elevations in relation to tide levels, and by the frequency and duration of tidal inundation. The different design elevations across the restored marsh plain will be achieved by the engineered placement of sediment into cells separated by levees; the levees will be graded down to within one foot of the design elevation after sediment placement is completed. Each marsh type supports distinct vegetation and associated wildlife habitats. The high marsh would occupy 297.4 acres (16.3 percent of the site), and would have an elevation of mean higher high water (MHHW). The low marsh would occupy 1,237.9 acres (67.7 percent of the site) plus 79.5 acres of inter-tidal channels and point bars, and would have a final sediment placement elevation no higher than 0.5 feet below mean high water (MHW). The low and high marsh elevations

were designed to accommodate natural sedimentation after tidal breaching to bring the marsh surface to its final elevation.

5. ENVIRONMENTAL BENEFITS

The newly restored tidal and non-tidal wetlands will provide, at a minimum, the following environmental benefits:

- Increase of tidal marsh acreage in Suisun Marsh of about 12 percent (1,620 ac/13,560); (Goals Report, 1999). The Project represents an increase of about 4 percent (1,620 ac./ 40,000 ac.) of tidal marsh to the total Bay system. Different historical analyses of the Bay Area have shown that between 80 to 90 percent of historic tidal marsh has been lost to diking, filling and other development. State policy calls for not only "no net loss", but also for a region-wide increase in total wetland acreage.
- The Project would result in an increase of tidal marsh in the Suisun Marsh area of about 12.3 percent. Additionally the new marshlands will have high "connectivity" due to their immediate proximity to the existing Suisun Marsh complex.
- The Project would result in a reduction of in-Bay and ocean disposal of dredged sediments. Sediments placed at the site would otherwise be disposed of at dispersive sites in the Bay or ocean during the course of various dredging projects over the life span of the Project. (Current disposal volumes are three to five million yards of sediment per year.)
- The rehandling facility portion of the Project will lower salinity in sediments that can be used in habitat restoration projects in the Delta.

6. SALINITY IMPACTS TO SUISUN MARSH

The Department of Water Resources(DWR) reviewed the Project for salinity impacts to the Suisun Marsh during preparation of the draft EIR/EIS. The EIR/EIS concluded, and DWR concurred, that the project will not cause any measurable salinity impacts to receiving waters or the marsh. After consultation with DWR and the Department of Fish and Game, the Resources Agency issued a letter stating that the Project would cause only negligible impacts and provide significant environmental benefits to the Suisun Marsh (see letter from Douglas Wheeler, Chief, Resources Agency, dated December 8, 1998, included in Correspondence). Additionally, the Discharger has performed calculations and effluent dilution modeling in order to assess the impacts of the decant water discharge on receiving water (see Finding 17, below).

7. TERMINOLOGY

For the purposes of this Order, the term “**construction**” applies to the construction of the marsh plain using dredged material. The construction of internal levees, pipelines and other infrastructure will be referred to as “**pre-construction**” and monitoring, any remediation, use of the **rehandling site** (see Section 10 below) and special studies are considered “**post-construction**”.

The County required the discharger to complete a *Mitigation, Monitoring and Reporting Plan (MMRP)* in order to address how the mitigation discussed in the final Environmental Impact Report will be carried out and monitored. The MMRP uses the term “contingency measure” to mean a measure that will be carried out if the initial implementation measure does not give the expected results or meet the performance criteria.

Discharger is synonymous with “applicant”.

The term **cover sediment or cover material** refers to the sediment placed onto a non-dispersive site that meets thresholds of chemical and biological quality that ensure that no adverse impacts are expected with full exposure to waters and biota. In general, sediments that do not meet the criteria for cover sediment would not be used for filling within the upper three feet of the marsh plain. Those criteria are described in the EIS/EIR for the project, and are included in this Order as “Waste Acceptance Criteria” (see Provisions, below).

Non-cover sediment refers to sediment that exceeds one or more of the cover criteria but still has lower concentrations than the non-cover thresholds based on total chemical concentration and leaching potential. No adverse impacts are expected from non-cover sediments as long as they are covered with cover sediments in order to prevent contact with surface water and biota.

8. CONSTRUCTION

The construction of the wetlands will employ hydraulic offloading from barges and placement of sediment. The construction of the marsh will generate a certain amount of return-flow or “decant” water, which has the potential to contain elevated levels of salt and other contaminants. To minimize decant water discharge, the Discharger will attempt to recycle as much of the decant water onsite; however, some water will still need to be discharged into Suisun Bay. The discharge will be via a pipe located at the offloading pier. The quality of the decant water is regulated by this permit, as are the beneficial uses associated with the site.

9. PHASED CONSTRUCTION

The Discharger proposes to construct the Project in four phases. Some aspects of the construction schedule have been decided upon after early consultation with the U.S. Fish and Wildlife Service, so as to minimize impacts to threatened and endangered species. The completion of the first phase of construction is reliant on one relatively large dredging project. Therefore, the Discharger will accept sediments from the Port of Oakland’s Deep Draft Navigation Project (50-Foot Project). The Port of Oakland has identified the subject site as one

of several disposal options for between 3.65 and 5.2 million cubic yards of material (Port of Oakland EIS/EIR, May 1998). Following the Discharger's schedule, construction of the Project is scheduled to begin in December 2000 with completion of the first phase in March of 2001.

Each of the Project's four phases will consist of about twelve sediment placement cells that will allow for the placed sediment to settle to the final design elevations (Figure 4). About three to six cells in the center of each phase will be constructed to contain "noncover" sediment. A 200-foot buffer (containing cover sediment only) will be built between all cells containing non-cover sediment and the constructed larger third-, fourth-, and fifth-order channels (Figure 5). Sediment placement including elevation and channel formation, sediment and water contaminant levels and geotechnical stability will be monitored throughout construction.

Once sediment placement is complete in a given phase, the water management system (e.g., pumps, pipes) will be dismantled and the existing perimeter levee will be breached to allow full tidal exchange with Suisun Bay and Montezuma Slough. Biological colonization and habitat function of each phase will be monitored after sediment placement and for at least 10 years after tidal breach.

10. REHANDLING SITE

The Discharger has proposed that a sediment rehandling facility be located at the southeastern corner of the project site for dewatering and lowering salinity in dredged sediments for on-site construction uses and for potential off-site sale. Any discharge of decant water from the rehandling site will be permitted separately from the restoration. Such a discharge may be regulated under an individual or general NPDES permit. Discharges from the rehandling facility are not regulated by this Order.

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The rehandling facility would be located adjacent to (and south of) the existing 75-75-acre Jerico Products, Inc. oyster shell processing facility. Dried sediments generated by the facility would be used for levee construction on-site and for off-site resale. Material may be transported from the rehandling site to other sites in the delta region for use in levee stabilization and construction as well as landfill daily cover. The rehandling facility would accept materials identified by regulatory agencies as suitable for reuse, which would in any case consist of material that met the cover material definition and may need to meet other site-specific criteria.

11. GROUNDWATER RESOURCES

Based on a review of existing well data and additional Project investigations of the subsurface conditions at the site, two water-bearing zones have been identified in the Project vicinity: a shallow, brackish zone; and a deeper zone used for domestic supply. Shallow groundwater on the low-lying parts of the site generally lies within a few feet of the surface at an elevation of about 2.5 feet below the national geodetic vertical datum (NGVD), with elevations as low as 7.6 feet below NGVD in some areas. See Figure 8, attached, for a comparison of NGVD to tidal stages. Available data indicate that the shallow aquifer does not extend beyond 70 feet below ground surface (bgs) at the site. The water level of this shallow system responds to both tide levels and seasonal rainfall.

Soils at the site are silt, clay and loam, interbedded with peat. A part of the shallow aquifer is a sandy layer (up to 60 feet thick), that is present on the southern portion of the site (Phase IV), and has higher permeability. Boring log data from soil borings taken at the southern perimeter of the site and synchronized water level fluctuations with tidal changes suggest that this sand layer is hydraulically connected to the Sacramento River/Suisun Bay and Montezuma Slough.

Salinity in the shallow groundwater at the south end of the site was found to be brackish and similar to that of the adjacent Sacramento River/Suisun Bay. Farther north from the Sacramento River, shallow groundwater on-site becomes more saline. The groundwater recharge rate from surface water flow is minimal due to the low permeability of the fine near-surface sediment, although the recharge rate could increase in wet years. The shallow groundwater on the site is not a viable source for domestic supply due to high salinity (i.e., total dissolved solids [TDS]).

All the investigations conducted at the site show that there is no hydraulic connectivity between the shallow and deep-water aquifers. Groundwater in the deep aquifers is of high enough quality that it is used for drinking. TDS concentrations measured in two known water supply wells (Birds Landing and Collinsville) that draw water from deeper aquifers were two orders of magnitude lower than TDS levels measured in the on-site shallow monitoring wells. Two shallow and one deep monitoring wells will be installed for each phase of the project. Groundwater resources will be protected from potential migration of salinity or other contaminants from the Project by restricting project pumping of groundwater to the shallow zone, testing of sediments for leachable pollutants before acceptance at the site, and by continued shallow and deep on-site groundwater monitoring.

The Discharger has investigated the potential for impacts to private wells located offsite by assessing the hydraulic connection between the shallow and deep aquifers. Reports submitted by the Discharger also verified the hydraulic connection to the Suisun Bay. The Discharger has determined that there will be no off-site draw down or subsidence effects from groundwater pumping during construction (LFR, April, 2000).

12. SECTION 404 WETLANDS FILL

ISSUANCE OF WASTE DISCHARGE REQUIREMENTS IN-LIEU OF WATER QUALITY CERTIFICATION:

The Discharger has applied to the State for Water Quality Certification under Section 401 of the Clean Water Act for the filling of up to 1,620 acres of jurisdictional wetlands.

The Discharger has also applied for a permit from the Corps to fill the subject area under Section 404 of the Clean Water Act. The wetlands on the site were delineated by the Corps on February 3, 1993. The Corps issued a Public Notice for the Project on November 21, 1994. The comment period for the Project ended on December 30, 1994, and has not been extended because the Project has not changed significantly from the original proposal. An individual permit for the Project is pending with the Corps. Public comments on the project EIR/EIS were accepted, however, until certification of the EIR/EIS by Solano County in February 1999.

The Regional Board, pursuant to Section 401 of the Clean Water Act reviews applications for Section 404 permits to determine if the proposed activity will meet state water quality standards for the proposed activity. Pursuant to Title 23, California Code of Regulations Section 3857, the Board is issuing WDRs and will not act on the request for Water Quality Certification.

ALTERNATIVES ANALYSIS

The Basin Plan requires that the Discharger conduct an alternatives analysis that is in conformance with the Section 404 (b)(1) Guidelines. The Project EIR/EIS also included an alternatives analysis in accordance with NEPA and CEQA guidelines. The Discharger has submitted documentation to show that significant effort was made to avoid, and then to minimize, wetland disturbance. The Discharger proposes to offset the loss of beneficial uses of waters of the State resulting from the discharge of fill material into waters of the State at the Project site by doing the following:

- restoring and recreating wetland habitat on the same site;
- restoring a greater number of beneficial uses to federal and state waters than currently exist;
- restoring federal waters so that they have a greater number of biological functions;
- phasing the project to reduce temporal losses as much as possible (i.e., four phases);
- monitoring for temporal and permanent loss of habit; and,
- enacting certain construction practices to minimize adverse impacts (best management practices).

The Discharger has agreed with the Corps that up to 1,620 acres of the site is "wetlands and other waters of the U.S." The Discharger and other consulting experts during preparation of the EIR/EIS conducted extensive biological surveys at the site. The results of their surveys show that most of the site is comprised of grasslands dominated by non-native grasses. Approximately 530 acres of the site were determined to provide wetland habitat for the endangered salt marsh harvest mouse (SMHM). However, these wetlands were found to be predominately of poor habitat value for the SMHM because they are subject to flooding and grazing impacts, as the site is not currently managed for wildlife habitat. (See Table 1. below).

The Discharger proposes to re-create approximately 1,657 acres of fully tidal marsh, 100 acres of muted tidal elements (e.g., fluvial hollows and diked pickleweed marsh), and 72 acres of seasonally wet depressions. Additionally, the Discharger proposes to enhance and protect 380 acres of upland transition and buffer (see Figure 3). The Discharger has proposed in its application and Mitigation, Reporting and Monitoring Plan (MMRP) to offset other adverse impacts to the beneficial uses of waters of the State resulting from project construction and operation.

13. CONSISTENCY WITH STATE WETLAND POLICY

This project is consistent with the Basin Plan Wetland Fill Policy that establishes that there is to be no net loss of wetland acreage and no net loss of wetland value when the project and any proposed mitigation are evaluated together, and that mitigation for wetland fill projects is to be located in the same area of the Region. The Project is also consistent with the following components of State Wetlands Policy:

The Senate Concurrent Resolution No. 28 states that, "It is the intent of the legislature to preserve, protect, restore, and enhance California's wetlands and the multiple resources which depend on them for the benefit of the people of the State."

The California Wetlands Conservation Policy (Executive Order W-59-93) establishes a primary objective to "ensure no overall net loss and long-term net gain in the quantity, quality, and permanence of wetlands acreage and values in California in a manner that fosters creativity, stewardship, and respect for private property."

Section 13142.5 of the California Water Code requires that the "Highest priority shall be given to improving or eliminating discharges that adversely affect...Wetlands, estuaries, and other biologically sensitive areas."

The Project is also consistent with the following objectives of the **Comprehensive Conservation and Management Plan (CCMP, 1993)** for the San Francisco Estuary:

OBJECTIVE WT-4

EXPAND THE WETLAND RESOURCE BASE BY RESTORING, ENHANCING AND CREATING WETLAND RESOURCES USING A VARIETY OF APPROACHES.

OBJECTIVE DW-4

ENCOURAGE THE REUSE OF DREDGED MATERIAL FOR PROJECTS SUCH AS WETLANDS CREATION/RESTORATION, LANDFILL AND UPLAND BUILDING MATERIAL WHERE ENVIRONMENTALLY ACCEPTABLE.

This Project is consistent with the goals of the **Long Term Management Strategy for dredged material disposal (LTMS)**. The LTMS programmatic EIR (Corps, et.al, 1997) sets as policy the goal of reusing 40 percent of the sediment dredged in San Francisco Bay for beneficial "reuse" projects. Such projects include restoration of diked historic baylands using dredged material as marsh foundation or substrate in order to make up the loss of elevation that is typical of many locations.

The Project is consistent with the recommendations for restoration of tidal marsh of the San Francisco Bay Area Wetlands Ecosystem Goals Project (p. 103, Goals Report, 1999) for areas "...along the eastern side of Montezuma slough." The Report states that there are "unique restoration opportunities" for restoration and enhancements of tidal marsh in the vicinity of the site and specifically recommends transitional habitats, vernal pools and other seasonal wetlands. In addition, this project supports the 1995 San Francisco Bay Basin Water Quality Control Plan (Basin Plan). Completion of this project as proposed would increase tidal marsh acreage in Suisan Bay by 12.3 percent (p. 96, Goals Report, 1999).

14. DREDGE PROJECT PERMITTING

Sediment for the Project will be brought to the site from a variety of dredging operations throughout the Bay Area, including the Sacramento Delta. Sediment could be generated by maintenance and new-work dredging carried out by the Corps of Engineers at navigation

channels through out the North Bay. Sediment may also come from maintenance dredging conducted by the Ports of Oakland, Richmond and San Francisco, or the Golden Gate Bridge District (Larkspur Ferry Terminal) or various marinas located throughout the region. To ensure that sediment accepted at the site meets state water quality standards, participating dredging projects will adhere to testing requirements set forth by the Board and the Corps of Engineers (currently Public Notice 99-3). All dredging in the Bay Area is regulated by the agencies that make up the Dredged Material Management Office (DMMO)¹. Sediments must be analyzed for contaminants prior to approval of each dredging project. The Discharger and Board staff will review sediment testing data from pending dredging projects to evaluate their conformity with the Sediment Acceptance Criteria (SAC) given in these Requirements (see Provision D, below). Board staff intends to make sediment recommendations available to the public via the DMMO.

15. WETLAND CONSTRUCTION

DESIGN

The Project will be built in four phases (see table below). Sediment placement will take place within interior containment cells. Phase I. of the project will be composed of 12 cells, with the subsequent three phases following a similar design². Design criteria are contained in the Operations Plan and the EIS/EIR. The wetland design is described in technical reports prepared by the Discharger, in particular: *Montezuma Wetlands Restoration Plan*, Levine-Fricke, August 1995 and *Operations Plan*, Levine Restoration Corporation, March 2000.

CONSTRUCTION PHASING

Each of the Project's four phases can accommodate approximately a quarter of the total 17 million cubic yards (cyd) capacity. The Project is phased to minimize temporal impacts to existing habitat on site (e.g, Phase I has the least amount of habitat value). After sediment is placed to the design elevation, tidal flow will be returned to each Phase through a single breach in the existing perimeter levee. Since total dredging needs in the Bay Area are on the order of three to five million cyd/yr, each phase would take at least one to two years to complete. Phase I and possibly Phase II will be initiated by the proposed Port of Oakland expansion project. A number of monitoring performance criteria must be met (e.g., chemical, ecological, and engineering criteria) prior to constructing Phases II, III and IV pursuant to the mitigation measures described in the EIR/EIS and the MMRP.

Phase	Total Acres ¹	Sediment Capacity (million cubic yards)	Acres Used for Sediment Placement ²
I	723	4.25	561
II	502	4.28	365
III	357	2.47	214
IV	647	5.68	562
Total	2,229	16.68	1,702

¹ *Mitigation, Monitoring, and Reporting Plan*, February 18, 2000

² *Operations Plan*, March 17, 2000

TIDAL ELEVATIONS

Design criteria have been developed for the Project. Marsh elevations for construction were described in the EIR/EIS. Tidal elevations at the Project site have been calculated from data collected by DWR using six tide gauges. Tidal heights for this area vary considerably up various sloughs within the Suisun Marsh. At the confluence of Montezuma Slough and Roaring River (just south of the Montezuma Salinity Control Structure), MHHW is 2.79 feet NGVD and MLLW is -2.06 feet NGVD. Tidal conditions at these gauges and elevations of high and low tides are shown in Figure 8.

The design calls for the low marsh plain to be set at 0.5 foot below MHW, or about 1.0 foot below MHHW, and the high marsh plain to be at MHHW, with a tolerance for less than 5 percent of the sediment to be more than 0.5 feet above these design elevations (EIR/EIS and MMRP). If achieved, this elevation would be satisfactory for the formation of small (first and second order) channels in the developing marsh plain at the natural density reflective of the site conditions. In the brackish Suisun Marsh region, channel density is typically less than in the more saline SF Bay tidal wetlands.

FILL ELEVATION CRITERIA

Placement of sediment at the proper elevation is critical to success in restoration of tidal marsh. The discharger has proposed the following design criteria for marsh topography. The following was adopted as mitigation for the potentially significant adverse impact of overfilling a cell with sediment (Table 3-1, EIR/EIS).

No more than 50 percent of the low marsh plain shall be higher than an elevation that is 0.5 foot below local MHW. Ninety-five percent of the low marsh plain shall be below the local MHW. No more than 50 percent of the high marsh plain shall be higher than local MHHW; 95 percent of the high marsh plain shall be lower than an elevation 0.5 foot above local MHHW³.

BIOLOGICAL PERFORMANCE CRITERIA

The Discharger proposes to monitor marsh vegetation (target species as well as weedy species) for up to twenty years after construction. Parameters include percent cover, species diversity and richness. The MMRP for the Project also proposed performance criteria and a program for monitoring those criteria (Table 2). In general, the proposed criteria in the monitoring plan are reliant on successful establishment of target vegetation. Staff has determined that marsh vegetation is a good indicator that overall habitat requirements are being met. In addition to vegetation surveys, the Discharger will be conducting invertebrate, mammal, bird, and fish sampling to determine resident species, water quality sampling, bioaccumulation sampling, and conducting a variety of engineering and hydrologic monitoring. Invertebrate biomass will also be measured in intertidal ponds to address their value for waterfowl and shorebirds. The site will be surveyed for SMHM, pond turtles, burrowing owls, vernal pool invertebrates, rare plants, as well

³ Final EIR Table 3-1, 3P-Hydro-3

as the red-swamp crawfish to assess the potential for these burrowing animals to reach the buried noncover sediment. The MMRP contains criteria that address temporal loss of potential salt marsh harvest mouse and other sensitive species habitat at the site. The major habitat type for the site will be low tidal marsh. For instance, performance criteria for vegetation in the low and high marsh are described as follows:

Low marsh: 5% cover by target low marsh vegetation (e.g. tules) in Phase I (averaged over all cells) before initiating Phase II; 50% cover in Phase I before initiating Phase III; 75% cover in Phase I before initiating Phase IV.

High marsh: 5% cover by target high marsh vegetation (including pickleweed) in Phase I (averaged over all cells) before initiating Phase II; 80% cover by all species, 75% cover by halophytes (including pickleweed); 50% covered by pickleweed in Phase I before initiation of Phase III, and same criteria in Phase II before initiation of Phase IV.

At the end of all 4 phases both high and low marsh should have at least 75% cover of native tidal marsh plants.

Similar types of vegetation performance criteria are described in detail in the MMRP for point bars in intertidal channels; habitats that will support the endangered salt marsh harvest mouse such as the diked pickleweed marsh, seasonally ponded wetlands, and managed fluvial hollows; and other habitat types.”

16. DISCHARGE DESCRIPTION

The name and location of the decant water discharge points are as follows:

<u>Discharge Point Name</u>	<u>Code</u>	<u>Latitude</u>	<u>Longitude</u>
Off Dock in Suisun Bay	E-001	38-04-19	121-51-34

The discharge point will be located at a depth of approximately 22 feet below MLLW and at a distance of about 800 feet from the shoreline. Attachment B of this Order shows the location of the discharge point. The Discharger has determined that the discharge point will receive an initial dilution of between 10:1 and 28:1 depending upon tidal stage. The decant water makeup water pond will have two overflow points along the southern levee, designed to protect the levee in cases of extreme wet weather; however the permitted discharge will be via a single 18-inch diameter pipe with 16-inch diffuser.

17. DECANT WATER MANAGEMENT DESCRIPTION

Decant water will be managed to conserve water in order to reduce the need to pump shallow groundwater. Groundwater, mixed with decanted water, will be used to create slurry for use in offloading sediment. The Discharger has prepared a water balance that calculates water quantity and quality including management of rainwater and wet weather run-on from the watershed.

Effluent Flow Description

Because the Project will be built in four phases, during the filling of the first two phases, there will be the potential for significant water "storage" throughout the remaining phases. The use of these unfilled phases for water storage can limit the amount of discharge of decanted water to Suisun Bay while enhancing existing wetland values in those unfilled phases. Enhancement of unfilled phases areas is consistent with mitigation measure described in the EIR/EIS and the MMRP. In addition, decant water will be recycled as it pertains to offloading sediment. The site is currently pumped to remove rainwater during the wet season via three pump stations located at the southern levee and along the western levee above the DWR facility on Montezuma Slough. Decant water that is discharged from the site will be monitored for general water quality parameters including suspended sediments, salinity and dissolved oxygen.

Effluent limits for contaminants in the decant water are established by this Order. Assuming a maximal working day of 20 hours per 24 hours, the decant water would be discharged at a maximum rate of between 2,000 and 5,000 gallons per minute (gpm) [or 2.4 million gallons to 6 million gallons per day (mgd), which would be discharged approximately every other day] (LFR, May 17, 2000).

Water Management

Slurry and decant water will be managed primarily for salinity and suspended sediment. Toxic substances in water will be monitored in the holding / makeup water pond and drainage ditch (as required by Section B, Effluent Limits, below and SMP, Attached). The Discharger has proposed a series of contingency measures in case there is a build-up of contaminants in decant water. The EIR/EIS and MMRP sections on water quality (MMRP, Table 5) state that total and dissolved chemical concentrations in the decant water will not exceed the deep water Basin Plan criteria for toxic constituents at the point of discharge (see Effluent Limits, Section II, below). The Discharger will monitor contaminant concentrations in the noncover sediment placement cells and in the makeup water pond. The water quality in the pond will be held to a threshold of one-half the deep water Basin Plan criteria. If the threshold is exceeded, contingency measures will be implemented. A full list of contingency measures are listed in the EIR (page 3-14). Additional treatment could involve addition of lime or mechanical filtration. In addition, the Discharger will monitor contaminant levels in onsite shallow and deep groundwater monitoring wells. In order to establish background levels of metals in groundwater, the Discharger will monitor contaminant quality of pumped groundwater.

18. BASIN PLAN

The Board adopted a revised Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) on June 21, 1995. This updated and consolidated plan represents the Board's master water quality control planning document. The revised Basin Plan was approved by the State Water Resources Control Board (SWRCB) and the Office of Administrative Law on July 20, 1995, and November 13, 1995, respectively. The Basin Plan identifies beneficial uses and water quality objectives for waters of the state in the Region, including surface waters and groundwater. The Basin Plan also identifies effluent limitations and discharge prohibitions intended to protect beneficial uses. This Order implements the plans, policies and provisions of the Basin Plan.

It is the Board's intent that this Order shall ensure attainment of applicable water quality objectives and protection of beneficial uses of receiving waters. This Order therefore includes requirements to the effect that discharges shall not cause or contribute to violations of water quality objectives nor shall they cause certain conditions to occur that create a condition of nuisance or water quality impairment in receiving waters.

19. BENEFICIAL USES

The beneficial uses identified in the Basin Plan for waters of the Suisun Bay, Montezuma Slough and as known for the Fairfield Ground Water Basin are:

Beneficial Use	Suisun Bay	Montezuma Slough	Ground ⁴ Water
Municipal and Domestic Supply	✓	✓	✓
Industrial Supply	✓	✓	✓
Navigation	✓	✓	
Water Contact Recreation	✓	✓	
Non-contact Water Recreation	✓	✓	
Commercial and Sport Fishing	✓	✓	
Wildlife Habitat	✓	✓	
Preservation of Rare and Endangered Species	✓	✓	
Fish Migration	✓	✓	
Fish Spawning	✓	✓	
Estuarine Habitat	✓	✓	
Warm Freshwater Habitat	N/A	✓	

20. POLLUTANTS OF CONCERN

A review of dredge disposal sample analyses; as well as, consideration of the Board's Section 303(d) list⁵ shows that that arsenic, cadmium, copper, lead, mercury, nickel, selenium, zinc, and PAHs are the constituents potentially found in dredged sediment that require special attention by the Board. While testing of the Port of Oakland's sediment proposed for Montezuma, as an example, has shown low levels of these pollutants dissolving in decant water, monitoring of decant water will take place within the makeup water pond and water transport network as well as at the point of discharge.

The Discharger will be accepting sediments from routinely dredged channels and vessel berthing areas located throughout the Central and North Bay Areas. The Board will be notifying permittees of the need to support data gathering efforts such as the Regional Monitoring Program for Trace Substances (RMP) as a part of the permitting process for individual dredging projects.

⁴ Groundwater in the deeper aquifer is suitable for these beneficial uses; shallow groundwater is brackish and has limited beneficial uses.

⁵ Section 303(d) List of Impaired Water Bodies and Priorities for Development of Total Maximum Daily Loads for the San Francisco Region, March 8, 1998.

However, the Discharger may be required to gather data specific to 303(d) listed contaminants as required by the Board on a case-by-case basis. The Suisun Bay is listed as impaired due to copper, nickel, PCBs, diazanon, selenium and exotic species. A request for information related to the listing would be made separately by the Executive Officer and would be issued pursuant to Section 13267 of the Water Code.

Additionally, the County of Solano has required the Discharger to provide analysis of incoming sediments for dioxins and radionuclides. Staff of the Board will work with the County, state and federal agencies, and the Dredged Material Management Office in order to develop sediment evaluation guidelines for testing these contaminants in sediments. Corps of Engineers guidelines for sediment testing (Public Notice 99-3, and 99-4) do not include dioxin and radionuclides for routine dredging projects. The Regional Board may require these analyses in cases when there is a reason to believe that elevated levels may be present.

21. GENERAL STATEMENT REGARDING TMDLS

The Board intends to establish Waste Load Allocations based on Total Maximum Daily Loads (TMDL) for the Suisun Bay after intensive literature review and data collection to determine appropriate local water quality objectives and cost-effective measures to achieve these objectives. Based on the then current Section 303(d) List, the Board may adopt TMDLs which may result in revising any water-quality-based-limits contained in this Order. The Board's plan for conducting these reviews, data collection and potentially developing TMDLs will be prioritized in the Section 303(d) List and incorporated into the Watershed Management Initiative for implementation.

The following summarizes the Board's strategy to collect water quality data and general approaches to policy and TMDL development with associated time frames, and funding mechanism for this work:

- a) Data collection - The Board will require individual point and non-point discharger or dischargers collectively to develop analytical techniques capable of detecting these pollutants at levels of concern and to characterize loadings from their facilities into the water quality-limited waterbodies. The results will be used to (1) revise the Section 303(d) List and (2) support the watershed-specific pollutant policy development.
- b) Policy and TMDL development - Adoption of TMDLs will be considered by the Board as part of the Basin Plan triennial review process. This process will refine the timing and mechanism for development of other pollutant-specific TMDLs.
- c) Funding mechanism - The Board anticipates receiving resources from federal agencies for development of any alternate water-quality-based-limits. The Board intends to supplement these resources to ensure timely alternate limits by allocating development costs among all dischargers through the RMP or other appropriate group funded mechanisms. The discharger has shown a willingness to participate in such a Board-initiated group effort as long as criteria are established to allocate the costs among all dischargers in the watershed equitably.
- d) This Project and others like it may be considered by Board staff as a factor in TMDL calculation and any subsequent Waste Load Allocation.

22. PERMIT FOR REHANDLING OPERATION

The Discharger has proposed to construct a sediment rehandling operation at the southeastern corner of the Project site. Discharge of decant water originating from the rehandling operation is not permitted pursuant to this Order. The Discharger will submit a revised application for an NPDES permit for any proposed rehandling site discharge. Regional Board staff will prepare an individual NPDES permit for Board approval or will recommend to the Discharger that it apply for coverage under the an NPDES general permit, depending upon a forthcoming effluent volume determination. Regardless, this Order does not authorize the discharge of decant water from the rehandling operation.

After completion of the restoration project (estimated to be 10-15 years), continued operation of the rehandling facility would require the County to revise the Project's Use Permit. The Discharger would use the offloading equipment and decant water facility to rehandle sediments from various dredging operations for eventual reuse on Delta Islands. The Discharger has agreed that no more than 20 percent of the sediment offloaded at the site may be rehandled for offsite use, thereby ensuring that the primary goal of offloading sediments will be for marsh restoration⁶.

These Requirements are subject to review after ten years from the date of issuance. Issues associated with the continued discharge from the rehandling site will be addressed in any revisions to the proposed Order. However, if the Discharger desires to continue operations at the rehandling site for the purposes of rehandling sediment after wetland restoration is complete, then the Discharger shall submit a Notice of Intent to Comply with the State's General Permit for Storm Water Associated with Industrial Activities (Federal Regulations for storm water discharges were promulgated by the USEPA on November 19, 1990. This NPDES General Permit was initially adopted November 19, 1991, amended September 17, 1992, and reissued April 17, 1997).

23. FINANCIAL ASSURANCE

The Discharger has agreed to provide financial assurance for this project in the form of a revolving bond or insurance policy in the amount of \$3,000,000 to cover the cost of closure of each phase of the wetland construction project and five years of maintenance. The final form of this financial assurance shall be submitted to the Executive Officer for his approval within three months of the adoption of this Order.

24. CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA).

A Final Environmental Impact Report (EIR) for this project was prepared by the County and was certified by the Solano County Board of Supervisors on February 2, 1999. The EIR has been prepared and certified in accordance with the provisions of Chapter 3 (commencing with Section 21100) of Division 13 of the Public Resources Code (California Environmental Quality Act) pursuant to Section 13389 of the California Code. (The Report was a joint CEQA/NEPA document; the Corps of Engineers was the lead agency in accordance with NEPA.) The EIR studied a full range of potential environmental impacts associated with this project. The EIR also

⁶ Final EIR/EIS (p.4-45) and MMRP

identifies ways in which the impacts can be mitigated to a less-than-significant level by design, engineering or regulatory measures. The Board has regulatory authority over a number of these impacts. Impacts and recommended mitigation measures that are directly associated with water quality, beneficial uses of waters and with the success of restoration are listed in the EIR in Table 3-1 and are attached to this Order (Attachment C). The Montezuma Wetlands Project Final Environmental Impact Report/Environmental Impact Statement (1998) recommends a number of mitigation measures to protect water quality and ensure the successful restoration of tidal marsh (Attachment). Staff of the Board have determined that implementation of the measures contained in these documents and in this Order will mitigate the effects of this discharge to Waters of the State.

LAWSUIT CHALLENGING THE EIR

On March 8, 1999, a lawsuit was filed by Friends of Suisun Marsh and the Save San Francisco Bay Association, challenging the adequacy of the EIR. The Solano County Superior Court heard arguments on the case and ruled that the project EIR was adequate. The lawsuit was subsequently dismissed by the Superior Court on December 7, 1999. The litigants have appealed the decision.

25. PUBLIC NOTICE

The Discharger and interested agencies and persons have been notified of the Board's intent to issue requirements for discharge and have been provided an opportunity to submit their written views and recommendations.

26. PUBLIC HEARING

The Board, in a public meeting, heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED, PURSUANT TO THE PROVISIONS OF DIVISION 7 OF THE CALIFORNIA WATER CODE AND REGULATIONS, AND GUIDELINES ADOPTED THEREUNDER, THAT THE DISCHARGER SHALL COMPLY WITH THE FOLLOWING:

A. DISCHARGE PROHIBITIONS

1. It is prohibited to discharge decant water at a location or in a manner different from that described in the findings of this Order.
2. It is prohibited to discharge decant water if it does not receive a minimum initial dilution of at least 10:1.
3. It is prohibited to bypass or overflow of untreated or partially treated decant water to waters of the State, either at the site or from the collection system or pump stations tributary to the final discharge point.
4. Discharges of water, materials, or wastes other than decant and return flow-water which are not otherwise authorized by this Order are prohibited.

B. EFFLUENT LIMITATIONS

Compliance with the effluent limits as specified in Section B shall be monitored at Station E-001.

1. CONVENTIONAL POLLUTANTS. THE EFFLUENT LIMITS SHALL NOT EXCEED THE FOLLOWING LIMITS:

<u>Constituent</u>	<u>Unit</u>	<u>Monthly Average</u>	<u>Weekly Average</u>	<u>Daily Maximum</u>	<u>Instantaneous Maximum</u>
a. Biochemical Oxygen Demand (BOD, 20°C)	mg/L	10	15	20	
b. Total Suspended Solids (TSS)	mg/L	15	15	20	100
c. Settable Matter	mg/L-hr	0.1			0.2
d. Oil & Grease	mg/L			10	
e. Ammonia Nitrogen	mg/L	2.0	3.0	4.0	
f. Turbidity	NTU			20	
g. pH	pH	Shall be between 6.5 to 8.5			

2. TOXIC SUBSTANCE EFFLUENT LIMITATIONS

The effluent discharged shall not exceed the following limits. (All limits are in units of $\mu\text{g/L}$, unless otherwise specified)

<u>Constituent</u>	<u>Daily (24 hr) Average Limit ($\mu\text{g/L}$)⁷</u>
Arsenic	69
Cadmium	43
Chromium (VI)	50
Copper	49
Lead	56
Mercury	0.25
Nickel	71
Selenium	50
Silver	23
Zinc	58
PAHs	15.0

Notwithstanding the above, the Discharger shall adhere to the analytical methods and protocols described in the Self-Monitoring Program.

3. WHOLE EFFLUENT ACUTE TOXICITY

Representative samples of the treated effluent shall meet the following limits for acute toxicity:

- a. an eleven sample median value of not less than 90 percent survival⁽¹⁾; and
- b. an eleven sample 90th percentile value of not less than 70 percent survival⁽²⁾.

- (1) If five or more of the past ten or fewer samples show less than 90 percent survival, then survival of less than 90 percent on the next sample represents a violation of the effluent limit.
- (2) If one or more of the past ten or fewer samples show less than 70 percent survival, then survival of less than 70 percent on the next sample represents a violation of the effluent limitation.

C. RECEIVING WATER LIMITATIONS

1. The discharge of waste shall not cause the following conditions to exist in waters of the State at any place:

⁷ Basis is from Water Quality Objectives for Toxic Pollutants, Table 3-3, Basin Plan

- a. Floating, suspended, or deposited macroscopic particulate matter or foam;
 - b. Bottom deposits or aquatic growths to the extent that such deposits or growths cause nuisance or adversely affect beneficial uses;
 - c. Alteration of temperature, turbidity, or apparent color beyond present natural background levels; and
 - d. Visible, floating, suspended, or deposited oil or other products of petroleum origin; and toxic or other deleterious substances to be present in concentrations or quantities which will cause deleterious effects on wildlife, waterfowl, or other aquatic biota, or which render any of these unfit for human consumption, either at levels created in the receiving waters or as a result of biological concentration.
2. The discharge of waste shall not cause the following limits to be exceeded in waters of the State at any point between one foot below the surface and three feet above the bottom:
- a. Dissolved Oxygen: 5.0 mg/L, minimum, from June 1 through November 15;
7.0 mg/L, minimum, at all other times of the year

The median dissolved oxygen concentration for any three consecutive months shall not be less than 80% of the dissolved oxygen content at saturation. When natural factors cause concentrations less than that specified above, then the discharge shall not cause further reduction in ambient dissolved oxygen concentrations.

- b. Dissolved Sulfide: 0.1 mg/L, maximum
- c. pH: Variation from normal ambient pH by more than 0.5 pH units.
- d. Un-ionized Ammonia: 0.025 mg/L as N, annual median; and 0.16 mg/L as N, maximum.
- e. Nutrients: Waters shall not contain bio-stimulatory substances in concentrations that promote aquatic growths to the extent that such growths cause nuisance or adversely affect beneficial uses.
- f. Turbidity shall not exceed background of the Waters of the State, as measured in NTU, as follows:

<u>Receiving Water Background</u>	<u>Incremental Increase</u>
< 50 units	5 units, maximum
50-100 units	10 units maximum
>100 units	10% of background, maximum

The discharge shall not cause a violation of any particular water quality standard for receiving waters adopted by the Board or the State Board as required by the Clean Water Act and regulations adopted thereunder. If more stringent applicable water quality standards are promulgated or approved pursuant to Section 303 of the Clean Water Act, or amendments thereto, the Board will revise and modify this Order in accordance with such more stringent standards.

D. SPECIFIC PROVISIONS

1 COMPLIANCE WITH MONITORING PLANS SMP AND MMRP

The Discharger shall carry out the monitoring described in the attached plans; Self-monitoring (SMP) and Mitigation Monitoring and Reporting (MMRP). Monitoring described in the SMP and MMRP may only be modified after written approval of the Executive Officer. The attached SMP covers water quality concerns during construction of the marsh (decant water) and discharge from the rehandling area and the MMRP outlines the monitoring of many of the physical aspects of marsh construction; as well as, plant and animal colonization and quantification of post construction data used to assess overall success (performance criteria).

4. PERFORMANCE CRITERIA

The Discharger shall adhere to the performance criteria described in the attached MMRP. The Criteria were described in the final EIR and further defined in the MMRP. Methods shall follow those described in the SMP and EIR. All water quality, sediment and marsh biota sampling shall be representative of actual conditions.

5. OPERATIONS PLAN

The Operations Plan shall be reviewed annually, and updated as necessary, and within 90 days of completion of any significant facility or process changes. Annual updates shall be due on one month after the start of construction of the following year, and each year thereafter. The Discharger shall submit proposed changes to the Plan for comment by the Board staff along with and detailed discussion of the status of site operations. The report shall include an estimated time schedule for completion of any revisions determined necessary, a description or copy of any completed revisions, or a statement that no revisions are needed.

6. MARSH ELEVATION CONTROL

Marsh filling activities shall cease in the affected cell whenever an exceedance of limits are detected through implementation of the MMRP. Contingency Measures in the MMRP and provisions of the SMP shall be implemented whenever there is an exceedance of construction criteria or limits.

7. CONTINGENCY PLAN

Contingencies are addressed in the MMRP prepared by the Discharger under the direction of the County and Regional Board staff. The Contingency Plan portion of the MMRP shall be reviewed, and updated as necessary, but at least annually. The discharge of pollutants in violation of this Order where the Discharger has failed to develop and/or adequately implement the Contingency Plan will be the basis for considering such discharge a willful and negligent violation of this Order pursuant to Section 13387 of the California Water Code. Annually, the Discharger shall submit to the Board a report discussing the status of the Contingency Plan review and update, including a description or copy of any completed revisions, or a statement that no changes are needed.

8. DREDGE PROJECT PERMITTING

Dredging in the Bay Area is regulated by agencies that staff the Dredged Material Management Office (DMMO). Sediments to be dredged must be analyzed for contaminants prior to approval

of each project following federal guidelines. Additionally, the DMMO agencies have issued guidance on testing protocol for San Francisco Bay, Public Notice 99-3. Data for all sediment proposed for site placement or rehandling shall be submitted for review by Board staff prior to dredging. Staff recommendations for placement at the site will be made available via the DMMO. Sediment to be placed at the site shall be in conformance with appropriate Regional Board guidelines (below).

9. SEDIMENT ACCEPTANCE CRITERIA

Sediment placed or rehandled on the Project site shall meet contaminant concentrations for "cover" and "non cover" as described in the table below. Sediment sampling results for material proposed for disposal of at the site shall be representative of the material as it resides in the bay or as substrate and the time of acceptance. Sediment sampling and analysis shall follow the protocols specified in Army Corps of Engineers Public Notice 99-3, unless explicitly exempted in writing by the Executive Officer. Sediment Acceptance Criteria (SAC) given here are based, in part, upon the Board's guidance documents entitled: Interim Sediment Screening Criteria and Testing Requirements for Wetland Creation and Upland Beneficial Reuse, Wolfenden and Carlin – staff of the Board, December 1992.

The SAC shall be used by the Discharger, dredging applicant and staff of the Board to screen prospective dredging projects for tentative placement at this site. Project sediments shall contain total concentrations of contaminants below the SAC unless authorized by Board staff. The SAC for this project may be modified and reissued by the Executive Officer and case-by case exceptions to the SAC may be issued, based on more intensive testing and analysis provided by the discharger or dredging applicant and at the direction of Board staff.

E. FINANCIAL ASSURANCE

The Discharger shall submit financial assurances to cover the cost of closure of each phase of the wetland construction project and five years of maintenance. Such financial assurance and language describing how it will be held and applied shall be submitted for the Executive Officer's acceptance and approval within three months of the adoption of this Order.

SEDIMENT ACCEPTANCE CRITERIA
MONTEZUMA WETLANDS WDR

CONSTITUENT (units in mg/kg)	Non-Cover⁸	Cover
Metals		
Cadmium	<9	<0.5
Chromium	<300	<220
Copper	<390	<90
Lead	<110	<50
Mercury	<1.3	<.035
Nickel	<200	<140
Silver	<2.2	<1.0
Zinc	<270	<160
Nonmetals		
Arsenic	< 85	<33
Selenium	<1.4	<0.7
Polychlorinated biphenyls (PCB)	<0.4	<0.05
Pesticides		
Total DDT	<0.1	<0.003
Total PAH	<35	<4

⁸ Non Cover and Cover Criteria taken from Staff Report Sediment Screening Criteria, also 1992 (cited in Final EIR)

F. ANNUAL PUBLIC MEETING

The Discharger shall hold a public meeting once per year at a central location in Solano County at a time and place most convenient to the public. Adequate public notice shall be given to the public through a dedicated mailing list, postings and newspaper announcement and copied to Board Staff. The purpose of the meeting shall be to give the public and agency staff an update on the activities of the Project, any changes to the Project that have occurred in the previous year and the anticipated work in the coming months. The Discharger shall use this meeting to make data summaries, monitoring results, project design information and photos available to the public.

G. STANDARD PROVISIONS

The Discharger shall comply with all applicable items of the attached "Standard Provisions and Reporting Requirements" dated August 1993, or any amendments thereafter.

- 1 The Discharger shall notify the Regional Board immediately whenever violations of this Order or the Self Monitoring Program are detected.
- 2 The Project shall not impact existing groundwater monitoring systems.
- 3 The Project shall not impact existing groundwater supply systems (private wells).
- 4 The Discharger shall implement the Contingency Plan portion of the MMRP if routine monitoring indicates that there is a potential threat to water quality.
- 5 The odor from the dredged sediment placement and rehandling operations shall not cause a nuisance beyond the property boundary.
- 6 All reports following these Provisions shall be prepared under the supervision of a registered civil engineer or certified engineering geologist.
- 7 The discharge of any hazardous waste as defined in Title 27, Chapter 15 of the California Administrative Code, to the disposal site is prohibited.
- 8 Only dredged material that has been demonstrated to be non-hazardous and meets the applicable guidelines and criteria specified in the Environmental Impact Report or in this, Order may be discharged.
- 9 Dredged material not meeting the conditions specified in the above Provision D.7. shall not be discharged until and unless a written approval of the discharge has been issued by the Executive Officer of the Board.
- 10 The Discharger shall remove and relocate any wastes, which are discharged at this site in violation of these Requirements.
- 11 The Discharger shall file with the Board a report of any material change or proposed change in

the character, location, or quantity of this waste discharge. For the purpose of these requirements, this includes any proposed change in the boundaries of the disposal areas or the ownership of the site.

- 12 The Discharger shall maintain a copy of this Order at the site to be available at all times to site operating personnel.
- 13 The Discharger shall maintain all devices or designed features installed in accordance with this Order such that they function without interruption for the life of the operation.
- 14 The Discharger shall permit the Board or its authorized representative, upon presentation of credentials:
 - ◆ Entry on to the premises on which wastes are located or in which records are kept.
 - ◆ Access to copy any records required to be kept under the terms and conditions of this Order.
 - ◆ Inspection of any treatment equipment, monitoring equipment or monitoring methodSampling of any discharge or surface water covered by this Order.

These Requirements do not authorize commission of any act causing injury to the property of another or of the public; do not convey any property rights; do not remove liability under federal, state or local laws, regulations or rules of other programs and agencies nor do these Requirements authorize the discharge of wastes without appropriate permits from other agencies or organizations.

H. QUALITY ASSURANCE PROJECT PLAN

The Discharger shall submit a technical report that is acceptable to the Executive Officer at least three months prior to commencement of sediment placement that contains a site-specific Quality Assurance Project Plan (QAPP). The QAPP will outline the collection of soil and water samples, analysis of the samples for chemical constituents of concern, and reporting of the results. The QAPP will specifically address project organization, quality assurance objectives, sampling procedures, sample handling and custody, laboratory analyses and quality control procedures, audits, corrective action, data reduction, management, reporting and validation.

I. CHANGE IN CONTROL OR OWNERSHIP

- a. In the event of any change in control or ownership of land or waste discharge facilities presently owned or controlled by the Discharger, the Discharger shall notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be immediately forwarded to the Board.
- b. To assume operation of this Order, the succeeding owner or operator must apply in writing to the Executive Officer requesting transfer of the Order (see Standard Provisions, referenced above). The request must contain the requesting entity's full legal name, the address and telephone number of the persons responsible for contact with the Board and a statement. The statement shall comply with the signatory paragraph described in Standard Provisions and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the California Water Code.

J. REOPENER

The Board may modify, or revoke and reissue, this Order if present or future investigations demonstrate that the discharge(s) governed by this Order will cause, have the potential to cause, or will contribute to adverse impacts on water quality and/or beneficial uses of the receiving waters. The Board may reopen this Order to review results of the Discharger's and Board staff's studies and new data on Section 303(d) listed contaminants and decide whether effluent limits should be revised.

K. ORDER EXPIRATION

This Order expires on July 19, 2010. Prior to expiration, the Discharger must file a report of waste discharge in accordance with Title 23, Chapter 3, Subchapter 9 of the California Administrative Code.

I, Lawrence P. Kolb, Acting Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on **July 19, 2000**.



Lawrence P. Kolb
ACTING EXECUTIVE OFFICER

Attachments:

- Figure 1. Location Map
 - Figure 2. Discharge Location
 - Figure 3. Site map showing project phases
 - Figure 4. Map of Phase I showing cells
 - Figure 5. Cross section showing levees
 - Figure 6. Decant Water Management Schematic Diagram
 - Figure 7. Artists Rendering of Completed Marsh
 - Figure 8. Tidal Tatum Diagram
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Table 1 – Habitat Type Summary

Table 2 – Mitigation, Monitoring and Reporting Plan Summary Table

- Attachment A. Self-Monitoring Program (SMP) Part A (August 1993) and Part B
- Attachment B. Table of Significant Environmental Impacts pertaining to the Regional Board (Final EIS/EIR)

References

Final Policy Environmental Impact Statement / Programmatic Environmental Impact Report, (Final EIR) for the *Long Term Management Strategy for the Placement of Dredged Material in the San Francisco Bay Region* was released on October 16, 1998. U.S. Army Corps of Engineers, US Environmental Protection Agency, San Francisco Conservation and Development Commission, San Francisco Bay Regional Water Quality Control Board, State Water Resources Control Board, 1998.

Draft Mitigation, Monitoring and Reporting Plan (MMRP) prepared by LFR-Levine, Fricke Recon, Inc., dated February 18, 2000.

Environmental Impact Statement / Environmental Impact Report (EIR), Montezuma Wetlands U.S Army Corps of Engineers and Solano County, July 1998.

Comprehensive Conservation and Management Plan, San Francisco Estuary Project, 1993.

Goals Report, 1999, Baylands Ecosystem Habitat Goals Project A Report of Habitat Recommendations Prepared by the San Francisco Wetlands Ecosystem Goals Project

LFR, April 25, 2000, Effects of Proposed Shallow Groundwater Supply System for the Montezuma Wetlands Project on Off-Site Local Water Supply Wells and Potential Land Subsidence.

LFR, May 17, 2000, Revised Technical Memorandum, Salinity Balance and Outfall Dilution Modeling, Levine-Fricke-Recon, Inc. prepared by Roger Leventhal, FarWest Engineering.

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION**

SELF-MONITORING PROGRAM

FOR

**MONTEZUMA WETLANDS
PROJECT**

COLLINSVILLE, SOLANO COUNTY

ORDER NO. 0-061

CONSISTS OF

PART A (dated August 1993)

AND

PART B

ATTACHMENT A

August 1993
SELF-MONITORING PROGRAM
PART A

Non-NPDES Facilities

A. PURPOSE

The principal purposes of a monitoring program by a waste discharger, also referred to as self-monitoring program, are: (1) to document compliance with waste discharge requirements and prohibitions established by this Regional Board, (2) to facilitate self-policing by the waste discharger in the prevention and abatement of pollution arising from waste discharge, (3) to develop or assist in the development of effluent or other limitations, discharge prohibitions, national standards, and other standards, and (4) to prepare water and wastewater quality inventories.

B. SAMPLING AND ANALYTICAL METHODS

Sample collection, storage, and analyses shall be performed according to the 40 CFR S136 or other methods approved and specified by the Executive Officer of this Regional Board.

Water and waste analyses shall be performed by a laboratory approved for these analyses by the State Department of Health Services (DOHS) or a laboratory waived by the Executive Officer from obtaining a certification for these analyses by the DOHS. The director of the laboratory whose name appears on the certification or his/her laboratory supervisor who is directly responsible for analytical work performed shall supervise all analytical work including appropriate quality assurance/quality control procedures in his or her laboratory and shall sign all reports of such work submitted to the Regional Board.

All monitoring instruments and equipment shall be properly calibrated and maintained to ensure accuracy of measurements.

C. SPECIFICATIONS FOR SAMPLING AND ANALYSES

The discharger is required to perform sampling and analyses according to the schedule in Part B in accordance with the following conditions:

1. Effluent
 - a. At least one sampling day shall reflect one day of weekend discharge, one day of peak loading, and one day of major unit operation shutdown or startup. The Executive Officer may approve an alternative sampling plan if it is demonstrated to the EO's satisfaction that expected operating conditions for the facility warrant a deviation from the standard sampling plan.
 - b. Grab samples of effluent shall be collected during periods of maximum peak flows and shall coincide with effluent composite sample days.
 - c. Chlorine residual analyzers shall be calibrated against grab samples as

- d. Date and time that analyses are started and completed, and name of personnel performing the analyses.
 - e. Calculation of results.
 - f. Results of analyses and/or observations.
2. A tabulation shall be maintained that shows the following flow data for influent and effluent stations and disposal areas:
- a. Total waste flow or volume for each day.
 - b. Maximum and minimum daily flows for each month.
3. A tabulation reflecting bypassing and accidental waste spills shall be maintained showing information items listed in Sections E-1 and E-2 for each occurrence.
4. A chronological log for each month shall be maintained of the effluent disinfection and bacterial analyses, showing the following:
- a. Date and time each sample is collected and waste flow rate at time of collection.
 - b. Chlorine residual, contact time, and dosage (in kilograms per day and parts per million).
 - c. Coliform count for each sample.
 - d. Moving median coliform of the number of samples specified by waste discharge requirements.

F. REPORTS TO BE FILED WITH THE REGIONAL BOARD

1. Spill Reports

A report shall be made of any spill of oil or other hazardous material. Spills shall be reported to this Regional Board, at (510) 286-1255, immediately after the occurrence. A written report shall be filed with the Regional Board within five (5) working days and shall contain information relative to:

- a. Nature of waste or pollutant.
- b. Quantity involved.
- c. Duration of incident.
- d. Cause of spill.
- e. SPCC Spill Prevention and Containment Plan in effect, if any.

- f. Estimated size of affected area.
- g. Nature of effects (i.e., fishkill, discoloration of receiving waters, etc.).
- h. Corrective measures that have been taken or planned, and a schedule of these activities.
- i. Persons notified.

2. Reports of Plant Bypass, Treatment Unit Bypass, and Permit Violation

In the event the discharger violates or threatens to violate the conditions of the waste discharge requirements and prohibitions or intends to experience an overflow or treatment failure due to:

- a. Maintenance work, power failures, or breakdown of waste treatment equipment, or
- b. Accidents caused by human error or negligence, or
- c. Other causes, such as acts of nature,

the discharger shall notify the Regional Board office by telephone as soon as he or his agents have knowledge of the incident and confirm this notification in writing within 7 working days of the telephone notification. The written report shall include time and date, duration and estimated volume of waste bypassed, method used in estimating volume, and person notified of the incident. The report shall include pertinent information explaining reasons for the noncompliance and shall indicate what steps were taken to prevent the problem from reoccurring.

In addition, the waste discharger shall promptly accelerate his monitoring program to analyze the discharge at least once every day. Such daily analyses shall continue until such time as the effluent limits have been attained, until bypassing stops or until such time as the Executive Officer determines to be appropriate. The results of such monitoring shall be included in the regular Self-Monitoring Report.

- 3. **The discharger shall file a written technical report to be received at least 30 days prior to advertising for bid (60 days prior to construction) on any construction project which would cause or aggravate the discharge of waste in violation of requirements; said reports shall describe the nature, cost, and scheduling of all actions necessary to preclude such discharge. In no case will any discharge of wastes in violation of permit and order be permitted unless notification is made to the Executive Officer and approval obtained from the Regional Board.**

4. Self-Monitoring Reports

Written reports shall be filed regularly for each calendar month (unless specified otherwise) and filed no later than the fifteenth day of the following month. The reports shall be comprised of the following:

a. **Letter of Transmittal:**

A letter transmitting self-monitoring reports should accompany each report. Such a letter shall include:

- 1) Identification of all violations of waste discharge requirements found during the reporting period,
- 2) Details of the magnitude, frequency, and dates of all violations,
- 3) The cause of the violations, and
- 4) Discussion of the corrective actions taken or planned and the time schedule for completion. If the discharger has previously submitted a detailed time schedule for correcting requirement violations, a reference to the correspondence transmitting such a schedule will be satisfactory.

Monitoring reports and the letter transmitting reports shall be signed by a principal executive officer or ranking elected official of the discharger, or by a duly authorized representative of that person.

The letter shall contain the following certification:

"I certify under penalty of law that this document and all attachments are prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who managed the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

b. **Map or aerial photograph.**

A map shall accompany the report showing the sampling and observation station locations.

c. **Effluent Data Summary.**

Summary tabulations of the data shall include for each constituent the total number of analyses, maximum, minimum, and average values for each period. Flow data shall be included. The original is to be submitted to:

**Executive Officer
California Regional Water Quality Control Board
San Francisco Bay Region
2101 Webster Street, Suite 500
Oakland, CA 94612**

5. Annual Reporting

By January 30 of each year, the discharger shall submit an annual report to the Regional Board covering the previous calendar year. The report shall contain both tabular and graphical summaries of the monitoring data during the previous year. In addition, the report shall contain a comprehensive discussion of the compliance record and the corrective actions, taken or planned, which may be needed to bring the discharger into full compliance with the waste discharge requirements.

Table 1. Habitat Types and Acreages - (Wetland Habitats Shown in Bold)

Landscape Elements	Impacted (acres)	Proposed (acres)
Open Water	50	
Brackish Marsh	30	
Seasonal pickleweed marsh	290	
Seasonal salt grass/mixed halophyte marsh	282	
Grassland	1,690	
Brackish pond	21	
Vernal pools	5	
Levee	55	
Developed Land	10	
Intertidal Channels		80
Low Marsh		1,440
High Marsh		145
Upland transition & buffer		380
Intertidal Ponds		7
Seasonally wet depressions		43
Diked Pickleweed Marsh		48
Managed fluvial hollows		32
Clank hollow		29
Loafing & nesting islands		6
SUBTOTAL OF EXISTING WETLAND ACRES	628	
TOTAL	2,433	2,210

Table 2. Monitoring Summary

<i>Type</i>	<i>Location (1)</i>	<i>Parameter (2)</i>
Groundwater quality	1.shallow and deep groundwater monitoring wells; 2.onsite supply wells 3. neighboring supply wells (elevation only)	Water Levels (continuous) Toxics (metals), Salinity, (instantaneous physical)
Make-up Water	Makeup water ponds	Toxic Substances / Salinity, pH
Make-up Pond Sediment	Makeup water ponds	Toxic Substances, Salinity, pH
Decant water	Outfall	Toxic Substances, Salinity, pH
Load confirmation	Barges	Toxic Substances
Levee dimensions	Levees at representative points, Survey benchmarks	Elevation, evidence of slumping, failure, etc.
Fill elevations	Resistivity probes and survey rods located in each cell	Elevation (+/- 0.5 foot)
Marsh channel formation – physical	All constructed channels, newly formed 1 st and 2 nd Order	Topography (bank, bed and thalweg) EIR 4.8.1
Marsh Water Quality (will include some sediment sampling)	Completed Phases –(see SMP)	Conventional Water Quality and sediment parameters see EIR 4.8.1
Bioaccumulation – Animal Tissue (Bivalve Tissue Conc)(3)	Completed phases –(see SMP)	Hg, Se, Total PCBs; Dioxins/Furans
Bioaccumulation –Plant Tissue	Completed phases – (see SMP)	Hg, Se, Metals, Total and Congener PCBs; PAH, Dioxins/Furans
Aquatic Invertebrate (benthic in-fauna)	intertidal channels, vernal pools, and seasonal ponds	Identify to lowest possible taxon May be done in conjunction with other sampling
Avian Survey	Throughout site –fixed points	Identification to species level – Coordination with Christmas Counts and other community counts
Fishery and SMHM Surveys	Throughout completed phases –at the direction of NMFS	Identification to species level
Vegetation Survey	Completed phases – Aerial photos with ground truthing	Percent cover and identification to species level of five most dominant
FOOTNOTES:		
(1) See Self-monitoring program (SMP) and Mitigation, Monitoring and Reporting Plan (MMRP) for details		
(2) Monitoring protocol and analysis method specified in SMP		
(3) Regional Monitoring Program protocol		

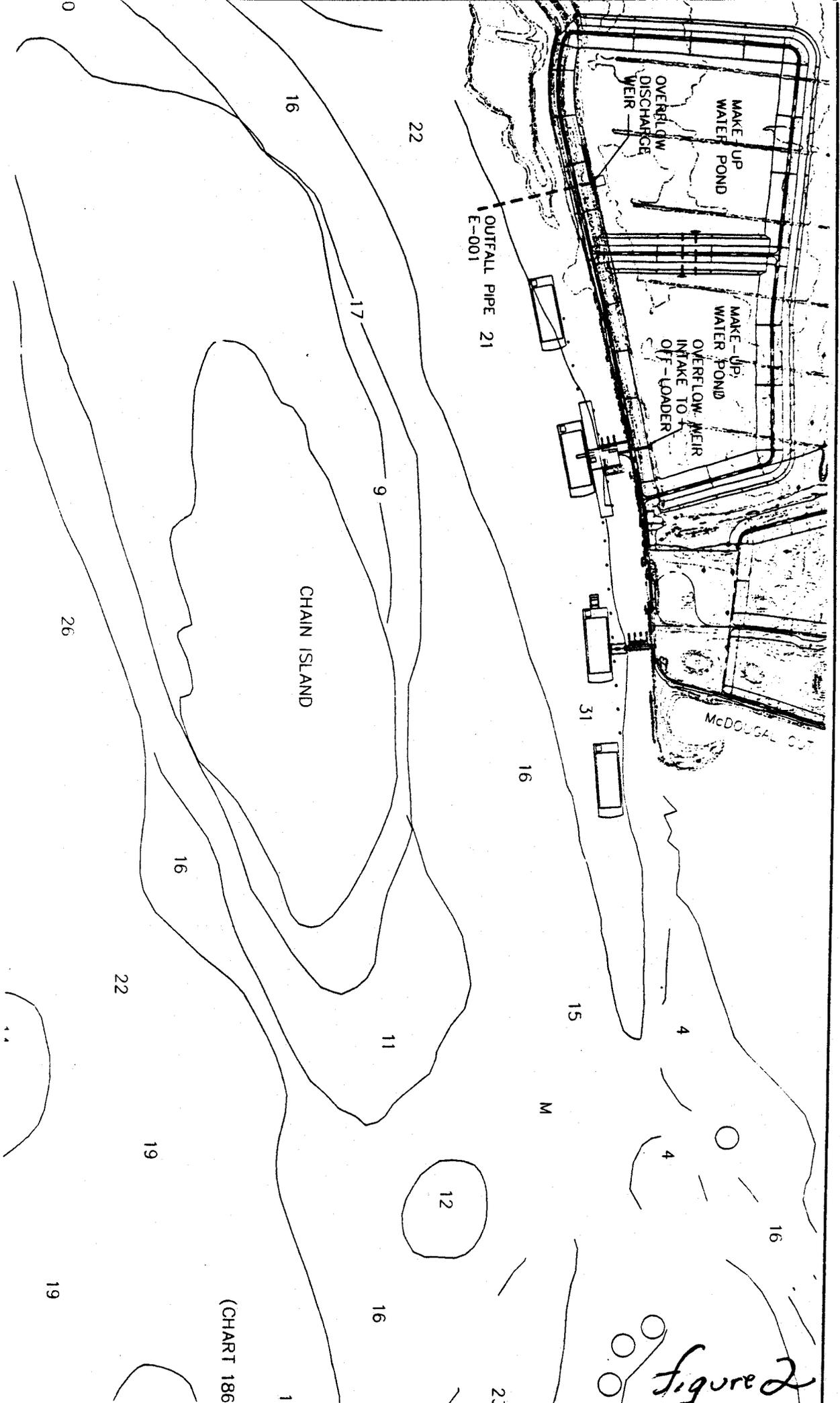


Figure 2



LI-Restoration
 Rehandling and Offloading Facility
 Offshore Depths
 from NOAA Chart 18656
 MONTEZUMA WETLANDS
 (CHART 186)

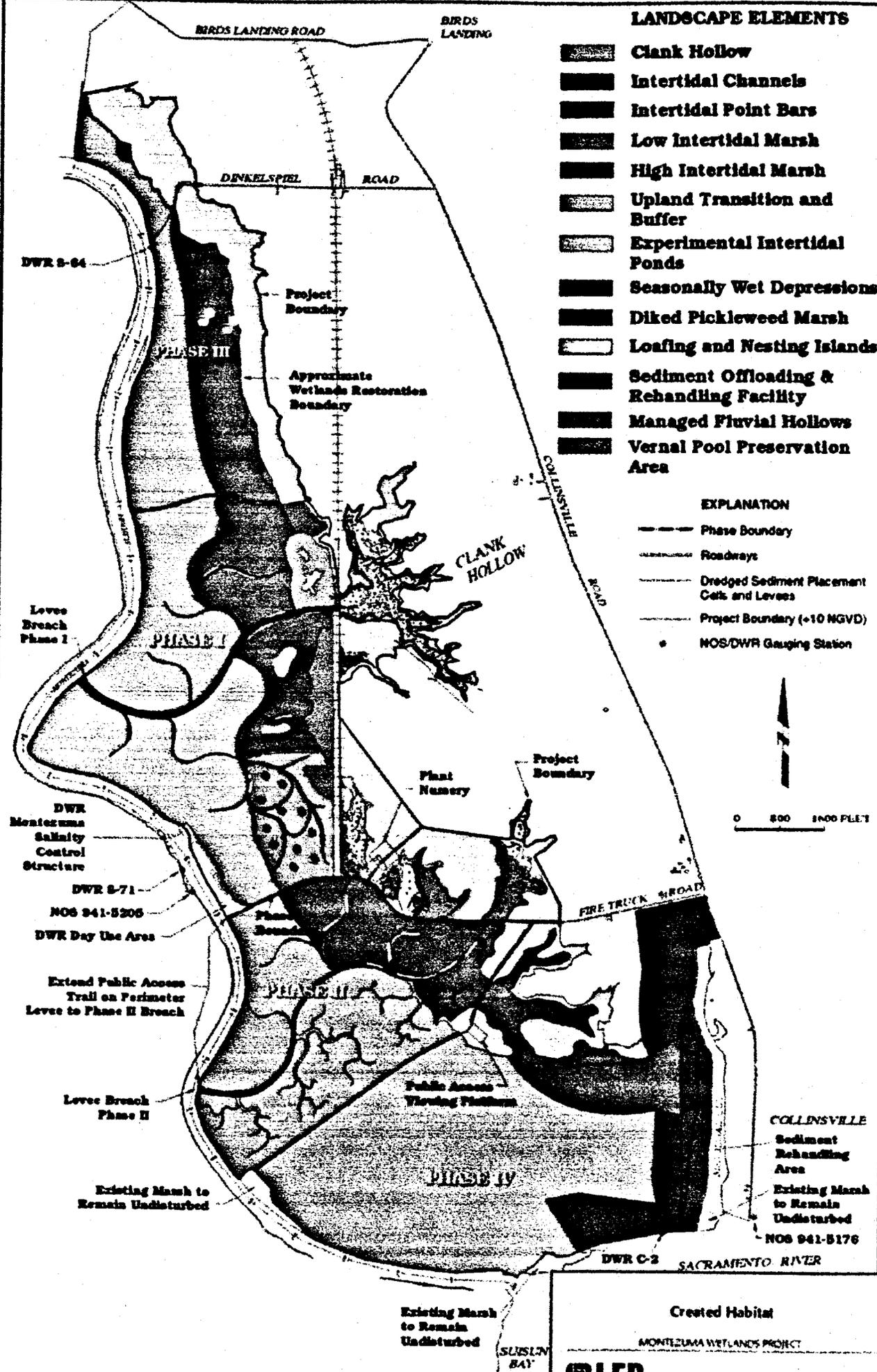
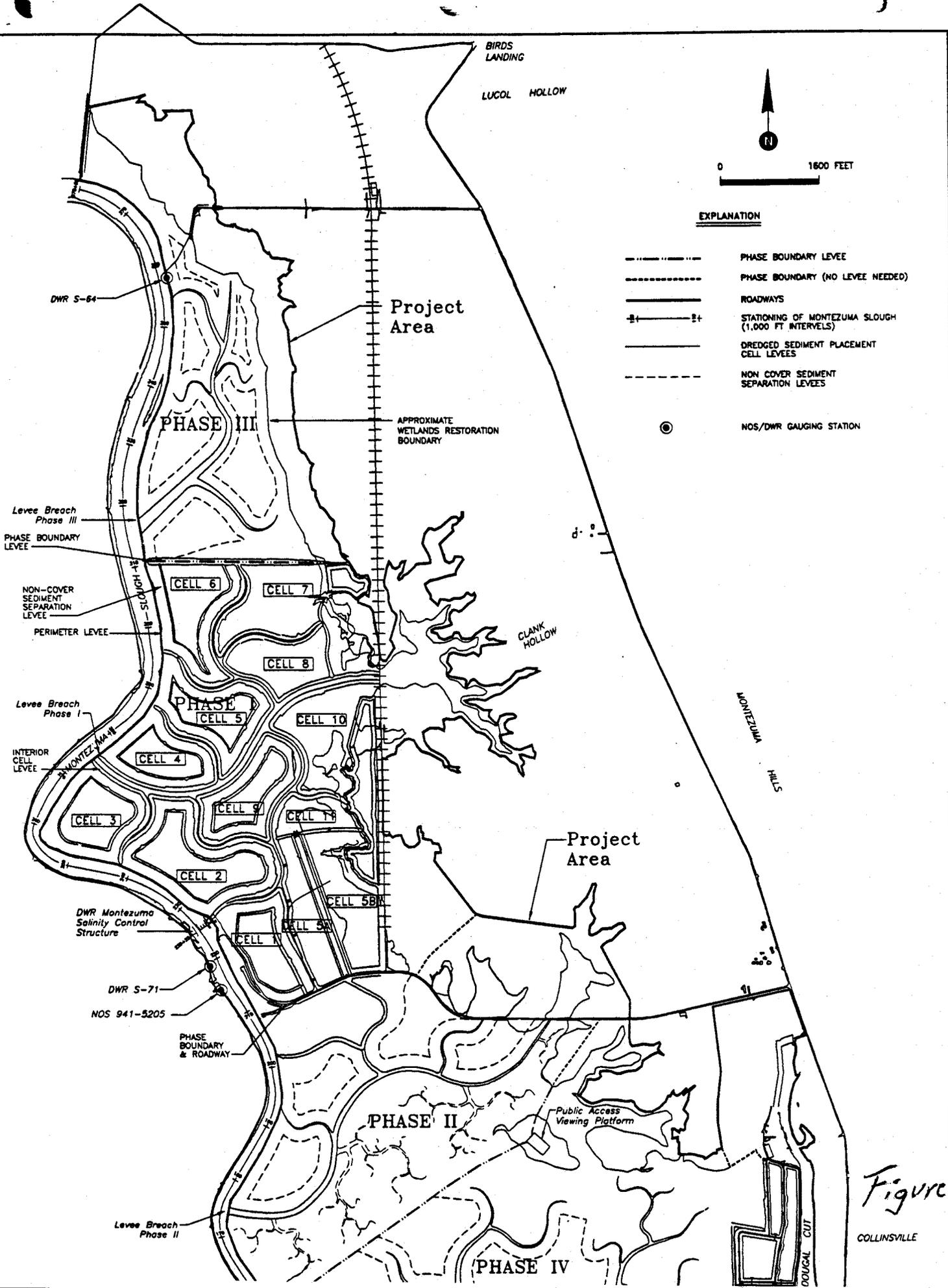


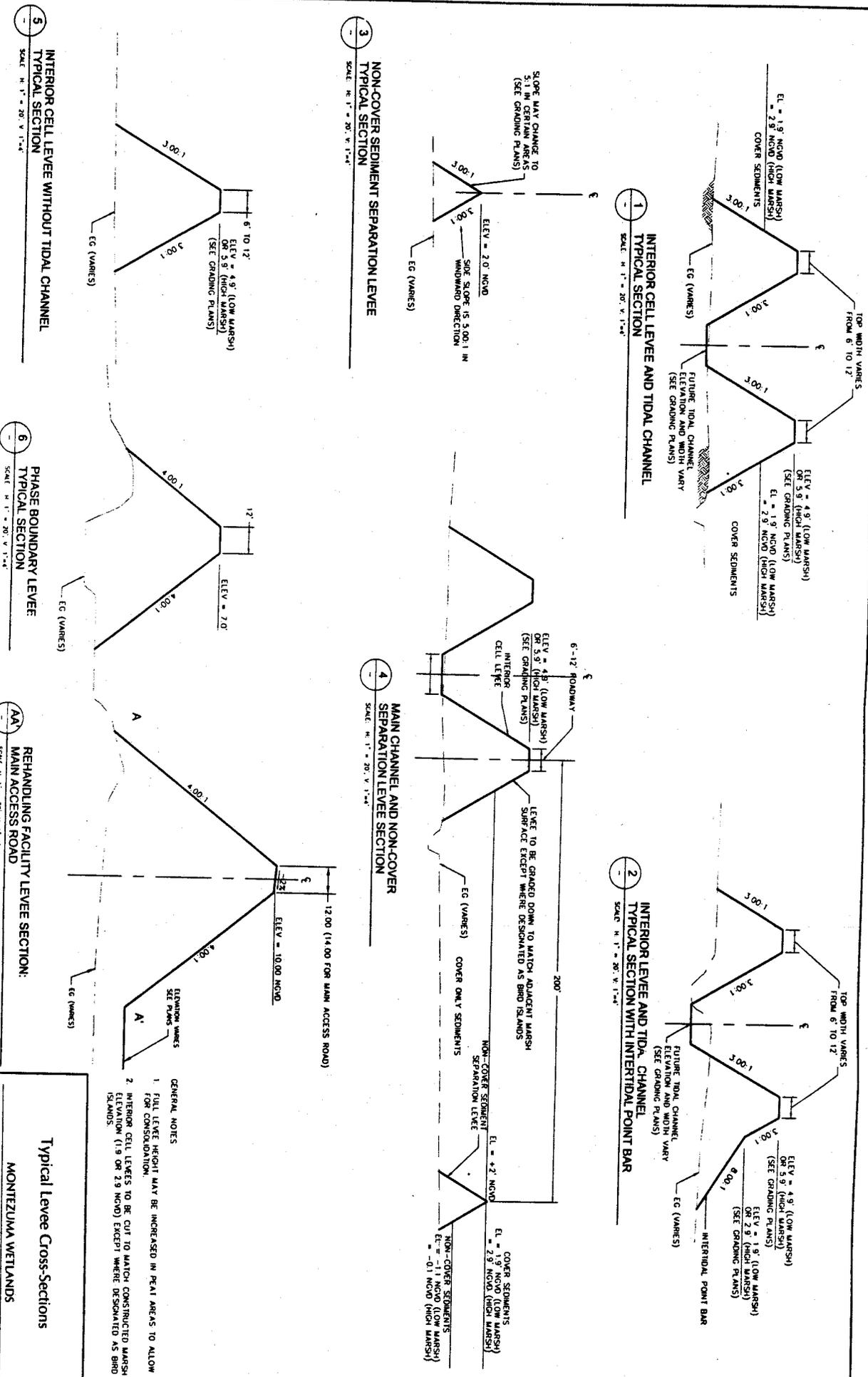
Figure 3



EXPLANATION

-----	PHASE BOUNDARY LEVEL
-----	PHASE BOUNDARY (NO LEVEE NEEDED)
=====	ROADWAYS
---+---+---	STATIONING OF MONTEZUMA SLOUGH (1,000 FT INTERVALS)
-----	DREDGED SEDIMENT PLACEMENT CELL LEVELS
-----	NON COVER SEDIMENT SEPARATION LEVELS
○	NOS/DWR GAUGING STATION

Figure 4
COLLINSVILLE



- GENERAL NOTES
1. FILL LEVEE HEIGHT MAY BE INCREASED IN PEAK AREAS TO ALLOW FOR CONSOLIDATION.
 2. INTERIOR CELL LEVEES TO BE CUT TO MATCH CONSTRUCTED MARSH ELEVATION (1.9 OR 2.9 NCND) EXCEPT WHERE DESIGNATED AS BIRD ISLANDS.

Typical Levee Cross-Sections
MONTEZUMA WETLANDS
IF RESTORATION

Figure 5

Project Cross Section

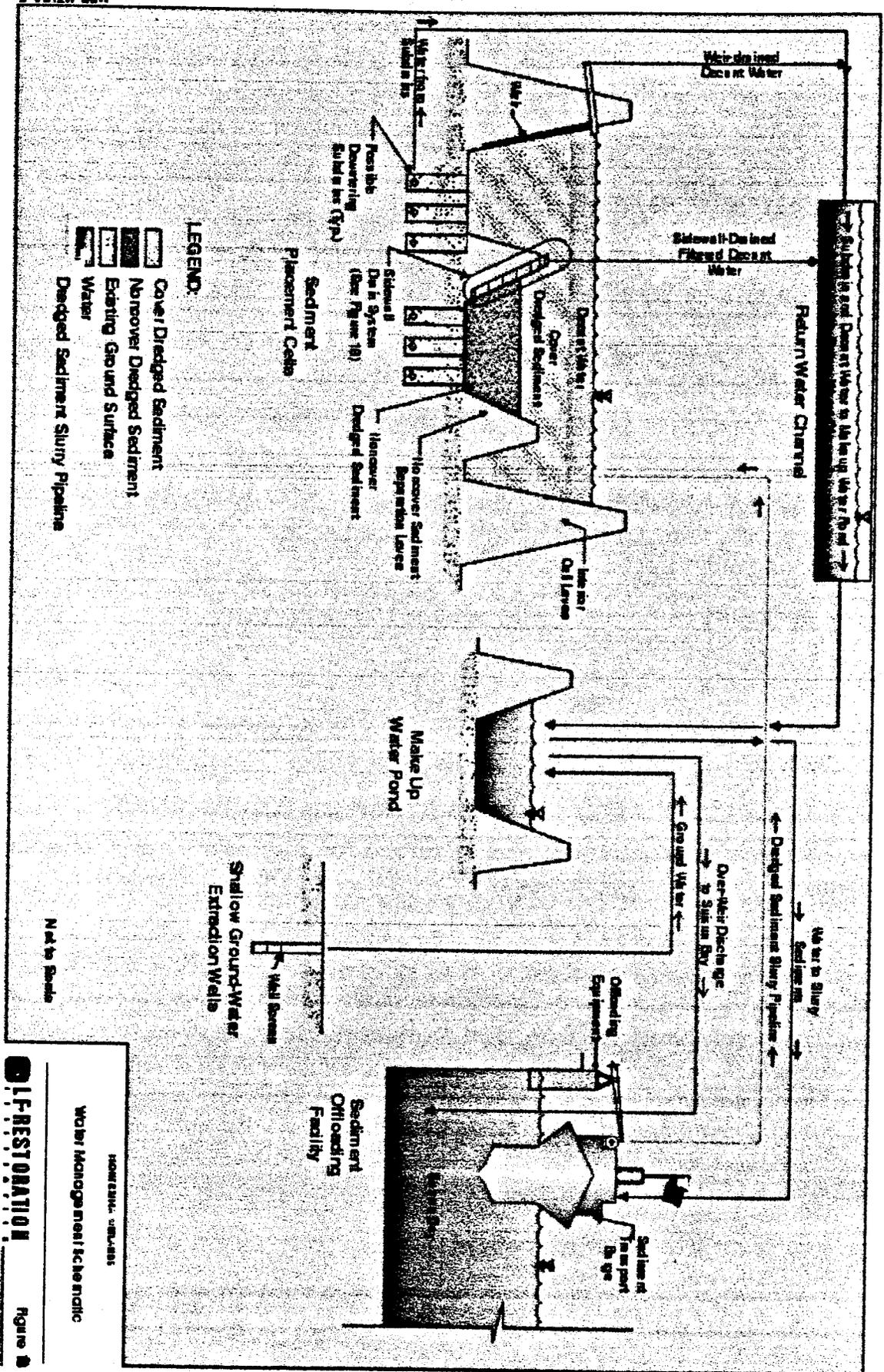
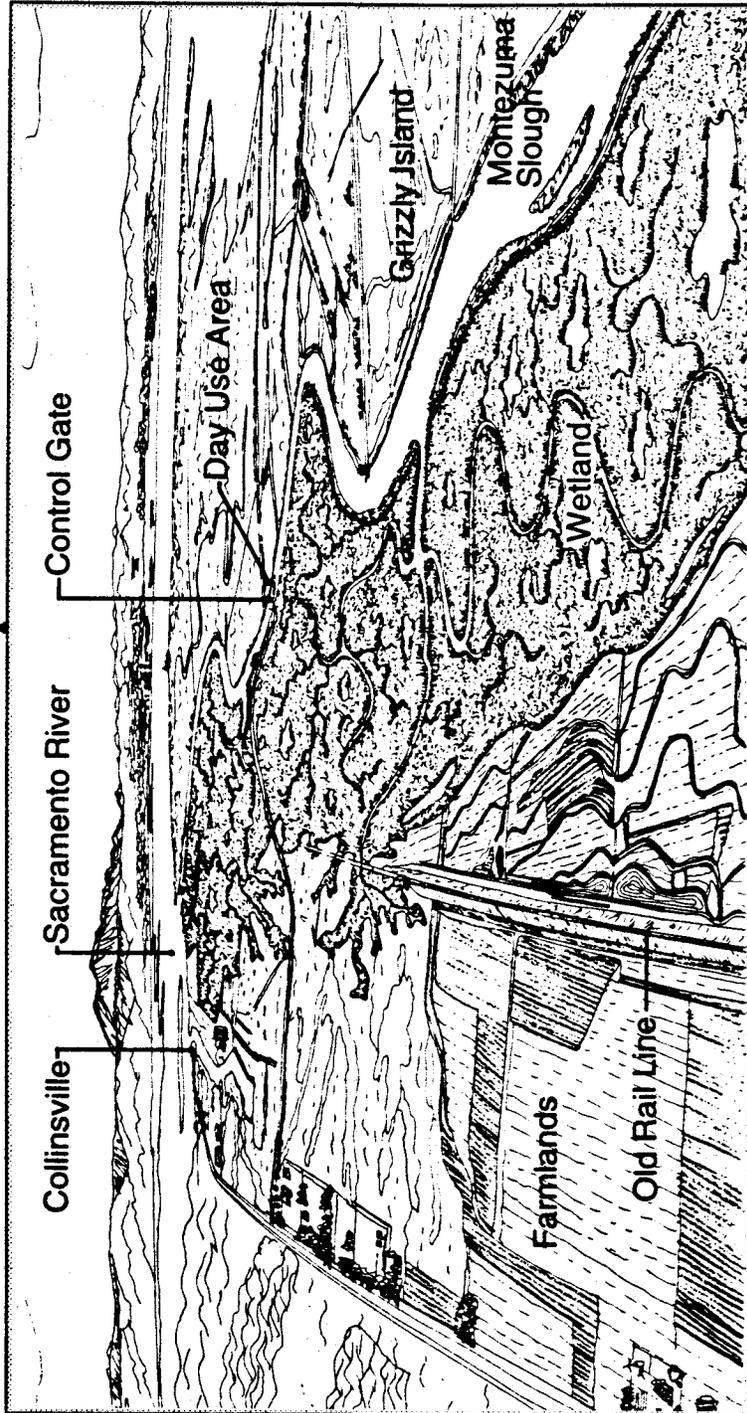
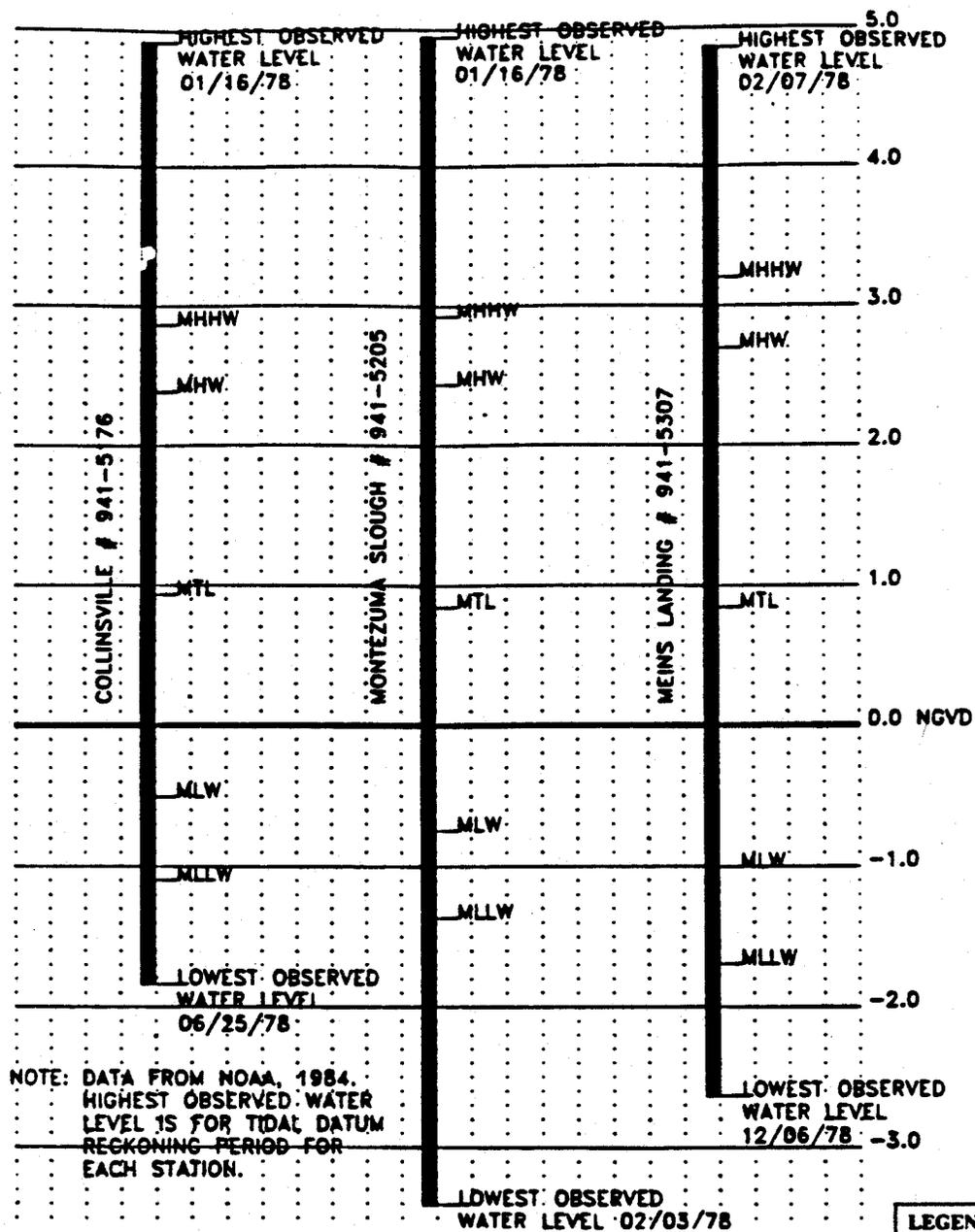


Figure 6



Rendering of the Site after Restoration of the Montezuma Wetlands

Figure 7



LEGEND
 MHHW - Mean High Higher Water
 MHW - Mean High Water
 MTL - Mean Tide Level
 MLW - Mean Low Water
 MLLW - Mean Low Lower Water

Source: Levine-Fricke, Technical Report 1992.

MONTEZUMA WETLANDS
 PROJECT
 EIR EIS

Figure 22

Montezuma Site:
Tidal Datums

BRADY AND ASSOCIATES
 PLANNERS AND CONSULTANTS

Figure 8

Table 2. Routine Sediment Physical and Chemical Evaluation

Characteristic	Reporting Limit
Total Solids [TS](%)	0.1
Total Organic Carbon [TOC](%)	0.1
Grain Size (%)	0.1

Metals (mg/kg)		
Element	CAS No.	
Arsenic	7440-38-2	2.0
Cadmium	7440-43-9	0.3
Chromium	7440-47-3	5.0
Copper	7440-50-8	5.0
Lead	7439-92-1	5.0
Mercury	7439-97-6	0.02
Nickel	7440-02-0	5.0
Selenium	7782-49-2	0.1
Silver	7440-22-4	0.2
Zinc	7440-66-6	1.0

Butyltins (µg/kg)		
Monobutyltin		10 each compound
Dibutyltin		
Tributyltin		
Tetrabutyltin		
Total Butyltins		

Table 2. Routine Sediment Physical and Chemical Evaluation

Characteristic		Reporting Limit
PAHs (µg/kg)		
Compound	CAS No.	20 each compound
Acenaphthene	83-32-9	
Acenaphthylene	208-96-8	
Anthracene	120-12-7	
Benzo(a)anthracene	56-55-3	
Benzo(a)pyrene	50-32-8	
Benzo(b)fluoranthene	205-99-2	
Benzo(g,h,i)perylene	191-24-2	
Benzo(k)fluoranthene	207-08-9	
Chrysene	218-01-9	
Dibenzo(a,h)anthracene	53-70-3	
Fluoranthene	206-44-0	
Fluorene	86-73-7	
Indeno(1,2,3-cd)pyrene	193-39-5	
Naphthalene	91-20-3	
Phenanthrene	85-01-8	
Pyrene	129-00-0	
Total PAHs		

Table 2. Routine Sediment Physical and Chemical Evaluation

Characteristic		Reporting Limit
Pesticides ($\mu\text{g}/\text{kg}$)		
Compound	CAS No.	
Aldrin	309-00-2	2 each compound
α -BHC	319-84-6	
β -BHC	319-85-7	
δ -BHC	319-86-8	
γ -BHC (Lindane)	58-89-9	
Chlordane	57-74-9	
2,4'-DDD	53-19-0	
4,4'-DDD	72-54-8	
2,4'-DDE	3424-82-6	
4,4'-DDE	72-55-9	
2,4'-DDT	789-02-6	
4,4'-DDT	50-29-3	
Total DDT		
Dieldrin	67-57-1	2 each compound
Endosulfan I	959-98-8	
Endosulfan II	33213-65-9	
Endosulfan sulfate	1031-07-8	
Endrin	72-20-8	
Endrin aldehyde	7421-93-4	
Heptachlor	76-44-8	
Heptachlor epoxide	1024-57-3	
Toxaphene	8001-35-2	20

Within the USACE San Francisco District

Table 2. Routine Sediment Physical and Chemical Evaluation

Characteristic		Reporting Limit
PCBs (µg/kg)		20 each Aroclor
Aroclor 1242	53469-21-9	
Aroclor 1248	12672-29-6	
Aroclor 1254	11097-69-1	
Aroclor 1260	11096-82-5	
Total Aroclors	12767-79-2	

*Note: Sediment reporting limits are on a dry-weight basis. To achieve the recommended reporting limits for some compounds in sediment, it may be necessary to use a larger sample size than the method describes, a smaller extract volume for gas chromatography/mass spectrometry analyses, or recommended sample cleanup methods to reduce interference.

Table 3. Bioaccumulative Contaminants of Concern for Routine Tissue Evaluation

Characteristic	Reporting Limit ^A
Total Lipid (%)	0.1
Cadmium (mg/kg)	0.1
Copper (mg/kg)	1.0
Mercury (mg/kg)	0.02
Selenium (mg/kg)	0.5
PAHs ^B (µg/kg)	20
Pesticides ^B (µg/kg)	2
PCBs ^C (µg/kg)	20
Butyltins ^B (µg/kg)	10

- A. Tissue reporting limits are on a wet-weight basis. To achieve the recommended reporting limits for some compounds in sediment, it may be necessary to use a larger sample size than the method describes, a smaller extract volume for gas chromatography/mass spectrometry analyses, or recommended sample cleanup methods to reduce interference.
- B. Use same list of compounds as in Table 2
- C. If bioaccumulation tests are necessary because of elevated levels of PCBs, the agencies expect to require PCB congener analysis rather than Aroclor analysis. The agencies are currently working on the specific list of congeners that will be required. A separate public notice will be issued listing the congeners of concern.

Table 4. Interstitial and Overlying Water Measurements[JRD1]

Characteristic	Reporting Limit
Salinity (ppt)	0.1
pH (pH units)	0.1
Ammonia (mg/kg)	0.2
Soluble Sulfides (mg/kg)	0.1
Dissolved Oxygen (mg/kg) (DO)	0.1
Temperature (°C)	0.1

SELF-MONITORING PROGRAM
PART B

I. DESCRIPTION OF SAMPLING STATIONS

A. INFLUENT

<u>Station</u>	<u>Description</u>
A-001	At any point tributary to the make-up /decant water pond and conveyance system (ditches) but immediately after manifold of the extraction well system.

B. EFFLUENT

<u>Station</u>	<u>Description</u>
E-001-S	Effluent to Suisun Bay Outfall At a point after the holding pond and prior to discharge to bottom diffuser.

C. RECEIVING WATERS

<u>Station</u>	<u>Description</u>
C-1	At a point in Suisun Bay about 100 feet down-current (dependent on tide) from the discharge outfall.

D. NEW MARSH AREAS

<u>Station</u>	<u>Description</u>
DWQ-#	Marsh Water Quality- Conventional Parameters: Taken at points within each newly completed phase representative of ambient water quality. Samples shall be a composite sample consisting of at least 8 sub-samples taken randomly throughout the phase. Samples shall be collected by small boat or alternate means that minimizes sediment disturbance and other sampling error. In addition, at least two stations shall be reference stations, one of which shall be located at Rush Ranch. Discharger shall submit a map with the first quarterly report showing the exact location of each sampling point. Reports shall include coordinates of sampling stations.
DBB-#	Bioaccumulation of Toxic Contaminants - Bivalve: Taken at points within each newly completed phase representative of ambient water quality. Samples shall be collected using the standardized protocols of the Regional Monitoring Program for Trace Substances (RMP) and shall take any other measures necessary to ensure data comparability with the RMP and State Mussel Watch Program. Stations will consist of deployed bivalves ("bagged") to be positioned at each tidal breach to maximize exposure to tidal exchange. In addition, at least two stations shall be reference stations, one of which shall be located at Rush Ranch.

DBP# **Bioaccumulation of Toxic Contaminants – Plant:** Taken at points within each newly completed phase representative of plant cover. At least 6 samples shall be collected. Protocols are referenced in the Mitigation Monitoring and Reporting Program (MMRP). Sampling points and composites shall be representative of dominant plant species sampled and sampling shall be representative of the distribution of that plant species within each phase.

E. PERIMETER (Land Observations)

<u>Station</u>	<u>Description</u>
L-1 to L-20	Points located at the corners and at midpoints along the perimeter levees of the each phase.

NOTE: A drawing showing the locations of these stations shall be included in the Annual Report, and in the monthly report.

II. SCHEDULE OF SAMPLING, ANALYSIS AND OBSERVATION

The schedule of sampling, analysis and observation shall be that given in Table 1.

III. MODIFICATION OF PART A (August 1993)

A. This monitoring program does not include the following sections of Part A:

Section C.1(c)

B. This monitoring program includes the following modifications of Part A:

1. Section F.5, Annual Reporting: The first sentence is revised to read:

'The discharger shall submit to the Board an Annual Report for each calendar year, to be received no later than February 15 of the following year.'

IV. REPORTING REQUIREMENTS

A. General Reporting Requirements are described in Section E of the Board's "Standard Provisions and Reporting Requirements", dated August 1993.

B. A Self-Monitoring Report shall be submitted for each quarter. The report shall be submitted to the Board by the last day of the following month. The required contents of these reports are described in SMP Part A, Section F.4.

C. An Annual Report shall be submitted for each calendar year. The report shall be submitted to the Board by February 15 of the following year. The required contents of these reports are described in SMP Part A, Section F.5.

D. Any overflow, bypass or significant non-compliance incident that may endanger health or the

environment shall be reported in accordance with SMP Part A, Sections F.1 and F.2, and any additional reporting guidance as may be provided by Board staff. The date, time, duration, location, estimated volume of wastewater discharged, and corrective actions taken for these events shall be reported in the quarterly Self-Monitoring Reports.

E. Flow Monitoring and Reporting.

Influent and Effluent (A-001, E-001): Flows shall be measured continuously, and recorded and reported daily. The following information shall also be reported, for each quarter: Average, Maximum and Minimum Daily Flows (mgd).

VI. TOXICITY REPORTING REQUIREMENTS

A. Routine Reporting: Toxicity test results for the current reporting period shall include the following, at a minimum, for each test:

- a. Sample date(s)
- b. Test initiation date
- c. Test species
- d. End point values for each dilution (e.g., number of young, growth rate, percent survival)
- e. NOEC value(s) in percent effluent
- f. IC₁₅, IC₂₅, IC₄₀, and IC₅₀ values (or EC₁₅, EC₂₅ ... etc.) in percent effluent
- g. TUc values (100/NOEC, 100/IC₂₅, and 100/EC₂₅)
- h. Mean percent mortality (\pm s.d.) after 96 hours in 100% effluent
- i. NOEC and LOEC values for reference toxicant test(s)
- j. IC₅₀ or EC₅₀ value(s) for reference toxicant test(s)
- k. Available water quality measurements for each test (i.e., pH, D.O., temperature, conductivity, hardness, salinity, ammonia)

B. Compliance Summary: Each self-monitoring report shall include a summary table of toxicity data of, at a minimum, samples collected during the most recent year.

C. Reporting Raw Data in Electronic Format: The Discharger may elect to submit data via the Regional Board's Electronic Reporting System. Data is submitted via a secure internet connection. The Discharger must submit data in accordance with the State and Regional Board software format.

VII. MISCELLANEOUS REPORTING

A. The discharger shall retain and submit (when required by the Executive Officer) the following information concerning the monitoring program for organic and metallic pollutants.

- a. Description of sample stations, times, and procedures.
- b. Description of sample containers, storage, and holding time prior to analysis.
- c. Quality assurance procedures together with any test results for replicate samples, sample blanks, and any quality assurance tests, and the recovery percentages for the internal surrogate standard.

I, Lawrence Kolb, Acting Executive Officer, hereby certify that the foregoing Self-Monitoring Program:

1. Has been developed in accordance with the procedure set forth in this Board's Resolution No. 73-16 in order to obtain data and document compliance with waste discharge requirements established in Board Order No 00-061.
2. May be reviewed at any time subsequent to the effective date upon written notice from the Executive Officer or request from the discharger, and revisions will be ordered by the Executive Officer.
3. Is effective as of September 1, 2000.



Lawrence P. Kolb
Acting Executive Officer

Attachments:

- Table 1 - Schedule for Sampling, Measurements and Analyses
- Footnotes for Table 1
- Table 2 - Incoming Sediment Testing

TABLE 1
 SCHEDULE OF SAMPLING, MEASUREMENT, AND ANALYSIS
 WATER QUALITY

Station	Constituent	Unit	Type of Sample	Frequency of Analysis	
A-001	Flow Rate [1]	mgd	Continuous	Continuous	
	Turbidity	NTU	Continuous	Continuous	
	Conductivity	mhos	Continuous	Continuous	
	Arsenic [8]	µg/L	grab	Quarterly	
	Cadmium	µg/L	grab	Quarterly	
	Chromium	µg/L	grab	Quarterly	
	Copper	µg/L	grab	Quarterly	
	Lead	µg/L	grab	Quarterly	
	Mercury	µg/L	grab	Quarterly	
	Nickel	µg/L	grab	Quarterly	
	Silver	µg/L	grab	Quarterly	
	Selenium	µg/L	grab	Quarterly	
	Zinc	ug/l	grab	Quarterly	
E-001-S	Flow Rate [1]	mgd	Continuous	Continuous	
	TSS [2]	mg/L	24 hr composite	2 times/week	
	Turbidity	NTU	24 hr composite	Continuous	
	pH	Std Units	Grab	Continuous	
	Temperature	°F	Grab	Continuous	
	Dissolved Oxygen	mg/L and % saturation	Grab	Continuous	
	Total Sulfides [7]	mg/L	Grab	Daily (see footnote)	
	Arsenic [8]	µg/L	24 hr composite	Weekly	
	Cadmium	µg/L	24 hr composite	Weekly	
	Chromium	µg/L	24 hr composite	Weekly	
	Copper	µg/L	24 hr composite	Weekly	
	Lead	µg/L	24 hr composite	Weekly	
	Mercury	µg/L	24 hr composite	Weekly	
	Nickel	µg/L	24 hr composite	Weekly	
	Silver	µg/L	24 hr composite	Weekly	
	Selenium	µg/L	24 hr composite	Weekly	
	Zinc	µg/L	24 hr composite	Weekly	
	Phenols twice per year		µg/L	Grab	Once /year
	PAHs twice per year []		µg/L	Grab	Weekly
	Pesticides	µg/L	Grab		Weekly
	PCB-Congeners	µg/L	Grab		Weekly
	Acute Toxicity twice per year		% Mortality 7-day		Weekly
		% Normal Develop		Weekly	

MONTEZUMA WETLANDS PROJECT - Self Monitoring Program
Order No. 00-061

Station	Constituent	Unit	Type of Sample	Frequency of Analysis
All M (marsh) Stations	Turbidity	NTU	Field	twice per year
	pH	Std Units	Field	twice per year
	Temperature	°F	Field	twice per year
	Dissolved Oxygen	mg/L	Field	twice per year
	Nitrogens (as N) [16]	mg/L	Grab	twice per year
	Total Phosphate	mg/L	Grab	twice per year
	Conductivity	mhos	Field	twice per year
	Hardness (as CaCO ₃)	mg/L	Grab	twice per year
	Salinity	ppt	Grab	twice per year
	Chlorophyll-a	mg/L	Grab	twice per year
	Secchi Disk	inches	Field	twice per year
	Water Depth	feet	Field	twice per year
	Standard Observations		Visual	twice per year
	Redox Potential (sediment)		insitu	Annual
	Total Suspended Solids			Annual
	Sulfides		Grab	Annual
	Total Organic Matter		Grab	Annual
Elements and Metals		Grab	Annual	

Footnotes for Table 1:

- 1) Flows shall be monitored continuously and the following shall be reported in quarterly self-monitoring reports Influent, average daily flow (A-001);
- 2) Influent, maximum and minimum flow rates and times of occurrence (A-001)
- 3) Effluent daily flow to Suisun Bay
- 4) Sulfide analysis shall be run when dissolved oxygen concentrations fall below 2.0 mg/L.
- 5) Arsenic must be analyzed for by the atomic absorption, gaseous hydride procedure (USEPA method No. 206.3/Standard Method No. 303E). Alternative methods of analysis must be approved by the Executive Officer.
- 6) Selenium must be analyzed for only by the atomic absorption, gaseous hydride procedure (USEPA method No. 270.3/Standard Method No. 303E). Alternative methods of analysis must be approved by the Executive Officer.
- 7) Polynuclear aromatic hydrocarbons, PAHs, shall be analyzed using the latest version of USEPA Method 610 (8100 or 8300). The discharger shall attempt to achieve the lowest detection limits commercially available. If an analysis cannot achieve a quantification limit for a particular sample at or below the effluent limits for PAHs, the discharger shall provide an explanation in its self-monitoring report. Note that the samples must be collected in amber glass containers. These samples shall be collected for the analysis of the regulated parameters. An automatic sampler which incorporates glass sample containers, and keeps the samples refrigerated at 4°C, and protected from light during compositing may be used.

MONTEZUMA WETLANDS PROJECT - Self Monitoring Program
Order No. 00-061

- 8) For PAHs, the existing limit in the Basin Plan is defined as the sum of sixteen constituents measured in USEPA Method 610. More current data from the NTR lists standards for just eleven of the PAHs measured in Method 610. The USEPA criteria for three of the eleven are higher than the other eight; these are anthracene (NTR objective at 110,000 ppb), fluorene (14,000 ppb), and pyrene (11,000 ppb).
- 9) The discharger shall attempt to achieve the lowest detection limits commercially available using the latest versions of USEPA Methods 608 (or 8080).
- 10) The latest versions of USEPA Methods 624 (or 8240), and 625 (or 8270) shall be used.
- 11) If the analysis performed cannot achieve the quantification limits specified above, the discharger shall provide an explanation in its self-monitoring report. Another sample shall be analyzed if the reported quantification limits are significantly above the limits specified above.
- 12) Ammonia (as N) shall be measured as Total Ammonia; the unionized fraction shall be calculated based on the total ammonia, pH, total dissolved solids or salinity, and temperature.
- 13) Flow-through bioassays shall be conducted with the two of the most sensitive fish species determined from concurrent screenings of three-spine stickleback, rainbow trout and fathead minnow pursuant to Provision E.13. of this Order. The Executive Officer may allow compliance monitoring with only one fish specie (the most sensitive, if known) provided that the discharger conducts sufficient screening with rainbow trout. The following constituents shall be measured on a daily basis, and reported for the bioassay sample stream: pH, Temperature, and Dissolved Oxygen (Sulfides if D.O. falls below 2.0 mg/L).
- 14) Critical Life Stage Toxicity Test shall be performed and reported in accordance with the Chronic Toxicity Requirements specified in Sections V and VI of the Self-Monitoring Program contained in this Order.
- 15) Monitoring for pH shall be done continuously; the minimum and maximum pH values for each day shall be reported in monthly self-monitoring reports.
- 16) The discharge shall conduct low-level monitoring with ultra-clean procedures for PAHs, PCBs, pesticides, and dioxins. The discharger shall utilize 3-5 laboratories and determine the reproducibility of results over a two-year period conducting sampling on a semi-annual basis. The purpose of this work is to establish the pollutant levels in the effluent using ultra-clean sampling procedures and low-level analytical procedures. To the extent that non-EPA approved (40CFR136) methods are used, the results will not be used for compliance purposes.
- 17) Field samples shall be validated with laboratory standards. Field notes shall contain a record of calibration of field instruments and shall be available for inspection at all times.
- 18) Field observations shall include, at a minimum: air temperature, weather conditions, color and appearance and odor of water and sediments.

TABLE 2
SCHEDULE OF SAMPLING, MEASUREMENT, AND ANALYSIS
WATER QUALITY

Required Testing and Analysis; Incoming Sediment Loads

All sediment accepted at the site for placement or rehandling shall be fully characterized for potential contaminants pursuant to testing methods described in USACOE Public Notice 99-3 (excerpted below), and following the tiered testing structure of the Inland Testing Manual¹. Modifications to the sampling and analysis shall only occur after written approval of the Executive Officer.

-----FROM PN 99-3 -----

¹ Evaluation of Dredged Material Proposed for Discharge in Waters of the U.S.
- Testing Manual, USEPA, Corps of Engineers, February 1998, EPA -823-B-98

Table 3
Additional Analysis

In addition, the discharger or dredging applicant shall analyze the project sediment for the following constituents:

Constituent	Unit	Type of Sample	Frequency of Analysis
Radio-nuclides	picocuries	Grab	PS ²
Total Dioxin and Furans ³	µg/L	Grab	PS

² PSD = Project Specific sampling density, The number of samples necessary to be representative will be determined on a project-by-project basis during sampling plan review by the Regional Board staff and via review by the Dredged Material Management Office (DMMO). This analysis is required if the sediment to be dredged is located at or adjacent to locations that are known to have stored or used high-level fissionable material, i.e. Navy bases and shipyards.

³ Total Dioxin Analysis method may be by EPA Method 8280A or Reporter Gene System (RGS)

ATTACHMENT B

**ATTACHMENT B
SUMMARY OF IMPACTS AND MITIGATION MEASURES
THAT PERTAIN TO WATER QUALITY
Proposed Project
(continued)**

Impacts	Significance Prior to Mitigation		Mitigation Measures	Significance After Mitigation
	County	Corps		
<p>P-GEO-3: Because of underlying compressible materials, the Project has the potential to create mudwaves, which could lead to levee instability, increasing the potential for exposure of non-cover sediments to the environment. Secondly, mud waves could form adjacent to the site, creating a potential navigation hazard in Montezuma Slough.</p>	S	S	<p>P-GEO-3: If mudwaves form, construction shall be stopped until excess pore water pressures dissipate, the mudwave stabilizes, and the extent of surface deformation to levees and to the adjacent slough channel are evaluated by a geotechnical engineer. Levees shall be reinforced or repaired as necessary, and any persistent navigation hazards shall be removed. The rate of sediment placement shall be reduced, based on the recommendations of the geotechnical engineer. Additional preventive measures are as follows: Prior to the placement of any fill on the site, the Project Applicant shall fulfill the following requirements:</p> <ul style="list-style-type: none"> • A baseline hydrographic survey of the Montezuma Slough immediately adjacent to the site shall be conducted before construction begins in Phase I to provide the basis for identifying and correcting any deformation caused by mudwaves. • For non-cover separation and cell levees: surcharge loads shall be kept significantly below foundation material shear strengths (thin lifts, slow rate of loading). • For interphase levees: drainage of foundation shall be facilitated with sand/wick drains if the subdrain system proves ineffective in reducing pore-pressure buildup. • For all types of project levees: settlement of levees shall be monitored in conjunction with the monitoring program proposed i.e., assessing fill elevations in the sediment placement cells and repairs made, as necessary. The levee design will be modified if the results of the proposed geotechnical evaluations indicate that changes are required for levee stability. The rate of sediment placement operations will be reduced to allow for dissipation of pore water pressures. 	LS

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**ATTACHMENT B
SUMMARY OF IMPACTS AND MITIGATION MEASURES
THAT PERTAIN TO WATER QUALITY FOR THE PROPOSED PROJECT**

(Does not include other Categories, e.g., Noise, Cultural Resources, etc)

Impacts	Significance Prior to Mitigation		Mitigation Measures	Significance After Mitigation
	County	Corps		
B. POLICY				
P-POL-4: Proposed year-round construction would be inconsistent with Solano County Grading and Erosion Control Ordinance Article 3, Design Principles and Standards, requiring revegetation of the graded areas in advance of the rainy season, between mid-October and mid-April. It would also be inconsistent with the RCOSE requiring that soil disturbance be limited to the period between April 1 and October 1.	LS	LS	No mitigation is required because runoff is controlled within the diked area of the site prior to discharge, and because the grading permit will require adequate erosion and sedimentation controls.	LS
P-POL-5: The Project would contribute significantly to the regional goals for the long-term management of dredged materials in the San Francisco Bay estuary.	NA	S	No mitigation required for a beneficial impact.	NA
C. GEOLOGY AND SEISMICITY				
P-GEO-2: Critical Project structures, such as cell and perimeter levees, and holding pond levees could fail or be damaged during an earthquake, increasing potential for release of contaminants to the environment and delaying marsh restoration.	S	S	P-GEO-2: Critical Project structures, such as levees, shall be designed to the current engineering standards of practice for levee construction, such as those of the Corps (U.S. Army Corps of Engineers 1978, 1980). Records for the design and reconstruction of the distressed levee sections as well as maintenance records shall be maintained by the Applicant for future design and maintenance of Project levees. These records will be used to track on-going levee maintenance and to perform preventative inspection and maintenance of levees prior to the development of problems. Following repairs to any critical levees damaged during an earthquake event, the survey benchmarks that would be installed as part of the elevation control monitoring program shall be re-surveyed to evaluate deformation that may not be discernible by visual observation. This additional surveying is intended to identify levees weakened but not breached by seismic activity.	LS

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**ATTACHMENT B
SUMMARY OF IMPACTS AND MITIGATION MEASURES
THAT PERTAIN TO WATER QUALITY
Proposed Project
(continued)**

C. GEOLOGY AND SEISMICITY				
P-GEO-4: If the proposed subdrain system fails, long-term settlement of the constructed marsh plain may lower it below project design elevations.	S	S	P-GEO-4: A supplemental system consisting of either wick drains, additional surcharge points, or well points, or a combination of these shall be developed for use should the proposed subdrain system prove ineffective.	LS
D. SEDIMENT QUALITY				
P-SED-1: Chemical concentrations in sediments used on the site may on a small scale exceed the proposed criteria (based on the SFRWQCB Interim Screening Criteria).	S	S	P-SED-1: The Applicant shall maintain complete records of the sediment sources, their physical and chemical characteristics, and of the disposition of such sediments within the site. If confirmation sampling indicates that sediments placed on the site have exceeded the required cover or non-cover criteria for placement according to the project design, additional sampling of the affected location(s) shall be undertaken immediately to develop a profile that establishes the nature and extent of the exceedence(s). Based on these results, subject to review and approval by the Corps, County, and RWQCB, one of the following alternative measures shall be implemented: <ul style="list-style-type: none"> • If the exceedence is relatively isolated, small in magnitude (within the range of normally expected variability), and not expected to have adverse effects under the conditions of its placement, it may be left in place. 	LS

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ATTACHMENT B
SUMMARY OF IMPACTS AND MITIGATION MEASURES
THAT PERTAIN TO WATER QUALITY
Proposed Project
(continued)

D. SEDIMENT QUALITY			
P-SED-1 (continued)			<ul style="list-style-type: none"> • If the above circumstances do not apply, the sediments of concern shall be removed to an approved location based on their chemical characteristics. Material shall be removed with mechanical grading equipment or portable dredges capable of working in the marsh environment. Subject to agency review and approval, the sediments may be mixed with confirmed clean sediment to reduce concentrations to within acceptable ranges for placement on the site. • The need for additional measures such as liming to reduce contaminant mobility, capping with fine sediments, increased depth of burial or horizontal isolation from channels, and increased long-term monitoring shall be considered by the Applicant and regulatory agencies.
P-SED-2: Evaporation and concentration of water in ponds could result in a gradual buildup of contaminants to harmful concentrations in sediments and pond water.	S	S	<p>P-SED-2: Quarterly sampling and analysis of the pond sediments and water shall be conducted. If contaminant concentrations in the sediments exceed the screening criteria for cover material, the pond shall be closed until sediments can be removed by clamshell dredging and placed as non-cover material in an available noncover sediment placement cell. If contaminant concentrations in the pond sediments exceed the screening criteria for non-cover material, the sediments shall be removed by clamshell dredging for disposal at an appropriate class landfill.</p>
E. HYDROLOGY AND WATER QUALITY			
P-HYDRO-1: If the designed channels are undersized, the tidal range at the upper ends of the slough channels would not provide the expected frequency and inundation of the marsh plain.	LS	LS	No mitigation required.
P-HYDRO-2: The potential for flooding in the area adjacent to the constructed wetlands could be increased.	LS	LS	No mitigation required.

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**ATTACHMENT B
SUMMARY OF IMPACTS AND MITIGATION MEASURES
THAT PERTAIN TO WATER QUALITY
Proposed Project
(continued)**

E. HYDROLOGY AND WATER QUALITY			
<p>P-HYDRO-3: The marsh plain could inadvertently be placed too high. This would prevent the formation of small channels, and the deposition of soft sediment.</p>	S	S	<p><u>P-HYDRO-3a:</u> The design criteria and action threshold should be stated as follows: "No more than 50 percent of the low marsh plain shall be higher than an elevation that is 0.5 foot below local MHW. Ninety-five percent of the low marsh plain shall be below the local MHW. No more than 50 percent of the high marsh plain shall be higher than local MHHW; 95 percent of the high marsh plain shall be lower than an elevation of 0.5 foot above local MHHW. Corrective action shall be taken if these goals are not met.</p> <p><u>P-HYDRO-3b:</u> In order to prevent overfilling, sediment placement shall be pulsed when the sediment elevation is estimated to be within 1 foot of the design elevation for both the noncover layer and the cover layer; i.e., thin lifts of sediment shall be placed into cells, and fill elevation shall be determined for each lift after initial consolidation. Each successive lift shall be thinner, to decrease the margin of error in achieving final design elevations. During placement, the slurry/pipeline discharge point shall be moved as required to several locations within each cell to prevent mounding based upon visual observations at the outfall discharge point. Fill elevations shall also be monitored during sediment placement by means of topographic surveying and a network of resistivity probes.</p>
	S		LS

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ATTACHMENT B
SUMMARY OF IMPACTS AND MITIGATION MEASURES
THAT PERTAIN TO WATER QUALITY
Proposed Project
(continued)

E. HYDROLOGY AND WATER QUALITY			
<p>P-HYDRO-3 (continued)</p>			<p>P-HYDRO-3b (continued): The number of resistivity probes installed within each sediment cell shall be related directly to the acreage and depth of the sediment cell and to the percent fines in the placed sediment. The number of grade control resistivity probes shall be increased in non-cover cells to enhance elevation control in those cells. The upper lifts of the non-cover sediments shall be gravity consolidated prior to placement of cover sediments. The sediment placement method has been modified from what was evaluated in the circulated DEIR to reduce the impact of turbulent flow of cover sediment over the placed non-cover sediments (see Sections 4.6.2 and 6.8.2 for further discussion).</p> <p>If monitoring results indicate that fill elevations have exceeded the criteria in Mitigation Measure P-HYDRO-3a, those overfilled areas shall be graded down to design elevations within six months of completion of sediment placement within each cell. Equipment capable of operating in a marsh environment shall be used, in order to avoid dewatering cells and exposing sediment to oxidation. Elevation control measures are described in more detail in Section 4.6.2. Alternatively, where subdrains are present, additional subdrain pumping could be used to reduce elevations to appropriate levels.</p>
<p>P-HYDRO-4: The large open reaches of water could allow significant waves to form during high tides. These waves could resuspend deposited sediment, and retard the formation of a mature vegetated marsh.</p>	LS	LS	<p>P-HYDRO-4: Although significant wave fetch is not expected to prevent sediment from settling out of suspension and accumulating under normal conditions, marsh vegetation shall be introduced into sediment cells (see P-BIO-2) where the wind fetch exceeds 1000 feet to reduce potential wave action and re-suspension of sediments that could occur under higher flood tides and storm events.</p>
			LS

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ATTACHMENT B
SUMMARY OF IMPACTS AND MITIGATION MEASURES
THAT PERTAIN TO WATER QUALITY
Proposed Project
(continued)

E. HYDROLOGY AND WATER QUALITY

<p><u>P-HYDRO-5</u>: Erosion of major channel banks or incision of small first-order and second-order channels into non-cover sediment could expose the non-cover sediment to erosion, releasing contaminated material into the environment.</p>	S	S	<p><u>P-HYDRO-5</u>: The tops of the non-cover separation levees shall be constructed of compacted cohesive clays to prevent channels from cutting through them. The interior slopes of noncover separation levees shall be built with 2:1 to 5:1 interior slopes (depending on exposure to wind fetch), rather than just 2:1 as was previously proposed, which geotechnical evaluations indicate is a sufficiently shallow slope to prevent excessive erosion of the levees during sediment placement operations. They would then function as sills to prevent the upstream channel segments from cutting into the non-cover sediment. The formation of first and second order channels shall be assessed and documented on a quarterly basis during the first year following tidal restoration, and annually thereafter. In the unlikely event that channels greater than 2 feet below MHHW develop over non-cover cells, further channel development shall be prevented by placement of straw bales, and/or revegetation.</p>	LS
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ATTACHMENT B
SUMMARY OF IMPACTS AND MITIGATION MEASURES
THAT PERTAIN TO WATER QUALITY
 Proposed Project
 (continued)

E. HYDROLOGY AND WATER QUALITY				
<p>P-WQ-1: There may be an increase in the concentration of contaminants in water in the make-up water pond, which, if discharged to the Sacramento River, would violate water quality standards.</p>	S	S		LS
<p>P-WQ-2: Salinity increases in make-up pond water leached from sediments could increase salinity in the receiving waters of the Sacramento River and Montezuma Slough; this increase would be quickly dispersed.</p>	LS	LS	<p>P-WQ-1: If the concentration of any chemical of concern in the make-up water pond exceeds one-half of the Basin Plan standard for deep water discharge, or other standard imposed through the NPDES permit, one or more of the following measures shall be implemented as necessary to ensure that water quality remains in compliance with discharge standards:</p> <ul style="list-style-type: none"> • Increase the settling time in the sediment placement cells; • Increase the filtering capacity of the geotextile fabrics used in the non-cover cells; • Decrease the amount of recycled water used in the water supply system and increase the amount of make-up water to reduce concentrations; • Add limestone to maintain dredged sediment slurry pH above 6.5; • Add iron chloride or iron sulfate to enhance precipitation; • Add flocculating agents to increase settling of clays and fine-grained sediments; • Set up and use an alkaline hydroxide treatment system; • Set up and use a sulfide treatment system; • Set up and use an ion-exchange or carbon treatment system. <p>No mitigation required.</p>	LS

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**ATTACHMENT B
SUMMARY OF IMPACTS AND MITIGATION MEASURES
THAT PERTAIN TO WATER QUALITY
Proposed Project
(continued)**

E. HYDROLOGY AND WATER QUALITY				
P-WQ-3: Some increase in salinity of the receiving waters of the Sacramento River and Montezuma Slough could be expected from salts leached from dredged materials in the wetland cells.	LS	LS	No mitigation required.	LS
P-WQ-4: The change in circulation and increased tidal prism in the restored wetlands could slightly decrease salinity in the Montezuma Slough.	LS	LS	No mitigation required.	LS
P-GW-1: The Project's withdrawal of shallow groundwater on the site could reduce groundwater supplies for residents east of the site.	S	S	P-GW-1: Prior to receiving Corps §404 and §10 permits a.d County use permits, the Applicant shall submit the results of pump tests, supported by data from piezometers and neighboring wells confirming that the Project's withdrawal of groundwater will not affect neighboring wells. The Applicant shall also monitor water levels in local supply wells during the start-up and first month of operation of the GWSS. If water levels are reduced in local wells, the Applicant shall implement one or more of the following measures as necessary to avoid reducing water supplies in neighboring wells: reduce the rate of groundwater pumping; increase on-site water storage capacity; modify well locations or the groundwater extraction system; or provide the affected neighbors with alternative water sources.	LS
P-GW-2: The Project could cause localized increases in contaminant concentrations in shallow brackish groundwater on the site, but it is extremely unlikely that the deeper aquifer would be affected	LS	LS	No mitigation required.	LS
F. BIOLOGICAL RESOURCES				
P-BIO-1a: Wildlife could be attracted to sediment placement cells and exposed to potentially harmful levels of contaminants if non-cover material is exposed onsite long enough for plant and/or invertebrate colonization to occur.	S	S	P-BIO-1a: During project implementation, the dimensions and sediment holding capacity of individual non-cover sediment cells shall be designed in conformity with a confirmed source of sediment to ensure that they are filled with cover sediment within six months and restoration initiated, with minimal exposure of non-cover material to wildlife. Plant and wildlife colonization or use of the non-cover disposal cells shall be closely monitored, and the permitted interval during which non-cover material is left exposed shall be shortened as necessary to minimize plant and invertebrate colonization, and potential wildlife exposure to non-cover sediments.	LS

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**ATTACHMENT B
SUMMARY OF IMPACTS AND MITIGATION MEASURES
THAT PERTAIN TO WATER QUALITY
Proposed Project
(continued)**

<p>P-BIO-1b: Once dredged materials are in place and plant colonization has begun, plant uptake of, and wildlife exposure to, contaminants derived from non-cover sediments could occur under certain conditions.</p>	<p align="center">S</p>	<p align="center">S</p>	<p>P-BIO-1b: In addition to measures identified in sections 6.6 and 6.7 of the EIR/EIS, non-cover sediment shall not be placed within the diked pickleweed marsh or within other project design elements where management of the hydrologic regime through controlled flooding and evaporation or water drawdown may be necessary to achieve project goals or mitigation requirements as they relate to the salt marsh harvest mouse (SMHM).</p>	<p align="center">LS</p>
<p>F. BIOLOGICAL RESOURCES</p>				
<p>P-BIO-1c: It is unlikely but possible that plant growth, animal burrowing, or physical processes could make contaminants in non-cover sediments available for plant and animal uptake. The resulting risks of bioaccumulation and toxicity to wildlife are low but potentially significant.</p>	<p align="center">S</p>	<p align="center">S</p>	<p>P-BIO-1c: Remedial steps will be taken if monitoring reveals bioaccumulation of contaminants. Project monitoring shall include sampling of above-ground plant tissues, submerged macrophytes (e.g. <i>Ruppia</i>, <i>Potamogeton</i>), two species of invertebrates, <i>Logammarus conferviculus</i> and <i>Neomysis mercedis</i>, or other species that are especially appropriate for comparison with regional monitoring data. Samples shall be analyzed to determine if the concentration of any toxic contaminant is significantly higher than background concentrations. In the event that the concentration of any chemical exceeds this threshold, or in the event that plant roots extend into the non-cover material in the low marsh habitat, the following contingency measures shall be implemented as appropriate: (1) further sampling and analysis shall be performed to verify the findings; (2) affected areas shall be delineated via additional sampling; (3) higher trophic level species shall be sampled to determine if chemicals identified in the above-ground plant tissue, submerged macrophyte, or invertebrate analyses are significantly higher than background concentrations, and are moving up the food web and causing adverse impacts to wildlife;</p> <p>(4) if analyses of higher trophic level species indicates an adverse impact, affected areas will shall be remediated in one of the following manners: (a) the area can be isolated with levees, capped with clean sediment, and converted into a diked managed wetland; (b) the area can be treated in place [e.g., bioremediation for polynuclear aromatic hydrocarbons (PAHs)] and either retained as tidal marsh or leveed and converted to diked, managed marsh; (c) the area can be excavated to remove the affected sediment and place it in an open available cell for non-cover, or dispose of it at an appropriate disposal facility. The excavated area shall be filled with clean sediment and restored appropriately.</p>	<p align="center">LS</p>

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**ATTACHMENT B
SUMMARY OF IMPACTS AND MITIGATION MEASURES
THAT PERTAIN TO WATER QUALITY
Proposed Project
(continued)**

F. BIOLOGICAL RESOURCES				
<p><u>P-BIO-2a:</u> Construction of the Proposed Project would result in short-term losses of existing wetland habitats and associated ecological functions and values on the Montezuma site.</p>	S	S	<p><u>P-BIO-2a:</u> To offset temporary losses of wetland functions and values water management focused on providing interim wetlands enhancement in unfilled project phases shall be incorporated into the Project; Phase II areas shall be managed to provide shorebird and waterfowl habitat, and Phases III and IV shall be managed to provide SMFHM habitat. Water management shall consist of operating existing pumps and drainage structures to control the extent and duration of seasonal flooding, and shall start during construction and continue during the period of sediment placement, but shall be terminated prior to construction within that phase.</p>	LS
<p><u>P-BIO-2b:</u> Construction of the Proposed Project could alter or eliminate vernal pool habitats and affiliated species on the site.</p>	S	S	<p><u>P-BIO-2b:</u> Prior to Project construction and implementation, the Project Applicant should prepare a detailed plan which shows how construction activities would avoid impacts on vernal pools outside fill areas. The plan must include detailed site drainage and buffer areas. If impacted, the vernal pools should be replaced at a 3:1 ratio (3.6 acres), preferably near the upland boundary of the Project. To protect regional native plant diversity, native vernal pool-affiliated plant species within areas of dredged sediment placement shall be reestablished in appropriate seasonally ponded habitat within the upland buffer area. Reestablishment shall involve seed collection and propagation or individual transplantation of the plant species listed in Table 6.8.3-2. This mitigation measure may be implemented in conjunction with P-BIO-3d.</p>	LS
<p><u>P-BIO-2c:</u> Using dredged materials that are excessively sandy could slow the establishment of wetland vegetation, which could also increase erosion and reduce the effectiveness of contaminant containment.</p>	S	S	<p><u>P-BIO-2c:</u> To foster successful plant establishment and limit contaminant mobility, cover sediments placed above non-cover sediments should have a maximum sand content of 15%, while elsewhere on the site, the top 1 foot should include a maximum of 73 percent sand and 6 percent gravel.</p>	LS

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SUMMARY OF IMPACTS AND MITIGATION MEASURES
THAT PERTAIN TO WATER QUALITY
Proposed Project
(continued)**

F. BIOLOGICAL RESOURCES				
<p><u>P-BIO-2d:</u> High marsh, seasonally flooded depressions, and the upland-transition zone could be invaded by pepperweed, reducing habitat values associated with tidal restoration.</p>	S	S	<p><u>P-BIO-2d:</u> An exotic species control program focused on preventing the establishment of pepperweed in the high marsh and upland transition areas shall be incorporated into the Project. This program should be coupled with the Applicant's proposed experimentation on methods to enhance pickleweed establishment and growth in high marsh, seasonally wet depressions, managed fluvial hollows, diked marsh, and at the lower edge of the upland transition zone. These measures shall begin during construction and continue for the first three years of tidal restoration in each phase. To demonstrate the viability of habitat restoration, implementation of Phase II shall proceed only after the relative dominance of desirable hydrophytic vegetation in the initial colonization of Phase I landscape elements has been documented.</p>	LS
<p><u>P-BIO-2e:</u> The attainment of restoration and mitigation objectives is uncertain without the development and implementation of a comprehensive monitoring plan that includes monitoring, reporting, and verification procedures, performance criteria, and contingencies.</p>	S	S	<p><u>P-BIO-2e:</u> A comprehensive monitoring plan shall be finalized with the approval of permitting agencies prior to project implementation. The monitoring plan shall include the methodology by which physical, chemical, and biological parameters shall be measured to establish the attainment of project goals. Biological parameters to be measured shall be compared with reference conditions in other Suisun Bay tidal marshes and shall include at a minimum vegetation structure and composition in the landscape elements that are part of the design; the use of constructed channel habitats by fishes; and bird use of constructed habitats. The plan shall include reporting and verification procedures and contingency measures and shall be implemented for the life of the project.</p>	LS
F. BIOLOGICAL RESOURCES				
<p><u>P-BIO-3a:</u> Sediment placement would eliminate up to 524 acres of habitat known or likely to support the endangered SMHM. The revised Project design would not provide sufficient quality and quantity of replacement habitat.</p>	S	S	<p><u>P-BIO-3a:</u> Mitigation requirements for the SMHM would be finalized by the Corps as part of Section 7 (Endangered Species Act) consultation with USFWS. The lead agencies would require the implementation of measures consistent with the Final EIR/EIS recommendations, which derive from the mitigation plan presented in Appendix Q.1. The actual habitat acreages and performance criteria required as part of the mitigation would be as described in Appendix Q.1 or, if not, as required by USFWS to achieve the same goals.</p>	LS

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**ATTACHMENT B
SUMMARY OF IMPACTS AND MITIGATION MEASURES
THAT PERTAIN TO WATER QUALITY
Proposed Project
(continued)**

<p>P-BIO-3b: The Project would eliminate burrowing owl nest sites and could injure or kill nesting birds of this species.</p>	<p>S</p>	<p>LS</p>	<p>P-BIO-3b: To mitigate the loss of burrowing owl nest sites, the Applicant shall take measures to ensure that the burrowing owl nesting population on the project site remains at levels within or exceeding the range that has been historically observed. The following measures shall be implemented prior to the initiation of grading or fill placement in each phase of the wetland restoration:</p> <ul style="list-style-type: none"> • The extent of burrowing owl nesting throughout the project site shall be assessed annually during the May-July nesting season. • Based on the most recent data available, artificial burrows in excess of the number of burrowing owls that be could be impacted in wetland restoration areas shall be constructed in upland-buffer portions of the project site, if possible in the vicinity of active ground squirrel colonies. 	<p>LS</p>
<p>F. BIOLOGICAL RESOURCES</p>				
<p>P-BIO-3b (continued)</p>	<p>S</p>	<p>S</p>	<ul style="list-style-type: none"> • A qualified biologist, as permitted by the CDFG, shall capture and relocate any burrowing owls residing in impact areas to the artificial burrow sites. Owl capture and relocation shall occur during early spring, when the owls normally return from migration and initially occupy burrows prior to nesting. The biologist shall confirm the absence of burrowing owls from impact areas and ensure that all sites that could be attractive to owls are collapsed or sealed to prevent future occupancy. • As permitted by CDFG, owls may be captured and relocated to artificial burrows on the project site from burrows that are about to be destroyed in non-project areas such as in the Central Valley. 	<p>LS</p>
<p>P-BIO-3c: The Project could have localized short-term impacts on special status fish species.</p>	<p>S</p>	<p>S</p>	<p>P-BIO-3c: Fish screens shall be provided at any intakes and outlets during construction and sediment placement phases of the project to reduce impacts to juveniles and adults of special status fish species per specifications of CDFG, NMFS, and USFWS. Levee breaches for each phase shall be sited to avoid well-developed stands of emergent vegetation that provide important habitat for special status fishes.</p>	<p>LS</p>
<p>P-BIO-3d: The Project would eliminate 0.39 acre of vernal pool habitat that supports the federally listed vernal pool fairy shrimp.</p>	<p>S</p>	<p>S</p>	<p>P-BIO-3d: Prior to impacting seasonally ponded areas that provide habitat for federally listed vernal pool invertebrates, the Applicant shall provide on- or off-site mitigation to preserve and create vernal pool habitats, according to acreage ratios and procedures approved by the USFWS.</p>	<p>LS</p>

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SUMMARY OF IMPACTS AND MITIGATION MEASURES
THAT PERTAIN TO WATER QUALITY
Proposed Project
(continued)**

<p>P-BIO-3e: The Project could eliminate individuals or local populations of special status plants, including the state-listed rare Mason's lilaeopsis.</p>	S	S	<p>P-BIO-3e: Measures to protect and enhance populations of rare plants that may occur in areas of project impact shall be implemented as described in the <i>Rare Plant Resource Mitigation and Restoration Plan for the Montezuma Wetlands Project</i> (Fiedler and Zebell 1995), which is included in Appendix Q.3.</p>	LS
<p>F. BIOLOGICAL RESOURCES</p>				
<p>P-BIO-4: Placement of sediment would cover existing mosquito control ditches. Increased seasonal ponding could increase mosquito populations during Project construction and implementation.</p>	S	LS	<p>P-BIO-4: To prevent nuisance and public health effects associated with mosquito production, final designs for each phase of the Project shall be reviewed by the Solano County Mosquito Abatement District. The District will also conduct periodic inspections of the site during construction and following tidal restoration. Based on the District's review, the Project design shall incorporate measures which are non-hazardous to fish and wildlife that are deemed sufficient by the District to limit mosquito production. The Applicant shall provide access and funding as necessary for inspections mosquito control by the District.</p>	LS
<p>P-BIO-5: The successful restoration of tidal shallow water, wetland habitats, and sensitive species habitats, with transitional upland and buffer areas as proposed, could provide significant ecological benefits to sensitive plants, and to fish and wildlife, including threatened and endangered Delta fishes, and to the Suisun Marsh system as a whole.</p>	NA	S	<p>No mitigation required for a beneficial impact.</p>	NA

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