CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ORDER No. R2-2007-0045

AMENDMENT TO ORDER NO. R2-2004-0063: WASTE DISCHARGE REQUIREMENTS AND WATER QUALITY CERTIFICATION FOR:

CALIFORNIA DEPARTMENT OF FISH & GAME

NAPA RIVER SALT MARSH – LOWER PONDS RESTORATION PROJECT, NAPA AND SOLANO COUNTIES TO ADD THE NAPA PLANT SITE (NPS) WETLAND RESTORATION PROJECT, NAPA COUNTY.

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

Purpose of Order

1. This Order serves as an amendment to the Waste Discharge Requirements (WDRs) and Water Quality Certification Order No. R2-2004-0063, issued by the Water Board on July 21, 2004, under Section 401 of the Federal Clean Water Act ,for the Napa River Salt Marsh Restoration Project (NRSMRP) located on the west side of the Napa River, to add an additional wetland restoration site on the east side of the River. The purpose of the original WDRs for the 9,450-acre NRSMRP was to provide receiving water limits, discharge specifications, and monitoring and reporting requirements to regulate salinity reduction and habitat restoration activities for the first phase of that project.
2. This amendment to Order No. R2-2004-0063 will regulate the placement of sediments and construction activities at the Napa Plant Site (NPS) to restore an approximately 1,460-acre salt pond site on the east side of the Napa River to predominantly tidal marsh and associated habitats. This amendment also regulates the discharge to waters of the State, and provides effluent limits and monitoring and reporting requirements to regulate wetland restoration on the NPS site. This amendment also supersedes Provision 36 of Order R2-2004-0063, pertaining to reporting requirements.

Discharger

3. The 1,460-acre NPS was acquired by the California Department of Fish & Game (DFG) from Cargill Salt Company (Cargill) in March 2003, as part of the larger State of California, federal, and privately sponsored purchase of 16,500 acres of salt ponds in the San Francisco Bay estuary (the remaining 15,040 acres are located in the South Bay and are not covered by this amended order). As the current owner of the 1,460-acre property the DFG, an agency of the State of California, is hereinafter referred to as the Discharger. The Discharger owns the land and is the local sponsor of the wetland restoration project.

Certification Application and Report of Waste Discharge

4. On November 20, 2006, the Discharger submitted an application for a Section 401 Water Quality Certification and a Report of Waste Discharge for the proposed wetland restoration and placement of sediment dredged from the Napa River at the site of the NPS, located on the east side of the Napa River. A separate monitoring plan for the NPS was submitted and is included here as Attachment A.

Site Location and Description

5. The wetland restoration site is located on the east side of the Napa River about 5 miles north of the river's confluence with San Pablo Bay and 3 miles south of the Highway 29 bridge. It lies within the San Pablo Bay watershed and is adjacent to the Napa River and Fagan Slough. The Napa River is tributary to San Pablo Bay, and Fagan Slough is tributary to the Napa River. Once the salt pond levees are breached, both the Napa River and Fagan Slough will be tied to the project area tidally.

6. The NPS is a former salt production facility adjacent to the Napa River near the City of American Canyon (Figure 1). The project site covers 1,460 acres and ranges in elevation from approximately -3.1 to 30.0 feet North American Vertical Datum 1988 (NAVD 88). The topographic high point, Green Island, is located on the north-central portion of the site. Since the project area is surrounded by levees, it currently receives no runoff from outlying areas. Salt ponds, levees, and water conveyance channels currently occupy over 90 percent of the project area (Table 1).

Table 1: Existing Land Uses and Proposed Project Components of the NPS:

Existing Land Cover in the Project Area		
LAND COVER:	**Acres**	**Percent**
Salt Ponds	1,142	78
Levees	151	10
Water Conveyance Channels	64	4
Uplands	42	3
Seasonal Wetlands	35	2
Tidal Channel	13	<1
Tidal Marsh	12*	<1
Intertidal Mudflat	1	<1
TOTAL	1,460	100

Surface Area of Proposed Project		
UNDEVELOPED AREA:	**Acres**	**Percent**
Tidal Marsh	1,189	81
Tidal Channels	99	7
Uplands-undeveloped	46	3
Seasonal wetlands	34	2
Tidal Marsh Ecotone	13	1
DEVELOPED AREA:		
Levees	63	4
Trails	8	<1
Uplands (developed)	5	<1
New Access Road	3	<1
Parking	0.3	<1
New Structures (restrooms)	<1	<1
TOTAL	1,460	100
*This is within the project area but outside the project boundary and not technically part of the project. It will not be affected by the project.		

Site History

7. The Napa River, slough channel, and salt ponds in the proposed project area reflect a long history of water management. Historically, the salt ponds were tidal marsh and marsh ecotone and, as part of the river's floodplain, the proposed project area acted to naturally attenuate floods and serve as a sink for sediments. The alignments of historic slough channels were mapped in an 1856 survey and remnants can be seen in contemporary aerial photos of the site. Around the turn of the century a levee was constructed to isolate the project area and facilitate agriculture. Beginning in the 1930s the Napa River was levied and dredged for flood protection and navigation. Channel maintenance has continued to the present day, though many flood control levees are being removed in favor of more ecologically sound flood management measures. Commercial salt production at the NPS began in the early 1950s and continued into the 1990s. Existing salt pond levees restrict floodwaters and tides in the Napa River from accessing the site.

8. In the past, water movement among salt ponds was managed to maximize salt production. The site encompasses various types of salt ponds (i.e., pickle ponds, crystallizer beds, and wash ponds) as well as salt harvesting, processing, and shipping facilities. The salt production process began in over 7,000 acres of evaporation ponds located across the Napa River from the NPS. The ponds located at the NPS contained the highest salt concentrations because they were used in the final stages of salt production and harvesting. Currently, the management objective as part of the land transfer from Cargill to the Discharger is to reduce residual salinity. Due to high salinities, ponds at the NPS support limited wildlife use compared to other salt ponds in the region. Currently, Cargill is implementing a footprint reduction plan, which focuses on removing residual salt in the ponds.

Current Regulatory Status of the NPS

9. The Discharger obtained a Water Quality Certification for the NPS on June 11, 2003, to impact 1.2 acres of wetlands and waters of the U.S. on the site for the purpose of removing salt over a 7-year period. No additional mitigation beyond replacement of the wetlands at a 1:1 ratio was required for the wetland fill, because the site will be restored to tidal wetlands. A subsequent amendment in October 2005 authorized maintenance dredging and the placement of dredged material in uplands.

10. The U.S. Army Corps of Engineers (Corps), as the federal regulatory agency for implementing the Clean Water Act, will issue a 404 permit for this site after the Water Board has approved this combined WDR amendment/ 401 certification. The Corps has initiated a Section 7 consultation with the U.S. Fish and Wildlife Service (USFWS) and a formal or informal consultation with the National Oceanic and Atmospheric Administration (NOAA) Fisheries.

11. The San Francisco Bay Conservation and Development Commission (BCDC), a State regulatory agency, is responsible for issuing a permit and a Consistency Determination (CD) to the Discharger. The CD evaluates the consistency of the project with the Coastal Zone Management Act. BCDC also has an active role in the planning and design of the project. One element of BCDC's permit/CD will address public access via the Bay Trail.

Project Description

12. The goal of the proposed restoration project on the east side of the Napa River is to restore or enhance about 1,335 acres of former salt ponds to tidal and seasonal marsh with associated channels, ecotones, and upland buffers. Approximately 126 acres of the 1,460-acre site will consist of levees, public access areas, and uplands.

13. All of the salt ponds in the project area would be restored to tidal action (Figure 2). The project has conducted hydrodynamic modeling to develop design criteria that would optimize conditions for restoration of tidal habitats. Specifically, the modeling has been used to develop the levee breach and tidal channel dimensions for the proposed project and project alternatives.

    To restore tidal action, four levee breaches are proposed: one in the North Unit, one in the Central Unit, and two in the South Unit. The breaches are in close proximity to the locations of the historic slough channel alignments (Figure 3). The ebb and flow of tides provide many key restoration actions, e.g., sedimentation, erosion, and seed dispersal. The construction of tidal channels will improve circulation and facilitate restoration.

14. To achieve the goals of this restoration project, impacts to the existing site will involve:
    i. dredging and filling in the salt ponds using onsite material totaling 590,000 cy of sediment (approximately 173.5 acres);
    ii. cutting or dredging the tidal marsh (certain waterways) totaling 355,473 cy, (approximately 54 acres);
    iii. excavating as much as 418,000 cy (24,000 linear feet of channels) to improve tidal circulation; and
    iv. excavating up to 219,000 cy for breaches and levee lowering

    Specific project objectives included in the Discharger's permit application include:
    - breaching external levees and excavating channels;
    - lowering some levees for wildlife habitat and raising others for flood protection;
    - placing fill obtained from predominantly onsite sources both to create habitat for ecological reasons and to speed vegetation development in areas adjacent to the Napa County Airport and to raise the elevation of an area that may become a Runway Safety Area at the Napa Airport;
    - realigning an access road; and
    - providing public access facilities and a potable water source.

15. The project is expected to occur in two or three phases, with low marsh appearing within four years after the first Napa River levee breach and the majority of the tidal marsh plain reaching climax elevations approximately 70 years after all four of the Napa River levees have been breached.

Impacts to Existing Wetlands

16. Since the 1,460-acre NPS currently has only 61 acres of wetlands and tidal channels, only 2.3 acres of which will be directly impacted, the project is expected to result in a substantial increase of at least 1,270 acres of predominantly tidal marsh in the San Francisco Bay Region, while leaving 126 acres for levee protection and public access. (Table 1).

17. The salt ponds are currently classified as jurisdictional waters of the U.S. (but non-wetlands) due to their pre-development condition as tidal wetlands. The project will, therefore, lose waters of the U.S., which, in this case, have very low functional value as habitat or as water purification systems, but will gain productive estuarine wetland habitat which has been severely diminished in the San Francisco Bay Region over the past 200 years. While the proposed wetland restoration site is expected to produce highly functioning wetlands, beneficial uses of the existing water conveyance channels, seasonal wetlands, tidal channels, tidal marsh, intertidal mudflat, and salt ponds do exist and will be impacted, so the restoration site will be monitored to determine whether those habitats will be replaced. Approximately 125 acres of

mixed wetland or water habitat exist on the NPS, in addition to the 1,142 acres of salt ponds (Table 1).

18. The NRSMRP site was also determined to have approximately 2,266 acres of existing wetlands and sloughs in addition to the salt ponds that provided some habitat for shorebirds and waterfowl. The 9,456-acre restoration project on the west side of the Napa River required vegetation and habitat monitoring to determine if the beneficial uses associated with those habitats will be replaced.

Benefits of Wetland Restoration

19. The proposed restoration project will restore tidal salt marsh on the east side of the Napa River, and supplement the tidal salt marsh restoration already occurring as part of the NRSMRP on the west side of the Napa River. Together both Napa River wetland restoration projects represent an extremely large and valuable contribution to the increase in tidal marsh wetlands recommended by San Francisco Bay Area scientists in the Wetland Ecosystem Goals Report (1999) and the Comprehensive Conservation and Management Plan (1993; updated 2007).

20. Once the project construction is complete, the Discharger intends to manage the North Unit of the NPS as part of the Fagan Marsh Ecological Reserve, and the Central and South Units as the Green Island Unit of the Napa-Sonoma Marshes Wildlife Area.

Investigations, Removals, and Remediations

21. Cargill, the prior landowner, had Phase 1 & 2 Environmental Site Assessments conducted in 2000 and 2002 across the entire site to determine if any hazardous materials existed. Extensive investigations have been conducted at the site. Some samples collected, analyzed and later removed exceeded some evaluation criteria. No samples were identified as CCR Title 22 hazardous waste relative to disposal criteria. Therefore, any remaining constituent concentrations are below hazardous waste criteria and will not threaten the beneficial uses of the restored wetlands.

22. In general, the site history and land use indicate that the release of excessive priority pollutants are not expected to occur once the site is open to tidal action. The Discharger has sponsored further sediment and water testing in conjunction with the NRSMRP to assure environmentally safe levels.

23. Cargill began to phase out the salt ponds in 2003 and is continuing to reduce salinity over an 8-year period. Details of the salt production and salinity reduction operations are provided in the EIR for the project (DFG 2006) and the salinity reductions are summarized in Table 2. Hydraulic and salinity diffusion modeling of the initial release to the Napa River from the North and Central Units suggest a salinity increase of no more than 5 parts per thousand (ppt) during any tidal cycle and only a short-term increase in turbidity when the North and Central Units are breached. It has

become apparent that Cargill is unlikely to meet the 97% salinity removal objective (established in 2003) in the South Unit. Thus it is unlikely the discharge from the South Unit at the time of breaching will be 5 ppt or less, as in the North and Central Units. However, if modeling for the South Unit breaching shows that the expected discharge will meet the criteria established for the breaches in the NRSMRP (i.e., a monthly average less than 50 ppt with instantaneous maximums less than 100 ppt) then the breaching may proceed under this Order, provided the NRSMRP self monitoring plan for salinity is followed. If salinity discharges are predicted to exceed these values, the Water Board will need to review the plan. It will be important to monitor the receiving waters as described in Appendices A & B, to construct the restoration site in phases, and to breach the levees when the ponds are dry to minimize pollutant releases, including salinity discharges to the Napa River.

Table 2: Changes in salinity between 2003 and 2006 at the Napa Plant Site

Pond Unit and Number	Pond Type	Salinity range in parts per thousand (ppt)[a]
North Unit 9 and 10	Pickle Ponds	2003 = 44-250 2004 = 57-252 2005 = 82-159 2006 = 36-40
Central Unit W1, W2, W3	Wash Ponds	2006 = 28-38
South Unit B-1, B-2, B-3, Unit 3	Pickle Ponds	2003 = 115-313 2004 = 6-255 2005 = 78-247 2006 = 48-155
South Unit CB 1-9	Crystallizer beds	2003 = no data 2004 = 182-255 2005 = 116-259 2006 = 146-158

Salinity data were collected by Cargill (personal communication from B. Ransom) and DFG.

24. Existing barge-channel dredged material proposed for beneficial reuse on the site was sampled and found to be acceptable as surface fill (i.e., the biologically active zone where most organisms live and/or feed) for the project.

25. As in most existing or potential wetland restoration sites in the San Francisco Bay, total and methyl-mercury levels sampled once were high enough in some areas of the ponds to cause adverse effects in some biological species, but most of these levels

were not significantly higher than nearby reference marshes, so did not indicate a problem unique to the NPS Restoration Site (one measurement, however, was high)[1]. If feasible, mercury levels in biosentinel species such as inland silversides will be measured as part of the monitoring program for this site; if infeasible, mercury levels in sediment and water will be monitored as for the NRSMRP (Appendices A & B). Baseline samples of mercury in the blood, tissue, and eggs of wildlife have been collected and analyzed throughout the San Francisco Bay and Delta to which future samples from the NPS can be compared.

Levee Breaching

26. Levees will be breached when the salt ponds are dry, minimizing the potential for adverse water quality conditions to the Napa River that may affect fish. When tidal waters enter the salt ponds, discharge though the breaches would comply with the Water Board's water quality standards. However, temporary increases in salinity and suspended sediment concentration may occur in the Napa River and Fagan Slough as a result of the levee breaches. There should be no adverse impacts on the Napa River, since these increases would be short term and very small since the pond bottoms will initially be hard and resistant to erosion.
27. Constructing breaches during the dry season will limit the potential for impacts to anadromous fish populations. During the dry season, anadromous fish would not be anticipated to occur in the vicinity of the project area. Delta smelt have the potential to occur in the project area year round, and therefore have a greater potential to be impacted by breach construction. The duration of construction-related effects would be relatively short, approximately 2 weeks for breach construction.[2] The direct effect of breach construction to fish would be small because the work in waters will be limited to a small, confined area and be of a short duration.

NPS Design Overview

28. The wetland restoration will be divided into 2 or 3 phases:

    a. **North Unit (205 acres):** This unit includes Ponds 9 and 10, which are located between the Northwest Pacific Railroad and Fagan Marsh Ecological Reserve.

---

[1] Mark Marvin-DiPasquale (USGS pers. comm.) noted that generally greater than 1 ppb methyl-mercury (MeHg) can be a screening level for "high" levels, though it is quite variable, so not definitive. Table 5 in the NPS permit application shows 5 samples from outside the project area ranged from 0.164 to 3.30 MeHg (ng/g or ppb) with an average of 1.2 ppb; while 18 samples from the ponds to be restored ranged from 0 to 10.93 ppb with an average of 2.6 ppb . DiPasquale also notes that MeHg levels up to 9 ppb have also been found in the nearby Petaluma River marsh and up to 10 ppb in Louisiana wetlands.
[2] The duration of salinity and sediment related effects will be defined more by modeling associated with later design stages.

This unit will be available for restoration in September 2007. These ponds will both be restored to tidal marsh; Pond 10 will receive fill to hasten the process. Any additional new fill obtained from offsite is not covered by this Order and would need to meet specific acceptance criteria; dredged material should be tested by the original dredgers of the offsite fill in accordance with the Corps guidelines (see below).

b. **Central Unit (175 acres):** This unit includes Wash Ponds W1, W2, and W3. The Central Unit also includes Green Island, salt production facilities, the barge channel, and the site's access road. Depending on available funding, construction in this unit will begin as part of the first phase or as phase 2. These ponds will be restored to tidal marsh with some transitional habitat.

c. **South Unit (1,080 acres):** This unit includes Crystallizer Beds (CB) 1 through CB9 and Ponds B-1, B-2, B-3, and Unit 3. Construction will begin in this unit between August 2009 and 2012, and it will comprise the second or third phase, depending on the timing of the Central Unit. These ponds will all be restored to tidal marsh with some transitional habitat.

Sources of Material

29. Fill material sources include material excavated from on-site tidal channels, levees or existing on-site dredged material stockpiles.

30. The majority of material excavated from the breaches will be used on-site for improvement of existing levees or fill for the ecotone areas. Material excavated from breaches that is not suitable for on-site reuse (e.g., rebar and concrete debris) would be recycled or disposed of off-site. All of the material excavated from the new channels would be reused on-site to raise the marsh plain elevation, create wave breaks[3], ditch blocks, or levees. Much of the excavated material would be side-cast and graded into the adjacent marsh plain.

31. All of the fill material needed for levee improvement is anticipated to come from on-site resources such as existing levees and existing stockpiles of material dredged from the Napa River. As mentioned above, some on-site dredged material has already been tested and found to be suitable. Some material was stockpiled in Wash Pond 1 (WP1) and its testing history is uncertain; however, this WP1 material will not require further testing since it is expected to be identical to the naturally occurring sediment that will accrete there when the site is opened to the tides. With the exception of the WP1 material, no other existing on-site stockpiles of dredge material will be used without first being tested and found to be within the Dredged Material Management Office's or the Water Board's criteria for reuse of dredged sediment. There will be no additional dredged fill material brought onsite and no discharge of decant water unless new permits are obtained.

---

[3] Wave breaks are low relief mounds constructed perpendicular to the prevailing wind direction to shorten fetch distances and mute wave generation.

32. Any upland soil that has not already been approved by this Order shall be determined to be clean based on criteria approved of by Water Board staff. While some of the Water Board's Environmental Screening Levels may protect wetland species, most of those levels are generally not considered protective of wetlands or of uplands that are adjacent to sensitive aquatic environments such as restored wetlands.

NPS Construction Sequencing

33. The full restoration of tidal wetlands is estimated to take 70 years after the levees are breached. Initial site construction is estimated to be completed in one construction season each for the North and Central Units and two seasons for the larger South Unit and would end with the breaching of the outboard levee. Site construction tasks are provided in the Table C-1 in Attachment C. Dates are approximate and will depend on the amount of time required to get necessary permits and to hire contractors and construction teams.

Monitoring and Adaptive Management

34. A Habitat Mitigation and Monitoring Plan was submitted with the permit application, and it is adapted here in Attachment A as a Habitat Monitoring and Adaptive Management Plan (MAMP) and in Attachment B as a Self Monitoring Plan (SMP). The MAMP was developed with the assistance of the San Francisco Bay Wetland Restoration Monitoring Group.

Water Quality Concerns

35. Water quality will be monitored for key constituents including salinity for a specified period of time before, during, and after construction until background levels are reached in the Napa River and sloughs. (See attached MAMP (Attachment A) and SMP (Attachment B).

36. Mercury methylation: Mercury occurs naturally in the San Francisco Bay environment and has been introduced as a contaminant in various chemical forms from a variety of anthropogenic sources. Ambient levels of sediments in San Francisco Bay are elevated in total mercury above naturally occurring background levels. Although mercury often resides in forms that are not hazardous, it can be transformed through natural processes into toxic methylmercury. Natural accretion processes in salt marshes continually supply fresh layers of sediment that release mercury in a form that can become biologically available for mercury-methylating bacteria. The resulting concentration of methylmercury is dependent on numerous variables: salinity, pH, vegetation, sulfur, dissolved organic carbon, nitrogen, redox potential, and seasonal variations in each of the identified variables.

    Wetland restoration projects can increase levels of methylmercury. However, it is not clear at this time whether restoration causes more methylation than the natural

methylation processes. Natural sedimentation occurring from sediments brought in on the tides, creeks, Napa River, or San Pablo Bay may also provide a source of mercury that may be methylated in the NPS. Although models are being developed to address these issues, it is not currently possible to estimate the methylmercury concentrations, bioaccumulation, and biomagnification in the food chain. The potential for increased methylmercury production is identified as a potentially significant unavoidable impact of the project. Periodic monitoring of biosentinel species or of sediment and water sampled at the site will be conducted as outlined in the MAMP and SMP.

37. Mosquito abatement: Of the wetland habitats in the project areas, only transitional ecotones and seasonal wetlands are considered to have the potential to produce problem numbers of mosquitoes. The NPS is in the jurisdiction of the Napa County Mosquito Abatement District. The project is coordinating with the District during the design, implementation and operation phases of the project to mitigate for any increases in potential mosquito breeding habitat at the site.

Hydrogeomorphic and Habitat Concerns

38. To assure that the hydrology is proceeding as expected to achieve the habitat goals listed in Table 1 within 70 years, the MAMP and SMP outlines the targets and performance criteria that are expected to be met within the time frame. No penalties will be imposed for a failure to achieve the interim and final habitat goals, but an investigation of the causes will be undertaken by the Discharger and other agencies including the Water Board, the Corps, and BCDC and management modifications will be made as necessary.

Applicable plans, policies and regulations

39. Basin Plan: The Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) is the Water Board's master water quality control planning document. It designates beneficial uses and water quality objectives for waters of the State, including surface waters and groundwater. It also includes programs of implementation to achieve water quality objectives. The Basin Plan was duly adopted by the Water Board and approved by the State Water Resources Control Board, U.S. EPA, and the Office of Administrative Law where required. The latest version can be found at the Water Board's website at www.waterboards.ca.gov/sanfranciscobay/Download.htm.

40. Beneficial Uses: Project construction would impact the Napa River and Fagan Slough. The Basin Plan lists the beneficial uses of the Napa River as:

- Agricultural Supply
- Cold and Warm Freshwater Habitat
- Fish Migration and Spawning
- Navigation

- Preservation of Rare and Endangered Species
- Contact and Non-contact Water Recreation
- Wildlife Habitat

41. State Plans and Policies:

    1) 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.

    2) This project is also consistent with the goals of the following components of State Wetlands Policy: California Wetlands Conservation Policy (Executive Order W-59-93, signed August 23, 1993) includes ensuring "no overall loss" and achieving a "...long-term net gain in the quantity, quality, and permanence of wetland acreage and values...." 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 benefit of the people of the State." Section 13142.5 of the CWC requires that the "[h]ighest priority shall be given to improving or eliminating discharges that adversely affect...wetlands, estuaries, and other biologically sensitive areas."

    3) Comprehensive Conservation and Management Plan: The NPS is consistent with the objectives of the CCMP (1993, updated in 2007) for the San Francisco Estuary, including, creation of wetland resources and the reuse of dredged material for projects such as wetlands creation/restoration, and upland building material, where environmentally acceptable.

    4) San Francisco Bay Area Wetlands Ecosystem Goals Project: The NPS is consistent with the recommendations of the 1999 Goals Report for the North Bay to restore tidal wetlands along the bayshore and up into the watersheds; to enhance seasonal wetlands, to ensure a natural transition to uplands; and to provide an upland buffer outside the baylands boundary.

42. California Environmental Quality Act (CEQA): The California Environmental Quality Act (CEQA) requires all Projects approved by State Agencies to be in full compliance with CEQA. DFG, as lead agency, has prepared a final environmental impact report that was considered and relied upon in preparation of this Order. The Water Board as a responsible agency under CEQA finds that all environmental effects have been identified for the project activities which it is required to approve, and that those proposed project activities, as conditioned, will not have significant adverse impacts on the environment.

Additional Findings

43. The following standard conditions apply to this Order:

    a. Every certification action is subject to modification or revocation upon administrative or judicial review, including review and amendment pursuant to CWC §13330 and 23 CCR §3867.

    b. Certification is not intended and shall not be construed to apply to any activity involving a hydroelectric facility and requiring a Federal Energy Regulatory Commission (FERC) license or an amendment to a FERC license unless the pertinent certification application was filed pursuant to 23 CCR §3855(b) and that application specifically identified that a FERC license or amendment to a FERC license for a hydroelectric facility was being sought.

    c. Certification is conditioned upon total payment of any fee required pursuant to 23 CCR §3833 and owed by the Discharger.

    d. Wetland Tracker: It has been determined through regional, state, and national studies that tracking of mitigation/restoration projects must be improved to better assess the performance of these projects, following monitoring periods that last several years. In addition, to effectively carry out the State's No Net Loss Policy for wetlands, the State needs to closely track both wetland losses and mitigation/restoration project success. Therefore, we require that the Discharger use a standard form to provide Project information related to impacts and mitigation/restoration measures. An electronic copy of the form and instructions can be downloaded at http://www.waterboards.ca.gov/sanfranciscobay/certs.htm. Project information concerning impacts and mitigation/restoration will be made available at the web link: http://www.wetlandtracker.org.

    e. An annual fee for WDRs pursuant to Section 13260 of the California Water Code is required.

Notification and Public Notice

44. The Water Board notified the Discharger and interested agencies and persons of its intent to issue WDRs and provided them with an opportunity to submit their written views and recommendations.

45. The Board, in a public meeting, heard and considered all comments pertaining to the proposed WDRs for the project.

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, its agents, successors, and assigns shall comply with the following:

A. PROHIBITIONS

1. It is prohibited to discharge decant water except from the stockpiled dredged material that has already passed the screening guidelines.

2. Discharges of water, materials, or wastes which are not otherwise authorized by this Order, are prohibited.

3. The direct discharge of wastes to surface waters or surface water drainage courses is prohibited, except as authorized in this Order.

4. Except for the on-site dredged material already approved for re-use, it is prohibited to import additional dredged material to this site without first obtaining permits from the Water Board to address decant water and sediment quality. New permits would require that the quality of sediments proposed for placement at the project site shall be submitted for Water Board review and approval prior to placement. This review would be coordinated through the multi-agency Dredged Material Management Office, of which the Water Board is a member. Imported *upland* material does not require additional permits but must be determined to be clean based on criteria approved of by the Executive Officer.
5. The activities subject to these requirements shall not cause a condition of pollution or nuisance as defined in Sections 13050 (l) and (m), respectively, of the California Water Code.

B. SPECIFICATIONS

1. The levees will be breached only when the ponds on the NPS are dry, which is defined as having no or only a few pockets of standing water.

2. Appropriate soil erosion control measures shall be undertaken and maintained to prevent discharge of sediment to surface waters or surface water drainage courses.

C. EFFLUENT LIMITATIONS

The Effluent Limits for the NRSMRP do not apply to the NPS, and the Receiving Water Limitation for salinity has been revised for the NPS as stated below. However, if the NPS South Unit cannot meet the lower revised Receiving Water Limitations for salinity, that unit can use those of the NRSMRP as described below, provided the NRSMRP SMP is implemented for salinity in the NPS South Unit.

D. RECEIVING WATER LIMITATIONS

Receiving Water Limitations in Order No. R2-2004-0063 shall apply to the NPS with the following addition: (a) for the North and Central Units, outflow from the site will increase salinity in the receiving waters by no more than 5 ppt during any tidal cycle; (b) for the South Unit, outflow from the site will increase salinity in the receiving waters by no more than an average of 50 ppt and instantaneous maximum of 100 ppt during any tidal cycle.

E. PROVISIONS

Monitoring and Reporting

1) The Discharger is responsible for all monitoring and reporting requirements at the NPS. However, the Wetland Regional Monitoring Program run by the San Francisco Estuary Institute – or any other entity equipped to take on regional wetland monitoring in the San Francisco Bay, may be delegated by the Discharger to carry out some of the obligations below for monitoring, analysis, and reporting.
2) All Monitoring Reports shall be provided as one hard copy and one electronic copy. In the case of large files, the electronic copy can be sent on a CD or be accessible on a permanent website.
3) For both the NRSMRP and the NPS, the Discharger shall be responsible for submitting biennial monitoring reports (every other year) as described in the attached MAMP (Attachment A) and SMP (Attachment B). If feasible, annual memos shall also be submitted in the intervening years that will summarize the data collected and analyzed. Data analysis is expected to include water quality, hydrologic, and habitat assessments over a 15-year period for each phase beginning after each construction phase is completed. Monitoring reports describing the data shall be submitted biennially beginning on December 1st, two years following the completion of construction activities in each of the 2 or 3 phases of the restoration project. If feasible, an additional status update every 5 years should be submitted thereafter, based on aerial or satellite photos documenting the types of habitats present on the site until the project goal is determined to be met by a Technical Advisory Committee for the site (see #E7 below).
4) If Receiving Water Limitations for the NPS use those of the NRSMRP for the South Unit, then the Discharger will carry out the monitoring described in the NRSMRP SMP for salinity. If limits are expected to be higher then those in the NRSMPR Order, the Discharger will submit a revised plan for the NPS South Unit to the Water Board for approval by the Executive Officer.
5) For the NPS, the monitoring elements, schedule, performance criteria, and general protocols are contained in the attached MAMP (Attachment A) and SMP (Attachment B) for the site. Aerial images can be ground-truthed by spot checking vegetation at the NPS according to the schedules and protocols provided in Appendices A and B.

If, however, this proves inadequate to identify plants by species in order to control non-wetland or highly invasive species, the Executive Officer can require more stringent future monitoring.

6) Provision 36 of Order No. R2-2004-0063 shall be modified to include the following revisions for the NRSMRP requested by the Discharger and agreed to by the Executive Officer. These revisions i-ii below will supersede Provisions 36 in Order No. R2-2004-0063 and do not affect any other Provisions in that order:

   i) "Vegetation will be monitored once per year in years 2, 5, 10, and 15 of the project at the NRSMRP site. The monitoring will be performed by DFG. Vegetation will be monitored in levee lowering areas, and in ponds 3, 4, and 5 once a given pond is more than 20% [this was originally 5%]. Permanent vegetation transects will be established in the levee lowering area. Transects will be aligned perpendicular to the levees. Quadrat sampling will be conducted along the transects to gather various vegetation parameters including species composition, percent cover, and height. The total lengths of the transects and number of sample quadrats will be determined based upon the linear distance of levees that were lowered. Approximately two percent of the sample area will be measured.
   ii) For the ponds at the NRSMRP site, vegetation cover in each pond will be established from aerial photographs. Once a pond has become more than 20% vegetated, permanent transects will be established to cover a range of elevations in the pond. Sampling will be limited to the pond interiors. The sampling methodology will be the same as for lowered levees."

   Other monitoring at the NRSMRP site will continue as described in the original Order, the original Monitoring and Adaptive Management Plan developed by the Corps, the revised Habitat Monitoring Plan for Ponds 1, 1A, 2, 3, 4, and 5, or letters from the Water Board's Executive Officer, and includes invasive species monitoring, bird surveys, water quality sampling, salt marsh harvest mouse surveys, sedimentation plates and erosion pin data collection, fish and macroinvertebrate sampling, and bathymetric surveys and annual aerial photographs of all ponds will be conducted. This monitoring should assure that native vegetation does establish, highly invasive vegetation is kept off of the site, sedimentation occurs to form tidal marsh, channels form, and wildlife species use the tidal marsh complex. If the site does not evolve as expected, a Technical Advisory Team (see #E7 below) will convene to try to determine why; and corrective measures with more monitoring may need to be implemented.

7) A Technical Advisory Committee (TAC) consisting of the Water Board, BCDC, the Corps, USFWS, National Marine Fisheries Service, and any other interested group or member of the public will be convened to review and assess the progress of the restoration project. Results of the data analysis will be presented to the TAC annually

or biennially for discussion and comment. This TAC can be the same one that has formed for the NRSMRP.

8) Aggressive non-native plant species that threaten sensitive native tidal marsh communities should be kept off the site to the extent feasible, including those listed under Tier I (and to a lesser extent Tier II) of the Water Board's "Invasive Non-Native Plant Species to Avoid in Wetland Projects in the San Francisco Bay Region". The Discharger should review this list and discuss with Water Board staff which species will be feasible to keep off the wetland restoration site, and which will not. Invasive cordgrass (*Spartina alterniflora*) is a high priority to keep out of tidal wetland restoration sites in the North Bay, and the Discharger will coordinate efforts with the Invasive Spartina Project to eradicate this species.

9) At the end of the monitoring periods for each phase of the project, the wetland restoration site should be assessed for wetland functionality using a method approved by the Executive Officer.

Construction Operations and Surveys

10) A qualified biologist shall conduct a tailgate talk to inform construction crews regarding the sensitive wildlife resources, and exclusion zones within the proposed construction alignment and what to do if special status species are encountered.

11) A qualified biologist shall be present to monitor construction activities in and near areas known to be occupied by salt marsh harvest mice, California clapper rail, and western snowy plover. The biologist shall have the authority to install or require wildlife protection measures such as fencing, noise buffers or noise level limitations during avian breeding seasons, and temporary halting or redirecting of construction activities to avoid impacts to sensitive species. Water Board staff shall be notified if construction activities are halted or redirected.

12) To the extent feasible, the Discharger shall avoid construction activities during the nesting period of the California clapper rail and western snowy plover, February through July. If construction activities must occur during nesting periods, a qualified biologist shall conduct pre-construction surveys up to 72 hours before construction begins, using survey methods approved by the USFWS. Due to tidal influences on construction/survey areas, surveys shall be conducted as close to the actual construction period as is practicable. The exact survey distance varies depending on construction site characteristics, such as natural barriers, between potential nests and construction activities. The USFWS shall be consulted on proposed schedule changes and any additional work or modifications to the work plan will be approved by the USFWS. Water Board staff shall be notified if the work plan is modified.

13) The Discharger shall minimize in-water construction during periods when listed species may be present.

14) Since the Discharger will be impacting greater than 1 acre to restore the wetland restoration site prior to beginning project construction, it shall submit a Notice of Intent (NOI) to the State Water Board under the General NPDES construction permit and implement required Best Management Practices (BMPs) to prevent water pollution

from construction activities. The Discharger will utilize both in-water and on-land BMPs including the use of coffer dams and measures to prevent and control the potential for spills of hazardous materials into the river. Contractors are required to implement BMPs identified in a Storm Water Pollution Prevention Plan (SWPPP) for controlling soil erosion and discharges of other construction-related contaminants such as fuel, oil, grease, paint, concrete, and other hazardous materials. Emergency response, routine maintenance activities, and preventive activities would be included in the plan. The plan shall also be submitted to the Water Board, NMFS, USFWS, and the Discharger for review and comment at least 30 days prior to the start of construction.

15) The Discharger shall have a construction monitor on site to ensure that the project is constructed according to plan. The construction monitor also resolves implementation questions and refers "Requests for Information" and "Submittals" to the design engineers. Biological monitors, either DFG staff or contractors, shall be on site during specific activities to ensure compliance with mitigation measures and protection of listed species, as discussed above. Construction monitoring notes and observations will be submitted to the Corps with the as-built report described below.

16) As-built plans shall be submitted to the Water Board noting changes from the final bid set of plans within 90 days of the completion of construction.

The Water 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 Water Board may reopen this Order to review results of the Discharger's and Water Board staff's studies and new data on Section 301(d) listed contaminants and decide whether future effluent limits should be revised.

I, Bruce Wolfe, 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 11, 2007.

Bruce H. Wolfe

Bruce H. Wolfe
Executive Officer

ATTACHMENTS:

Attachment 1: Figures.
Figure 1. Site Location
Figure 2. Proposed Project Habitats
Figure 3. Historic Slough Channels

Attachment A: Monitoring and Adaptive Management Plan (MAMP); Table A-1; Figure A-1 (Monitoring Locations).

Attachment B: Self Monitoring Plan (SMP), Table B-1

Attachment C: Napa Salt Plant Construction Sequencing and Activities

Attachment A: Monitoring and Adaptive Management Plan (MAMP) for the Napa Plant Site (NPS)

MONITORING

This attachment discusses the monitoring plan for construction and habitat evolution at the NPS and includes the parameters, performance standards, hypothesized habitat targets, protocols, and frequencies for the North, Central, and South Units. The monitoring methods, schedule, and reporting system are also described in the Attachment A, Table A-1 Napa Plant Site Monitoring: Parameter, Performance Objective, Protocols, and Frequency.

1.0 Background

This monitoring plan was developed to track the progress of the project with input from the Water Board staff and the Bay Area Monitoring Review Team (MRT), which met on May 15, 2006 to discuss the monitoring plan for the project. Monitoring also includes items identified in the Final Environmental Impact Report (e.g., avian monitoring in the North Unit for bird strike hazard evaluation). In addition, the Water Board suggested using other salt pond restoration project monitoring plans as examples to maintain a level of consistency among projects. Two projects in particular were suggested as appropriate models because they were breached in 2006: the NRSMRP located near the NPS project, and the Island Ponds (A19, A20 and A21) in the South Bay. However, it should be noted that the island ponds are mitigation for a Santa Clara Valley Water District project(s), whereas, the NPS project is purely for restoration purposes and is not driven by a regulatory mandate.

1.1 Monitoring Components and Performance Objectives

Over a 15-year period, chemical, physical, and biological project components will be monitored for each phase of the restoration project. In addition, annual aerial or satellite photos will continue to track tidal marsh development over the 15-year monitoring period. Thereafter, aerial or satellite photos will be analyzed every 5 years, if feasible, until the final objective of tidal marsh is achieved (defined here as having 75% -- 80% cover of native tidal marsh plant species outside of the channels).

1.2 Chronology

Project construction will be completed in two or three phases. The construction of each phase will be considered complete when tidal action has been restored and all grading and site improvements associated with that phase are finished. After each phase has been completed the Department of Fish & Game (DFG) will submit a construction completion report (with as-built drawings) to the Corps, Water Board, and BCDC. Upon approval of these reports (or after 45 days from submission), the monitoring period will commence. Monitoring requirements for Phase 2 may be modified based on Phase 1 results and lessons learned.

2.0 Monitoring Methods and Schedule

This section presents monitoring protocols for water quality, biota, and geomorphic evolution. The monitoring schedule is also discussed and summarized in Table A-1 .

2.1 Water Quality.

This section discusses general water quality parameters and mercury.

General Water Quality Parameters: The water quality monitoring is specifically associated with project construction to assess the effects of breaching on the receiving water quality. General water quality parameters to be monitored include salinity, temperature, pH, DO, and turbidity. General water quality parameters will be monitored *in situ* by collecting a grab sample and using a multi-parameter probe and flow cell (e.g., YSI 6820 or equivalent) to measure parameters. Figure A-1 shows sampling locations and designates which locations are associated with each construction phase. Monitoring stations are associated with each breach and the receiving water downstream of the breach (i.e., in the Napa River). The sampling station locations will allow assessment of pond effluent and receiving water quality, as well as estimation of attenuation of any water quality conditions that may exists (e.g., salinity plumes or low DO concentrations).

If feasible, water quality data will be collected at one foot below the surface during an ebbing tide. Data will be collected at the following frequency:

- Within 3 days prior to breaching of the pond levees
- Once during the first 24 hours after breaching, and again within 5 days after the breaching
- Weekly for the first month after breaching
- Monthly until water quality performance objectives have been met for three consecutive months

Water quality monitoring data will be evaluated for trends and compared to the performance objectives established for each parameter.

Mercury: Water and sediment will not be monitored post construction for mercury because the Water Board is amending the mercury objective (Water Quality Control Plan for the San Francisco Bay Region as amended August 9, 2006). The mercury objective is expected to be based on fish tissue mercury concentrations. DFG has requested that the CBDA Biosentinel Mercury Monitoring Program BMMP) add a sampling station within the Napa Plant Site project area. If the BMMP cannot conduct this monitoring then DFG will follow the BMMP fish collection and mercury analysis protocols. One station will be established in the North Unit. Sampling will be conducted at least biennially (every other year) and annually if funding is available. Once the South Unit is breached the North Unit data will be analyzed to determine if a station should be established in the South Unit.

2.2 Biota

This section discusses biological monitoring, including avian monitoring, fish as used for biosentinel mercury monitoring, small mammals, and vegetation.

Birds

Avian surveys will be conducted quarterly in the North Unit (Ponds 9 and10) and as follows in the Central and South Units: twice a year in years 1-3; once a year in years 4-7, 10 and 15 or until vegetation cover reaches 80 percent and the predominant bird use shifts from shorebirds and waterfowl to resident marsh species. Surveys will continue for approximately 1 year thereafter or for a maximum period of 15 years following completion of each project phase. The greater frequency of monitoring in the North Unit is a mitigation measure that will provide data needed to evaluate bird strike hazards associated with the Napa County Airport, and guide adaptive management decisions. Bird surveys will be conducted using the USGS point count protocol. DFG may choose to monitor California Clapper Rails when the appropriate habitat has developed.

Data from United States Geological Survey (USGS) bird surveys conducted at the project site between April 2003 and March 2006 will be used as a baseline for comparison of data collected in the post-project monitoring period. Data analysis will include an evaluation of species composition, abundance and trends in bird use. DFG will coordinate with the Napa Solano Audubon Society to add a Christmas Bird Count Station at the NPS.

Fish

DFG will coordinate with regional programs to conduct biosentinel fish monitoring at the NPS (see mercury section above). Monitoring would occur at one location once per year in each wetland restoration Unit.

Small mammals

Tidal marsh habitats can support populations of special-status small mammals, including salt marsh harvest mouse (*Reithrodontomys raviventris*) and Suisun ornate shrew (*Sorex ornatus sinuosus*). It is DFG's responsibility as a state agency to make efforts toward the conservation and recovery of these species. Thus, DFG will monitor or document the presence or absence of state listed small mammals at the project site in accordance with the established state wildlife conservation and recovery programs. This monitoring will commence once appropriate habitat has developed.

Vegetation

Vegetation colonization in wetland areas will be monitored using aerial photography supported by ground-truthing. Aerial images will be interpreted with a Geographic Information System (GIS) to estimate percent cover in the wetland areas. Ground-truthing will be performed to verify vegetation signature on the aerial photos, and to make qualitative assessments of species richness and community composition. Vegetation assessment will be conducted separately for each project planning unit, i.e., cover, species richness, and composition will be analyzed separately for the North, Central and South Units. Vegetation assessment will commence for each planning unit when aerial imagery or ground-based observations suggest that the cover is approximately 20 percent. Prior to reaching the 20% level, the dominant pioneer species colonizing the marsh plain will be noted.

Invasive non-native plant species that threaten sensitive native tidal marsh communities should be kept off the site to the extent feasible, including those listed under Tier I (and to a lesser extent Tier II) of the Water Board's "Invasive Non-Native Plant Species to Avoid in Wetland Projects in the San Francisco Bay Region"[1] DFG will review this list and discuss with Water Board staff which species will be feasible to keep off the wetland restoration site, and which will not. Invasive cordgrass (*Spartina alterniflora*) is a high priority to keep out of tidal wetland restoration sites in the North Bay and DFG should coordinate with the Invasive Spartina Project to control this species.

Aerial photography will be coordinated with the NRSMRP to maximize the cost-effectiveness and efficiency of monitoring. Photography may be taken using aircraft mounted cameras in conjunction with DFG waterfowl counts. Images may be slightly oblique (not ortho-rectified), however these images should be adequate for estimating vegetation cover on the ponds. Google Earth images may be used as a potential source if they can adequately detect the type and amount of vegetation species on the site (verified by ground truthing).

2.3 Geomorphic Evolution

Protocols developed by the San Francisco Estuary Institute for mapping vegetation using aerial and satellite photos will be reviewed and followed if feasible[2]. Some form of habitat mapping including vegetation types and channel evolution will be conducted using aerial or satellite photos obtained from DFG's planes or other source such as Google Earth, if those provide sufficient detail to assess the development of habitats including channels.

2.3.1 Tidal Channel Evolution

Evolution of tidal channels will be evaluated using aerial imagery. The aerial images will be captured biennially during a spring low tide to increase channel network visibility. Aerial images will be interpreted with GIS to calculate: 1) overall channel density in the drainage basin associated with each breach; 2) channel width at each breach and at locations along the alignment of the constructed channels. The cross-section locations are shown in Figure A-1. Density will be calculated as square feet of channel per square feet of marsh plain.

Restoration of tidal action to the North Unit will increase the tidal prism in Fagan Slough and may result in erosion of the adjacent marsh plain. Monitoring of Fagan Slough erosion is not a regulatory requirement, but has heuristic value with regard to documenting the effects of restoring tidal action. Bank scour of Fagan Slough will be evaluated using aerial imagery and field measurements. Erosion pins will be placed on the marsh plain at 50-meter off-sets from the

[1] (www.waterboards.ca.gov/sanfranciscobay/certs.htm under "Fact Sheet for Wetland Projects, Appendix I).

[2] In addition to protocols for tidal marsh vegetation mapping from aerial and satellite imagery, this site also has protocols for monitoring tidal marsh plants and animals, as well as sedimentation rates. (see www.wrmp.org/documents.html; under "Protocols".

edge of Fagan Slough. The distance from the markers to the edge of slough will be recorded in years 2, 5, 10, and 15.

2.3.2 Sedimentation

Sedimentation in restored tidal areas will be monitored using sedimentation plates, pins, erosion tables or Lidar. If sedimentation plates are used, each plate will be constructed of a square sheet of non-corrosive material. Sedimentation plates will be set flush with the marsh surface prior to restoration of tidal action. A rod will be placed through the center to anchor the plate and facilitate relocation. Sedimentation plates will be placed in the North, Central and South Units (Figure A-1). Sedimentation plates are placed close to the perimeter levee points to facilitate safe access by DFG staff. Sediment accumulation on the plates will be measured in years 2, 5, 10, and 15. A total of 6 plates will be placed on the site before tidal action is restored, but only 3 of those need to be measured regularly; the remaining 3 can be kept in reserve for measuring, in case the predicted deposition fails to produce elevations at which vegetation develops.

3.0 Reports

As-built plans will be submitted to the Corps, BCDC, and the Water Board within 90 days of the completion of construction. The plans will note changes from the final bid set of plans and will be accompanied by notes from the construction manager and monitor.

Monitoring reports describing the data collected pursuant to the approved restoration plan shall be submitted biennially (every two years) beginning on December 1st, for 15 years post-construction of each phase (Years 2, 4, 6, 8, 10, 12, 14). In addition to submitting the biennial monitoring reports, DFG may voluntarily submit informal memo reports in the interim years. However, if limitations due to budget restraints and personnel limitations become unmanageable for DFG to submit informal memo reports in a given interim year, DFG will suspend the submission of the informal memo report for that given year but will submit the biennial monitoring report the following year. Biennial post-construction monitoring reports will include monitoring results, analysis of quantitative monitoring data, an evaluation of performance objectives, and suggested corrective actions. The report will include photographs and figures identifying monitoring station locations and photo points. The monitoring report will include a list of the names of the persons who conducted the monitoring and prepared the report. Results of the water quality sampling will be presented in the 1st year. Trend analysis of sedimentation, tidal channel evolution, and vegetation colonization will begin in the Year 3 report. All reports will evaluate and discuss bird use. Monitoring reports will include details of any adaptive management actions that have been implemented in the preceding year. Monitoring reports will be submitted to the Corps, the Water Board, BCDC, USFWS, Caltrans Aeronautics and Napa County (Airport and Department of Public Works).

The monitoring and reporting schedule is shown in Table A-1.

4.0 Notification of Completion

DFG shall notify the Corps, BCDC, and the Water Board at the end of the 15-year monitoring period, or when the performance objectives have been met. A site visit to confirm completion status will be scheduled. The hypothesized target of 75% -- 80% cover of native tidal marsh

plant species outside of the channels may not occur for 70 years or longer. DFG will attempt to analyze habitat development and report to the agencies every 5 years if feasible on the development of the site toward meeting that target.

5.0 Contingency Measures

Corrective actions, if necessary, will be suggested in biennial monitoring reports for performance objectives that are not being met. The responsible party for implementing and monitoring required contingency measures is the California Department of Fish and Game, currently represented by:

Larry Wyckoff, Habitat Conservation Manager
7329 Silverado Trail
Napa, CA 94558
707.944.5542
fax 707.944.5563
lwyckoff@dfg.ca.gov

6.0 Maintenance

The proposed project design minimizes operations and maintenance requirements, particularly because no water control structures are included. Tidal restoration is self-sustaining and evolves to a dynamic equilibrium state without intervention. The project would require operation and/or maintenance of the following:

- Perimeter levees
- Public access features including the boat launch, trails, restrooms, and interpretive signs
- Parking area and site access road

Perimeter levees will be inspected for erosion, settlement, excessive burrowing animal activity, and/or presence of deep-rooted woody plants. Maintenance would be performed to address problems. Public restrooms and trash receptacles would also require regular maintenance. The parking area and the site access road may require grading or placement of additional road base material.

7.0 Adaptive Management

The ability to react to changing circumstances is the basis for adaptive management. The adaptive management premise is to addresses issues as they arise; developing solutions based on contemporary circumstances and available resources. Issues that may require adaptive management include mosquito abatement, invasive species, bird strike hazards, erosion, flooding, and others. DFG will develop solutions to management needs as they arise. DFG will utilize a Technical Advisory Committee (TAC) to discuss adaptive management measures, particularly in regard to bird strike hazards. The TAC will include DFG staff, resource agency staff from the Water Board, BCDC, the Corps, Napa County, and other interested agencies and the public. The TAC will meet once every 2 years or more frequently, if necessary. Lessons

learned from Phase 1 construction and management will inform Phase 2 final design and management.

Table A-2
Maintenance and Adaptive Management Schedule

Years Following Construction	Maintenance and Adaptive Management Activities
Years 1 and 3	Avian Activity Evaluation Levee and road inspection Technical Advisory Committee meetings, as needed
Years 5, 7 and 10	Levee and road inspection Technical Advisory Committee meeting, as needed
On-going	Levee and road inspection and maintenance Public access and facilities maintenance

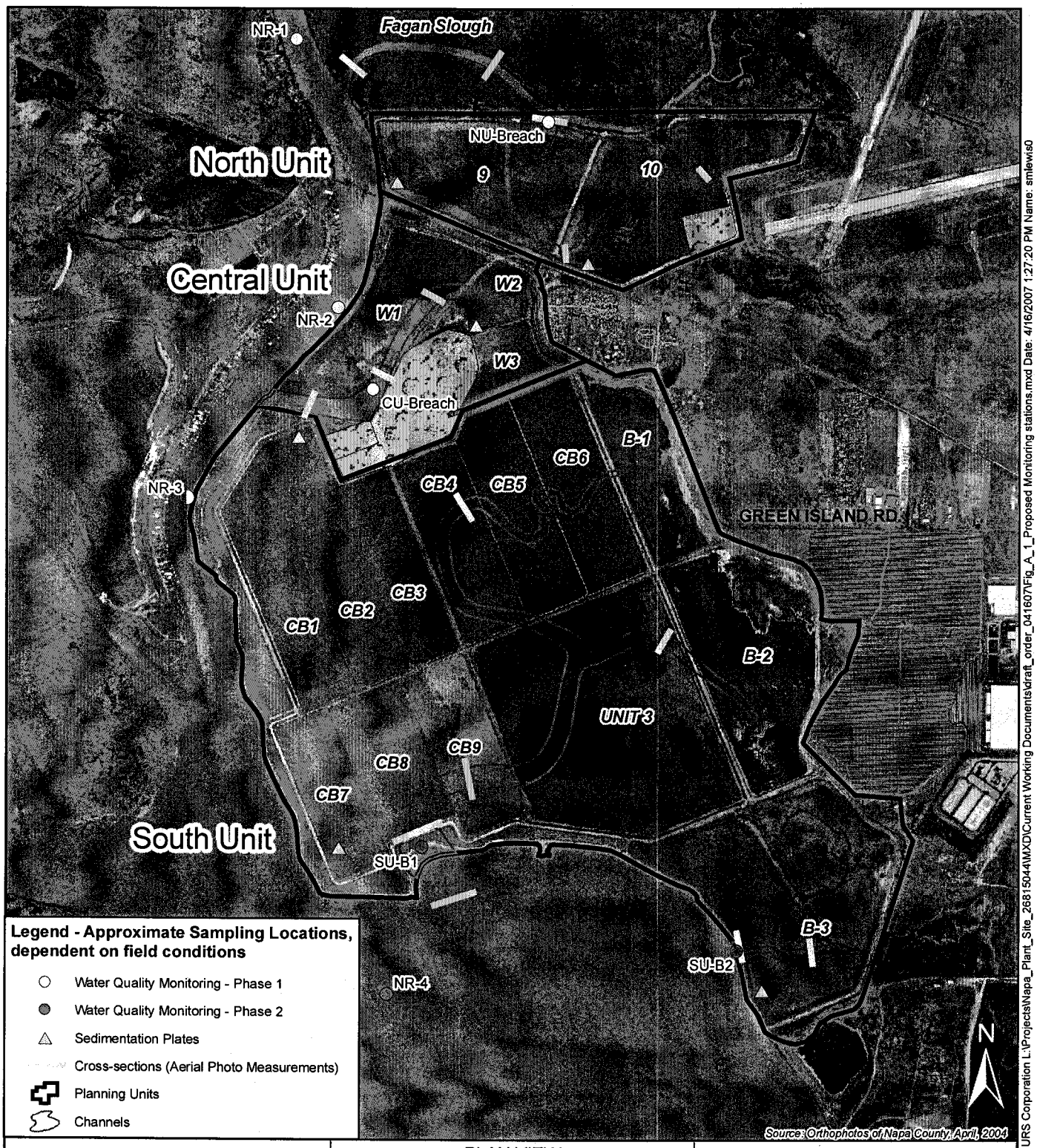
Avian Management

The TAC will review bird strike data and determine if adaptive management measures are needed. Specifically, the TAC will discuss implementation options if the Relative Hazard Score of birds using the North Unit increases and bird strikes appear to be associated with birds using the North Unit. The TAC will suggest the types of adaptive management measures to be implemented. Adaptive management measures could include avian control techniques (e.g., habitat exclusion, repellent and harassment) identified in the FAA *Wildlife Hazard Management at Airports* publication (Cleary and Dolbeer 2005). Monitoring will be conducted to determine if adaptive management measures achieve the desired outcome.

Mosquito Abatement

As vegetation becomes established on the site potential mosquito habitat may increase. During the time that the site is at or below MHW it is predicted to drain well, even as vegetation begins to establish. The South Unit marsh plain is predicted to be at MHW at approximately 65-75 years after breaching. This mature marsh plain has potential to include isolated pools and shrink/swell cracks surrounded by vegetation, which could serve as mosquito breeding habitat. The areas most likely to provide mosquito habitat in the near term are the existing transfer and brine ditches. When the ditch's salt concentration decreases and water stops flowing through them then they have the potential to be larval mosquito habitat. The project would lower the levees adjacent to these ditches, using the excess material to fill or partially fill the ditches, thereby enhancing ditch drainage and decreasing mosquito habitat. These levees would also be breached in numerous locations to facilitate drainage. The perimeter levees would facilitate Napa County Mosquito Abatement District's treatment procedures by providing good perimeter access to the tidal marshes and perimeter drainage ditch. In addition, the boat-launching ramp in the barge channel provides aquatic access.

Sampling locations are shown on the attached Figure A-1.



Legend - Approximate Sampling Locations, dependent on field conditions

- Water Quality Monitoring - Phase 1
- Water Quality Monitoring - Phase 2
- Sedimentation Plates
- Cross-sections (Aerial Photo Measurements)
- Planning Units
- Channels

URS Corporation L:\Projects\Napa_Plant_Site_26815044\MXD\Current Working Documents\draft_order_041607\Fig_A_1_Proposed Monitoring stations.mxd Date: 4/16/2007 1:27:20 PM Name: smlewis0

PURPOSE: WETLAND RESTORATION

DATUM: NAVD88

ADJACENT PROPERTY OWNERS: SEE TABLE 6

PLAN VIEW

0 500 1,000 2,000 3,000

1 inch equals 1,750 feet

CALIFORNIA DEPARTMENT OF FISH AND GAME

FIGURE A-1
MONITORING STATIONS

IN: CITY OF AMERICAN CANYON
AT: 2983 GREEN ISLAND RD.
COUNTY OF: NAPA STATE: CA

APPLICATION BY: CALIFORNIA DEPARTMENT OF FISH AND GAME

DATE: 11/10/06

Attachment A

Table A-1

(see Attachment A: Monitoring & Adaptive Management Plan [MAMP] for explanations).

Table A-1: Napa Plant Site 15-Year Monitoring Program Parameters, Performance Standards, Hypothesized Targets, Protocols and Frequency.

Note that the 15-year monitoring period for each of the 2 or 3 phases will begin after construction is completed. In addition to the monitoring elements below, the use of best management practices and site monitoring to ensure that pollutants are not discharged to the Bay or Napa River will also be conducted during construction periods.

Parameter	Performance Standards	Hypothesized Target*	Protocol	North Unit Frequency	Central Unit Frequency	South Unit Frequency
Field Photo Monitoring	None, purpose is documentation	The establishment of native tidal marsh communities.	• Establish photo monitoring points for ground images •	Annual	Annual	Annual
Aerial or Satellite Photo Monitoring	None, purpose is documentation	The establishment of native tidal marsh communities.	• Obtain aerial images from: DFG project-specific aerial photography; sources explained in SFEI's** Vegetation Mapping Protocol for aerial/satellite photos, or readily-available public source such as GoogleEarth®	Annual (Years 1-15); Thereafter, once every 5 years until final vegetation targets are reached (if feasible).	Annual (Years 1-15); Thereafter, once every 5 years until final vegetation targets are reached (if feasible).l	Annual (Years 1-15); Thereafter, once every 5 years until final vegetation targets are reached (if feasible).

Attachment A: Table A-1. Napa Plant Site Monitoring: Parameters, Performance Objectives, Protocols, and Frequency

Parameter	Performance Standards	Hypothesized Target*	Protocol	North Unit Frequency	Central Unit Frequency	South Unit Frequency
Salinity	Outflow from the site will increase salinity in the receiving waters by no more than 5 ppt during any tide cycle	Maintain or improve water quality in the Napa River.	Grab water sample/data collection using a multi-parameter probe and flow cell (e.g., YSI 6820 or equivalent). • Monitoring stations associated with each breach (See Figure A-1). • If feasible, data will be collected more than one foot below the surface during ebbing tide and more than one foot above the bottom.	• Within 3 days prior to breaching of the pond levees • Once during the first 24 hours after breaching, and again within 5 days after the breaching. • Weekly for the first month after breaching • Monthly until water quality performance objectives have been met for three consecutive months.	• Within 3 days prior to breaching of the pond levees • Once during the first 24 hours after breaching, and again within 5 days after the breaching. • Weekly for the first month after breaching • Monthly until water quality performance objectives have been met for three consecutive months.	• Within 3 days prior to breaching of the pond levees • Once during the first 24 hours after breaching, and again within 5 days after the breaching. • Weekly for the first month after breaching • Monthly until water quality performance objectives have been met for three consecutive months.

Attachment A: Table A-1. Napa Plant Site Monitoring: Parameters, Performance Objectives, Protocols, and Frequency

Parameter	Performance Standards	Hypothesized Target*	Protocol	North Unit Frequency	Central Unit Frequency	South Unit Frequency
Dissolved oxygen (DO)	Outflow of water from the site will not decrease DO concentrations in the receiving waters during any tide cycle to a concentration lower than 5.0 mg/L (Basin Plan water quality objective downstream of Carquinez Bridge) or below the ambient concentration if the ambient concentration is less than 5.0 mg/L. The median DO concentration for any three consecutive months shall not be less than 80 percent of the DO content at saturation.	Maintain or improve water quality in the Napa River.	Same protocol as for salinity	Same frequency as for salinity	Same frequency as for salinity	Same frequency as for salinity
pH	Outflow of water from the site will not cause changes greater than 0.5 units of pH in the receiving waters during any tide cycle. The pH shall not be depressed below 6.5 nor raised above 8.5, or below ambient pH if the ambient pH is less than 6.5, or above the ambient pH, if the ambient pH is grater than 8.5.	Maintain or improve water quality in the Napa River.	Same protocol as for salinity	Same frequency as for salinity	Same frequency as for salinity	Same frequency as for salinity

Attachment A: Table A-1. Napa Plant Site Monitoring: Parameters, Performance Objectives, Protocols, and Frequency

Parameter	Performance Standards	Hypothesized Target*	Protocol	North Unit Frequency	Central Unit Frequency	South Unit Frequency
Temperature	Outflow of water from the site will not increase temperature by more than 5°F (2.8°C) in the receiving waters during any tide cycle in the wet season, and 10°F in the dry season.	Maintain or improve water quality in the Napa River.	Same protocol as for salinity	Same frequency as for salinity	Same frequency as for salinity	Same frequency as for salinity
Turbidity	Outflow of water from the site will not increase turbidity in the receiving waters during any tide cycle by more than 5 NTU if the ambient turbidity is less than 50 NTU, or by more than 10% if the ambient turbidity is greater than 50 NTU	Maintain or improve water quality in the Napa River.	Same protocol as for salinity	Same frequency as for salinity	Same frequency as for salinity	Same frequency as for salinity
Methyl mercury	Mercury concentrations over time are similar to or less than concentrations in samples collected from comparable habitats in the San Pablo Bay watershed	Maintain or improve water quality in the Napa River and restored wetlands.	Grab sediment and water column samples; 1 background sampling location in Napa River (continue use of current location) **Or,** other protocols acceptable to RWQCB, e.g. a regional biosentinel fish tissue monitoring such as the one developed by UC Davis.	1 location; at least biennially (every 2 years); annually if feasible.	1 location; at least biennially (every 2 years); annually if feasible.	1 location; at least biennially (every 2 years); annually if feasible.

Attachment A: Table A-1. Napa Plant Site Monitoring: Parameters, Performance Objectives, Protocols, and Frequency

Parameter	Performance Standards	Hypothesized Target*	Protocol	North Unit Frequency	Central Unit Frequency	South Unit Frequency
Birds (also see under "small mammals and/or CCRs below)	Relative Hazard Score of birds using Ponds 9 and 10 will decrease over time.	Ponds 9 & 10 will quickly become vegetated to avoid bird strikes. Bird use in the remaining ponds will increase when compared with USGS baseline data for each restoration unit (i.e. North, Central and South)	Bird surveys using point counts Coordinate with Napa Solano Audubon Society to add a Christmas Bird Count Station at the Napa Plant Site.	Four times a year, at low and high tide during each event, until vegetation cover reaches 80 percent or the predominant bird use shifts from shorebirds and waterfowl to resident marsh species. Surveys may continue for up to 1 year thereafter, or for a maximum period of 15 years.	Twice a year for Years 1 - 3, annually during Years 4 – 7, 10 and 15 or until vegetation cover reaches 80 percent or the predominant bird use shifts from shorebirds and waterfowl to resident marsh species. Surveys will be conducted at low and high tide during each event.	Twice a year for Years 1 - 3, annually during Years 4 – 7, 10 and 15 until vegetation cover reaches 80 percent or the predominant bird use shifts from shorebirds and waterfowl to resident marsh species. Surveys will be conducted at low and high tide during each event.

Attachment A: Table A-1. Napa Plant Site Monitoring: Parameters, Performance Objectives, Protocols, and Frequency

Parameter	Performance Standards	Hypothesized Target*	Protocol	North Unit Frequency	Central Unit Frequency	South Unit Frequency
Vegetation	Pond 10 will have 80% cover by emergent vegetation within 5 years	Remaining ponds will have native tidal marsh vegetation that will increase over time compared to the baseline (=pre-restoration conditions). 75% -- 80% cover of native tidal marsh plant species (or acceptable non-aggressive non-native plants), is a reasonable hypothesized target for the site. However the final results should be analyzed and presented by DFG in its biennial reports to the inter-agency Technical Advisory Committee for discussion.	• On-going observations (as part of routine site maintenance and control) to detect non-native invasive species; to the extent feasible, control highly invasive species on the Water Board's Tier 1 list of species to keep out of wetland sites.*** • Notify and coordinate with Invasive Spartina Project to eradicate non-native *Spartina* or hybrids, if detected • Annual aerial photography or Google Earth® images and GIS to define extent of vegetation communities and total percent cover • Ground-truth to identify dominant species, define communities, assess species richness and composition when vegetation cover reaches 20%. • Map vegetation cover in a restoration unit when cover is ≥ approx. 20%	• Annual aerial photography; SFEI's method**; or Google Earth® images • Annual observations of vegetation development • Mapping with ground-truthing in years 2, 5, 10, and 15 post construction •	• Annual observations • Annual observations of vegetation development • Mapping with ground-truthing in years 2, 5, 10, and 15 post construction Annual aerial photography; SFEI's protocol for aerial images**; or Google Earth® images	• Annual observations • Annual observations of vegetation development • Mapping with ground-truthing in years 2, 5, 10, and 15 post construction • Annual aerial photograph; SFEI's protocol for aerial images**; or Google Earth® images
Small Mammals and/or California Clapper Rails		Site will support native species	• Monitor or document the presence or absence of state listed small mammals (e.g., salt marsh harvest mouse or CA Clapper Rails) at the project site in accordance with the established state wildlife conservation and recovery programs. • Monitoring will commence when appropriate habitat has developed (e.g., dense high marsh vegetation for salt marsh harvest mouse).	As determined by DFG	As determined by DFG	As determined by DFG

Attachment A: Table A-1. Napa Plant Site Monitoring: Parameters, Performance Objectives, Protocols, and Frequency

Parameter	Performance Standards	Hypothesized Target*	Protocol	North Unit Frequency	Central Unit Frequency	South Unit Frequency
Tidal channel evolution		Density and size of tidal channels will increase throughout the duration of the monitoring period.	• Aerial photograph; SFEI;s recommended protocol**; or Google Earth ® image interpreted with GIS to calculate overall channel density in the drainage basin associated with each breach (sq ft channel per sq ft of marsh plain). • Top width of each breach measured in GIS from aerial images.	Years 2, 5, 10, and 15	Years 2, 5, 10, and 15	Years 2, 5, 10, and 15
Fagan Slough		Fagan Slough will erode to dimensions approximating its historic conditions	• Aerial photograph; SFEI's recommended protocol**; or Google Earth ® image interpreted with GIS to calculate channel top width and breach width. • Ground-truth to measure bank erosion by installing permanent markers off-set from the channel edge. Measure distance from marker to edge of channel.	Years 2, 5, 10, and 15 In addition, the annual aerial photos will also be reviewed each year to determine if the hydrology is performing as expected..	Not applicable	Not applicable

Attachment A: Table A-1. Napa Plant Site Monitoring: Parameters, Performance Objectives, Protocols, and Frequency

Parameter	Performance Standards	Hypothesized Target*	Protocol	North Unit Frequency	Central Unit Frequency	South Unit Frequency
Sedimentation		The site will fill in with enough sediment within 30 years to support native tidal marsh vegetation.	• Deposition resulting in marsh plain accretion to the MHW elevation will be mapped as vegetation germinates and colonizes the restoration site. • Sediment plates, pins, erosion tables, or Lidar. If sediment plates or pins are used, 6 monitoring locations will be established in appropriate areas throughout the site, and the 3 in the lowest areas will be measured. If vegetation establishment or sedimentation rates are below expectations, the remaining 3 locations will be monitored to determine sedimentation rates in those areas.	Years 2, 5, 10, and 15.	Years 2, 5, 10, and 15	Years 2, 5, 10, and 15

*No penalties for failure to achieve the targets in this column are expected since that would discourage important restoration projects. However, failure to achieve targets should prompt the Technical Advisory Committee associated with this project to investigate the causes for failure, recommend management measures to protect beneficial uses, and report those recommendations to the resource agencies and the public.

**San Francisco Estuary Institute: http://www.wrmp.org/documents.html ; under Protocols, "Tidal Marsh Vegetation Mapping"

*** http://www.waterboards.ca.gov/sanfranciscobay/certs.htm under "Fact Sheet for Wetland Projects" (Appendix I).

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

SELF-MONITORING PROGRAM

FOR

NAPA PLANT SITE RESTORATION PROJECT

ORDER No. R2-2007-0045

A. GENERAL

1. Reporting responsibilities of waste dischargers are specified in Sections 13225(a), 13267(b), 13383 and 13387(b) of the California Water Code, and in this Water Board's Resolution No. 73-16.

2. 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 Water Board, (2) to facilitate self-policing by the waste discharger in the prevention and abatement of pollution arising from waste discharge.

B. SAMPLING AND ANALYTICAL METHODS

1. Sample collection, storage, and analyses shall be performed according to Code of Federal Regulations Title 40, Section 136 (40 CFR S136), or other methods approved and specified by the Executive Officer of this Water Board.

2. Water and soil analyses shall be performed by a laboratory approved for these analyses by the State Department of Public Health (DPH), or a laboratory waived by the Executive Officer from obtaining a DPH certification for these analyses, or by properly calibrated field equipment when approved by the Executive Officer of this Water Board.

3. The director of the laboratory whose name appears on the certification, or his/her laboratory supervisor who is directly responsible for the analytical work performed shall supervise all analytical work including appropriate quality assurance/quality control procedures in his/her laboratory and shall sign all reports of such work submitted to the Water Board.

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

C. DEFINITION OF TERMS

1. Grab sample is defined as an individual sample collected in a short period of time not exceeding 15 minutes. It is used primarily in determining compliance with daily maximum limits and instantaneous maximum limits. Grab samples represent only the condition that exists at the time the wastewater is collected.

2. Duly authorized representative is one whose:

   a. Authorization is made in writing by a principal executive officer or ranking elected official;

   b. Authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such chief engineer, project manager, or field supervisor.

3. Instantaneous maximum is defined as the highest measurement obtained for the calendar day.

4. Median of an ordered set of values is that value below and above which there is an equal number of values, or which is the arithmetic mean of the two middle levels, if there is no one middle value.

5. Receiving waters refers to any water which actually or potentially receives surface water discharged from the Napa Plant Site Project Area. The receiving waters in this case are the Napa River and Fagan Slough.

6. Construction phase is defined as that period of time when the site is prepared for marsh restoration and includes all activities leading up to the restoration of tidal action.

7. Construction phase activities are defined as all site activities including the movement of soil or sediment, such as placement of dredged material via slurry techniques, excavation of trenches and toe drains, and all other soil handling such as berm and levee construction.

8. Post-construction phase is defined as the period of time beginning when site construction is substantially completed, and tidal action has been restored to the North, Central and South Pond Units.

9. Post-construction phase activities are defined as all monitoring, site maintenance, and adaptive management activities which take place after construction is completed and tidal action has been restored to the North, Central and South Pond Units.

10. Project boundary shall be defined as the limit of the receiving waters at mean low low water level, which is the topographic contour representing an elevation of 0 ft. NAVD88.

11. Monitoring period for purposes of reporting for water quality shall be defined as that period of time beginning on the day the levees are s breached, and ending when the water quality objectives have been met for three consecutive months. Habitat and geomorphic assessment monitoring period ends 15 years after breaching for each unit. Avian monitoring period ends at 15 years post breach or when vegetation cover reaches 80% or the predominant bird use shifts from shorebirds and waterfowl to resident marsh species, which ever is sooner. After 15 years, if vegetation cover does not reach 75-80% cover, the Discharger will attempt to analyze aerial or satellite photos once every 5 years and assess the extent of habitat development, until 75-80% cover is reached.

12. Ambient Napa River salinity shall be defined as the salinity measure in the Napa River at a point 50 feet upcurrent from the breach in the levee separating the Central and South Units from the Napa River and the North Unit from Fagan Slough.

D. SPECIFICATIONS FOR SAMPLING AND ANALYSES

The Discharger is required to perform sampling and analyses according to the schedule in **Table B-1** in accordance with the following conditions:

1. Pond Water

    a. Grab samples of pond water shall be collected during periods of maximum peak discharge flows, and shall coincide with receiving waters sample days.

    b. If analytical results are received showing any instantaneous maximum limit is exceeded for any organic constituent, a confirmation sample shall be taken within 24 hours and results known within 24 hours of the sampling.

    c. If any instantaneous maximum limit for a constituent is exceeded in the confirmation sample(s), then the discharge shall be restricted to the extent practical, until the cause of the violation can be found and corrected.

    d. For other violations, the discharger shall implement procedures that are acceptable to the Executive Officer on a case by case basis.

2. Receiving Waters

    a. Receiving water sampling shall be conducted on days coincident with pond water of effluent.

b. In tidally-influenced receiving waters, samples shall be collected at each station on each sampling day during the period within 1 hour following low slack water. Where sampling at lower slack water period is not practical, sampling shall be performed during higher slack water period.

c. Samples of downstream receiving water shall be collected within the discharge plume and down current of the discharge point so as to be representative, unless otherwise stipulated.

d. Samples of background receiving water shall be collected upcurrent of the discharge point.

e. If feasible, samples shall be collected within one foot below the surface of the receiving water body and one foot above the channel or pond bottom.

E. DESCRIPTION OF SAMPLING STATIONS

1. A site plan drawing showing the location of all sampling points is included as Figure A-1 in Appendix A. A site plan drawing showing the location of all sampling points shall be submitted with all monitoring reports submitted under this Plan.

2. Receiving water sampling point NR-1shall be established at a point 100-150 feet upstream from the point of discharge into the receiving water, or if access is limited, at the first point upstream which is accessible.

3. Receiving water sampling point NR- 2, 3, 4 shall be established at a point 100-150 feet downstream from the point of discharge into the receiving water, or if access is limited, at the first point downstream which is accessible.

F. STANDARD OBSERVATIONS

1. Receiving Water

   a. Floating and suspended materials of waste origin (to include oil, grease, algae, and other macroscopic particulate matter): presence or absence, source, and size of affected area.

   b. Discoloration and turbidity: description of color, source, and size of affected area.

   c. Odor: presence or absence, characterization, source, distance of travel, and wind direction.

   d. Evidence of beneficial water use: presence of waterfowl or wildlife, fishermen, and other recreational activities in the vicinity of the sampling stations.

e. Hydrographic condition, if relevant:

1) Time and height of corrected high and low tides (corrected to nearest NOAA location for the sampling date and time of sample and collection).

2) Depth of water columns and sampling depths.

f. Weather condition:

1) Air temperature.

2) Wind - direction and estimated velocity.

3) Precipitation - total precipitation during the previous five days and on the day of observation.

2. Pond Water

a. Floating and suspended materials of waste origin (to include oil, grease, algae, and other macroscopic particulate matter): presence or absence, source, and size of affected area.

b. Discoloration and turbidity: description of color, source, and size of affected area.

c. Odor: presence or absence, characterization, source, distance of travel, and wind direction.

d. Evidence of beneficial water use: presence of waterfowl or wildlife, fishermen, and other recreational activities in the vicinity of the sampling stations.

e. Hydrographic condition, if relevant:

1) Time and height of corrected high and low tides (corrected to nearest NOAA location for the sampling date and time of sample and collection).

2) Depth of water columns and sampling depths.

f. Weather condition:

1) Air temperature.

2) Wind - direction and estimated velocity.

3) Precipitation - total precipitation during the previous five days and on the day of

observation.

G. REPORTS TO BE FILED WITH THE WATER BOARD

1. **Start-Up Report**: A report on the start-up phase shall be submitted to the Water Board no more than 45 days after the initial breach on the levee dividing the a) Central Unit from the barge channel, b)ad South Unit from the Napa River, and c) North Unit from Fagan Slough. Each Start-Up Report shall contain the same elements stipulated below under 2, Annual Self-Monitoring Reports, and shall include all data collected during the first 30 days following the breach of each levee.

2. **Biennial Self-Monitoring Reports**: Written reports shall be submitted biennially for both the NRSMRP and the NPS, beginning on December 1st, two years following the completion of construction activities in each of the 2 or 3 phases of the restoration project. If feasible, annual memos will be submitted in the intervening years to summarize the data collected and analyzed . Biennial reports shall be submitted until Year 15 after construction for each phase, or until vegetation reaches 75%-80%, whichever occurs sooner. If vegetation does not reach that level before Year 15, the Water Board would like, if feasible, biennial memos and a status update every 5 years thereafter based on aerial or satellite photos documenting the types of habitats present on the site until the project goal is determined to be met by a Technical Advisory Committee for the site. The reports shall be comprised of the following: water quality data analysis and geomorphic and habitat assessments over a 15 year period for each phase beginning after each construction phase is completed.

   For the NPS, the monitoring elements, schedule, performance criteria, and general protocols are contained in the attached MAMP (Attachment A) for the site.

   a. Letter of Transmittal: A letter transmitting self-monitoring reports should accompany each report. Such a letter shall include identification of changes to the project design, and any unplanned releases or failures that may have occurred since the preparation of the previous self-monitoring report. If unplanned releases are noted, then a discussion of the corrective actions taken or planned, and a time schedule for completion, shall be included.

   b. Map or Aerial Photograph: A map or aerial photograph shall accompany the report showing sampling and observation station locations.

   c. Results of Analyses and Observations: The report format shall be a format that is acceptable to the Executive Officer.

      1) If the discharger monitors any pollutant more frequently than required by this permit using test procedures approved under 40 CFR Part 136 or as specified in this permit, the results of this monitoring shall be included in the calculation and

reporting of the data submitted in the Self-Monitoring Report.

2) Calculations for all limitations that require averaging of measurements shall utilize an arithmetic mean unless otherwise specified in this permit.

3) The report shall also include a table identifying by method number the analytical procedures used for analyses. Any special methods shall be identified and should have prior approval of the Board's Executive Officer.

4) Lab results shall be summarized in tabular form, but do not need to be included in the report.

3. **Final Report**: Reporting requirements under Order No. R2-2004-0063 will end a) for water quality when the water quality objectives have been met for three consecutive months; b) for habitat and geomorphic assessment the monitoring period ends 15 years after breaching for each unit; c) for avian monitoring period ends at 15 years post breach or when vegetation cover reaches 80% or the predominant bird use shifts from shorebirds and waterfowl to resident marsh species, which ever is sooner. If vegetation does not reach 75-80% in any phase, and the Discharger has the resources to analyze aerial or satellite photos every 5 years, then that analysis should be done until the target is reached, or until a Technical Advisory Committee determines that the site is unlikely to achieve that habitat. The Final Report will be submitted to the Water Board that contains both tabular and graphical summaries of the monitoring data obtained during the Project. In addition, the Final Report shall contain a comprehensive discussion of the compliance record and the corrective actions taken.

4. **Spill Reports**: If any hazardous substance is discharged in or on any waters of the state, or discharged and deposited where it is, or probably will be discharged in or on any waters of the state, the discharger shall report such a discharge to this Water Board, at (510) 622-2300 on weekdays during office hours from 8 a.m. to 5 p.m., and to the Office of Emergency Services at (800) 852-7550 during non-office hours. A written report shall be filed with the Water 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 spilling,
   e. Spill Prevention, Control, and Countermeasure Plan (SPCC) in effect, if any,
   f. estimated size of affected area,
   g. nature of effects (i.e., fish kill, discoloration of receiving water, etc.),
   h. corrective measures that have been taken or planned, and a schedule of these activities, and
   i. persons/agencies notified.

5. Monitoring reports, and letters transmitting monitoring 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."

H. RECORDS TO BE MAINTAINED

1. Written reports, laboratory analytical reports, maintenance records, and other records shall be maintained by the Discharger and retained for a minimum of five years. This period of retention shall be extended during the course of any unresolved litigation regarding this discharge or when requested by the Water Board or Regional Administrator of the U.S. Environmental Protection Agency, Region IX. Such records shall show the following for each sample:

    a. Identity of sampling and observation stations by number.

    b. Date and time of sampling and/or observations.

    c. Method of sampling (See Section C - Definition of Terms).

    d. Complete procedure used, including method of preserving sample and identity and volumes of reagents used. A reference to a specific section of Standard Methods is satisfactory.

    e. Calculations of results.

    f. Results of analyses and/or observations.

I, Bruce H. Wolfe, Executive Officer do hereby certify the foregoing Self-Monitoring Program:

1. Has been developed in accordance with the procedure set forth in the Water Board's Resolution No. 73-16 in order to obtain data and document compliance with waste discharge requirements established in Water Board Order No. R2-2004-0063.

2. Was adopted by the Water Board on July 11, 2007.

3. May be revised by the Executive Officer pursuant to U.S. EPA regulations (40 CFR 122.36); other revisions may be ordered by the Water Board.

Bruce H. Wolfe
Executive Officer

Attachments: Table B-1
Figure A-1 (see Appendix A, Attachment A.)

TABLE B-1 - SCHEDULE FOR SAMPLING, MEASUREMENTS, AND ANALYSIS FOR NAPA SALT PLANT

SAMPLE POINT:	METHOD	North Unit (NU) NU-breach	Central Unit (CU) CU-breach	South Unit (SU) SU-B1 & SU-B2	Napa River NR-1, NR-2, NR-3, NR-4
MATRIX: WATER					
Salinity [1]	multiparameter probe	D/M	D/M	D/M	D/M
pH [1]	multiparameter probe	D/M	D/M	D/M	D/M
Temperature [1]	multiparameter probe	D/M	D/M	D/M	D/M
Turbidity [1]	multiparameter probe	D/M	D/M	D/M	D/M
Dissolved oxygen [1]	multiparameter probe	D/M	D/M	D/M	D/M
Methyl mercury [2]	EPA 1630	B	B	B	B
MATRIX: SEDIMENT					
Methyl mercury [2]	UC Davis method for biosentinel fish; FGS 045 or other appropriate method for sediment and water	B	B	B	B
BIOTA					
Fish[3]	USGS	B	B	B	B
Birds	Point Counts	4 per year	1) S-A in yrs 1-3 2) A in yrs 4-7, 10, 15	1) S-A in yrs 1-3 2) A in yrs 4-7, 10, 15	--
Vegetation	Observations & mapping	1) A: observations 2) Yrs 2, 5, 10, and 15: mapping	1) A: observations 2) Yrs 2, 5, 10, and 15: mapping	1) A: observations 2) Yrs 2, 5, 10, and 15: mapping	--
Small mammals and/or CA. Clapper Rails	as determined by DFG	as determined by	as determined by DFG	as determined by DF(	--

Geomorphic Evolution

Tidal Channels	measure breach top width and map channel evolution	A in yrs 2, 5, 10, 1	A in yrs 2, 5, 10, 15	A in yrs 2, 5, 10, 15	--
Sedimentation	a) deposition mapped as vegetation germinates; b) sediment plates, pins, erosion tables, or LIDAR	A in yrs 2, 5, 10, 1	A in yrs 2, 5, 10, 15	A in yrs 2, 5, 10, 15	--
Habitat Development	Aerial or satellite photos	A in yrs 1-15; thereafter every 5 years, if feasible, until 75-80% cover is reached	A in yrs 1-15; thereafter every 5 years, if feasible, until 75-80% cover is reached	A in yrs 1-15; thereafter every 5 years, if feasible, until 75-80% cover is reached	

Notes:

[1] Field test only

[2] Methyl mercury — Monitoring using analysis of biosentinel fish species developed by U.C. Davis researchers is preferred, however water and sediment will be tested if inclusion of the Napa Plant Site in the biosentinel regional program is infeasible.

[3]USGS regional program protocols for biosentinel species sampling and analysis

A	Once per year
D/M	Once within 3 days prior to breach; during the first and fifth day following breach; weekly during the first month; monthly thereafter until performance objective met for 3 months
FGS	Frontier Geosciences (or other approriate method)
B	Biennial (every 2 years) at a minimum; annually if feasible.
DFG	Department of Fish & Game (the Discharger)
S-A	twice per year (semi-annual)
yrs	years

Attachment C: Napa Salt Plant Construction Sequencing and Activities

Table C-1 Completed Tasks and Construction Sequencing at the Napa Plant Site

Completed Tasks
A. The progress of salinity reduction is presented in Table 2 in the amended order. Cargill Corp. started phasing out the salt ponds in 2003 and is continuing to reduce salinity over an eight-year period. Ponds 9, 10, and the Wash Ponds will be available for restoration in 2007.
B..Phase I. Site Investigation, Fall 2002[1]
C..Phase II. Contaminant Removal, April – June 2003 [2]
D. Removal of soils with low levels of total petroleum hydrocarbons, lead, polynuclear aromatic hydrocarbons.
Planned 2007 Tasks: Construction Phase 1
North Unit Activities (Fall and Winter 2007 and 2008) • Levee lowering between Ponds 9 and 10 and Fagan Marsh and between Pond 9 and the Napa River • Excavation of tidal channels in Ponds 9 and 10 • Levee improvements on the southern and eastern perimeters of the North Unit • Placement of marsh plain, ecotone and RSA fill in Pond 10 • Excavation of a breach in the Pond 9 levee Central Unit Activities (2007 or 2008): • Levee improvements on the perimeter of the Central Unit • Realignment of site access road • Excavation of tidal channels in W1 and W2 • Excavation of breach in W1 levee • Lowering of levee between W1 and the Barge Channel
It is anticipated that Phase 1 activities could be completed in one construction season, which takes into account the potential construction window limitations associated with listed species migration and breeding seasons. The ability to construct Phase 1 in 2007 will depend on obtaining permits and construction financing on a schedule that allows a contractor to construct the project prior to the rains. If construction is delayed, then August 2008 is the anticipated alternative start date. The ability to construct both the North and Central Units in one season depends on the construction contractor's available resources.

[1] CH2M Hill. 2003. Site Investigation Report, Cargill Salt Napa Site and Baumberg Concentrator Ponds. Volume 1—Report and Attachments A through C.
[2] Treadwell and Rollo. 2003. Site Removal Report, 2983 Green Island Road, American Canyon, CA.

Planned 2009 – 2012 Tasks: Construction Phase 2
Phase 2: South Unit (construction start date between 2009 to 2012) • Excavation of breaches in CB8 and B-3 • Excavation of tidal channels in the South Unit • Levee improvements on the perimeter of the South Unit • Placement of ecotone fill • Public access and facilities improvements • Installation of a potable water source
It is anticipated that Phase 2 activities could be completed in two construction season, which takes into account the potential for construction windows limited by listed species breeding season and migration restrictions.

The use of heavy construction equipment such as excavators, cranes, vibratory hammers, dozers, scrapers, compaction equipment, and haul trucks will be required for the activities described below.

Breaching external levees and excavating channels to provide tidal circulation:
The perimeter levee of the site would be breached in four locations to restore tidal circulation. These breaches are located in close proximity to the mouths of the major historic tidal sloughs. Construction of the breaches will require excavation in uplands and some dredging. Tidal channels would be excavated in the pond bottoms to improve tidal circulation (i.e., flooding and draining of the site). Placement of temporary cofferdams or excavation from barges may also be necessary for breach construction. Installation of sheet pile to create cofferdams may be required. The breaches would be opened to tidal circulation when the ponds are dry, minimizing the potential for adverse water quality conditions associated with the discharge of high salinity water or excess sediment.

Lowering and Raising Levees:
Some levees will be lowered to improve marsh plain continuity, reduce predator access, and create wetland. Internal levees would be graded to maximum elevation of MHW and breached in strategic locations. The internal levees would be disconnected from the perimeter levee to discourage predator access.

Some levees will be raised. The project will maintain the existing level of flood protection by improving the levee along the eastern perimeter to the 10 foot

elevation. [3]The perimeter levee would also serve an important function by providing maintenance access and a public trail system.

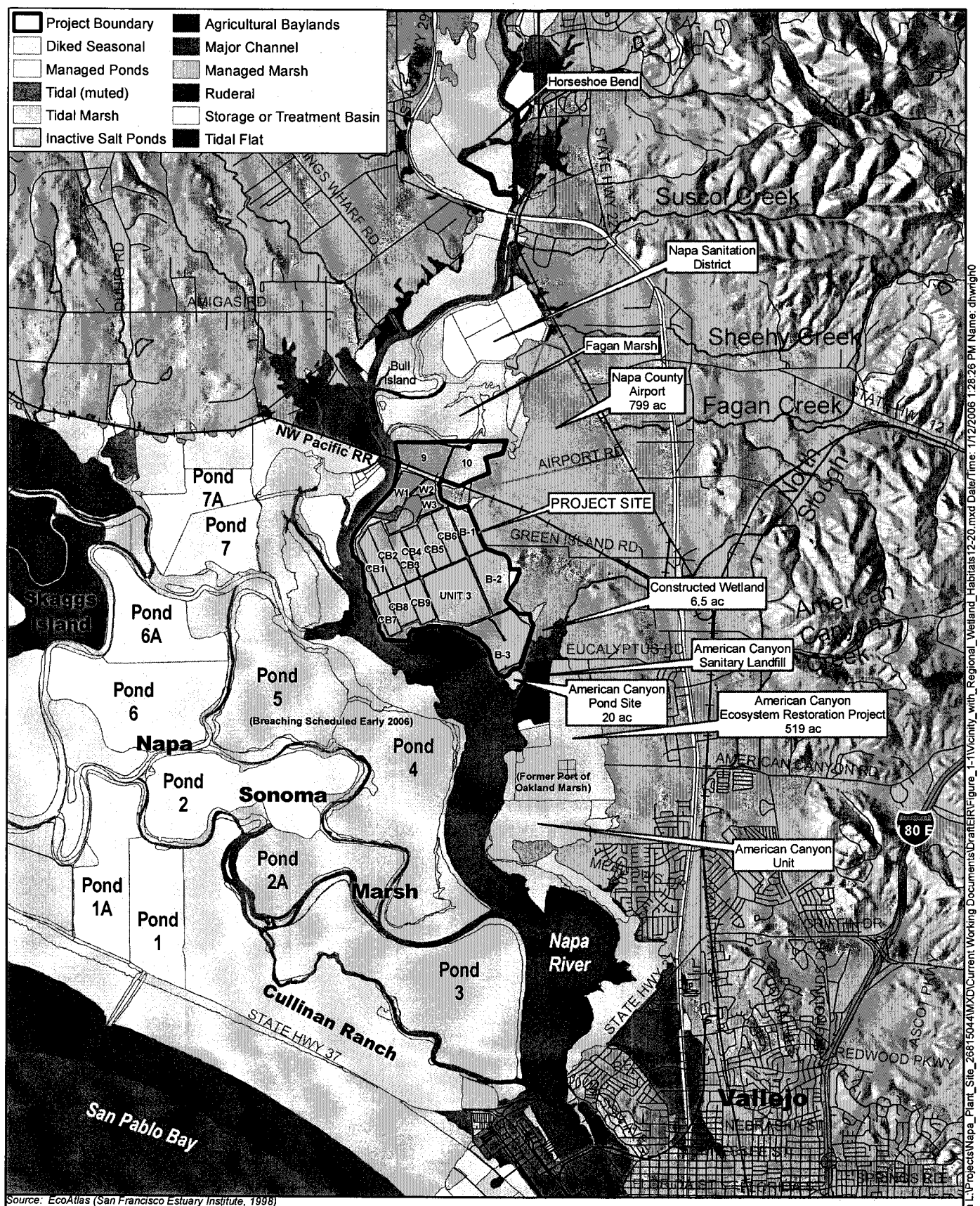
Creating additional wetlands, uplands, & public access areas:

Additional wetlands will be created in levee lowering locations. Wetland plant establishment will be accelerated by placing approximately 94,000 cubic yards of fill in approximately 85 acres of Pond 10. The fill will provide elevations appropriate for growth of tidal marsh vegetation as mitigation for potential bird strike hazard impacts to aircraft using Napa County Airport because a vegetated marsh attracts smaller birds that pose less danger to aircraft.

Upland will be created for two purposes. Approximately 9 acres of Pond 10 will be filled with about 54,000 cubic yards of material to allow the Napa County Airport to construct a Runway Safety Area in the future. Fill will also be used to create about 12 acres for a wildlife habitat transition area adjacent to the levees and the new access road. All fill will come from on-site. If new fill is required it will be tested and evaluated using the Dredged Material Management Office's or the Water Board's criteria for reuse of dredged sediment. New permits will be obtained for any dredged material brought onto the site, except from the barge channel as already tested and allowed in Findings 24, above.

Public access features to be constructed include trails, picnic facilities, and restrooms. A launch ramp for hand-launched watercraft is already present at the site.

[3] The salt pond's river front levee formerly provided de facto flood protection. Once the ponds are breached then formerly internal levees will be raised to 10 ft. NAVD, the elevation of the former river front levee.



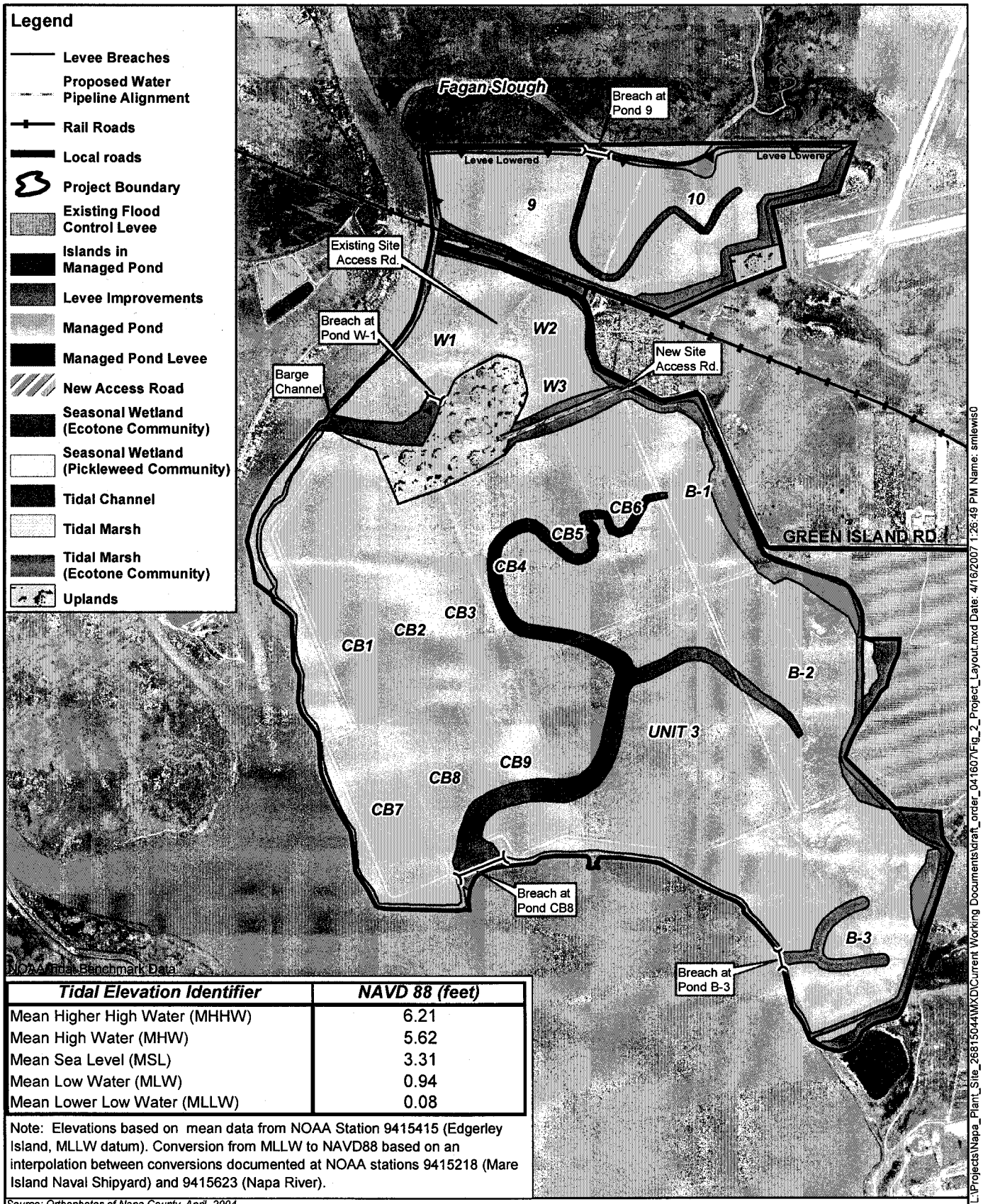
Source: EcoAtlas (San Francisco Estuary Institute, 1998)

1 0.5 0 1 Miles

N W E S

Applicant: California Department of Fish and Game	Napa Plant Site Restoration Project	Vicinity Map	Figure 1

URS Corporation L:\Projects\Napa_Plant_Site_26615044\MXD\Current Working Documents\Draft\EIR\Figure_1-1\Vicinity_with_Regional_Wetland_Habitats12-20.mxd Date/Time: 1/12/2006 1:28:26 PM Name: dhwngh0



NOAA Tidal Benchmark Data

Tidal Elevation Identifier	NAVD 88 (feet)
Mean Higher High Water (MHHW)	6.21
Mean High Water (MHW)	5.62
Mean Sea Level (MSL)	3.31
Mean Low Water (MLW)	0.94
Mean Lower Low Water (MLLW)	0.08

Note: Elevations based on mean data from NOAA Station 9415415 (Edgerley Island, MLLW datum). Conversion from MLLW to NAVD88 based on an interpolation between conversions documented at NOAA stations 9415218 (Mare Island Naval Shipyard) and 9415623 (Napa River).

Source: Orthophotos of Napa County, April, 2004

0 500 1,000 2,000 Feet

N W E S

URS

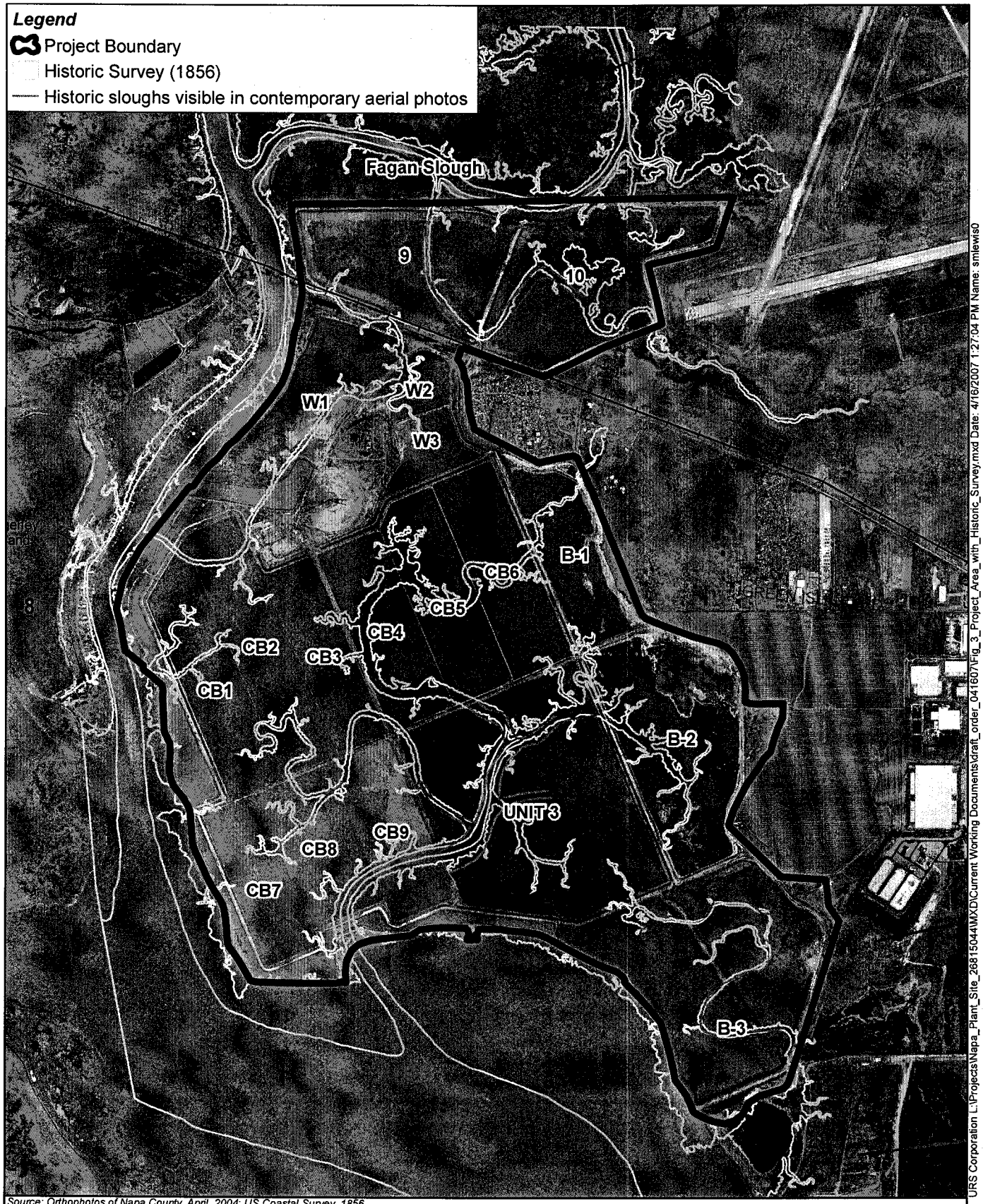
Napa Plant Site Restoration Project

26815044

Project Layout

Figure 2

URS Corporation L:\Projects\Napa_Plant_Site_26815044\MXD\Current Working Documents\draft_order_041607\Fig_2_Project_Layout.mxd Date: 4/16/2007 1:26:49 PM Name: smlewis0



Source: Orthophotos of Napa County, April, 2004; US Coastal Survey, 1856

0 500 1,000 2,000 Feet

N W E S

URS

Napa Plant Site Restoration Project	Project Area with Historic Survey (1856)	Figure 3
26815044		

URS Corporation L:\Projects\Napa_Plant_Site_26815044\MXD\Current Working Documents\draft_order_041607\Fig_3_Project_Area_with_Historic_Survey.mxd Date: 4/16/2007 1:27:04 PM Name: smlewis0