CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ORDER NO. R2-2015-0008

WASTE DISCHARGE REQUIREMENTS and WATER QUALITY CERTIFICATION for:

HANSON MARINE OPERATIONS
SAND MINING IN CENTRAL SAN FRANCISCO BAY AND SUISUN BAY

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

A. Purpose of Order: This Order regulates Hanson Marine Operations' (Hanson's) marine sand mining activities (project) within Central San Francisco Bay and Suisun Bay, including the discharge of decant water from those operations.

This Order constitutes Waste Discharge Requirements (WDRs) and provides the Water Quality Certification (Certification) for the project described herein.

B. Project Overview: Hanson conducts sand mining operations in Central San Francisco Bay and Middle Ground Shoal within Suisun Bay. Sand mining is the intentional dredging of sand and fine to medium gravel (hereinafter referred to collectively as sand) to be later used and sold for commercial purposes. Sand is dredged from various areas in the San Francisco Bay Estuary (Estuary) and is transported to upland facilities (sand yards) for processing and storage.

Hanson currently uses one tugboat/barge pair for sand mining, the tug *San Joaquin River*, with the trailing suction hopper barge, the *Sand Merchant*, which is equipped with suction mining equipment. The *Sand Merchant* is 230 feet long by 55 feet wide, with an approximate cargo capacity of 2,400 cubic yards (cy). It is limited by draft and other practical operating constraints to mining in water with a minimum depth of -20 feet mean lower low water (MLLW) and can mine in water up to about -90 feet MLLW.

During mining operations, the drag head at the end of the suction pipe (drag arm) is buried about 6-18 inches into the sand substrate. The drag head consists of a mining face measuring 36x36 inches that is equipped with a 6-inch "grizzly," a square grid to prevent entrainment of material 6 inches or larger in diameter. Water and sand are drawn into the drag head by the suction of a centrifugal pump. Water drawn into the drag head through the substrate creates a sand-water slurry that allows the sand to be suspended and pumped into the hopper barge. Hanson's equipment has a maximum pumping capacity of 15,000 gallons per minute (gpm); sand to water proportions are normally approximately 17% sand and 83% water for finer fill sand and 12% sand and 88% water for coarser sand.

C. Discharge Description: During mining, sand-water slurry fills the cargo hopper via a flume chute that runs down the center of the hopper. The flume has 10 gates fitted with ½ x ½ inch mesh screens that distribute sand to different parts of the hopper. Accumulating sand displaces the water from the sand-water slurry. The water is discharged through overflow pipes on either side at the rear of the cargo hopper. The overflow pipes extend down below the waterline on the outside of the barge. The bottom of the cargo hopper is also fitted with a dewatering system. A pipe along the

centerline, at the bottom of the hopper, has five fine-mesh-screened openings where water that has filtered through the sand and gravel smaller than ½ inch is collected and pumped overboard.

The discharge, also known as return flow, decant water, or overflow, contains material that does not settle out in the hopper, such as fine-grain sediment (silt and clay particles), aeration bubbles, dissolved substances, detritus, and plankton. It may also contain larger-size aggregates. Due to these characteristics, a visible plume (turbidity) may occur around the barge while the discharge is taking place. Based on the equipment and methods used for sand mining within the Estuary, commercial sand characteristically ranges in size from approximately 1 mm to 12 mm (½ inch), with larger and smaller particles discharged overboard. No chemicals or other materials are added to the overflow plume during sand mining. Hanson has estimated that it discharges approximately 3,034,435 gallons (15,024 cy) of decant water containing about 1.2 cy of fine-grain suspended sediment per mining event.

Once mining is completed, the barge is taken to a site for offloading. Appendix A shows sand yard locations in the Bay Area. The *Sand Merchant* can either offload using a conveyor offloading system (dry offload) or hydraulically offload by re-slurrying the cargo and pumping the sand ashore (wet offload). Sand used in concrete and asphalt products must be washed using fresh water before delivery to the customer. This is necessary to produce a sand product with a chloride content appropriate for concrete, generally 0.006% chloride or less by weight of cement. Sand yards in the Bay Area are relatively small (typically 4-5 acres) and have limited capability to stockpile or store sand for an extended period. Therefore, sand mining in the Estuary is conducted in response to short-term demand. The wastewater discharges from Bay Area sand yards are currently regulated under the Water Board's General Permit for Aggregate Mining and Sand Washing/Offloading Facilities, Order. No. R2-2008-0011. Stormwater discharges from Bay Area sand yards, which are not otherwise commingled with wastewater, are regulated under the statewide NPDES Industrial Stormwater General Permit (NPDES Permit No. CAS000001). As such, they are not addressed in this Order.

D. Regulatory Status: Sand mining decant or overflow water discharges are currently regulated under Water Board Order No. 95-177, as amended by Order No. 00-048, adopted on August 25, 1995, and June 21, 2000, respectively. Hanson has submitted an application to the Water Board to reissue WDRs and issue Certification to mine sand in Central San Francisco Bay and Middle Ground Shoal in Suisun Bay for 10 years (2015 - 2025).

In addition to obtaining WDRs/ Certification and a permit from the U.S Army Corps of Engineers (Corps) under section 10 of the Rivers and Harbors Act of 1899, Hanson must also obtain and comply with the following approvals/permits for the project:

- A lease with the State Lands Commission (SLC) for mineral extraction, where mining takes place on State sovereign lands. Hanson has entered into a lease with SLC, effective January 1, 2013 through December 31, 2022, to mine at the specified lease areas as indicated in Table 1 of this Order.

- An approved reclamation plan from the State Mining and Geology Board (SMGB). SMGB has approval authority over the reclamation plans prepared pursuant to Surface Mining and Reclamation Act for the sand mining sites. SMGB adopted resolution No. 2005-02 in February 2005, approving the reclamation plans for ten marine sand mining leases in the Central Bay, Suisun Bay, and the western Delta.

- An Incidental Take Permit from the California Department of Fish and Wildlife (CDFW). Hanson submitted its application on July 11, 2013, and CDFW issued the permit on April 1, 2014, and amended it on October 14, 2014.

- A permit from the San Francisco Bay Conservation and Development Commission (BCDC) pursuant to the McAteer-Petris Act. Hanson has submitted an application to BCDC.

- Biological opinions from the National Oceanic and Atmospheric Administration National Marine Fisheries Service (NOAA Fisheries) and the U.S. Fish and Wildlife Service (USFWS) regarding potential impacts to federally-listed special status species and essential fish habitat. USFWS issued a biological opinion on October 22, 2014.

E. Sand Mining Project Description

1. **Project Location:** Two marine aggregate companies, Hanson and Lind Marine Incorporated (previously Jerico Products, Inc.), and a joint venture, Suisun Associates, with Hanson and Lind Marine as the joint venture partners, currently harvest sand commercially from the Estuary. Hanson harvests sand from specified areas that are leased from the SLC and a private party, the Grossi Family.

   The specific areas where Hanson proposes to continue mining sand are the SLC Central Bay and Middle Ground lease locations listed in Table 1 and shown in Appendix A. Hanson is currently the only sand mining company operating in the Central Bay. Hanson and Lind Marine currently both mine the Middle Ground parcel under separate leases with the Grossi family, which owns the rights to the Middle Ground area.

   Sand mining does not occur uniformly within the lease areas but is typically clustered within specific areas where sand deposits have a low percentage of fine material (silts, clay, and mud). Material with a low percentage of fines is more suitable for use in construction materials. In addition, mining locations are limited by equipment constraints and permit requirements. The actual locations where sand mining occurs in the Central Bay are regulated and/or influenced by a number of factors, which include SLC-designated lease areas, navigation restrictions, areas having suitable water depths for mining, areas where sand is known from historical observations to accumulate, and areas having moderately high water velocities resulting in frequent sand movement, replenishment, and scour of fines from sand deposits.

2. **Project Purpose and History:** The purpose of marine sand mining in the Estuary is to obtain marine aggregate that is primarily used for construction activities within the greater San Francisco Bay Area, either as fill and base material or as an ingredient in ready-mix concrete and hot mix asphalt. Sand obtained from the Estuary is used in the construction and maintenance of highway and freeway systems, commercial and public buildings, and residential construction.

   Sand has been mined commercially from the Estuary for more than seven decades, beginning in the 1930s. Hanson entered the construction sand mining business in 1999 when it acquired two companies that held the construction sand mining leases and permits that Hanson operates under today.

3. **Sand Mining Volume:** Hanson proposed in its application to mine up to 1,540,000 cy of sand annually for a ten-year period from the 2,601-acre area in the Central Bay consisting of nine parcels of submerged land that comprise four leases from the SLC, designated as Mineral Extraction Lease Nos. 709.1, 2036.1, 7779.1, and 7780.1 (Appendix A-2) and 50,000 cy from the 367-acre area of submerged lands known as Middle Ground Island Sand Shoals, adjacent to Middle Ground Island in Suisun Bay (Middle Ground, Appendix A-3).

   Studies conducted by the United States Geological Service have indicated that the dominant sediment transport pathway in certain southern Central Bay lease areas is ebb-directed (seaward) and that sand removed from this transport pathway may be linked to reduced sediment supplies to the ebb-tidal delta at the mouth of San Francisco Bay. Also, NOAA Fisheries has stated during its in-progress consultation on impacts to Essential Fish Habitat that it needs additional data regarding impacts to benthic habitat. We have determined that, as a precautionary measure, it is appropriate to reduce the volume of sand that can be extracted from all lease areas to avoid and minimize any extraction-related potential effects to beneficial uses. (e.g., subtidal and intertidal benthic habitat and recreation-related uses). The permitted annual mining volume in lease area Presidio Shoals PRC 709.1, has been reduced from the proposed 340,000 cy to 232,000 cy, to reduce the volume of sand extracted from the South Parcel.

   Table 1 provides the average and maximum volumes Hanson is authorized to mine within each lease area on an annual basis over the ten-year period that the WDRs are in effect. The ten-year maximum volume allows for multiple peak years when construction-related demand for sand is greater than the allowed annual volume.

Table 1: 2015 - 2025 Permitted Annual, Peak Year and Ten-Year Total Sand Mining Volumes

Location / Lease No.		Annual Volume Cubic Yards (cy)	Peak Year Volume Cubic Yards (cy)
Central Bay			
PRC 709.1:	Presidio Shoals (709.1 South Parcel), Alcatraz Shoals (709.1 East Parcel), Point Knox Shoals (709.1 North Parcel)	232,000	290,000
PRC 2036.1:	Point Knox South Shoal	360,000	450,000
PRC 7779.1:	Point Knox Shoal (7779.1 North, West, & East Parcels)	484,000	550,000
PRC 7780.1:	Alcatraz South Shoal	127,000	160,000
	Central Bay Total	**1,203,000**	**1,450,000**
Suisun Bay			
Middle Ground (Grossi family lease)		40,000	50,000
	Total	**1,243,000**	
	Total		**1,500,000**
	Total 10-year Not-to-Exceed Maximum	**12,430,000**	

4. **Sand Mining Methods:** Hanson uses two methods of hydraulic sand mining - stationary potholing and moving potholing:

    - Stationary potholing involves an initial search for an appropriate sand source, followed by "stationary" mining by burying the drag head into the substrate and controlling the drag head from moving by either anchoring or engine thrust.

    - Moving potholing may involve mining more than one specific location during a mining event, and may involve some movement within a general site. Moving potholing is similar to stationary potholing, in that it involves mining in a "stationary" position when an appropriate sand source is found, but also involves moving in search of another appropriate stationary source. This method is used when the sand at a particular location becomes unsuitable (i.e., too coarse or too fine) or is particularly challenging to remove (too consolidated or weather conditions make removal difficult). If the operator determines that the barge needs to move to a new location, they raise the drag head into the water column no higher than 3 feet off the bottom and clear the drag pipe by keeping the pumped engaged for up to 30 seconds. The operator then turns off the pump and it remains off while the barge is en route to the next potential mining location.

5. **Mining Event Duration**
   The duration and timing of individual mining events reflect differences in equipment, weather, conditions of the substrate, and type of sand (fine or coarse). Sand mining activity may occur at any time of day. The timing is influenced by tidal schedules. An individual mining event generally lasts from 3 to 5.5 hours. In the Central Bay, the mean duration of mining events is relatively consistent from month to month. For Hanson's mining operations during the period March 2002 through February 2003, the monthly mean event duration ranged from 3.5 to 4.6 hours, with a maximum duration of 9 hours and a minimum duration of 1 hour. The mean single-event yields from Hanson's mining operations were also quite consistent, with monthly means of from 1,931 cy per event to 2,149 cy per event.

   Once the barge is loaded, it travels to an upland offloading location. Depending on the mining and offloading locations, a single event–including loading, unloading, and travel time–can take anywhere from 8 to 24 hours, but typically takes about 10 hours in the Central Bay. Under these circumstances, from an operational perspective, the greatest frequency with which the *Sand Merchant* could disturb any single area is twice in any 24-hour period.

6. **Sand Mining Impacts on Benthic Habitat**
   Hanson has submitted Biological Assessments for consultation with NOAA Fisheries and USFWS regarding potential impacts to federally-listed special status species and essential fish habitat. The Biological Assessments concluded that the proposed sand mining is not expected to change the benthic habitat or community and will not substantially affect the availability or distribution of foraging habitat for protected fish species. These conclusions were primarily based on the findings of a 2009 benthic study by Applied Marine Sciences (AMS). However, NOAA Fisheries staff indicated that the AMS study design did not account for naturally variable short-term population fluctuations (e.g., diurnal and seasonal) in the benthos at or between sites, nor did it establish pre-mining benthic community baselines that could be compared to post-mining communities. Furthermore, it did not assess the epibenthic community, an important source of fish forage. NOAA Fisheries determined that an additional,

supplemental benthic habitat evaluation study is necessary. Provision 6 requires Hanson to coordinate with NOAA Fisheries, USFWS, and CDFW to develop a work plan and complete investigations as per the approved work plan to verify the results of the 2009 AMS study. Provision 5 requires Hanson to organize a technical advisory committee (TAC) to develop a work plan for the study, identify experienced contractors to conduct it, and review all data deliverables.

7. **Potential Entrainment Impacts**
Suction head dredging has the capability to affect multiple vertebrate and invertebrate communities inhabiting the Estuary, including benthic infauna and epifauna, mobile invertebrates such as shrimp and crabs, demersal and pelagic fish, and the planktonic stages of both invertebrates and fish. The suction current created to pump the sand slurry off of the seafloor, up the dredge pipe, and onboard the barge could be too strong for some organisms and age classes to escape entrainment. Entrainment of estuarine organisms is expected to occur as described below:

    - The entrainment of larval, juvenile, and adult fish and invertebrates from the water column during priming and clearing of the centrifugal pump when the drag head is positioned near the bottom of the water column, within 3 feet of the seafloor.

    In addition, larval fish can be entrained through the vacuum-relief vent pipe mounted on the top of the drag head, which is designed to draw in water to thin the sand slurry if it becomes too dense to effectively pump. Hanson has installed a positive barrier fish screen at the intake end of the vent pipe. The screen is sized to exclude juvenile and adult fish, but it currently is not technologically possible to exclude larvae.

8. **Avoidance, Minimization, and Mitigation Measures**
The following measures are intended to minimize adverse effects on special-status species and their habitats within the project area:

    - A positive barrier fish screen that meets CDFW, USFWS, and NOAA Fisheries specifications has been installed on Hanson mining equipment (vacuum-relief vent pipe on top of the drag head) to prevent entrainment take of adult and juvenile special-status fish species when water is drawn in through the vent pipe to thin the sand slurry at times when it becomes too dense.

    - To minimize fish entrainment, when priming the pump or clearing the drag arm, the drag head is held as close to the bottom as possible, no more than 3 feet off the bottom at its maximum height in the water column. In addition, Hanson has implemented new operating procedures to reduce entrainment. Specifically, the suction pump is not engaged until the drag head is on the substrate. The dredge operator continuously monitors for production of “clear water” and disengages the pump if “clear water” is observed (i.e., when the drag head is off the bottom, limited to 6 minutes per mining event). If it becomes necessary to move the barge, the operator raises the drag arm no higher than 3 feet off the bottom and clears the pipe for no more than 30 seconds. The operator then turns off the pump while the barge is en route to the next potential mining location. When the barge stops moving, the operator lowers the drag head into the substrate and turns on the pump for sample collection and further mining if the substrate meets grade specifications.

- To avoid impacts to sensitive shallow water habitat, mining is not allowed within 200 feet of any shoreline or within 250 feet of areas with water depths less than or equal to -30 feet MLLW in Central Bay or -9 feet MLLW in the Middle Ground area of Suisun Bay.

- Based on consultation with CDFW and USFWS, during longfin and delta smelt spawning season (December 1 through June 30), Hanson will implement mining volume reductions in the Middle Ground lease area to avoid and minimize potential entrainment of larval smelt.

- To minimize entrainment take of larval longfin smelt and delta smelt, Hanson will observe seasonal mining depth restrictions in the Middle Ground area. No mining will be allowed December through June in water depths less than or equal to -25 feet MLLW and no mining will be allowed July through November in water depths less than or equal to -15 feet MLLW.

- Hanson will establish a 100-foot buffer zone around all hard bottom habitat within and adjacent to Central Bay mining leases, especially Harding, Shag, and Arch Rocks.

- To fully mitigate incidental take of species protected under the State and federal Endangered Species Acts that fish screens cannot avoid or minimize, Hanson is required by CDFW and USFWS to purchase credits from a CDFW and USFWS-approved mitigation bank to provide permanent protection and perpetual management of compensatory habitat.

9. **Discharge Characterization and Receiving Water Quality Evaluation Study**
   Provision 4 of this Order requires Hanson to complete a study characterizing the quality of its effluent (i.e., hopper barge decant/overflow discharge) and the impacts of this discharge and mining on receiving water quality.

   In November 1993, MEC Analytical Systems, Inc. completed a study, *Special Studies for Sand Mining Discharges of the Tidewater Sand and Gravel Company*, to evaluate Central Bay sand mining effluent quality and its potential impacts on receiving water quality. The study found, generally, that the effluent met water quality objectives under typical sand mining conditions.

   However, the 1993 study did not include Suisun Bay mining locations and equipment and environmental conditions may have changed in the ensuing 21 years; therefore, Hanson needs to perform a new study to update the results of the 1993 study. This Order may be reopened to require additional water quality monitoring and implementation of corrective measures if the new study indicates potentially unacceptable water quality impacts from sand mining discharges.

F. Compliance with Applicable Plans, Policies, and Regulations

The requirements in this Order are based on the requirements and authorities described below:

1. **California Environmental Quality Act (CEQA) Statement of Findings and Overriding Considerations**

On October 19, 2012, the SLC, as lead agency, certified a Final Environmental Impact Report (FEIR) (State Clearinghouse No. 2007072036) for the San Francisco Bay and Delta Sand Mining Project in accordance with CEQA. The SLC also adopted a Statement of Findings and Statement of Overriding Considerations (SOC) (October 19, 2012).

As directed by CEQA and the State CEQA Guidelines (PRC sections 211002.1(d), 21080.1, 21167.2; 15 CCR sections 15096(e),(f), 15231), the Water Board, as a responsible agency under CEQA, has considered the FEIR and SOC and finds that the Project has the following significant environmental effects that are within the Water Board's purview and jurisdiction:

Bio-6 (Sand mining could result in smothering or burial of, or mechanical damage to, infauna and epifauna, and reduced fish foraging.)

The SLC determined that impacts will be less than significant with mitigation. The Water Board concurs and hereby finds that changes or alterations have been required in, or incorporated into, the Approved Project that avoid or substantially lessen the significant environmental effect as identified in the EIR and for the reasons described in the SLC's Findings on pages D-7 through D-9.

Bio-8 (Regular operation of sand mining activities will cause entrainment and mortality of delta and longfin smelt. The Project would result in a significant impact to delta smelt and longfin smelt as a result of entrainment and mortality during sand mining operations impacting delta smelt and longfin smelt thereby exceeding the established significance level criteria thresholds.)

The SLC determined that impacts to delta and longfin smelt will remain significant and unavoidable even with implementation of the recommended mitigation measures. The Water Board concurs and hereby finds that (1) Changes or alterations have been required in, or incorporated into, the Approved Project that avoid or substantially lessen the significant environmental effect as identified in the EIR; (2) Such changes or alterations are within the responsibility and jurisdiction of the CDFW and not the SLC or Water Board. Such changes have been adopted by such other agency or can and should be adopted by such other agency; and (3) Specific economic, legal, social, technological or other considerations, including provision or employment opportunities for highly trained workers make infeasible the mitigation measures identified in the EIR. These findings are supported by the reasons described in the SLC's Findings on pages D-9 through D-14. In particular, Hanson will implement measures required by CDFW to avoid and minimize effects to these and other state- and federally-listed species and their habitat within project areas. As compensatory mitigation for the incidental take impact during the proposed 10-year mining period, CDFW has required Hanson to purchase 0.421 acres of shallow water habitat credits from a CDFW-approved mitigation or conservation bank.

Bio-9 (Green sturgeon, Chinook salmon, and steelhead trout will be impacted during sand mining. The Project will cause the entrainment and mortality of green sturgeon, Chinook salmon and steelhead trout during sand mining.)

The SLC determined that implementation of mitigation measure MM Bio-8a will reduce effects of the Approved Project due to entrainment of Chinook salmon, steelhead trout, and green sturgeon to less than significant. The Water Board concurs and hereby finds that changes or alterations have been required in, or incorporated into, the Approved Project that avoid or substantially lessen the significant environmental effect as identified in the EIR for the reasons

described in the SLC's Findings on pages D-14 through D-16. In addition, these changes or alterations are within the responsibility and jurisdiction of CDFW and not the SLC or Water Board. CDFW has required implementation of mitigation measure MM Bio-8a in the Incidental Take Permit for the Project.

In addition to the original Approved Project, the Water Board has ordered Hanson to abide by certain conditions, discharge prohibitions and receiving water limitations in order to meet beneficial uses and water quality objectives. These conditions, discharge prohibitions and receiving water limitations do not create any new significant impacts or increase the severity of impacts requiring any additional CEQA analysis as provided by PRC section 21166 and CEQA Guidelines sections 15162, 15163.

2. **San Francisco Bay Basin Water Quality Control Plan (Basin Plan)**
California Water Code section 13240 authorizes the Water Board to develop a Water Quality Control Plan for the San Francisco Bay Basin, which is the Water Board's master water quality control planning document (the Basin Plan). The Basin Plan designates beneficial uses and water quality objectives for waters of the State, including surface waters and groundwater. It also includes implementation programs and policies to achieve those objectives for all waters addressed through the plan. The Basin Plan was duly adopted by the Water Board and approved by the State Water Resources Control Board (State Water Board), U.S. EPA, and the Office of Administrative Law where required. The latest version can be found on the Water Board's website at http://www.waterboards.ca.gov/sanfranciscobay/basin_planning.shtml. Requirements in this Order implement the Basin Plan.

The existing beneficial uses of Central San Francisco Bay and Suisun Bay include:

- Industrial service supply (IND)
- Industrial process supply (PROC)
- Commercial and sport fishing (COMM)
- Shellfish harvesting (SHELL) (Central Bay only)
- Estuarine Habitat (EST)
- Fish migration (MIGR)
- Preservation of rare and endangered species (RARE)
- Fish Spawning (SPWN)
- Wildlife habitat (WILD)
- Water contact recreation (REC-1)
- Noncontact water recreation (REC-2)
- Navigation (NAV)

3. **Anti-Degradation Policy**
State Water Board Resolution 68-16 ("Statement of Policy with Respect to Maintaining High Quality of Waters in California") requires that whenever the existing quality of water is better than the quality established in policies as of the date on which such policies become effective, such existing high quality must be maintained. Resolution 68-16 only allows change in the existing high quality if it has been demonstrated to the Water Board that the change is consistent with maximum benefit to the people of the State, will not unreasonably affect present and anticipated beneficial uses of such water, and will not result in water quality less than that prescribed in the policies. Resolution 68-16 further requires that discharges meet

WDRs which will result in the best practicable treatment or control of the discharge necessary to assure that (a) pollution or nuisance will not occur and (b) the highest water quality consistent with the maximum benefit to the people of the State will be maintained. Resolution 68-16 incorporates the federal "antidegradation" policy (Cal. Code Regs., tit. 40, § 131.12).

Sand mining, as proposed, is not expected to result in water quality less than that prescribed in the policies. No pollution or nuisance is expected to occur and the highest water quality consistent with the maximum benefit of the people of the State will be maintained. This Order proposes to allow sand mining at a reduced level as compared with the prior permit or the project application. Therefore, it is anticipated that the effects of sand mining, as authorized by this Order, will have even less of an impact than those discussed in the EIR and will not degrade water quality.

4. **Public Notice**
   The Water Board notified Hanson and interested agencies and persons of its intent to issue WDRs and Certification for the project and provided a 30-day public comment period during which they could submit their written views and recommendations.

5. **Public Hearing**
   The Water Board, in a public meeting, heard and considered all comments pertaining to the WDRs and Certification for the project.

IT IS HEREBY ORDERED that Hanson, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, shall comply with the following:

A. DISCHARGE PROHIBITIONS

1. The discharge of water, material, or wastes that is not otherwise authorized by the Order is prohibited.

2. The Basin Plan prohibits discharge of waste water which has "particular characteristics of concern to beneficial uses" (a) at any point in San Francisco Bay and (b) "at any point where the waste water does not receive a minimum initial dilution of at least 10:1 or into any non-tidal water, dead end slough, similar confined water, or any immediate tributary thereof." All shoals presently mined for sand, as listed under Table 1, are expected to have a dilution ratio of at least 10:1. The determination was made based on the depth of the receiving water bodies where sand mining typically occurs (-30 to -90 feet MLLW in Central Bay), the depth restrictions imposed by mining equipment draft limits or other operating constraints (-20 to -45 feet MLLW in Suisun Bay), and potential maximum overflow or decant discharge rate of 15,000 gpm.

3. The discharge shall not cause a condition of pollution or nuisance as defined in Water Code sections 13050(l) and (m), respectively.

4. The discharge of effluent which meets the definition of a hazardous or designated waste as defined in Title 23, Division 3, Chapter 15 of the California Administrative Code is prohibited. Only dredged material that has been demonstrated to be non-hazardous may be mined.

B. RECEIVING WATER LIMITATIONS

1. The discharge of decant/overflow effluent from Hanson's hopper barge shall not cause the following conditions to exist in waters of the State:

    a. Floating material, including solids, liquids, foams, and scum, in concentrations that cause nuisance or adversely affect beneficial uses.

    b. Suspended material in concentrations that cause nuisance or adversely affect beneficial uses.

    c. Oils, greases, waxes, or other materials in concentrations that result in a visible film or coating on the surface of the water or on objects in the water, that cause nuisance, or that otherwise adversely affect beneficial uses.

    d. Bottom deposits or aquatic growths to the extent that such deposits or growths cause nuisance or adversely affect beneficial uses.

    e. Alteration of temperature beyond present natural background levels.

    f. Changes in turbidity that cause nuisance or adversely affect beneficial uses, or increases from normal background light penetration or turbidity greater than 10 percent in areas where natural turbidity is greater than 50 nephelometric turbidity units.

    g. Coloration that causes nuisance or adversely affects beneficial uses.

    h. Toxic or other deleterious substances in concentrations or quantities that cause deleterious effects on wildlife, waterfowl, or other aquatic biota, or render any of these unfit for human consumption, either at levels created in the receiving waters or as a result of biological concentration.

2. The discharge shall not cause waters of the State to exceed the following quality limits:

    a. Dissolved Oxygen — 5.0 mg/L minimum in Central Bay and 7.0 mg/L minimum in Suisun Bay (if natural factors cause lower dissolved oxygen concentrations, this discharge shall not cause further reductions).

    b. Dissolved Sulfide — Natural background level.

    c. pH — The pH shall not be depressed below 6.5 or raised above 8.5. The discharge shall not cause changes greater than 0.5 pH units in normal ambient pH levels.

C. PROVISIONS

1. **Reporting Requirements**
   All technical and monitoring reports required by this Order are required pursuant to section 13267 of the Water Code. Failure to submit reports in accordance with schedules established by this Order or attachments or appendices to this Order, or failure to submit a report of sufficient technical quality acceptable to the Executive Officer, may subject Hanson to enforcement action pursuant to section 13268 of the Water Code.

2. **Monitoring and Reporting**
   Hanson shall comply with the Self-Monitoring and Reporting Program (SMP) attached to this Order and as may be amended by the Executive Officer. The Executive Officer may amend the SMP in response to a written request by Hanson or as necessary to assure collection of information to demonstrate compliance with this Order.

3. **Reopener Provisions**
   The Water Board may modify or reopen this Order prior to its expiration date in any of the following circumstances or as otherwise allowed by law:

   a. If present or future investigations demonstrate that the discharges governed by this Order have or will have a reasonable potential to cause or contribute to, or will cease to have, adverse impacts on water quality or beneficial uses of the receiving waters.

   b. If a water quality study (or studies) or other relevant information provides a basis for determining that a permit condition should be modified.

   c. If State Water Board precedential decisions, new policies, new laws, or new regulations are adopted.

   d. If conditions in federal permits and state permits, which are referenced by this permit, are modified.

4. **Special Study to Evaluate Effluent and Receiving Water Quality**
   Hanson shall submit a Sampling and Analysis Plan (SAP), acceptable to the Executive Officer, within 30 days of Order adoption, for a study to characterize effluent and receiving water quality. In particular, the study shall characterize overflow effluent toxicity and composition (suspended sediment, conventional pollutant, and toxic pollutant concentrations), the spatial and temporal extent of the overflow plume in the receiving water based on the magnitude of suspended sediment concentrations within the plume, and shall compare overflow plume suspended sediment concentrations to background (ambient) conditions. The selection of sampling locations and number of sampling events shall be representative of all of Hanson's mining areas and mining methods, adequate to capture seasonal variations, and be conducted under both flood and ebb tide cycles.

   The SAP shall include, at a minimum, sampling locations, a sampling schedule, laboratory information, analytical methods, QA/QC information, and a reporting schedule.

   Hanson shall start implementing the SAP within 45 days of the Executive Officer's approval. Hanson shall submit a final study report within 60 days of data collection completion, but in no case later than June 30, 2017. Hanson may collaborate with other sand miners to fund and perform the required study.

5. **Benthic Study Technical Advisory Committee (TAC)**
   Hanson shall organize and convene a TAC that includes representatives from SLC, the Corps, the Water Board, NOAA Fisheries, USFWS, CDFW, BCDC, Hanson, Lind Marine, and at least one scientist with expertise in Estuary benthic ecology, preferably from USGS or affiliated with

a local university. Hanson shall coordinate with the TAC to develop a work plan for the benthic study, identify experienced contractors to conduct it, and review all data deliverables.

6. **Benthic Habitat Impact Evaluation Study**
Based on the final work plan developed through the TAC, Hanson shall complete, no later than December 31, 2018, a benthic habitat evaluation study that includes, but is not limited to, the following objectives:

   - Characterize the benthic community and habitat within areas where sand mining is permitted to occur and adjacent areas having similar habitat characteristics where sand mining is not permitted. Characteristics of the benthic community include species composition, biomass of the dominant taxa, density (abundance), and species diversity. Benthic habitat characteristics include consideration of substrate particle size, bed form, evidence of natural and anthropogenic disturbance, and other physical conditions;

   - Identify differences between communities inhabiting mining leases and control sites; and

   - Obtain a better understanding of the effects of sand mining on benthic communities and their rates of recovery following sand mining events.

   Hanson may collaborate with other sand miners to fund and perform the required study. Hanson shall submit copies of its progress reports and the final report to Water Board staff according to the TAC-approved study and reporting plan.

7. **Lease Area Boundaries**
Hanson shall limit sand mining and effluent (overflow) discharges to specific SLC-designated lease areas. Mining is not permitted outside of the lease areas. These limitations reduce and avoid the risk of mining in sensitive subtidal habitat that is located outside the designated lease areas. Specifically, Hanson shall operate sand mining dredges only within the areas detailed in Table 1 in Finding E.3 and as shown in Appendices A-2 and A-3.

8. **Annual and Seasonal Volume Limits**
Hanson shall limit the volume of sand mined annually as shown in Table 1 in Finding E.3. To reduce the potential for entrainment of larval longfin smelt and delta smelt in the Middle Ground lease area, Hanson shall limit the volume of sand mined between December 1 and June 30 each year as required by CDFW Incidental Take Permit 2081-2013-047-03, Amendment No. 1, dated October 14, 2014[1]. Hanson shall also adhere to seasonal volume limits required by USFWS in its Biological Opinion dated October 22, 2014.

9. **Location and Depth Restrictions**
Hanson shall comply with the mining location and depth restrictions shown in the following table:

[1] Middle Ground and Suisun Channel lease areas are limited to a combined mining volume of 54,000 cy between December 1 and June 30.

Mining Location & Depth Restrictions	
Central Bay	No mining within 200 feet of any shoreline No mining within 250 feet of depths <-30 feet MLLW
Middle Ground	No mining within 200 feet of any shoreline No mining within 250 feet of depths < -9 feet MLLW No mining within depths <-25 feet MLLW from December 1 through June 30 No mining within depths < -15 feet MLLW from July 1 through November 30

10. **Buffer Zone Around Hard Bottom Habitat**
Hanson shall establish a buffer zone at a minimum of 100 feet from the outward edge of any hard bottom feature within and adjacent to Central Bay mining leases such that dredging equipment does not come into physical contact with these sensitive areas, including Harding, Shag, and Arch Rocks. SLC has required that any physical contact between dredging equipment and hard bottom areas be immediately reported to SLC, which will establish a new minimum buffer zone distance sufficient to avoid subsequent contacts. Hanson shall notify Water Board staff via email if hard bottom contact occurs, concurrent with reporting to SLC.

11. **Spill Prevention Plan**
Hanson shall maintain and implement a plan, reviewed and approved by the CDFW Office of Oil Spill Prevention and Response, demonstrating that adequate measures are in place to prevent and respond to accidental releases of hydraulic fluids, solvents, oils, and other hazardous materials.

12. **Spill Notification and Response**
Hanson shall notify Water Board staff immediately by telephone and e-mail whenever a release of petroleum products or toxic chemicals to waters of the State occurs as a result of sand mining activity. Pursuant to Water Code section 13267, a written notification of spill response shall be submitted to the Water Board within 30 days of spill occurrence. The written notification shall identify the nature of the spill, describe the action necessary to remedy the condition, and specify a timetable, subject to the modifications of the Water Board, for remedial actions.

13. **Monitoring and Reporting**
    a. Hanson shall measure and record dredging locations and areal extent of benthic disturbance per lease area, water depth at time of dredging, volumes dredged, and off-loading locations for dredging on a daily basis during operations. Monitoring and reporting shall be conducted in accordance with the Self-Monitoring Program (SMP, Appendix B).

b. Hanson shall file with the Water Board a report of any material change or proposed change in the character, location, or quantity of the effluent discharge.

c. Dredging operations shall cease immediately whenever violations of requirements are detected through implementation of the SMP. Hanson shall notify Water Board staff immediately by telephone and email whenever violations are detected. Operations shall not resume until Hanson submits, and the Executive Officer approves, a corrective action plan that will provide alternative methods of compliance.

Protection of Special Status Species

14. This Certification does not allow for the take, or incidental take except as described below, of any special status species. Hanson shall use the appropriate protocols, as approved by State and federal resource agencies in their consultations on the project, to ensure that sand mining activities do not adversely impact Preservation of Rare and Endangered Species, a beneficial use of San Francisco Bay and its tributaries as set forth in the Basin Plan.

15. Hanson shall adhere to the Terms and Conditions and the Reasonable and Prudent Measures in the *Biological Opinion* dated October 22, 2014, issued for the project by USFWS.

16. Hanson shall adhere to the Terms and Conditions and the Reasonable and Prudent Measures in the most current *Endangered Species Consultation* issued for the project by NOAA Fisheries, and, to the extent imposed as permit conditions by the Corps, the Conservation Recommendations in the Essential Fish Habitat Consultation also issued for the project by NOAA Fisheries.

17. Hanson shall adhere to the conditions of Incidental Take Permit No. 2081-2013-047-03 dated April 1, 2014, Amendment No. 1 dated October 14, 2014, and any subsequent amendments, issued for the project by CDFW for entrainment of special status fish species (Chinook Salmon, Delta Smelt, and Longfin Smelt).

Standard Provisions

18. Hanson shall maintain a copy of this Order on the vessel so as to be available at all times to all vessel personnel.

19. For the purposes of this Order, disposal of dredged material is defined as any ultimate use or disposition other than the resale of the sand for construction and other beneficial uses. For dredged material that is not of market grade and is not sold, the ultimate offsite disposal of the material is subject to the approval of the Executive Officer. This approval shall be based upon a demonstration that the ultimate disposal will occur at a site that has WDRs or another appropriate approval from the Water Board.

    Hanson shall permit the Water Board or its authorized representative, upon presentation of identification:

    a. Entry onto the premises on-board any and all vessels and into offices where records are kept.
    b. Access to copy any records required to be kept under the terms and conditions of this Order.

c. Inspection of any treatment equipment, monitoring equipment, or monitoring method required by this Order.
d. Sampling of any discharge or surface water covered by this Order.

20. **Certification**
The Water Board hereby certifies that any discharge from the referenced project will comply with the applicable provisions of Clean Water Act sections 301 (Effluent Limitations), 302 (Water Quality Related Effluent Limitations), 303 (Water Quality Standards and Implementation Plans), 306 (National Standards of Performance), and 307 (Toxic and Pretreatment Effluent Standards), and with other applicable requirements of State law. Clean Water Act section 401 directs the agency responsible for certification to prescribe effluent limitations and other limitations necessary to ensure compliance with the Clean Water Act and with any other appropriate requirement of state law. Section 401 further provides that state certification conditions shall become conditions of any federal license or permit for the project. The conditions of this certification must be met to ensure that the project will comply with water quality standards, any applicable effluent limitation, standard of performance, prohibition, effluent standard, or pretreatment standard required pursuant to the Clean Water Act sections listed above and to ensure that the project will comply with any other appropriate requirements.

21. This Certification applies to the project as proposed in the application materials. Failure to implement the project as proposed is a violation of this Certification. Violation or threatened violation of the conditions of this Certification is subject to any remedies, penalties, process, or sanctions as provided for under applicable State or federal law, including administrative civil liability pursuant to Water Code section 13350. Failure to meet any condition of a certification may subject Hanson to civil liability imposed by the Water Board to a maximum of $5,000 per day of violation or $10 for each gallon of waste discharged in violation of the certification.

22. This Certification action is subject to modification or revocation upon administrative or judicial review, including review and amendment pursuant to Water Code section 13330 and California Code of Regulations, title 23 (23 CCR), section 3867. The Water Board may add to or modify the conditions of this Order, as appropriate, to implement any new or revised water quality standards and implementation plans adopted and approve pursuant to the Porter-Cologne Water Quality Control Act or section 303 of the Clean Water Act, or in response to new information concerning the conditions of the project.

23. This Certification action is not intended and shall not be construed to apply to any discharge from any activity involving a hydroelectric facility 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 subsection 3855(b) and that application specifically identified that a FERC license or amendment to a FERC license for a hydroelectric facility was being sought.

24. This Order does not remove liability under federal, State, or local laws, regulations or rules of other programs and agencies, nor does this Order authorize the discharge of wastes without appropriate permits from other agencies or organizations.

25. Water Board Order Nos. 95-177 and 00-048 are hereby rescinded.

I, Bruce H. Wolfe, Executive Officer, do hereby certify that the foregoing is a full, complete and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on January 21, 2015.

Digitally signed by Bruce H. Wolfe
DN: cn=Bruce H. Wolfe, o=SWRCB, ou=Region 2, email=bwolfe@waterboards.ca.gov, c=US
Date: 2015.01.28 17:37:55 -08'00'

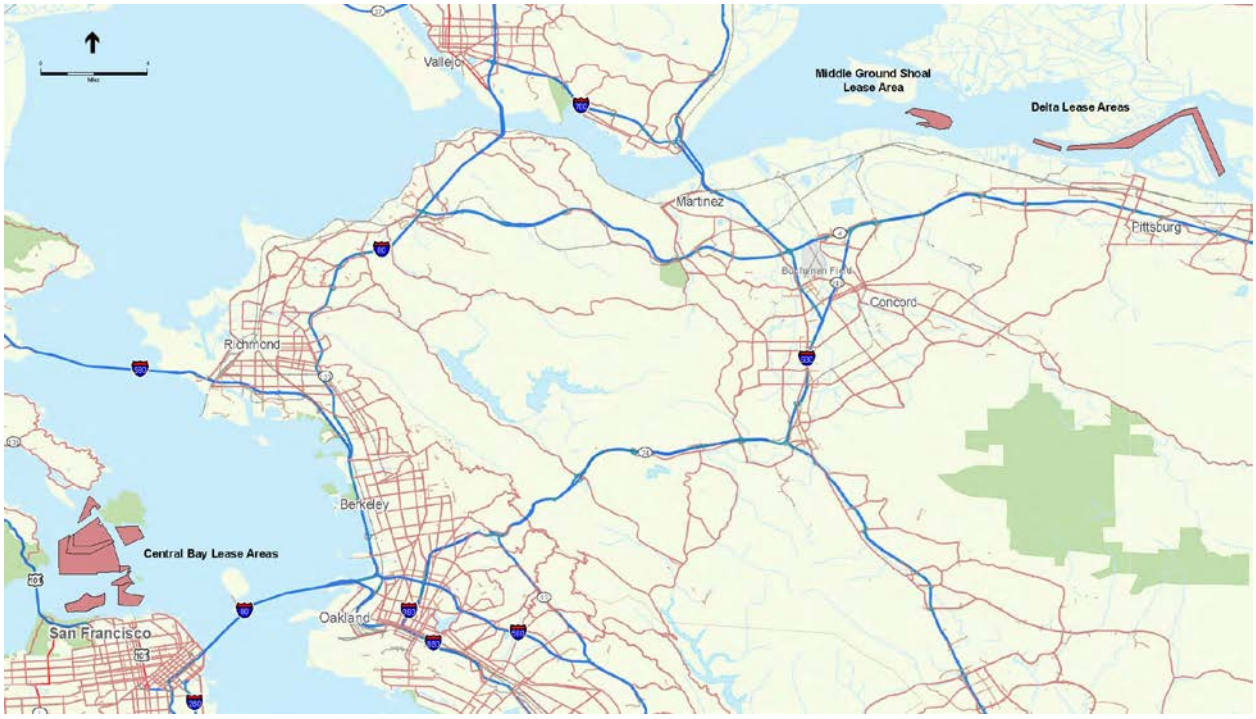
Bruce H. Wolfe
Executive Officer

Appendices: Appendix A: Site Maps - Central and Suisun Bays
Appendix B: Self-Monitoring Program (SMP)

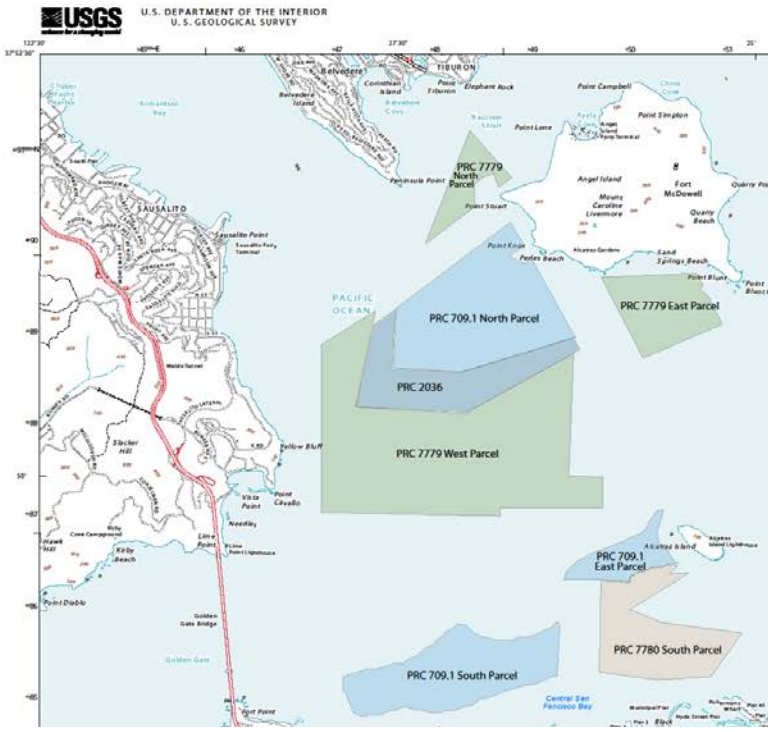
APPENDIX A

Sand Mining Lease Location Maps and
Upland Sand Processing Facility (Sand Yard) Location Map

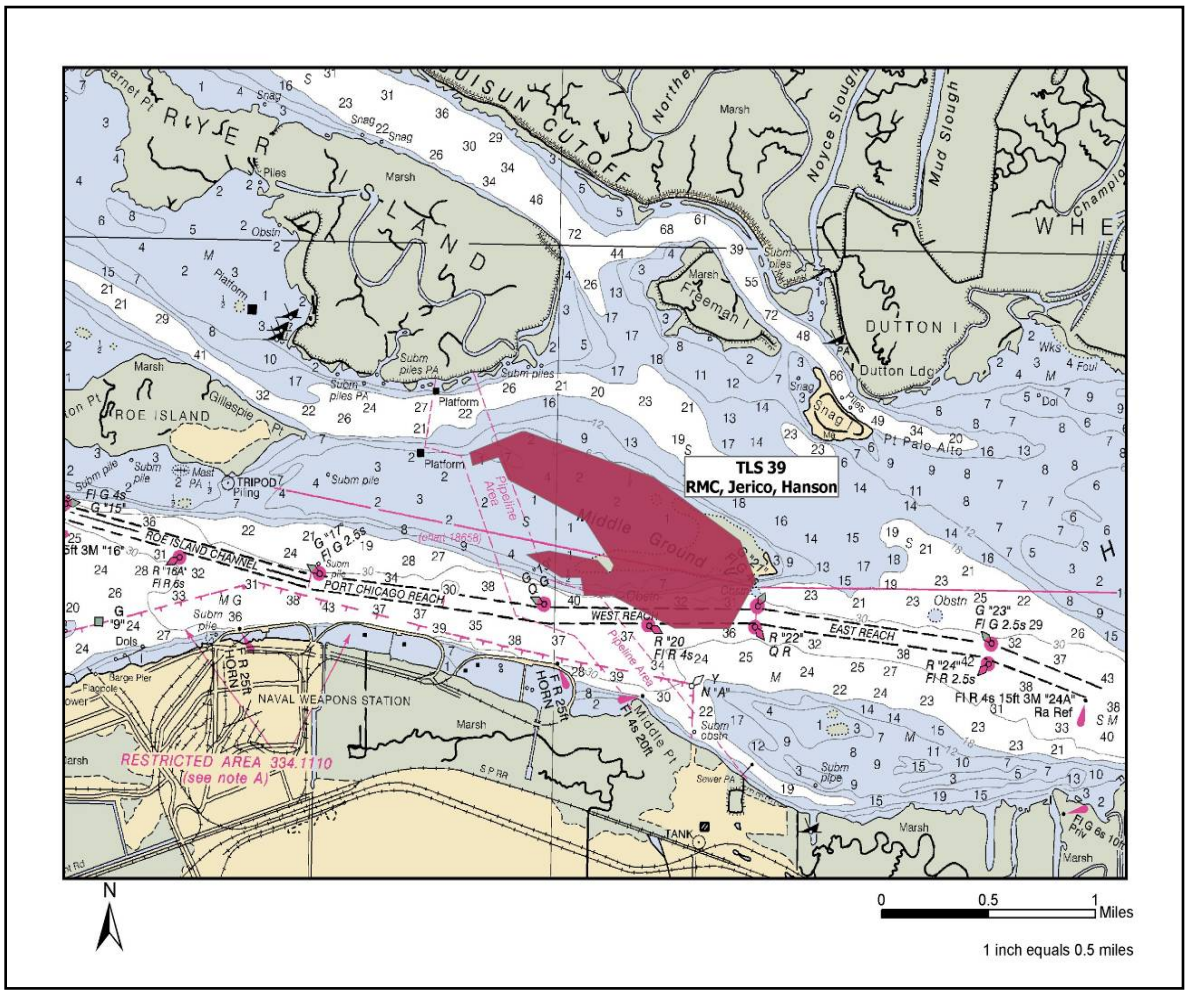
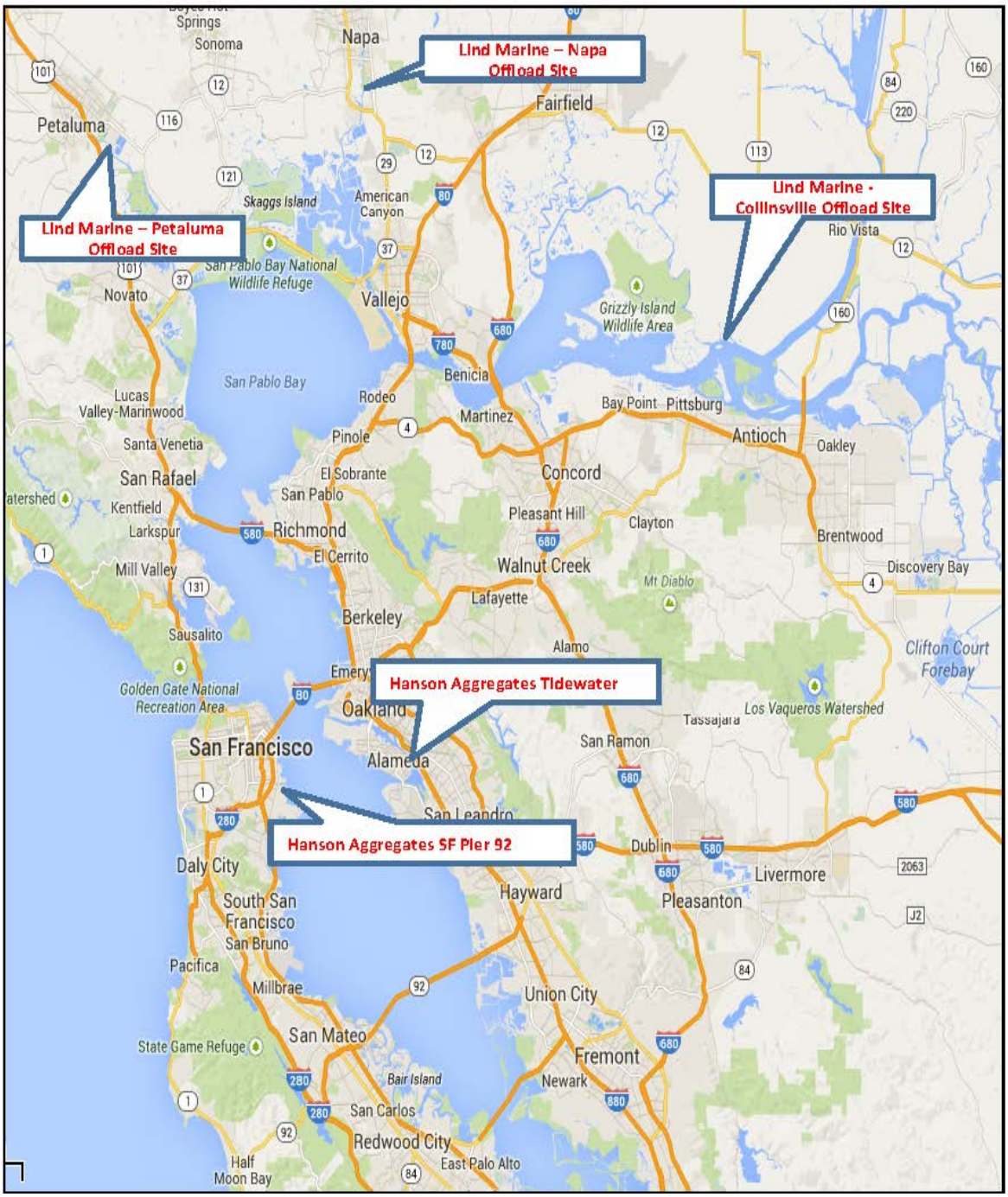
Appendix A-1
Regional Map of General Sand Mining Lease Locations



Appendix A-2
Hanson Marine Operations' Central Bay Sand Mining Lease Locations



Appendix A-3
Hanson Marine Operations' Middle Ground Sand Mining Lease Locations



Appendix A-4
Upland Sand Processing Facility (Sand Yard) Locations