EXHIBIT C – Shell Martinez Marine Terminal
MITIGATION MONITORING PROGRAM

MITIGATION MONITORING PROGRAM

As the Lead Agency under the California Environmental Quality Act (CEQA), the California State Lands Commission (CSLC) is required to adopt a program for reporting or monitoring the implementation of mitigation measures for the Shell Martinez Marine Terminal Lease Consideration Project, if approved, to ensure that the adopted mitigation measures are implemented as defined in this EIR. This Lead Agency responsibility originates in Public Resources Code section 21081.6(a) (Findings), and State CEQA Guidelines sections 15091(d) (Findings) and 15097 (Mitigation Monitoring or Reporting).

MONITORING AUTHORITY

The purpose of a Mitigation Monitoring Program (MMP) is to ensure that measures adopted to mitigate or avoid significant impacts are implemented. An MMP can be a working guide to facilitate not only the implementation of mitigation measures and applicant-proposed measures by the Project proponent, but also the monitoring, compliance and reporting activities of the CSLC and any monitors it may designate.

The CSLC may delegate duties and responsibilities for monitoring to other environmental monitors or consultants as deemed necessary, and some monitoring responsibilities may be assumed by responsible agencies, such as the Office of Spill Prevention and Response. The number of monitors assigned to the project will depend on the number of concurrent mitigation measure requirements. The CSLC or its designee(s) will ensure that a qualified person is delegated any duty or responsibility to monitor compliance. Any mitigation measure study or plan that requires the approval of the CSLC must allow at least 60 days for adequate review time. Other agencies and jurisdictions may require additional review time. It is the responsibility of the environmental monitor assigned to each spread to ensure that appropriate agency reviews and approvals are obtained. The CSLC or its designee will also ensure that any deviation from the procedures identified under the monitoring program is approved by the CSLC. Any deviation and its correction shall be reported immediately to the CSLC or its designee by the environmental monitor assigned to the Project.

ENFORCEMENT AND COMPLIANCE RESPONSIBILITY

The CSLC is responsible for enforcing the procedures adopted for monitoring through the environmental monitor assigned to the project. Any assigned environmental monitor shall note problems with monitoring, notify appropriate agencies or individuals about any problems, and report the problems to the CSLC or its designee.

The Applicant is responsible for successfully implementing all the mitigation measures in the MMP, and is responsible for assuring that these requirements are met by all of its

construction contractors and field personnel. Standards for successful mitigation also are implicit in many mitigation measures that include such requirements as obtaining permits or avoiding a specific impact entirely. Other mitigation measures include detailed success criteria. Additional mitigation success thresholds will be established by applicable agencies with jurisdiction through the permit process and through the review and approval of specific plans for the implementation of mitigation measures.

GENERAL MONITORING PROCEDURES

Environmental Monitors

Monitoring procedures will be conducted during continued routine operations as well as accidental spills of the project. The CSLC and the environmental monitor(s) are responsible for integrating the mitigation monitoring procedures in coordination with the Applicant. To oversee the monitoring procedures and to ensure success, the environmental monitor assigned to each mitigation measure must assure that the mitigation monitoring procedures or requirements are adhered to in accordance with time specifications, if given. The environmental monitor is responsible for ensuring that all procedures specified in the monitoring program are followed.

General Reporting Procedures

Site visits and specified monitoring procedures performed by other individuals will be reported to the environmental monitor assigned to the project. A monitoring record form will be submitted to the environmental monitor by the individual conducting the visit or procedure so that details of the visit can be recorded and progress tracked by the environmental monitor. A checklist will be developed and maintained by the environmental monitor to track all procedures required for each mitigation measure and to ensure that the timing specified for the procedures is adhered to. The environmental monitor will note any problems that may occur and take appropriate action to rectify the problems.

Public Access to Records

The public is allowed access to records and reports used to track the monitoring program. Monitoring records and reports will be made available for public inspection by the CSLC or its designee on request.

MITIGATION MONITORING TABLES

The following sections present the mitigation monitoring tables for the project. Each table lists the following information, by column:

- Impact (impact number, title, and impact class);
- Mitigation Measure (full text of the measure is presented);
- Monitoring/reporting action (the action to be taken by the monitor or Lead Agency);
- Effectiveness criteria (how the agency can know if the measure is effective);
- Responsible agency; and
- Timing (before, during, or after construction; during operation, etc.).

Mitigation Monitoring Program – Operational Safety/Risk of Upset

Impact	Mitigation Measure	Monitoring/ Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
OS-3 Potential for Spills and Response Capability for Containment of Class I-IV Oil Spills From Shell Terminal During Transfer Operations: Shell's response capability for containment of spills during transfer operations would still result in adverse and significant impacts for spills greater than 50 barrels (bbls). Consequences would range from spills that can be contained during first response efforts with rapid cleanup (Class II), to those complex spills that result in a significant impact (Class I) with residual effects after mitigation.	**OS-3a Remote Release Systems:** Install and maintain mooring quick release devices that shall be able to be activated within 60 seconds. • These devices shall be capable of being engaged by electric/push button release mechanism and by integrated remotely-operated release system. • Shell shall document procedures and training for systems use and communications between Terminal and vessel operator(s). • Routine inspection, testing and maintenance of all equipment and systems in accordance with manufacturers' recommendations and necessity are required to ensure safety and reliability, to the satisfaction of California State Lands Commission (CSLC) staff. • Shell may install alternate technology that provides an equivalent level of protection, as reviewed by CSLC staff and approved by the Commission at a publicly noticed meeting. These measures would allow a vessel to leave the Shell Terminal as quickly as possible in the event of an emergency (fire, explosion, accident, or tsunami) that could lead to a spill that could impact the Shell Terminal or the vessel.	CSLC monitor to observe properly maintained devices after installation and periodically monitor procedures and training for systems use.	Reduces potential for damages and spills**.** In the event of an emergency, the Shell Terminal will able to quickly release a vessel to prevent spread of oil.	CSLC	Within 24 months of lease implementation.
OS-3 Potential for Spills and Response Capability for Containment of Class I-IV Oil Spills From Shell Terminal During Transfer Operations: Shell's response capability for containment of spills during transfer operations would still result in adverse and significant impacts for spills greater than 50 barrels (bbls). Consequences would range from spills that can be contained during first response efforts with rapid cleanup (Class II), to those complex spills that	**OS-3b Tension Monitoring Systems (TMSs).** Install and maintain TMSs to effectively monitor all mooring line and environmental loads, and avoid excessive tension or slack line conditions that could result in damage to the terminal structure and/or equipment and/or vessel mooring line failures that could result in spills. • Line tensions and environmental data shall be integrated into systems that record and relay all critical data to the Control Room, terminal operator(s) and vessel operator(s). • This system shall include, but not be limited to, quick release hooks only (with load cells), site-specific current meter(s), site-specific anemometer(s), and visual and audible alarms that can support effective	CSLC monitor to observe properly maintained devices after installation and periodically monitor procedures and training for systems use.	Reduces potential for damages and spills**.**	CSLC	Within 24 months of lease implementation.

Mitigation Monitoring Program – Operational Safety/Risk of Upset

Impact	Mitigation Measure	Monitoring/ Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
result in a significant impact (Class I) with residual effects after mitigation.	preset limits and shall be able to record and store monitoring data. • Shell shall document procedures and training for systems use and communications between Terminal and vessel operator(s). • Routine inspection, testing and maintenance of all equipment and systems in accordance with manufacturers' recommendations and necessity are required to ensure safety and reliability, to the satisfaction of California State Lands Commission (CSLC) staff. • Shell may install alternate technology that provides an equivalent level of protection, as reviewed by CSLC staff and approved by the Commission at a publicly noticed meeting.				
OS-3 Potential for Spills and Response Capability for Containment of Class I-IV Oil Spills From Shell Terminal During Transfer Operations: Shell's response capability for containment of spills during transfer operations would still result in adverse and significant impacts for spills greater than 50 barrels (bbls). Consequences would range from spills that can be contained during first response efforts with rapid cleanup (Class II), to those complex spills that result in a significant impact (Class I) with residual effects after mitigation.	**OS-3c Allision Avoidance Systems:** Install and maintain Allision Avoidance Systems (AASs) at the Shell Terminal to prevent damage to the wharf and/or vessel during docking and berthing operations. • The AASs shall be used and alarmed to monitor vessel drift (both surge and sway) during all mooring operations, and shall be equipped with an AIS receiver to capture passing vessel parameters. • This shall be integrated with the Tension Monitoring Systems such that all data collected are available in the Control Room and to Terminal operator(s) at all times and vessel operator(s) during berthing operations. The AASs shall also be able to record and store monitoring data. • Prior to implementing this measure, Shell shall consult with the San Francisco Bay Bar Pilots (SFBBP), the U.S. Coast Guard, and the California State Lands Commission (CSLC) staff and provide information that would allow CSLC staff to determine, on the basis of such consultations and information regarding the nature, extent and adequacy of the existing berthing system, the most appropriate application and timing of an AASs at the Shell Terminal.	CSLC monitor to observe properly maintained devices after installation and periodically monitor procedures and training for systems use.	Reduces potential for damages and spills**.**	CSLC	Within 24 months of lease implementation.

Mitigation Monitoring Program – Operational Safety/Risk of Upset

Impact	Mitigation Measure	Monitoring/ Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
	• Shell shall document procedures and training for systems use and communications between Terminal and vessel operator(s). • Routine inspection, testing and maintenance of all equipment and systems in accordance with manufacturers' recommendations and necessity are required to ensure safety and reliability, to the satisfaction of CSLC staff.				
OS-4 Group V Oils: Group V oils have a specific gravity greater than 1 and do not float on the water; instead, they will sink below the surface into the water column or possibly to the bottom. Shell does not identify the types of oils by Group that it handles in its Oil Spill Response Manual nor does Shell discuss response capabilities by Group. Shell handles asphalt and other products that may be Group V oils. If this is the case, a release of a Group V oil could result in significant impacts (Class I).	**OS-4:** Shell shall consult with the California State Lands Commission (CSLC) and Office of Spill Prevention and Response (OSPR) staffs regarding Group V oil spill response technology including potential new response equipment and techniques that may be applicable for use at the Shell Terminal. Shell shall work with the CSLC and OSPR in applying these new technologies, as agreed upon, if recommended for this facility.	Shell shall submit biennial (every other year) report on status of new technology and equipment to CSLC.	Provides flexibility in lease to update MM and improve response capability.	CSLC	Submit biennial (every other year) report for life of lease.
OS-6 Potential for Fires and Explosions and Response Capability: Residential areas are beyond the hazard footprint boundary; however, there is an extremely small probability that the Martinez Marina could be impacted by a tanker explosion. Because of the extremely low probability of this event, it is concluded that fires and explosions would not cause a public safety risk (Class III). However, a major fire at the Shell Terminal could result in a significant oil spill. Hence, a significant impact has been identified (Class II).	**OS-6a:** Shell shall implement Mitigation Measure (MM) OS-3a to provide and maintain effective Remote Release Systems, which would allow a vessel to depart the Shell Terminal quickly in the event of a fire and/or explosion that could lead to a spill. These measures would also allow for the ability to isolate the terminal and/or vessel from an emergency situation that could lead to a spill.	See MM OS-3a.	See MM OS-3a.	See MM OS-3a.	See MM OS-3a.
	OS-6b: Shell shall develop a Fire Plan consistent with Section 3108F2.2 of 24 CCR, Part 2, California Building Code, Chapter 31F. Shell shall also develop a set of procedures and conduct training and drills for dealing with tank vessel fires and explosions for tankers berthed at the terminal. The procedures shall include the steps to follow in the event of a tank vessel fire and describe how Shell and the vessel will coordinate activities. The procedures shall also identify	Shell shall prepare and submit Fire Plan to CSLC for review and approval.	Provides planning and procedures for emergency response.	CSLC	Submit to CSLC within 90 days of signing the lease agreement.

Mitigation Monitoring Program – Operational Safety/Risk of Upset

Impact	Mitigation Measure	Monitoring/ Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
	other capabilities that can be procured if necessary in the event of a major incident. The Fire Plan and procedures shall be submitted to the California State Lands Commission (CSLC) within 90 days of lease renewal. The CSLC shall have final approval of the plan.				
OS-7 Response Capability for Accidents in Bay and Outer Coast: Spills from accidents in the Bay could result in impacts to water quality or biological resources that could be significant adverse (Class II) impacts for spills that can be if contained during first response efforts; or significant adverse (Class I) impacts that would have residual impacts. While Shell does not have legal responsibility for tankers it does not own, it does have responsibility to participate in improving general response capabilities.	**OS-7a:** Shell shall participate in U.S. Coast Guard (USCG) Port and Waterways Safety Assessment (PAWSA) workshops for the San Francisco Bay area to support overall safety improvements to the existing Vessel Traffic Service (VTS) in the Bay Area, if such workshops are conducted by the USCG during the life of the lease.	(Implement as lease condition.) Shell shall demonstrate to CSLC their participation in USCG PAWSA workshops to support overall safety in the Bay and to protect sensitive resources.	Reduces potential damage to resources.	CSLC	Life of lease.
	OS-7b: Shell shall respond to any spill from a vessel traveling in the Bay to or from the wharf, moored at its wharf, related in any way to the wharf, or carrying cargo owned by Shell, as if it were its own, without assuming liability, until such time as the vessel's response organization can take over management of the response actions in a coordinated manner.	(Implement as lease condition.) CSLC monitor to observe emergency actions.	Reduces potential damage to resources.	CSLC	Life of lease.

Mitigation Monitoring Program – Water Quality

Impact	Mitigation Measure	Monitoring/ Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
WQ-2 Segregated Ballast Water: Discharge of ballast water that contains harmful organisms could impair several of the Project area's beneficial uses, including commercial and sport fishing, estuarine habitat, fish migration, preservation of rare and endangered species, water contact recreation, non-contact water recreation, fish spawning, and	**WQ-2:** Following the adoption of the Mitigation Monitoring Program for the proposed Project, Shell will advise both agents and representatives of shipping companies having control over vessels that have informed Shell of plans to call at the Shell Terminal about the California Marine Invasive Species Act and associated implementing regulations. Shell will ensure that all vessels submit required reporting forms, as applicable for each vessel, to the California State Lands Commission (CSLC) Marine Facilities Division, including but not	Shell shall ensure that all vessels submit required reporting forms, as applicable for each vessel, to the CSLC Marine Facilities Division prior to the vessel's entry into San Francisco Bay or in the alternative,	This measure will provide a tracking mechanism and shall remain in effect until such time that more stringent requirements are developed.	CSLC	Life of lease.

Mitigation Monitoring Program – Water Quality

Impact	Mitigation Measure	Monitoring/ Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
wildlife habitat. Therefore discharge of segregated ballast water is determined to have a potentially significant impact to water quality (Class I).	limited to, the Ballast Water Reporting Form, the Hull Husbandry Reporting Form, the Ballast Water Treatment Technology Reporting Form, and/or the Ballast Water Treatment Supplemental Reporting Form.	at least 24 hours prior to the vessel's arrival at the Shell Terminal.			
WQ-4 Non-segregated Ballast Water: Non-segregated ballast water that is sent to the treatment facility may include nonindigenous organisms. Treatment at the facility does not include any specific procedures to prevent organisms that may be in ballast water from being discharged to Bay waters. Discharge of harmful organisms would be a significant adverse impact (Class II).	**WQ-4:** Shell shall not discharge any non-segregated ballast water received at the Shell Terminal to San Francisco Bay. If Shell needs to unload non-segregated ballast water, it shall be unloaded into a tanker truck or other suitable wastehandling vehicle and disposed of at an appropriate facility.	(Implement as lease condition.)	Reduces potential damage to resources.	CSLC	Life of lease.
WQ-5 Other Liquid Wastes: Spills of sanitary wastewater, cargo tank washwater or bilge water could degrade water quality and many spills would constitute chronic long-term degradation of water quality, resulting in a significant adverse impact (Class II).	**WQ-5:** Shell shall prepare a Spill Prevention Plan (SPP) for greywater, sewage, and other waste water streams and for ships visiting the Shell Terminal that includes Best Management Practices (BMPs) specifically to prevent leaks and spills during transfer of liquids between vessels and trucks on the Shell Terminal. The Spill Prevention Plan shall be prepared within 6 months of lease implementation and reviewed by the California State Lands Commission (CSLC) and be available to the San Francisco Bay Regional Water Quality Control Board (RWQCB). The SPP shall identify the personnel, equipment and materials needed to deal with a spill. The plan will include information about storage capacity, environmentally and economically sensitive areas, personnel training, practice drills and a "worst case" scenario. The plan should be tested regularly to maximize the use of new technology and to sharpen personnel response skills. Consult the U.S. Environmental Protection Agency National Oil and Hazardous Substances Pollution Contingency Plan for goals and assignment of responsibilities for managing oil spills. The plan shall include, but not be	Shell shall prepare a Spill Prevention Plan for CSLC review and approval, and update as necessary. The plan should be available to the RWQCB.	Aggressive implementation of BMPs to reduce the input of chemicals to the Bay from operations on the wharf would reduce Shell's input of these chemicals.	CSLC	Prepare Spill Prevention Plan within 6 months of lease implementation. Maintain annually for life of lease.

Mitigation Monitoring Program – Water Quality

Impact	Mitigation Measure	Monitoring/ Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
	limited to, the following procedures: • Identify individuals responsible for implementing the plan. Make sure that oil spill response crews are available 24 hours/day. • Define safety measures to be taken with each kind of spill. Oil spill response crews are to be trained to conduct land and water response operations. • Specify how to notify authorities, such as police, fire, appropriate local, state and federal agencies, hospitals, or other agencies for assistance. • Document the locations of spill response equipment and procedures on use and ensure that procedures are clear and concise. Keep sufficient absorbent material and spill containment instruments (appropriate for all types of materials that could be spilled) at the Shell Terminal in an accessible area. • State the procedures for containing, diverting, isolating, and cleaning up the spill. Describe spill response equipment to be used for each kind of spill, include safety and cleanup equipment. Equipment for spill prevention could include dikes or other forms of secondary containment around tanks and other processing vessels to retain oil or hazardous materials in the event of a release. • If a spill occurs, stop the spill or lead source and contain the spill. Immediately clean up any spills on the dock or vessel and dispose of wastes according to local, state, and federal requirements. Report spills into the water immediately to the U.S. Coast Guard National Response Center.				
WQ-7 Anti-Fouling Paints: Use by marine vessels of anti-fouling paints containing copper, sodium, zinc, or tributyltin (TBT) are considered toxic and present a significant adverse impact to water quality that cannot be mitigated to less than significant (Class I).	**WQ-7:** Following the adoption of the Mitigation Monitoring Program for the proposed Project, Shell will advise both agents and representatives of shipping companies having control over or representing vessels that have informed Shell of plans to call at the Shell Terminal about the requirements of the 2008 International Maritime Organization (IMO) prohibition of tributyltin (TBT) applications to vessel hulls. Shell will ensure that the	Shell shall require vessels to document that they have no new TBT applications (per IMO mandate). Documentation shall be kept at Shell, available for CSLC	Shell will ensure that visiting vessels are in compliance with 2008 IMO requirements by submitting copies of certifications from vessel masters or authorized	CSLC	Life of lease.

Mitigation Monitoring Program – Water Quality

Impact	Mitigation Measure	Monitoring/ Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
	Master or authorized representative of vessels intending to call at the Shell Terminal certifies that their vessel is in compliance and provides a copy of such certification to the California State Lands Commission's Marine Facilities Division's Northern California Field and Sacramento Offices, either electronically or by facsimile, prior to the vessel's entry into San Francisco Bay or in the alternative, at least 24 hours prior to the vessel's arrival at the Shell Terminal.	inspection.	representatives to CSLC. This will help to reduce impact to water quality by eliminating organotins, and also eliminate toxicity to marine organisms.		
WQ-8 Tanker Maintenance: Routine vessel maintenance would have the potential to degrade water quality due to chronic spills during transfers of lubricating oils, resulting in adverse significant (Class II) impacts.	**WQ-8:** Mitigation Measure WQ-5 applies which addresses preparation of a Spill Prevention Plan that includes Best Management Practices for the Shell Terminal.	See MM WQ-5.	See MM WQ-5.	See MM WQ-5.	See MM WQ-5.
WQ-9 Stormwater Runoff from the Wharf: Stormwater runoff from the Shell Terminal may contribute pollutants to the San Francisco Bay in concentrations that may adversely affect some benthic species within the local area, resulting in a significant adverse impact (Class II) to water quality.	**WQ-9:** Shell shall coordinate with the Regional Water Quality Control Board (RWQCB) to develop a Storm Water Pollution Prevention Plan (SWPPP) that Shell shall prepare specifically for the Shell Terminal to reduce the input of chemicals to the San Francisco Bay from the marine terminal. Best Management Practices (BMPs) for consideration shall include (at a minimum) (1) conducting all vehicle maintenance on land not over water or marshland, (2) berming all areas on the pier where maintenance activities are being conducted and cleaning up all spilled contaminants before berms are removed, (3) when necessary, washing the surface of the pier to the extent practical and directing washwater into sumps, (4) maintenance of sumps, and (5) posting signs to educate all workers to the importance of keeping contaminants from entering the San Francisco Bay.	These BMPs shall be detailed in a SWPPP that Shell shall prepare specifically for the Shell Terminal and submit to CSLC for approval.	Aggressive implementation of BMPs to reduce the input of chemicals to the Bay from operations on the Shell Terminal would reduce Shell's input of these chemicals.	CSLC	Prepare SWPPP within 6 months of lease implementation. Maintain SWPPP, update as necessary for life of lease.
WQ-11 Oil and Product Leaks and Spills at the Shell Terminal: Potential impacts on water quality can result from leaks or spills. Small leaks or spills (less than 50 barrels [bbls]) related to Shell Terminal	**WQ-11:** MM OS-3a through OS-3c and OS-4 (Operational Safety/Risk of Accidents) shall be implemented.	See MM OS-3a through MM OS-3c and MM OS-4.	See MM OS-3a through MM OS-3c and MM OS-4.	See MM OS-3a through MM OS-3c and MM OS-4.	See MM OS-3a through MM OS-3c and MM OS-4.

Mitigation Monitoring Program – Water Quality

Impact	Mitigation Measure	Monitoring/ Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
operations could result in significant (Class II) impacts, while large spills (greater than 50 bbls) could result in significant adverse impacts (Class I).					
WQ-12 Water Quality Impacts from Accidental Spills from Vessels in Transit in Bay or Along Outer Coast: A significant impact to water quality (Class I or II) could result from leaks or an accidental spill of crude oil or oil product from a vessel spill along tanker routes either in San Francisco Bay or outer coast waters.	**WQ-12**: Shell shall implement MM OS-7a and OS-7b of Section 4.1, Operational Safety/Risk of Accidents, addressing potential participation in Port and Waterways Safety Assessment workshops for the San Francisco Bay area to support overall safety improvements to the existing Vessel Traffic Service (VTS) and Shell response actions for spills at or near the Shell Terminal.	See MM OS-7a and MM OS-7b.	See MM OS-7a and MM OS-7b.	See MM OS-7a and MM OS-7b.	See MM OS-7a and MM OS-7b.

Mitigation Monitoring Program – Biological Resources

Impact	Mitigation Measure	Monitoring/ Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
BIO-3 Maintenance Dredging: Loss of juvenile Dungeness crabs and young Chinook salmon would be a significant, adverse impact because dredging at the time when juveniles are moving through the area could disrupt the migration patterns of these species (Class II). Because of the low volume of material dredged, impacts are adverse, but less than significant (Class III) to plankton, other benthos, other fishes, and birds.	**BIO-3a:** The Shell Terminal shall schedule dredging to avoid the months of May and June when juvenile Dungeness crabs are most abundant in the Project study area. In the event that, due to circumstances beyond lessee's control, dredging must occur in May and June to maintain a depth for safe navigation and operation of the terminal, lessee shall consult with the California Department of Fish and Game (CDFG) regarding the potential effects of such dredging on juvenile Dungeness Crabs and Chinook salmon smolts. Such consultation may occur directly with CDFG personnel in Region 3 or with CDFG personnel during the consideration of lessee's application to the Dredged Material Management Office (DMMO). If the CDFG concurs with dredging as proposed by the lessee, documentation of which shall be provided to Lessor, it shall be conclusively presumed that juvenile Dungeness Crabs and Chinook salmon smolts will not be significantly affected, and dredging may proceed as provided herein.	Shell shall coordinate with the CSLC, CDFG, and U.S. Army Corps of Engineers (USACE), who are the dredging permit holders, on the scheduling of dredging operations.	Reduces potential impacts to juvenile Dungeness crabs.	CSLC, CDFG, USACE	Prior to dredging.

Mitigation Monitoring Program – Biological Resources

Impact	Mitigation Measure	Monitoring/ Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
	BIO-3b: Although chances of entrainment of salmon are relatively low, to protect the salmon, the Shell Terminal shall schedule dredging in June through November when winter and spring run Chinook salmon smolt activity is lowest. See, also, consultation with California Department of Fish and Game (CDFG) in MM BIO-3a, above.	Shell shall coordinate with the CSLC, CDFG, and U.S. Army Corps of Engineers (USACE), who are the dredging permit holders on the scheduling of dredging operations.	Reduces potential impacts to Chinook salmon smolt.	CSLC, CDFG, USACE	Prior to dredging.
BIO-4 Introduction of Nonindigenous Species: Invasive organisms/introduction of nonindigenous species in ballast water released in the Bay or from vessel biofouling could have significant (Class I) impacts to plankton, benthos, fishes, and birds.	**BIO-4a:** Implement Mitigation Measure (MM) WQ-2 in Water Quality that requires that Shell comply with the California Marine Invasive Species Act (MISA) and related California State Lands Commission (CSLC) regulations and ensure that all vessel's submit required report forms including, but not limited to, the Ballast Water Reporting Form, Hull Husbandry Reporting Form, and treatment technology reporting forms to the CSLC to better track the management of ballast water and vessel biofouling. Implement MM WQ-4 requiring that non-segregated ballast water be unloaded to a suitable waste handling vehicle and disposed of at an appropriate facility rather than being treated at the Shell effluent treatment facility shall apply. All vessels must also have removed biofouling organisms from their wetted surfaces on a regular basis.	See MM WQ-2 and MM WQ-4.	See MM WQ-2 and MM WQ-4.	See MM WQ-2 and MM WQ-4.	See MM WQ-2 and MM WQ-4.

Mitigation Monitoring Program – Biological Resources

Impact	Mitigation Measure	Monitoring/ Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
	BIO-4b: Shell shall participate and assist in funding ongoing and future actions related to invasive species and identified in the October 2005 Delta Smelt Action Plan (State of California 2005). The funding support shall be provided to the Pelagic Organism Decline Account or other account identified by the California Department of Water Resources (DWR) and California Department of Fish and Game (CDFG), lead Action Plan agencies. The level of funding shall be determined through a cooperative effort between the CSLC, the DWR, the CDFG, and Shell, and shall be based on criteria that establish Shell's commensurate share of the Plan's invasive species actions costs.	The level of funding shall be determined by the CSLC, DWR, CDFG, and Shell Oil Products US as part of the agencies' responsibilities under the Delta Smelt Action Plan and CSLC's administration of the MISA.	Contributions will go towards effort in finding a solution to pelagic species decline.	CSLC, DWR, CDFG	Life of lease.
BIO-6 Oil Spills at the Shell Terminal: The impacts of a spill on the biota at or near the Shell Terminal have the potential to spread through Carquinez Strait and into Suisun and San Pablo Bays. Vulnerable biota are plankton, benthos, eelgrass, fishes, marshes, birds, and mammals. Per Section 4.1, Operational Safety/Risk of Accidents, small spills at the Shell Terminal (less than 50 barrels [bbls]) should be able to be contained (Class II impacts). However, spills larger than 50 bbls may not be able to be contained and impacts from large spills are considered to be significant adverse (Class I) impacts.	**BIO-6a:** Implement Mitigation Measure (MM)s OS-3a-c and OS-4 in Section 4.1, Operational Safety/Risk of Accidents to either lower the probability of an oil spill or increase response capability.	See MM OS-3a-c and MM OS-4.	See MM OS-3a-c and MM OS-4.	See MM OS-3a-c and MM OS-4.	See MM OS-3a-c and MM OS-4.
	BIO-6b: Shell shall identify a source of sonic hazing devices to scare birds away from Suisun Shoal and demonstrate to the satisfaction of the California Department of Fish and Game-Office of Spill Prevention and Response (CDFG OPSR) that these devices can be deployed within 3 hours of a spill at the Shell Terminal.	CSLC monitor to observe that Shell has the sonic hazing device capability.	Reduces potential damages to birds.	CSLC, CDFG OSPR	Within 12 months of lease implementation.
	BIO-6c: When a spill occurs, develop procedures for cleanup of any sensitive biological areas contacted by oil, in consultation with biologists from California Department of Fish and Game (CDFG) and U.S. Fish and Wildlife Service (USFWS), to avoid damage from cleanup activities.	Shell shall provide documentation of damage as soon as possible after a large spill to CSLC, CDFG, and USFWS.	Reduces potential damage from oil spills.	CSLC, CDFG, and USFWS	Documentation of damage as soon as possible after a spill event.
	BIO-6d: Shell shall work with the Natural Resource Damage Assessment (NRDA) team, if invited, to work as a single team toward determination of the extent of damage and loss of resources, cleanup, restoration and compensation. Shell shall keep the California State Lands Commission (CSLC) informed of their participation in such efforts, by providing copies of memos, meeting agendas, or other appropriate documentation, including e-mails. Shell	Shell shall provide documentation of participation to CSLC.	Reduces potential damage and loss of resources from oil spills.	CSLC, NRDA	In conjunction with NRDA Team, for life of lease.

Mitigation Monitoring Program – Biological Resources

Impact	Mitigation Measure	Monitoring/ Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
	shall be responsible for cleanup, restoration and compensation of damages to resources if Shell is determined to be the responsible party.				
BIO-7 Biological Resources Impacts from Accidental Spills from Vessels in Transit in Bay or along Outer Coast: A significant impact to biological resources (Class I or II impact) could result from spills of crude oil or product from a vessel in transit along tanker routes either in San Francisco Bay or outer coast waters.	**BIO-7:** Shell shall implement Mitigation Measures (MM)s OS-7a and OS-7b of Section 4.1, Operational Safety/Risk of Accidents, addressing potential participation in U.S. Coast Guard Port and Waterways Safety Assessment (PAWSA) workshops for the San Francisco Bay area, and Shell's response actions for spills at or near the Shell Terminal.	See MM OS-7a and MM OS-7b.	See MM OS-7a and MM OS-7b.	See MM OS-7a and MM OS-7b.	See MM OS-7a and MM OS-7b.

Table 6-4 Mitigation Monitoring Program – Commercial and Sport Fisheries

Impact	Mitigation Measure	Monitoring/ Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
FSH-1 Space Use Conflicts Between Fisheries and Shell Terminal Operations: Commercial trawling near the Shell Terminal is limited, although the Carquinez Strait shrimp fishery is located in the direct vicinity of the Shell Terminal. Based on the impact significance criteria, space use impacts on the shrimp fishery are expected to continue to be potentially significant (Class II).	**FSH-1:** Shell Terminal officials shall work with shrimp trawlers to avoid conflicts between fishing and normal Shell Terminal operations. In addition, Shell shall inform incoming vessel operators that use the Shell Terminal of shrimp trawling activities near the Shell Terminal. If vessel transits to and from the Terminal exceed or are expected to exceed baseline conditions of 230 vessel calls per year, Shell shall notify shrimp trawlers as follows. • Contact the California Department of Fish and Game (CDFG) to obtain contact information for licensed shrimp trawlers operating in the Carquinez Strait. • Notify shrimp trawlers identified above of the increase in vessel transits to and from the Terminal. • Provide copies of the notifications to the California State Lands Commission (CSLC). Information regarding shrimp trawling may be obtained from the CDFG website at: http://www.dfg.ca.gov/marine/.	Shell shall demonstrate to CSLC their activities by providing copies of notices.	Avoids conflicts between shrimp trawlers and normal Shell Terminal operations.	CSLC	Annual reporting for life of lease.

Table 6-4 Mitigation Monitoring Program – Commercial and Sport Fisheries

Impact	Mitigation Measure	Monitoring/ Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
FSH-2 Impacts on Fish and Habitat from Discharge of Ballast Water: Fisheries depend on a healthy environment to survive and flourish. Invasive species discharged from ballast water could impair water quality (Impact WQ-2) and biological resources (Impact BIO-4). These impacts to fisheries resources would impair commercial and sports fishing activities in the Bay and outer coast, resulting in significant adverse impacts (Class I).	**FSH-2a:** Shell shall implement: (1) MM WQ-2 for segregated ballast water reporting for each vessel and ~~(2)~~ distribute advisories about the California Marine Invasive Species Act and (2) MM BIO-4a for disposal of non-segregated ballast water.	See MM WQ-2 and MM BIO-4a.	See MM WQ-2 and MM BIO-4a.	See MM WQ-2 and MM BIO-4a.	See MM WQ-2 and MM BIO-4a.
	FSH-2b Implement MM BIO-4b that requires Shell participate and assist in funding ongoing and future actions related to invasive species and identified in the October 2005 Delta Smelt Action Plan (State of California 2005).	The level of funding shall be determined by CSLC, DWR, and CDFG as part of these agencies responsibilities under the Delta Smelt Action Plan and CSLC's administration of MISA.	Contributions will go towards effort in finding a solution to pelagic species decline.	CSLC, DWR, CDFG	Life of lease.
FSH-4 New Dredging at Berths #3 and #4: Over the 30-year lease, Shell may dredge Berths #3 and #4 to accommodate more vessels. This dredging is expected to cause significant, but mitigable, impacts on fish habitat (Class II).	**FSH-4:** Implement MM BIO-3a and MM BIO-3b which lay out dredging windows for Dungeness crab and Chinook salmon.	See MM BIO-3a and MM BIO-3b.	See MM BIO-3a and MM BIO-3b.	See MM BIO-3a and MM BIO-3b.	See MM BIO-3a and MM BIO-3b.
FSH-5 Space Use Conflicts Between Bay Shrimp Fishery and Transiting Vessels: Space use conflicts between transiting vessels serving the Shell Terminal and shrimp trawling are expected to be significant (Class II) due to temporary, but ongoing, blocking of trawl grounds while vessels transit through the Carquinez Strait.	**FSH-5:** Implement MM FSH-1, requiring Shell to notify shrimp trawlers of increased vessel calls to Shell Terminal, and to inform incoming vessels operators of shrimp trawling activities.	See MM FSH-1.	See MM FSH-1.	See MM FSH-1.	See MM FSH-1.
FSH-6 Space Use Conflicts Between Bay Herring Fishery and Transiting Vessels: Space use conflicts between transiting vessels serving the Shell Terminal and commercial herring operators	**FSH-6:** Shell shall contact the California Department of Fish and Game (CDFG) to obtain contact information for licensed commercial herring fishermen in the north and east Bay and shall notify these Pacific herring fisheries, during the herring season, of vessel transits to and from the Shell	Shell shall demonstrate to CSLC their activities by providing proof of participation.	Reduces Shell-bound vessels potential for interference with transiting vessels and fishing activities.	CSLC, CDFG	Annual reporting for life of lease.

Table 6-4 Mitigation Monitoring Program – Commercial and Sport Fisheries

Impact	Mitigation Measure	Monitoring/ Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
could occur resulting in interference or displacement of herring fishing activities. A significant adverse (Class II) impact could result.	Terminal. Shell shall also contact CDFG to request notification of, and shall participate in, the Pacific herring commercial fishery annual public scoping and hearing process, part of CDFG's annual review of herring commercial fishing regulations.				
FSH-7 Conflicts Between Transiting Vessels, Bay Sport Fisheries and Martinez Marina Operations: Space use conflicts between sport fisheries in the Bay and transiting vessels serving the Shell Terminal are potentially significant (Class II).	**FSH-7:** Shell officials shall inform incoming vessel operators of sport fishing activities near the Shell Terminal.	Shell shall demonstrate to CSLC their activities by providing copies of notices.	Reduces Shell-bound vessels potential for interference of transiting vessels and sport fishing activities.	CSLC	Annual reporting for life of lease.
FSH-9 Fisheries Impacts from Accidental Spills at the Shell Terminal or Along Bay Transit Routes: Shrimp, herring and sport fisheries in central and north San Francisco Bay, San Pablo Bay, Carquinez Strait, Napa River and Honker Bay are at highest risk of spill contamination. Depending on spill location, size and water and weather conditions, areas upstream of the confluence of the Sacramento and San Joaquin rivers may also suffer harm. In addition, the Bay marinas, launch ramps and fishing access points may be threatened, contaminated or closed. Significant adverse impacts (Class I and II) to Bay commercial and sport fisheries would result from oil spill accidents originating at the Shell Terminal or from tankers transiting the coast that service the Shell Terminal.	**FSH-9a:** Implement MM OS-3a through MM OS-3c and MM OS-4 in Operational Safety/Risk of Accidents, and MM BIO-6b through MM BIO-6d in Biological Resources, to lower the probability of an oil spill and increase response capability.	See MM OS-3a through MM OS-3c, MM OS-4, and MM BIO-6b through MM BIO-6d.	See MM OS-3a through MM OS-3c, MM OS-4, and MM BIO-6b through MM BIO-6d.	See MM OS-3a through MM OS-3c, MM OS-4, and MM BIO-6b through MM BIO-6d.	See MM OS-3a through MM OS-3c, MM OS-4, and MM BIO-6b through MM BIO-6d.
	FSH-9b: In the event of a spill at the Shell Terminal, Shell shall post notices at spill sites, marinas, launch ramps and fishing access points to warn fishing interests of locations of contaminated sites. Notices shall be written in English and Spanish, and be posted in areas most likely to be seen by fishing interests.	CSLC monitor to observe notice postings.	Provides notification to local anglers of potential areas of contamination.	CSLC, RWQCB	Life of lease.
	FSH-9c: If damages to fishing operations or related businesses are determined by state, federal or local authorities to be caused by Shell financial compensation shall be provided by Shell as determined by the authorities. Any losses shall be documented as soon as possible after a spill, using methods for determining damages established beforehand. Response for damage losses should include provisions for compensating operators and businesses as soon as possible.	CSLC, OSPR, to be commensurate with Shell's contribution of impacts.	Helps to fund programs for restoration or compensation.	CSLC, OSPR	After a spill event, as warranted.
	FSH-9d: Should a spill occur at the Shell Terminal, following the spill, Shell shall evaluate the effectiveness of oil spill mitigation measures used to	Shell to provide input to assist CSLC in evaluation following	Helps to develop more effective mitigation measures.	CSLC	After spills for life of lease.

Table 6-4 Mitigation Monitoring Program – Commercial and Sport Fisheries

Impact	Mitigation Measure	Monitoring/ Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
	respond to a spill caused at the Shell Terminal by tankers calling at the wharf. Results of the evaluation shall be made available to public decision-makers to ensure refinement, and if necessary, modification of mitigation measures. Evaluation would be done only after an accident and would include monitoring using scientifically accepted protocols. Costs for the evaluation would be borne by Shell for spills caused at the Shell Terminal. Shell shall contribute to independent public or private organizations or oil spill research. Determination of organizations would occur after the spill with approval by the CSLC. Contributions would be determined in cooperation with the evaluating organizations, agencies, and the CSLC.	a spill. Contributions would be determined in cooperation with the evaluating organizations, agencies, and the CSLC.			
	FSH-9e: Shell shall update the Shell Terminal Oil Spill Response Plan to prominently mention Martinez Marina as an oil spill response facility and deployment site and to list the available equipment, supplies and vessels available to Shell which are located at the Marina.	Provide copy of updated plan to CSLC for review and approval.	Provides updated and current information through the Response Plan.	CSLC	Within 6 months of lease implementation.
FSH-10 Fisheries Impacts From Accidental Spills Along Outer Coast Transit Routes: Significant adverse impacts (Class I or II) to outer coast commercial and sport fisheries could result from oil spill accidents from transiting tankers calling at the Shell Terminal. The level of impact would depend on the size of the spill, location, and fisheries occurring in the area of spread of the spill.	**FSH-10:** Shell shall implement MM OS-7 for Port and Waterways Safety Assessment (PAWSA) workshop participation and to provide immediate spill response near/at the terminal. Shell shall implement MMs FSH-9b through FSH-9d to notify fishing interests of possible fishing areas to help offset the losses to fishing interests and businesses dependent on fishing activities, and to evaluate the effectiveness of mitigation measures.	See MM OS-7a and MM OS-7b, and MM FSH-9b through MM FSH-9d.	See MM OS-7a and MM OS-7b, and MM FSH-9b through MM FSH-9d.	See MM OS-7a and MM OS-7b, and MM FSH-9b through MM FSH-9d.	See MM OS-7a and MM OS-7b, and MM FSH-9b through MM FSH-9d.

Table 6-5 Mitigation Monitoring Program – Land Use

Impact	Mitigation Measure	Monitoring/ Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
LU-3 Accidental Releases At or Near the Terminal: A number of recreational facilities (designated parks, wildlife preserves, open space, etc.) and recreational uses (nature viewing, boating, fishing, surfing, etc.) are within the potential area that could be impacted by the spread of oil. Shoreline and water-related uses would be disrupted by oil on the shoreline and in the water and could result in significant adverse (Class I or II) impacts.	**LU-3:** Mitigation measures (MM) for spills at the Shell Terminal would be the responsibility of Shell Terminal operations. Shell shall implement MMs OS-3a, OS-3b, OS-3c, OS-4, OS-7a, OS-7b, and BIO-6a through BIO-6d.	Shell shall implement measures presented in Operational Safety/Risk of Accident; Water Quality; Biological Resources; and Commercial and Sport Fisheries.	The measures provide for enhanced response capability and protection. Impacts may remain significant depending on effectiveness of first response.	As per referenced measures.	As per referenced measures.
LU-4 Land Use/Recreational Impacts of Oil Spills from Vessels in Transit: Spills, from vessels in transit in the shipping lanes, that beach along sensitive land use areas or heavily used areas including recreational areas would limit or preclude such uses and result in significant adverse (Class I or II) impacts, depending on the various characteristics of a spill and its residual effects.	**LU-4:** Shell shall implement MMs OS-7a and OS-7b.	See MM OS-7a and MM OS-7b.	See MM OS-7a and MM OS-7b.	See MM OS-7a and MM OS-7b.	See MM OS-7a and MM OS-7b.

Table 6-6 Mitigation Monitoring Program – Noise

Impact	Mitigation Measure	Monitoring/ Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
N-4 Future Dredging Operations: To accommodate the increase in vessel traffic over the 30-year lease, the area in and around Berths # 3 and # 4 may require dredging. Noise from any nighttime dredging has the potential to impact receptors at the Martinez Marina (Class II).	**N-4:** Any dredging to be performed within 0.42 mile (2,250 feet) of any sensitive land use or live aboard boat shall be restricted to between the hours of 7:00 a.m. and 10:00 p.m.	(Implement as lease condition.) Shell shall notify CSLC prior to dredging activities.	Requires that dredging occur within allowable local noise ordinance to avoid impacts to nearby receptors.	CSLC	During dredging.

Table 6-7 Mitigation Monitoring Program – Visual Resources/Light and Glare

Impact	Mitigation Measure	Monitoring/ Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
VR-2 Visual Effects from Accidental Releases of Oil At or Near the Terminal: The visual impacts of a spill could last for a long period of time, depending on the level of physical impact and cleanup ability, and are considered to be adverse and significant (Class I or II).	**VR-2:** Mitigation Measures (MM) for oil spill impacts include those measures for contingency planning and response as presented in Operational Safety/Risk of Accidents and Biological Resources.	Shell shall implement measures presented in Operational Safety/Risk of Accidents and Biological Resources.	The measures provide for enhanced response capability and protection. Impacts may remain significant depending on effectiveness of first response.	As per referenced measures.	As per referenced measures.
VR-3 Visual Effects of Oil Spills from Vessels in Transit: Spills, from vessels in transit in the shipping lanes, would change the color and texture of water and shoreline conditions. The level of public sensitivity and expectations of viewers would result in a negative impression of the viewshed and result in significant adverse (Class I or II) impacts, depending on the various characteristics of a spill and its residual effects.	**VR-3:** Shell shall implement MM OS-7a and OS-7b in Operational Safety/Risk of Accidents.	See MM OS-7a and MM OS-7b.	See MM OS-7a and MM OS-7b.	See MM OS-7a and MM OS-7b.	See MM OS-7a and MM OS-7b.

Table 6-8 Mitigation Monitoring Program – Environmental Justice

Impact	Mitigation Measure	Monitoring/ Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
EJ-1 Environmental Justice Impacts Associated with Continued Operation of the Shell Terminal: Overall, Project impacts would affect resources used by the entire Bay community, whether or not they are minority or low-income, and would, therefore, not have a disproportionate impact on a minority or low-income population. Environmental Justice impacts are considered less than significant (Class III) for all except subsistence fishing, which is Class II.	**EJ-1:** If an oil spill has been determined by applicable state, federal or local authorities to originate from the Shell Terminal and that spill results in closures of subsistence fishing by members of minority and/or low income communities for more than two days, Shell shall contribute either funds or food stuffs to a local food bank in an amount sufficient, as determined by the applicable authorities, to replace food sources that would have been supplied by fishing activities within the affected areas.	Local authorities shall determine the amount of funds or food to be contributed.	Helps to prevent impacts of minority or low-income populations by replacing food sources.	CSLC	After a spill resulting in closures of subsistence fishing for more than 2 days.

Table 6-9 Mitigation Monitoring Program – Cumulative Impacts

Impact	Mitigation Measure	Monitoring/ Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
CUM-OS-1 Upset Conditions: All terminals and tanker/barge operators are required by Federal and State regulations to demonstrate that they have, or have under contract, sufficient response assets to respond to worst-case releases. Even so, oil spills can still result in significant, adverse impacts (Class I and Class II) to the environment depending on whether first response efforts can contain and cleanup the spill. Shell contributes incrementally to the cumulative environment.	**CUM-OS-1:** Implement MM OS-3 through MM OS-7.	See MM OS-3 through MM OS-7.	See MM OS-3 through MM OS-7.	See MM OS-3 through MM OS-7.	See MM OS-3 through MM OS-7.
CUM-WQ-1 Contaminants Impacts on San Francisco Bay Water Quality: The water quality of the San Francisco Bay estuary has been degraded by inputs of pollutants from a variety of sources, as such, any contribution of a contaminant already at significantly high levels to the waters of San Francisco Bay would have a significant adverse impact at the cumulative level (Class I).	**CUM-WQ-1:** Implement MM WQ-4, MM WQ-5, and MM WQ-7.	See MM WQ-4, MM WQ-5, and MM WQ-7.	See MM WQ-4, MM WQ-5, and MM WQ-7.	See MM WQ-4, MM WQ-5, and MM WQ-7.	See MM WQ-4, MM WQ-5, and MM WQ-7.
CUM-WQ-2 Segregated Ballast Water: Contribution of contaminants or exotic organisms from operations at the Shell Terminal would be a significant adverse cumulative impact that cannot be mitigated to less than significant (Class I).	**CUM-WQ-2:** Implement MM WQ-2.	See MM WQ-2.	See MM WQ-2.	See MM WQ-2.	See MM WQ-2.

Table 6-9 Mitigation Monitoring Program – Cumulative Impacts

Impact	Mitigation Measure	Monitoring/ Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
CUM-WQ-3 Oil Spills along Outer Coast: A major oil spill along the outer coast would have a significant adverse (Class I) cumulative impact on water quality. A spill along the outer coast would not be within Shell's responsibility.	**CUM-WQ-3:** Implement MM OS-7a.	See MM OS-7a.	See MM OS-7a.	See MM OS-7a.	See MM OS-7a.
CUM-BIO-1 Routine Operations: Operations at the Shell Terminal could contribute to the cumulative adverse impacts to biological resources from the introduction of nonindigenous organisms. These potential impacts include competition, destabilization of the aquatic food web, accumulation of contaminants in the tissues of non-native prey species such as the Asian clam, and introduction of disease organisms or toxic algae. These are cumulatively significant adverse impacts (Class I) and the Shell Terminal's contribution to the cumulative potential for introduction of nonindigenous species through ballast water discharges or vessel biofouling could be considerable. The Shell Terminal also would contribute in a minor way to the cumulative degradation of water quality in San Francisco Bay. Impaired water quality in San Francisco Bay is a significant adverse impact (Class I). Disturbance to the benthic community by vessels in shipping channels has altered the benthic community in these areas (Class I impact). The Shell Terminal would contribute in a minor way to this significant impact. Dredging at the Shell Terminal could contribute to potentially significant but mitigable impacts on migration and spawning (Class II).	**CUM-BIO-1a:** Implement MM WQ-2.	See MM WQ-2.	See MM WQ-2.	See MM WQ-2.	See MM WQ-2.
	CUM-BIO-1b: Implement MM CUM-WQ-1 (MMs WQ-4, WQ-5 and WQ-7).	See MM CUM-WQ-1 (MMs WQ-4, WQ-5 and WQ-7).	See MM CUM-WQ-1 (MMs WQ-4, WQ-5 and WQ-7).	See MM CUM-WQ-1 (MMs WQ-4, WQ-5 and WQ-7).	See MM CUM-WQ-1 (MMs WQ-4, WQ-5 and WQ-7).
	CUM-BIO-1c: Implement MM BIO-3a-b.	See MM BIO-3a-b.	See MM BIO-3a-b.	See MM BIO-3a-b.	See MM BIO-3a-b.
CUM-BIO-2 Accident Conditions: Oil spills from all terminals combined, or from all tankering combined, may affect more resources than Shell Terminal operations alone, due to the wider distribution of potential sources of spills. Operations solely associated with the Shell Terminal contribute relatively little to the cumulative risk of an oil spill. Even so, a spill from Shell Terminal operations has the potential to impact biological resources and result in a significant adverse (Class I or II) impact.	**CUM-BIO-2:** Implement MM BIO-6a-d and OS-7a-b.	See MM BIO-6a-d and OS-7a-b.	See MM BIO-6a-d and OS-7a-b.	See MM BIO-6a-d and OS-7a-b.	See MM BIO-6a-d and OS-7a-b.
CUM FSH-1 Space Use Conflicts with Bay Fisheries: The cumulative projects would cause space use conflicts with the commercial shrimp, Pacific herring and sports fisheries, and result in significant (Class I and II) impacts. Shell's contribution to space use conflicts with the Pacific herring fishery ranges from Class I to Class III, depending on herring spawning locations, fishing operations and other factors.	**CUM FSH-1:** Implement MM FSH-1, MM FSH-5, MM FSH-6 and MM FSH-7.	See MM FSH-1, MM FSH-5, MM FSH-6 and MM FSH-7.	See MM FSH-1, MM FSH-5, MM FSH-6 and MM FSH-7.	See MM FSH-1, MM FSH-5, MM FSH-6 and MM FSH-7.	See MM FSH-1, MM FSH-5, MM FSH-6 and MM FSH-7.

Table 6-9 Mitigation Monitoring Program – Cumulative Impacts

Impact	Mitigation Measure	Monitoring/ Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
CUM-FSH-2 Impacts on Fish and Habitat from Discharge of Ballast Water: Vessels that call at the Shell Terminal, from outside the Golden Gate, have the potential to introduce invasive species to the San Francisco Bay Estuary and cause irreparable harm to fisheries and the ecosystem. In the future the problem could become greater if the number of vessels substantially increases. The significant adverse impact is expected to be Class I.	**CUM FSH-2:** Implement MM FSH-2.	See MM FSH-2.	See MM FSH-2.	See MM FSH-2.	See MM FSH-2.
CUM-FSH-3 Contaminant and Dredging Impacts on Fisheries: Shell's contribution to the San Francisco Bay Estuary of contaminants from stormwater runoff and anti-fouling paints is small when compared to discharges from other development. However, because contaminants (on a cumulative basis) have caused irreparable and adverse harm to the Bay, impacts to plankton and fish populations are significant per Impact CUM BIO-1. These cumulative impacts are likely significantly impacting sport and commercial fishing success (Class I). Cumulative impacts from dredging is expected to be significant, but mitigable (Class II)	**CUM FSH-3:** Implement MM CUM-WQ-1 and MM FSH-4.	See MM CUM-WQ-1 and MM FSH-4.	See MM CUM-WQ-1 and MM FSH-4.	See MM CUM-WQ-1 and MM FSH-4.	See MM CUM-WQ-1 and MM FSH-4.
CUM-FSH-4 Accident Conditions: Cumulative impacts on Bay and outer coast fisheries from harbor and shipping activity related oil spills, including those associated with the Shell Terminal and related vessels would range from Class I to Class III. Shell has no responsibility for vessels transiting the Bay or outer coast that are not associated with the Shell Terminal.	**CUM FSH-4:** Implement MM FSH-9.	See MM FSH-9.	See MM FSH-9.	See MM FSH-9.	See MM FSH-9.
CUM-LU-1 Oil Spills from Vessels in Transit in Bay or along Outer Coast: Impacts to sensitive shoreline lands, and/or water and non-water recreation due to a release of oil would result in potentially significant adverse (Class I or II) impacts. When the cumulative environment is considered, the contribution from the Shell Terminal is small, but a spill could still be significant (Class I or II).	**CUM-LU-1:** Implement MM OS-7a and MM OS-7b.	See MM OS-7a and MM OS-7b.	See MM OS-7a and MM OS-7b.	See MM OS-7a and MM OS-7b.	See MM OS-7a and MM OS-7b.
CUM-VR-2 Visual Effect from Accidental Release of Oil: Spills from multiple sources that would overlap in time (either the spill occurrence or cleanup operation) are unlikely, however, such incidents would result in significant adverse visual impacts (Class I or II).	**CUM-VR-2:** Implement MM OS-3 through MM OS-7 and MM BIO-4 through MM BIO-7.	See MM OS-3 through MM OS-7 and MM BIO-4 through MM BIO-7.	See MM OS-3 through MM OS-7 and MM BIO-4 through MM BIO-7.	See MM OS-3 through MM OS-7 and MM BIO-4 through MM BIO-7.	See MM OS-3 through MM OS-7 and MM BIO-4 through MM BIO-7.