5.7 - Hydrology and Water Quality

5.7.1 - Introduction

This section describes the existing hydrology and water quality setting, and the potential effects from project implementation on the site and its surroundings. Descriptions and analysis in this section are based on information contained in the Preliminary Water Quality Management Plan prepared by Fuscoe Engineering, the Marina Park Coastal Engineering Study prepared by Everest International Consultants, Inc., a summary of water enhancement devices (oloids) prepared by Everest International Consultants, Inc., an analysis of sand compatibility prepared by Newfields, Inc., and the Marina Resort & Community Plan Final EIR prepared by Michael Brandman Associates. The first four studies are included in this REIR in **Appendix H, Drainage and Water Quality Information**. The Marina Resort & Community Plan Final EIR is available for review at the City of Newport Beach Planning Department.

5.7.2 - Regulatory Setting

A number of regulations and permits control activities may affect water quality. Among these are:

Clean Water Act (CWA). This federal law provides for the restoration and maintenance of the physical, chemical, and biological integrity of the nation's waters. Discharges (including those related to dredge and fill activities) to waters of the United States must be authorized through National Pollutant Discharge Elimination System (NPDES) permits. The CWA is administered at the national level by the EPA, but major provisions of the law are delegated to the states. In California, the State Water Resources Board (SWRCB) and its regional water quality control boards implement sections of the Act through the Water Quality Control Plan, Standard Urban Stormwater Mitigation Plans (SUSMPs), and permits for discharges. Under Section 303(d), the State is required to list water segments that do not meet water quality standards and to develop action plans, called TMDLs, to improve water quality. Activities that have the potential to discharge dredge or fill materials into the waters of the U.S. are regulated under Section 404 of the Act, as administered by the U.S. Army Corps of Engineers (USACE). A Section 401 certification or waiver from the governing RWQCB is necessary for issuance of Section 404 permits.

A component of the Section 404/401 Clean Water Act permit program addresses beach nourishment activities. The USACE/State of California Sand Compatibility and Opportunistic Use Program (SCOUP; http://www.dbw.ca.gov/csmw/PDF/Final_SCOUP_Master_Plan.pdf) was developed to streamline regulatory approval of small (less than 150,000 cubic yards) beach nourishment projects using opportunistic materials. In the Los Angeles area, the USACE has authorized Regional General Permit (RGP) 67, which provides guidance regarding material suitability for beach nourishment projects. RGP-67 incorporates the SCOUP, including its process for assessing sand at both the donor and receiving sites. RGP-67 requires that the grain size characteristics of the donor site(s) be reasonably similar to those of the receiving site(s).

California Porter-Cologne Act. This Act (State Water Code Sections 13000 *et seq.*) is the basic water quality control law for California that implements the federal CWA. The Porter-Cologne Act is implemented by the SWRCB and its nine regional boards, which manage the permit provisions of Section 402 and of certain planning provisions of Sections 205, 208, and 303 of the federal Act. This means that the state issues one discharge permit for purposes of both federal and state law. Permits for discharge of pollutants are officially called NPDES permits. Anyone who is discharging waste or proposing to discharge waste that could affect the quality of state waters must file a "report of waste discharge" with the governing RWQCB. The NPDES permit program includes permits for stormwater controls related to construction projects, industrial facilities, and municipalities (see below).

Water Quality Control Plan, Los Angeles Region (Basin Plan, Adopted 1994). The SWRCB's Basin Plan is designed to preserve and enhance water quality and to protect beneficial uses of regional waters (inland surface waters, groundwater, and coastal waters such as bays and estuaries). The Basin Plan designates beneficial uses of surface water and groundwater, such as contact recreation or municipal drinking water supply; establishes water quality objectives that describe the pollution thresholds beyond which the beneficial uses will be impaired; and describes implementation programs. Beneficial uses and water quality objectives combine to form water quality standards (WQS) under the Clean Water Act.

NPDES Stormwater Permits. The SWRCB has developed a statewide General Construction Activities Stormwater Permit and a General Industrial Activity Stormwater Permit for projects that do not require an individual permits. The General Construction Activities Stormwater Permit applies to most stormwater discharges associated with construction activity, such as the proposed project; under this permit, all construction activities that disturb one acre or more must:

- Prepare and implement a Storm Water Pollution Prevention Plan (SWPPP) that specifies best management practices (BMPs) to prevent construction pollutants from contacting stormwater. The intent of the SWPPP and BMPs is to keep all products of erosion from moving offsite into receiving waters;
- Eliminate or reduce non-stormwater discharges to storm sewer systems and other waters of the United States; and
- Perform sampling and analytical monitoring to determine the effectiveness of BMPs in: (a) preventing further impairment by sediment in stormwaters discharged directly into waters listed as impaired for sediment or silt; and (b) reducing or preventing pollutants in stormwater discharges from causing or contributing to exceedances of water quality objectives.

The General Industrial Activities Stormwater Permit program is not applicable to the proposed project, which would be covered under the City of Newport Beach's municipal storm water permit. That program is part of the Orange County Municipal Separate Storm Sewer System (MS4) permit, which is currently undergoing revisions to strengthen it.

California Toxics Rule of 2000 (40 CFR Part 131). This rule establishes numeric criteria for priority toxic pollutants in inland waters as well as enclosed bays and estuaries to protect ambient aquatic life (23 priority toxics) and human health (57 priority toxics). The toxics rule also includes provisions for compliance schedules to be issued for new or revised NPDES permit limits when certain conditions are met. The numeric criteria are the same as those recommended by the Environmental Protection Agency in its CWA Section 304(a) guidance.

5.7.3 - Existing Conditions

Hydrology/Drainage

The project site is located within the Newport Bay watershed that covers 13.2 square miles along the coast of central Orange County. The watershed includes portions of Costa Mesa and Newport Beach. The project site is located on the Balboa Peninsula between Balboa Boulevard and the portion of Newport Bay where the West Lido, Rhine, and Newport Channels meet. The peninsula is crossed by a system of streets with nearly flat grades (less than a few tenths of one percent). No longitudinal slopes occur along Balboa Boulevard other than those at storm drain inlets. The site is currently fully developed, and approximately 83 percent of the site consists of impervious surfaces.

The existing topography was reviewed to assess storm and flooding impacts to existing buildings. Local streets and storm drains on the western portion of the Balboa Peninsula together provide conveyance capacity sufficient for the 100-year storm event. The existing storm drain system can be surcharged during a 100-year storm event and most likely becomes inefficient. Much of the storm runoff would drain to Balboa Boulevard and ponds until reaching a relief elevation that would allow flow into Newport Bay.

Runoff from the eastern portion of the project site is conveyed via existing storm drain lines to the main storm drain along Balboa Boulevard that discharges into Newport Bay at 15th Street. Runoff from the western portion of the site (east of 18th Street) is conveyed via existing storm drain lines to the main storm drain along Balboa Boulevard that discharges into Newport Bay at 18th Street. The storm water on the portion of the project site west of 18th Street is conveyed to the existing storm drain along 19th Street prior to discharging into Newport Bay.

Groundwater

Groundwater levels at the site vary in response to tidal fluctuations. Two borings conducted by Terra Costa encountered groundwater at 6.5 feet and 10 feet below the ground surface. Ground water at and near the site is heavily influenced by seawater, and is unsuitable for use as a municipal water supply. There are no municipal wells in the general vicinity of the project site.

Water Quality

Surface Water Quality

All surface water on or near the site consists of storm water and routine dry-weather runoff (e.g., from irrigation); there are no streams or standing water bodies on the site. No substantial water quality issues have been identified for the project site. There is no indication of soil contamination that

would cause surface water quality issues (see section 5.8). Typical urban runoff contaminants associated with the existing mobile home park, parking areas, beach, and the public facilities on the project site include bacteria, heavy metals, nutrients, pesticides, organic compounds, sediments, trash and debris, oxygen demanding substances, oil and greases. These contaminants are carried into the bay by storm events and routine water runoff through the storm drain system or, in the case of very large storms, sheet flow.

Lower Newport Bay Water Quality

Water quality in Newport Bay is influenced by a number of factors, including tidal flushing, discharges into the bay, and sediment contamination. This last factor is a key component in regulatory designations of water quality. Based on the 2006 Section 303(d) list of Water Quality Limited Segments published by the Santa Ana Regional Water Quality Control Board, the Lower Newport Bay is listed as impaired for chlordane, copper, DDT, PCBs, and sediment toxicity. Once a water body has been listed as impaired, a Total Maximum Daily Load (TDML) for the constituent of concern (pollutant) must be developed for the water body. A TDML is an estimate of the daily load of pollutants that a water body may receive from point sources, non-point sources, and natural background conditions (including an appropriate margin of safety), without exceeding its water quality standard. Those facilities and activities that are discharging into the water body, collectively, must not exceed the TDML.

Several TDMLs have been developed jointly for the San Diego Creek Watershed and the Newport Bay, including nutrients, pathogens and pesticides. In addition, TDMLs for organochlorine compounds and metals currently exist or are in development by the Regional Water Quality Control Board and other agencies. These include:

- Siltation (sediments) and nutrient TMDLs for Lower Newport Bay, Upper Newport Bay, San Diego Creek Reach 1, and San Diego Creek Reach 2
- A fecal coliform (pathogen) TMDL has been adopted for Lower Newport Bay and Upper Newport Bay. A diazinon/chlorpyrifos pesticide TMDL has been adopted for Upper Newport Bay and San Diego Creek, Reach 1.
- TMDLs are anticipated for selenium and metals (Lower and Upper Newport Bay), selenium and fecal coliforms (San Diego Creek Reach 1), and certain metals (San Diego Creek Reach 2).
- TMDLs for organochlorine compounds (particularly DDT, chlordane, and PCBs) are anticipated for both Newport Bay segments, both San Diego Creek reaches, and Newport Bay's Rhine Channel; toxaphene is also targeted in San Diego Creek Reaches 1 and 2.

In 1994, the State Water Resources Control Board, in conjunction with other federal and State agencies, studied sediment chemistry and toxicity throughout Newport Bay. Sediments in various areas of Newport Bay contained elevated concentrations of mercury, copper, DDT, polychlorinated biphenyl's, tri-butyl tin, lead, DDE, and total chlordane. In addition, a Southern California Coastal Water Research Project investigation of sediments in the Rhine Channel, northwest of the project site,

found similar concentrations of contaminants. These results contributed to the 303(d) impaired water body listing described above.

Newport Bay sediments in the general area of the project site are contaminated by a variety of pollutants known to be toxic to marine organisms (**Appendix D.2**). Rhine Channel sediments contain concentrations of lead, mercury, copper, zinc, and Total PCBs that exceed TMDL targets, and elevated concentrations of p,p; DDD and tri-butyl tin (TBT). Sediments around Lido Peninsula and Lido Isle contained elevated concentrations of either lead, p'p, DDE, or total chlordane, or a combination of these compounds.

Testing of sediments adjacent to the project site (**Appendix G.3**) did not detect semi-volatile organic compounds, organo-chloride pesticides, or polychlorinated biphenyls. Heavy metals were not detected at elevated concentrations (i.e., above the Effects Range Low [ERL]) except in the case of mercury. Mercury was present in channel sediments at the site of the proposed marina in concentrations that exceeded the ERL criteria. Petroleum hydrocarbons were detected, but not at levels deemed to represent an environmental concern.

Water quality in Newport Bay is also influenced by tidal flushing. A condition that affects water quality and contamination in the sediments is the amount of time required for water at a given location within Newport Bay to be exchanged with new water from the ocean (flushing activity) by tidal action. The less frequent the exchange of water results in a lower quality of water. This exchange rate is known as residence time. The residence time of ocean water in the vicinity of the project site is in the range of 25 to 30 days (**Appendix H.2**). By comparison, residence time of ocean water near the entrance to Lower Newport Bay is approximately one day.

Longer periods between complete tidal flushing cycles reduces water quality by increasing water temperatures, lowering dissolved oxygen, and increasing the length of time that suspended sediments prevent light from illuminating the seafloor. Although there are no local or state standards, the federal Environmental Protection Agency has established guidelines that suggest that adequate tidal flushing to maintain water quality of marina basins requires flushing reductions (the amount of conservative substance that is flushed from the basin) ranging from 70 to 90 percent per day. By that guideline, flushing, and by extension water quality, near the project site is inadequate.

5.7.4 - Thresholds of Significance

According to the CEQA Guidelines' Appendix G Environmental Checklist, the following questions are analyzed to determine whether hydrology and water quality impacts are significant. Would the project:

a.) Violate any water quality standards or waste discharge requirements?

b.) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a

level which would not support existing land uses or planned uses for which permits have been granted?

c.) Substantially alter the existing drainage pattern of area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?

d.) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?

e.) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

f.) Otherwise substantially degrade water quality?

g.) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?

h.) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?

i.) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?

j.) Expose people or structures to inundation by seiche, tsunami, or mudflow?

5.7.5 - Project Impact Analysis and Mitigation Measures

This section discusses potential impacts associated with the proposed project and provides mitigation measures where necessary.

Water Quality Standards and Requirements

5.7-A: The project would not violate any water quality standards or waste discharge requirements.

Project-Specific Analysis

Construction Impacts

Construction of the proposed project would involve activities (demolition of existing site features, grading, excavation and hauling, removal and transport of contaminated soils and construction debris, dredging and dredged material transport, pile driving, welding, and concrete pouring) that could discharge pollutants to the waters of Newport Bay. Construction activities could generate pollutants such as silt and other particulate matter (i.e., suspended solids), fuels and lubricating oils, debris, and dissolved chemicals. Construction activities would be governed by a site-specific Storm Water Pollution Prevention Plan (SWPPP) prepared in compliance with the SWRCB's General Construction Activities Permit and approved by the City of Newport Beach. Note that the SWRCB's permit is

currently under revision; the project's SWPPP would be revised as necessary to comply with the new permit.

Demolition and grading activities in Phase 1, further grading in Phase 2, and demolition, excavation, building construction, and grading in Phase 3 could cause short-term increases in turbidity in the adjacent channel and site storm drains from site runoff and dust related to erosion of exposed soils. Site runoff would be minimized by construction BMPs such as erosion barriers, temporary swales, soil stabilization, and phasing of excavation and grading. With these controls, the impact of upland construction activities on water quality would be less than significant.

Construction of the proposed marina in Phase 3 could cause localized increases in turbidity in the channel adjacent to the site as a result of approach channel dredging, propeller wash from tugboats hauling barges, and pile driving. The extent and orientation of the dredge plume (suspended solids) would depend on the prevailing tidal cycle and the effectiveness of construction best management practices. Some construction-related turbidity is allowed by the WDRs issued for dredging projects, but turbidity that extends outside the allowable mixing zone would violate the permit.

BMPs for dredging would include silt curtains deployed around dredging and pile driving as necessary to control turbidity, reducing dredge cycle time, and ensuring that barge dewatering is complete before barges depart from the project site. Turbidity would not result from the bulk of marina excavation and dredging, which would take place in a basin enclosed by sheet piling; only when the basin was opened to the channel could construction-generated turbidity escape to open waters. The WDRs issued for the project by the Santa Ana RWQCB would specify discharge limits and water quality standards that the project would have to comply with in order to protect water quality, and would impose a water quality monitoring program, to be implemented by the City, to evaluate the effectiveness of BMPs and detect exceedances of water quality standards. Despite implementation of BMPs and compliance with the WDRs, construction activities could result in increased pollutants to surface water that would violate water quality standards. Accordingly, marina construction could result in short-term degradation of surface water quality below applicable standards. Although the impact would be short-term, lasting only during dredging activities open to the channel, it is considered significant.

Impacts to water quality could also occur during placement of dredged sediments (sand) on Newport Beach beaches. Whether sediments are placed by bottom-dump barges immediately offshore of the beach or directly on the beach via hydraulic piping (unlikely) or truck placement, the finer-grained component of the material could be resuspended into ocean or bay waters. Because the material that would be placed is predominantly (>90%) sand (**Appendix H.4**), this effect would likely produce only a very localized turbidity plume. The likely BMP to reduce turbidity would be to control the rate of sand placement. Accordingly, sand placement on area beaches would have less than significant impacts on water quality standards.

Operational Impacts

Long-term operation of the proposed project would not generate water pollution from site runoff under normal conditions, as the site is designed not to discharge runoff to the bay, but could generate water pollution from boats in the marina and marina maintenance dredging. Pollutants could include bacteria, heavy metals, pesticides, organic compounds, sediments, trash and debris, oxygen demanding substances, and oil and grease. Site runoff is expected to be minimal because of the BMPs that would be implemented, especially in Phase 3 (see the Preliminary Water Quality Management Plan, **Appendix H.1**). Structural features would include reducing the site's percentage of impervious surfaces from 83 percent to 53 percent via increased turf and porous concrete pavers in the parking lots, an efficient irrigation system to avoid runoff, a vegetative bioswale, and landscaped biocells; operational BMPs would include common-area litter control, common-area landscape management, and street sweeping of parking lots. The project would increase infiltration and could harvest and reuse water. The marina would be operated in accordance with the State's Clean Marinas Program, which prohibits sanitary discharges from boats in marinas (pump out stations would be provided), as well as activities that could introduce pollutants into marina waters (e.g., below-water maintenance other than scraping, engine work, painting, fiberglass repair).

These measures would reduce pollutant loading to the bay due to the combination of reduction of pollutant generation, percolation of stormwater into the ground, and the filtering action of the bioswales and biocells that would be installed. The full range of BMPs that would control pollutant runoff during project operations, including the location and configuration of biocells and bioswales, is described in the project's Preliminary Water Quality Management Plan (**Appendix H.1**). The Plan was prepared to comply with the County of Orange's current MS4 permit, and would be revised if pending revisions to the MS4 permit include new requirements relevant to project operation. These BMPs would reduce potential operational-phase water quality impacts to less than significant.

Operation of the proposed marina could create a condition where inadequate tidal flushing within the marina would threaten water quality. The hydrodynamic modeling study (**Appendix H.2**) evaluated water quality in the proposed marina based on U.S. Environmental Protection Agency (EPA) guidelines for marina flushing management measures. Those guidelines (developed for the southeastern and northwestern United States) suggest that adequate tidal flushing to maintain water quality should range from 70 percent to 90 percent exchange per day. The study found that there would be adequate tidal flushing only about one-quarter of the way into the basin, and minimum flushing father into the basin. The flushing reduction would be an average of 43 percent throughout the marina basin, which would not meet the EPA guidelines. Accordingly, operation of the marina would represent a potentially significant water quality impact.

Long-term marina maintenance could include periodic minor dredging to remove accumulations of sediment in slips and the basin. On the basis of the experience of the American Legion marina immediately adjacent to the site, however, and the results of the modeling study of coastal processes (**Appendix H.2**), siltation in the marina would occur very slowly. Since its construction in 1959 the American Legion marina has been dredged only twice, in the mid 1980s, and a total of less than 400

cubic yards of sediment was removed; the groin on the west side of the marina is judged to be instrumental in keeping sand out of the basin. Maintenance dredging, therefore, is expected to be very infrequent (perhaps once every fifteen years). If needed, the dredging would be conducted in accordance with the City's permit (Regional General Permit 54), which specifies measures to protect water quality and biological resources. Accordingly, maintenance dredging would have a less than significant impact on water quality.

Cumulative

Implementation of the proposed project could result in short-term water quality impacts during construction activities, and these activities could contribute to cumulative impacts on water quality, specifically related to turbidity within Newport Bay.

In the long-term, operation of the proposed project could cause poor water quality in the Newport and West Lido channels due to poor water quality in the proposed marina. The proposed project would include various BMPs to reduce pollutants and protect the quality of the water entering Newport Bay. In addition, the small size of the marina relative to Newport Bay would minimize the impact, and the project's cumulative impact on water quality standards would not be considerable.

Mitigation Measures

Project Specific

MM 5.7-A.1 Prior to construction of each phase, the City of Newport Beach shall prepare a stormwater pollution prevention plan (SWPPP) for construction activities that describes 1) best management practices (BMPs) to reduce the release of potential pollutants into surface water and 2) how those BMPs will be implemented. The SWPPP shall include, but not be limited to, the following BMPs:

- **Dust Control:** Water will be sprayed periodically on newly graded areas to prevent dust from grading activities being blown on to adjacent areas (in conformance with Newport Beach Ordinance limiting water use).
- **Construction Staging:** Specific areas will be delineated for storage of material and equipment, and for equipment maintenance, to contain potential spills; no fueling if large vehicles and equipment on site will be permitted.
- **Sediment Control:** Sand bags and/or silt fences will be located along the perimeter of the site. Existing inlets and proposed area drains will be protected against intrusion of sediment.
- **Tracking:** Tracking of sand and mud on the local street will be avoided by tire washing and/or road stabilization. Street cleaning (using a sweeper, no wash down activities are permitted) will be performed if tracking occurs at the discretion of the City's Engineer.
- **Waste Disposal:** Specific areas and/or methods will be selected for construction waste disposal. Solid waste will be disposed of in approved trash receptacles at specific locations. Washing of concrete trucks will be done in a

contained area allowing proper cleanup**. (**Wash water would be discharged into sanitary sewer [as permitted], Baker Tank or settling basin.) Other liquid waste will not be allowed to percolate into the ground.

- **Construction Dewatering:** Construction dewatering, if required, will necessitate approval of permits by the California Regional Water Quality Control Board and the City.
- **Maintenance:** Maintenance BMPs will be employed as necessary before and after rainfall events to insure proper operation.
- **Training:** The SWPPP will include directions for staff training and checklists for scheduled inspections related to BMP implementation.
- **Construction Vehicles:** Construction vehicles will be inspected daily to ensure there are no leaking fluids. Leaking construction vehicles will be serviced outside of the project site at facilities approved by the City's Engineer.
- **Turbidity:** Activities shall not cause turbidity increases in bay waters that exceed: a) 20 percent if background turbidity is between 0 and 50 Nephelometric Turbity Units (NTUs); b) 10 NTU if background is between 50 and 100 NTUs; c) 10 percent if background turbidity is greater than 100 NTUs. Monitoring of turbidity in bay water adjacent to boat slip construction will be conducted daily during construction activities that may cause turbidity. If activities exceed the above criteria, construction activities associated with causing turbidity will be discontinued until the above criteria is met.
- **Grease:** Construction activities will not cause visible oil, grease, or foam in the work area or in the bay.
- **Silt curtains:** Silt curtains will be placed within the bay so that all effluent from dredging activities will be contained within the construction zone.
- **Hauling Trucks:** The project construction contractors will ensure that trucks hauling soil material to and from the project site will be covered and will maintain a 2-inch differential between the maximum height of any hauled material and the top of the haul trailer. Haul truck drivers will water the load (using reclaimed water where feasible) prior to leaving the site in order to prevent soil loss during transport.
- **Heavy Equipment:** Limit heavy equipment use on the beach, as feasible, to areas away from the high-tide line during construction.
- **Hydrogen Sulfide:** Provisions shall be made, as necessary, for the treatment of hydrogen sulfide to comply with water quality standards and to control odors from the dewatering process.
- **Dredged Material:** Project operations will require that the scow doors used to release dredged material remain closed until the scows are towed to the disposal site.

MM 5.7-A.2 As part of marina construction in Phase 3, the City of Newport Beach shall include mechanical devices within the marina basin design to enhance the movement and mixing of water within the basin. The use of mechanical devices shall meet the EPA guidelines for adequate tidal flushing (at least 70 percent exchange every 24 hours). One option could be the use of oloids (propeller-type devices) that have been modeled (**Appendix H.3**), but the selection of the system to be installed shall be coordinated with and approved by US EPA, the Santa Ana RWQCB, and NOAA Fisheries.

Cumulative

Implementation of Mitigation Measure MM 5.7-A.1 and MM 5.7-A.2 is required.

Level of Significance After Mitigation

Project Specific

Less than significant.

Cumulative

Less than significant.

Groundwater Supplies and Recharge

5.7-B: The project would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted.

Project-Specific Analysis

Construction activities in Phases 1 and 2 would not affect groundwater because the construction activities would be confined to the upper few feet of the site currently occupied by the mobile home park. Phase 3 construction would include drilling or excavating building foundations and driving piles, excavating a portion of the project site to create the marina basin, and driving sheet and column piles for the marina. The creation of the basin and some of the building foundation activities would extend to the groundwater; however, these activities would not deplete groundwater supplies because the project area is not used for domestic water supply. Therefore, the construction of the proposed project would result in no impact on groundwater supplies.

In the operational phase, the site's drainage features would direct stormwater flows to bioswales and biocells on the site. Since stormwater on the project site is currently conveyed to the Bay, the diversion of stormwater to bioswales and biocells would contribute to recharge of the existing groundwater table. Therefore, the proposed project could result in a beneficial impact on groundwater recharge.

Cumulative

The proposed project would not substantially deplete groundwater supplies and would beneficially impact groundwater recharge. As a result, the proposed project's contribution to cumulative impacts on groundwater supplies and recharge would be inconsiderable.

Mitigation Measures

Project Specific
No mitigation measures are required.

Cumulative
No mitigation measures are required.

Level of Significance After Mitigation

Project Specific
No impact.

Cumulative
No impact.

Drainage Pattern: Erosion or Siltation

5.7-C: The project would not substantially alter the existing drainage pattern of the area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site.

Project-Specific Analysis

All phases of project construction would have the potential to produce erosion and siltation on the project site. Implementation of the construction SWPPP (see Impact 5.7-A), however, would reduce the potential to less than significant.

Implementation of Phase 3 of the proposed project would include reducing impervious surfaces from the current 83 percent to 53 percent. In addition to increase the amount of stormwater captured on the project site, the project includes bioswales and biocells to allow for stormwater to percolate into the groundwater. These changes represent a beneficial impact on drainage patterns, as they would alleviate street flooding and storm drain overcapacity during storm events. The proposed project would not alter the course of a stream or a river because there are no streams or rivers on or immediately adjacent to the project site. Accordingly, there would be no erosion or siltation occurring from alteration of a stream or river.

The proposed project includes a new groin just west of the marina entrance that could alter existing coastal dynamics along the Marina Park beach. In general, a shore-perpendicular structure such as the proposed groin may interrupt longshore movement of sand along the coastline, resulting in the trapping of sand on the upcoast side of the groin and erosion on the downcoast side; in fact, the American Legion groin shows some accumulation of sand on the west (upcoast) side. The severity of

the effect depends on the physical environment (wind, wave, current and littoral processes) and the dimensions (mainly the length) of the groin. The new groin is needed to prevent the movement of sand, carried by littoral processes, into the new marina; the same function is being carried out for the American Legion marina by the existing groin.

Based on the physical environment of the proposed project location and the length of the proposed groin, it is expected that the proposed groin would have minimum, if any, impact to the neighboring shoreline. The proposed project is located along a shoreline with benign wave and current conditions and limited littoral transport; for example, hydrodynamic modeling (**Appendix H.2**) showed that the tidal current along the channel at Marina Park is normally below 0.1 ft/sec. In addition, a review of historical photographs shows that the beach configuration has remained stable for at least the past 15 years. The proposed groin would be located adjacent to, and have the same length as, the existing American Legion groin; that groin has not affected beach dynamics in the decades it has been in place, as evidenced by the long-term stability of the beach. The proposed project would not alter the existing wave climate, which is very small, and thus would not change the effects of wave action on the beach.

The new marina would include vertical bulkhead walls along the interior of the basin and along the long dock bordering the channel. These walls have the potential to reflect waves within the basin, but should have little to no effect on adjacent areas and properties, and would not trap sand, thus closing off the supply of sand from upcoast beaches. However, waves in the marina basin would be confined to the basin and would not contribute to beach erosion, and waves in the channel are too small to have any effect on nearby shorelines: hydrodynamic modeling (**Appendix H.2**) showed that even under extreme wind condition with a 50-year return period, the waves at the project site would still be less than two feet.

Both upland storm water dynamics and shoreline beach dynamics would not be substantially altered by the proposed project. Accordingly, the proposed project would have less than significant impacts on erosion and siltation.

Cumulative

Since the proposed project would not alter a stream or river, adversely change drainage patterns, or substantially alter shoreline dynamics, the project would not have a cumulatively considerable impact on drainage patterns or erosion.

Mitigation Measures

Project Specific

No mitigation measures are required.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project Specific

Less than significant.

Cumulative

No impact.

Drainage Pattern: Flooding

5.7-D: The project would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.

Project-Specific Analysis

The reduction of impervious surfaces,and the implementation of a stormwater management plan in all phases, and the addition of bioswales and biocells in Phase 3 (see Impact 5.7-A), would reduce the amount of stormwater runoff from the project site compared to existing runoff. As a result, the project would result in a beneficial impact related to stormwater flows.

Cumulative

Since implementation of the proposed project would reduce stormwater flows leaving the project site under all phases, the proposed project would not contribute to drainage problems or flooding adjacent to the project site. The proposed project would have a beneficial impact on cumulative offsite flooding.

Mitigation Measures

Project Specific

No mitigation measures are required.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project Specific

Beneficial.

Cumulative

Beneficial.

Runoff Water and Drainage Systems

5.7-E: The project would not create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.

Project-Specific Analysis

Implementation of all phases of the proposed project would allow more stormwater to be captured on the project site, thus reducing the amount of stormwater runoff from the project site compared to existing conditions (see 5.7-A). As a result, the project would result in a beneficial impact on the existing stormwater drainage systems.

The proposed project would not result in additional sources of polluted runoff in any phase. In addition to the change in land uses from residential to open space, the proposed project would include structural features and best management practices (BMPs), none of which are in place on the existing site, that would require stormwater containment and would reduce the pollutant load in site runoff (see 5.7-A and the Preliminary Water Quality Management Plan, **Appendix H.1**). As the proposed BMPs would eliminate the potential for additional sources of polluted runoff compared to existing conditions, there would be no impact related to polluted runoff.

Cumulative

The proposed project would reduce the amount of stormwater runoff from the project site compared to existing runoff. As a result, the project would result in a beneficial impact on the existing stormwater drainage systems that convey stormwater to the Bay. Thus, the project would contribute a beneficial cumulative impact on existing drainage systems.

In addition, since the proposed project includes various BMPs to reduce potential impacts on surface water quality, which in turn affects the quality of the water from offsite storm drainage systems entering Newport Bay, the proposed project would contribute less than cumulatively considerable to surface water quality impacts.

Mitigation Measures

Project Specific

No mitigation measures are required.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project Specific

No impact.

Cumulative

No impact.

Water Quality

5.7-F: The project would not otherwise substantially degrade water quality.

Project-Specific Analysis

No potential sources of water quality degradation are associated with the proposed project which have not been addressed above in 5.7-A through 5.7-E. Those discussions have addressed the potential water quality impacts of demolition and construction in all phases, including grading, excavation, dredging, dredged material transport, and the placement of dredged material on area beaches, and of the operation of the proposed project, including park use and maintenance, marina operations, maintenance dredging, and water circulation. Accordingly, the proposed project would otherwise not substantially degrade water quality and there would be no impact.

Cumulative

No other potential sources of water quality degradation have been identified that could have a cumulative impact

Mitigation Measures

Project Specific
No impact

Cumulative
No impact.

Level of Significance After Mitigation

Project Specific
No impact.

Cumulative
No impact.

Housing Placement: Flood Hazard Area

5.7-G: The project would not place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map.

Project-Specific Analysis

Implementation of the proposed project would not involve the development of housing. As delineated by the Flood Insurance Rate Map (FIRM) designated by the Federal Emergency Management Agency (FEMA), the project site is not located within a 100-year floodplain, nor is it located within a Special Flood Hazard Area (SFHA). No impacts associated with flood and water related hazards would result with project implementation

Cumulative

Since the project site is not located within a 100-year floodplain and the project does not include housing, the proposed project will not contribute to a cumulative impact of locating housing within a 100-year floodplain.

Mitigation Measures

Project Specific

No mitigation measures required.

Cumulative

No mitigation measures required.

Level of Significance After Mitigation

Project Specific

No impact.

Cumulative

No impact.

Structures: Flood Hazard Area

5.7-H: The project would not place within a 100-year flood hazard area structures which would impede or redirect flood flows.

Project-Specific Analysis

According to the Flood Insurance Rate Map prepared by FEMA, the project site is not located within a 100-year flood hazard area and would not be inundated by a 100-year flood. In addition, the project site would have fewer structures that could impede the flow of water than under existing conditions, especially during Phase 1 and 2. Therefore, the structures proposed on the project site would result in no impacts on flood flows.

Cumulative

Since the project would not impact flood flows, the project would not contribute to cumulative impacts on flood flows.

Mitigation Measures

Project Specific

No mitigation measures are required.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project Specific

No impact.

Cumulative

No impact.

Flooding

5.7-I: The project would not expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam.

Project-Specific Analysis

The proposed project is not located in an area of flooding or in the vicinity of a levee or dam. According to city staff, the proposed project floor elevations of the structures at +10 feet above MLLW would reduce potential significant effects from storm surges and flooding. In addition, the project site would have fewer structures that could impede the flow of water than under existing conditions, especially during Phase 1 and 2. Therefore, the proposed project would not expose people or structures to a significant risk of death involving flooding.

Cumulative

The proposed project is not located within the vicinity of a levee or dam. Therefore, there will be no cumulative impact resulting from the failure of a levee or dam.

Mitigation Measures

Project Specific

No mitigation measures are required.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project Specific

No impact.

Cumulative

No impact.

Seiche, Tsunami, or Mudflow

5.7-J: The project could be subject to Inundation by seiche, tsunami, or mudflow.

Project-Specific Analysis

As the site lies on the coast, the risks that are associated with tsunamis are moderate to high; there are no hillsides close enough to the project site to pose a risk of mudslides. Studies performed by Legg, Borrero, and Synolakis (2004) suggest that this area of the coastline may be affected by both earthquake-generated and submarine landslide-generated tsunamis with wave heights of two meters (seven feet) or more and wave run-ups of four meters (13 feet) or more. Accordingly, the site could be affected by tsunamis under certain conditions, although the probability of such an event is considered low. Legg, Borrero, and Synolakis (2004) estimate a return interval of at least several

hundred years for a seismic event large enough to generate a catastrophic tsunami in southern California.

Seiches are waves that surge back and forth in an enclosed basin, and are usually seismically induced. The larger the basin the larger the wave can be, and it is generally necessary for the basin to have nearly vertical walls, as would be the case with the proposed marina, for a seiche to develop.

The project would reduce the risk to people of a tsunami by removing residential uses. The City of Newport Beach has a tsunami contingency plan and evacuation routes in place, which would reduce the likelihood of injury and death. The potential for a damaging seiche to occur in the marina is very small, given the small size of the marina. Accordingly, the potential impact of tsunamis and seiches would be less than significant.

Cumulative

The proposed project has the potential to be inundated by a tsunami. However, implementation of the City's tsunami contingency plan and evacuation routes would reduce this cumulative impact to less than significant.

Mitigation Measures

Project Specific

No mitigation measures are required.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project Specific

Less than significant

Cumulative

Less than significant.