4.7  HYDROLOGY AND WATER QUALITY

This section of the EIR describes the existing hydrology and water quality on campus and analyzes the potential physical environmental effects related to flooding, drainage, groundwater, and surface water quality that may occur due to implementation of the 2004 LRDP. The portion of this section pertaining to hydrology is based on a technical hydrology study prepared by PBS&J for the 2004 LRDP, which is included in Appendix F of this EIR. Impacts of the 2004 LRDP on existing and future water supply sources and wastewater treatment are described and analyzed in Section 4.14.

4.7.1  ENVIRONMENTAL SETTING

4.7.1.1 SURFACE WATER DRAINAGE

Regional Drainage

The UCSD campus is located within the Peñasquitos Hydrologic Unit (Unit 6.00) of the San Diego Region. This unit is defined in the Water Quality Control Plan for the San Diego Basin (1994), referred to as the Basin Plan. As shown in Figure 4.7-1, the Peñasquitos Hydrologic Unit is a triangular shaped area of about 170 square miles extending from Poway to La Jolla. The unit is generally bordered to the north by the San Dieguito River watershed and to the south by the San Diego River watershed. Development within the hydrologic unit consists of a variety of land uses including high density commercial and residential uses in the University and Mira Mesa areas, medium density residential areas, and open space areas such as Los Peñasquitos Canyon, the area around MCAS Miramar, the Del Mar Mesa, and Rose Canyon. The unit is relatively dry with annual precipitation levels ranging from approximately eight inches along the coast to over 18 inches at the inland reaches, with UCSD averaging approximately 10 inches per year.

The Peñasquitos Hydrologic Unit is comprised of five hydrologic areas (HAs) and UCSD is located within three of them: the Miramar Reservoir HA (6.10), the Scripps HA (6.30), and the Miramar HA (6.40). The other two HAs in the unit are the Poway (6.20) and Tecolote (6.50) HAs. Drainage within the unit is unique when compared to typical hydrologic units because of the dramatic difference in direction of drainage. In the northern portion of the unit, drainage within the Miramar Reservoir and Poway HAs flows to Los Peñasquitos Creek and Carmel Valley Creek, which flow westward to the Los Peñasquitos Lagoon and then the Pacific Ocean. In the southern portion of the unit, drainage within the Miramar and Tecolote HAs flows to the southwest to Mission Bay through Rose Creek and Tecolote Creek. Lastly, on the western edge of the unit, within the Scripps HA, the majority of drainage flows directly to the Pacific Ocean through unnamed intermittent coastal canyons or storm drains.

UCSD Drainage

The drainage areas on the UCSD campus can be divided into three general areas: those that drain directly west into the Pacific Ocean (located in the Scripps HA), those that drain to the south to Mission Bay (located in the Miramar HA), and those that drain to the north to Los Peñasquitos Lagoon (located in the Miramar Reservoir HA). The drainage areas located on the UCSD campus and flow direction within those areas are shown in Figure 4.7-2.

The portion of the campus that is located in the Scripps HA and drains directly west to the Pacific Ocean is roughly the area that is located west of the UCSD Ridge Walk. The Ridge Walk runs north-south through the campus from the Spaños Training Facility south to Revelle College. The west campus areas west of the Ridge Walk, such as the north campus parking lots, Eleanor Roosevelt College, and portions of Thurgood Marshall and Muir Colleges, drain to storm drains that flow to the west under off-campus residential areas
4.7 Hydrology and Water Quality

and into short coastal canyons that lead to the Pacific Ocean. Similarly, the Gliderport, Torrey Pines Center, and beach properties drain directly to short coastal canyons that lead to the Pacific Ocean. The eastern portion of SIO and portions of Revelle College and the theater district drain to Skeleton Canyon, which drains off campus to City storm drains and to the Pacific Ocean. The remainder of SIO primarily drains directly to the beach through storm drains on the campus. The drainage basins that include these areas total approximately 500 acres (includes some off-campus areas and does not include the beach properties) with a total combined existing 10-year storm flow (Q_{10}) of 528 cubic feet per second (cfs) and 100-year storm flow (Q_{100}) of 738 cfs.

The portion of the campus that is located in the Miramar Reservoir HA and drains north to the Los Peñasquitos Lagoon consists of the northern portion of the west campus that is east of the Ridge Walk. The drainage area includes the North Campus Recreation Area, portions of Thurgood Marshall College, the Geisel Library, the Price Center, Warren College, and the Campus Services Complex. In addition, this area contains a large expanse of UCSD Park that includes the two undeveloped canyons in the northern portion of the west campus. Drainage from the developed areas in this portion of the campus primarily drains through storm drains which discharge to the undeveloped areas in the Park. This drainage collects in the two canyons in the Park, which flow off campus to the north and into the Soledad Canyon drainage prior to joining with Los Peñasquitos Creek and entering Los Peñasquitos Lagoon. For the most part, once within the canyons in the UCSD Park, drainage is conveyed in natural and semi-natural channels. However, north of the campus, just east of Science Center Drive, a City of San Diego concrete channel is the primary conveyance, until joining with the Soledad Canyon drainage. Approximately 300 acres drain into Los Peñasquitos Lagoon from UCSD with a total existing Q_{10} of 312 cfs and a total existing Q_{100} of 440 cfs.

The portion of the campus that is located in the Miramar HA and drains south to Mission Bay includes the remainder of the west campus (the School of Medicine, portions of Revelle and Muir Colleges, most of University Center, and Fifth College), all of the east campus, and La Jolla del Sol. With the exception of some isolated canyons on the west campus (Pepper Canyon) and east campus (North and Central Canyons) these areas primarily drain through campus storm drains to off-campus Caltrans and City storm drains, which eventually discharge to Rose Creek in Rose Canyon. Rose Creek flows west and south through Rose Canyon in variable forms such as a more natural creek in its northernmost reaches to a semi natural channel with concrete stabilization through its central reaches, to a primarily concrete channel at its lower reaches. South of UCSD, Rose Creek joins with a substantial tributary from San Clemente Canyon and eventually discharges to Mission Bay at the northeast corner of the bay, near Mission Bay High School. Drainage basins delineated for the UCSD campus for the portions that drain to Mission Bay total approximately 400 acres (includes the off-campus VA Medical Center and does not include La Jolla del Sol) with a total existing Q_{10} storm flow of 658 cfs and a total existing Q_{100} of 916 cfs.

4.7.1.2 WATER QUALITY

This section discusses the existing water quality of the runoff from UCSD and the measures that UCSD is currently implementing to prevent or reduce pollutants from entering its runoff.

Runoff is a term used to describe any water that drains or runs off of a defined land area into a waterway. Runoff can be the result of rain, in which case it is also sometimes referred to as storm water. Runoff can also result from various other sources or activities such as irrigation, hosing down of areas, errant wash water from cleaning, leaks in pipes, and air conditioner condensation. When runoff is not the result of natural precipitation, it is sometimes referred to as non-storm water. This section describes the existing water quality of the runoff that is discharged from UCSD campus as storm water and non-storm water.
This page intentionally left blank.
Drainage basins colored red delineated for the La Jolla del Sol, University House, and beach properties because development under the 2004 LRDP is not anticipated to result in substantial new impervious surfaces on those properties.
This page intentionally left blank.
General hydrologic characteristics, land uses, and activities that involve pollutants have the greatest influence on the water quality runoff from a given area. The UCSD campus includes a variety of land uses and activities that have potential to produce pollutants that could adversely affect water quality. Table 4.7-1 summarizes the activities and sources of pollutants for the UCSD campus and their associated pollutants. If improperly managed, these pollutants can be deposited in areas such as streets, parking lots, and walkways, and when exposed to precipitation or non-storm water runoff can be washed downstream to the drainage system and receiving waters.

Table 4.7-1. Potential Pollutant Activity or Sources List

<table>
<thead>
<tr>
<th>Activity/Source</th>
<th>Pollutants of Concern</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building maintenance (i.e., washing, graffiti abatement)</td>
<td>Waste water, paint chips, cleaning products, dirt and sediment, detergents</td>
</tr>
<tr>
<td>Chemical spills</td>
<td>Various cleaning compounds, diesel, paint, hazardous materials, vehicle fluids, hydrocarbons, oil and grease</td>
</tr>
<tr>
<td>Construction activities</td>
<td>Concrete, drywall, paint, sediment</td>
</tr>
<tr>
<td>Erosion</td>
<td>Sediment, organic matter</td>
</tr>
<tr>
<td>Food service operations</td>
<td>Wash water, food residue, bacteria, oil and grease</td>
</tr>
<tr>
<td>Grounds maintenance</td>
<td>Green waste, fuel, oil, pesticides, herbicides, fertilizers, sediment</td>
</tr>
<tr>
<td>Impervious areas</td>
<td>Increased flows and pollutant loading</td>
</tr>
<tr>
<td>Irrigation runoff</td>
<td>Chloramines, fertilizers, pesticides, sediment</td>
</tr>
<tr>
<td>Litter and debris</td>
<td>Litter and debris</td>
</tr>
<tr>
<td>Loading/unloading areas</td>
<td>Petroleum products, fertilizers, pesticides, herbicides, cleaning solutions, paint</td>
</tr>
<tr>
<td>Outdoor storage of raw materials</td>
<td>Sand, asphalt, soil, pesticides, herbicides, fertilizer, paint, solvents, fuel</td>
</tr>
<tr>
<td>Painting (indoor)</td>
<td>Paint or rinse water (oil and water based), paint thinner</td>
</tr>
<tr>
<td>Parking lot runoff</td>
<td>Oil and grease, hydrocarbons, litter, heavy metals</td>
</tr>
<tr>
<td>Roof runoff</td>
<td>Particulate matter and associated pollutants</td>
</tr>
<tr>
<td>Sewer line blockages</td>
<td>Raw sewage, bacteria</td>
</tr>
<tr>
<td>Trash storage areas</td>
<td>Organic materials, hazardous materials</td>
</tr>
<tr>
<td>Utility line maintenance and repairs (domestic water/irrigation/sewer)</td>
<td>Chloramines, chlorine, sediment, adhesive cements, primers</td>
</tr>
<tr>
<td>Vehicle and equipment washing (staff)</td>
<td>Cleaning products, oil and grease, vehicle fluids</td>
</tr>
<tr>
<td>Vehicle and equipment maintenance</td>
<td>Oil and grease, vehicle fluids</td>
</tr>
</tbody>
</table>


Measures that are currently taken by UCSD to reduce the discharge of the pollutants are documented in its Storm Water Management Plan (SWMP). UCSD’s 2003 SWMP was prepared to comply with the General Small MS4 Storm Water Permit issued by the SWRCB under the Phase II National Pollutant Discharge Elimination System (NPDES) requirements. These regulations are described further below in Section 4.7.2. The SWMP identifies pollutant sources potentially affecting the quality and quantity of storm water discharges, provides Best Management Practices (BMPs) for campus operational and construction activities implemented by UCSD staff and contractors, and provides measurable goals for the implementation of the SWMP to reduce the discharge of the identified pollutants into the storm drain system and associated waterways. BMPs include treatment controls, operating procedures, training and education, and practices to
4.7 Hydrology and Water Quality

control site runoff, spill, leaks, and waste disposal. BMPs are required to be updated accordingly to comply with any additions and/or modifications to the NPDES permit requirement or site conditions.

As part of its storm water management program, and to facilitate compliance with the General Construction Storm Water Permit, UCSD has prepared a Storm Water Pollution Prevention Plan (SWPPP) template for construction activities. The SWPPP template assists construction managers and contractors with the identification of pollution sources and related control measures or BMPs, particularly for erosion control, non-storm water management, waste management, and water pollution. The SWPPP also covers other required elements such as training and a construction BMP maintenance, inspection, and repair program. The SWPPP template can be tailored to a specific project by checking boxes or filling in blanks in the document. Storm water pollution prevention drawings (SWPPD) specific to the project would be added to illustrate the locations, application, and deployments of the required BMPs, as well as on-site drainage patterns.

UCSD has also obtained coverage under the General Industrial Storm Water Permit for discharges associated with its maintenance garage (WDID No. 9375004085). Pursuant to the requirements of this permit, UCSD maintains a SWPPP specifically for activities regulated under this permit. In addition, point source discharges of filtered seawater from various aquarium tanks at Birch Aquarium and Scripps Institution of Oceanography are regulated under an individual permit (Discharge Order No. 99-83, NPDES No. CA01017239). These discharges are located at several outlets (seawater and storm water) along the beach at SIO.

The discharges permitted by the NPDES permit discharge into the San Diego Marine Life Refuge and adjacent to the San Diego-La Jolla Ecological Reserve, both designated as Areas of Special Biological Significance (ASBS) by the State Water Resources Control Board. UCSD was informed by the RWQCB that the Ocean Plan does not allow point source discharges into designated ASBSs without an exception; therefore, UCSD has applied to the State Water Resources Control Board for an exception to the Ocean Plan. Conditions of approval to protect the ASBS may be included in the exception and would then become part of the NPDES permit as it is renewed this year. Discharge standards may include more stringent discharge limits, storm water pollution prevention and increased monitoring. Meeting these standards could require modification to components of the seawater and storm water discharge system, modification to the Birch Aquarium life support systems, the addition of various seawater treatment systems and equipment, and the installation of equipment and structures necessary for implementation of storm water pollution prevention BMPs.

4.7.1.3 RECEIVING WATERS

Receiving waters is a general term typically used to describe any water body such as a creek, river, lake, bay, or ocean, which receives runoff. In the context of the proposed 2004 LRDP, it refers to those water bodies that would receive runoff from a project that is associated with the implementation of the 2004 LRDP. Therefore, there are several potential receiving waters for the 2004 LRDP, which include: Soledad Canyon/Soledad Valley, Los Peñasquitos Creek, Los Peñasquitos Lagoon, Rose Creek, Mission Bay, several unnamed intermittent coastal drainages, and the Pacific Ocean. Each of the receiving waters is described below. The beneficial uses designated for each receiving water by the RWQCB are provided in Table 4.7-2 and the definitions for the beneficial uses are provided in Table 4.7-3. In general beneficial uses are those uses, users, or activities that benefit from the presence of the water and could be adversely impacted if water quality were degraded.

**Soledad Canyon.** Soledad Canyon is located to the northeast of the UCSD campus. Runoff from UCSD discharges to the Soledad Canyon drainage, just before it flows into Los Peñasquitos Creek. Although UCSD runoff would only affect a small segment of the Soledad Canyon drainage (roughly 1000 feet in length), for the sake of thoroughness it is included in this list of receiving waters. The Soledad Canyon drainage receives
Table 4.7-2. Beneficial Uses of UCSD Receiving Waters

<table>
<thead>
<tr>
<th>Hydrologic Area Number</th>
<th>MUN</th>
<th>AGR</th>
<th>IND</th>
<th>COMM</th>
<th>NAV</th>
<th>REC1</th>
<th>REC2</th>
<th>BOLL</th>
<th>EST</th>
<th>WARM</th>
<th>COLD</th>
<th>WILD</th>
<th>RARE</th>
<th>MAR</th>
<th>AQUA</th>
<th>MIGR</th>
<th>SPN</th>
<th>SHELL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inland Surface Waters</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soledad Canyon</td>
<td>6.10</td>
<td>+</td>
<td>●</td>
<td>●</td>
<td>○</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
</tr>
<tr>
<td>Los Penasquitos Creek</td>
<td>6.20</td>
<td>+</td>
<td>●</td>
<td>○</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
</tr>
<tr>
<td>Rose Canyon</td>
<td>6.40</td>
<td>+</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
</tr>
<tr>
<td>Unnamed intermittent coastal streams</td>
<td>6.30</td>
<td>+</td>
<td>○</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
</tr>
<tr>
<td>Coastal Waters</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Los Penasquitos Creek</td>
<td>6.10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mission Bay</td>
<td>NA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pacific Ocean</td>
<td>NA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

● Existing Beneficial Use
○ Potential Beneficial Use
+ Excepted From MUN
NA Not Applicable

* See Table 4.7-3 for definitions of the applicable beneficial uses.
<table>
<thead>
<tr>
<th>Designation</th>
<th>Abbrev.</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Municipal and Domestic Supply</td>
<td>MUN</td>
<td>Includes uses of water for community, military, or individual water supply systems including, but not limited to, drinking water supply.</td>
</tr>
<tr>
<td>Agricultural Supply</td>
<td>AGR</td>
<td>Includes uses of water for farming, horticulture, or ranching including, but not limited to, irrigation, stock watering, or support of vegetation for range grazing.</td>
</tr>
<tr>
<td>Industrial Service Supply</td>
<td>IND</td>
<td>Includes uses of water for industrial activities that do not depend primarily on water quality including, but not limited to, mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection, or oil well re-pressurization.</td>
</tr>
<tr>
<td>Commercial and Sport Fishing</td>
<td>COMM</td>
<td>Includes the uses of water for commercial or recreational collection of fish, shellfish, or other organisms including, but not limited to, uses involving organisms intended for human consumption or bait purposes.</td>
</tr>
<tr>
<td>Navigation</td>
<td>NAV</td>
<td>Includes uses of water for shipping, travel, or other transportation by private, military, or commercial vessels.</td>
</tr>
<tr>
<td>Contact Water Recreation</td>
<td>REC1</td>
<td>Includes uses of water for recreational activities involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water-skiing, skin and SCUBA diving, surfing, white water activities, fishing, or use of natural hot springs.</td>
</tr>
<tr>
<td>Non-contact Water Recreation</td>
<td>REC2</td>
<td>Includes the uses of water for recreational activities involving proximity to water, but not normally involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tidepool and marine life study, hunting, sightseeing, or aesthetic enjoyment in conjunction with the above activities.</td>
</tr>
<tr>
<td>Preservation of Biological Habitats of Special Significance</td>
<td>BIOL</td>
<td>Includes uses of water that support designated areas or habitats, such as established refuges, parks, sanctuaries, ecological reserves, or Areas of Special Biological Significance (ASBS), where the preservation or enhancement of natural resources requires special protection.</td>
</tr>
<tr>
<td>Estuarine Habitat</td>
<td>EST</td>
<td>Includes uses of water that support estuarine ecosystems including, but not limited to, preservation or enhancement of estuarine habitats, vegetation, fish, shellfish, or wildlife (e.g., estuarine mammals, waterfowl, shorebirds).</td>
</tr>
<tr>
<td>Warm Freshwater Habitat</td>
<td>WARM</td>
<td>Includes uses of water that supports warm water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish or wildlife, including invertebrates.</td>
</tr>
<tr>
<td>Cold Freshwater Habitat</td>
<td>COLD</td>
<td>Includes uses of water that support cold water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish or wildlife, including invertebrates.</td>
</tr>
<tr>
<td>Wildlife Habitat</td>
<td>WILD</td>
<td>Includes uses of water that support terrestrial ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats, vegetation, wildlife, or wildlife water and food sources.</td>
</tr>
<tr>
<td>Rare, Threatened, or Endangered Species</td>
<td>RARE</td>
<td>Includes uses of water that support habitats necessary, at least in part, for the survival and successful maintenance of plant or animal species established under state or federal law as rare, threatened or endangered.</td>
</tr>
<tr>
<td>Marine Habitat</td>
<td>MAR</td>
<td>Includes uses of water that support marine ecosystems including, but not limited to, preservation or enhancement of marine habitats, vegetation such as kelp, fish, shellfish, or wildlife (e.g., marine mammals, shorebirds).</td>
</tr>
<tr>
<td>Aquaculture</td>
<td>AQUA</td>
<td>Includes the uses of water for aquaculture or mariculture operations including, but not limited to, propagation, cultivation, maintenance, or harvesting of aquatic plants and animals for human consumption or bait purposes.</td>
</tr>
<tr>
<td>Migration of Aquatic Organisms</td>
<td>MIGR</td>
<td>Includes uses of water that support habitats necessary for migration, acclimatization between fresh and salt water, or other temporary activities by aquatic organisms, such as anadromous fish.</td>
</tr>
<tr>
<td>Spawning, Reproduction, and/or Early Development</td>
<td>SPWN</td>
<td>Includes uses of water that support high quality aquatic habitats suitable for reproduction and early development of fish. This use is applicable only for the protection of anadromous fish.</td>
</tr>
<tr>
<td>Shellfish Harvesting</td>
<td>SHELL</td>
<td>Includes uses of water that support habitats suitable for the collection of filter-feeding shellfish (e.g., clams, oysters and mussels) for human consumption, commercial, or sport purposes.</td>
</tr>
</tbody>
</table>
runoff from Carroll Canyon as well as portions of Sorrento Valley and areas north of La Jolla Village Drive and Miramar Road that are east of UCSD. Therefore, this drainage receives runoff from a large amount of highly developed area containing residential, commercial, and industrial uses, and it likely suffers from degradation due to the number of pollutants associated with urban runoff. The drainage also receives runoff from I-5 and I-805, which are also generators of pollutants. Due to the size of the drainage area that contributes to the portion of the Soledad Canyon drainage affected by UCSD runoff (UCSD lands account for less than 3% of the watershed), UCSD runoff accounts for a minimal amount of its flow.

**Los Peñasquitos Creek.** The portion of Los Peñasquitos Creek affected by runoff from UCSD is limited to its lowest reach, which stretches from its confluence with the Soledad Canyon drainage, northwest through the Soledad Valley until it empties into the Los Peñasquitos Lagoon. This portion of the creek has a fairly large contributing watershed, which includes the areas that drain to Los Peñasquitos Canyon, as well as Soledad Canyon. Los Peñasquitos Canyon extends inland as far as Interstate 15 and the contributing watershed, which includes a variety of land uses from open space to highly urbanized areas and covers approximately 58 square miles, extends even further. UCSD represents approximately 0.8 percent of the Los Peñasquitos Creek watershed and, therefore, its contribution to this receiving water is much less than to the Soledad Canyon drainage.

**Los Peñasquitos Lagoon.** The Los Peñasquitos Lagoon watershed comprises approximately 100 square miles and receives drainage from Carmel Valley, Carroll Canyon, and Los Peñasquitos Canyon. Los Peñasquitos Canyon is the largest contributor of the three. The major tributaries to the Los Peñasquitos Lagoon include Deer Canyon Creek, which flows into Carmel Creek in Carmel Valley; Carroll Creek; and Pomerado, Rattlesnake, and Beeler Creeks which all flow into Poway Creek, which subsequently becomes Los Peñasquitos Creek. UCSD represents less than 0.5 percent of the Los Peñasquitos Lagoon watershed.

The Los Peñasquitos Lagoon watershed extends as far upstream as the City of Poway with some areas located within unincorporated portions of San Diego County. Elevations within the watershed range up to 2,900 feet above mean sea level in the upper watershed. Most of the upper watershed is in private ownership, with a few areas belonging to the cities and school districts. The upper watershed is undergoing a rapid transformation with the urbanization of the northern San Diego area. The majority of the property is in the upper watershed zoned for low to medium density housing, and it already currently contains many established residential communities.

The 385-acre Los Peñasquitos Lagoon lies in the lower watershed, at the mouth of Carmel Creek and Los Peñasquitos Creek. This coastal wetland resource includes salt marsh vegetation that covers about 235 acres of the area and about 30 acres of well-defined tidal channels that range in depth from one to 27 feet. Mudflats and salt flats comprise the remaining 120 acres of the wetland habitat in the lagoon. These habitats support a wide variety of plant and animal species, including several that are federally and state listed as endangered or threatened, and the lagoon is a significant stopover for migratory birds.

Los Peñasquitos Lagoon originated many thousands of years ago when rising sea levels flooded the Peñasquitos Valley to form a deep marine embayment. Silt deposited by inflowing rivers gradually filled in the estuary over the years so that most of the area is now covered only by shallow water at high tide. Railroad and highway construction in the early 1900s resulted in significant changes in the natural drainage pattern and tidal circulation of the lagoon and greatly constricted the lagoon entrance channel. Tidal flushing and circulation problems in the lagoon exist to this day. The lagoon is also largely affected by the urban and industrial development in its watershed and is identified as an impaired water body for sedimentation and siltation on the Clean Water Act (CWA) Section 303(d) list.
Approximately half of the Los Peñasquitos Lagoon is owned by the State of California with the other half being owned by the San Diego Gas and Electric Company (SDG&E). The SDG&E owned land was once the site of a potential power plant but now offers limited educational and scientific research opportunities. The portion owned by the State of California has been designated as a natural preserve within the Torrey Pines State Reserve, under the administration of the State Department of Parks and Recreation. Land use within Torrey Pines State Reserve includes recreational, scientific, and educational uses. Torrey Pines State Reserve is recognized as a Marine Managed Area (MMA) by the Resource Agency of California for the Ocean Resources Management Program. MMAs are discrete geographic marine and estuarine areas along the California coast designated using legislative, administrative, or voter initiative processes and are intended to protect, conserve or otherwise manage a variety of resources.

**Rose Creek.** Rose Creek is the primary drainage within Rose Canyon, an “L” shaped canyon to the south of the campus. Runoff from UCSD drains to Rose Creek from several storm drain outlets. The primary portion of Rose Creek that the campus runoff contributes to is the portion of the creek that runs in a north-south direction from near the southern terminus of Gilman Drive at I-5, south to Mission Bay. The upper portion of the creek runs in an east-west direction to the south of the University community. As previously discussed, Rose Creek exists in a variety of conditions such as a more natural creek in its northern most reaches, to a semi natural channel with concrete stabilization through its central reaches, to a primarily concrete channel at its lower reach. UCSD drainage discharges to the creek at the downstream end of its more natural reaches and where channelization begins. Therefore, the ecological value of the portion of the creek that is affected by the UCSD runoff is limited. Wildlife that may inhabit the limited open spaces around this portion of the creek includes raccoon, skunks, rabbits, coyotes, foxes, mule deer, raptors/large hawks, and owls.

The Rose Creek watershed extends inland as far as I-15 and contains a highly developed portion of the City of San Diego, as well as some open space areas. UCSD accounts for approximately 1.8 percent of the watershed and, therefore, UCSD’s contribution to this drainage is minimal.

**Mission Bay.** Rose Creek eventually discharges to Mission Bay. The Mission Bay watershed drains an area of approximately 80 square miles of highly urbanized region primarily located entirely west of I-15. Rose Creek and Tecolote Creek are the main tributaries to Mission Bay, which was converted from a coastal marshland after the completion of a large dredging project. A riprap channel connects the bay and the Pacific Ocean. UCSD represents less than one percent of the Mission Bay watershed.

Mission Bay is irregularly shaped, with two large islands and depths ranging from 7 to 20 feet, and includes a water body lined by residential areas, hotels, marinas, theme parks, and beaches. Recreational activities include many free sporting activities (i.e., volleyball, jet-skiing, and waterskiing), park facilities offering picnic shelters, barbecues, designated swim zones staffed with lifeguards during the summer months, basketball courts, and children’s playground areas.

Circulation in the eastern portion of the bay, where Rose Creek discharges to it, is poor. Coliform bacteria are present in Mission Bay as a result of urban runoff and sewage spills. Mission Bay is identified as an impaired water body on the CWA Section 303(d) list for eutrophic waters along the mouth of Rose Creek and Tecolote Creek, bacteria along the shoreline of the entire bay, and lead. Mission Bay supports a diverse native flora and fauna that are sensitive to the effects of pollutants due to restricted or intermittent tidal flushing. The three types of aquatic habitats in the Bay are sandy bottom shallow water, eelgrass beds, and rocky shoreline. There are two types of intertidal habitats: mudflat and marsh. Three habitats support over 25 species of marine fish and invertebrates and provide opportunities for bird watching.

**Pacific Ocean.** The Pacific Ocean is located to the west of the UCSD campus bordering the entire coast of California and it is the ultimate or final receiving water for all UCSD runoff. The San Diego Marine Life Refuge is located in the Pacific Ocean adjacent to SIO and the San Diego-La Jolla Ecological Reserve is
located just south of SIO. These areas are utilized for recreational activity, including swimming, surfing, and sailing. These areas also contain a variety of biotic habitats, including rocky bottoms, sandy substrates, and the broad head of a submarine canyon. The San Diego Marine Life Refuge and the San Diego-La Jolla Ecological Reserve are each considered as Areas of Special Biological Significance (ASBS) by the State Water Resources Control Board. The ASBS designation is intended to afford special protection to marine life through prohibition of waste discharges with these areas. Designated state water quality protection areas formerly listed as ASBS are now recognized and classified as Critical Coastal Areas (CCA) by the California Coastal Commission (CCC). In addition, to the north of SIO, the Torrey Pines State Beach is designated as a Marine Managed Area (MMA). The Pacific Ocean shoreline along Scripps is identified as an impaired water body on the 2002 CWA Section 303(d) list for bacteria along approximately 3.9 miles of coastline.

Other Receiving Waters. Other receiving waters to which the UCSD campus drains include a variety of on- and off-campus drainages in short and/or isolated canyons.

4.7.2 REGULATORY FRAMEWORK

4.7.2.1 FEDERAL

Clean Water Act

The Clean Water Act (CWA) was designed to restore and maintain the chemical, physical, and biological integrity of the waters in the United States. The CWA also directs states to establish water quality standards for all waters of the United States and to review and update such standards on a triennial basis. Other provisions of the CWA related to basin planning include Section 208, which authorizes the preparation of waste treatment management plans, and Section 319, which mandates specific actions for the control of pollution from nonpoint sources. The EPA has delegated responsibility for implementation of portions of the CWA to the State Water Resources Control Board (SWRCB) and the Regional Water Quality Control Boards (RWQCBs), including water quality control planning and control programs, such as the National Pollutant Discharge Elimination System (NPDES) program. The NPDES program is a set of permits designed to implement the CWA that apply to various activities that generate pollutants with potential to impact water quality.

Section 303 of the CWA requires states to adopt water quality standards for all surface waters of the United States. Section 304(a) requires the EPA to publish water quality criteria that accurately reflect the latest scientific knowledge on the kind and extent of all effects on health and welfare that may be expected from the presence of pollutants in water. Where multiple uses exist, water quality standards must protect the most sensitive use. Water quality standards are typically numeric, although narrative criteria based upon biomonitoring methods may be employed where numerical standards cannot be established or where they are needed to supplement numerical standards. Section 303(c)(2)(b) of the CWA requires states to adopt numerical water quality standards for toxic pollutants for which EPA has published water quality criteria and which reasonably could be expected to interfere with designated uses of a water body.

NPDES Permit Program – Phase I

In November 1990, under Phase I of the urban runoff management strategy, the EPA published NPDES permit application requirements for municipal, industrial, and construction storm water discharges. The application requirements for municipalities were directed at municipalities which own and operate separate storm drain systems serving populations of 100,000 or more, or which contribute significant pollutants to waters of the United States, and required such agencies to obtain coverage under municipal storm water NPDES permits.
Municipalities were required to develop and implement an urban runoff management program to address activities to reduce pollutants in urban runoff and storm water discharges that were contributing a substantial pollutant load to their systems. Rather than establishing numeric effluent limits, the EPA established narrative effluent limits for urban runoff, including the requirement to implement appropriate BMPs.

The Phase I regulations were also directed at certain facilities that discharged storm water associated with industrial activity, and construction activities that disturbed five or more acres. Only the industrial and construction activity components of the Phase I program were applicable to UCSD. The municipal regulations were not.

**NPDES Permit Program – Phase II**

The Phase II Final Rule, published in the Federal Register on December 8, 1999, requires NPDES permit coverage for storm water discharges from:

- Certain regulated small municipal separate storm sewer systems (MS4s); and
- Construction activity disturbing between one and five acres of land (i.e., small construction activities).

In addition to expanding the NPDES Program, the Phase II Final Rule included minor revisions for certain industrial facilities. As with Phase I, the Phase II Program requires the development and implementation of storm water management plans to reduce pollutant discharges. The MS4 and construction components of the Phase II program are both applicable to UCSD.

**4.7.2.2 STATE**

**Porter-Cologne Water Quality Control Act**

The Porter-Cologne Water Quality Control Act authorizes the SWRCB to adopt, review, and revise policies for all waters of the state (including both surface and groundwaters) and directs the RWQCB to develop regional Basin Plans. Section 13170 of the California Water Code also authorizes the SWRCB to adopt water quality control plans on its own initiative. The Water Quality Control Plan for the San Diego Basin (9) is designed to preserve and enhance the quality of water resources in the San Diego Region for the benefit of present and future generations. The purpose of the plan is to designate beneficial uses of the Region’s surface and ground waters, designate water quality objectives for the reasonable protection of those uses, and establish an implementation plan to achieve the objectives.

All projects resulting in discharges, whether to land or water, are subject to Section 13263 of the California Water Code and are required to obtain approval of Waste Discharge Requirements (WDRs) from the RWQCBs. Land and groundwater related WDRs (i.e., non-NPDES WDRs) regulate discharges of process and wash-down wastewater and privately or publicly treated domestic wastewater. WDRs for discharges to surface waters also serve as NPDES permits. These regulations are applicable to UCSD.

**National Pollution Discharge Elimination System (NPDES) Permits**

In California, the SWRCB and its RWQCBs administer the NPDES permit program. The NPDES permits cover all construction and subsequent drainage improvements that disturb one acre or more, industrial activities, and municipal separate storm drain systems. Construction and industrial activities are typically regulated under statewide general permits that are issued by the SWRCB. The SWRCB also issued a statewide general small MS4 storm water NPDES permits for public agencies that fall under that Phase II NPDES regulations.
The NPDES permit system was established in the CWA to regulate both point source discharges (a municipal or industrial discharge at a specific location or pipe) and nonpoint source discharges (diffuse runoff of water from adjacent land uses) to surface waters of the United States. For point source discharges, each NPDES permit contains limits on allowable concentrations and mass emission of pollutants contained in the discharge. For nonpoint source discharges, the NPDES program establishes a comprehensive storm water quality program to manage urban storm water and minimize pollution of the environment to the maximum extent practicable (MEP). The NPDES program consists of characterizing receiving water quality, identifying harmful constituents, targeting potential sources of pollutants, and implementing a comprehensive storm water management program.

The reduction of pollutants in urban storm water discharge to the MEP through the use of structural and nonstructural BMPs is one of the primary objectives of the water quality regulations for MS4s. BMPs typically used to manage runoff water quality include controlling roadway and parking lot contaminants by installing filters with oil and grease absorbents at storm drain inlets, cleaning parking lots on a regular basis, incorporating peak-flow reduction and infiltration features (such as grass swales, infiltration trenches, and grass filter strips) into landscaping, and implementing educational programs.

**Industrial Storm Water Permits**

Pursuant to Phase I of the NPDES permit program, storm water runoff from industrial facilities with certain Standard Industrial Classification (SIC) Codes is governed by the SWRCB under Water Quality Order 97-03-DWQ/NPDES Permit #CAS000001. These regulations prohibit discharges of polluted storm water unless the discharge is in compliance with the general NPDES permit requirements. The nine individual RWQCBs also enforce the General Industrial Storm Water Permit within their respective regions.

To receive coverage under the General Industrial Storm Water Permit, the owner or operator of an industrial facility must submit a Notice of Intent (NOI) to comply with the permit to the SWRCB, prepare a Storm Water Pollution Prevention Plan (SWPPP), and conduct monitoring and reporting. An industrial facility has the option to request an individual, site-specific NPDES permit instead of the general permit. RWQCBs, however, typically only adopt individual permits when the facility has exceptional characteristics or poses a considerable threat to storm water.

Under the General Industrial Storm Water Permit, dischargers are required to control and eliminate sources of pollutants in storm water through the development and implementation of a SWPPP. The SWPPP is to be used as a tool for recognizing and evaluating potential sources of pollutants associated with industrial activities that may affect the quality of storm water discharges and authorized non-storm water discharges from the facility. The SWPPP is also used as a guide to help identify site-specific BMPs, which are to be implemented to reduce or prevent pollutants associated with industrial activities in storm water discharges and authorized non-storm water discharges.

As previously indicated, UCSD has obtained coverage under the General Industrial Storm Water Permit for discharged associated with the maintenance garage located at the campus services facility (WDID No. 9375004085).

**Small MS4 Storm Water Permits**

As part of Phase II of the NPDES permit program, the SWRCB adopted a General Permit for the Discharge of Storm Water from Small MS4s (WQ Order No. 2003-0005-DWQ) to provide permit coverage for smaller municipalities, including non-traditional Small MS4s, which are governmental facilities such as military bases, public campuses (such as UCSD), and prison and hospital complexes. The main objectives of the Phase II regulations are to reduce the amount of pollutants being discharged to the maximum practical extent and
protect the quality of the receiving waters. In order to meet this requirement, permittees are required to prepare a Storm Water Management Program to address the following six minimum control measures:

1. Public education and outreach;
2. Public participation/involvement;
3. Illicit discharge detection and elimination;
4. Construction site storm water runoff control for sites greater than one acre;
5. Post-construction storm water management in new development and redevelopment; and
6. Pollution prevention/good housekeeping for municipal operations.

These control measures are typically addressed through the development of BMPs.

Attachment 3 of the Phase II General Permit lists UCSD as a non-traditional MS4. UCSD will be designated by the RWQCB in the future as an MS4 covered by the General Permit. At such time, UCSD will be required to comply with the submittal requirements of the General Permit, which include submittal of a Notice of Intent and Storm Water Management Plan to the RWQCB for review in accordance with the permit requirements. Based on discussions with the RWQCB, it is anticipated that that UCSD will be brought into coverage under the General Permit no later than the end of 2005. In the meantime, UCSD is developing and implementing its Storm Water Management Plan. The federal time frame to fully implement Phase II Storm Water Management Plan is March 10, 2008.

Construction Storm Water Permits

Storm water runoff from construction activity that results in soil disturbances of at least one acre of total land area (and projects that meet other specific criteria) is governed by the SWRCB under Water Quality Order 99-08-DWQ, NPDES Permit #CAS000002. These regulations prohibit discharges of polluted storm water from construction projects that disturb one or more acres of soil unless the discharge is in compliance with the general NPDES permit requirements. The nine individual RWQCBs enforce the General Construction Storm Water Permit for projects within their region. The San Diego RWQCB oversees permits at UCSD.

It is the responsibility of the construction site owner or landowner to obtain coverage under this General Permit prior to commencement of construction activities. To obtain coverage, the operator or owner must file a NOI with a vicinity map and the appropriate fee with the SWRCB. The General Permit outlines the requirements for preparation of a SWPPP.

California Coastal Act

Under the California Coastal Act, described in more detail in Section 4.8 and other sections of this EIR, the California Coastal Commission (CCC) strives to reduce the amount of polluted runoff that now reaches California’s ocean waters and which has the potential to adversely impact human health, fish, and wildlife, and other aspects of the marine environment. The Coastal Commission is working with the State Water Resources Control Board to develop a statewide nonpoint source pollution control plan in cooperation with the EPA, the National Oceanographic and Atmospheric Administration, regional water quality control boards, local governments, local land-users, and other interested parties.
In addition, although the CCC does not directly manage any Marine Managed Area (MMA), it does have review authority over any activity associated with the designation of a MMA that constitutes development under the Coastal Act. Development activities include projects on land or in/under water, the placement or erection of any solid material or structure, grading, removing, dredging, mining, or extracting any materials (including research purposes), change in the density or intensity of land use, and change in the intensity of the access and/or use of water. Development within the MMA in State waters and adjacent terrestrial areas within its jurisdiction are regulated and could require a permit from the Coastal Commission.

**California Ocean Plan**

The 2001 California Ocean Plan (Ocean Plan), managed by the SWRCB, is the state’s water quality control plan for ocean waters. It lists “beneficial uses” of California’s ocean waters which need to be protected; establishes “water quality objectives” necessary to achieve protection for those beneficial uses; and sets forth a program of implementation (including waste discharge limitations, monitoring, and enforcement) to ensure that water quality objectives are met. The Ocean Plan was revised in 2001 and now affords special protection to Water Quality Protection Areas such as the San Diego Marine Life Refuge and the San Diego-La Jolla Ecological Reserve by prohibiting or limiting discharges into the areas. As previously mentioned, UCSD is in the process of seeking an exception to the Ocean Plan to enable the continuation of the existing ocean water outfall from SIO.

### 4.7.2.3 REGIONAL

**San Diego Basin Plan**

The Water Quality Control Plan for the San Diego Basin (Basin Plan) sets forth water quality objectives for constituents that could potentially cause an adverse effect or impact on the beneficial uses of water. The beneficial uses of the receiving waters relevant to the 2004 LRDP are listed in Table 4.7-2. Specifically, the San Diego Basin Plan is designed to accomplish the following:

- Designate beneficial uses for surface and ground waters,
- Set the narrative and numerical objectives that must be attained or maintained to protect the designated beneficial uses and conform to the state’s antidegradation policy
- Describe implementation programs to protect the beneficial uses of all waters within the region, and
- Describe surveillance and monitoring activities to evaluate the effectiveness of the Basin Plan.

The Basin Plan incorporates by reference all applicable SWRCB and RWQCB plans and policies.
4.7.3  PROJECT IMPACTS AND MITIGATION

4.7.3.1  ISSUE 1 – SITE DRAINAGE AND HYDROLOGY

<table>
<thead>
<tr>
<th>Hydrology and Water Quality Issue 1 Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Would implementation of the 2004 LRDP alter the existing drainage or hydrology of a site or area in a manner which would result in flooding, exceed the capacity of storm water drainage systems, or result in substantial erosion or siltation?</td>
</tr>
</tbody>
</table>

**Impact:** Implementation of the 2004 LRDP would have the potential to substantially alter drainages and hydrology which could increase runoff volumes resulting in flooding, exceedence of the existing storm water drainage system, and erosion.

**Mitigation:** Project specific drainage studies including implementation of site design and flow control if necessary (Hyd-1A); and a campus wide study for detention opportunities (Hyd-1B).

**Significance Before Mitigation:** Potentially significant

**Significance After Mitigation:** Less than significant

**Standards of Significance**

Based on Appendix G of the CEQA Guidelines, implementation of the 2004 LRDP may have a significant adverse impact if it would:

- Substantially alter the existing drainage pattern of the site or area, including 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;
- Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff;
- Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects; or
- Substantially alter the existing drainage pattern of the site or area, including 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.

**Impact Analysis**

**Impacts from Construction Activities**

Land disturbing construction activities associated with implementation of the 2004 LRDP, such as grading and excavation of project sites, construction of new building foundations, roads, driveways, and trenches for utilities, could result in the localized alteration of drainage patterns. These alterations may result in temporarily exceeding the capacity of storm water facilities if substantial drainage is rerouted. Temporary ponding and/or flooding could also result from such activities, from temporary alterations of the drainage system (reducing its capacity of carrying runoff), or from the temporary creation of a sump condition due to grading. Alterations may temporarily result in erosion and siltation if flows were substantially increased or routed to facilities or channels without capacity to carry the flow.

Under the NPDES permit program, SWPPPs are prepared and BMPs identified in the SWPPPs are implemented for construction sites greater than one acre, which reduce the likelihood of alterations in drainage to result in these impacts. In compliance with applicable construction permits, the campus would continue to implement BMPs, such as the following:
• Minimizing disturbed areas. Clearing of land is limited to that which will be actively under construction in the near term, new land disturbance during the rainy season is minimized, and disturbance to sensitive areas or areas that would not be affected by construction is minimized.

• Stabilizing disturbed areas. Temporary stabilization of disturbed soils is provided whenever active construction is not occurring on a portion of the site, and permanent stabilization is provided by finish grading and permanent landscaping.

• Protecting slopes and channels. Outside of the approved grading plan area, disturbance of natural channels is avoided, slopes and crossings are stabilized, and increases in runoff velocity caused by the project is managed to avoid erosion to slopes and channels.

• Controlling the site perimeter. Upstream runoff is diverted around or safely conveyed through the project and is kept free of excessive sediment and other constituents.

• Controlling internal erosion. Sediment-laden waters from disturbed, active areas within the site are detained.

Implementation of appropriate BMPs, as part of compliance with construction permits for construction sites greater than one acre, would protect the quality of storm water runoff by controlling runoff and by ensuring that the quality of storm water flows meets the applicable requirements of the RWQCB. In addition, all construction sites, including those less than one acre, would be managed under the campus’s Storm Water Management Plan in compliance with the Phase II regulations. Therefore, short-term impacts resulting from alterations of drainage and hydrology during construction would be less than significant.

Impacts Following Construction

Implementation of the 2004 LRDP would result in the construction of new buildings and redevelopment, landscaping, and other features on the UCSD campus that are anticipated to result in minor alterations to existing drainage patterns of individual sites within the campus, but not substantial alterations to the drainage courses of the campus as a whole. However, implementation of the 2004 LRDP would convert some areas of the campus from softscape to hardscape which could increase runoff from certain areas. To characterize this issue, a hydrologic analysis of the campus was conducted for the implementation of the 2004 LRDP. The results of this analysis are summarized in Table 4.7-4, and further detail can be found in the 2004 LRDP Hydrology Study (PBS&J 2004), in Appendix F. The University House, beach properties, and La Jolla del Sol were not included in the analysis because no substantial increases to impervious areas are anticipated for these areas.

As shown in Table 4.7-4, implementation of the 2004 LRDP is expected to increase flows from several UCSD drainage basins due to decreasing pervious surfaces in the drainage basins. There are also several drainage basins in which there is no or minimal anticipated increase. This is not necessarily because there is no development anticipated for this area under the 2004 LRDP; it merely indicates that the development that is anticipated to occur in that area is not anticipated to substantially change the hydrologic regime and pervious/impervious areas of the site.
### 4.7 Hydrology and Water Quality

#### 4.7-20

**Table 4.7-4. UCSD 2004 LRDP Hydrology Study Results**

<table>
<thead>
<tr>
<th>Drainage Basin Number</th>
<th>Area (Ac)</th>
<th>Existing</th>
<th>Proposed</th>
<th>dQ</th>
<th>Existing</th>
<th>Proposed</th>
<th>dQ</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Miramar Reservoir Hydrologic Area (6.1) – Drains to Los Peñasquitos Lagoon</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1000</td>
<td>16.3</td>
<td>11</td>
<td>11</td>
<td>0</td>
<td>15</td>
<td>15</td>
<td>0</td>
</tr>
<tr>
<td>1100, 1300</td>
<td>233.7</td>
<td>238</td>
<td>242</td>
<td>4</td>
<td>338</td>
<td>343</td>
<td>5</td>
</tr>
<tr>
<td>1900</td>
<td>6.6</td>
<td>16</td>
<td>16</td>
<td>0</td>
<td>21</td>
<td>21</td>
<td>0</td>
</tr>
<tr>
<td>2300</td>
<td>29.5</td>
<td>27</td>
<td>27</td>
<td>0</td>
<td>38</td>
<td>38</td>
<td>0</td>
</tr>
<tr>
<td>2600</td>
<td>4.9</td>
<td>4</td>
<td>4</td>
<td>0</td>
<td>5</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>2700</td>
<td>4.1</td>
<td>5</td>
<td>8</td>
<td>3</td>
<td>6</td>
<td>10</td>
<td>4</td>
</tr>
<tr>
<td>2800</td>
<td>8.1</td>
<td>11</td>
<td>11</td>
<td>0</td>
<td>16</td>
<td>16</td>
<td>0</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td><strong>303.2</strong></td>
<td><strong>312</strong></td>
<td><strong>319</strong></td>
<td><strong>7</strong></td>
<td><strong>439</strong></td>
<td><strong>448</strong></td>
<td><strong>9</strong></td>
</tr>
<tr>
<td><strong>Scripps Hydrologic Area (6.3) – Drains directly to Pacific Ocean</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>700</td>
<td>71.1</td>
<td>138</td>
<td>141</td>
<td>4</td>
<td>191</td>
<td>196</td>
<td>5</td>
</tr>
<tr>
<td>1200</td>
<td>25.9</td>
<td>41</td>
<td>51</td>
<td>10</td>
<td>58</td>
<td>71</td>
<td>14</td>
</tr>
<tr>
<td>1500, 1600, 2000</td>
<td>117.8</td>
<td>123</td>
<td>132</td>
<td>9</td>
<td>174</td>
<td>186</td>
<td>12</td>
</tr>
<tr>
<td>1700</td>
<td>5.6</td>
<td>9</td>
<td>9</td>
<td>0</td>
<td>12</td>
<td>12</td>
<td>0</td>
</tr>
<tr>
<td>1800</td>
<td>27.7</td>
<td>27</td>
<td>39</td>
<td>12</td>
<td>38</td>
<td>56</td>
<td>18</td>
</tr>
<tr>
<td>2100</td>
<td>112.1</td>
<td>127</td>
<td>137</td>
<td>10</td>
<td>177</td>
<td>191</td>
<td>14</td>
</tr>
<tr>
<td>2200</td>
<td>19.7</td>
<td>23</td>
<td>33</td>
<td>10</td>
<td>33</td>
<td>44</td>
<td>12</td>
</tr>
<tr>
<td>2400</td>
<td>8.2</td>
<td>14</td>
<td>14</td>
<td>0</td>
<td>18</td>
<td>18</td>
<td>0</td>
</tr>
<tr>
<td>3000</td>
<td>5.4</td>
<td>14</td>
<td>14</td>
<td>0</td>
<td>19</td>
<td>19</td>
<td>0</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td><strong>393.5</strong></td>
<td><strong>516</strong></td>
<td><strong>570</strong></td>
<td><strong>55</strong></td>
<td><strong>720</strong></td>
<td><strong>793</strong></td>
<td><strong>75</strong></td>
</tr>
<tr>
<td><strong>Miramar Hydrologic Area (6.4) – Drains to Mission Bay</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>25.3</td>
<td>48</td>
<td>59</td>
<td>11</td>
<td>67</td>
<td>79</td>
<td>13</td>
</tr>
<tr>
<td>200</td>
<td>17.7</td>
<td>36</td>
<td>36</td>
<td>0</td>
<td>49</td>
<td>49</td>
<td>0</td>
</tr>
<tr>
<td>300</td>
<td>46.9</td>
<td>43</td>
<td>43</td>
<td>0</td>
<td>61</td>
<td>61</td>
<td>0</td>
</tr>
<tr>
<td>400, 500*, 600</td>
<td>263.4</td>
<td>277</td>
<td>329</td>
<td>52*</td>
<td>387</td>
<td>460</td>
<td>73*</td>
</tr>
<tr>
<td>800</td>
<td>65.5</td>
<td>105</td>
<td>105</td>
<td>0</td>
<td>151</td>
<td>151</td>
<td>0</td>
</tr>
<tr>
<td>900</td>
<td>61.6</td>
<td>127</td>
<td>132</td>
<td>6</td>
<td>172</td>
<td>180</td>
<td>8</td>
</tr>
<tr>
<td>1400</td>
<td>3.9</td>
<td>7</td>
<td>7</td>
<td>0</td>
<td>9</td>
<td>9</td>
<td>0</td>
</tr>
<tr>
<td>2500</td>
<td>12.5</td>
<td>15</td>
<td>15</td>
<td>0</td>
<td>20</td>
<td>20</td>
<td>0</td>
</tr>
<tr>
<td>2900</td>
<td>9.2</td>
<td>13</td>
<td>13</td>
<td>0</td>
<td>19</td>
<td>19</td>
<td>0</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td><strong>506</strong></td>
<td><strong>671</strong></td>
<td><strong>739</strong></td>
<td><strong>17</strong></td>
<td><strong>935</strong></td>
<td><strong>1028</strong></td>
<td><strong>94</strong></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,203</strong></td>
<td><strong>1,499</strong></td>
<td><strong>1,628</strong></td>
<td><strong>79</strong></td>
<td><strong>2,094</strong></td>
<td><strong>2,269</strong></td>
<td><strong>178</strong></td>
</tr>
</tbody>
</table>

See Figure 4.7-2 for corresponding drainage basins. The University House, beach properties, and La Jolla del Sol were not included in the analysis because no substantial increases to impervious areas are anticipated for these areas.

*The Science Research Park was graded at the time of study but not yet developed.

Q_{10} (cfs) – 10 year storm peak flow in cubic feet per second

Q_{100} (cfs) – 100 year storm peak flow in cubic feet per second

dQ – Change in peak flow between existing and 2004 LRDP developed conditions
Increased peak runoff associated with implementation of the 2004 LRDP may have detrimental effects on and off campus. Potential impacts associated with increased runoff include:

- Exceeding capacity of on-site storm water conveyance systems;
- Exceeding capacity of off-site storm water conveyance systems;
- Exceeding capacity of storm drain inlets and catch basins;
- Causing new erosion and worsening existing erosion problems on site; and
- Causing new erosion and worsening existing erosion problems off site, particularly coastal bluff areas.

Drainage basins 100, 400/500/600 and 900 drain southerly toward Mission Bay (Figure 4.7-2). Basin 100 is mostly developed and therefore it is less likely that increased runoff in this basin would result in on-campus erosion problems. More likely impacts would be exceedences of storm drain infrastructure capacity. Basins 400/500/600 and 900 both contain sloped open space areas that could be subject to erosion and these basins could also be impacted by exceedences of storm drain infrastructure capacity. In addition, runoff increases in the basins could also cause or contribute to impacts off campus such as erosion and capacity exceedences in the community to the south of campus and in Rose Canyon.

Drainage basin 1100/1300 drains northerly toward Los Peñasquitos Lagoon (Figure 4.7-2). This basin contains a large portion of the UCSD Park that is sloped open space. UCSD staff noted that erosion problems may exist in this portion of the Park, however, confirmation of these problems was not part of this analysis. If the problems do exist, increased runoff in this basin could contribute to the problems as well as potentially causing additional erosion problems. Storm drain infrastructure capacity problems could also occur within these drainages due to increase runoff. Off-campus, erosion and capacity exceedences could also occur in Soledad Canyon and Los Peñasquitos Creek.

Drainage basins 700, 1200, 1800, 1500/1600/2000, 2100, and 2200 drain westerly toward the Pacific Ocean (Figure 4.7-2). The drainage basins on the west campus are mostly developed and therefore it is less likely that increased runoff in these basins would result in on-campus erosion problems. However, Basin 1800, which includes the unpaved Gliderport, and Basins 1500/1600/2000 and 2200, which contain a large portion of UCSD Park in SIO, both encompass areas of open space that could be subject to erosion. All of the drainage basins have potential for negative impacts due to increased runoff to storm water conveyance systems from a capacity standpoint both on and off campus; however, because these basins drain to the Pacific Ocean their conveyance systems are generally short. Off-campus erosion problems could occur from runoff increases in these basins in the short coastal ravines that convey drainage to the beaches through the coastal bluffs and at the beach itself.

Substantial increased runoff volumes from individual project sites have the potential to overload the campus storm drain system and increase flows and velocity which could result in flooding at inlets, increased erosion, and impacts to downstream channel and habitat integrity. Therefore, projects involving a substantial increase in impervious surfaces would have potential significant impacts.

**Mitigation Measures**

Implementation of the following mitigation measures would reduce potentially significant impacts associated with drainage and hydrology alteration and the resulting potential for flooding, exceedence of drainage system capacity, and erosion, to below a level of significance. In order to mitigate for this increased runoff, future development on campus shall be required to maintain or reduce the peak runoff for the 10-year, 6-hour storm event under existing conditions in the post development condition as described below under the following mitigation measures (see Hyd-1A). Maintaining 10-year, 6-hour storm event peak runoff is the standard
measure employed by public and regulatory agencies to mitigate for hydrologic impacts because larger storms occur less frequently, and the costs to mitigate for these larger storm events typically outweigh the benefits.

**Hyd-1A** For each development or redevelopment project that would result in an increase of 10,000 square feet or more of impervious surface, the engineer of record shall perform a drainage study commissioned by the Auxiliary and Plant Services (APS) or Facilities Design and Construction (FD&C) departments that would comply with the conditions that follow. Design measures and other recommendations used to comply with these conditions shall be incorporated into project development plans and construction documents. Design measures shall be consistent with UCSD’s storm water management program, shall be operational within a reasonable time from project occupancy, and shall be maintained by UCSD.

i. Site design that controls runoff discharge volumes and durations shall be utilized where applicable and feasible.

ii. Measures that protect slopes and channels such as energy dissipaters, vegetation, and slope/channel stabilizers shall be applied where appropriate.

iii. All developments that will increase impervious surfaces by 10,000 square feet or more shall maintain the peak runoff for the 10-year, 6-hour storm event. In cases where known or potential on- or off-site erosion problems have been identified, the engineer of record in coordination with UCSD shall determine if maintenance of peak runoff for a larger storm event is necessary.

This standard shall be applied at the location where storm runoff from the drainage basin in which the project is located flows across UCSD property limits, either as overland flow or contained within a storm water conveyance system. In order to achieve this standard, detention may occur at one of the following locations:

a. The project site. Single-project detention or retention basins may be incorporated into project design with features including but not limited to: small on-site detention or retention basins; rooftop ponding; temporary flooding of parking areas, streets and gutters; landscaping or gravel beds designed to temporarily retain water; and gravel beds designed to collect and retain runoff;

b. The downstream campus boundary within the drainage basin encompassing the project site; or

c. An alternative location within the drainage basin encompassing the project site, detention at which results in no net increase of runoff at the downstream property limit. This alternative will be useful in cases where detention at the project site or at the downstream property limit is precluded due to site constraints.

Detention projects that fall under items b and c may be implemented as part of a campus-wide storm water detention study described under Hyd-1B. In campus drainage basins identified to have existing or potential erosion or capacity problems, detention downstream of the project site or at an alternative location may not be an acceptable alternative. In these cases, every attempt shall be made to detain increased runoff at the project site. If detention must occur at a downstream or alternative location, additional improvements may be required downstream of the site to mitigate the erosion or capacity problem.
Hyd-1B

UCSD shall conduct a campus wide storm water detention study. The purpose of the study would be to provide an alternative or supplement to requiring a separate detention study for each project. At a minimum, the study shall include the following tasks:

a. Determine detention volumes in those basins where development is anticipated;

b. Determine optimum detention facility locations based on environmental impacts, runoff storage potential, utility conflicts, planned site improvements, and miscellaneous site constraints;

c. Determine detention facility configurations based on the site survey, confirming constructability;

d. Determine which, if any, major drainage basins have known on-site or off-site erosion or drainage facility capacity problems that may justify the need for detention in excess of the 10-year, 6-hour storm event; and

e. Provide preliminary cost estimates for basins.

Once the study is completed, the recommended detention facilities shall be considered by UCSD for implementation. Detention facilities identified shall be implemented when appropriate and feasible, either as a separate project or in conjunction with a development or redevelopment project, and would be addressed by a subsequent CEQA review process.

4.7.3.2 ISSUE 2 – WATER QUALITY

Hydrology and Water Quality Issue 2 Summary

Would implementation of the 2004 LRDP violate any water quality standards or waste discharge requirements, or otherwise substantially degrade water quality?

Impact: Implementation of the 2004 LRDP would have the potential to generate pollutants during construction and post construction activities that could impact downstream water quality if not properly controlled.

Mitigation: Preparation and implementation of an erosion control plan for construction sites less than one acre (Hyd-2A); and implementation of site design and treatment control design measures to reduce pollutants of concern in runoff (Hyd-2B).

Significance Before Mitigation: Potentially significant

Significance After Mitigation: Less than significant

Standards of Significance

Based on Appendix G of the CEQA Guidelines, implementation of the 2004 LRDP may have a significant adverse impact if it would violate any water quality standards or waste discharge requirements, or otherwise substantially degrade water quality. Waste discharge requirements are requirements that are developed as part of permits issued by the SWRCB or RWQCB.

Impact Analysis

Applicable water quality standards developed by the SWRCB or RWQCB for storm water are set forth in applicable storm water permits (which also serve as waste discharge requirements). Storm water permits that are applicable to UCSD and the 2004 LRDP include the General Construction Storm Water Permit, the General Industrial Storm Water Permit, the General Small MS4s Storm Water Permit; and an individual
permit for discharges from SIO. All of these permits control pollutants in runoff from campus properties. The campus would continue to comply with these permits during implementation of the 2004 LRDP; therefore, no impact would occur with regard to violation of storm water standards or waste discharge requirements.

With regard to general water quality impacts from storm water and other runoff, the various pollutants potentially generated at UCSD can adversely affect water quality in a variety of ways. A summary of the general adverse environmental effects that can result from the most common pollutant categories is provided below and potential 2004 LRDP impacts related to construction and post construction conditions are described in the following sections.

- **Sediments** – Sediments are soils or other surficial materials eroded and then transported or deposited by the action of wind, water, ice, or gravity. Sediments can increase turbidity, clog fish gills, reduce spawning habitat, lower young aquatic organisms survival rates, smother bottom dwelling organisms, and suppress aquatic vegetation growth.

- **Nutrients** – Nutrients are inorganic substances, such as nitrogen and phosphorus. They commonly exist in the form of mineral salts that are either dissolved or suspended in water. Primary sources of nutrients in urban runoff are fertilizers and eroded soils. Excessive discharge of nutrients to water bodies and streams can cause excessive aquatic algae and plant growth. Such excessive production, referred to as eutrophication, may lead to excessive decay of organic matter in the water body, loss of oxygen in the water, release of toxins in sediment, and the eventual death of aquatic organisms.

- **Metals** – Metals are raw material components in non-metal products such as fuels, adhesives, paints, and other coatings. Primary sources of metal pollution in storm water are typically commercially available metals and metal products. Metals of concern include cadmium, chromium, copper, lead, mercury, and zinc. Lead and chromium have been used as corrosion inhibitors in primer coatings and cooling tower systems. At low concentrations that naturally occur in soils, metals are not toxic. However, at higher concentrations, certain metals can be toxic to aquatic life. Humans can be impacted from contaminated groundwater resources and bioaccumulation of metals in fish and shellfish. Environmental concerns regarding the potential for release of metals to the environment have already led to restricted metal usage in certain applications.

- **Organic Compounds** – Organic compounds are carbon based. Commercially available or naturally occurring organic compounds are found in pesticides, solvents, and hydrocarbons. Organic compounds can, at certain concentrations, indirectly or directly constitute a hazard to life or health. When rinsing off objects, toxic levels of solvents and cleaning compounds can be discharged to storm drains. Dirt, grease, and grime retained in the cleaning fluid or rinse water may also adsorb levels of organic compounds that are harmful or hazardous to aquatic life.

- **Trash and Debris** – Trash (such as paper, plastic, polystyrene packing foam, and aluminum materials) and biodegradable organic matter (such as leaves, grass cuttings, and food waste) are general waste products that may have a significant impact on the recreational value of a water body and aquatic habitat. Excess organic matter can create a high biochemical oxygen demand in a stream and thereby lower its water quality. Also, in areas where stagnant water exists, the presence of excess organic matter can promote septic conditions resulting in the growth of undesirable organisms and the release of odorous and hazardous compounds such as hydrogen sulfide.

- **Oxygen Demanding Substances** – This category includes biodegradable organic material as well as chemicals that react with dissolved oxygen in water to form other compounds. Proteins, carbohydrates, and fats are examples of biodegradable organic compounds. Compounds such as ammonia and hydrogen
sulfide are examples of oxygen demanding compounds. The oxygen demand of a substance can lead to depletion of dissolved oxygen in a water body and possibly the development of septic conditions.

- **Oil and Grease** – Oil and grease are characterized as high molecular weight organic compounds. Primary sources of oil and grease are petroleum hydrocarbon products, motor products from leaking vehicles, esters, oils, fats, waxes, and high molecular-weight fatty acids. Introduction of these pollutants to the water bodies is typical due to the wide uses and applications of some of these products in municipal, residential, commercial, industrial, and construction areas. Elevated oil and grease content can decrease the aesthetic value of the water body, as well as the water quality.

- **Bacteria and Viruses** – Bacteria and viruses are ubiquitous microorganisms that thrive under certain environmental conditions. Their proliferation is typically caused by the transport of animal or human fecal wastes from the watershed. Excessive bacteria and viruses in water can alter the aquatic habitat and create a harmful environment for humans and aquatic life. The decomposition of excess organic waste causes increased growth of undesirable organisms in the water.

- **Pesticides** – Pesticides (including herbicides) are chemical compounds commonly used to control nuisance growth or prevalence of organisms. Excessive application of a pesticide may result in runoff containing toxic levels of its active component.

**Impacts from Construction Activities**

Project construction would have the potential to result in substantial additional sources of polluted runoff which could have short-term impacts on surface water quality through activities such as demolition, clearing and grading, stockpiling of soils and materials, concrete pouring, painting, and asphalt surfacing. Construction of projects implemented under the 2004 LRDP would involve various types of equipment such as dozers, scrapers, backhoes, other earth moving equipment, dump trucks, cranes, trucks, concrete mixers, and generators. Stockpiled soils and other construction materials for use during later construction phases would be stored outdoors during construction. Pollutants associated with these construction activities that could result in water quality impacts include soils, debris, other materials generated during demolition and clearing, fuels and other fluids associated with the equipment used for construction, paints, other hazardous materials, concrete slurries, and asphalt materials.

These pollutants could impact water quality if they are washed off site by storm water or non-storm water, or are blown or tracked off site to areas susceptible to wash off by storm water or non-storm water. Depending on the location of the construction site at its discharges, pollutants are likely to drain to one or more of the receiving waters identified for the UCSD campus. Sediment is the most common pollutant associated with construction sites because of the associated earth moving activities and areas of exposed soil. Sediment that is washed off site can result in turbid waters in receiving waters which can impact aquatic species. In addition, when sediment is deposited in a receiving water it can smother species, alter the substrate and habitat, and alter the drainage course. Hydrocarbons such as fuels, asphalt materials, and oils, and hazardous materials such as paints and concrete slurries, which are discharged from the site, could impact aquatic plants and animals downstream. Debris and trash discharged from the site could be deposited in nearby canyons or receiving waters and could impact wildlife as well as aesthetics.

Landscaping when installed could also result in water quality impacts due to the use of fertilizers. If fertilizers are discharged, they could adversely affect aquatic plants and animals downstream in receiving waters through a reduction in oxygen levels and an increase eutrophication. Eutrophication is the process of over-enrichment of nutrients in a water body fostering an increase in biotic life that results in a significant loss of dissolved oxygen.
Due to the extent of construction that is anticipated under the 2004 LRDP, implementation of the 2004 LRDP could result in significant short-term impacts to water quality from uncontrolled sediment and pollutants from construction sites. However, the campus’s continued compliance with General Construction Storm Water Permit would mitigate impacts on sites of one acre and more to a level that is less than significant. The General Construction Storm Water Permit requires the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP must contain a site map which shows the construction site perimeter, existing and proposed buildings, lots, roadways, storm water collection and discharge points, general topography both before and after construction, and drainage patterns across the project. The SWPPP must list BMPs the discharger will use to protect storm water runoff and the placement of those BMPs. Construction BMPs typically include, and are not limited to:

- Proper storage, use, and disposal of construction materials.
- Removal of sediment from surface runoff before it leaves the site by silt fences or other similar devices around the site perimeter with particular attention to protecting water bodies listed on the 303(d) list for sediment, such as the Los Peñasquitos Lagoon.
- Protection of all storm drain inlets on site or downstream of the construction site to eliminate entry of sediment.
- Stabilization of cleared or graded slopes.
- Diversion of runoff from uphill areas around disturbed areas of the site.
- Prevention of tracking soil off site through use of a gravel strip or wash facilities at exit areas.
- Protection or stabilization of stockpiled soils.
- Continual inspection and maintenance of all specified BMPs through the duration of construction.

Additionally, the SWPPP shall contain a visual monitoring program.

**Impacts Following Construction**

Following construction, the development of individual project areas with structures, concrete, asphalt, and landscaping would reduce the potential for erosion on the site and sediment discharges. Also, equipment and hazardous materials associated with construction would be removed from the site, which would reduce the potential for pollutants to be discharged from the site. However, use and operation of the projects would generate pollutants that could impact water quality in other ways. Table 4.7-5 provides a summary of the different pollutants by land use type that could be generated by campus projects. When it rains these pollutants can be washed from developed sites and into the storm drain or adjacent drainages. In addition, implementation of the 2004 LRDP could result in increased development on the campus, and associated impacts such as non-storm water discharges, non-storm water connections to the storm drainage system, and accidental spills, could also occur.

Impacts that could result from pollutants discharged to receiving waters were discussed previously in this section. In addition, several receiving waters are listed as impaired for certain pollutants. Los Peñasquitos Lagoon is listed as impaired for sedimentation/siltation; Mission Bay is listed for bacteria indicators, eutrophic conditions, and lead; and the Pacific Ocean at Scripps hydrologic area is listed for bacteria indicators. The addition of pollutants for which these receiving waters are listed as impaired for would have a greater likelihood of resulting in impacts.

Non-storm water discharges, non-storm water connections to the storm drainage system, accidental spills, and other operational impacts are anticipated to be less than significant, however, they would be further reduced
through the continued implementation of the UCSD Storm Water Management Plan. The generation of pollutants from activities associated with new development and redevelopment projects under the 2004 LRDP is considered a potentially significant impact. This impact is addressed in the UCSD Storm Water Management Plan, however, law does not yet mandate implementation of the plan’s components relating to new development and redevelopment. Therefore, impacts from new development and redevelopment projects are considered potentially significant and mitigation is proposed.

**Table 4.7-5. Anticipated and Potential Pollutants Generated by Land Use Types**

<table>
<thead>
<tr>
<th>General Pollutant Categories</th>
<th>Land Use</th>
<th>Sediments</th>
<th>Nutrients</th>
<th>Heavy Metals</th>
<th>Organic Compounds</th>
<th>Trash &amp; Debris</th>
<th>Oxygen Demanding Substances</th>
<th>Oil &amp; Grease</th>
<th>Bacteria &amp; Viruses</th>
<th>Pesticides</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Other Campus Developments</td>
<td>P(1)</td>
<td>P(1)</td>
<td>P(2)</td>
<td>X</td>
<td>P(5)</td>
<td>X</td>
<td>P(3)</td>
<td>P(5)</td>
<td>P(5)</td>
</tr>
<tr>
<td></td>
<td>Vehicle Repair Shops</td>
<td>X</td>
<td>X(4)(5)</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Parking Lots</td>
<td>P(1)</td>
<td>P(1)</td>
<td>X</td>
<td>X</td>
<td>P(1)</td>
<td>X</td>
<td>P(1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Streets</td>
<td>X</td>
<td>P(1)</td>
<td>X(4)</td>
<td>X</td>
<td>P(5)</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

X = anticipated
P = potential
(1) A potential pollutant if landscaping exists on site.
(2) A potential pollutant if the project includes uncovered parking areas.
(3) A potential pollutant if land use involves food or animal waste products.
(4) Including petroleum hydrocarbons.
(5) Including solvents.

**Mitigation Measures**

Implementation of mitigation measure Hyd-2A would reduce potential significant impacts associated with construction sites that are less than one acre to below a level of significance. Implementation of mitigation measure Hyd-2B would reduce potential significant impacts associated with post-construction activities at new development and redevelopment projects to below a level of significance.

**Hyd-2A** For any project resulting in land disturbance that is less than an acre, prior to initiation of construction the APS or FD&C project managers in consultation with the UCSD Civil Engineer shall approve an erosion control plan for the project construction. This erosion control plan shall include, but not be limited to, the following applicable measures to protect downstream areas from sediment and other pollutants during site grading and construction:

- Proper storage, use, and disposal of construction materials.
- Removal of sediment from surface runoff before it leaves the site by silt fences or other similar devices around the site perimeter.
- Protection of storm drain inlets on site or downstream of the construction site to eliminate entry of sediment.
- Stabilization of cleared or graded slopes.
• Removal of sediment tracked or otherwise transported onto adjacent roadways through periodic street sweeping.

• Prevention of tracking soil off site through use of a gravel strip or wash facilities at exit areas (or equivalent measures).

• Protection or stabilization of stockpiled soils.

**Hyd-2B**

For each development or redevelopment project that would include 100,000 square feet of development or parking lots greater than 5,000 square feet potentially exposed to precipitation or runoff, the following design standards or their equivalent shall be applied in addition to those conditions in Hyd-1A. Equivalent design standards may be less restrictive if consistent with the applicable MS4 permit at that time. Design measures and other recommendations used to comply with these standards shall be incorporated into project development plans and construction documents. Design measures shall be consistent with UCSD’s storm water management plan, shall be operational within a reasonable time from project occupancy, and shall be maintained by UCSD.

i. All new storm drain inlets and catch basins within the project site shall be marked with prohibitive language and/or graphical icons to discourage illegal dumping per UCSD standards.

ii. Outdoor areas for storage of materials that may contribute pollutants to the storm water conveyance system shall be covered and protected by secondary containment.

iii. All trash container areas shall be enclosed to prevent off-site transport of trash and drainage shall be directed to the sanitary sewer system or the containers shall be covered to prevent exposure of trash to precipitation.

iv. Pollutants of concern shall be minimized through the incorporation of design measures best suited to maximize the reduction of pollutant loadings in that runoff. At least one treatment control is required for new parking areas or structures, or other new uses identified by FD&C or Environmental Planning to have potential to generate substantial pollutants. Treatment controls include detention basins, infiltration basins, wet ponds or wetlands, drainage inserts, filtration, and hydrodynamic separator systems. Treatment controls shall incorporate volumetric or flow based treatment control design standards to mitigate (infiltrate, filter, or treat) storm water runoff, as appropriate.
4.7.3.3 ISSUE 3 – SEICHEs, TSUNAMIS, AND MUDFLOWS

Hydrology and Water Quality Issue 3 Summary

Would implementation of the 2004 LRDP expose people or structures to a significant risk of loss, injury or death involving inundation by seiche, tsunami, or mudflow?

Impact: Implementation of the 2004 LRDP could expose people or structures to tsunamis, because of its coastal location, or mudflows, due to on-campus topography. However, exposure to both hazards is unlikely to be substantial.

Mitigation: No mitigation is required.

Significance Before Mitigation: Less than significant. Significance After Mitigation: Less than significant.

Standards of Significance

Based on Appendix G of the CEQA Guidelines, implementation of the 2004 LRDP may have a significant adverse impact if it would expose people or structures to a significant risk of loss, injury or death involving inundation by seiche, tsunami, or mudflow.

Impact Analysis

The campus is not subject to inundation by seiche as this phenomenon is typically associated with landlocked bodies of water, none of which occur near the campus; thus, no impact is anticipated.

A tsunami (or seismic sea wave) is the secondary effect of a major earthquake. Waves are often generated in the ocean at a point near the earthquake source by the sudden movement of the sea floor. When a tsunami finally reaches a distant coastline, it may appear as a rapidly rising or falling tide, a series of breaking waves, or a bore (a step-like wave with a steep breaking front). Reefs, bays, entrances to rivers, undersea features and the slope of the beach all help to modify the tsunami as it approaches the shore. Tsunamis rarely become great, towering breaking waves and sometimes the tsunami may break far offshore or may not be visible at all. In the rare event that a particularly destructive tsunami occurred, the southwest portion of the SIO campus could be at risk of inundation. However, in the 100-year history since SIO was founded and developed, no tsunamis have affected this site. In addition, due to organizational and scientific advances, it is likely that if a tsunami did occur, there would be sufficient notice to evacuate people from this relatively small area of the concern. The West Coast and Alaska Tsunami Warning Center (WCATWC) monitors earthquakes and if the location and magnitude of an earthquake meet the known criteria for generation of a tsunami, a tsunami warning is issued; therefore, impacts are considered to be less than significant.

Inundation by mudflows across the developed portion of the majority of the campus is unlikely. This is due to the urbanized location, and the fact that most of the campus is located on a relatively flat mesa well above open spaces. However, portions of the campus do lie at lower elevations and in proximity to known landslides. Therefore, in these low-lying areas, there is a potential for inundation by mudflows under the right set of conditions. Because the majority of these low-lying campus areas is vegetated and would not be developed under the 2004 LRDP, it is considered unlikely for inundation by mudflows to occur as result of the proposed project and the impact is less than significant. Additional discussion of geotechnical issues can be found in Section 4.5.
Mitigation Measures

The 2004 LRDP would not result in a significant impact regarding the exposure of people or structures to a significant risk of loss, injury or death involving inundation by seiche, tsunami, or mudflow; therefore, no mitigation measures are required.

4.7.4 CUMULATIVE IMPACTS AND MITIGATION

### Hydrology and Water Quality Cumulative Issue Summary

Would implementation of the 2004 LRDP have a cumulatively considerable contribution to a cumulative hydrology and water quality impact considering past, present, and probable future projects?

<table>
<thead>
<tr>
<th>Cumulative Impact</th>
<th>Significance</th>
<th>LRDP Contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increases in storm water runoff within the watershed would contribute to downstream erosion problems.</td>
<td>Potentially significant.</td>
<td>Not cumulatively considerable with implementation of mitigation measure Hyd-1A.</td>
</tr>
<tr>
<td>Development within watershed increases pollutant sources that could adversely affect receiving waters.</td>
<td>Potentially significant.</td>
<td>Not cumulatively considerable with implementation of mitigation measure Hyd-2A and 2B.</td>
</tr>
</tbody>
</table>

The geographic context for the cumulative impact analysis concerning hydrology and water quality is the Peñasquitos Hydrologic Unit, within which the proposed project is located. This Hydrologic Unit is comprised of five hydrologic areas (HAs): Miramar Reservoir, Scripps, Miramar, Poway, and Tecolote. The analysis accounts for all anticipated cumulative growth within this geographic area, including development proposed under the 2004 LRDP, development anticipated under the surrounding planning documents, and known development projects within the Peñasquitos Hydrographic Unit.

4.7.4.1 DRAINAGE AND HYDROLOGY

Urban development within the Peñasquitos Hydrologic Unit would increase impervious areas and consequently increase storm water runoff. These increases could result in flooding, drainage systems capacity issues, and erosion problems throughout the Hydrologic Unit. However, most future development projects in the San Diego region would be subject to NPDES Phase I and II regulations, which now require addressment of changes to hydrologic regime and mitigation for conditions of concern. In addition, most projects are reviewed by other jurisdictions for hydrologic impacts and some projects are also regulated by the Coastal Commission. Nevertheless, implementation of the mandated measures to control hydrology cannot be guaranteed by the University of California on these projects because they fall within other jurisdictions.

No severe flooding issues were identified within the Peñasquitos Hydrologic Unit that the campus drainage would contribute to, however, there is no comprehensive study or resource available with this information. Similarly, there is no comprehensive resource depicting erosion problems within the unit, however, it is suspected that they do occur. Because it is likely that some erosion, and possibly flooding problems do exist within the watershed, a potential significant impact could occur without appropriate drainage controls.

Development under the 2004 LRDP could contribute to such impacts if they were to occur downstream of the campus. However, with implementation of the mitigation measure Hyd-1A and 1B, it is anticipated that the hydrologic contribution resulting from the 2004 LRDP would not noticeably contribute to drainage impacts within the watershed and, therefore, would not be cumulatively considerable.
4.7.4.2 WATER QUALITY

Urban development within the Peñasquitos Hydrologic Unit would increase impervious areas and activities that generate pollutants, and consequently could result in additional impacts to receiving waters in the Hydrologic Unit. Most future development projects in the San Diego region would be subject to NPDES Phase I and II regulations, which would require that source control and nonpoint source BMPs be employed to control potential effects on water quality and that storm water quality control devices be incorporated into storm water collection systems to collect sediment and other pollutants. Nevertheless, implementation of the mandated measures to control pollutants cannot be guaranteed by the University of California on these projects because they fall within other jurisdictions.

Currently water quality impairments or problems within the Peñasquitos Hydrologic Unit downstream of the campus are described in Section 4.7.1. Development under the 2004 LRDP that does not implement proper pollutant controls could contribute to the water quality impairments discussed if they were to occur to receiving waters downstream of the campus. However, with implementation of the mitigation measures Hyd-2A and 2B, it is anticipated that the pollutant contribution resulting from the 2004 LRDP would not cause or contribute to a water quality impairment and would not be cumulatively considerable.

The campus’s compliance with water quality standards and waste discharge requirements would not be affected by off-campus projects and is therefore not cumulatively relevant. The only issue that is cumulative relevant is the City’s compliance with the Point Loma Wastewater Treatment Plant waste discharge requirements. Development throughout the City of San Diego is also treated by this plant and, therefore, development throughout the City could also impact the capacity of this plant. However, as further discussed in Section 4.14, because the City manages the operations of the plant and provides for expansions and other measures when necessary, a significant and cumulatively considerable contribution impact is not expected to occur.

4.7.4.3 MUDSLIDES AND TSUNAMI

Mudslides and tsunami are localized events and other projects would not increase the likelihood of their occurrence or result in increased exposure to the events; therefore, they are not cumulatively relevant.

4.7.5 CEQA CHECKLIST ITEMS ADEQUATELY ADDRESSED IN INITIAL STUDY

Would the project 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)?

No removal of groundwater is proposed, as the project would use potable water supplied by the City of San Diego Water Department via existing lines on UCSD’s campus. The City receives deliveries of imported water from the San Diego County Water Authority (SDCWA) to satisfy potable water demand. No impacts to groundwater supplies would occur. No additional analysis is required.
Would the project 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?

According to the 1997 FEMA flood insurance rate maps, the campus (including SIO) is in Zone X, which is outside of the 100-year and 500-year flood hazard areas; therefore no impact would occur and no further analysis is required.

Would the project place within a 100-year flood hazard area structures which would impede or redirect flood flows?

Development under the 2004 LRDP would not place structures within the 100-year flood hazard area, as the entire campus, including SIO is located in Flood Zone X which is outside of the 100- and 500-year floodplains (FEMA 1997). Therefore, 2004 LRDP implementation will not impede or redirect flood flows. No impact would occur and no further analysis is required.

Would the project 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?

Campus development is located on the Torrey Pines Mesa, at an average elevation between 300 to 400 feet above mean sea level. It is extremely unlikely that dam or levee failure occurring at remote inland San Diego County locations would have any effect on elevated campus lands located at the Pacific Coast. Flood flows emanating from inland areas would more likely travel to the coast via Los Peñasquitos Lagoon to the north or Rose Canyon to the south of campus lands. No additional analysis is needed.

4.7.6 REFERENCES


This page intentionally left blank.