

4.7 HYDROLOGY AND WATER QUALITY

This section describes and evaluates the potential impacts related to hydrology and water quality associated with the proposed project. Hydrology impacts were evaluated in the Hydrology/Hydraulic Report for City Place and Sky Lofts (Fusco Engineering, May 2007) which is provided in Appendix F of this DEIR. This report is summarized in Section 4.7.4.1, Long Term Storm Water Flows, Hydrology/Drainage Impacts.

4.7.1 EXISTING SETTING RELATED TO HYDROLOGY AND WATER QUALITY

The project site is located in the Santa Ana Watershed. The watershed is composed of 153.2 square miles — the largest in Orange County. The Santa Ana Watershed extends southwesterly from the San Bernardino Mountains, crosses central Orange County, and empties into the Pacific Ocean. The Orange County section of this watershed includes parts of the Cities of Anaheim, Brea, Huntington Beach, Orange, Placentia, Santa Ana, Villa Park and Yorba Linda. The Santa Ana River serves as the main tributary to the watershed, with Santiago Creek being the river's largest tributary in Orange County. Santiago Creek is located south of the project site, just south of Memory Lane, in Santiago Park.

The project site has been rough graded and is currently a staging area for the adjacent City Place project which is under construction. The soil on the site is previously placed fill material, consisting primarily of sand, silt, and clay mixtures to depths of about 1 to 2 feet below the existing ground surface. Alluvial soil encountered in borings at the site generally consisted of silty, sandy and clayey silts, silty sands and poorly graded sands, and gravels to the maximum explored depth of approximately 61 feet.¹ These types of soils would allow a relatively high amount of water to permeate the soil during storms. The site is relatively flat; therefore, runoff from the existing site has a low volume and does not move very fast because of the flatness of the site.

4.7.1.1 Federal and State Programs

Water quality objectives for all waters in the state are established under applicable provisions of Section 303 of the CWA and the state Porter-Cologne Water Quality Control Act. The SWRCB and the RWQCB are responsible for assuring implementation of and compliance with the federal CWA and the Porter-Cologne Water Quality Control Act provisions.

4.7.1.2 National Pollutant Discharge Elimination Systems Permits

The NPDES permit was established as part of the implementation of the CWA to regulate municipal and industrial discharges to surface waters of the United States. The CWA prohibits the discharge of any pollutant into navigable waters from a point source unless the discharge is in compliance with a NPDES Program permit. The purpose of the NPDES program is to manage urban storm water runoff, minimizing pollution of the environment to the maximum extent practicable. 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 NPDES Program requires local agencies and project applicants to obtain permits to discharge storm water into waters of the State. The regulations provide that discharges of storm water to waters of the United States from construction activities are effectively prohibited unless the discharge is conducted in compliance with an NPDES permit. Construction activities subject to this general Permit include clearing, grading,

¹ Fuscoe Engineering, *Hydrology/Hydraulic Report for City Place and Sky Lofts*. May 2007.

disturbances to the ground such as stockpiling, or excavation. Disturbance refers to exposed soil resulting from activities such as clearing, grading, and excavating. Construction activities can include road building, construction of buildings and demolition.

Each NPDES permit contains limits on allowable concentrations and mass emissions of pollutants contained in the discharge. Sections 401 and 402 of the CWA contain general requirements regarding NPDES permits. Section 402(p) of the CWA (an amendment to Section 404) established a framework for regulating construction storm water discharges under the NPDES Program. Section 307 describes the factors that the United States EPA must consider in setting effluent limits for priority pollutants.

4.7.1.3 State Water Quality Regulations

In California, the NPDES Program is administered by the nine RWQCBs. Each RWQCB is required to adopt a Water Quality Control Plan, or Basin Plan, as required by Section 303 of the CWA and the Porter-Cologne Water Quality Control Act. The plans establish water quality standards and objectives for California rivers and their tributaries. The Porter-Cologne Water Quality Control Act requires that Basin Plans recognize and reflect regional differences in existing water quality, the beneficial uses of the region's ground and surface waters, local water quality conditions and problems, and implement a program for achieving water quality objectives (California Water Code, Section 13050[j]).

4.7.1.4 Regional Water Quality Regulations

General Construction Activity Storm Water NPDES permits (General Permit) are issued for storm water discharges by the RWQCB. The project site is within the RWQCB, Santa Ana Region (Region 8). Within Region 8, the adopted Santa Ana River Basin Plan provides the framework for its regulatory programs. The Santa Ana River Basin Plan designates the beneficial uses of the waters of the region and specifies water quality objectives intended to protect the beneficial uses of all regional waters. Beneficial uses and water quality objectives, together with an antidegradation policy, comprise federal "water quality standards." The Basin Plan also specifies an implementation plan that includes discharge prohibitions.

4.7.1.5 Local Water Quality Regulations

Since 1990, the County of Orange has cooperated with Orange County cities (the Permittees) in complying with the NPDES permits issued by the Santa Ana and San Diego RWQCBs. The result of this cooperation has been the development of numerous storm water programs that have been integrated into the area-wide Drainage Area Management Plan (DAMP). The County believes this common approach provides the most efficient and effective means of reducing storm water and urban runoff pollution to meet permit requirements.

As a result of the NPDES permits issued in early 2002 (Third Term Permits), the DAMP has undergone substantial changes and restructuring and is now termed the 2003 DAMP. The 2003 DAMP contains model program guidance that was developed through a collaborative effort among all Permittees, including the County, as well as interested agencies, organizations, and the public. The DAMP requires that each Permittee prepare a Local Implementation Plan (LIP) as an Appendix to the DAMP. The City of Santa Ana's LIP describes the activities that the City has previously undertaken and is currently undertaking to meet the requirements of the Third Term Permits and to make meaningful improvements in urban water quality. The LIP is intended to serve as the basis for City compliance during the five-year period of the Third Term Permit, however, the LIP is subject to modifications and updates as the City determines necessary, or as directed by the RWQCB.

4.7.1.6 Underground Water Quality

According to the California Division of Mines and Geology, historically the most shallow groundwater level at the project site is approximately 30 to 40 feet below grade. However, a geotechnical investigation performed by Leighton and Associates, Inc. and included as an Appendix to the City Place EIR did not encounter underground water at depths up to 61.5 feet below grade. Furthermore, this geotechnical investigation indicated that there were no pre-existing water quality issues at the project site.

4.7.1.7 Surface Water Quality

Storm water runoff carries typical urban pollutants such as suspended sediments and contaminants associated with motor vehicle operation including oils and grease, as well as fertilizers and pesticides associated with grounds maintenance. Studies to characterize typical urban runoff quality conducted as a part of the Nationwide Urban Runoff Program identified heavy metals as the most prevalent priority pollutant constituents. Concentrations of heavy metals in urban runoff were found, in many cases, to exceed EPA ambient water quality criteria and drinking water standards. Organic priority pollutants were also identified, but at a lower frequency and at lower concentrations than heavy metals. Constituents found in typical urban runoff vary as a result in differences in rainfall intensity and occurrence, geographic features, land use, as well as vehicle traffic and percent of impervious surfaces. The EPA estimates that short-term runoff from construction sites without adequate erosion control can contribute more sediment to receiving waters than that deposited by natural processes over a period of decades.

4.7.2 THRESHOLDS OF SIGNIFICANCE RELATED TO HYDROLOGY AND WATER QUALITY

Based on Appendix G of the CEQA Guidelines, implementation of the proposed project would result in a significant adverse impact on the environment related to hydrology and water quality if it would:

- Violate any water quality standards or waste discharge requirements.
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site during construction,
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or 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.
- Otherwise substantially degrade water quality or beneficial uses.

4.7.3 METHODOLOGY RELATED TO HYDROLOGY AND WATER QUALITY

The Hydrology/Hydraulic Report was prepared in conformance with the *Orange County Hydrology Manual*. Advanced Engineering Software (Version 8.0) was utilized to compile the hydrologic data and to determine the peak discharges. Copies of the computer printouts are included in Appendix F of this DEIR. Water Surface Pressure Gradient program was used to calculate the hydraulic grade line.

4.7.4 IMPACTS RELATED TO HYDROLOGY AND WATER QUALITY

4.7.4.1 Long-Term Storm Water Flows

Hydrology/Drainage Impacts

The proposed project storm drain system will drain into the existing storm drain system on the City Place site and outlet into an existing 42-inch reinforced concrete pipe storm drain along Memory Lane. However, a final storm drainage plan has not yet been prepared.

A Hydrology/Hydraulic report was prepared for the City Place project in December 2004 by Fuscoe Engineering. This report included the current City Place site and the City Place Sky Lofts site. The runoff for this entire area (City Place and City Place Sky Lofts sites) was estimated at 26.71 cubic feet per second (cfs). The 2004 hydrology study indicated that the proposed drainage plan for the project in conjunction with existing drainage facilities in the project area would provide adequate drainage for the project during a 25 year storm frequency. At the time of the 2004 report, the 2.008-acre City Place Sky Lofts site was proposed for five condominium buildings and drives. The analysis for the May 2007 Hydrology/Hydraulic report prepared for the proposed project replaced the five condominium buildings and drive aisles originally proposed for the site with the high-rise residential tower and parking garage. Additional runoff for the proposed project is estimated to increase the 25 year storm frequency by 0.44 cfs per acre to a total of 27.15 cfs. The May 2007 report concludes that the additional 0.44 cfs would have little effect on the existing storm drain system and that existing facilities would provide adequate drainage for the proposed project. Additionally, the May 2007 report concludes there would be no damage to structures related to storm drainage in a 100 year storm frequency.

As the runoff water from the project site would not exceed the capacity of the existing storm drain system or result in flooding on- or off-site, impacts related to hydrology and drainage would be less than significant.

Water Quality Impacts

The proposed project has the potential to result in long-term impacts to water quality due to the addition of urban pollutants and an increase in site activities associated with the new development. Typical urban pollutants associated with new development include pesticides, fertilizers, vehicle hydrocarbons, grease, oil, plastics, paint and litter. The proposed project would generate low levels of water quality contaminants which would be carried in storm water runoff from paved surfaces to Santiago Creek, Santa Ana River and to the Pacific Ocean. Presently, the RWQCB designates the mouth of the Santa Ana River at the Pacific Ocean as an Impaired Water Body, in accordance with Section 303 of the CWA. The RWQCB requires that all discretionary projects incorporate features to filter or retain the first 0.75 inches of storm water on-site during each storm event. Mitigation measures described below would ensure that the proposed project complies with the applicable RWQCB requirements and applicable NPDES permit requirements to reduce potential water quality impacts to downstream water bodies.

4.7.4.2 Short-Term Storm Water Flows

Implementation of the proposed project would require grading, excavation and other construction-related activities that could cause soil erosion from exposed soil at an accelerated rate during storm events if not properly controlled. A major source of storm water pollution common to many construction sites relates to earthmoving activities. The major pollutant generated by earthmoving activities is sediment, typically produced by wind and/or water erosion. Site clearance and excavation activities can increase erosion. Construction BMPs may include the placement of gravel bag dikes, installation of silt fencing, and general

good housekeeping practices intended to ensure that sediment and other construction-related materials are not discharged in storm water runoff to the Santa Ana River. Potential pollutants include but are not limited to: solid or liquid chemical spills; wastes from paints, stains, sealants solvents, detergents, glues, lime, pesticides, herbicides, fertilizers, wood, preservatives, asbestos fibers, paint flakes, and stucco fragments; fuels; oils; lubricants; hydraulic, radiator or battery fluids; concrete and related cutting or curing residues; floatable wastes; engine, steam cleaning, street cleaning or degreasing wastes; and superchlorinated potable water line flushing and testing.

The amount and rate of erosion will vary depending on a number of factors, including the time of year of construction, the size of the development site, the amount and intensity of rainfall, and the amount of natural and/or artificial fill. Storm water runoff from the project site during construction could contain soils and sediments from these activities. The State's General Construction Permit requires the preparation of a SWPPP to control possible pollutant loading in storm water discharges from the project site resulting in land disturbance of one or more acres, or less than one acre where the construction project is a part of a larger common plan of development.

A SWPPP describes the measures or practices to control pollutants during both the construction and post-construction phases of the proposed project. A SWPPP typically identifies project design features and a list of target structural and non-structural BMPs that would be used to control, prevent, remove or reduce pollution. Compliance with the SWPPP is monitored by site inspections from the RWQCB. In addition to the requirements of the NPDES program, provisions of the Uniform Building Code and the City's Grading Code also require reduction of erosion and sedimentation impacts.

4.7.5 MITIGATION RELATED TO HYDROLOGY AND WATER QUALITY

Mitigation measures W-1 and W-2 would ensure that planned drainage facilities would be approved by the City and installed prior to issuance of occupancy permits. Additionally, the Hydrology Report provided in Appendix F of this DEIR identified that existing off-site drainage facilities would have adequate capacity to accommodate storm water runoff generated from implementation of the proposed project. Therefore, impacts related to on- or off-site flooding and capacity of existing storm water drainage systems related to implementation of the proposed project would be less than significant.

With implementation of mitigation measures W-3 and W-4, impacts related to water quality standards or waste discharge requirements, and water quality during and after project construction would be less than significant.

Hydrology/Drainage

- W-1 Prior to issuance of grading permits, the applicant shall submit a final drainage plan identifying the exact size and location of drainage facilities.
- W-2 The applicant shall construct facilities on the project site to transport storm water from the site to the City's/County's drainage facilities. All such facilities will be subject to the review and approval of the City Engineer and shall be installed prior to the issuance of occupancy permits.

For Construction (SWPPP)

- W-3 Prior to the commencement of soil disturbing activities, the project proponent shall submit for approval to the RWQCB, a Notice of Intent to be covered under the Storm Water Permit. Additionally, the project proponent shall prepare a SWPPP which will require the implementation of BMPs. The project proponent shall implement the SWPPP and will modify the SWPPP as directed

by the Storm Water Permit. These provisions shall be included in the plan notes. The SWPPP shall include all of or a combination of specific BMPs as follows:

- a) Sediment for areas disturbed by construction shall be retained on-site using structural controls such as sandbags, fencing or retention ponds.
- b) Stockpiles of soil shall be properly contained to eliminate or reduce sediment transport from the site to the streets, drainage facilities or adjacent properties via runoff, vehicle tracking or wind.
- c) Appropriate BMPs for construction-related materials, wastes, spills or residues shall be implemented to minimize transport for the site to streets, drainage facilities or adjoining properties.
- d) Runoff from equipment and vehicle washing shall be contained at construction sites unless treated to reduce or remove sediment and other pollutants.
- e) All construction contractor and subcontractor personnel are to be made aware of the required BMPs and good housekeeping measures for the project site and any associated construction staging areas.
- f) At the end of each day of construction activity, all construction debris and waste materials shall be collected and properly disposed of in trash or recycle bins.
- g) Any designated smoking area shall have an appropriate cigarette waste receptacle that is fitted to not allow cigarette butts to enter storm water or drains during rain or high winds. All contractor and subcontractor personnel will be directed to dispose of cigarette butts in these receptacles.

For Post-Construction Water Quality Management Plan (WQMP)

W-4 Prior to finalizing design plans, a WQMP shall be prepared and approved by the City of Santa Ana addressing post-construction storm water runoff. This will consist primarily of structural BMPs addressing the urban runoff from the site.

4.7.6 LEVEL OF SIGNIFICANCE AFTER MITIGATION RELATED TO HYDROLOGY AND WATER QUALITY

Mitigation set forth in this DEIR along with the implementation of the water quality requirements would mitigate the project's impacts to a level that is considered less than significant. Compliance with the DAMP, LIP and Grading Code and Uniform Building Code would ensure that storm water runoff would not result in any significant adverse impacts to adjacent properties, the Santa Ana River and local water bodies and beaches downstream.