

5.8 Hydrology and Water Quality



5.8 HYDROLOGY AND WATER QUALITY

This section analyzes potential project impacts on existing drainage patterns, surface hydrology, and flood control facilities and water quality conditions in the Project area. Mitigation measures are recommended to avoid potential impacts or reduce them to a less than significant level. The discussion in this section is based on information and conclusions contained in the *EIR Drainage Technical Report* (Drainage Report), prepared by Psomas and peer reviewed by RBF Consulting, dated February 2013; refer to [Appendix 10.8, *EIR Drainage Technical Report*](#).

5.8.1 EXISTING REGULATORY SETTING

This section discusses the Federal, State, and local drainage policies and requirements applicable to the Project site.

FEDERAL

Federal Clean Water Act (33 USC §§ 1251, *et seq.*)

The primary goals of the Clean Water Act (CWA) are to restore and maintain the chemical, physical, and biological integrity of the nation's waters and to make all surface waters fishable and swimmable. The CWA forms the basic national framework for the management of water quality and the control of pollution discharges; it provides the legal framework for several water quality regulations, including the National Pollutant Discharge Elimination System (NPDES), effluent limitations, water quality standards, pretreatment standards, antidegradation policy, nonpoint-source discharge programs, and wetlands protection. The United States Environmental Protection Agency (USEPA) has delegated the responsibility for administration of portions of the CWA to state and regional agencies.

NPDES permitting is broken up into two Phases: I and II. Phase I requires medium and large cities, or certain counties with populations of 100,000 or more to obtain NPDES permit coverage for their storm water discharges. Phase II requires regulated small Municipal Separate Storm Sewer Systems (MS4s) in urbanized areas, as well as small MS4s outside the urbanized areas that are designated by the permitting authority, to obtain NPDES permit coverage for their storm water discharges. Polluted storm water run-off is commonly transported through MS4s. This run-off is often untreated and discharged into local water bodies.

National Flood Insurance Program

The National Flood Insurance Program (NFIP) was created by Congress in 1968. It provides a means for property owners to financially protect themselves from flood damage. The NFIP offers flood insurance to homeowners, renters, and business owners if their community participates in the program. Participating communities agree to adopt and enforce ordinances that meet or exceed Federal Emergency Management Agency (FEMA) requirements to reduce the risk of flooding. The City of El Segundo is a participating community and must adhere to the NFIP.

The entire City of El Segundo, including the Project site, has been placed in Zone X (unshaded), pursuant to FEMA Flood Insurance Rate Map (FIRM) Panel 1770F, Map No. 06037C1T10F (September 28, 2008). Zone X (unshaded) is an area of minimal flood hazard. It includes the



areas located outside the Special Flood Hazard Area and higher than the elevation of the 0.2-percent-annual-chance (or 500-year) flood.

STATE

California Porter-Cologne Act

The CWA places the primary responsibility for the control of surface water pollution and for planning the development and use of water resources with the states, although it does establish certain guidelines for the states to follow in developing their programs and allows the EPA to withdraw control from states with inadequate implementation mechanisms.

California's primary statute governing water quality and water pollution issues with respect to both surface waters and groundwater is the Porter-Cologne Water Quality Control Act (Water Code §§ 13000, *et seq.*). The Porter-Cologne Act grants the State Water Resources Control Board (SWRCB) and the Regional Water Quality Control Boards (RWQCBs) authority and responsibility to adopt plans and policies, to regulate discharges to surface and groundwater, to regulate waste disposal sites, and to require cleanup of discharges of hazardous materials and other pollutants. The Porter-Cologne Act also establishes reporting requirements for unintended discharges of any hazardous substance, sewage, or oil or petroleum product.

Each RWQCB must formulate and adopt a water quality control plan for its region. The regional plans are to conform to the policies set forth in the Porter-Cologne Act and established by the SWRCB in its state water policy. The Porter-Cologne Act also provides that a RWQCB may include within its regional plan water discharge prohibitions applicable to particular conditions, areas, or types of waste.

State Water Resources Control Board

The SWRCB administers water rights, water pollution control, and water quality functions throughout the State, while the RWQCBs conduct planning, permitting, and enforcement activities. For the proposed Project, the NPDES permit is divided into two parts: construction and post-construction. The construction permitting is administered by the SWRCB, while the post-construction permitting is administered by the RWQCB.

Development projects typically result in the disturbance of soil that requires compliance with the NPDES General Permit, Waste Discharge Requirements for Discharges of Storm Water Runoff Associated with Construction Activities (Order No. 2009-0009-DWQ, NPDES Number CAS000002). This Statewide General Construction permit regulates discharges from construction sites that disturb one or more acres of soil. By law, all storm water discharges associated with construction activity where clearing, grading, and excavation results in soil disturbance of at least one acre of total land area must comply with the provisions of this NPDES Permit, and develop and implement an effective Storm Water Pollution Prevention Plan (SWPPP). The SWPPP is required to contain a site map(s), 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 is required to list Best Management Practices (BMPs) the discharger will use to protect storm water runoff and the placement of those BMPs. Additionally, the SWPPP must contain a visual monitoring program; a chemical monitoring program for "non-visible" pollutants to be implemented if there is a failure of BMPs; and a sediment monitoring plan if the



site discharges directly to a water body listed on the 303(d) list for sediment. Section A of the Construction General Permit describes the elements that must be contained in a SWPPP. A project applicant must submit a Notice of Intent (NOI) to the SWRCB, to be covered by the NPDES General Permit, and prepare the SWPPP before beginning construction. Implementation of the plan starts with the commencement of construction and continues through the completion of the project. Upon completion of the project, the applicant must submit a Notice of Termination (NOT) to the SWRCB to indicate that construction is completed.

Groundwater Management Act

The Groundwater Management Act (Water Code §§ 10750, *et seq.*). The Groundwater Management Act provides local water agencies with procedures to develop a groundwater management plan so those agencies can manage their groundwater resources efficiently and safely while protecting the quality of supplies. Under the Act, development of a groundwater management plan by a local water agency is voluntary. Once a plan is adopted, the rules and regulations contained therein must also be adopted to implement the program outlined in the plan.

California Geological Survey Tsunami Inundation Maps

The California Geological Survey provides geologic and seismic expertise to the public, other State government offices, and local government agencies (cities and counties). The California Geological Survey is working closely with CEMA and the Tsunami Research Center at the University of Southern California to produce statewide tsunami inundation maps for California. These maps are used by coastal communities to produce emergency evacuation plans.

A tsunami is a sea wave generated by an earthquake, landslide, volcanic eruption, or even by a large meteor hitting the ocean. Basically, an event such as an earthquake creates a large displacement of water resulting in a rise or mounding at the ocean surface that moves away from this center as a sea wave. These sea waves can move more than 800-kilometers (500-miles) per hour. As they approach land and as the ocean shallows, these waves slow down, making them grow in height (amplitude). Tsunamis generally affect coastal communities and low-lying (low-elevation) river valleys in the vicinity of the coast. Buildings closest to the ocean and near sea level are most at jeopardy.

The California Emergency Management Agency provides generalized maps for projected tsunami inundation to coastal government agencies for emergency planning purposes. These maps are used as a basic guideline for what areas are prone to tsunami inundation. According to the Tsunami Inundation Map for Emergency Planning - Venice Quadrangle, the Project site is not located within a tsunamis hazard zone.¹

LOS ANGELES REGIONAL WATER QUALITY CONTROL BOARD

The SWRCB oversees the nine RWQCBs in the state of California. The City of El Segundo is within the jurisdiction of the Los Angeles RWQCB (LARWQCB).

¹ State of California Department of Conservation, California Geological Survey, Tsunami Inundation Maps, http://www.consrv.ca.gov/cgs/geologic_hazards/Tsunami/Inundation_Maps/Pages/Statewide_Maps.aspx, Accessed March 18, 2013.



The Municipal Storm Water Permitting Program regulates storm water discharges from municipal separate storm sewer (drain) systems (MS4s). Most of these permits are issued to a group of co-permittees encompassing an entire metropolitan area. The MS4 permits require the discharger to develop and implement a Storm Water Management Plan/Program with the goal of reducing the discharge of pollutants to the maximum extent practicable (MEP). The management programs specify what BMPs will be used to address certain program areas. The program areas include public education and outreach; illicit discharge detection and elimination; construction and post-construction; and good housekeeping for municipal operations.

In order to address the requirements of the Clean Water Act, the LARWQCB issued a NPDES Permit (Order No. R4-2012-0175, NPDES Permit No. CAS004001, *Waste Discharge Requirements for Municipal Separate Storm Sewer System [MS4] Discharges Within the Coastal Watersheds of Los Angeles County, Except Discharges Originating from the City of Long Beach [MS4]*) to the Los Angeles County Flood Control District, the County of Los Angeles, and the 84 incorporated cities (including the City of El Segundo) within the coastal watersheds of Los Angeles County.

The MS4 Permit Order requires development and implementation of a Planning and Land Development Program for all “New Development” and “Redevelopment” projects subject to the Order. The Program is intended to accomplish the following objectives:

- Lessen the water quality impacts of development by using smart growth practices such as compact development, directing development towards existing communities via infill or redevelopment, and safeguarding of environmentally sensitive areas;
- Minimize the adverse impacts from storm water runoff on the biological integrity of Natural Drainage Systems and the beneficial uses of water bodies in accordance with requirements under CEQA;
- Minimize the percentage of impervious surfaces on land developments by minimizing soil compaction during construction, designing projects to minimize the impervious area footprint, and employing Low Impact Development (LID)² design principles to mimic predevelopment water balance hydrology through infiltration, evapotranspiration and rainfall harvest and use;
- Maintain existing riparian buffers and enhance riparian buffers when possible;
- Minimize pollutant loadings from impervious surfaces such as roof tops, parking lots, and roadways through the use of properly designed, technically appropriate BMPs (including Source Control BMPs such as good housekeeping practices), LID Strategies, and Treatment Control BMPs;
- Properly select, design and maintain LID and Hydromodification Control BMPs to address pollutants that are likely to be generated, reduce changes to pre-development hydrology, assure long-term function, and avoid the breeding of vectors; and

² Low impact development (LID) is an approach to stormwater management that emphasizes the use of small-scale, natural drainage features integrated throughout the city to slow, clean, infiltrate and capture urban runoff and precipitation, thus reducing water pollution, replenishing local aquifers and increasing water reuse. (City of Los Angeles, *Green Infrastructure for Los Angeles: Addressing Urban Runoff and Water Supply Through Low Impact Development*, April 2009).



- Prioritize the selection of BMPs to remove storm water pollutants, reduce storm water runoff volume, and beneficially use storm water to support an integrated approach to protecting water quality and managing water resources.

The MS4 Permit Order specifies the criteria or thresholds for determining “New Development” and “Redevelopment Projects.” The Redevelopment Projects that are subject to Permittee conditioning and approval for the design and implementation of post-construction controls to mitigate storm water pollution, before completion of a project, include the following, among others:

- Land-disturbing activity that results in the creation or addition or replacement of 5,000 square feet or more of impervious surface area on an already developed site.
- Where Redevelopment results in an alteration to more than fifty percent of impervious surfaces of a previously existing development, and the existing development was not subject to post-construction storm water quality control requirements, the entire project must be mitigated.
- Where Redevelopment results in an alteration of less than fifty percent of impervious surfaces of a previously existing development, and the existing development was not subject to post-construction storm water quality control requirements, only the alteration must be mitigated, and not the entire development.

The proposed El Segundo South Campus Specific Plan Project (ESSCSP Project) would meet the requirements of a Redevelopment Project.

The new requirements of the Municipal NPDES permit require that proposed projects include a Standard Urban Storm Water Mitigation Plan (SUSMP), or functional equivalent document, to address potential water quality impacts on-site using LID and that its potential impact on downstream waterbodies (i.e., Hydromodification) is evaluated. BMPs are required in all drainage areas to be developed. Additionally, the NPDES permit requires BMPs to retain the 0.75-inch, 24-hour rain event, or the 85th percentile, 24-hour storm event, whichever is greater, and achieve applicable water quality-based effluent limitations and/or receiving water limitations established pursuant to Total Maximum Daily Loads (TMDLs). The use of bioretention and biofiltration systems are required to meet design specifications and the maximum potential for evapotranspiration from green roofs and rainfall harvest and use shall be considered when evaluating the potential for onsite retention.

Since the NPDES permit was adopted on November 8, 2012, the County of Los Angeles has not yet updated its guidance to address the new permit requirements. The plan (SUSMP or functional equivalent document) created for the proposed Project would be required to comply with the future guidance that is currently in development.

EL SEGUNDO MUNICIPAL CODE

Pursuant to ESMC § 5-4-9, *Construction Activity Storm Water Measures*, each person applying to the City for a grading or building permit for projects for which compliance with regulations governing state construction activity storm water permits (GCASPs) must submit satisfactory proof to the City that: 1) a NOI to comply with the GCASP was filed; and 2) a SWPPP was prepared, before the City can issue any grading or building permit on the construction project. A



copy of the NOI and SWPPP must be maintained on site during grading and construction and be made available for inspection, review, and copying upon the request of any City Inspector. Further, it is unlawful for any person or entity required under federal or state law to comply with the requirements for a GCASP for construction activity in the City to conduct, authorize, or permit construction activities in the City at any facility, which discharges to the City's MS4 Permit without complying with all applicable requirements for a GCASP.

ESMC Chapter 5-4, *Storm Water and Urban Runoff Pollution Control*, was adopted for the purpose of protecting and enhancing the water quality of the City's watercourses, water bodies, and wetlands in a manner consistent with the Clean Water Act and the NPDES permit. ESMC § 5-4-8, *Best Management Practices Required*, specifies that the responsible person must implement BMPs as follows:

- A. Responsible persons for parking lots with more than twenty five (25) parking spaces exposed to storm water, which parking lots are associated with industrial or commercial activities must use BMPs to reduce the discharge of pollutants to the MEP.
- B. Responsible persons of premises where machinery or other equipment is repaired or maintained, at facilities or activities associated with industrial or commercial activities must use BMPs or other steps to prevent discharge of maintenance related or repair related pollutants to the MS4.
- C. For other premises exposed to storm water, the responsible person must use BMPs, if they exist, or other steps to reduce the discharge of pollutants to the MEP, including the removal and lawful disposal of any solid waste or any other substance which, if it were to be discharged to the MS4, would be a pollutant.

ESMC Chapter 5-7, *Standard Urban Storm Water Mitigation Plan Implementation*, is intended to control non-storm water discharges to the storm drain system and reduce pollutants in storm water discharges, including those pollutants taken up by storm water as it flows over urban areas, to the MEP. ESMC § 5-7-3, *Scope of Chapter*, specifies the New Development and Redevelopment Projects that are subject to compliance with ESMC Chapter 5-7, which would include the proposed Project.

5.8.2 EXISTING ENVIRONMENTAL SETTING

METHODOLOGY FOR DRAINAGE REPORT

The City of El Segundo defers to the County of Los Angeles methodology for storm water calculations. The methodology described in the Los Angeles County Department of Public Works (LACDPW) Hydrology Manual (2006) was used to compute the 25-year storm water runoff flows from the Project site to the existing and proposed storm drains. The hydrologic methods used in this study were based on procedures described in the 2006 LACPWD Manual. The LACDPW TC_calc_depth.xls (January 2006) program was used to calculate the times of concentration and runoff for each of the sub-areas in the existing and proposed conditions. Tc calculations for the existing and proposed conditions are provided in Section 4 of the Drainage Report. In accordance with LACDPW requirements, the 25-year (24-hour) storm event was used as the design storm in this analysis.



EXISTING PROJECT SITE HYDROLOGY AND DRAINAGE CONDITIONS

The Project area to be disturbed is approximately 86 acres. The existing tributary area that was studied is approximately 132.5 acres. Due to the large area of building, roadway, and surface parking lots, the approximate percentage of impervious area for existing sub-areas is on average 79.5 percent.

As illustrated on Exhibit 5.8-1, *Existing Conditions Hydrology*, the Project site drains northwest to southeast. Offsite flows do not combine with onsite flows before entering the public storm drain, with the exception of relatively minor offsite flow from El Segundo Boulevard and the property to the south. Exhibit 5.8-2, *Existing Stormwater and Site Drainage System*, illustrates the site's existing stormwater and drainage system. As shown, the Current points of connection to the City's public storm water system, which consists of a variable diameter (96-inch to 108-inch) reinforced concrete pipe (RCP) storm drain, occur at multiple locations along the eastern and southern portions of the Project site. The public main lines discharge into an existing City retention and infiltration basin south of the Project site. Existing onsite and City main storm drain systems are considered to have adequate capacity, as no reports of flooding or drainage concerns have been reported.

In accordance with LACDPW requirements, existing conditions for the 25-year (24-hour) storm event runoff were determined for the Project site; refer to Table 5.8-1, *Existing Flowrates*.

**Table 5.8-1
Existing Flowrates**

Drainage Sub-Area	Area (Acres)	Percent Impervious	Flow (cfs)	24-Hour Runoff Volume (Acre-Feet)
1	1.7	47.0	2.3	0.31
2	1.1	74.9	2.0	0.29
3	5.5	91.0	7.6	1.69
4	46.8	91.0	46.5	14.36
5	6.2	91.0	10.0	1.91
6	3.4	91.0	6.8	1.05
7	6.1	77.4	8.6	1.65
8	61.7	69.2	51.1	14.92
Total	132.5	79.5	134.9	36.18

Source: Psomas, *EIR Drainage Technical Report*, February 2013.

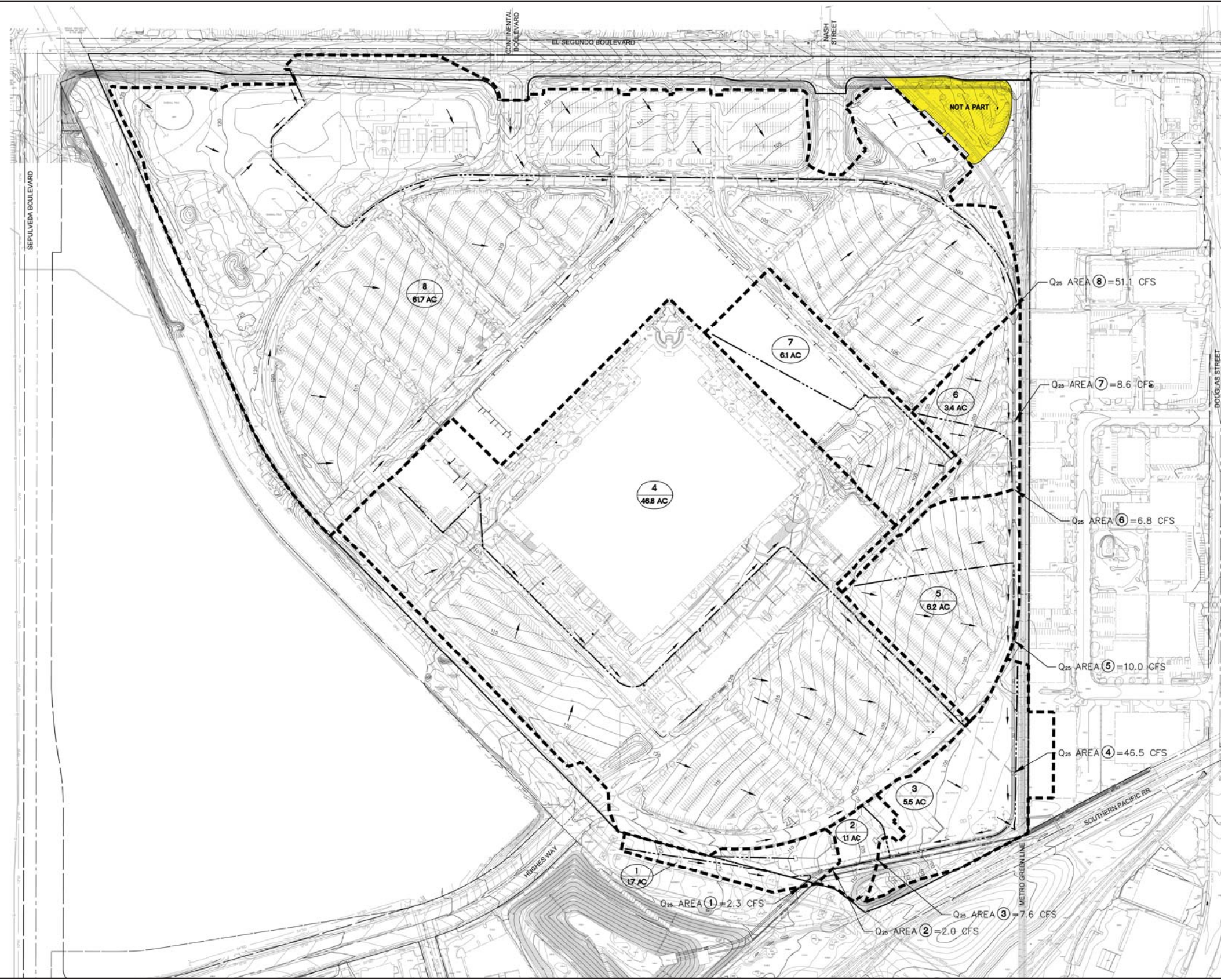


EXISTING STORM WATER QUALITY CONDITIONS

Nonpoint Source Pollutants

A net effect of urbanization can be to increase pollutant export over naturally occurring conditions. The impact of the higher export affects the adjacent streams and also the downstream receiving waters. However, an important consideration in evaluating storm water quality is to assess whether the beneficial use to the receiving waters is impaired. Nonpoint source pollutants have been characterized by the following major categories in order to assist in determining the pertinent data and its use. Receiving waters can assimilate a limited quantity of various constituent elements; however, there are thresholds beyond which the measured amount becomes a pollutant and results in an undesirable impact. Standard water quality categories of typical urbanization impacts are outlined below.

- **Sediment.** Sediment is made up of tiny soil particles that are washed or blown into surface waters. It is the major pollutant by volume in surface water. Suspended soil particles can cause the water to look cloudy or turbid. The fine sediment particles also act as a vehicle to transport other pollutants, including nutrients, trace metals, and hydrocarbons. Construction sites are the largest source of sediment for urban areas under development. Another major source of sediment is streambank erosion, which may be accelerated by increases in peak rates and volumes of run-off due to urbanization.
- **Nutrients.** Nutrients are a major concern for surface water quality, especially phosphorous and nitrogen, which can cause algal blooms and excessive vegetative growth. Of the two, phosphorus is usually the limiting nutrient that controls the growth of algae in lakes. The orthophosphorus form of phosphorus is readily available for plant growth. The ammonium form of nitrogen can also have severe effects on surface water quality. The ammonium is converted to nitrate and nitrite forms of nitrogen in a process called nitrification. This process consumes large amounts of oxygen, which can impair the dissolved oxygen levels in water. The nitrate form of nitrogen is very soluble and is found naturally at low levels in water. When nitrogen fertilizer is applied to lawns or other areas in excess of plant needs, nitrates can leach below the root zone, eventually reaching ground water. Orthophosphate from auto emissions also contributes phosphorus in areas with heavy automobile traffic. As a general rule of thumb, nutrient export is greatest from development sites with the most impervious areas. Other problems resulting from excess nutrients are: 1) surface algal scums; 2) water discolorations; 3) odors; 4) toxic releases; and 5) overgrowth of plants. Common measures for nutrients are total nitrogen, organic nitrogen, total Kjeldahl nitrogen (TKN), nitrate, ammonia, total phosphate, and total organic carbon (TOC).
- **Trace Metals.** Trace metals are primarily a concern because of their toxic effects on aquatic life, and their potential to contaminate drinking water supplies. The most common trace metals found in urban run-off are lead, zinc, and copper. Fallout from automobile emissions is also a major source of lead in urban areas. A large fraction of the trace metals in urban run-off are attached to sediment; this effectively reduces the level, which is immediately available for biological uptake and subsequent bioaccumulation. Metals associated with sediment settle out rapidly and accumulate in the soils. Urban run-off events typically occur over a shorter duration, reducing the amount of exposure, which could be toxic to the aquatic environment. The toxicity of trace metals in run-off varies with the hardness of the receiving water. As total hardness of the water increases, the threshold concentration levels for adverse effects increases.



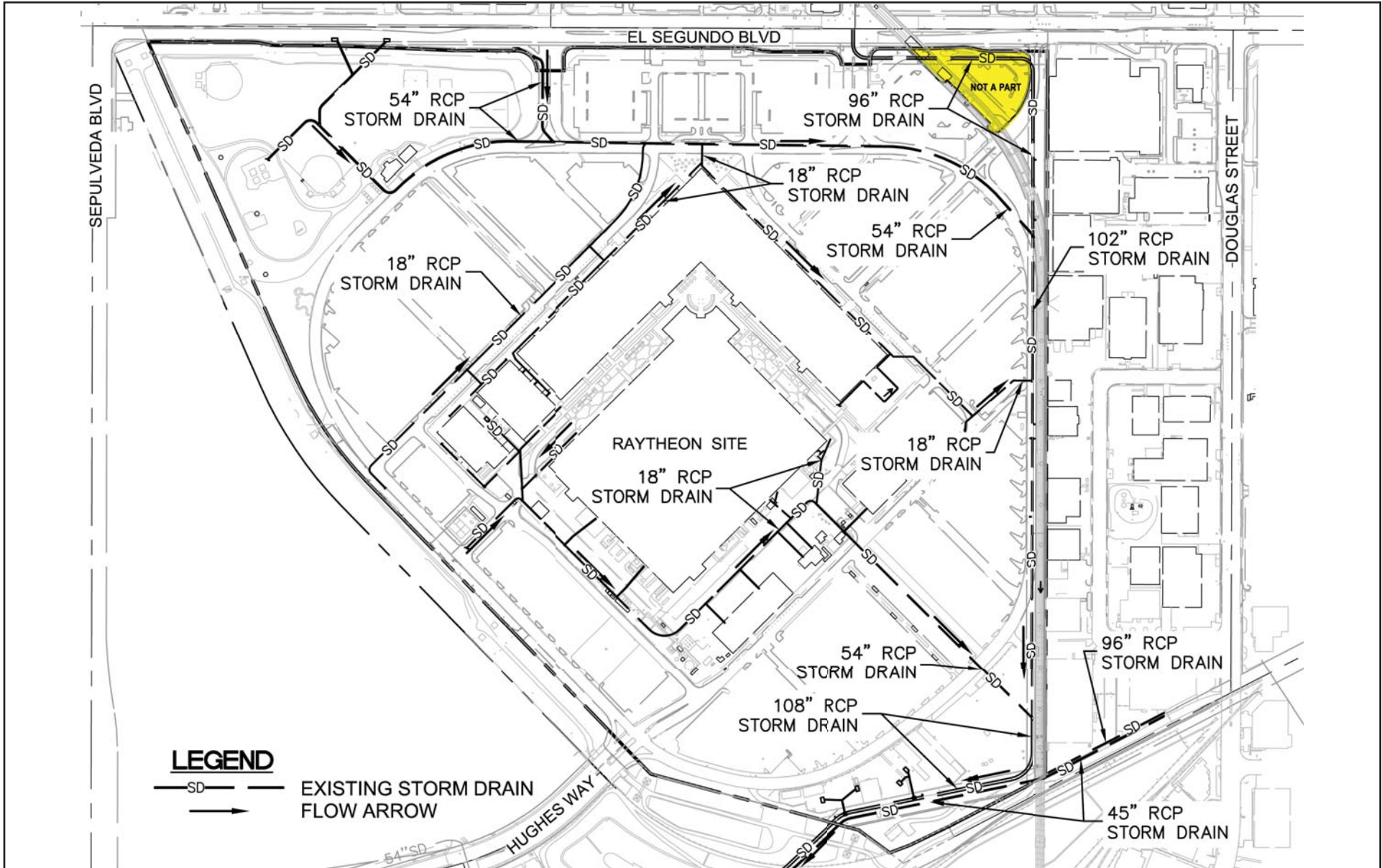
LEGEND / HYDROLOGIC DATA

- PROPERTY LINE
- - - DRAINAGE SUB-AREA BOUNDARY
- ①
17 AC SUB-AREA DESIGNATION AND ACREAGE
- DRAINAGE FLOW PATH
- STORM FREQUENCY: 25 YEARS
- PREDOMINANT SOIL TYPE: O13 & O14
- LAND USE: COMMERCIAL/ LIGHT INDUSTRY
- RAINFALL: 4.48 INCHES
- NET DRAINAGE AREA: 132.5 AC
- Q₂₅ AREA ⑧ = 51.1 CFS

Source: PSOMAS, October 18, 2012.



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Source: PSOMAS, *Water System Study*, March 21, 2013.

NOT TO SCALE



07/14 • JN 10-107917 (130148)

ENVIRONMENTAL IMPACT REPORT
 EL SEGUNDO SOUTH CAMPUS SPECIFIC PLAN (EA 905)

Existing Stormwater and Site Drainage System

Exhibit 5.8-2



- Oxygen-Demanding Substances. Aquatic life is dependent on the dissolved oxygen in the water. When organic matter is consumed by microorganisms, dissolved oxygen is consumed in the process. A rainfall event can deposit large quantities of oxygen-demanding substance in lakes and streams. The biochemical oxygen demand of typical urban run-off is on the same order of magnitude as the effluent from an effective secondary wastewater treatment plant. A problem from low dissolved oxygen (DO) results when the rate of oxygen-demanding material exceeds the rate of replenishment. Oxygen demand is estimated by direct measure of DO and indirect measures such as biochemical oxygen demand (BOD), chemical oxygen demand (COD), oils and greases, and TOC.
- Bacteria. Bacteria levels in undiluted urban run-off exceed public health standards for water contact recreation almost without exception. Studies have found that total coliform counts exceeded the U.S. Environmental Protection Agency's (EPA) water quality criteria at almost every site and almost every time it rained. The coliform bacteria that are detected may not be a health risk by themselves, but are often associated with human pathogens.
- Oil and Grease. Oil and grease contain a wide variety of hydrocarbons, some of which could be toxic to aquatic life in low concentrations. These materials initially float on water and create the familiar rainbow-colored film. Hydrocarbons have a strong affinity for sediment and quickly become absorbed to it. The major source of hydrocarbons in urban run-off is through leakage of crankcase oil and other lubricating agents from automobiles. Hydrocarbon levels are highest in the run-off from parking lots, roads, and service stations. Residential land uses generate less hydrocarbon export, although illegal disposal of waste oil into storm water can be a local problem.
- Other Toxic Chemicals. Priority pollutants are generally related to hazardous wastes or toxic chemicals and can be sometimes detected in storm water. Priority pollutant scans have been conducted in previous studies of urban run-off, which evaluated the presence of over 120 toxic chemicals and compounds. The scans rarely revealed toxins that exceeded the current safety criteria. The urban run-off scans were primarily conducted in suburban areas not expected to have many sources of toxic pollutants (with the possible exception of illegally disposed or applied household hazardous wastes). Measures of priority pollutants in storm water include: 1) phthalate (plasticizer compound); 2) phenols and creosols (wood preservatives); 3) pesticides and herbicides; 4) oils and greases; and 5) metals.

PHYSICAL CHARACTERISTICS OF SURFACE WATER QUALITY

Standard parameters, which can assess the quality of storm water, provide a method of measuring impairment. A background of these typical characteristics assists in understanding water quality requirements. The quantity of a material in the environment and its characteristics determine the degree of availability as a pollutant in surface run-off. In an urban environment, the quantity of certain pollutants in the environment is a function of the intensity of the land use. For instance, a high density of automobile traffic makes a number of potential pollutants (such as lead and hydrocarbons) more available. The availability of a material, such as a fertilizer, is a function of the quantity and the manner in which it is applied. Applying fertilizer in quantities that exceed plant needs leaves the excess nutrients available for loss to surface or ground water.



The physical properties and chemical constituents of water traditionally have served as the primary means for monitoring and evaluating water quality. Evaluating the condition of water through a water quality standard refers to its physical, chemical, or biological characteristics. Water quality parameters for storm water comprise a long list and are classified in many ways. Typically, the concentration of an urban pollutant, rather than the annual load of that pollutant, is required to assess a water quality problem. Some of the physical, chemical, or biological characteristics that evaluate the quality of the surface run-off are listed below.

- *Dissolved Oxygen (DO)*. DO in the water has a pronounced effect on the aquatic organisms and the chemical reactions that occur. It is one of the most important biological water quality characteristics in the aquatic environment. The DO concentration of a water body is determined by the solubility of oxygen, which is inversely related to water temperature, pressure, and biological activity. DO is a transient property that can fluctuate rapidly in time and space, and represents the status of the water system at a particular point and time of sampling. The decomposition of organic debris in water is a slow process, as are the resulting changes in oxygen status. The oxygen demand is an indication of the pollutant load and includes measurements of biochemical oxygen demand or chemical oxygen demand.
- *Biochemical Oxygen Demand (BOD)*. The BOD is an index of the oxygen-demanding properties of the biodegradable material in the water. Samples are taken from the field and incubated in the laboratory at 20°C, after which the residual dissolved oxygen is measured. The BOD value commonly referenced is the standard 5-day values. These values are useful in assessing stream pollution loads and for comparison purposes.
- *Chemical Oxygen Demand (COD)*. The COD is a measure of the pollutant loading in terms of complete chemical oxidation using strong oxidizing agents. It can be determined quickly because it does not rely on bacteriological actions as with BOD. COD does not necessarily provide a good index of oxygen demanding properties in natural waters.
- *Total Dissolved Solids*. Total dissolved solids (TDS) concentration is determined by evaporation of a filtered sample to obtain residue whose weight is divided by the sample volume. The TDS of natural waters varies widely. There are several reasons why TDS is an important indicator of water quality. Dissolved solids affect the ionic bonding strength related to other pollutants such as metals in the water. TDS are also a major determinant of aquatic habitat. TDS affects saturation concentration of dissolved oxygen and influences the ability of a water body to assimilate wastes. Eutrophication rates depend on TDS.
- *pH*. The pH of water is the negative log, base 10, of the hydrogen ion (H⁺) activity. A pH of 7 is neutral; a pH greater than 7 indicates alkaline water; a pH less than 7 represents acidic water. In natural water, carbon dioxide reactions are some of the most important in establishing pH. The pH at any one time is an indication of the balance of chemical equilibrium in water and affects the availability of certain chemicals or nutrients in water for uptake by plants. The pH of water directly affects fish and other aquatic life; generally, toxic limits are pH values less than 4.8 and greater than 9.2.
- *Alkalinity*. Alkalinity is the opposite of acidity, representing the capacity of water to neutralize acid. Alkalinity is also linked to pH and is caused by the presence of carbonate, bicarbonate, and hydroxide, which are formed when carbon dioxide is



dissolved. A high alkalinity is associated with a high pH and excessive solids. Most streams have alkalinities less than 200 milligrams per liter (mg/l). Ranges of alkalinity of 100-200mg/l seem to support well-diversified aquatic life.

- *Specific Conductance.* The specific conductivity of water, or its ability to conduct an electric current, is related to the total dissolved ionic solids. Long term monitoring of project waters can develop a relationship between specific conductivity and TDS. Its measurement is quick and inexpensive and can be used to approximate TDS. Specific conductivities in excess of 2000 microhms per centimeter ($\mu\text{ohms/cm}$) indicate a TDS level too high for most freshwater fish.
- *Turbidity.* The clarity of water is an important indicator of water quality that relates to the alkalinity of photosynthetic light to penetrate. Turbidity is an indicator of the property of water that causes light to become scattered or absorbed. Turbidity is caused by suspended clays and other organic particles. It can be used as an indicator of certain water quality constituents, such as predicting sediment concentrations.
- *Nitrogen.* Sources of nitrogen in storm water are from the additions of organic matter to water bodies or chemical additions. Ammonia and nitrate are important nutrients for the growth of algae and other plants. Excessive nitrogen can lead to eutrophication since nitrification consumes dissolved oxygen in the water. Nitrogen occurs in many forms. Organic nitrogen breaks down into ammonia, which eventually becomes oxidized to nitrate-nitrogen, a form available for plants. High concentrations of nitrate-nitrogen (N/N) in water can stimulate growth of algae and other aquatic plants, but if phosphorus (P) is present, only about 0.30 mg/l of nitrate-nitrogen is needed for algal blooms. Some fish life can be affected when nitrate-nitrogen exceeds 4.2 mg/l. There are a number of ways to measure the various forms of aquatic nitrogen. Typical measurements of nitrogen include Kjeldahl nitrogen (organic nitrogen plus ammonia), ammonia, nitrite plus nitrate, nitrite, and nitrogen in plants. The principal water quality criterion for nitrogen focuses on nitrate and ammonia.
- *Phosphorus.* Phosphorus is an important component of organic matter. In many water bodies, phosphorus is the limiting nutrient that prevents additional biological activity from occurring. The origin of this constituent in urban storm water discharge is generally from fertilizers and other industrial products. Orthophosphate is soluble and is considered to be the only biologically available form of phosphorus. Since phosphorus strongly associates with solid particles and is a significant part of organic material, sediments influence concentration in water and are an important component of the phosphorus cycle in streams. Important methods of measurement include detecting orthophosphate and total phosphorus.

Existing Storm Water Quality Conditions

Existing stormwater from the Project site is currently untreated. As stated, the Project site discharges stormwater into an existing City retention and infiltration basin south of the Project site. Runoff does not leave the retention and infiltration basin. However, the Project site lies within the Dominguez Channel watershed. The Dominguez Channel ultimately empties into the consolidated slip of the Los Angeles Harbor. Although the Project site lacks any measured data on stormwater runoff quality, expected storm water quality can be qualitatively discussed by relating typical pollutants to specific land uses. Under section 303(d) of the Clean Water Act



(codified at 33 U.S.C. §§ 1251, *et seq.*), the list of impairments in these receiving waters includes ammonia, copper, dieldrin (tissue), indicator bacteria, lead (tissue), sediment toxicity, and zinc (sediment). Based on a comparison of the impairments existing in Dominguez Channel from the State 303(d) list and pollutants associated with existing land use activities on the Project site, common pollutants (pollutants of concern) are organics, trash, debris, oil/grease, nutrients, metals and sediment.

Beneficial Uses

To meet the requirements of the Porter-Cologne Act, the Los Angeles Regional Water Quality Control Board defined the beneficial uses of its waterbodies in the Water Quality Control Plan, Los Angeles Region, Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties (June 13, 1994). Beneficial uses are the uses of water necessary for the survival or well-being of humans, plants, and wildlife. If pollutant concentrations in waterbodies cause impairments to their beneficial uses, then the waterbody is placed on the State of California's list of impaired waterbodies (Water Code § 13050) until a TMDL is established for the waterbody (maximum discharge of pollutants). The beneficial uses of Dominguez Channel are Water Contact Recreation (REC1), Non-Contact Water Recreation (REC2), Commercial and Sport Fishing (COMM), Estuarine Habitat (EST), Marine Habitat (MAR), Wildlife Habitat (WILD), Rare, Threatened, or Endangered Species (RARE), Migration of Aquatic Organisms (MIGR), and Spawning, Reproduction, and/or Early Development (SPWN).

GROUNDWATER

The Project site is located within the jurisdiction of the West Basin Municipal Water District (West Basin). According to UWMP Figure 4-1, *West Basin Service Area Projected Water Supplies*, West Basin's 2010 water supply portfolio was comprised of: 63 percent imported water; 21 percent groundwater; 8 percent recycled water; 8 percent conservation; and 0.3 percent desalination. The City of El Segundo does not use groundwater as a potable water source. Instead, the City leases its 953 AFY water rights it owns in the adjudicated West Coast Basin to the City of Manhattan Beach.

The groundwater supply is extracted from the West Coast Groundwater Basin (Basin), which underlies much of the West Basin service area including El Segundo. The average amount of water extracted from the Basin is approximately 36,000 acre-feet per year. Because the Basin is adjudicated (i.e., the amount to be extracted each year has been determined by a court decision), the rights to the amount of groundwater extracted each year remain virtually the same. Total adjudicated pumping rights in the Basin remain at approximately 55,000 acre-feet per year. The Water Replenishment District of Southern California (WRD) is responsible for maintaining and replenishing the Basin. Natural replenishment of the Basin's groundwater supply occurs through the underflow from the Central Groundwater Basin and limited local precipitation. Artificial replenishment of the Basin, which is the responsibility of WRD, occurs through a mix of imported water and recycled water. Groundwater recharge through surface spreading occurs at the following locations: Montebello Forebay Spreading Grounds adjacent to the Rio Hondo and the San Gabriel River; within the unlined portion of the San Gabriel River; and behind the Whittier Narrows Dam in the Whittier Narrows Reservoir.³

³ Water Replenishment District of Southern California, *Water Replenishment District of Southern California Engineering Survey and Report 2012*, March 16, 2012, Page IV-2.



TSUNAMI, SEICHE, AND MUDFLOW

Tsunami

A tsunami is a sea wave generated by an earthquake, landslide, volcanic eruption, or even by a large meteor hitting the ocean. An event such as an earthquake creates a large displacement of water resulting in a rise or mounding at the ocean surface that moves away from this center as a sea wave. Tsunamis generally affect coastal communities and low-lying (low-elevation) river valleys in the vicinity of the coast. Buildings closest to the ocean and near sea level are most at jeopardy.

As discussed above, the California Emergency Management Agency (Cal EMA), in cooperation with CGS, produced a Tsunami Inundation Map for the Venice 7.5" Quadrangle (dated March 1, 2009) that depicts the Project site and surrounding neighborhood lying outside a tsunami inundation area.

Seiche

A seiche is an earthquake or slide-induced wave that can be generated in an enclosed body of water of any size from swimming pool, to a harbor, or lake. Given that there are no large, enclosed open bodies of water or reservoirs upgradient of the Project area, the potential for seiching is nonexistent.

Mudflow

Mudflows result from the downslope movement of soil and/or rock under the influence of gravity. The project site and surrounding area is relatively flat. Potential risk from mudflow (i.e., mudslide, debris flow) does not exist within the Project area, as steep slopes are not located on or in proximity to the Project site.

5.8.3 IMPACT THRESHOLDS AND SIGNIFICANCE CRITERIA

Appendix G of the *CEQA Guidelines* contains the Initial Study Environmental Checklist, which includes questions relating to hydrology, drainage and water quality. The issues presented in the Initial Study Checklist have been utilized as thresholds of significance in this section. Accordingly, a project may create a significant adverse environmental impact if it would:

- Violate any water quality standards or waste discharge requirements;
- Substantially deplete groundwater supplies or substantially interfere with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (i.e., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted);
- 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 that would result in substantial erosion or siltation on- or off-site;



- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface run-off in a manner that would result in flooding on- or off-site;
- Create or contribute to run-off water that would exceed the capacity of existing or planned storm water drainage systems or provision of substantial additional sources of polluted run-off;
- Otherwise substantially degrade water quality;
- 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 (refer to Section 8.0, *Effects Found Not to be Significant*);
- Place a structure within a 100-year flood hazard area that would impede or redirect flood flows (refer to Section 8.0);
- 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 (refer to Section 8.0);
- Result in inundation by seiche, tsunami, or mudflow (refer to Section 8.0); and
- Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which would cause significant environmental effects.

Based on these standards, the Project's effects have been categorized as either a "less than significant impact" or a "potentially significant impact." Mitigation measures are recommended for potentially significant impacts. If a potentially significant impact cannot be reduced to a less than significant level through the application of mitigation, it is categorized as a significant unavoidable impact.

5.8.4 IMPACTS AND MITIGATION MEASURES

WATER QUALITY – SHORT-TERM IMPACTS

● GRADING, EXCAVATION, AND CONSTRUCTION ACTIVITIES ASSOCIATED WITH THE PROJECT COULD VIOLATE WATER QUALITY STANDARDS.

Impact Analysis: Impacts related to water quality range over three different periods:

- During the earthwork and construction phase, when the potential for erosion, siltation, and sedimentation would be the greatest;
- Following construction, before the establishment of ground cover, when the erosion potential may remain relatively high; and
- Following completion of the Project, when impacts related to sedimentation would decrease markedly, but those associated with urban runoff would increase.



The activities during the Project's construction phase include clearing, grading, and disturbances to the ground, such as stockpiling and excavation, which would result in short-term impacts to water quality. Dischargers whose projects disturb one or more acres of soil are required to obtain coverage under the General Construction Permit.

The total estimated earthwork for the ESSCSP Project is approximately 159,900 cubic yards (CY) of cut, approximately 51,100 CY of fill, and approximately 108,800 CU of export.⁴ The Project would disturb more than one acre of soil, thus, is subject to compliance with the General Construction Permit requirements. As part of the development's compliance, a Notice of Intent (NOI) must be prepared and submitted to the SWRCB, providing notification and intent to comply with the General Construction Permit. Before the City issues grading permits, the Applicant must also prepare a Storm Water Pollution Prevention Plan (SWPPP), in order to control common pollutants such as suspended soil in stormwater runoff from leaving the Project area. The SWPPP would include an Erosion Control Plan and appropriate Best Management Practices (BMPs). The SWPPP would be implemented under the responsibility of a qualified SWPPP practitioner and an Annual Report would be submitted to the SWRCB each year the site is not fully stabilized.

During construction, temporary stormwater BMPs would be required to minimize erosion and restrict sedimentation of the storm drain downstream. In compliance with the General Construction Permit: the non-storm water discharges from the construction sites must be eliminated or reduced to the maximum extent practicable; a SWPPP that governs construction activities for the Project must be developed; and routine inspections must be performed of all storm water pollution prevention measures and control practices being used at the site, including inspections before and after storm events. Upon Project completion, the Applicant would be required to submit a Notice of Termination (NOT) to the SWRCB to indicate that construction is completed.

Pursuant to ESMC § 5-4-9, each person applying to the City for a grading or building permit for projects for which compliance with regulations governing the General Construction Permit is required, must submit satisfactory proof to the City that: 1) a NOI to comply with the General Construction Permit was filed; and 2) a SWPPP was prepared, before the City can issue any grading or building permit on the construction project. The Project would also be subject to compliance with ESMC § 5-4-9, since it is subject to compliance with the General Construction Permit. A copy of the NOI and SWPPP must be maintained on site during grading and construction and be made available for inspection, review, and copying upon the request of any City Inspector. Further, it is unlawful for any person or entity required under federal or California law to comply with the requirements for a GCASP for construction activity in the City to conduct, authorize or permit construction activities in the City at any facility, which discharges to the City's MS4 without complying with all applicable requirements for a GCASP. The Project's construction activities would be subject to inspection by the City's Department of Public Works.

Depending on the parcel-specific geotechnical recommendations and development proposals, construction activities associated with future development may include clearing, grading, and ground disturbances (i.e., stockpiling and excavation), which would result in short-term impacts to water quality. Dischargers whose projects disturb one or more acre of soil would be required to obtain coverage under the General Construction Permit, as described above.

⁴ Psomas, *Phase I Grading Exhibit and Phase II Grading Exhibit*, Revised February 2, 2013.



The Project's construction activities would have a less than significant impact on surface water quality and would not significantly impact the beneficial uses of receiving waters following compliance with NPDES and ESMC requirements. Short-term water quality impacts would be less than significant.

Mitigation Measures: No mitigation is required.

Level of Significance: Less Than Significant Impact.

LONG-TERM OPERATIONAL IMPACTS

- **PROJECT IMPLEMENTATION COULD ALTER EXISTING DRAINAGE PATTERNS, RESULT IN INCREASED RUN-OFF AMOUNTS, AND DEGRADE WATER QUALITY.**
- **THE PROJECT COULD 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.**

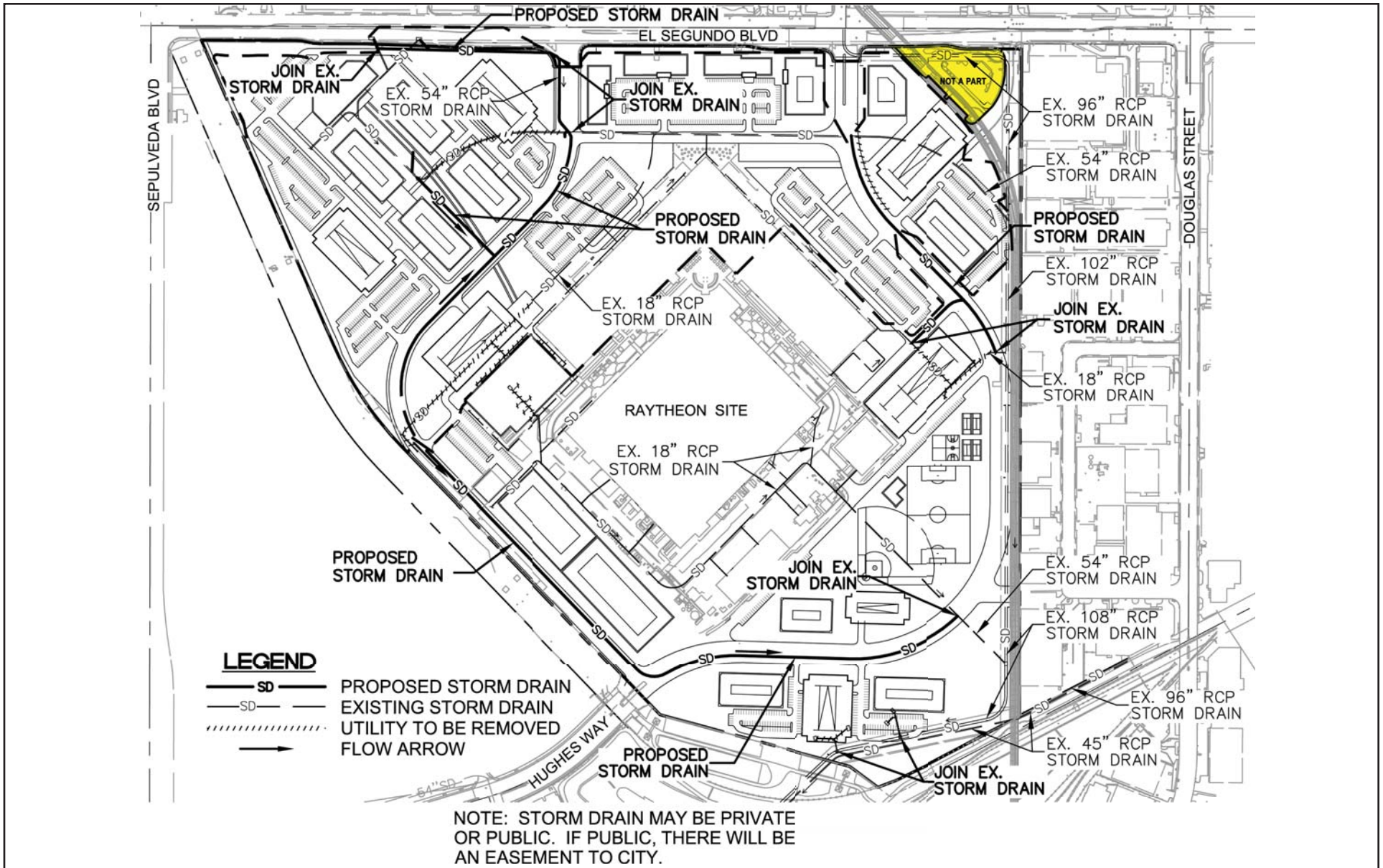
Impact Analysis: The Project would allow for the removal of approximately 19,143 square feet of existing buildings and construction of approximately 2,161,600 square feet of office, warehouse, light industrial, and retail/restaurant uses, as described in Section 3.0, Project Description. Approximately 7,000 linear feet of new onsite storm drain lines are proposed to serve the Project; refer to Exhibit 5.8-3, Proposed Stormwater and Site Drainage System. The maximum pipe diameter is not anticipated to exceed 54 inches.

Exhibit 5.8-4, Proposed Conditions Hydrology, illustrates the site's drainage patterns upon Project implementation. As shown, relatively minor offsite flow from El Segundo Boulevard and the property to the south would continue unobstructed to combine with onsite flows. The Project area would continue to drain northwest to southeast. Reconfiguration of site roadways and replacement of existing buildings and surface parking lots with new buildings and parking lots/structures would result in changes to drainage patterns and amounts of impervious surfaces. However, proposed drainage sub-areas would closely match existing sub-areas.

The environmental impacts resulting from construction of the proposed stormwater and site drainage facilities described above are analyzed in Sections 5.1 through Sections 5.11 of this EIR. As concluded in these sections, the facilities' environmental impacts would be less than significant with mitigation incorporated.

Table 5.8-2, Comparison of 25-Year Hydrology, provides a comparison of existing and proposed Project peak flow rates for the 25-year storm event.

Sub-drainage areas would continue to flow to the City of El Segundo storm drain along the eastern and southern edge of the Project site. The total proposed tributary area would be less than one percent larger than the existing tributary area, since portions of the Project area that formerly drained offsite would be redirected and managed onsite. The average percent imperviousness of the site is anticipated to decrease from 79.5 percent to 70.0 percent. Additionally, there would be no net increase in storm water discharge from the Project site.



Source: PSOMAS, *Water System Study*, March 21, 2013.

NOT TO SCALE

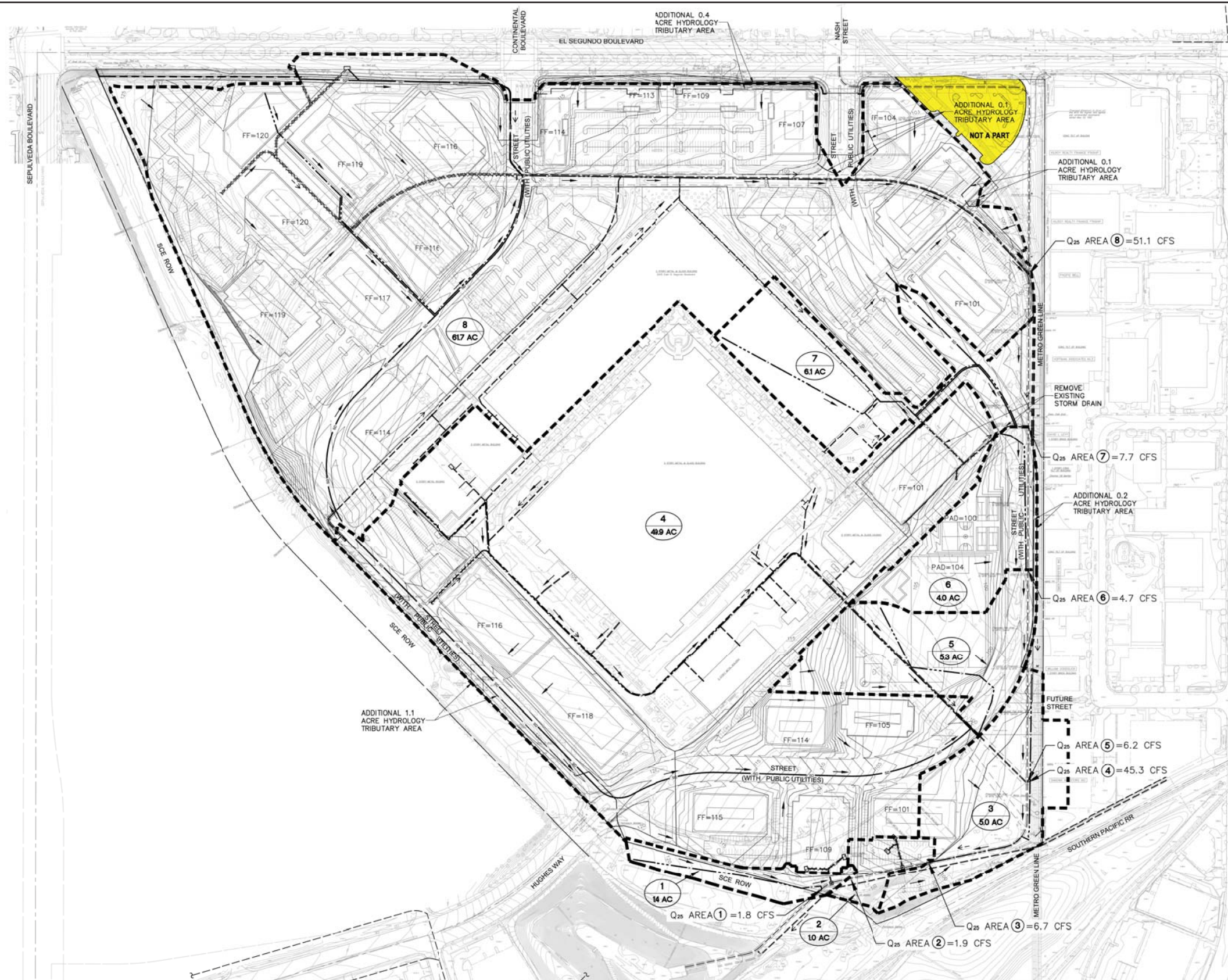


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ENVIRONMENTAL IMPACT REPORT
EL SEGUNDO SOUTH CAMPUS SPECIFIC PLAN (EA 905)

Proposed Stormwater and Site Drainage System

Exhibit 5.8-3



LEGEND / HYDROLOGIC DATA

- PROPERTY LINE
- - - DRAINAGE SUB-AREA BOUNDARY
- ①
20 AC SUB-AREA DESIGNATION AND ACREAGE
- - - DRAINAGE FLOW PATH
- STORM FREQUENCY: 25 YEARS
- PREDOMINANT SOIL TYPE: 013 & 014
- LAND USE: COMMERCIAL/ LIGHT INDUSTRY
- RAINFALL: 4.48 INCHES
- NET DRAINAGE AREA: 134.4 AC
- Q₂₅ AREA ⑧ = 51.1 CFS
- - - EXISTING STORM DRAIN TO BE REMOVED

Source: PSOMAS, October 18, 2012.



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**Table 5.8-2
Comparison of 25-Year Hydrology**

Drainage Sub-Area	Area (Acres)			Flow (cfs)		
	Existing	Project	Change	Existing	Project	Change
1	1.7	1.4	-0.3	2.3	1.8	-0.5
2	1.1	1.0	-0.1	2.0	1.9	-0.1
3	5.5	5.0	-0.5	7.6	6.7	-0.9
4	46.8	49.9	3.1	46.5	45.3	-1.2
5	6.2	5.3	-0.9	10.0	6.2	-3.8
6	3.4	4.0	0.6	6.8	4.7	-2.1
7	6.1	6.1	0	8.6	7.7	-0.9
8	61.7	61.7	0	51.1	51.1	0
Total	132.5	134.4	1.9	134.9	125.4	-9.5

Source: Psomas, *EIR Drainage Technical Report*, February 2013.

As indicated in Table 5.8-2, proposed Project flow rates in each sub-area, and therefore at each connection to the existing public storm drain system, would be less than existing flow rates. Therefore, onsite detention would not be required. An increase in the rate or amount of storm water runoff above the baseline condition would not occur. Based on the hydrologic results, detention facilities would not be required in each of the proposed sub-areas. However, final hydrology calculations are required to verify that detention facilities are not required in each of the proposed sub-areas. Recommended Mitigation Measure HYD-1 requires that a Construction-Level Hydrology and Hydraulic Study be conducted before any Grading Permit is issued. The Study would verify whether detention facilities are required in each proposed sub-area. If the Study determines that onsite detention is required to avoid downstream impacts, examples of possible flood control mitigation include a surface stormwater detention pond, subsurface detention structure, or subsurface detention pipes. Compliance with Mitigation Measure HYD-1 would reduce drainage and runoff impacts to less than significant levels.

Storm Water Quality

The long-term impacts to water quality occur when impacts related to sedimentation decrease markedly, but those associated with urban runoff increase due to Project operations. A reduction of permeable surfaces would be considered a water quality impact, as permeable surfaces allow for rain and runoff to infiltrate into the ground. Infiltration both reduces the amount of flow that is capable of washing off additional pollutants and filter water removing potential pollutants. These changes have the potential to affect long-term water quality. The Project involves the removal of approximately 19,143 gross square feet of existing office and warehouse uses and associated hardscapes and construction of approximately 2,161,600 gross square feet of new office, warehouse, light industrial, and commercial uses and associated hardscapes. Project implementation would not result in a reduction of permeable surfaces, since the average percent imperviousness of the site is anticipated to decrease from 79.5 percent to 70.0 percent. Thus, the water quality issues of concern would involve stormwater and nuisance water runoff associated with the newly proposed land uses.



The Redevelopment projects⁵ that are subject to Permittee⁶ conditioning and approval for the design and implementation of post-construction controls to mitigate storm water pollution include land-disturbing activity that results in the creation or addition or replacement of 5,000 square feet or more of impervious surface area on an already developed site. The proposed Project meets this criteria of creating land disturbing activity of more than 5,000 square-feet of impervious surface area on an already developed site, thus, is considered a Redevelopment Project under the SWRCB Municipal NPDES permit. Potential pollutants associated with the proposed Project include organics, trash, debris, oil/grease, nutrients, metals, and sediment, which could have a significant adverse impact to storm water quality if not mitigated.

The Project would be required to implement post-construction controls in order to mitigate stormwater pollution. Specifically, the MS4 Permit requires each permittee to implement a Planning and Land Development Program for all Redevelopment projects, before issuance of a Grading Permit. The Project would be required to control pollutants, pollutant loads, and runoff volume from the site by minimizing the impervious surface area and controlling runoff from impervious surfaces through infiltration, bioretention, and/or rainfall harvest and use. The Project would be required to capture and treat the first 0.75-inch rain event before the runoff is discharged offsite. BMPs would need to achieve applicable water quality-based effluent limitations and/or receiving water limitations established pursuant to TMDLs.

A SUSMP, or functional equivalent, must be prepared, including Best Management Practices (BMPs), in accordance with the latest El Segundo SUSMP, or functional equivalent template. Additionally, storm water detention/retention features, as necessary, must be included in the Construction Drawings to mitigate impacts of changes in imperviousness, as identified in the site-specific hydrology study. BMPs would be required to be implemented in each drainage subarea based on LID and SUSMP (or functional equivalent) design principles. The BMPs would be designed to collect, detain, treat, infiltrate/evapotranspire, and discharge runoff onsite before discharging into the City storm drain system. To the maximum extent practical, storm water quality treatment would be provided with infiltration. The treatment methods are expected to include infiltration wells, infiltration basins, high-efficiency planter boxes, and surface planting areas. As discussed below, it is anticipated that treatment would occur on a parcel by parcel basis, however, a common treatment facility may be created to treat stormwater from multiple lots.

As stated, the NPDES permit requires BMPs to capture and treat the first 0.75-inch rain event before the runoff is discharged offsite. Table 5.8-3, *SUSMP (or Functional Equivalent) Calculations, 0.75-inch*, shows the required peak mitigation flow rates (Q_{pm}) and mitigation volumes (V_m) for the total area of the Project site. As indicated in Table 5.8-3, an approximate total treatment volume of 5.47 acre-feet is required. This represents minimum treatment flows and volumes since the treatment flow and volume would increase when the Project site is subdivided and each parcel is developed separately, as discussed below.

⁵ As discussed in the *Los Angeles Regional Water Quality Control Board* Section above, the MS4 Permit Order specifies criteria or thresholds for determining "New Development" and "Redevelopment Projects."

⁶ As discussed in the *Los Angeles Regional Water Quality Control Board* Section above, MS4 permits are issued to a group of co-permittees encompassing an entire metropolitan area. NPDES Permit No. CAS004001, which covers the Project site, was issued to the Los Angeles County Flood Control District, County of Los Angeles, and 84 incorporated cities (including the City of El Segundo).



**Table 5.8-3
SUSMP (or Functional Equivalent) Calculations, 0.75-inch**

Area (acre)	Qpm (cfs)	Vm (ft ³)	Vm (acre-feet)
134.4	16.85	238,273	5.47
Source: Psomas, <i>EIR Drainage Technical Report</i> , February 2013.			

Water quality-based effluent TMDLs for the El Segundo retention and infiltration basin are not available. However, the Project would be required to comply with basic MS4 Permit requirements. In the event TMDLs are identified for this watershed prior to permit approval, watershed control measures would be required. These may include structural and/or non-structural controls, and operation and maintenance procedures, such as establishing parking area maintenance practices and stormwater system maintenance practices. The Project would also be subject to compliance with ESMC Chapters 5-4 and 5-7, which require the implementation of BMPs and address non-storm water discharges to the storm drain system.

The future parcel-specific development proposals would also be subject to compliance with NPDES requirements. Any proposed development that satisfies the criteria or thresholds for “Redevelopment Projects” must comply with the MS4 Permit Order requirements. The individual Redevelopment Projects that satisfy the criteria would be subject to Permittee conditioning and approval for the design and implementation of post-construction controls to mitigate storm water pollution, before issuance of a Grading Permit. As previously noted, an approximate total treatment volume of 5.47 acre-feet is required. This represents minimum treatment flows and volumes since the treatment flow and volume would increase when the Project site is subdivided and each parcel is developed separately. Parcel-specific BMPs would be required to treat this minimum volume from the Project site. However, each parcel would be required to comply with current stormwater regulations at the time plan check commences and therefore some parcels may be subject to higher requirements than others, based on development timing and phasing. A SUSMP, or functional equivalent, must be prepared before issuance of a Grading Permit for each individual Redevelopment Project that satisfies the criteria. The SUSMP must include BMPs, in accordance with the latest El Segundo SUSMP, or functional equivalent template. Additionally, storm water detention/retention features, as necessary, must be included in the Construction Drawings to mitigate impacts of changes in imperviousness, as identified in the parcel-specific hydrology study. BMPs would be required to be implemented in each drainage subarea based on LID and SUSMP (or functional equivalent) design principles.

Overall, compliance with NPDES and ESMC requirements would reduce potential impacts to long-term water quality to less than significant levels.

Mitigation Measures:

- HWQ-1 Before the City issues any grading permit, the Applicant must conduct a Construction Level Hydrology and Hydraulics Study to determine potential storm water runoff rates and peak flows from the Project site per County of Los Angeles methodology. The 50-year storm flows for both existing and proposed Project conditions must be included in the study. The Study must be completed by a qualified professional, approved by the Director of Public Works, and be consistent with standard engineering practices for the region, including the use of the Los Angeles County



Manual. The Study must demonstrate the effect of storm water discharges to any City, County, or other agency-owned drainage or flood control facility, as mitigated and be designed and implemented to prevent an increase in the rate or amount of storm water runoff above the baseline condition.

The Study must also determine whether onsite detention is required. If the final hydrology calculations determine that onsite detention is required to avoid downstream impacts, the Study must also identify the necessary flood control mitigation, which may include a surface stormwater detention pond, subsurface detention structure, or subsurface detention pipes. The construction level hydrology calculations and Construction Level Hydrology and Hydraulics Study must be prepared and reviewed by the Director of Public Works and Building Official before any Grading Permit is issued.

- HWQ-2 Before the City issues any permit for development of an individual parcel, the Construction Level Hydrology and Hydraulics Study must be updated and submitted to the Director of Public Works for review. The phasing must be implemented to prevent an increase in the rate or amount of storm water runoff above the baseline condition.

Level of Significance: Less Than Significant With Mitigation Incorporated.

GROUNDWATER

● THE PROJECT COULD POTENTIALLY DEplete GROUNDWATER SUPPLIES OR SUBSTANTIALLY INTERFERE WITH GROUNDWATER RECHARGE.

Impact Analysis: The Project would not interfere with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level, since it is not located within a groundwater recharge area. Additionally, the Project site's average percent imperviousness is expected to decrease from 79.5 percent to 70.0 percent with Project implementation. Therefore, the Project would not reduce the ability of surface waters to be absorbed 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. Impacts would be less than significant in this regard.

As concluded in Section 5.11, *Utilities and Service Systems*, the Project would result in an increase in water demand (approximately 408,168 gallons per day) over existing conditions. However, this increased demand for water would not result in a depletion of groundwater supplies. Although, the City of El Segundo maintains rights to 953 acre-feet of water per year from the adjudicated West Basin, the City does not use groundwater as a potable water source. Instead, the City leases its yearly water rights to the City of Manhattan Beach. According to the 2010 Urban Water Management Plan (UWMP), the City does not anticipate using groundwater to meet water demands due to water quality issues associated with seawater intrusion. Therefore, the Project would not deplete groundwater supplies. Impacts would be less than significant in this regard.

Mitigation Measures: No mitigation is required.

Level of Significance: Less Than Significant Impact.



5.8.5 CUMULATIVE IMPACTS

- **PROJECT IMPLEMENTATION COMBINED WITH OTHER RELATED CUMULATIVE PROJECTS COULD RESULT IN INCREASED RUN-OFF AMOUNTS, DEGRADED WATER QUALITY, AND DECREASED GROUNDWATER SUPPLIES.**

Impact Analysis: For purposes of drainage and water quality analysis, cumulative impacts are considered for projects located within the same watershed (i.e., Dominguez Channel watershed) as the proposed Project, and that drain to the El Segundo Pump Station No. 18 retention basin. The related cumulative projects are listed below (refer also to Tables 4-1 and 4-2 and Exhibit 4-1):

- #1 (EA #548);
- #5 (EA #768);
- #6 (EA #844);
- #8 (EA #784);
- #9 (EA #786);
- #10 (EA #791);
- #11 (EA #799);
- #17 (EA #912);
- #18 (EA #921);
- #19 (EA #940);
- #23 (EA #960); and
- #27 (EA #971).

Cumulative projects would have the potential to affect water quality at their respective sites during the construction phase and long-term operations. As concluded above, Project development would result in increased potential for short- and long-term operational water quality impacts in the area. Therefore, the Project's incremental effects to water quality are cumulatively considerable. However, the Project and cumulative development must adhere to NPDES requirements and implement a SWPPP with specific BMPs during construction activities. Additionally, the Project and cumulative development must adhere to NPDES requirements and implement a SUSMP with specific BMPs for post-construction conditions. Each project would also be required to comply with existing water quality standards at the time of development review and include BMPs, as necessary. Therefore, the combined cumulative short- and long-term impacts on surface water quality associated with the Project's incremental effects and those of the cumulative projects would be less than significant with adherence to NPDES and ESMC requirements.

Implementation of the cumulative projects would result in changes to drainage patterns and amounts of impervious surfaces on each respective development site. Higher flows resulting from cumulative development would contribute storm water flows to the local and regional drainage facilities, which would result in drainage and runoff impacts. Additionally, runoff from some of the cumulative projects could drain into the conveyance systems used by the Project. As concluded above, Project implementation would result in changes to drainage patterns and amounts of impervious surfaces. Therefore, the Project's incremental effects to drainage are cumulatively considerable. However, future development would be required to account for higher flows within the drainage area on a project-by-project basis. Each cumulative project would be required to submit individual analyses to their respective jurisdictions for review and approval prior to issuance of grading or building permits. Each analysis must indicate how peak flows generated from each related project would be accommodated by the existing and/or proposed storm drainage facilities. Therefore, the combined cumulative drainage and runoff impacts associated with the Project's incremental effects and those of the cumulative projects would be less than significant.



As concluded above, the Project would not deplete groundwater supplies, since the City does not use groundwater as a potable water source. Additionally, the Project would not substantially interfere with groundwater recharge, as the average percent imperviousness of the Project site would be reduced when compared to existing conditions. Therefore, the Project's incremental effects to groundwater supplies and recharge are not cumulatively considerable. Moreover, cumulative projects would not interfere with groundwater recharge, since they are not located within a groundwater recharge area. Although development of the cumulative projects could result in an overall increase in impervious surfaces, most of the sites involve redevelopment and not new development on vacant lands. Cumulative projects would not deplete groundwater supplies, as the City does not use groundwater as a potable water source. Therefore, cumulative impacts to groundwater supplies would be less than significant.

Mitigation Measures: No mitigation is required.

Level of Significance: Less Than Significant Impact.

5.8.6 SIGNIFICANT UNAVOIDABLE IMPACTS

No significant impacts related to hydrology and drainage have been identified following implementation of the recommended mitigation and compliance with the NPDES and ESMC regulatory requirements.

5.8.7 SOURCES CITED

City of El Segundo, *City of El Segundo Municipal Code*, as codified through Ordinance No. 1466.

RBF Consulting, *Water Supply Assessment El Segundo South Campus Specific Plan*, April 2013.

Psomas, *EIR Drainage Technical Report*, February 2013.

State of California Department of Conservation, California Geological Survey, Tsunami Inundation Maps, http://www.consrv.ca.gov/cgs/geologic_hazards/Tsunami/Inundation_Maps/Pages/Statewide_Maps.aspx, Accessed March 18, 2013.

Water Replenishment District of Southern California, *Water Replenishment District of Southern California Engineering Survey and Report 2012*, March 16, 2012.