

5. Environmental Analysis

5.7 HYDROLOGY AND WATER QUALITY

This section of the Draft Environmental Impact Report (DEIR) evaluates the potential impacts to hydrology and water quality conditions in the City of Long Beach from implementation of the Proposed Project. Hydrology deals with the distribution and circulation of water, both on land and underground. Water quality deals with the quality of surface and groundwater. Surface water is water on the surface of the land and includes lakes, rivers, streams, and creeks. Groundwater is water below the surface of the earth. The analysis in this section is based in part on the following technical report:

- Midtown Specific Plan Infrastructure Technical Report for Hydrology, Sewer, Water, & Water Quality, Fuscoe Engineering, July 1, 2015

A complete copy of this study is included Appendix E to this DEIR.

5.7.1 Environmental Setting

5.7.1.1 REGULATORY BACKGROUND

Federal, state and local laws, regulations, plans or guidelines that are potentially applicable to the Proposed Project are summarized below.

Clean Water Act

Controlling pollution of the nation's receiving water bodies has been a major environmental concern for more than three decades. Growing public awareness of the impacts of water pollution in the United States culminated in the establishment of the federal Clean Water Act (CWA) in 1972 (also referred to as the Federal Water Pollution Control Act of 1972), which provided the regulatory framework for surface water quality protection.

The United States Congress amended the CWA in 1987 to specifically regulate discharges to waters of the US from public storm drain systems and storm water flows from industrial facilities, including construction sites, and require such discharges be regulated through permits under the National Pollutant Discharge Elimination System (NPDES). Rather than setting numeric effluent limitations for storm water and urban runoff, CWA regulation calls for the implementation of Best Management Practices to reduce or prevent the discharge of pollutants from these activities to the Maximum Extent Practicable (MEP) for urban runoff and meeting the Best Available Technology Economically Achievable (BAT) and Best Conventional Pollutant Control Technology (BCT) standards for construction storm water. Regulations and permits have been implemented at the federal, state, and local level to form a comprehensive regulatory framework to serve and protect the quality of the nation's surface water resources.

In addition to reducing pollution with the regulations described above, the CWA also seeks to maintain the integrity of clean waters of the United States – in other words, to keep clean waters clean and to prevent undue degradation of others. As part of the CWA, the Federal Antidegradation Policy [40 CFR Section 131.12] states that each state “shall develop and adopt a statewide antidegradation policy and identify the

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methods for implementing such policy...” [40 CFR Section 131.12(a)]. Three levels of protection are defined by the federal regulations:

- Existing uses must be protected in all of the Nation’s receiving waters, prohibiting any degradation that would compromise those existing uses;
- Where existing uses are better than those needed to support propagation of aquatic wildlife and water recreation, those uses shall be maintained, unless the state finds that degradation is “...necessary to accommodate important economic or social development” [40 CFR Section 131.12(a)(2)]. Degradation, however, is not allowed to fall below the existing use of the receiving water; and
- States must prohibit the degradation of Outstanding National Resource Waters, such as waters of national and state parks, wildlife refuges, and waters of exceptional recreation or ecological significance.

Porter-Cologne Water Quality Act

In the State of California, the State Water Resources Control Board (SWRCB) and local Regional Water Quality Control Boards (RWQCBs) have assumed the responsibility of implementing the US Environmental Protection Agency’s (EPA) NPDES Program and other programs under the CWA such as the Impaired Waters Program and the Antidegradation Policy. The primary quality control law in California is the Porter-Cologne Water Quality Act (Water Code Sections 13000 et seq.). Under Porter-Cologne, SWRCB issues joint federal NPDES Storm Water permits and state Waste Discharge Requirements (WDRs) to operators of municipal separate storm sewer systems (MS4s), industrial facilities, and construction sites to obtain coverage for the storm water discharges from these operations.

Basin Plan for the Los Angeles Region

In addition to its permitting programs, SWRCB, through its nine RWQCBs, developed Regional Water Quality Control Plans (or Basin Plans) that designate beneficial uses and water quality objectives for California’s surface waters and groundwater basins, as mandated by both the CWA and the state’s Porter-Cologne Water Quality Act. Water quality standards are therefore established in these Basin Plans and provide the foundation for the regulatory programs implemented by the state. The Los Angeles RWQCB’s (LARWQCB) Basin Plan, which covers the Project Site, specifically designates beneficial uses for surface waters and ground waters, sets narrative and numerical objectives that must be met in order to protect the beneficial uses and conform to the state’s antidegradation policy, and describes implementation programs to protect all waters in the Region. In other words, LARWQCB’s Basin Plan provides all relevant information necessary to carry out federal mandates for the antidegradation policy, 303(d) listing of impaired waters, and related Total Maximum Daily Loads, and provides information relative to NPDES and WDR permit limits.

CWA 303(d) List of Water Quality Limited Segments

Under Section 303(d) of the CWA, states are required to identify water bodies that do not meet their water quality standards. Once a water body has been listed as impaired, a Total Maximum Daily Load (TMDL) for the constituent of concern (pollutant) must be developed for that water body. A TMDL is an estimate of the

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daily load of pollutants that a water body may receive from point sources, non-point sources, and natural background conditions (including an appropriate margin of safety), without exceeding its water quality standard. Those facilities and activities that are discharging into the water body, collectively, must not exceed the TMDL.

Storm water runoff from the Project Site ultimately discharges into the Los Angeles River to the west of the Project Site. The Los Angeles River ultimately outlets into the Los Angeles River Estuary (Queensway Bay) about 3-4 miles south of the Project Site discharge points and ultimately to the Pacific Ocean. According to the 2010 303(d) list of Water Quality Limited Segments published by SWRCB, the Los Angeles River Reach 1 is listed as impaired for ammonia, cadmium, coliform bacteria, dissolved copper, cyanide, diazinon, lead, nutrients, trash, dissolved zinc, and pH. In addition, the Los Angeles River estuary receiving water is listed as impaired for Chlordane, DDT, PCBs, and toxicity in sediments, as well as trash.

Total Maximum Daily Loads

Once a water body has been listed as impaired on the 303(d) list, a TMDL for the constituent of concern (pollutant) must be developed for that water body. A TMDL is an estimate of the daily load of pollutants that a water body may receive from point sources, non-point sources, and natural background conditions (including an appropriate margin of safety), without exceeding its water quality standard. Those facilities and activities that are discharging into the water body, collectively, must not exceed the TMDL. In general terms, municipal, small MS4, and other dischargers within each watershed are collectively responsible for meeting the required reductions and other TMDL requirements by the assigned deadline.

For the Los Angeles River Reach 1, LARWQCB has adopted wet-weather TMDLs for cadmium and zinc and both wet- and dry-weather TMDLs for copper, lead, and trash. TMDLs for cyanide, Diazinon, and pH have not been determined.

For the Los Angeles River Estuary (Queensway Bay), only the TMDL for trash in the overall watershed applies. TMDLs for the impairment of Chlordane, DDT, PCBs, and toxicity in sediments are not yet written. Table 10 (TMDLs for Los Angeles River Reach 1) of the Infrastructure Technical Report (see Appendix E) summarizes the numeric targets and loading capacities selected in order to meet the water quality objectives (WQOs) for the protection of beneficial uses in impaired waters as part of the TMDLs. Table 11 (Waste Load Allocations for Los Angeles River Reach 1) provides the waste load allocations for Reach 1.

General Construction Permit and Storm Water Pollution Prevention Plans

The General Construction Permit (GCP; Order No. 2009-0009-DWQ, NPDES Permit No. CAS000002), and its subsequent revisions (Order No. 2012-0006-DWQ), regulates stormwater and non-stormwater discharges associated with construction activities disturbing one acre or greater of soil. Construction sites that qualify must submit a Notice of Intent (NOI) to gain permit coverage or otherwise be in violation of the CWA and California Water Code.

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The GCP requires the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP) for each individual construction project greater than or equal to one acre of disturbed soil area (regardless of the site's Risk Level). The SWPPP must list Best Management Practices (BMPs) that the discharger will use to control sediment and other pollutants in stormwater and non-stormwater runoff; the BMPs must meet the BAT and BCT performance standards. Additionally, the SWPPP must contain a visual monitoring inspection program; a chemical monitoring program for sediment and other "non-visible" pollutants to be implemented based on the Risk Level of the site, as well as inspection, reporting, training and record-keeping requirements. Section XVI of the GCP describes the elements that must be contained in a SWPPP.

In addition to the requirements above, the GCP contains requirements for construction sites based on the sites risk of discharging construction-related pollutants, as well as additional monitoring and reporting requirements. Each construction project must complete a risk assessment prior to commencement of construction activities, which assigns a Risk Level to the site and determines the level of water quality protection/requirements the site must comply with. The GCP also includes provisions for meeting specific Numerical Effluent Limits and Action Levels for pollutants based on the sites' Risk Level.

Since the Proposed Project would allow for redevelopment activities that would disturb greater than one acre of land area, development projects within the Project Site will be subject to the storm water discharge requirements of the GCP. The development projects will require submittal of an NOI, SWPPP, Risk Assessment, and other Project Registration Documents (PRDs) required by the GCP prior to the commencement of soil-disturbing activities. In the Los Angeles Region, SWRCB is the permitting authority, while LARWQCB provides local oversight and enforcement of the GCP.

General WDR Permit for Groundwater Discharges

LARWQCB requires a permit for discharging wastes to surface waters from activities involving de minimus or temporary groundwater related discharges. Under Order No. R4-2013-0095 (NPDES No. CAG994004), Permittees are required to monitor their discharges from groundwater extraction waste from construction and dewatering activities to ensure that proposed effluent limitations for constituents are not exceeded.

During the design phase, each development project is evaluated with site-specific boring tests to determine exact location and potential for groundwater during construction activities. Sites that require dewatering activities due to groundwater encountered onsite is required to either obtain permission to discharge to the sanitary sewer system through the local sewer agency or file for the general WDR permit to discharge to the MS4.

City of Long Beach MS4 Permit and Long Beach Stormwater Management Plan

In March 2014, LA RWQCB re-issued the City of Long Beach MS4 Storm Water Permit as WDR Order R4-2014-0024 (NPDES Permit No. CAS004003). Pursuant to this MS4 Permit, the City is required to develop and implement Minimum Control Measures as part of a Stormwater Management Program. The Long Beach Stormwater Management Plan was last revised in August 2001 and was built upon Regional Board WDR Order No. 99-060.

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In order to comply with the updated MS4 Permit, a “Low Impact Development (LID) Best Management Practices (BMP) Design Manual” was developed (2013) in advance of the final permit, which details actions for compliance with the LID regulations adopted in City Ordinance No. ORD-10-035, such as land development policies pertaining to LID and hydromodification for new development and significant redevelopment projects. The term “hydromodification” refers to the changes in runoff characteristics from a watershed caused by changes in land use condition. More specifically, hydromodification refers to “the change in the natural watershed hydrologic processes and runoff characteristics (i.e., interception, infiltration, overland flow, interflow, and groundwater flow) caused by urbanization or other land use changes that result in increased stream flows and sediment transport.” The use of LID BMPs in project planning and design is to preserve a site’s predevelopment hydrology by minimizing the loss of natural hydrologic processes such as infiltration, evapotranspiration, and runoff detention. LID BMPs try to offset these losses by introducing structural and non-structural design components that restore these water quality functions into the project’s land plan.

City of Long Beach LID/SUSMP/MS4 Plan

One component of the New Development/Significant Redevelopment Section of the City’s Stormwater Management Plan is the provision to prepare a project-specific LID Plan to infiltrate, evapotranspire, and/or capture and use stormwater runoff to prevent pollutants from leaving the site. If partial or complete onsite compliance is infeasible, the LID Plan is required to comply with, at a minimum, all applicable Standard Urban Stormwater Management Plan (SUSMP) requirements. This includes operation and maintenance requirements for all structural or treatment control BMPs required for specific categories of developments to reduce pollutants in post-development runoff to the MEP.

All development and redevelopment in Long Beach is subject to LID requirements of the City’s Department of Development Services LID BMP Design Manual (November 12, 2013), except for the following projects:

- A development or redevelopment that does not require a building permit;
- A development or redevelopment creating, adding, or replacing less than 500 square feet of impervious surface area;
- A development or redevelopment involving only emergency construction activity required to immediately protect public health and safety;
- A development or redevelopment involving the grinding/overlaying and replacement of existing parking lots;
- A development or redevelopment involving only re-striping of permitted parking lots;
- A redevelopment resulting in land disturbing activities or replacement of 50 percent or less of an existing building, structure, or impervious surface area;
- An infrastructure project within the public right-of-way;

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- A development or redevelopment involving only activity related to gas, water, cable, or electricity services on private property;
- A project involving only exterior movie and television production sets, or facades on existing developed site; or
- A development or redevelopment where LID requirements are technically infeasible.

As required by the City's LID Ordinance on stormwater quality management, all development or redevelopment that does not meet the above-listed exemptions must submit a LID Plan to the City for approval prior to the City issuing any building or grading permits. Since the Proposed Project includes multiple land owners with multiple projects, individual development projects that would be accommodated by the Proposed Project will be subject to the requirements of the City's LID Ordinance, requiring the development of a project-specific LID Plan. Project-specific LID Plans within the Project Site will be required to ensure all of the requirements of the City's LID Ordinance on stormwater quality are addressed for that project. This includes meeting any new requirements associated with development projects, as well as the requirements of the MS4 permit (or subsequent MS4 Permits), which includes LID features and/or hydromodification controls.

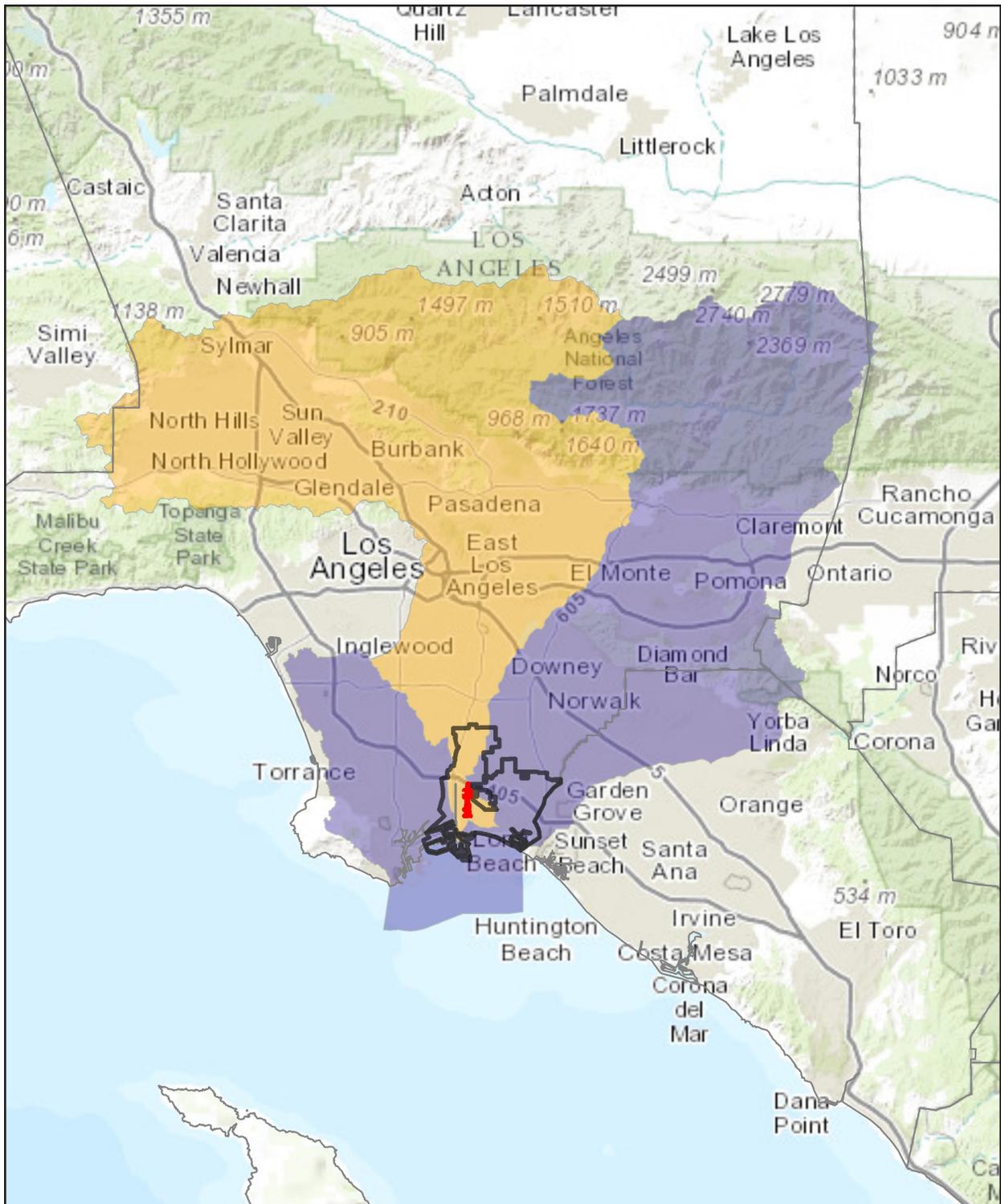
5.7.1.2 EXISTING CONDITIONS

Regional Surface Waters and Drainage

The Project Site is in the lower portion of the Los Angeles River Watershed, which spans 830 square miles of western, central, and southern Los Angeles County and some small areas of eastern Ventura County (see Figure 5.7-1, *Los Angeles River Watershed*). The watershed extends from the San Gabriel Mountains on the northeast, to the Santa Susana Mountains and Santa Monica Mountains on the northwest and west, respectively, and extending south to the mouth of the Los Angeles River in the City of Long Beach. The watershed includes all of the San Fernando Valley, much of central Los Angeles, and parts of south Los Angeles. The Los Angeles River, the primary stream in the watershed, extends 51 miles from the confluence of Bell Creek and the Arroyo Calabasas in the southwest San Fernando Valley to the Pacific Ocean at the City of Long Beach. The river has a natural bottom with riprap side slopes south of 25th Street in Long Beach and a concrete bottom north of 25th Street.

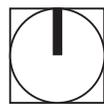
More specifically, the Project Site is part of the coastal plain that drains directly into the main stem of the Los Angeles River. General urban runoff is the source of most of the dry-season flow in many of the tributaries and channels of the lower portion of the Los Angeles River Watershed. Approximately 100 million gallons of runoff from landscape irrigation, car washing, and other inadvertent sources flows through the Los Angeles County storm drain system daily and into the flood control channels, including the Los Angeles River and its tributaries. The typical wet period spans October through April and flows can get up to 1,592 cubic-feet-per-second (cfs) at the estuary, with occasional storms and flows during storm events potentially increasing runoff volume to 10 billion gallons. The Project Site discharges into the Los Angeles River Reach 1, approximately three to four miles north from the Los Angeles Estuary and Pacific Ocean.

Figure 5.7-1 - Los Angeles River Watershed
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-  Project Site
-  City of Long Beach
- Watersheds**
-  Los Angeles
-  San Gabriel

Source: USGS, 2013



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Local Surface Waters and Drainage

The nearest stream to the Project Site is the Los Angeles River, approximately 0.6 mile to the west. The project site is served by two flood control and drainage systems.

- The City of Long Beach operates and maintains a storm drain system including catch basins, and drain pipes (primarily reinforced concrete pipe [RCP]) that range from 12 to 90 inches within the study area.
- The Los Angeles County Flood Control District (LACFCD) operates and maintains flood control facilities including the larger systems primarily ranging from 48 to 93 inches within the study area.

All runoff from the Project Site ultimately discharges into the Los Angeles River via three separate pump stations, including the Cerritos Pump Station, Hill Street Pump Station, and Willow Pump Station. Major streams are divided into segments called reaches. All three pump stations are within Reach 1 of the Los Angeles River, which extends from about Ocean Boulevard on the south to Carson Street on the north.

Major storm drain pipes serving the Project Site are listed in Table 5.7-1 and shown in Exhibits 5A (Existing Storm Drain Facilities North), 5B (Existing Storm Drain Facilities Center), and 5C (Existing Storm Drain Facilities South) of the Infrastructure Technical Report included as Appendix E to this DEIR. The table also shows the existing perviousness of the Project Site by development district/area.

Table 5.7-1 Existing Drainage Facilities in Project Site

Development District/Area	Existing Drain Facility; Roadway; Owner ¹	Existing Imperviousness Percentage
1 (Corridor District)	90 inches; Willow Street; LACFCD 42 inches; Willow Street; LB 60 inches; Long Beach Boulevard; LACFCD 30 inches; 31st Street; LB	83%
2 (Corridor District)	93 inches; Eagle Street; LACFCD 60 inches; Hill Street; LACFCD 54 inches; 20th Street; LACFCD	88%
3 (Corridor District)	48 inches; 16th Street; LACFCD	83%
4 (Medical District)	54 inches; 28th Street; LB	79%
5 (Transit Node District)	90 inches; Willow Street; LB	87%
6 (Transit Node District)	48 inches; Pacific Coast Highway; LACFCD	90%
7 (Transit Node District)	21 inches; Anaheim Street; LB	90%
Conventional Zone	42 inches; 20th Street; LACFCD	81%

Source: Fuscoe Engineering 2015.

Notes: LACFCD = Los Angeles County Flood Control District.; LB = City of Long Beach

¹ All storm drain pipes listed are reinforced concrete pipe (RCP).

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2005 Master Plan of Drainage Update

In 2005, the City’s Master Plan of Drainage was updated (2005 MPD Update) to evaluate the hydraulic capacity of the major storm drain systems within the City boundary, including LACFCD facilities. The analysis included computation of the 10-, 25-, and 50-year storm events and the capacity of the existing storm drain systems to determine where improvements are recommended. The 10-year conveyance capacity was used as the threshold for needed upsizing. Within the Project Site, the 2005 MPD Update identified four areas of deficiency, which are described in Table 5.7-2 and shown in Figure 7 (City of Long Beach 2005 Master Plan of Drainage Update Deficiency Map) of the Infrastructure Technical Report included as Appendix E to this DEIR. The remainder of the storm drain system within the Project Site was deemed sufficient under existing conditions to convey the 10-year storm event (Fuscoe 2015).

Table 5.7-2 Storm Drainage Deficiencies Identified in 2005 Master Plan of Drainage Update

District	Roadway	Roadway Segment Cross Streets	Segment ID	Existing Pipe Size	Existing Capacity	10-Year Peak Flow	Recommended Pipe Size
City of Long Beach Storm Drain Lines							
Medical District 5	Willow Street	West of Long Beach Boulevard to east of Pasadena Street	060220 060225	27 inches 30 inches	17.4 cfs 23.3 cfs	25 cfs	36 inches
Los Angeles County Flood Control District Storm Drain Lines							
Corridor District 2	20th Street	Locust Avenue to Elm Avenue	040725	24 inches	12.9 cfs	18 cfs	36 inches
Transit Node District 6	Pacific Coast Highway	Locust Avenue to west of Pasadena Avenue	040020	48 inches	45.5 cfs	82 cfs	60 inches

Source: Fuscoe Engineering 2015.
Notes: cfs = cubic feet per second

Surface Water Quality

The receiving waters for the Project Site are two segments of the Los Angeles River: Reach 1 and the estuary (Queensway Bay), with the latter extending from about Ocean Boulevard south to the mouth of the river.

Beneficial Uses

Beneficial uses are uses to which water can be put for the benefit of people and/or wildlife. The existing beneficial uses of Los Angeles River Reach 1 are:

- GWR: Ground Water Recharge
- WARM: Warm Freshwater Habitat
- MAR: Marine Habitat
- WILD: Wildlife Habitat
- RARE: Rare, Threatened, or Endangered Species

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Water Quality Objectives

General water quality objectives have been set forth for surface waters in the LARWQCB region for numerous constituents listed in the Infrastructure Technical Report (see Appendix E). In addition, the following specific objectives have been set for the Los Angeles River between Figueroa Street and Willow Street;¹ all concentrations are in mg/L²: Total Dissolved Solids (mg/L) = 1500; Sulfate (mg/L) = 350; Chloride (mg/L) = 150; Nitrogen (mg/L) = 8.

Reach 1 and the estuary are listed on the CWA Section 303(d) List of Water-Quality Limited Segments for the pollutants shown in Table 5.7-3. The status of the TMDL for each pollutant is also listed in the table.

Table 5.7-3 Total Maximum Daily Loads

Pollutant	TMDL Status
Los Angeles River: Reach 1 (Estuary to Carson Street)	
Ammonia	Approved 2004
Cadmium	Approved 2005
Coliform Bacteria	In preparation
Copper, dissolved	Approved 2005
Cyanide	Required, estimated completion 2019
Diazinon (organophosphate insecticide)	Required, estimated completion 2019
Lead	Approved 2005
Nutrients (algae)	Approved 2004
pH	Approved 2004
Trash	Approved 2008
Zinc, dissolved	Approved 2005
Los Angeles River Estuary (Queensway Bay)	
Chlordane (organochlorine insecticide)	Required, estimated completion 2019
DDT (organochlorine insecticide)	Required, estimated completion 2019
Polychlorinated biphenyls (PCBs)	Required, estimated completion 2019
Sediment toxicity	Required, estimated completion 2019
Trash	Approved 2008

Source: SWRCB 2014.

Groundwater

Regional

The Project Site is within the southeast end of the Los Angeles West Coast Basin, which is one of five major groundwater basins in the Los Angeles River Watershed. Much of the Los Angeles River Watershed is underlain with extensive clay layers and the most important spreading basins for groundwater recharge are in the San Fernando Basin, far to the northwest, where the underlying soils are permeable. Unlike the other four

¹ Figueroa Street crosses the Los Angeles River in the community of Mt. Washington in the City of Los Angeles about 19 miles (straight-line distance) north of the Willow Street crossing of the river.

² One milligram per liter is equivalent to one part per million.

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groundwater basins with notable spreading grounds, groundwater recharge for the West Coast Basin is primarily through direct injection, along with lateral flow from the adjacent Central Basin to the northeast.

Project Site

The City of Long Beach is divided into thirty major drainage basins. Within each major basin, sub-basins are identified which are served by 36-inch drainage pipes or larger. Sub-basins are further sub-divided into drainage areas contributing runoff to specific drainage nodes. The entire system is integrated into GIS and provides the City a useful management tool for the operation and maintenance of the storm drain system.

The Project Site falls within three of the major basins, including Basin 4, 5 and 6; all three basins, described below, are nearly entirely built out with urban uses.

- **Basin 04.** This basin, spanning 810 acres, contains Development Districts 3, 6 and 7 of the Project Site. The primary drainage pattern is from east to west and includes two major storm drain systems. One of the major systems includes the county-owned pump station (LA02) called Cerritos Station, between 10th Street and 11th Street, which includes drainage from the Project Site.
- **Basin 05.** This basin, encompassing 546 acres, includes most of Development District 2 of the Project Site. The primary drainage pattern is from east to west and there is one major storm drain system within this basin. All flows from this basin including the Project Site ultimately end up at the Hill Street Pump Station owned by the County of Los Angeles (LA03).
- **Basin 06.** This basin, spanning 695 acres, includes Development Districts 1, 4 and 5 of the Project Site. The major drainage pattern is south and southeast and there are two major storm drain systems within this basin. Both of these major storm drain systems converge at the City-owned and -operated Willow Pump Station (SD06) located at San Francisco Avenue and north of Willow Street.

Groundwater Quality

Beneficial Uses

The Basin Plan identifies Coastal Plain of Los Angeles West Coast Basin groundwater management zone in the Lower Los Angeles River as having four beneficial uses. They are

- MUN: Municipal and Domestic Supply
- AGR: Agricultural Supply
- IND: Industrial Service Supply
- PROC: Industrial Process Supply³

³ Industrial service supply consists of industrial uses not dependent on water quality, such as cooling water and hydraulic conveyance. Industrial process supply consists of industrial uses dependent on water quality, such as food processing (SFBRWQCB 2015).

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Water Quality Objectives

General water quality objectives have been set forth by LARWQCB for all groundwater in its jurisdiction for several constituents listed in the Infrastructure Technical Report (see Appendix E). In addition, the following specific objectives have been established for the West Coast Basin: Total Dissolved Solids = 800 mg/L; Sulfate = 250 mg/L; and Chloride 250 mg/L; Boron = 1.5 mg/L.

Regional

In general, historical activities and practices have degraded groundwater quality in Los Angeles County over the past century. Causes include seepage of fertilizers and pesticides into the subsurface from past agricultural uses, nitrogen and pathogenic bacteria from poorly sited and maintained septic tanks, and various hazardous substances from leaking aboveground and underground storage tanks and industrial operations. Overdraft of groundwater from coastal aquifers in the first half of the 20th Century resulted in not only a decline in groundwater levels, but also the intrusion of seawater into the aquifers.

Local

The Water Replenishment District of Southern California, as part of its Regional Groundwater Monitoring Program for the Central and West Coast groundwater basins, tests samples from a well approximately 1.5 miles northwest of the Project Site one to two times annually from four depths ranging from 430 to 1,390 feet below ground surface. Water from the well at 430 feet depth consistently exceeds LARWQCB water quality objectives for total dissolved solids and chloride; no exceedances were observed at the depth of 1,390 feet.

5.7.2 Thresholds of Significance

According to Appendix G of the CEQA Guidelines, a project would normally have a significant effect on the environment if the project would:

- HYD-1 Violate any water quality standards or waste discharge requirements.
- HYD-2 Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted).
- HYD-3 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 a substantial erosion or siltation on- or off-site.
- HYD-4 Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.

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- HYD-5 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.
- HYD-6 Otherwise substantially degrade water quality.
- HYD-7 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.
- HYD-8 Place within a 100-year flood hazard area structures which would impede or redirect flood flows.
- HYD-9 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.
- HYD-10 Be subject to inundation by seiche, tsunami, or mudflow.

The Initial Study, included as Appendix A, substantiates that impacts associated with the following thresholds would be less than significant:

- Threshold HYD-7
- Threshold HYD-8
- Threshold HYD-9
- Threshold HYD-10

These impacts will not be addressed in the following analysis.

5.7.3 Environmental Impacts

The Project Site consists of two areas along Long Beach Boulevard totaling 373 acres, stretching from Anaheim Street on the south to Wardlow Road on the north (see Figures 2, *Local Vicinity*, and 3, *Aerial Photograph*): 1) the Midtown Specific Plan area spanning approximately 369 acres from Anaheim Street on the south to Wardlow Road on the north and 2) an area outside of, but adjacent to the Midtown Specific Plan boundary, which consist of approximately 4 acres around Officer Black Park (west of Pasadena Avenue between 21st Street and 20th Street). Both of these areas make up the overall Project Site and constitute the Proposed Project. As shown in Table 3-3, *Overall Land Use Projections for Proposed Project*, the Proposed Project would accommodate approximately 1,700 dwelling units, 369,000 square feet of commercial and employment -generating uses, 27 hospital beds, and 81 hotel rooms over existing conditions within the Project Site. No physical change (e.g., additional development intensity, redevelopment) is expected to occur within the area outside the Midtown Specific Plan and all existing uses within this area are expected to remain.

The Proposed Project also includes closure of the following roadway segments, which intersect with Long Beach Boulevard, to vehicular traffic in order to create parklets (small street parks; see Figure 5.11-1, *Parks and Recreational Facilities Serving the Project Site*): 25th Street west of Long Beach Boulevard; 25th Street east of Long Beach Boulevard; 23rd Street west of Long Beach Boulevard; 23rd Street east of Long Beach Boulevard; 21st Street west of Long Beach Boulevard; 21st Street east of Long Beach Boulevard; Rhea Street

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east of Long Beach Boulevard; Esther Street east of Long Beach Boulevard; 15th Street west of Long Beach Boulevard; 15th Street east of Long Beach Boulevard; and 14th Street east of Long Beach Boulevard.

The following impact analysis addresses thresholds of significance for which the Initial Study disclosed potentially significant impacts. The applicable thresholds are identified in brackets after the impact statement.

Impact 5.7-1: Development pursuant to the Proposed Project would increase the amount of impervious surfaces on the Project Site and would therefore impact opportunities for groundwater recharge. [Threshold HYD-2]

Impact Analysis: The potential impacts resulting from the Proposed Project within each of the areas of the Project Site are addressed below.

Midtown Specific Plan Area

New development and redevelopment projects of types described above under Impact 5.7-1 would retain the stormwater volume from an 85th-percentile 24-hour storm onsite. Therefore, some of the stormwater generated by increased impervious areas of development that would be accommodated by the Midtown Specific Plan would be infiltrated into the soil.

Additionally, the Midtown Specific Plan area would have a minimal effect on usable groundwater reserves because it is in a largely developed area of the City and is surrounded by urban uses. Groundwater is also not relevant to the Midtown Specific Plan area because infiltration will not be used, the Project Site is not in or near any groundwater recharge basin, and neither the Midtown Specific Plan area nor the surrounding area is used for intentional groundwater recharge.

Furthermore, groundwater is estimated to comprise about 49 percent of the water supply for the City of Long Beach in 2015 (LBWD 2011). The City of Long Beach forecasts that it will have adequate water supplies to meet water demands through the 2015-2035 period without exceeding its water rights to Central Subbasin groundwater. Groundwater levels in the Central Subbasin are managed by the California Department of Water Resources to maintain a safe operating yield of groundwater, that is, a sustainable pumping rate that does not exceed the total of natural and artificial recharge into the Subbasin (CBMWD 2012). Water supply impacts are discussed in detail in Section 5.14, *Utilities and Service Systems*.

Therefore, the Midtown Specific Plan would not substantially interfere with groundwater supplies or groundwater recharge, and impacts are not anticipated significant.

Area Outside the Midtown Specific Plan

As noted above, with the exception of the zoning designation revisions that would be undertaken in this area of the Project Site under the Proposed Project, no physical change (e.g., additional development intensity, redevelopment) is expected to occur within this area and all existing uses are expected to remain. Therefore, no impacts on groundwater supplies or groundwater recharge are anticipated to occur.

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Impact 5.7-2: Development pursuant to the Proposed Project would not substantially alter the existing drainage pattern of the Project Site or surrounding area in a manner that would result in a substantial erosion or siltation on- or offsite. [Threshold HYD-3]

Impact Analysis: Erosion and siltation impacts potentially resulting from development that would be accommodated by the Proposed Project would, for the most part, occur during the project's sites preparation and grading phase. However, there is also a potential for erosion and siltation during project operation. Following is a discussion of potential erosion and siltation impacts during the construction and operation phases of development that would be accommodated by the Proposed Project.

The potential erosion and siltation impacts resulting from the Proposed Project within each of the areas of the Project Site are addressed below.

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Construction Phase

As discussed below under Impact 5.7-4, the construction contractor of individual development projects that would be accommodated by the Midtown Specific Plan would be required to prepare and implement an SWPPP pursuant to the GCP during grading and construction activities. The SWPPP would specify BMPs that construction contractor's would implement prior to and during grading and construction activities to minimize erosion and siltation impacts on- and offsite. BMPs that would be implemented during the construction phase of individual development projects are discussed in detail under Impact 5.7-4. For example, as outlined in Impact 5.7-4, BMPs would include but are not limited to: erosion control BMPs, such as hydraulic mulch, soil binders, and geotextiles and mats; the protection of storm drain inlets with an impoundment (i.e., gravel bags) around the inlet and equipped with a sediment filter such as a fiber roll; and stabilization of all construction entrance/exit points to reduce the tracking of sediments onto adjacent streets. Adherence to the BMPs in the SWPPP would reduce, prevent, or minimize soil erosion and siltation from project-related grading and construction activities.

Therefore, the construction phase of development projects that would be accommodated by the Midtown Specific Plan would not result in a substantial alteration of the existing drainage pattern of the Project Site or area in a manner that would result in substantial erosion or siltation on- or offsite.

Operation Phase

Development that would be accommodated by the Midtown Specific Plan is not anticipated to substantially change the drainage pattern on individual development sites or the overall Project Site. Under proposed conditions, runoff on individual development sites and the overall Project Site would be conveyed similar to existing conditions. Individual development sites would also consist of impervious surfaces (e.g., asphalted driveways, building pads, concrete walkways) and pervious surfaces (e.g., common area landscaping, open space lawn areas). There would be no substantial areas of bare or disturbed soil onsite that would be vulnerable to erosion or siltation. All areas would either be paved or landscaped.

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Additionally, as stated under Impact 5.7-4, to help prevent long-term impacts associated with development that would occur under the Midtown Specific Plan and in accordance with the requirements of the City of Long Beach and its MS4 permit (Order No. R4-2014-0024), new development and significant redevelopment projects must incorporate site design/LID and source control BMPs, which would help prevent post-development erosion and siltation on- or offsite. For example, LID BMPs would collect and filter runoff from development sites before discharging it offsite. Furthermore, the project applicant of individual development projects would be required to submit grading plans to the City per the provisions in the City's Municipal Code. During their review of submitted grading plans, City staff would ensure that the minimum requirements to regulate grading and earthwork are incorporated into the development project in order to control the quality of drainage and runoff (including erosion and siltation) from the development site.

Therefore, the operational phase of development projects that would be accommodated by the Midtown Specific Plan would not result in a substantial alteration of the existing drainage pattern of the Project Site or area in a manner that would result in substantial erosion or siltation on- or offsite.

Area Outside the Midtown Specific Plan

Under the Proposed Project, the area that is outside the Midtown Specific Plan, which covers two residential blocks around Officer Black Park (approximately 4 acres) west of Pasadena Avenue between 21st Street and 20th Street (see Figure 3-5, *Current and Proposed Zoning Designations*), would be extracted from PD 29 and retain its underlying conventional zoning designations, which include Single-Family Residential, standard lot (R-1-N); Three-Family Residential (R-3-S); and Park (P). With the exception of the zoning designation revisions that would be undertaken, no physical change (e.g., additional development intensity, redevelopment) is expected to occur within this area and all existing uses (which include residential uses, a church, and Officer Black Park) are expected to remain. Therefore, no erosion or siltation impacts are anticipated to occur.

Impact 5.7-3: Development pursuant to the Proposed Project would increase the amount of impervious surfaces on the Project Site and would therefore increase surface water flows into drainage systems within the watershed. [Thresholds HYD-4 and HYD-5 (part)]

Impact Analysis: The potential impacts resulting from the Proposed Project within each of the areas of the Project Site are addressed below.

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Based on the relatively high existing impervious conditions and proposed land uses of the Midtown Specific Plan area, which generally would have proportional impervious areas equal to or less than existing conditions, project runoff is not anticipated to increase over existing conditions. Buildout of the Midtown Specific Plan would result in decreases in impervious areas in Districts 1, 2, and 3 of the Midtown Specific Plan area; and no net change in amounts of impervious areas in Districts 4 through 7 with the following exception. In areas where existing single-family residential uses would be redeveloped with multifamily residential uses, the percentage impervious area would increase from approximately 50 percent at present to approximately 85 percent after redevelopment. Existing single-family uses in the Midtown Specific Plan area are distributed in small clusters that are highly scattered – mostly across five of the seven districts – comprising between 6 to

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13 percent of the land area of each of those districts. The storm drain lines closest to clusters of single-family residences have sufficient capacity to accommodate minor increases in runoff while conveying stormwater from a 10-year storm, and redevelopment of some single-family residential uses with multifamily uses would not require upsizing of storm drains.

The existing City and LACFCD storm drain systems serving the Midtown Specific Plan area are not anticipated to change as a result of the Midtown Specific Plan, thereby making the 2005 MPD Update applicable to the proposed conditions (buildout of the Midtown Specific Plan). The City of Long Beach uses peak flow from a 10-year storm as its threshold below which existing drainage facilities require upsizing. In addition to the storm drain improvement recommendations outlined in the 2005 MPD Update, the City of Long Beach Public Works Department also identified the upsizing of all storm drain facilities within the Midtown Specific Plan area that are less than 24-inches to a minimum of 24-inches. The upsizing of these storm drain facilities would occur as development projects pursuant to the Midtown Specific Plan are implemented. Figure 13 (Midtown Project Area Storm Drain Improvements) of the Infrastructure Technical Report (see Appendix E) highlights all storm drain improvements as identified in the 2005 MPD Update and the upsizing of all pipes to a minimum of 24-inches or greater. The storm drain improvements would impact a variety of facilities within Development Districts 2, 3, 4, 5, 6, and 7 of the Midtown Specific Plan.

Buildout of the Midtown Specific Plan would require drainage improvements specified below in Section 5.7.7, *Mitigation Measures*, which are consistent with those outlined in the 2005 MPD Update and identified by the City of Long Beach Public Works Department. Additionally, through the incorporation of site design, LID features and BMPs as required under the City's SUSMP/LID design requirements, the individual development projects that would be accommodated by the Midtown Specific Plan would effectively retain or treat the 85th percentile 24-hour storm water runoff.

Therefore, the Midtown Specific Plan would not substantially alter the existing drainage pattern of the Midtown Specific Plan area or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site, nor would it create or contribute runoff water that would exceed the capacity of existing or planned storm water drainage systems.

Area Outside the Midtown Specific Plan

As noted above, with the exception of the zoning designation revisions that would be undertaken in this area of the Project Site under the Proposed Project, no physical change (e.g., additional development intensity, redevelopment) is expected to occur within this area and all existing uses are expected to remain. Therefore, no impacts are anticipated to occur.

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Impact 5.7-4: During the construction phase of development pursuant to the Proposed Project, there is the potential for short-term unquantifiable increases in pollutant concentrations from construction activities of the development projects. Upon the completion of individual development projects that would be accommodated by the Proposed Project, the quality of storm runoff (sediment, nutrients, metals, pesticides, pathogens, and hydrocarbons) may be altered. [Thresholds HYD-1 (part), HYD-5 (part), and HYD-6 (part)]

Impact Analysis: Impacts to water quality generally range over three different phases of a development project:

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

The Proposed Project may cause deterioration of water quality of downstream receiving waters if construction- and operation-related sediment or pollutants wash into the storm drain system and facilities. Following is a discussion of the potential water quality impacts resulting from the Proposed Project's construction and operational phases within each of the areas of the Project Site.

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Construction Phase

Construction-related runoff pollutants are typically generated from waste and hazardous materials handling or storage areas; outdoor work areas; material storage areas; and general maintenance areas (e.g., vehicle or equipment fueling and maintenance, including washing). Runoff during the construction-phase of development projects that would be accommodated by the Midtown Specific Plan may cause deterioration of water quality of downstream receiving waters if construction-related sediment or pollutants wash into the storm drain system and facilities.

However, prior to the issuance of grading permits, applicants of individual development projects of one acre or greater of soil disturbance would be required to comply with the most current GCP and associated local NPDES regulations to ensure that the potential for soil erosion is minimized on a project-by-project basis. In accordance with the GCP, the following Permit Registration Documents (PRDs) would be required to be submitted by project applicants to the SWRCB prior to commencement of construction activities:

- Notice of Intent (NOI)
- Risk Assessment (Standard or Site-Specific)
- Particle Size Analysis (if site-specific risk assessment is performed)

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- Site Map
- SWPPP
- Active Treatment System (ATS) Design Documentation (if ATS is determined necessary)
- Annual Fee and Certification

The Risk Assessment incorporates two risk factors for a project site: sediment risk (general amount of sediment potentially discharged from the site) and receiving water risk (the risk sediment discharges can pose to receiving waters). Since site-specific development projects are not being considered with the Midtown Specific Plan, a detailed site-specific Risk Assessment cannot currently be conducted. However, since the Midtown Specific Plan area is in a watershed considered to be a low-risk receiving water body, it is anticipated that construction projects subject to the GCP would not be greater than Risk Level 2. Based on the Risk Level a project falls under, different sets of regulatory requirements are applied to the site. The main difference between Risk Levels 1, 2, and 3 are the numeric effluent standards. The procedures for the risk assessments and the detailed description of the Risk Levels are provided in detail in the Infrastructure Technical Report included as Appendix E to this DEIR.

In accordance with the GCP, an SWPPP must be prepared and implemented for construction projects that include one acre or more of soil disturbance, and revised as necessary, as administrative or physical conditions change. The SWPPP must be made available for review upon request, describe construction BMPs that address pollutant source reduction, and provide measures/controls necessary to mitigate potential pollutant sources. These include, but are not limited to: erosion controls, sediment controls, tracking controls, non-storm water management, materials and waste management, and good housekeeping practices, which are briefly discussed below.

- Erosion control BMPs, such as hydraulic mulch, soil binders, and geotextiles and mats, protect the soil surface by covering and/or binding the soil particles. Temporary earth dikes or drainage swales may also be used to divert runoff away from exposed areas and into more suitable locations. If implemented correctly, erosion controls can effectively reduce the sediment loads entrained in storm water runoff from construction sites.
- Sediment controls are designed to intercept and filter out soil particles that have been detached and transported by the force of water. All storm drain inlets on or next to the project site should be adequately protected with an impoundment (i.e., gravel bags) around the inlet and equipped with a sediment filter such as a fiber roll. Impoundments and filters should also be placed around areas of soil disturbing activities, such as grading or clearing.
- Stabilize all construction entrance/exit points to reduce the tracking of sediments onto adjacent streets. Wind erosion controls should be used in conjunction with tracking controls.

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- Non-storm water management BMPs prohibit the discharge of materials other than storm water, as well as reduce the potential for pollutants from discharging at their source. Examples include avoiding paving and grinding operations during the wet season where feasible, and performing any vehicle equipment cleaning, fueling and maintenance in designated areas that are adequately protected and contained.
- Waste management consists of implementing procedural and structural BMPs for collecting, handling, storing and disposing of wastes generated by a construction project to prevent the release of waste materials into storm water discharges.

Prior to commencement of construction activities for development projects within the Midtown Specific Plan area, the project-specific SWPPP(s) are required to be prepared in accordance with the site-specific sediment risk analyses based on the grading plans, with erosion and sediment controls proposed for each phase of construction for the individual development projects. The phases of construction will define the maximum amount of soil disturbed, the appropriate sized sediment basins and other control measures to accommodate all active soil disturbance areas, and the appropriate monitoring and sampling plans.

SWPPPs require development projects to plan BMPs for four general phases of construction:

- grading and land development (that is, mass grading & rough grading)
- utility and road installation
- finish grading and building construction
- final stabilization and landscaping

Therefore, BMP implementation for new construction activities under the Midtown Specific Plan can be evaluated in this general context. Site-specific details on individual BMPs would be dependent on the scope and breadth of each development project, which are not known at this time.

Rough Grade

During rough grading, substantial soil disturbing activities or earthwork could occur; thus, this construction phase entails the highest risks of erosion and/or sedimentation. Therefore, an effective combination of erosion and sediment controls must be implemented during this phase of construction. Active exposed areas need to have sufficient supply of standby erosion and sediment control BMPs stored onsite to protect all active exposed areas to reduce or prevent sediment discharges. The total active exposed area is not permitted to exceed that which can be adequately protected by deploying these BMPs prior to a predicted rain event. Inactive exposed areas not being actively worked on are required to be protected from erosion with temporary or permanent erosion and sediment control BMPs. Such BMPs are required to be deployed, not just stored on standby ready for deployment.

Utility and Road Installation

In addition to the erosion and sediment control BMP requirements for the grading phase, the utility and road installation phase would introduce materials to the individual development sites that may exceed concentration limits specified in the GCP. Materials include, but are not limited to hydrated lime, concrete, mortar, Portland cement treated base, and fly ash. For this reason, pH levels must be controlled at this stage

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through non-storm water management and waste and materials management BMPs. Stockpile management would also be important due to the trenching activities involved in utility installation. Should such limits be exceeded, additional site management or “good housekeeping” BMPs would be required to be implemented and the source of pollution controlled.

Building Construction

Once utilities and roads are in place, infrastructure including curb and gutter, catch basins, and storm drains convey runoff off-site; thus, sediment controls (such as sediment/desilting basins) used in the rough grade phase may no longer be needed. BMPs at this stage would therefore be more focused on on-lot sediment control BMPs and at discharge points, such as catch basin inlet protection. During building construction, a substantial amount of construction materials would be delivered to an individual development site, and wastes generated onsite could impact pH levels. Therefore, non-storm water management and waste and materials management BMPs would be required to be employed regularly.

Final Stabilization and Landscaping

During final stabilization and landscaping on individual development sites, minimal construction would be taking place and the majority of the site would be stabilized. The majority of activities would involve planting and landscaping lots and common areas. The main BMPs used at this stage would be sediment control at discharge locations and stockpile management, and good housekeeping practices would continue in this phase of construction.

Conclusion

With compliance of the most current GCP and associated local NPDES regulations, water quality and waste-discharge impacts from project-related grading and construction activities are not anticipated to occur.

Operational Phase

With the proposed land use changes, development under the Midtown Specific Plan may result in long-term impacts to the quality of storm water and urban runoff, subsequently impacting downstream water quality. It can potentially create new sources for runoff contamination through changing land uses. As a consequence, the Midtown Specific Plan may have the potential to increase the postconstruction pollutant loadings of certain constituent pollutants, which are discussed below, associated with the proposed land uses and their associated features.

Pathogens (bacteria and viruses)

Elevated pathogen levels are typically caused by the transport of human or animal fecal wastes in runoff. Runoff that flows over land such as urban runoff can mobilize pathogens, including bacteria and viruses. Even runoff from natural areas can contain pathogens (e.g., from wildlife, plant matter, and soils). Other sources of pathogens in urban areas include pets and leaky sanitary sewer pipes. The presence of pathogens in runoff can impair receiving waters. Total and fecal coliform, enterococcus bacteria, and *E. coli* bacteria are commonly used as indicators for pathogens due to the difficulty of monitoring pathogens directly.

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Metals

The primary sources of trace metals in storm water are metals typically used in transportation, buildings and infrastructure, paints, fuels, adhesives, and coatings. Copper, lead, and zinc are the most prevalent metals typically found in urban runoff. Other trace metals, such as cadmium, chromium, and mercury are typically detected at very low levels, or not detected, in urban runoff. Trace metals can be toxic to aquatic life and can contaminate groundwater.

Nutrients

Nutrients are inorganic forms of phosphorous and nitrogen. The main sources of nutrients in urban areas include fertilizers in lawns, pet wastes, failing septic systems, and atmospheric deposition from automobiles and industrial operations. The most common impacts of excessive nutrient concentrations are excessive algal production, hypoxia or anoxia, and fish kills (these effects taken together are termed “eutrophication”), as well as potential releases of toxins from sediment due to changes in water chemistry.

Pesticides

Pesticides (including herbicides) are chemical compounds commonly used to control insects, rodents, plant diseases, and weeds. Excessive application of a pesticide or impractical application of pesticides (i.e., right before rain events) may result in runoff containing toxic levels to receiving water bodies and microorganisms.

Organic Compounds

Organic compounds are carbon-based, and are typically found in pesticides, solvents, and hydrocarbons. Dirt, grease, and other particulates can also adsorb organic compounds in rinse water from the cleaning of objects, and can be harmful or hazardous to aquatic life either indirectly or directly.

Sediments

Sheet erosion and the transport and deposition of sediment in surface waters can be a significant form of pollution. Increases in runoff velocities and volumes can cause excessive erosion and sediment transport. Excessive fine sediment can impair aquatic life through light reduction, temperature changes, etc.

Trash and Debris

Improperly disposed or handled trash such as paper, plastics and debris including the biodegradable organic matter such as leaves, grass cuttings, and food waste can accumulate on the ground surface where it can be entrained in urban runoff. Large amount of trash and debris can significantly degrade the recreational value of a water body. Excessive organic matter can create a high biochemical oxygen demand in a stream and lower its water quality.

Oxygen-Demanding Substances

Oxygen-demanding substances include biodegradable organic material as well as chemicals that react with dissolved oxygen in water to form other compounds, such as proteins, carbohydrates, fats, as well as ammonia and hydrogen sulfide. The oxygen demand of a substance can lead to depletion of dissolved oxygen in a

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water body and possibly the development of septic conditions, resulting in the growth of undesirable organisms and the release of odorous and hazardous compounds.

Oil and Grease

Oil and grease in water bodies decreases their aesthetic value as well as water quality; one of the most important sources of oil and grease is leakage from motor vehicles. The most common sources of oil and grease in urban runoff are spilled fuels and lubricants; discharge of domestic and industrial wastes; atmospheric deposition; and runoff. Runoff can contain liquids leached from roads; tire/rubber debris; and automobile exhaust. Some petroleum hydrocarbons, such as polycyclic aromatic hydrocarbons (PAHs), can bioaccumulate in aquatic organisms and are toxic at low concentrations. Hydrocarbons can persist in sediment for long periods and can result in adverse impacts on the diversity and abundance of organisms in sediments on the bottoms of water bodies.

MS4 Permit Requirements

To help prevent long-term impacts associated with development that would occur under the Midtown Specific Plan and in accordance with the requirements of the City of Long Beach and its MS4 permit (Order No. R4-2014-0024), new development and significant redevelopment projects must incorporate site design/LID and source control BMPs to address post-construction storm water runoff management. Source control BMPs reduce the potential for pollutants to enter runoff. In addition, development projects that are identified as priority projects are required to implement site design/LID and source control BMPs applicable to their specific priority project categories, as well as implement treatment control BMPs where necessary. Selection of LID and additional treatment control BMPs is based on the pollutants of concern for the specific development site and the BMP's ability to effectively treat those pollutants, in consideration of site conditions and constraints. Further, development projects must include a project-specific SUSMP or LID Design Plans that describes the menu of BMPs chosen for the project, as well as include operation and maintenance requirements for all structural and any treatment control BMPs.

Since the Midtown Specific Plan does not include a specific or detailed development project, project-specific SUSMPs were not developed for the Midtown Specific Plan at this time. Future project-specific reports, preliminary and/or final, would be required to be prepared consistent with the prevailing terms and conditions of the City's LID Ordinance (Ordinance No. ORD-2013-0024) and LID BMP Design Manual (2013) at the time a development project is formally submitted to the City for review. Moreover, LID and water quality treatment solutions prescribed in project-specific reports are required to be designed to support or enhance the regional BMPs and efforts implemented by the City as part of their City-wide efforts to improve water quality.

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SUSMP / LID Design Approach

The overall approach to water quality treatment for individual development projects that would be accommodated by the Midtown Specific Plan would include incorporation of site design/LID strategies and source control measures throughout the development sites to provide treatment of storm water and reduce runoff. In accordance with the City's MS4 Permit, the use of LID features would be consistent with the prescribed hierarchy of treatment provided in the MS4 Permit: infiltration, evapotranspiration, harvest/reuse and biotreatment. For those areas of development sites where LID features are not feasible, treatment control BMPs with biotreatment enhancement design features would be utilized to provide treatment. Where applicable, LID features would be analyzed to demonstrate their ability to treat portions of the required design capture volume (DCV) and reduce the size of downstream onsite treatment control BMPs.

Consistent with regulatory requirements and design guidelines for water quality protection, the following principles would be applied to individual development projects and would be supported by construction level documents in the final SUSMP plan prior to grading permit(s) issuance by the City of Long Beach:

- Where feasible, LID features will be sized for water quality treatment credit according to local Regional Board sizing criteria as defined in the MS4 Permit for either flow-based or volume-based BMPs. There will be a significant effort to integrate LID techniques within the internal development areas (site design objectives), thereby reducing runoff from small storms and treating such runoff at the source. In most instances, LID features will be sized for the required design capture volume for the project.
- Detailed field investigations, drainage calculations, grading, and BMP sizing to occur during the detailed design phase and future project-specific SUSMP documentation.
- Where feasible, LID features will be designed to infiltrate and/or reuse treated runoff on-site in accordance with feasibility criteria as defined in the LID BMP Design Manual (City of Long Beach Development Services).
- For those areas of the project where infiltration is not recommended or acceptable and harvest/reuse landscaping demands are insufficient, biotreatment LID features will be designed to treat runoff and discharge controlled effluent flows to downstream receiving waters.

Unlike flood control measures that are designed to handle peak storm flows, LID BMPs and treatment control BMPs are designed to retain, filter or treat more frequent, low-flow runoff or the "first-flush" runoff from storm events. In accordance with the City's MS4 Permit, the LID BMPs would be required to be sized and designed to ensure onsite retention of the volume of runoff produced from a 24-hour 85th percentile storm event. This is termed the "design capture volume", or DCV. The 85th Percentile for the northern half of the Midtown Specific Plan area is 0.7 inches while the 85th Percentile event for the southern half of the Midtown Specific Plan area is 0.6 inches. The City's LID BMP Design Manual provides design criteria, hydrologic methods and calculations for combining use of infiltration, retention, and biofiltration BMPs to meet onsite volume retention requirements.

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Water Quality Opportunities and Conclusion

In an effort to create enhanced mobility and complete streets as one of the Midtown Specific Plan's guiding principles, the design elements (termed "catalysts") specified in the Midtown Specific Plan to accomplish this goal also creates potential opportunities to incorporate LID practices into public spaces and right-of-ways. By redesigning corridors such as Long Beach Boulevard to prioritize walking, bicycling, and other non-vehicular modes of transportation, this would create opportunities for implementing pervious pavement as hardscape within areas with low vehicular traffic and light traffic loads, such as the widened sidewalks, enhanced crosswalks, and separated bike lanes proposed. Canopy trees and potted plants in the designs of small streetscape elements can serve a dual purpose as storm water planter areas for biofiltration.

The reclaiming of unused or very low volume segments of roadways to convert to parklets can create significant (e.g. quarter of an acre) areas or zones for storm water retention and runoff reduction. This can be accomplished by removing existing impervious surfaces and replacing with permeable pavers, grading hardscape to drain to landscaped parks for infiltration and evapotranspiration, and utilizing proposed landscape buffer zones for biofiltration.

It should be noted that with public improvements, especially within the right-of-way, biofiltration BMPs are generally more feasible to integrate than infiltration LID BMPs due to infrastructure constraints such as existing underground utilities to remain in place and the limited footprint available. Therefore, these opportunities to incorporate water quality features should not be looked at as regional treatment facilities but, instead, as small-scale hydrologic source control LID measures.

Through the incorporation of site design, LID features and BMPs as required under the City's SUSMP/LID design requirements, the individual development projects that would be accommodated by the Midtown Specific Plan would effectively retain or treat the 85th percentile 24-hour storm water runoff for pollutants such as bacteria, metals, nutrients, oil and grease, organics, pesticides, sediment, trash, and oxygen demanding substances prior to discharge offsite. As more and more properties within the Midtown Specific Plan area undergo development and redevelopment as part of the Midtown Specific Plan build-out, properties not previously subject to the current land development provisions would be required to incorporate SUSMP/LID standards.

Therefore, long-term surface water quality of runoff from the Midtown Specific Plan area would be expected to improve over existing conditions as more LID BMPs are implemented throughout the Midtown Specific Plan area. This is considered an overall beneficial effect of the Midtown Specific Plan and no significant adverse water quality impacts is anticipated to occur.

Area Outside the Midtown Specific Plan

As noted above, with the exception of the zoning designation revisions that would be undertaken in this area of the Project Site under the Proposed Project, no physical change (e.g., additional development intensity, redevelopment) is expected to occur within this area and all existing uses are expected to remain. Therefore, no water quality impacts are anticipated to occur.

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5.7.4 Cumulative Impacts

The areas considered for cumulative impacts to hydrology and water quality are the Los Angeles Watershed for drainage and water quality impacts, and the Los Angeles West Coast Basin for groundwater impacts.

Drainage

Other cumulative development projects in the Los Angeles Watershed would increase impervious areas on the affected project sites and thus could increase runoff. However, other cumulative development projects would be mandated to conform to requirements of MS4 Permit No. R4-2012-0175 issued by the LARWQCB in 2012, covering coastal watersheds in Los Angeles County outside the City of Long Beach. Water-quality requirements for operation of developed land uses in the unincorporated areas of the county are in the LID Standards Manual issued by the Los Angeles County Department of Public Works in 2013. In addition, various cities within the portion of Los Angeles County in LARWQCB's jurisdiction have set forth their own water quality requirements as co-permittees under the aforementioned MS4 Permit.

Other cumulative development projects in the City that would be accommodated by the Long Beach General Plan would also increase impervious areas on the affected project sites and thus could increase runoff and the amount and type of pollutants. However, as with development projects that would be accommodated by the Proposed Project, each cumulative development project would be mandated to conform to requirements of the City's MS4 Permit and SUSMP/LID design requirements.

Furthermore, other cumulative development projects in the City and county would be required to preserve a site's predevelopment hydrology, as verified by a site-specific hydrology study; or, where that were infeasible, to minimize stormwater contamination through biotreatment.

Therefore, the Proposed Project would not combine with other cumulative development projects to result in drainage impacts; as a result, cumulative impacts would be less than significant.

Groundwater

The use of LID measures for other cumulative development projects in the City and county would minimize the net increase in impervious areas where feasible, and therefore, would minimize interference with groundwater recharge. Therefore, the Proposed Project would not combine with other cumulative development projects to result in groundwater impacts; as a result, cumulative impacts would be less than significant.

Water Quality

Other cumulative development projects in Los Angeles County and the City could increase the generation of water contaminants of the types listed above under Impact 5.7-4. However, other cumulative development projects in the part of the county in LARWQCB's jurisdiction would be required to comply with MS4 Permits R4-2012-0175 (outside of the City of Long Beach) and R4-2014-0024 (in the City of Long Beach). Other cumulative development projects would be required to implement LID measures where feasible; or other measures, such as biotreatment, where LID measures were infeasible. Additionally, in order to obtain

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coverage under the statewide GCP, all construction projects of one acre or larger in California must prepare and implement a SWPPP specifying BMPs to be implemented during construction.

As with development projects that would be accommodated by the Proposed Project, other cumulative development projects would be required to comply with regulatory requirements for minimizing water pollution. Therefore, the Proposed Project would not combine with other cumulative development projects to result in water quality impacts; as a result, cumulative impacts would be less than significant.

5.7.5 Existing Regulations

- United States Code, Title 33, Sections 1251 et seq.: Clean Water Act
- Code of Federal Regulations Title 40 Parts 122 et seq.: National Pollutant Discharge Elimination System (NPDES)
- California Water Code Sections 13000 et seq.: Porter-Cologne Water Quality Act
- Statewide General Construction Permit (Order No. 2009-0009-DWQ) and its subsequent revisions (Order No. 2012-0006-DWQ)
- Los Angeles Regional Water Quality Control Board Order No. R4-2014-0024: MS4 Permit, City of Long Beach

5.7.6 Level of Significance Before Mitigation

Upon implementation of regulatory requirements, the following impacts would be less than significant: 5.7-1, 5.7-2, and 5.7-4.

Without mitigation, the following impacts would be **potentially significant**:

- Impact 5.7-3 Development pursuant to the Proposed Project would increase the amount of impervious surfaces on the Project Site and would therefore increase surface water flows into drainage systems within the watershed.

5.7.7 Mitigation Measures

Impact 5.7-3

HYD-1 Prior to the issuance of grading or building permits for any development or redevelopment projects pursuant to the Midtown Specific Plan, the City of Long Beach shall ensure that the following drainage improvements are fully funded for and implemented:

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- Any development or redevelopment project that would impact existing storm drain facilities within the Midtown Specific Plan area (public and private) that is less than 24-inches in size shall fully fund upsizing of such facilities to a minimum 24-inch pipe size or greater dependent upon the location and size of the development or redevelopment project. The increase in pipe size will serve to reduce localized flooding.
- Any development or redevelopment project that would impact the two segments of City of Long Beach’s storm drains in Willow Street for which improvements were recommended by the 2005 Master Plan of Drainage Update shall fully fund upsizing of those storm drain segments to 36 inches or other final size as prescribed by City of Long Beach Public Works Department.

HYD-2 Prior to the issuance of grading or building permits for any development or redevelopment projects pursuant to the Midtown Specific Plan, project applicants/developers of such projects shall prepare a site-specific hydrology and hydraulic study of the onsite and immediate offsite storm drain systems to determine capacity and integrity of the existing systems. The hydrology and hydraulic study shall be submitted to City of Long Beach Public Works Department for review and approval.

HYD-3 The project applicant/developer of each development or redevelopment project that would be accommodated by the Midtown Specific Plan shall request the “allowable discharge rate” – which limits peak flow discharges as compared to existing conditions based on regional flood control constraints – from the Los Angeles County Department of Public Works, and shall comply with such discharge rate. Compliance with the “allowable discharge rate” shall be demonstrated in the hydrology and hydraulic study to be completed pursuant to Mitigation Measure HYD-2.

HYD-4 The project applicant/developer, architect, and construction contractor for each development or redevelopment project that would be accommodated by the Midtown Specific Plan shall incorporate low-impact development (LID) best management practices (BMPs) within the respective project, providing for water quality treatment and runoff reduction and/or detention in accordance with local stormwater permit requirements.

5.7.8 Level of Significance After Mitigation

Impacts 5.7-1, 5.7-2, and 5.7-4

Compliance with regulatory requirements would reduce impacts to a less than significant level. Therefore, no significant unavoidable adverse impacts have been identified.

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Impact 5.7-3

Compliance with regulatory requirements and implementation of mitigation measures identified above would reduce impacts to a less than significant level. Therefore, no significant unavoidable adverse impacts have been identified.

5.7.9 References

- Central Basin Municipal Water District (CBMWD). 2012, February 21. 2010 Urban Water Management Plan. <http://www.water.ca.gov/urbanwatermanagement/2010uwmps/Central%20Basin%20Municipal%20Water%20District/2010%20UWMP.pdf>.
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- Los Angeles Regional Water Quality Control Board (LARWCB). 2014, March 28. Waste Discharge Requirements for Municipal Separate Storm Sewer System Discharges from the City of Long Beach: Order No. R4-2014-0024. <http://www.longbeach.gov/civica/filebank/blobdload.asp?BlobID=40507>.
- San Francisco Bay Regional Water Quality Control Board (SFBRWQCB). 2015, May 21. Chapter 2: Beneficial Uses. http://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/planningtmdls/basinplan/web/bp_ch2.shtml#2.1.13.
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- Water Replenishment District of Southern California (WRD). 2013, October 15. Safe Drinking Water Program. http://www.wrd.org/safe_drinking_water_2013_10_15.pdf.