5.11 HYDROLOGY AND WATER QUALITY

This section describes the hydrologic and water quality setting of the project site and applicable off-site areas, and evaluates the potential for impacts to drainage, runoff (including hydromodification), groundwater, and water quality conditions from implementation of the Project.

This EIR tiers from the Previous Environmental Review Documents, as described in Chapter 2.0, *Introduction*. The 2013 SEIR did not address hydrology and water quality but relied on analysis in the 1993 Program EIR for the GDP (EIR 90-01). Section 3.9, *Water Resources and Water Quality*, of the 1993 Program EIR analyzed the potential impacts related to hydrology and water quality for the entire Otay Ranch GDP, including the Main Campus Property. This analysis concluded that implementation of the GDP would result in significant but mitigable environmental impacts to regional hydrologic and water quality conditions and is hereby incorporated by reference. The measures applicable to the UID project include requiring site-specific hydrology studies and BMP implementation at the SPA Plan level, implementing plans provided in the 1991 Urban Runoff/Reservoir Study by Baldwin Vista, compliance with all applicable runoff and stormwater discharge regulations, requiring additional studies related to groundwater recharge, and future compliance with an Urban Runoff Master Plan for Otay Lakes. It is noted, however, that no previous mitigation measures are incorporated by reference because the reports related to the current Project include updated mitigation measures that are equivalent to or more efficient than measures included in previous environmental review. Section 4.4, *Hydrology/Drainage*, of the 2001 SEIR (01-01) analyzed potential impacts associated with implementation of the EastLake III SPA, including the Lake Property. These analyses concluded that potentially significant impacts could be reduced to a level below significance by requiring compliance with applicable federal, state and City regulations related to stormwater runoff with future development plans and are herein incorporated by reference.

Information contained in this section is based on site-specific technical reports related to hydrology and water quality, prepared by Rick Engineering, including a site-specific *Water Quality Technical Report and Hydromodification Management Plan* (Appendix H) and a *Drainage Study* (Appendix I). The technical reports update the applicable information contained in the SEIRs. It should be noted that the Water Quality Technical Report (WQTR) was prepared in September 2015, prior to the 2016 City of Chula Vista BMP Design Manual, and does not reflect the format of a Priority Development Project Storm Water Quality Management Plan (PDP SWQMP). However, the WQTR incorporates the design requirements based on the 2013 Municipal Separate Stormwater Systems (MS4) Permit (Order No, R9-2013-0001, as amended by Order Nos. R9-2015-0001 and R9-2015-0100). For the purposes of this report, the WQTR will herein be referred to throughout this section as a PDP SWQMP to reflect current nomenclature related to water quality.

5.11.1 Existing Conditions

A. Regulatory Framework

1. Federal

a. The Clean Water Act

The Clean Water Act (CWA) (33 U.S.C. 1251–1376), as amended by the Water Quality Act of 1987, is the major federal legislation governing water quality. The objective of the CWA is "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." Important sections of the Act are as follows:

- Sections 303 and 304 provide for water quality standards, criteria, and guidelines.
- Section 401 (Water Quality Certification) requires an applicant for any federal permit that proposes an activity, which may result in a discharge to waters of the United States, to obtain certification from the state that the discharge will comply with other provisions of the Act.
- Section 402 establishes the National Pollutant Discharge Elimination System (NPDES), a permitting system for the discharge of any pollutant (except for dredged or fill material) into waters of the United States. This permit program is administered by the State Water Resources Control Board (SWRCB).
- Section 404 establishes a permit program for the discharge of dredged or fill material into waters of the United States. This permit program is jointly administered by the ACOE and the USEPA.

b. National Pollution Discharge Elimination System Permits

The NPDES permit system was established under the federal CWA to regulate both point and nonpoint source discharges to surface Waters of the U.S. The NPDES program characterizes receiving water quality, identifies harmful constituents, targets potential sources of pollutants, and implements a comprehensive storm water management program. In California, the SWRCB and the nine statewide RWQCBs administer the NPDES permit program, pursuant to authority delegated by the USEPA. Specifically, as outlined below under the discussion of State Requirements, construction activities are typically regulated under statewide general permits issued by the SWRCB, while municipal permits for operational activities and groundwater extraction permits (along with individual waste discharge requirements [WDRs]) are issued by the individual RWQCBs. These permits are typically implemented by the local permittees (e.g., the City of Chula Vista) with direction and oversight by the SWRCB and/or RWQCBs, including the San Diego RWQCB for the proposed project area (hereafter referred to as the RWQCB).

c. Federal Antidegradation Policy

The federal antidegradation policy is designed to protect water quality and water resources. The policy directs states to adopt a statewide policy that includes the following primary provisions:

(1) existing instream uses and the water quality necessary to protect those uses shall be maintained and protected; (2) where existing water quality is better than necessary to support fishing and swimming conditions, that quality shall be maintained and protected unless the state finds that allowing lower water quality is necessary for important local economic or social development; and (3) where high-quality waters constitute an outstanding national resource, such as waters of national and state parks, wildlife refuges, and waters of exceptional recreational or ecological significance, that water quality shall be maintained and protected.

d. Safe Drinking Water Act

Under the Safe Drinking Water Act (SDWA) (Public Law 93-523), passed in 1974, the USEPA regulates contaminants of concern to domestic water supply. Contaminants of concern relevant to domestic water supply are defined as those that pose a public health threat or that alter the aesthetic acceptability of the water. These types of contaminants are regulated by the USEPA primary and secondary maximum contaminant levels (MCLs). MCLs and the process for setting these standards are reviewed triennially. Amendments to the SDWA enacted in 1986 established an accelerated schedule for setting drinking water MCLs.

e. Federal Emergency Management Agency

The City of Chula Vista and San Diego County are participants in the National Flood Insurance Program (NFIP), a federal program administered by the Federal Emergency Management Agency (FEMA). Participants in the NFIP must satisfy certain mandated floodplain management criteria. The National Flood Insurance Act of 1968 adopted a desired level of protection that would protect developments from floodwater damage associated with an Intermediate Regional Flood, a flood which is defined as a flood having an average frequency of occurrence on the order of once in 100 years, although such a flood may occur in any given year.

2. State

a. Porter-Cologne Water Quality Control Act

The Porter–Cologne Water Quality Control Act (California Water Code Section 13000 et seq.) provides the basis for water quality regulation within California. The act requires a “Report of Waste Discharge” for any discharge of waste (liquid, solid, or otherwise) to land or surface waters that may impair a beneficial use of surface or groundwater of the state.

b. State Water Resources Control Board and Regional Water Quality Control Board

The SWRCB administers water rights, water pollution control, and water quality functions throughout the state, while the Regional Water Quality Control Boards (RWQCBs) conduct planning, permitting, and enforcement activities. The proposed project area lies within the jurisdiction of the San Diego Regional Water Quality Control Board (SDRWQCB).

The SDRWQCB uses planning, permitting, and enforcement authorities to meet this responsibility, and has adopted the Water Quality Control Plan for the San Diego Basin (Basin Plan; SDRWQCB 2011) to implement plans, policies, and provisions for water quality management. The Basin Plan was prepared in compliance with the federal CWA and the state Porter–Cologne Water Quality

Control Act. The Basin Plan establishes beneficial uses for major surface waters and their tributaries, water quality objectives that are intended to protect the beneficial uses, and implementation programs to meet stated objectives.

State and federal laws mandate the protection of designated beneficial uses of water bodies. State law defines beneficial uses as "domestic; municipal; agricultural and industrial supply; power generation; recreation; aesthetic enjoyment; navigation; and preservation and enhancement of fish, wildlife, and other aquatic resources or preserves" (Water Code Section 13050[f]). Beneficial uses are generally defined in the Basin Plan as "the uses of water necessary for the survival or well-being of man, plus plants and wildlife." Identified existing and potential beneficial uses for the project site and applicable downstream portions of the Otay River, Lower Otay Reservoir, and associated coastal areas include the following (with additional description provided in the project PDP SWQMP included as Appendix H of this EIR): municipal and domestic supply (MUN); agricultural supply (AGR); industrial service supply (IND); industrial process supply (PROC); contact and non-contact water recreation (REC 1 and REC 2); warm and cold freshwater habitat (WARM and COLD); wildlife habitat (WILD); and rare, threatened or endangered species (RARE). Identified beneficial uses for local groundwater resources include MUN, AGR and IND. Water quality objectives identified in the Basin Plan are based on established beneficial uses and are defined as "the limits or levels of water quality constituents or characteristics which are established for the reasonable protection of beneficial uses."

c. General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit)

Construction activities exceeding one acre (or meeting other applicable criteria) are subject to pertinent requirements under the Construction General Permit. This permit was issued by the SWRCB (pursuant to authority delegated by the USEPA), as NPDES No. CAS000002 and SWRCB Order 2009-0009-DWQ (as amended by Order Nos. 2010-0014-DWQ and 2012-0006-DWQ). Specific conformance requirements include implementing a SWPPP, an associated CSMP, employee training, and minimum BMPs, as well as a REAP for applicable projects (e.g., those in Risk Categories 2 or 3, as outlined below). Under the Construction General Permit, project sites are designated as Risk Level 1 through 3 based on site-specific criteria (e.g., sediment erosion and receiving water risk), with Risk Level 3 sites requiring the most stringent controls. Based on the site-specific risk level designation, the SWPPP and related plans/efforts identify detailed measures to prevent and control the off-site discharge of pollutants in storm water runoff. Depending on the risk level, these may include efforts such as minimizing/stabilizing disturbed areas, mandatory use of technology-based action levels, effluent and receiving water monitoring/reporting, and advanced treatment systems (ATS). Specific pollution control measures require the use of best available technology economically achievable (BAT) and/or best conventional pollutant control technology (BCT) levels of treatment, with these requirements implemented through applicable BMPs. While site-specific measures vary with conditions such as risk level, proposed grading, and slope/soil characteristics, detailed guidance for construction-related BMPs is provided in the permit and related City standards (as outlined below), as well as additional sources including the USEPA National Menu of Best Management Practices for Storm Water Phase II – Construction (USEPA 2013), and Storm Water Best Management Practices Handbooks (California Stormwater Quality Association [CASQA] 2009). Specific requirements for the proposed project under this

permit would be determined during SWPPP development, after completion of project plans and application submittal to the SWRCB.

d. General Groundwater Extraction Discharges to Surface Waters Permit

If project-related construction activities entail the discharge of extracted groundwater into receiving waters, the coverage under the General Groundwater Extraction Discharges to Surface Waters Permit (Groundwater Permit; NPDES No. CAG919003, Order No. R9-2015-0013) would be required. Conformance with the Groundwater Permit is generally applicable to all temporary and certain permanent groundwater discharge activities, with exceptions as noted in the permit. Specific requirements for permit conformance include: (1) submittal of appropriate application materials and fees; (2) implementation of pertinent (depending on site-specific conditions) monitoring/testing, disposal alternative, and treatment programs; (3) provision of applicable notification to the associated local agency prior to discharging to a municipal storm drain system; (4) conformance with appropriate effluent standards (as outlined in the permit); and (5) submittal of applicable documentation (e.g., monitoring reports).

e. Waste Discharge Requirements for Municipal Separate Storm Sewer Systems Permit

The current MS4 Permit (Municipal Permit) became effective for listed co-permittees, including the City of Chula Vista, on June 27, 2013 (NPDES No. CAS 0109266, Order No. R9-2013-0001, as amended by Order Nos. R9-2015-0001 and R9-2015-0100). The Municipal Permit implements a regional strategy for water quality and related concerns and mandates a watershed-based approach that often encompasses multiple jurisdictions. The overall permit goals include: (1) providing a consistent set of requirements for all MS4 co-permittees; and (2) allowing the co-permittees to focus their efforts and resources on achieving identified goals and improving water quality, rather than just completing individual actions (which may not adequately reflect identified goals). Under this approach, the co-permittees are tasked with prioritizing their individual water quality concerns, as well as providing implementation strategies and schedules to address those priorities. Municipal Permit conformance entails considerations such as receiving water limitations (e.g., Basin Plan criteria as outlined below), waste load allocations (WLAs), and numeric water quality based effluent limitations (WQBELs). Specific efforts to provide permit conformance and reduce runoff and pollutant discharges to the maximum extent practicable (MEP) involve methods such as: (1) using jurisdictional planning efforts (e.g., discretionary general plan approvals) to provide water quality protection; (2) requiring coordination between individual jurisdictions to provide watershed-based water quality protection; (3) implementing appropriate BMPs, including Low Impact Development (LID) measures, to avoid, minimize and/or mitigate effects including increased erosion and sedimentation, hydromodification1 and the discharge of pollutants in urban runoff; and (4) using appropriate monitoring/assessment, reporting, and enforcement efforts to ensure proper implementation, documentation, and (as appropriate) modification of permit requirements.

[1] Hydromodification is generally defined in the Municipal Permit as the change in natural watershed hydrologic processes and runoff characteristics (interception, infiltration, and overland/groundwater flow) caused by urbanization or other land use changes that result in increased stream flows and sediment transport.

f. State Nondegradation Policy

In 1968, as required under the federal antidegradation policy described previously, the SWRCB adopted a nondegradation policy aimed at maintaining high quality for waters in California. The nondegradation policy states that the disposal of wastes into state waters shall be regulated to achieve the highest water quality consistent with maximum benefit to the people of the state and to promote the peace, health, safety, and welfare of the people of the state. The policy provides as follows:

a) Where the existing quality of water is better than required under existing water quality control plans, such quality would be maintained until it has been demonstrated that any change would be consistent with maximum benefit to the people of the state and would not unreasonably affect present and anticipated beneficial uses of such water.

Any activity which produces waste or increases the volume or concentration of waste and which discharges to existing high-quality waters would be required to meet waste discharge requirements which would ensure (1) pollution or nuisance would not occur and (2) the highest water quality consistent with the maximum benefit to the people of the state would be maintained.

g. California Toxics Rule

In May 2000, the SWRCB adopted and CalEPA approved the California Toxics Rule (CTR), which establishes numeric water quality criteria for approximately 130 priority pollutant trace metals and organic compounds. The SWRCB subsequently adopted its State Implementation Policy (SIP) of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries. The SIP outlines procedures for NPDES permitting for toxic pollutant objectives that have been adopted in Basin Plans and in the CTR.

3. Local

a. Chula Vista Standard Urban Storm Mitigation Plan

All development projects will be required to meet NPDES standards and incorporate BMPs, as defined by the City of Chula Vista's Standard Urban Storm Mitigation Plan (SUSMP). Pursuant to the San Diego RWQCB Municipal Permit, and the City of Chula Vista Storm Water Management Standards Requirements Manual, which includes the SUSMP, all development and redevelopment located within or directly adjacent to or discharging directly to an environmentally sensitive area (as defined in the Municipal Permit and the Local SUSMP), are required to implement site design, source control, and treatment control BMPs.

b. City of Chula Vista BMP Design Manual

The City adopted a jurisdiction-specific BMP Design Manual (BMP Manual, City of Chula Vista 2017) to reflect related NPDES standards, as well as the associated Model BMP Manual for the San Diego Region (Project Clean Water 2016). The BMP Manual identifies construction and post-construction storm water requirements for Standard Projects and Priority Development Projects (PDPs), with the proposed Project constituting a PDP (Rick Engineering 2015b). Specifically, the BMP Manual identifies regulatory requirements and provides detailed performance standards and

monitoring/maintenance efforts for: (1) construction BMPs; (2) overall storm water management design; (3) LID site design and source control BMPs applicable to all projects; (4) pollutant (or treatment) control and hydromodification management BMPs applicable to PDPs; (5) operation and maintenance requirements for applicable BMPs; and (6) specific direction and guidance to provide conformance with City and related NPDES storm water standards.

c. City of Chula Vista Municipal Code Section 14.20, Storm Water Management and Discharge Control

Applicable requirements in Section 14.20 if the CVMC reflect the previously described NPDES standards and incorporate the related City BMP Design Manual by reference. This section of the CVMC is intended to promote the health, safety, and general welfare of the citizens of the City of Chula Vista by prohibiting non-storm water discharges to the storm water conveyance system, preventing discharges to the storm water conveyance system from disposal of materials other than storm water, and reducing pollutants in storm water discharges to the MEP to provide conformance with water quality objectives for surface waters. This ordinance specifically prohibits non-storm water discharges and illegal connections to the storm water conveyance system, as well as any discharge that would result in a violation of an NPDES permit.

d. City of Chula Vista General Plan

The Chula Vista General Plan Public Facilities and Services (PFS) and Environmental Elements address drainage facilities and the protection of water quality. Specifically, the Public Facilities and Services Element includes the following objectives and policies related to drainage and water quality: (1) Objective PFS 1, *Ensure adequate and reliable…drainage service and facilities, with related policies to adequately plan/design new drainage facilities, upgrade existing drainage facilities when applicable, and provide appropriate storm water management*; and (2) Objective PFS 2, *Increase efficiencies in…handling storm water runoff throughout the City through use of alternative technologies, with related policies to assure that drainage facilities provide appropriate storm water runoff and sediment control (including through the use of state-of-the-art technology), and limit the disruption natural landforms and water bodies through (for example) using natural channels that simulate natural drainage ways*. In addition, the Environmental Element includes the following objectives and policies related to drainage and water quality: (1) Objective E 2, *Protect and improve water quality within surface water bodies and groundwater resources within and downstream of Chula Vista*, with related policies to protect water quality though appropriate land use management, reduction of pollutants and toxics in urban runoff, public education, regulatory compliance, and collaborative watershed protection; and (2) Objective E 15, *Minimize the risk of injury and property damage associated with flood hazards, with related policies to preclude unsuitable development and require hydrologic analyses for proposed development in areas susceptible to flood hazards, implement associated measures deemed necessary by the City Engineer, and remove or eliminate existing facilities and activities determined to be unsuitable for flood hazard areas*.

e. Zoning Code and Growth Management Ordinance

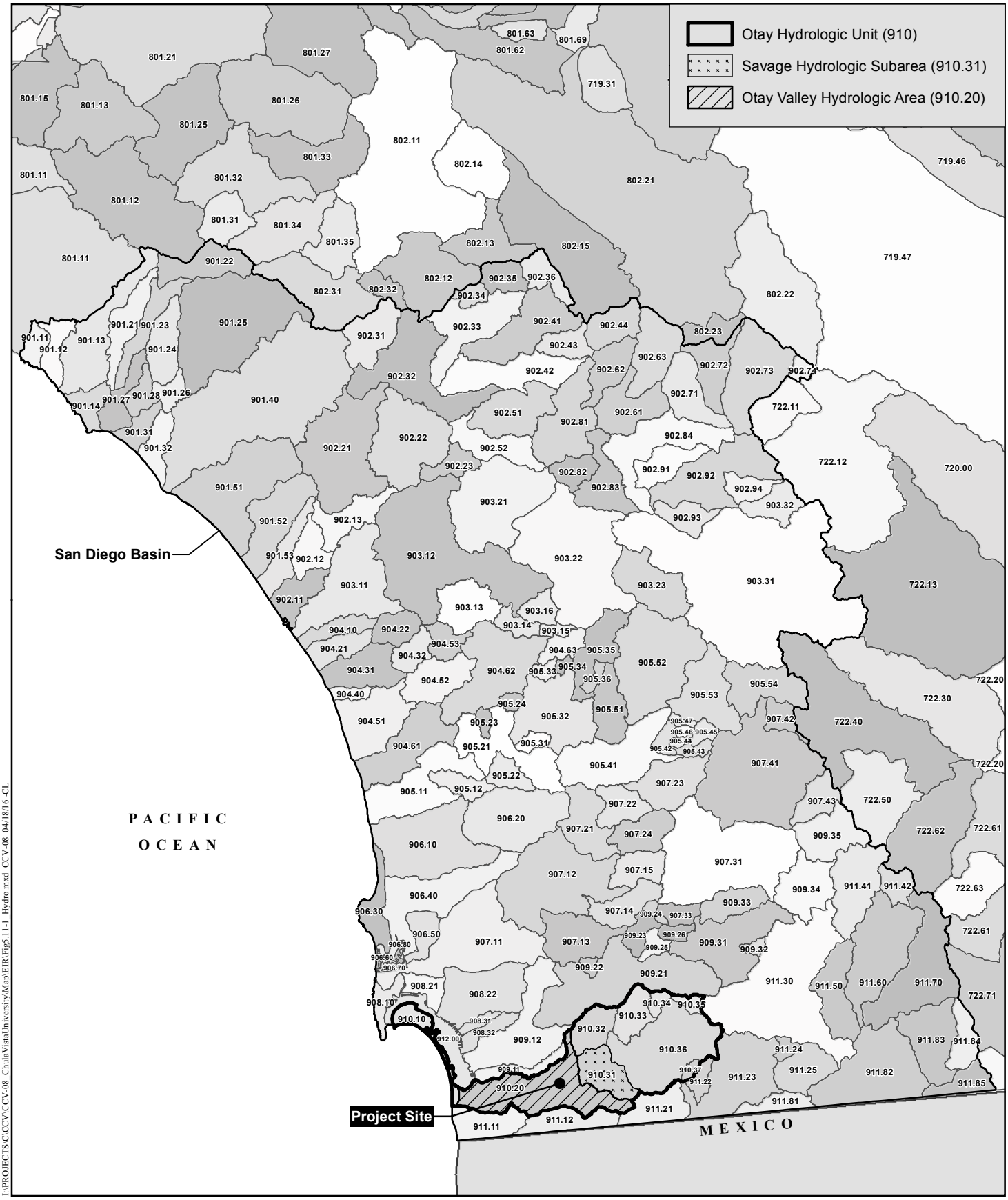
Zoning Code Section 19.80.030 is intended to ensure that new development would not degrade existing public services and facilities below acceptable standards for storm water collection and

other services and requires inclusion of a related Public Services and Facilities Element in the General Plan. Section 19.80.040 requires that discretionary approvals for development projects ensure adequate funding for public facilities (e.g., through a Public Facilities Finance Plan [PFFP]), while Section 19.09 (Growth Management) provides policies and programs that tie the pace of development to the provision of public facilities and improvements. Specifically, Section 19.09.040 F requires that: (1) storm water flows and volumes shall not exceed City engineering standards and shall comply with associated current regulatory requirements; and (2) the GMOC shall annually review the performance of the City storm drain system, with respect to the impacts of new development, to determine its ability to meet the goals and objectives for drainage. In addition, Section 19.09.080 also requires a PFFP for applicable development approvals, as described above for Section 19.80.040.

B. Hydrologic Setting

The project site is located within the Otay Hydrologic Unit (HU) 910, one of 11 major drainage areas identified in the SDRWQCB Basin Plan. The Otay HU is divided into a number of hydrologic areas and subareas based on local drainage characteristics, with the project site located within the Otay Valley Hydrologic Area (HA) 910.20, and the Savage Hydrologic Subarea (HSA) 910.31 of the Dulzura HA (refer to Figure 5.11-1, *Hydrologic Conditions*). Drainage within the Otay HU is primarily through the Otay River and related tributaries, including Salt Creek in the Project vicinity. The Otay River is located approximately 0.6 mile south of the Project site at its closest point and flows generally west before discharging to San Diego Bay approximately eight miles to the west. Salt Creek is located within and east of the Main Campus Property (and west of the Lake Property) and flows generally south to the Otay River. The Otay River watershed encompasses approximately 160 square miles in southwestern San Diego County and consists largely of unincorporated areas in the County of San Diego (but also includes incorporated areas within the cities of Chula Vista, Imperial Beach, Coronado, National City, and San Diego). Two large surface reservoirs, Upper and Lower Otay lakes, are located east of the site (immediately east of the Lake Property), with the Otay River flowing into and out of Lower Otay Lake. Downstream receiving waters for the Main Campus Property portion of the Project site include Salt Creek, the Otay River and San Diego Bay as noted, while the Lake Property drains east directly to Lower Otay Lake.

The Project site is mostly undeveloped, although substantial areas have been previously disturbed by agricultural or grading activities, including the High Tech K-12 School. Existing on-site development is limited primarily to a number of paved and unpaved roads/trails, electrical transmission/distribution line right-of-way (ROW) corridors (including several metal lattice towers and wooden poles), and a number of drainage improvements. Specifically, existing drainage facilities consist mainly of concrete-lined ditches, an outlet structure, a riprap energy dissipater located east of the High Tech K-12 School campus, an outlet/headwall structure located at the base of a manufactured slope just southwest of the Eastlake Parkway/Hunte Parkway intersection, and several minor crossing structures (culverts) at road/wash intersections. Downstream drainage facilities include several larger bridge crossings along the Otay River at roadways including SR-125, I-805, and I-5.



Source: California Interagency Watershed Map of 1999 (Calwater 2.2.1)

Hydrologic Conditions

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N 0 12 Miles

Figure 5.11-1

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1. On-site Hydrology

As noted above, surface drainage within the Main Campus Property and related watershed areas flows generally south to the Otay River, while drainage in the Lake Property flows east to Lower Otay Lake. The project site is divided into 10 drainage basins in the Project Drainage Study, designated as Basins 100 through 700, 1000, 1100, and 1200. Basins 100 through 700 are associated with the Main Campus Property, while basins 1000, 1100, and 1200 are located within the Lake Property (with the location and extent of all existing drainage basins shown on the Pre-Project Drainage Study Map included as Figure 5.11-2a, *Existing Drainage Conditions (Main Campus Property)*, and Figure 5.11-2b, *Existing Drainage Conditions (Lake Property)*). Basins 100 and 200 are located in the western portion of the Main Campus Property and drain generally south as primarily non-point (sheet) flow to the Otay River. Basins 300 through 700 encompass the central and western portions of the Main Campus Property and drain southeast as primarily sheet flow to Salt Creek, which then continues south to the Otay River as previously described. Drainage in Basins 1000, 1100, and 1200 moves east to Lower Otay Lake as sheet flow and drains through three existing culvert crossings beneath Wueste Road before entering the lake. As described in the Project Drainage Study, Basins 200, 300 and 700 currently receive off-site flows from developed properties to the north. Specifically, flows from various portions of Otay Ranch Village (Village) 11 enter Basins 200 and 700, flows from High Tech High School and/or adjacent slopes enter Basins 300 and 700, and flows from the Millenia development enter Basin 200.

2. Groundwater

The Project site is not located within the areal extent of any known mapped regional groundwater basins, with the closest such basin, the Otay Valley Groundwater Basin, located to the south along the Otay River corridor (California Department of Water Resources [DWR] 2003). Pursuant to information in the project Geotechnical Evaluation, no known water wells are present with the site vicinity, with typical groundwater depths in the Otay HU of 25 feet or less and groundwater movement generally to the south and west. Perched aquifers may occur locally, however, particularly in association with alluvial deposits along larger drainages such as Salt Creek. Perched aquifers generally consist of unconfined (i.e., not under pressure) groundwater contained by impermeable or semi-permeable strata, with the presence and/or extent of such groundwater bodies typically associated with and influenced by seasonal precipitation, as well as local landscape and/or agricultural irrigation.

3. Water Quality

a. Surface Water

Surface water within the Project site consists of intermittent flows from storm events and runoff from landscape irrigation (or other sources) in off-site properties as described above. No known water quality data is available for the Project site or immediate vicinity, with surface storm and irrigation flows typically subject to variations in water quality due to local conditions such as runoff rates/amounts and land use. Historic and current water quality monitoring has been/is being conducted within the Otay HU in association with requirements under the federal CWA/NPDES and the related Municipal Permit, as outlined above under the discussion of Regulatory Framework. Specifically, this includes wet and dry season monitoring as summarized below.

Wet weather monitoring was conducted during the 2009/2010 and 2011/2012 seasons at the Otay River Temporary Watershed Assessment Station (TWAS-1), located approximately 7.5 miles west (downstream) of the Project site (with no previous or subsequent monitoring conducted at TWAS-1). This monitoring included numerous physical, chemical and biological parameters, with resulting data for 2011/2012 indicating the following trends: (1) applicable water quality objectives were exceeded at a high frequency (more than 50 percent) for bioassessment scores (as outlined below); (2) water quality objectives were exceeded at a medium frequency (25 to 50 percent) for general chemical parameters (turbidity, methylene blue active substances [MBAS[2]], dissolved copper/zinc/lead and pyrethroid insecticides), toxicity to aquatic organisms, fecal coliform bacteria, and total dissolved solids (TDS); and (3) water quality objectives were exceeded at a low frequency (less than 25 percent) for nutrients (Weston Solutions, Inc. [Weston] 2013). Bioassessment testing involves evaluation of the taxonomic richness and diversity of benthic macroinvertebrate (BMI) communities based on the Index of Biotic Integrity (IBI), which provides a quantified score reflecting biological conditions and associated water quality.

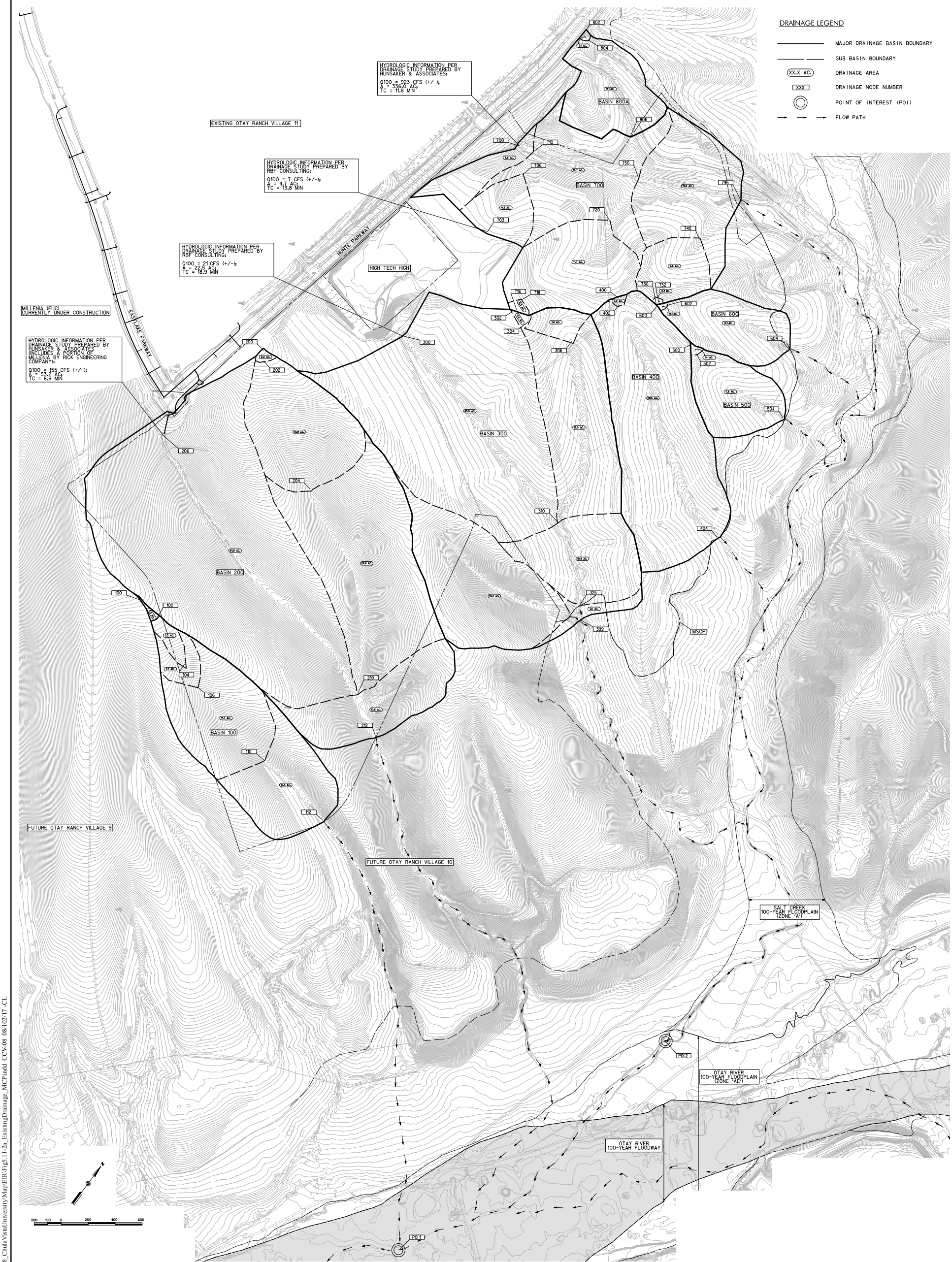
Jurisdictional dry weather sampling was conducted most recently in 2011 at a number of locations both up- and downstream of the Project site. These efforts documented that water quality objectives were most commonly exceeded for conductivity, MBAS, nitrate, and ammonia; and less commonly for pollutants including orthophosphate, pH, and coliform bacteria (Weston 2013).

The SWRCB and RWQCBs are required to produce biennial qualitative assessments of statewide and regional water quality conditions. These assessments are focused on CWA Section 303(d) impaired water listings and scheduling for assignment of total maximum daily load (TMDL) requirements. A TMDL establishes the maximum amount of an impairing substance or stressor that a water body can assimilate and still meet water quality standards and allocates that load among pollution contributors. TMDLs are quantitative tools for implementing state water quality standards, based on the relationship between pollution sources and water quality conditions. States are required to identify and document any and all polluted surface water bodies, with the resulting documentation referred to as the Clean Water Act Section 303(d) List of Water Quality Limited Segments, or more commonly the 303(d) list. This list of water bodies identifies the associated pollutants and TMDLs, along with projected TMDL implementation schedules/status. The most current (2010) approved 303(d) list identifies the following impairment listings in downstream waters (SWRCB 2016):

- Lower Otay Lake (1,050 acres) is listed for ammonia, color, iron, manganese, phosphate, nitrogen, and elevated pH levels. The expected TMDL completion dates are 2021 for nitrogen, and 2019 for all other listed pollutants.

- San Diego Bay is listed for the following locations/pollutants: (1) San Diego Bay, general (10,783 acres), is listed for polychlorinated biphenyls (PCBs); (2) South Bay, Bayside Park at J Street (50 acres), is listed for enterococcus and total coliform bacteria; and (3) South Bay, Chula Vista Marina (no quantified area), is listed for copper. The expected TMDL

[2] MBAS consist of surfactants (compounds that lower surface tension between two liquids or liquids/solids) that typically occur in substances such as commercial detergents, wetting agents, emulsifiers, foaming agents, and dispersants.



Source: Rick Engineering 2017

Existing Drainage Conditions (Main Campus Property)

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Figure 5.11-2a

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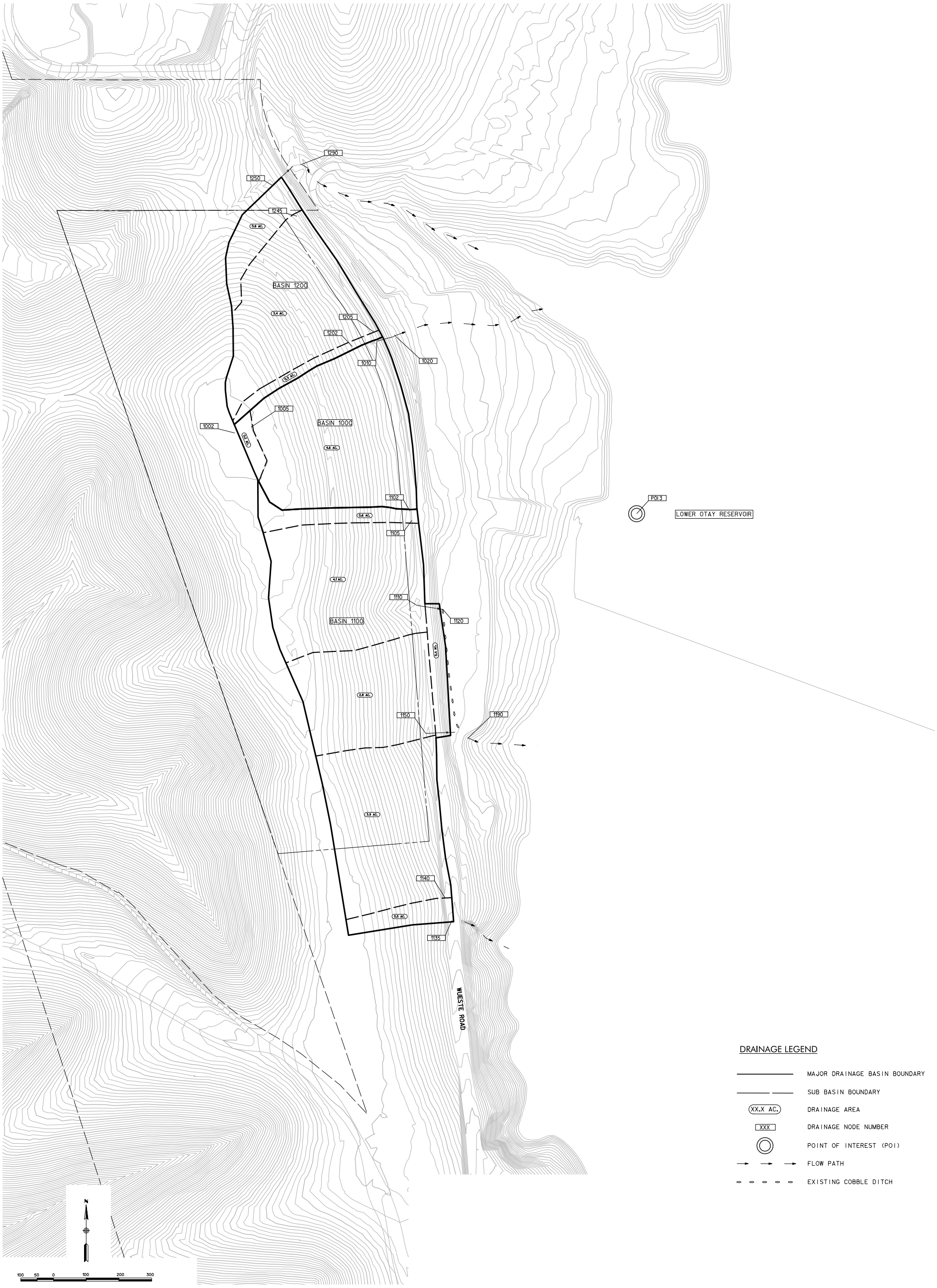

Source: Rick Engineering 2017

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Existing Drainage Conditions (Lake Property)

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HELIX Environmental Planning

Figure 5.11-2b

completion dates are 2021 for enterococcus bacteria, and 2019 for all other listed pollutants.

b. Groundwater

No known site-specific data are available regarding groundwater quality in the Project vicinity. The eastern portion of the Otay Valley Groundwater Basin to the south is identified as generally sodium-calcium-bicarbonate in character, with reported TDS levels ranging between approximately 500 and 2,000 milligrams per liter (mg/l, DWR 2003).

5.11.2 Thresholds of Significance

Based on Appendix G of the CEQA Guidelines and related City criteria, impacts regarding hydrology and water quality would be significant if the Project would:

- **Threshold 1:** Violate any water quality standards or waste discharge requirements, including City of Chula Vista engineering standards for storm water flows and volumes.

- **Threshold 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).

- **Threshold 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 substantial erosion or siltation on or off the site, or violate City of Chula Vista Engineering Standards for storm water flows and volumes.

- **Threshold 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 the site.

- **Threshold 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.

- **Threshold 6:** Otherwise substantially degrade water quality.

- **Threshold 7:** Place housing or other structures 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, which would impede or redirect flood flows.

- **Threshold 8:** 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.

- **Threshold 9:** Result in a substantial increase in risk of exposure to inundation by seiche, tsunami, or mudflow.

5.11.3 Impact Analysis

A. Threshold 1: Violate any water quality standards or waste discharge requirements, including City of Chula Vista Engineering Standards for storm water flows and volumes.

Potential Project-related water quality impacts are associated with both short-term construction activities and long-term operation and maintenance. Because the proposed project does not involve activities that could directly affect groundwater quality (e.g., underground fuel storage tanks or septic systems), potential impacts to groundwater quality are limited to the percolation of project-related surface runoff and associated pollutants (e.g., in pervious portions of the proposed storm drain system). Accordingly, the following assessment of potential water quality impacts is applicable to both surface and groundwater resources.

1. Construction

Potential water quality impacts related to on- and off-site Project construction include erosion/sedimentation, accidental discharges of construction-related hazardous materials used/stored onsite (e.g., fuels, etc.), and disposal of extracted groundwater (if required), as described below.

a. Erosion and Sedimentation

Construction-related erosion and sedimentation impacts would be addressed through conformance with applicable elements of the NPDES Construction General Permit and related City storm water standards (refer to the discussion of *Regulatory Framework* in Section 5.11.1). Specifically, this would entail implementing an appropriate SWPPP and related efforts, including erosion and sediment control BMPs (with typical erosion and sediment control BMPs). Without implementation of erosion and sediment control BMPs, water quality impacts are considered to be potentially significant (Impact 5.11-1a).

b. Construction-Related Hazardous Materials

Project construction would involve the use and/or storage of hazardous materials such as fuels, lubricants, solvents, concrete, paint, and portable septic system wastes. The accidental discharge of such materials during project construction could potentially result in significant impacts if these pollutants reach downstream receiving waters, particularly materials such as petroleum compounds that are potentially toxic to aquatic species in low concentrations. Implementation of a SWPPP would be required under NPDES guidelines as previously described and would include measures to avoid or mitigate potential impacts related to the use and potential discharge of construction-related hazardous materials. While detailed BMPs would be determined as part of the NPDES/SWPPP process based on project-specific parameters, they are likely to include the following types of standard industry measures and guidelines from sources including the Construction General Permit and City BMP Design Manual, as well as the additional sources identified in Section 5.8, *Geology and Soils*, (including CASQA [2009] and USEPA [2016]): (1) minimizing and properly locating (e.g., away from drainages/storm drains) hazardous material use/storage areas; (2) providing appropriate covers/enclosures, secondary containment (e.g., berms), monitoring/maintenance, and inventory control (e.g., delivery logs/labeling) for

hazardous material use/storage areas; (3) restricting paving operations during wet weather and providing appropriate sediment control downstream of paving activities; (4) utilizing properly designed and contained washout areas for materials including concrete, dry wall and paint; (5) properly maintaining all construction equipment and vehicles; (6) providing training to applicable construction employees on the proper use, handling, storage, disposal and notification/cleanup for construction-related hazardous materials; (7) storing containment and cleanup materials on site; (8) implementing appropriate solid waste containment, disposal and recycling efforts; and (9) properly locating, maintaining and containing portable wastewater facilities. Therefore, water quality impacts associated with construction-related hazardous materials would be potentially significant (Impact 5.11-1b) until specific measures are identified as part of the SWPPP.

c. Disposal of Extracted Groundwater

While shallow groundwater is generally not expected to occur in the project site and vicinity, construction dewatering could potentially be required during project construction (e.g., in associated with locally perched groundwater aquifers). Disposal of groundwater extracted during construction activities into local drainages and/or storm drain facilities could potentially generate significant water quality impacts through erosion/sedimentation, or the possible occurrence of pollutants in local aquifers. Project construction would require conformance with NPDES Groundwater Permit criteria prior to disposal of extracted groundwater (as outlined above under *Regulatory Framework* in Section 5.11.1). While specific BMPs to address potential water quality concerns from disposal of extracted groundwater would be determined based on site-specific parameters, they would likely include erosion/sedimentation controls (as outlined in Section 5.8), as well as the following types of standard measures from the Groundwater Permit: (1) submittal of appropriate application materials and fees; (2) implementation of pertinent (depending on site-specific conditions) monitoring/testing, disposal alternative, and treatment programs; (3) provision of applicable notification to the associated local agency prior to discharging to a municipal storm drain system; (4) conformance with appropriate effluent standards (as outlined in the permit); and (5) submittal of applicable documentation (e.g., monitoring reports).

Water quality impacts related to extraction of groundwater during construction would be potentially significant (Impact 5.11-1c). However, based on required conformance with NPDES and related City storm water standards, including the implementation of a SWPPP and appropriate BMPs, construction-related water quality impacts from implementation of the Project would be mitigated to less than significant.

2. Operation (Post-Construction)

a. Water Quality Assessment

The Project PDP SWQMP/Hydromodification Management Plan ([HMP] Appendix H) identifies pollutants of concern and appropriate control measures related to development of the Project, based on procedures identified in the NPDES Municipal Permit and related City storm water standards. As previously noted, the proposed project is identified as a PDP under City guidelines, due to the inclusion of proposed development categories such as commercial sites, restaurants, hillside development, parking areas, and roadways. Anticipated and potential pollutants associated

with the proposed Project include sediment, nutrients, heavy metals, organic compounds, trash and debris, oxygen demanding substances, oil and grease, bacteria and viruses, and pesticides (refer to Table 2-1 of the PDP SWQMP/HMP in Appendix H). Based on the previously described conditions and related 303(d) listings of the downstream receiving waters, the primary pollutants of concern for the Project are identified as pesticides, nutrients, and metals. Secondary pollutants of concern for the Project include sediment, organic compounds, trash and debris, oxygen demanding substances, oil and grease, and bacteria and viruses (with descriptions of all pollutant categories provided in Section 2.1 of the Project PDP SWQMP/HMP in Appendix H). Urban pollutants accumulate in areas such as streets, parking areas, and drainage facilities, and are picked up in runoff during storm events. Runoff within the Project site would increase as a result of constructing impervious surfaces, with a corresponding increase in pollutant loading potential. Based on these conditions, long-term Project operation could result in the on- and off-site transport of urban pollutants and associated significant effects such as increased turbidity, oxygen depletion, and toxicity to attendant species in downstream receiving waters.

The Project would conform to applicable City and NPDES storm water standards, with such conformance to include the use of appropriate post-construction LID site design, source control and treatment control BMPs, as identified in the City BMP Design Manual. Specific proposed BMPs are identified in the Project PDP SWQMP/HMP, with these measures summarized below and followed by a discussion of associated monitoring and maintenance activities.

<u>Low Impact Development (LID) Site Design BMPs</u>

Site design BMPs are intended to avoid, minimize and/or control post-development runoff, erosion potential and pollutants generation to the MEP by mimicking the natural hydrologic regime. The LID process employs design practices and techniques to effectively capture, filter, store, evaporate, detain, and infiltrate runoff close to its source. Specific LID site design BMPs identified in the Project PDP SWQMP/HMP are based on three site design concepts, which are summarized below along with associated implementation measures (with additional discussion provided in Appendix H). All of the proposed LID site design BMPs would help reduce long-term urban pollutant generation by minimizing runoff rates and amounts, retaining permeable areas, increasing on-site filtering and infiltration, and reducing erosion/sedimentation potential.

Site Design BMP Concept LID-1, Minimize the Impervious Footprint and Conserve Natural Areas

The Project site is primarily undeveloped as previously described, with the proposed development footprint part of a larger planning process with dedicated open space areas for habitat preservation under the Multiple Species Conservation Program (including much of the Salt Creek and Otay River corridors). Under this design concept, the noted process would be enhanced on-site through design efforts such as dedicating additional habitat conservation areas as permanent open space, providing recreation and landscaped areas to help reduce the total amount of impervious surfaces, directing runoff from impervious surfaces into landscaping where feasible, including substantial tree plantings throughout the developed portions of the site to maximize canopy interception, and minimizing soil compaction in areas such as the downstream bioretention basins to allow for incidental infiltration (with additional discussion of the bioretention basins provided below under the analysis of treatment control BMPs). Proposed implementation measures for Site Design BMP Concept LID-1 are listed below.

- Minimize and disconnect impervious surfaces.
- Conserve natural areas, soils, and vegetation where feasible.
- Construct walkways, trails, patios, overflow parking lots, alleys and other low-traffic areas with permeable surfaces such as permeable concrete or asphalt, unit pavers, or granular materials.
- Construct streets, sidewalks, and parking lot aisles to the minimum widths necessary while meeting requirements for public safety and providing a "walkable environment" for pedestrians.
- Maximize canopy interception and water conservation by preserving existing native trees and shrubs and planting additional native or drought-tolerant varieties.
- Minimize the use of impervious surfaces, such as decorative concrete, in landscaped areas.
- Use natural drainage features in the Project storm water system to the MEP.
- Minimize soil compaction through efforts such as restricting construction equipment access in applicable areas (e.g., open space and appropriate drainage facilities), and collecting/storing native soil for reuse in on-site landscaping.
- Employ other applicable LID site design concepts that are comparable and equally effective.

Site Design BMP Concept LID-2, Minimize Directly Connected Impervious Areas

This concept entails directing runoff from rooftops and other impervious surfaces into landscaped areas to the MEP to help reduce the "effective"[3] impervious cover within the Project site, with associated implementation measures listed below.

- Drain rooftops into adjacent landscaping where proposed, prior to discharging into the storm drain system.
- Drain impervious sidewalks, walkways, trails, and patios into adjacent landscaping where proposed.
- Utilize other applicable design characteristics that are comparable and equally effective.

Site Design BMP Concept LID-3, Protect Slopes and Channels

Under this design concept, larger natural drainage features would be preserved (e.g., the Salt Creek and Otay River corridors), the site would be stabilized/landscaped in conformance with the City

[3] Pursuant to Section 3.7 of the Development Storm Water Manual, the City of Chula Vista will not consider storm water BMPs "effective," unless a mechanism is in place that will ensure ongoing long-term maintenance of all structural BMPs. This mechanism may be provided by the City or by a project proponent (Chula Vista 2011c).

Landscape Manual, runoff would be conveyed away from the tops of slopes via swales or drains, energy dissipators would be installed at all storm drain outlet/outfall locations, and splash pads or rock would be placed at outlets from roof drains into landscaped areas to help avoid/minimize erosion. Proposed implementation measures for Site Design BMP Concept LID-3 are listed below.

- Minimize disturbance to natural drainages.
- Convey runoff safely from the tops of slopes.
- Vegetate slopes with native and/or drought-tolerant vegetation.
- Control and treat flows by conveying drainage into landscaped areas, or other methods, prior to reaching natural drainage systems.
- Stabilize permanent channel crossings.
- Install energy dissipators to minimize impacts to receiving waters.

  Utilize other applicable design principles that are comparable and equally effective.

<u>Source Control BMPs</u>

Source control BMPs are intended to avoid or minimize the introduction of pollutants into storm drains and natural drainages to the MEP by reducing on-site pollutant generation and off-site pollutant transport at the source. Specifically, this involves minimizing contact between pollutants and urban runoff, with source control BMPs identified in the Project PDP SWQMP/HMP based on four source control design concepts which are summarized below along with associated implementation measures (and additional discussion provided in Appendix H). All of the proposed source control BMPs would help to improve long-term water quality within and downstream from the Project site by avoiding or minimizing pollutant generation and exposure to storm flows at the source.

Source Control BMP Design Concept SC-1, Provide Storm Drain Stenciling

Under this design concept, storm drain inlets and catch basins would be signed, stenciled, or labeled with prohibitive language and/or graphic icons to discourage illegal dumping, with associated implementation measures listed below.

- Provide stenciling or labeling at all Project storm drain inlets and catch basins, with prohibitive language such as “No Dumping – I Live Downstream” and/or related graphic icons such as fish or other aquatic organisms.
- Post signs with prohibitive language and/or graphic icons which prohibit illegal dumping at public access points along applicable channels and creeks.
- Maintain the legibility of storm drain/public access stencils, signs, and labels.

Source Control BMP Design Concept SC-3, Design Trash Storage Areas to Reduce Pollutant Introduction

This design concept is intended to avoid/minimize the introduction of pollutants from trash storage areas (e.g., dumpsters), by reducing the potential for trash dispersal through requiring the following implementation measures at all trash storage/container areas.

- Pave trash storage/container areas with an impervious surface designed to prevent run-on from adjacent areas and provide screens or walls to prevent off-site trash dispersal.
- Cover trash receptacles with a roof or awning to avoid/minimize direct precipitation contact.
- Design all trash storage/container areas in conformance with CVMC Section 19.58.340 (e.g., proper design and maintenance of trash/recycling areas).

Source Control BMP Design Concept SC-4, Use Efficient Irrigation Systems and Landscape Design

Under this concept, irrigation systems and landscape design would be tailored to address site-specific requirements while minimizing water use/runoff, with associated implementation measures listed below.

- Employ rain shutoff devices to prevent irrigation during or after precipitation events.
- Design irrigation systems and schedules to match the specific watering requirements of individual landscaped areas.
- Use flow reducers or shutoff valves triggered by pressure reductions to minimize water loss in the event of broken sprinkler heads or lines.
- Utilize other applicable design principles that are comparable and equally effective to reduce irrigation runoff.

Source Control BMP Design Concept SC-5, Incorporate Requirements Applicable to Individual Priority Project Categories

This design concept would ensure that applicable individual PDP requirements from the City BMP Design Manual are implemented. Specifically, this would include measures related to residential driveways and guest parking, designated parking areas, and hillside landscaping for the proposed Project, with associated implementation measures listed below.

For residential driveways and guest parking, the following implementation measures are applicable:

- Design driveways with shared access, a flared layout (i.e., a single lane at the street), pavement strips only under tire pathways, and/or drainage to landscaping.

- Pave uncovered parking on private residential lots with a permeable surface or drain parking areas to landscaping.

- Utilize other applicable features that are comparable and equally effective, as determined by the City Engineer.

For parking areas, the following implementation measures are applicable:

- Where landscaping is proposed in parking areas, incorporate landscaped areas into the drainage design where feasible.

- Utilize permeable pavement where feasible in overflow parking areas (i.e., parking in excess of minimum City requirements).

- Include other applicable design concepts that are comparable and equally effective, as determined by the City Engineer.

For hillside landscaping, the following implementation measure is applicable:

- Pursuant to the City Landscape Manual, areas disturbed by Project development would be landscaped with deep-rooted, drought-tolerant plant species selected for erosion control, to the satisfaction of the City.

Treatment Control BMPs

Treatment control (or structural) BMPs are designed to remove pollutants from urban runoff for a design storm event to the MEP through means such as filtering, settling, biological uptake, media adsorption, or other applicable processes. Treatment control BMPs are required to address the identified priority pollutants of concern and must provide medium or high levels of removal efficiency for these pollutants (per applicable regulatory requirements). Specific treatment control BMPs identified in the Project PDP SWQMP/HMP include bioretention basins, which filter storm water through plant roots and a biologically active soil mix before infiltrating into the native soil if appropriate soil conditions are present. If local soil conditions are not conducive to infiltration, subdrains would be incorporated to convey treated flows to the storm drain system. Five individual bioretention basins are proposed, including three associated with the Main Campus Property (two of which would be constructed as part of an adjacent development but would treat flows from the proposed project as well), and two on the Lake Property (with portions of the Lake Property to be self-treating, as described below). Bioretention basins exhibit a high-level removal efficiency for coarse sediment and trash, as well as pollutants that tend to associate with fine particles during treatment (including sediment, heavy metals, organic compounds, oxygen demanding substances, bacteria and viruses, oil and grease, and pesticides). Bioretention basins provide a medium-level removal efficiency for pollutants that tend to be dissolved during treatment, including nutrients. As noted above, two of the bioretention basins associated with the Main Campus Property are proposed to be constructed as part of the Village 10 development located south of the Project site. If, as noted in the Project PDP SWQMP/HMP, these Village 10 treatment control facilities are not operational when the proposed Project is completed, similar bioretention facilities would be placed within the Project footprint as an interim measure to provide regulatory conformance until the

Village 10 basins are operational. These temporary facilities, if implemented, would be designed to address both water quality and hydromodification management criteria, as the intervening tributary drainages between the Project site and the Otay River are not exempt from HMP criteria (refer to the Hydromodification Assessment below in this section).

The proposed treatment control BMPs would help to improve long-term water quality within and downstream of the Project site by treating/removing pollutants from urban runoff to the MEP prior to downstream discharge. Additional discussion of proposed treatment control BMP design standards, including selection criteria, sizing (i.e., volume- and flow-based design), locations, shared/interim function, and performance requirements is provided in the Project PDP SWQMP/HMP (Appendix H). It should also be noted that the proposed treatment control BMPs would meet the applicable water quality requirements identified for Lower Otay Lake by the City of San Diego (which uses the lake as a drinking water source). Specifically, the two proposed bioretention basins on the Lake Property portion of the site would provide treatment for associated Project flows prior to discharge to the storm water system, which would drain directly to Lower Otay Lake. Specifically, these basins would provide treatment for flows from Basins 1100 and 1200, while Basin 1000 would consist of landscaped slopes and is considered self-treating[4] (Rick Engineering 2015b). Additional discussion regarding City of San Diego treatment requirements for Lower Otay Lake is provided in Appendix H.

<u>Post-construction BMP Monitoring/Maintenance</u>

The identified BMPs include physical facilities that require ongoing monitoring and maintenance, such as bioretention basins, signs/stencils, irrigation systems, and landscaping. Pursuant to requirements in the NPDES Municipal Permit, maintenance of applicable BMPs is required, with associated criteria identified in the City BMP Design Manual and the Project PDP SWQMP/HMP, as outlined below.

Long-term BMP maintenance requires that the property owner enter into a Storm Water Management Facilities Maintenance Agreement (Maintenance Agreement) with the City and develop an Operation and Maintenance Plan (O&M Plan). The Maintenance Agreement and O&M Plan specify applicable criteria to ensure appropriate and ongoing BMP maintenance, through efforts such as identifying maintenance responsibilities (e.g., the property owner or the City); ensuring adequate funding (through means such as a cash deposit, letter of credit, or other means acceptable to the City); documenting BMP specifications, locations, and individual maintenance requirements/schedules; and maintaining appropriate records of maintenance activities and results. Based on the noted requirements, the Project PDP SWQMP/HMP identifies the following typical maintenance procedures for proposed BMPs.

Bioretention Basins

Inspections would be conducted monthly during the first four to six months of operation, annually thereafter, and after major storm events, to identify: (1) accumulation of sediment, litter and/or debris at inlets/outlets; (2) standing water; and (3) dislodged or damaged energy dissipators or

[4] Self-treating areas typically consist of undeveloped or vegetated sites that do not receive runoff from development and prevent pollutants from combining with storm water through processes such as filtering by vegetation and/or infiltration.

other facilities. Ongoing maintenance would include removal (and proper disposal) of accumulated materials (e.g., sediment and debris), as-needed repairs, and identification of additional maintenance/cleaning services if applicable.

Signs/Stencils/Labels

Inspections would be conducted annually to ensure legibility, with associated maintenance to include as-needed repairs or replacement of faded, vandalized, or otherwise illegible signs, stencils, or other labeling facilities.

Irrigation Systems

Irrigation systems would be inspected monthly to ensure proper function and avoid conditions including leaks (e.g., from broken lines or sprinkler heads), erosion from concentrated flows, ponded water, and overwatering (e.g., during rain events) or under-watering. Associated maintenance would consist of as-needed system adjustments and repair/replacement of applicable facilities.

Landscaping

Inspection of landscaped areas would be conducted monthly to assess potential problems including erosion; ponded water; areas with less than 70 percent vegetation cover; animal burrows, holes, or mounds; and trash and debris accumulation. Maintenance would be conducted monthly and would include routine mowing, trimming and trash/debris removal, as well as as-needed repairs/ replacement. These efforts may also include implementation of corrective integrated pest management (IPM) measures, such as using physical barriers, weeding, manual removal, biological controls, or proper use of pesticides.

Conclusion

Prior to mitigation, which would ensure the implementation of proposed LID site design, source control, and treatment control BMPs in conformance with NPDES and related City storm water standards (including monitoring/maintenance efforts), long-term Project-related water quality impacts would be considered significant (Impact 5.11-1d). Implementation of these considerations is included as mitigation to ensure that impacts are reduced to a level below significance.

b. Hydromodification Assessment

As discussed in the Project PDP SWQMP/HMP and outlined in this section, runoff from proposed development would be conveyed through the proposed storm drain system and treated in conformance with applicable regulatory standards before ultimately being discharged directly to the Otay River (Main Campus Property) or Lower Otay Lake (Lake Property). The Project PDP SWQMP/HMP concludes that the Project would be exempt from applicable HMP requirements in the City BMP Design Manual and the countywide HMP (County of San Diego 2011a), based on the following considerations: (1) flows from the Main Campus Property would be conveyed (via appropriate storm water facilities/water quality BMPs) directly to a portion of the Otay River exempt from HMP requirements; and (2) flows from the Lake Property would be discharged directly to Lower Otay Lake via stabilized conveyance systems. As a result, potentially significant

impacts related to hydromodification requirements would occur (Impact 5.11-1e); however, impacts would be reduced to a less-than-significant level as a result of Project implementation.

It should also be noted, as discussed above under the Water Quality Assessment, that if the Village 10 bioretention basins are not operational when the proposed Project is completed, the temporary bioretention facilities placed within the Project footprint as an interim measure would be designed to address both water quality and hydromodification management criteria (e.g., though appropriate flow detention/retention). Specifically, this would be required because the intervening tributary drainages between the Project site and the Otay River are not exempt from HMP criteria. Under the described interim scenario, associated potential impacts would be avoided or reduced below a level of significance though incorporating applicable hydromodification elements into the design of temporary bioretention facilities. Hydromodification requirements are included as mitigation to reduce this potentially significant impact to a level below significance.

B. Threshold 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).

The Project would not entail any long-term withdrawal or other use of groundwater, with no associated impacts to local groundwater supplies, aquifer volumes, or water tables from Project implementation. In the unlikely event that shallow groundwater is encountered during Project construction, temporary dewatering efforts would be implemented in conformance with applicable NPDES requirements as previously described. Based on the minor and temporary nature of such potential dewatering activities, as well as the fact that disposal of any extracted groundwater would likely occur within the areal extent of the same basin from which the groundwater was extracted (with associated potential for infiltration/recharge), no associated significant impacts related to drawdown or depletion of local groundwater resources are anticipated.

While Project implementation would include the installation of impervious surfaces such as structures and pavement, associated potential impacts to existing on-site recharge capacity would be less than significant based on the following considerations: (1) the site design includes extensive open space and landscaping that would provide recharge capacity (with flows from rooftops and paved areas to be directed into landscaping as outlined above under Threshold 1); and (2) the proposed storm drain system incorporates natural drainage systems to the MEP, as well as the use of bioretention basins as treatment control BMPs, with some associated potential for infiltration and associated groundwater recharge.

C. Threshold 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 substantial erosion or siltation on or off site, or violate Chula Vista Engineering Standards for storm water flows and volumes.

1. Existing Drainage Conditions

As described in Section 5.11.1, surface flows within applicable portions of the Project site and associated off-site watersheds drain generally south to the Otay River (Main Campus Property and related off-site watersheds), and east to Lower Otay Lake (Lake Property). Flows in the Main Campus Property occur as sheet flow and within a number of small to medium-size intermittent drainages, including Salt Creek, and continue south from the site for approximately 0.6 mile before discharging directly into the Otay River. Flows from the Lake Property occur as sheet flow, which moves east before entering three existing culverts beneath Wueste Road and discharging directly into Lower Otay Lake. The Otay River continues generally west from the Project site area for approximately eight miles and enters San Diego Bay, while Lower Otay Lake provides surface water storage and outlets to the Otay River southeast of the Project site.

2. Post-Development Drainage Conditions

Project implementation would result in some modification of the described existing on-site drainage patterns and directions through proposed grading and construction. Specifically, Project development would include a series of storm drain facilities to capture, regulate and convey flows within and through the site, as depicted on Figures 3-10a and 3-10b. The Project drainage system would conform to applicable City engineering standards, however, and the Project Drainage Study notes that "In the post-project condition, the drainage characteristics are anticipated to remain similar as compared to the pre-project condition." As a result, the described modifications from Project implementation would not substantially alter the overall described on- and off-site drainage patterns. Flows within the Main Campus Property (including applicable flows from off-site areas as described in Section 5.11.1) would continue to drain primarily to the south, with the Project design including a number of appropriately designed and located drainage facilities to retain the overall existing drainage features, including the use of similar outlet points for flows discharged from the site (refer to the Pre- and Post-Project Drainage Study Maps included in Map Pockets 1 and 2 of the Project Drainage Study, Rick Engineering 2015a, in EIR Appendix I). Similarly, post-development flows in the Lake Property would continue east and discharge directly into Lower Otay Lake, similar to existing flows. As a result, post-development flows from the Project site would mimic existing conditions to the extent feasible, with overall runoff patterns and directions maintained and off-site flows continuing to drain generally south to Otay River and east to Lower Otay Lake. Based on the described conditions, Project-related impacts to drainage alteration would be less than significant, including associated potential erosion and siltation effects (with additional information on potential erosion concerns provided above under the discussion of Threshold 1 and in Section 5.8).

3 Post-Development Runoff Rates/Amounts

Implementation of the Project would result in the construction of new impervious surfaces, including pavement and structures. These areas would increase both the rate and amount of runoff

within the site by reducing infiltration capacity and concentrating flows. These flows would be conveyed through and from the site via the proposed storm drain system, as outlined above and depicted on Figures 3-10a and 3-10b. The Modified Rational Method was used to determine pre- and post-development flows in the Project Drainage Study (with specific methodology described in Section 2.0 of the Drainage Study, refer to Appendix I). A summary of pre- and post-development flows for the 10 described drainage basins is provided in Table 5.11-1, *Summary of Pre- and Post-development Drainage Conditions*. As shown, the basins are also categorized by three associated point of interest (POI) locations to evaluate potential effects to downstream "conditions of concern" including drainage system capacities, drainage area diversions, and erosion from concentrated runoff and/or increased peak flow rates. An evaluation of these potential effects at the POI locations is provided below.

Table 5.11-1 SUMMARY OF PRE- AND POST-DEVELOPMENT DRAINAGE CONDITIONS

Point of Interest (POI)	Pre-Development Conditions			Post-Development Conditions			Flow Change[1]
	Drainage Basin	Area (Acres)	Peak 100-Year Flow Rate[1]	Drainage Basin	Area (Acres)	Peak 100-Year Flow Rate[1]	
POI 1	100	24.9	25.4	100	75.3	331.6	+306.2
	200	166.5	240.1[2]	200	137.7	472.5[2]	+232.4
POI 2	300	116.2	89.4[2]	300	80.9	233.5[2]	+144.1
	400	29.7	39.5	400	27.6	79.3	+39.8
	500	7.6	11.4	500	5.8	26.9	+15.5
	600	8.2	11.4	600	7.8	30.2	+18.8
	700	404.0	982.5[2]	700	31.5	100.7[3]	n/a
POI 3	1000	4.8	6.7	1000	1.7	4.5	-2.2
	1100	12.3	14.4	1100	12.0	25.0	+10.6
	1200	4.5	6.5	1200	7.9	23.9	+17.4

Source: Rick Engineering 2015a

[1] Cubic feet per second.

[2] Includes flows from applicable off-site areas.

[3] Off-site areas are excluded in the post-development condition, as the majority of post-development flows would be conveyed generally south and discharged directly into the Otay River. Under pre-development conditions, these flows drain south via Salt Creek before entering the Otay River.

a. Point of Interest 1

The location of POI 1, which encompasses basins 100 and 200 along with applicable off-site areas, is approximately 650 feet downstream of the outfall to the Otay River associated with the Village 10 development. Specifically, flows from proposed Project Basins 100 and 200 would be conveyed off-site in the Village 10 storm drain system and discharged directly to the Otay River. The Project Drainage Study concludes that there are no downstream conditions of concern associated with flows at POI 1, based on the following considerations: (1) the increase in peak flows to the lower portion of the Otay River would be conveyed downstream prior to peak runoff within the overall Otay River Watershed reaching the lower river area; (2) all flows associated with POI 1 would continue to drain generally south to the Otay River, with no related drainage diversion; and (3) the Village 10 storm drain system facilities would include appropriately designed energy dissipators to reduce discharge velocities to non-erosive levels (pursuant to applicable City standards). It

should also be noted, as previously described under Threshold 1, that if the Village 10 facilities are not operational when the Project is completed, similar temporary bioretention facilities would be placed within the Project footprint as an interim treatment control and hydromodification measure. Under this scenario, the temporary facilities would also include appropriately designed energy dissipators as noted above.

b. Point of Interest 2

POI 2 is located approximately 100 feet downstream of the proposed storm drain outfall into the Otay River, near the mouth of Salt Creek. As indicated in Table 5.11-1, the post-development watershed area and related flows are substantially reduced from the pre-development condition. Specifically, this is due to the fact that the pre-development condition for Basin 700 includes extensive off-site areas that drain south via Salt Creek before reaching the Otay River, with these areas to discharge directly to the Otay River near POI 2 under post-development conditions. The Project Drainage Study concludes that there are no downstream conditions of concern associated with flows at POI 2, based on similar considerations as described above for POI 1.

c. Point of Interest 3

POI 3 is identified as Lower Otay Lake, with flows from Basins 1000 through 1200 to discharge directly into the lake as previously described. The Project Drainage Study concludes that there are no downstream conditions of concern associated with flows at POI 3, based on the following considerations: (1) the increase in peak flows to Lower Otay Lake would be stored therein as part of the overall water supply; (2) all flows associated with POI 3 would continue to drain generally east to the lake, with no related drainage diversion; and (3) the proposed storm drain system facilities conveying flows beneath Wueste Road would include appropriately designed energy dissipators to reduce discharge velocities to non-erosive levels prior to conveyance directly to the lake (pursuant to applicable City standards).

From the above analyses, drainages serving the Project site would be susceptible to increased erosion resulting from increased peak flow rates, increased runoff volumes, and duration, which would result in a potentially significant impact (Impact 5.11-2). With implementation of the proposed drainage improvements the Project Drainage Study concludes that there would be "…no adverse impacts to downstream conditions of concern anticipated as a result of the project." Accordingly, potential Project-related impacts to drainage alteration, associated erosion and siltation effects, and conformance with City standards related to storm water rates/amounts would be less than significant with incorporation of the proposed drainage facilities (with additional information on potential erosion concerns provided above under the discussion of Threshold 1 and in Section 5.8). Nonetheless, mitigation is included to ensure that the facilities are implemented and monitored throughout buildout of the Project and impacts related to alteration of existing drainage patters remains below a level of significance.

D. Threshold 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.

As previously described, implementation of the Project would not result in substantial alteration of existing drainage patterns, although it would result in the construction of new impervious surfaces that would increase both the rate and amount of runoff within and from the site. As discussed under Threshold 3, however, post-development runoff from the site and applicable off-site areas would be conveyed through storm drain systems associated with the Project and/or Village 10 and discharged directly to the Otay River (Main Campus Property) or Lower Otay Lake (Lake Property). These storm drain facilities would be designed to accommodate post-development flows from a 100-year storm event, pursuant to applicable City standards. In addition, the Project Drainage Study concludes that no adverse impacts related to downstream conditions of concern, including system capacities from concentrated runoff, and increased peak flow rates, would result from implementation of the Project.

In conclusion, drainages serving the southern basin would be susceptible to increased peak flow rates and increased runoff volumes, which would result in a potentially significant flooding impact (Impact 5.11-3). Installation of the proposed drainage facilities at construction would minimize these impacts. Nonetheless, mitigation would be required to ensure that the facilities are implemented and monitored throughout buildout of the Project.

E. Threshold 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.

As described above under Thresholds 3 and 4, the Project storm drain system would accommodate post-development flows from a 100-year storm event, pursuant to applicable City standards, and would not result in adverse impacts to downstream conditions of concern, including system capacities from concentrated runoff and increased peak flow rates. Accordingly, post-development flows would not generate or contribute flows that would exceed the capacity of existing or planned storm water systems. Additionally, as outlined in the discussion under Threshold 1, Project implementation would include measures to ensure conformance with applicable regulatory standards related to water quality, including NPDES and associated City requirements. Although the Project includes features to reduce the amount and rate of runoff to a less than significant level, these features are also prescribed as mitigation measures to assure implementation and facilitate monitoring through buildout of the Project (Impact 5.11-4).

F. Threshold 6: Otherwise, substantially degrade water quality.

Based on the discussions provided above under Thresholds 1 and 5, the Project would implement measures to ensure required conformance with applicable regulatory standards related to water quality, including NPDES and associated City requirements. However, supplemental water quality studies are required to identify which site-specific BMPs identified in the water quality technical report would be necessary for individual development projects to comply with the manual.

Therefore, potentially significant impacts related to degrading water quality could occur (Impact 5.11-5).

G. Threshold 7: Place housing or other structures 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, which would impede or redirect flood flows.

The 100-year floodplain boundaries designated by Federal Emergency Management Agency (FEMA) for the Otay River and Salt Creek in the Project site vicinity are included on Figure 5.11-3a, *Proposed Drainage Conditions (Main Campus Property)*, and Figure 5.11-3b, *Proposed Drainage Conditions (Lake Property)*. As shown on these figures, all proposed housing and related urban development is located outside of the mapped 100-year floodplain boundaries, with no associated impacts to result from Project implementation. Additionally, while limited portions of the outlet structure and related energy dissipater associated with the proposed off-site bioretention basin near POI 2 would be located within the Otay River 100-year floodplain, associated potential impacts related to impeding or redirecting flood flows would be less than significant based on the minor area and low profile of the noted facilities within the floodplain boundary. Associated potential impacts related to flood hazards from implementation of the Project would be less than significant.

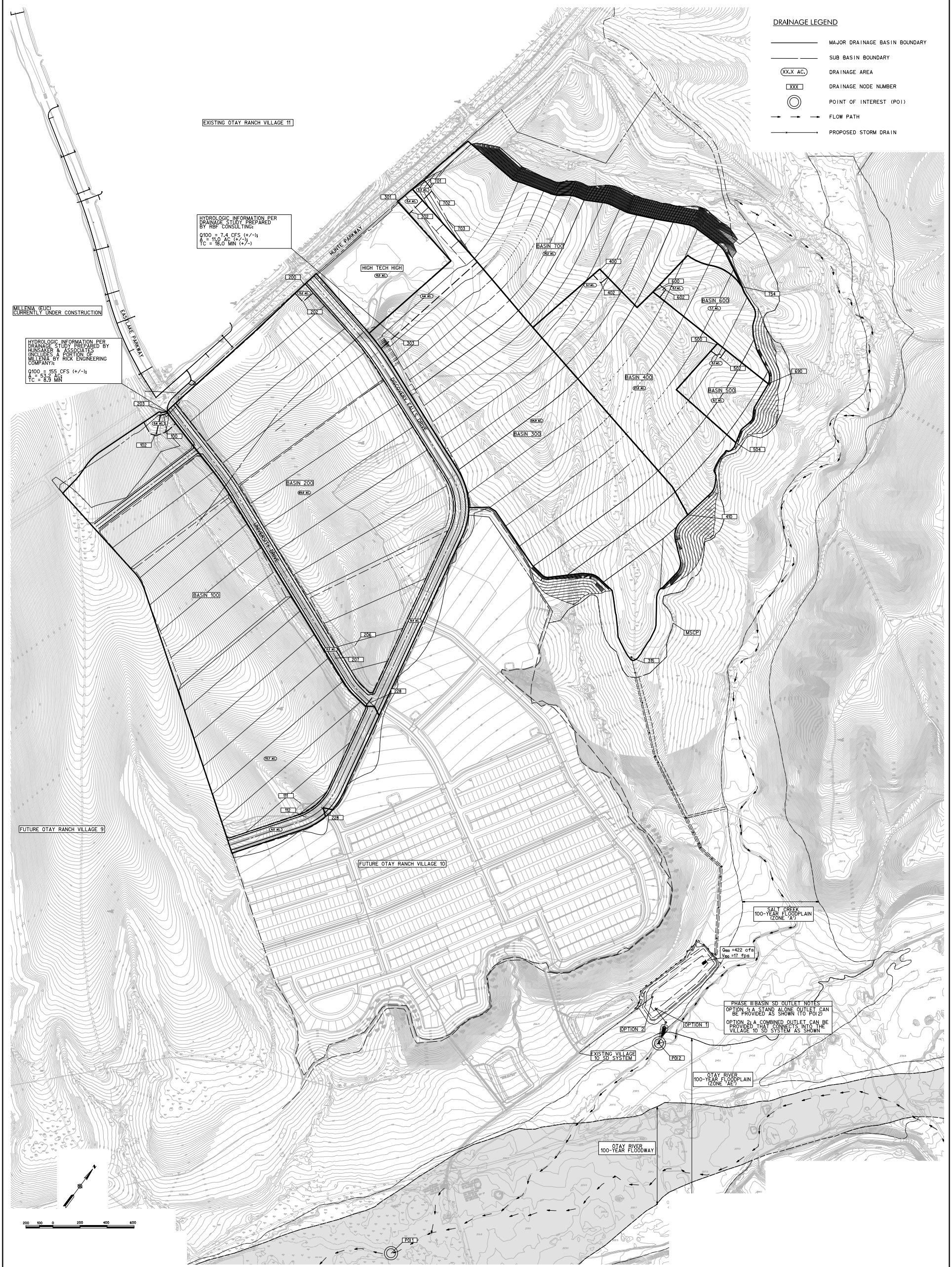
H. Threshold 8: Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam.

As discussed under Threshold 7, the Project would not result in any significant impacts related to the placement of housing within a 100-year floodplain, or the impediment or redirection of associated flood flows. Additionally, as depicted on Figure 5.11-4, *Flood and Dam Inundation Hazards Map*, of the Chula Vista General Plan Environmental Element, the Project site is not within the mapped inundation area associated with the Savage Dam (Lower Otay Lake). While portions of the off-site storm drain/water quality facilities located south of the site extend into the noted inundation area, associated potential impacts would be less than significant based on the following considerations: (1) the minor area and low profile of storm drain/water quality facilities within the dam inundation boundary; and (2) large containment structures, such as the Savage Dam, are subject to extensive design, construction, inspection and safety criteria through the California Division of Safety of Dams, with the probability for inundation from a catastrophic event (e.g., earthquake-induced failure) considered extremely low.

I. Threshold 9: Result in a substantial increase in risk of exposure to inundation by seiche, tsunami, or mudflow.

As described in Section 5.8, the Project Geotechnical Evaluation (Appendix G) concludes that potential inundation effects related to tsunamis and seiches are not design considerations due to the inland location and elevation of the Project site (see Section 5.8.1 under heading 2.p., *Tsunamis and Seiches*). As a result, no potential impacts related to tsunamis and seiches would occur.

The analysis in Section 5.8 also concludes that potential impacts related to landslide hazards (which include mudflows) are potentially significant. Project implementation would require incorporation of Mitigation Measures 5.8-1a through 5.8-1c to address potential landslide hazards



Source: Rick Engineering 2017

Proposed Drainage Conditions (Main Campus Property)

UNIVERSITY INNOVATION DISTRICT EIR

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Figure 5.11-3a

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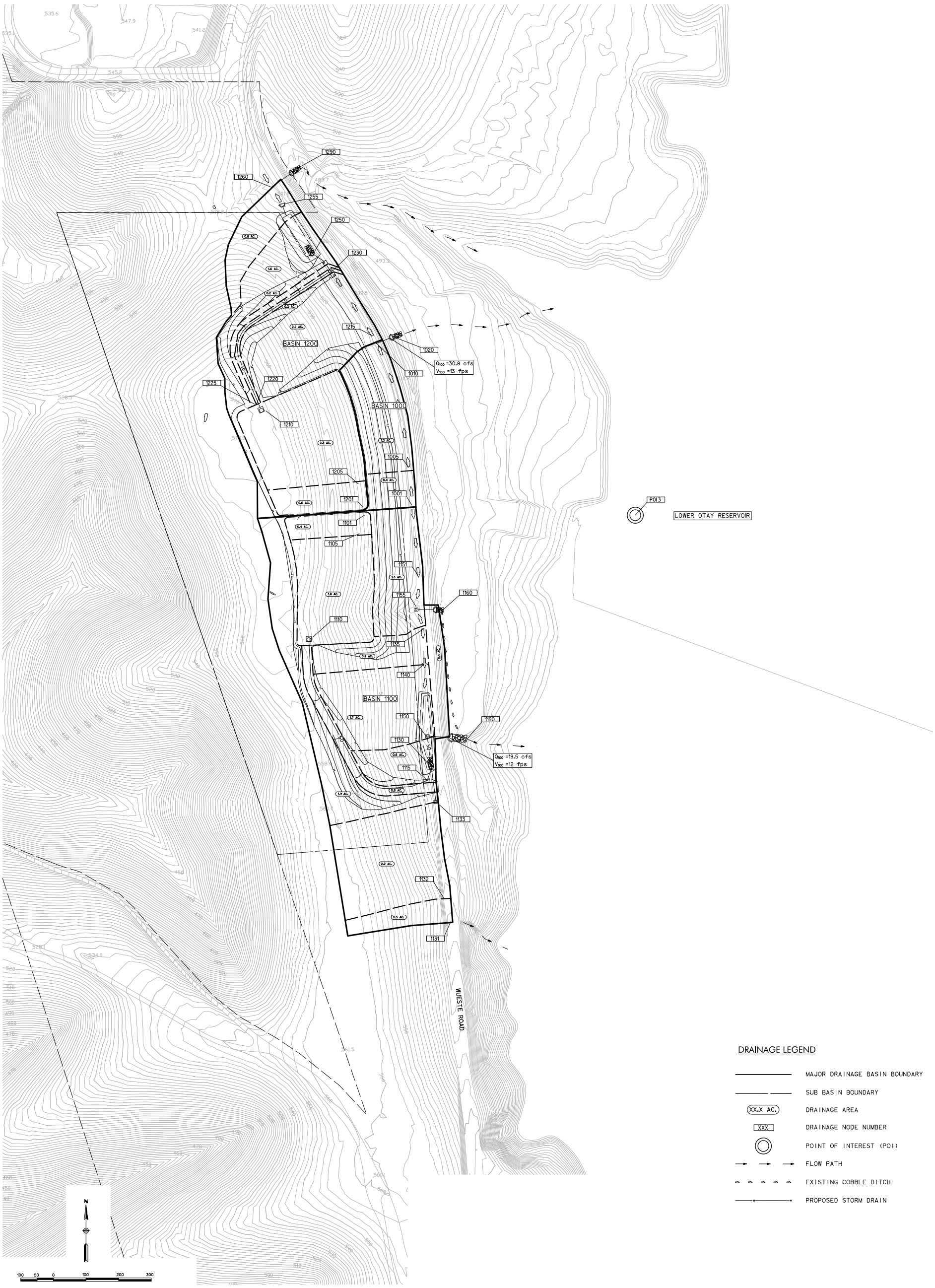

Source: Rick Engineering 2017

Proposed Drainage Conditions (Lake Property)

UNIVERSITY INNOVATION DISTRICT EIR

HELIX Environmental Planning

Figure 5.11-3b

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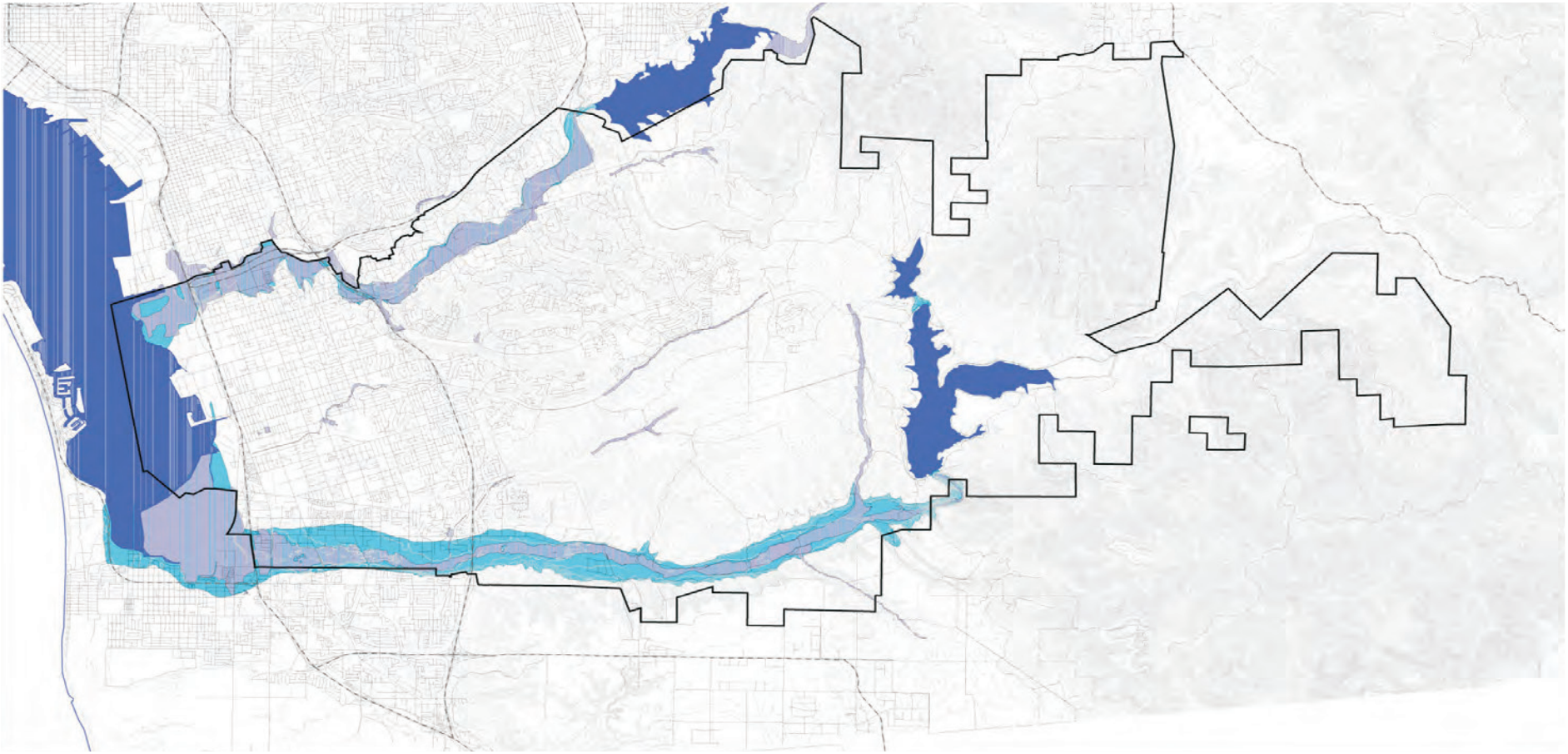

General Plan Area
Water bodies

Flood hazard areas
Areas potentially subject to hazards associated with flooding as defined by the Federal Emergency Management Act (FEMA) Flood Insurance maps (1997) as Special Flood Hazard Areas (SFHA) inundated by a 100-year flood.

Dam inundation areas
Potential zones of unundation due to failure of the Sweetwater Dam, Upper Otay Dam, and Savage Dam as presented in maps obtained from the Governor's Office of Emergeny Services website.

0 Feet 6000

Source: Ninyo & Moore 2003

Flood and Dam Inundation Hazard Map

UNIVERSITY INNOVATION DISTRICT EIR

HELIX Environmental Planning

Figure 5.11.4

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based on applicable industry/regulatory standards, recommendations from the Project Geotechnical Evaluation, and pertinent updates from subsequent (and required) detailed geotechnical investigation. Specifically, these measures include standard efforts such as removal of landslide deposits and replacement with engineered fill, placement of buttress fills, or a combination of these efforts. Site-specific conditions and remedial efforts associated with landslide hazards would be verified through City plan review and on-the-ground geotechnical observations and testing during Project excavation, grading and construction activities (including detailed geotechnical investigation). Without incorporation of Mitigation Measures 5.8-1a through 5.8-1c, site-specific modifications to the described recommendations may not be implemented as necessary to ensure conformance with applicable regulatory requirements and industry standards and as such, impacts would be potentially significant (Impact 5.11-6).

5.11.4 Level of Significance Prior to Mitigation

A. Water Quality Standards

Impact 5.11-1a: Water quality impacts associated with erosion and sedimentation would be potentially significant.

Impact 5.11-1b: Water quality impacts associated with construction-related hazardous materials would be potentially significant.

Impact 5.11-1c: Water quality impacts related to extraction of groundwater during construction would be potentially significant.

Impact 5.11-1d: Long-term Project-related water quality impacts would be considered significant.

Impact 5.11-1e: Potentially significant impacts related to hydromodification requirements would occur.

B. Groundwater Supplies and Recharge

No significant impacts related to groundwater supplies and recharge have been identified.

C. Erosion or Siltation

Impact 5.11-2: Drainages serving the Project site would be susceptible to increased erosion resulting from increased peak flow rates, increased runoff volumes, and duration, which would result in a potentially significant impact.

D. Surface Runoff

Impact 5.11-3: Drainages serving the southern basin would be susceptible to increased peak flow rates and increased runoff volumes, which would result in a potentially significant flooding impact.

E. Exceed Drainage Capacity

Impact 5.11-4: The Project could generate or contribute to flows that exceed capacity of existing or planned water systems.

F. Degradation of Water Quality

Impact 5.11-5: Potentially significant impacts related to degrading water quality could occur.

G. 100-Year Flood Hazards

No significant impacts related to 100-year flood hazards have been identified for the Project.

H. Consistency with Water Quality Policies

No significant impacts related to consistency with water quality policies have been identified for the Project.

I. Flooding

No significant impacts related to flooding have been identified with the Project.

J. Inundation

Impact 5.11-6: Impacts related to inundation would be potentially significant.

5.11.5 Mitigation Measures

Development of the UID site would occur as future applicants apply for various permits. The mitigation measures below identify that a future applicant would be responsible for the implementation of the following mitigation measures. The Project includes features and would implement BMPs to reduce potential impacts to hydrology and water quality. These features are also prescribed as mitigation measures to ensure implementation.

A. Water Quality Standards

Water quality impacts associated with erosion and sedimentation would be potentially significant (Impacts 5.11-1a through 5.11-1e). Mitigation Measures 5.11-1a through 5.11-1f would reduce impacts to level than significant levels:

5.11-1a Storm Water Pollution Prevention Plan (SWPPP). Prior to the issuance of each grading permit for any land development permit, including clearing and grading, the Project applicant shall submit notice of intent and obtain coverage under the National Pollutant Discharge Elimination System permit for construction activity from the State Water Resources Control Board. Adherence to all conditions of the General Permit for Construction Activity is required. The applicant shall be required under the State Water Resources Control Board General Construction Permit to develop a SWPPP and monitoring plan that shall be submitted to the City Engineer and the Director of Public Works. The SWPPP shall be incorporated into the grading and drainage plans and shall

specify both construction and post-construction structural and non-structural best management practices on the site to reduce the amount of sediments and pollutants in construction and post-construction surface runoff before it is discharged into off-site storm water facilities. Section 7 of the City's Storm Water Manual outlines construction site best management practice requirements. The SWPPP shall also address operation and maintenance of post-construction pollution prevention measures, including short-term and long-term funding sources and the party or parties that will be responsible for said measures, as well as measures to maintain the Project area free of trash and debris; employ appropriate standard spill prevention practices and clean-up materials; install and maintain sediment and erosion control measures in accordance with an approved SWPPP; maintain effective control of fugitive dust; and properly store, handle, and dispose of all toxins and pollutants including waste materials. The SWPPP shall incorporate construction and post-construction best management practices as outlined in the UID Edge Plan (Appendix D of the UID SPA Plan). The grading plans shall note the condition requiring a SWPPP and monitoring plans. Additional notes shall be included on the applicable construction plans to the satisfaction of the City Engineer and the Director of Public Works:

- A qualified biologist shall be on site to monitor all vegetation clearing and periodically thereafter during construction to ensure implementation of appropriate resource protection measures.

- Dewatering shall be conducted in accordance with standard regulations of the RWQCB. A permit to discharge water from dewatering activities will be required.

- During construction, material stockpiles shall be placed such that they cause minimal interference with on-site drainage patterns.

- Material stockpiles shall be covered when not in use.

- Graded areas shall be periodically watered to minimize dust that may affect adjacent vegetation.

Also, performance measures contained in the Edge Plan shall be implemented to avoid the release of toxic substances associated with urban runoff, including:

- Sediment shall be retained on site by a system of sediment basins, traps, or other appropriate measures.

- Storm drains shall be equipped with silt and oil traps to remove oils, debris, and other pollutants. Storm drain inlets shall be labeled "No Dumping-Drains to Ocean." Storm drains shall be regularly maintained to ensure their effectiveness.

- The parking lots shall be designed to allow storm water runoff to be directed to vegetative filter strips and/or oil-water separators to control sediment, oil, and other contaminants.

- Permanent energy dissipators shall be included for drainage outlets.
- The BMPs contained in the SWPPP shall include, but are not limited to, silt fences, fiber rolls, gravel bags, and soil stabilization measures such as erosion control mats and hydro-seeding.
- The Project area drainage basins will be designed to provide effective water quality control measures, as outlined in the Project's Water Quality Technical Reports. Design and operational features of the drainage basins will include design features to provide maximum infiltration and maximum detention time for settling of fine particles; maximize the distance between basin inlets and outlets to reduce velocities; and establish maintenance schedules for periodic removal of sedimentation, excessive vegetation, and debris.

5.11-1b **Supplemental Water Quality Report**. Prior to the issuance of each grading permit, the applicant shall submit a supplemental report to the site-specific PDP SWQMP (Rick Engineering 2015b; Appendix H of this EIR) that identifies which on-site storm water management measures from the PDP SWQMP have been incorporated into the Project to the satisfaction of the City Engineer. If a storm water management option is chosen by the planning area owner that is not shown in the water quality technical report, a project-specific water quality technical report shall be prepared for the planning area, referencing the Water Quality Technical Report for the UID for information relevant to regional design concepts (e.g., downstream conditions of concern) to the satisfaction of the City Engineer.

5.11-1c **Post-Construction/Permanent Best Management Practices**. Prior to issuance of each grading permit, the City Engineer shall verify that applicants have incorporated and will implement post-construction BMPs in accordance with current regulations. In particular, applicants are required to comply with the requirements of Section 2c of the City of Chula Vista's Standard Urban Storm Water Management Plan, the Chula Vista Development Storm Water Manual, and the PDP SWQMP for the UID or any supplements thereto to the satisfaction of the City Engineer. Specifically, the applicant shall implement low impact development (LID) best management practices in the preparation of all site plans and incorporate structural on-site design features into the Project design to address site design and treatment control best management practices as well as requirements of the hydromodification management plan. The applicant shall monitor and mitigate any erosion in downstream locations that may occur because of on-site development.

5.11-1d **Limitation of Grading**. Prior to issuance of each grading permit, the Project applicant shall comply with the Chula Vista Development Storm Water Manual limitation of grading requirements, which limit disturbed soil area to 100 acres, unless expansion of a disturbed area is specifically approved by the Director of Public Works. With any phasing resulting from this limitation, if required, the Project applicant shall provide, to the satisfaction of the City Engineer, erosion and sediment control best management practices in areas that may not be completed, before grading of additional areas begin.

5.11-1e Hydromodification Criteria. Prior to issuance of each grading permit, the Project applicant shall comply, to the satisfaction of the City Engineer, with City hydromodification criteria or the hydromodification management plan (see Appendix H), as applicable, addressed as part of the UID SPA Plan concurrent with grading and improvement plans for the Project.

5.11-1f Outfall Erosion. Prior to issuance of each grading permit, the Project applicant shall monitor any erosion at the Project's outfall at the Otay River and Lower Otay Lake and, prior to the last building permit for the Project, obtain approval for and complete any reconstructive work necessary to eliminate any existing erosion and prevent future erosion from occurring, all to the satisfaction of the Development Services Director.

B. Groundwater Supplies and Recharge

No mitigation measures are required.

C. Erosion or Siltation

Impacts related to increased erosion would be potentially significant (Impact 5.11-2). Mitigation Measures 5.11-1a through 5.11-1f above would reduce impacts related to erosion.

D. Surface Runoff

A potentially significant flooding impact associated with surface runoff could occur (Impact 5.11-3). Mitigation Measures 5.11-1a through 5.11-1f above would reduce impacts related to surface runoff.

E. Exceed Drainage Capacity

With regard to exceedance of drainage capacity (Impact 5.11-4), although the Project includes features to reduce the amount and rate of runoff to a less than significant level, these features are included as Mitigation Measures 5.11-1a through 5.11-1f to assure implementation and facilitate monitoring through buildout of the Project.

F. Degradation of Water Quality

Potentially significant impacts related to degrading water quality could occur (Impact 5.11-5). Mitigation Measures 5.11-1a through 5.11-1f above would reduce impacts related to degradation of water quality.

G. 100-Year Flood Hazards

No mitigation measures are required.

H. Consistency with Water Quality Policies

No mitigation measures are required.

I. Flooding

No mitigation measures are required.

J. Inundation

Impacts related to inundation would be potentially significant (Impact 5.11-6). Implementation of Mitigation Measures 5.8-1a through 5.8-1c would reduce impacts related to inundation.

5.11.6 Level of Significance After Mitigation

A. Water Quality Standards

Water quality impacts associated with erosion and sedimentation (Impacts 5.11-1a through 5.11-1e) would be reduced to less than significant levels with implementation of Mitigation Measures 5.11-1a through 5.11-1f because the mitigation requires appropriate water quality control BMPs in conformance with the Project SWPPP and related City and NPDES requirements, which are designed to address water quality standards. Specifically, the mitigation measures would minimize erosion, siltation, and pollution within sensitive vegetation communities.

B. Groundwater Supplies and Recharge

Impacts related to groundwater would be less than significant without mitigation.

C. Erosion or Siltation

Impacts associated with increased erosion (Impact 5.11-2) would be reduced to less than significant levels with implementation of Mitigation Measures 5.11-1a through 5.11-1f because the mitigation would require appropriate water quality control BMPs in conformance with the Project SWPPP and related City and NPDES requirements, which are designed to address erosion and siltation.

D. Surface Runoff

A potentially significant flooding impact associated with surface runoff erosion (Impact 5.11-3) would be reduced to less than significant levels with implementation of Mitigation Measures 5.11-1a through 5.11-1f because the mitigation would require appropriate water quality control BMPs would be in conformance with the Project SWPPP and related City and NPDES requirements, which are designed to address surface runoff.

E. Exceed Drainage Capacity

With regard to exceedance of drainage capacity (Impact 5.11-4), although the Project includes features to reduce the amount and rate of runoff to a less than significant level, these features are included as Mitigation Measures 5.11-1a through 5.11-1f to assure implementation and facilitate monitoring through buildout of the Project. Implementation of Mitigation Measures 5.11-1a through 5.11-1f would require appropriate water quality control BMPs in conformance with the Project SWPPP and related City and NPDES requirements, which are designed to address drainage capacity.

F. Degradation of Water Quality

Potentially significant impacts related to degradation of water quality (Impact 5.11-5) would be reduced to less than significant levels with implementation of Mitigation Measures 5.11-1a through 5.11-1f because the mitigation would require appropriate water quality control BMPs in conformance with the Project SWPPP and related City and NPDES requirements.

G. 100-Year Flood Hazards

Impacts would be less than significant without mitigation.

H. Consistency with Water Quality Policies

Impacts would be less than significant without mitigation.

I. Flooding

Impacts would be less than significant without mitigation.

J. Inundation

Impacts related to inundation (Impact 5.11-6) would be reduced to less than significant levels with implementation of Mitigation Measures 5.8-1a through 5.8-1c because the mitigation would require compliance with state and City standards related to removal of landslide deposits and replacement with engineered fill, placement of buttress fills, or a combination of these efforts.

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