

4.8 HYDROLOGY AND WATER QUALITY

The environmental setting, regulatory framework, potential impacts, and mitigation measures concerning hydrology and water quality are discussed in 2016 PEIR Section 4.8 and hereby incorporated by reference. The additions/changes to those analyses necessary to make the 2016 PEIR applicable to the revised Project are presented below.

This Section identifies the existing environmental conditions in the affected area, identifies and analyzes the Project's potentially significant environmental impacts, and recommends mitigation measures to avoid/reduce future projects' construction and operational impacts. This Section addresses the Project's potential impacts concerning water quality, groundwater, drainage patterns/runoff, and flooding/inundation.

4.8.1 EXISTING ENVIRONMENTAL SETTING

2016 PEIR

The existing environmental setting concerning hydrology and water quality is discussed in 2016 PEIR Section 4.8.1 (pages 4.8-1 through 4.8-9) and the additions/changes necessary to make the 2016 PEIR applicable to the revised Project are presented below.

ADDITIONS/CHANGES SINCE 2016 PEIR

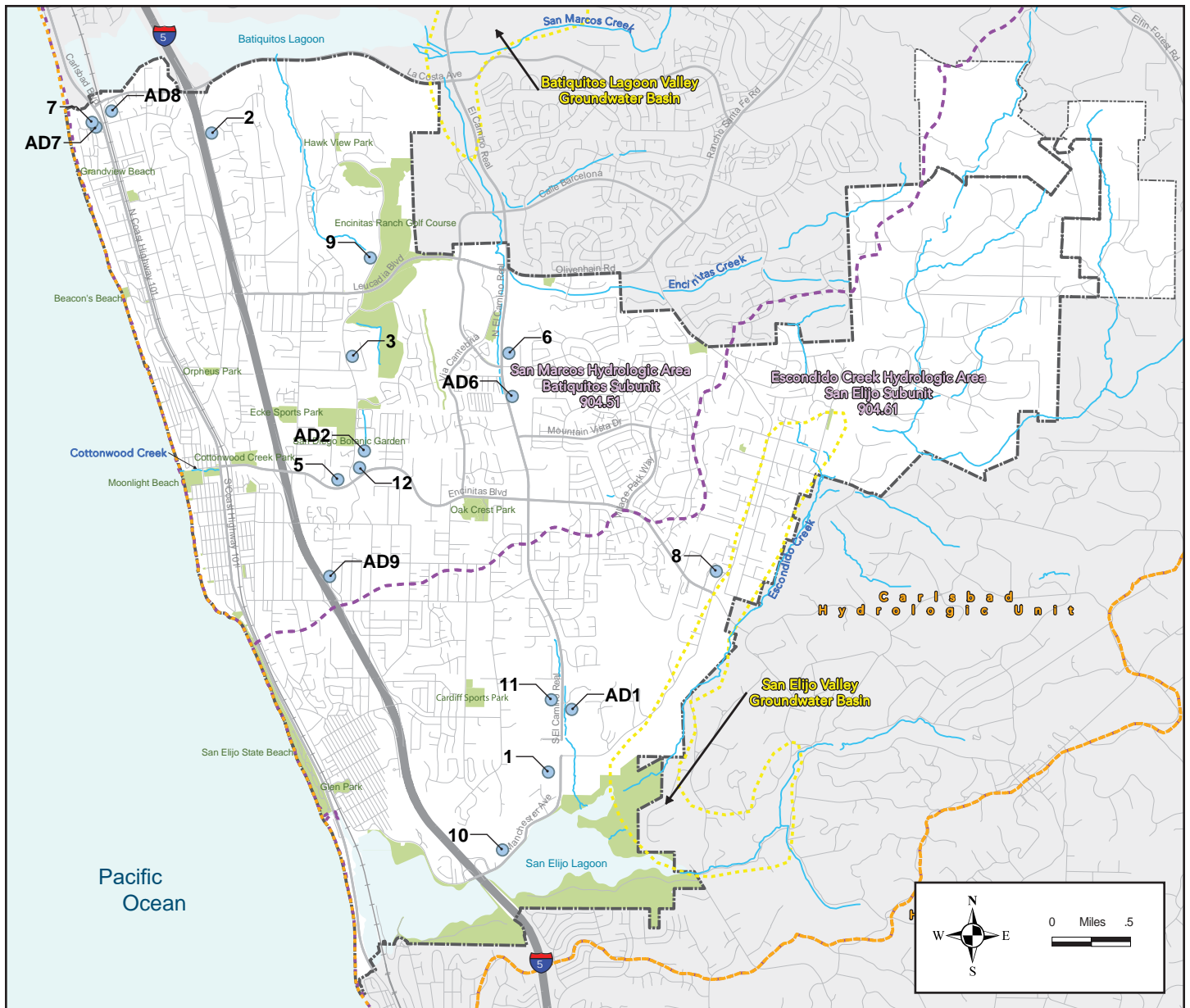
Hydrology: Surface Water and Watershed

Surface water features and watershed features are depicted on Figure 4.8-1, *Hydrological Features*. The City is entirely within the Carlsbad Hydrological Unit watershed, with the northern portion of the City within the San Marcos Hydrological Area, Batiquitos Subunit, and the southern portion within the Escondido Creek Hydrological Area, San Elijo Subunit. Creek and lagoon locations are also shown on Figure 4.8-1. No changes to the watersheds or water features have occurred since the 2016 PEIR.

Hydrology: Flood Hazard

The Federal Emergency Management Agency's (FEMA) primary missions are to reduce the loss of life and property and protect the nation from all hazards, including flooding. Flood zones are geographic areas that FEMA has defined according to varying levels of flood risk. These zones are depicted on a community's Flood Insurance Rate Map (FIRM) or Flood Hazard Boundary Map. Each zone reflects the severity or type of flooding in the area. Portions of the City are within a FEMA 100-year flood zone and the 10-year flood zone. Figure 4.8-2, *Flood Hazards*, identifies the candidate sites within or immediately adjacent to a 100-year flood zone or dam inundation area.

Portions of the City are also within a dam inundation area. Dam inundation areas are downstream areas subject to flooding or other effects during large storm events. Dam inundation areas are subject to the uncontrolled release of an upstream reservoir as well as events leading to breaks in levees or dams.



Source: RECON, Final Environmental Assessment/Program Environmental Impact Report for, At Home in Encinitas, Figure 4.8-1, Hydrological Features, May 12, 2016.



The following candidate sites are either within or immediately adjacent to a 100-year flood zone or dam inundation area:

Cardiff:

- Candidate Site #1: Outside of but proximate to a dam inundation area
- Candidate Site #10: Within a 100-year flood zone and a dam inundation area

Olivenhain:

- Candidate Site #8: Outside of but proximate to a dam inundation area

There are no candidate sites within a 10-year flood zone or a Floodplain Overlay Zone, as identified on the City of Encinitas Floodplain Overlay Zone Map.

Hydrology: Tsunamis and Seiches

None of the candidate sites are within a tsunami hazard zone or would be affected by a seiche¹.

Water Quality: Beneficial Uses and 303(d) List Status

The 2016 PEIR notes that the beneficial uses of surface water in the San Marcos and Escondido Creek Hydrological Areas include industrial service supply, agricultural supply, navigation, water contact recreation, non-contact water recreation, commercial and sport fishing, preservation of biological habitats of special concern, estuarine habitat, wildlife habitat, preservation of rare and endangered species, marine habitat, fish migration, and shellfish harvesting. Contact uses include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, surfing, and fishing. Non-contact uses include, but are not limited to, picnicking, sunbathing, hiking, beach-combing, camping, boating, tidepool and marine life study, hunting, sightseeing, or aesthetic enjoyment in conjunction with the above activities. No changes would occur because of the candidate sites.

The Federal Clean Water Act (CWA) Section 303(d) requires states to assess the quality of their waters and publish a list of those waters not meeting water quality standards. For water bodies placed on the 303(d) List of Water Quality Limited Segments, states are required to develop total maximum daily loads (TMDLs) ² for the pollutant(s) that are causing standards impairment. Once a water body is placed on the 303(d) List of Water Quality Limited Segments, it remains on the list until a Total Maximum Daily Load (TMDL) is adopted and/or water quality standards are attained. The affected segments within the City that are listed on the 303(d) List are shown on Figure 4.8-3, *303(d) List of Impaired Water Quality Segments*.

¹ "Tsunami Inundation Map for Emergency Planning, Encinitas Quadrangle." California Emergency Management Agency, California Geological Survey, University of Southern California, 1 June 2009.
www.conservation.ca.gov/cgs/geologic_hazards/Tsunami/Inundation_Maps/SanDiego/Documents/Tsunami_Inundation_Encinitas_Quad_SanDiego.pdf.

² A TMDL is a written plan that describes how an impaired water body will meet water quality standards. Section 303(d) of the CWA requires states to develop TMDLs for impaired waterbodies
https://www.waterboards.ca.gov/water_issues/programs/tmdl/docs/tmdl_factsheet.pdf



Source: California Environmental Protection Agency, State Water Resources Control Board, Impaired Water Bodies, Final 2014/2016 California Integrated Report (Clean Water Act Section 303(d) List / 305(b) Report).

As identified in the 2014 and 2016 California 303(d) List of Water Quality Limited Segments:

- Cottonwood Creek is listed for DDT, toxicity, benthic community effects, nitrogen, phosphorous, and selenium.
- Encinitas Creek is listed for benthic community effects, selenium, toxicity, and phosphorous.
- Escondido Creek is listed for benthic community effects, DDT, indicator bacteria, toxicity, manganese, phosphate, selenium, sulfates, and total dissolved solids.
- Pacific Ocean Shoreline, Batiquitos Hydrologic Subarea at Moonlight Beach is listed on the 303(d) list of indicator bacteria and for trash.
- Pacific Ocean Shoreline, San Elijo Hydrologic Subarea at Cardiff State Beach at San Elijo Lagoon is listed for indicator bacteria.
- Pacific Ocean Shoreline, San Elijo Hydrologic Subarea at Cardiff State Beach at parking lot entrance is listed for trash.
- San Elijo Lagoon is listed as an impaired water body for indicator bacteria, toxicity, eutrophic, sedimentation/siltation.
- San Elijo Creek, unnamed tributary at San Elijo Avenue is on the 303(d) list for indicator bacteria.

4.8.2 REGULATORY FRAMEWORK

IMPACTS:

2016 PEIR

The regulatory framework concerning hydrology and water quality, as discussed in 2016 PEIR Section 4.8.2 (pages 4.8-9 through 4.8-17), applies to the revised Project. The additions/changes necessary to make the 2016 PEIR applicable to the revised Project are presented below.

Encinitas Stormwater Manual

The Encinitas Stormwater Manual has been superseded by the City of Encinitas Engineering Design Manual Chapter 7, *BMP Design Manual (Stormwater Manual & Appendices)* (effective February 16, 2016). Stormwater Manual Chapter 7 is consistent with 2013 Municipal Stormwater Permit requirements.

4.8.3 SIGNIFICANCE DETERMINATION THRESHOLDS

Consistent with the 2016 PEIR and in substantial conformance with CEQA Guidelines Appendix G, impacts would be significant if the Project would:

- Violate any water quality standards or waste discharge requirements (see Issue 1);
- Substantially deplete ground water supplies or interfere substantially with ground water recharge such that there would be a net deficit in aquifer volume or a lowering of the local ground water 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) (see Issue 2);
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in a substantial erosion or siltation on- or off-site (see Issue 3);

- 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 (see Issue 4);
- Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff (see Issue 5);
- Otherwise substantially degrade water quality (see Issue 6);
- Place housing within a 100-year flood hazard area as mapped on a Federal Flood Hazard Boundary or FIRM or other flood hazard delineation map (see Issue 7);
- Place within a 100-year flood hazard area structures which would impede or redirect flood flows (see Issue 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 (see Issue 9); or
- Inundation by seiche, tsunami, or mudflow (see Issue 10).

4.8.4 IMPACTS AND MITIGATION MEASURES

4.8.4 - Issues 1 and 6: Water Quality

Impacts related to water quality would be significant if the Project would:

Violate any water quality standards or waste discharge requirements or otherwise substantially degrade water quality.

IMPACTS:

2016 PEIR

The potential impacts concerning water quality are discussed in 2016 PEIR Section 4.8.5 (Issues 1 and 6, pages 4.8-19 and 4.8-20). The 2016 PEIR noted that all future development, including housing sites proximate to impaired water bodies, would be required to comply with City of Encinitas Municipal Code (EMC) Chapters 20.08 and 23.24; all pertinent City of Encinitas Jurisdictional Runoff Management Plan requirements; the City of Encinitas Stormwater Manual and Stormwater Standards Manual; the National Pollutant Discharge Elimination System (NPDES) Municipal Stormwater (MS4) Permit, NPDES General Construction Permit; and all water quality-related regulations. Where projects would disturb one or more acres of soil, or where a project would disturb less than one acre but is a part of larger development plan that totals one or more acres, the NPDES permitting process requires coverage under the Construction General Permit. The Construction General Permit requires preparation of a Storm Water Pollution Prevention Plan (SWPPP). For sites of less than one acre, projects would be required to comply with the City's water quality requirements. The 2016 PEIR concluded that while development of the housing sites has the potential to increase the amount of pollutants discharged into surface waters, all development would be subject to Federal, State, and local regulations including Encinitas General Plan (EGP) policies intended to control water quality impacts. Substantial adverse water quality impacts would be avoided and impacts would be less than significant.

The additions/changes necessary to make the 2016 PEIR applicable to the revised Project are presented below.

REVISED PROJECT

The following candidate sites are within or adjacent to impaired waters:

Cottonwood Creek

- Leucadia: Candidate Site #3
- Old Encinitas: Candidate Sites #5, #12, and #AD2

San Elijo Lagoon

- Cardiff: Candidate Site #10

As with the Project analyzed in the 2016 PEIR, future development with the revised Project has the potential to increase the amount of pollutants discharged into surface waters. However, future development would be subject to Federal, State, and local regulations including EGP policies outlined below, which are intended to control water quality impacts. Therefore, substantial adverse water quality impacts would be avoided and impacts would be less than significant.

GENERAL PLAN POLICIES AND MITIGATION MEASURES:

GENERAL PLAN POLICIES:

Refer to Appendix E, *Relevant General Plan Policies*, for the full text of these policies.

- LUE Policy 2.8
- LUE Policy 2.10
- LUE Policy 2.11
- RME Policy 1.6
- RME Policy 2.1
- RME Policy 2.2
- RME Policy 2.3

MITIGATION MEASURES:

No mitigation measures concerning water quality were identified in 2016 PEIR Section 4.8 and none are necessary for the Project.

LEVEL OF SIGNIFICANCE: Less Than Significant Impact

4.8.4 - Issue 2: Groundwater

Impacts related to groundwater would be significant if the Project would:

Substantially deplete ground water supplies or interfere substantially with ground water recharge such that there would be a net deficit in aquifer volume or a lowering of the local ground water 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).

IMPACTS:

2016 PEIR

The 2016 PEIR noted that most of the housing sites involved impervious surfaces, although 13 sites were undeveloped or partially undeveloped. Future development of vacant sites would increase those sites' impervious surfaces. The analysis concluded that buildout of the housing sites would incrementally decrease the amount of water infiltration into the groundwater basins, with an associated reduction of ground water recharge. Future development would be required to incorporate Low Impact Development

(LID) features that would minimize impervious area, as much as feasible, and promote water infiltration. In addition, installation of treatment control and hydromodification management facilities was required, which would promote retention and infiltration of stormwater within a development site. Redevelopment of improved sites would require compliance with water quality standards in place at the time of construction, which would result in reduced runoff, greater infiltration, and improved water quality relative to the existing condition.

Potable water would be obtained from the San Dieguito Water District (SDWD), a subsidiary district to the City of Encinitas or Olivenhain Municipal Water District (OMWD) (serving other areas of the City). According to the districts' Urban Water Management Plans, groundwater is not used as a source of potable supplies. Therefore, buildout of the housing sites would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge.

The 2016 PEIR notes that while development of the housing sites has the potential to increase impervious surfaces and decrease groundwater infiltration, requirements for LID and best management practices (BMPs) would reduce impacts. Therefore, the 2016 PEIR concluded that impacts on groundwater levels and groundwater recharge would be less than significant.

The additions/changes necessary to make the 2016 PEIR applicable to the revised Project are presented below.

REVISED PROJECT

The candidate sites include both vacant and developed parcels. Future development of the candidate sites would increase the amount of impervious surfaces on each site. As previously noted, SDWD and OMWD provide water services to the City's residents. Both districts' 2015 Urban Water Management Plans note that they do not use groundwater to supply their service areas.³ OMWD is studying the use of developing a local groundwater water supply through the desalinization of brackish water. Future development of the candidate sites has the potential to increase impervious surfaces and decrease groundwater infiltration. Future development projects would be required to comply with Federal, State, and local plans, policies, and regulations. Therefore, impacts on groundwater levels and groundwater recharge would be less than significant.

GENERAL PLAN POLICIES AND MITIGATION MEASURES:

GENERAL PLAN POLICIES:

No General Plan policies are applicable.

MITIGATION MEASURES:

No mitigation measures were identified in 2016 PEIR Section 4.8.6 and none are necessary for the Project.

LEVEL OF SIGNIFICANCE: Less Than Significant Impact

³ San Dieguito Water District 2015 Urban Water Management Plan (2016) and Olivenhain Municipal Water District 2015 Urban Water Management Plan (2016).

4.8.4 - Issues 3, 4, and 5: Drainage Pattern/Runoff

Impacts related to drainage and runoff would be significant if the Project would:

Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in a substantial erosion or siltation on- or off-site;

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; or

Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.

IMPACTS:**2016 PEIR**

The potential impacts concerning drainage patterns and runoff are discussed in 2016 PEIR Section 4.8.7 (Issues 3, 4 and 5, pages 4.8-21 and 4.8-22). The 2016 PEIR concluded development of the housing sites would not result in substantial changes to the City's overall drainage patterns. Stormwater runoff from housing sites would be collected within the existing stormwater conveyance system and runoff would ultimately be discharged into the Pacific Ocean. The drainage areas, as well as the drainage characteristics/patterns in the buildout condition would be like existing conditions. However, the 2016 PEIR concluded that an increase in impervious surfaces would potentially increase stormwater runoff to the drainage systems. Projects would be required to comply with EMC Chapter 23.24, *Grading, Erosion and Sediment Control*; no significant impacts to upstream or downstream properties were identified. Any proposed storm drain system improvements for future development would also be required to be designed for the 100-year storm event so it would not result in flood hazards on surrounding lands, erosion or siltation, or exceed the capacity of the storm drain system. All development would be required to adhere to EGP policies, and applicable Federal, State, and City regulatory standards to effectively avoid/address potentially significant impacts concerning hydrology. The 2016 PEIR concluded drainage and runoff impacts would be less than significant.

The additions/changes necessary to make the 2016 PEIR applicable to the revised Project are presented below.

REVISED PROJECT

The Project does not propose new residential or other development; rather, it provides capacity for future development consistent with State law. The Project proposes to retain the underlying EGP land use designations/zoning for each candidate site, but add an R-30 Overlay that would increase the maximum density to 30 dwelling units per net acre. The candidate sites include both developed and vacant/undeveloped properties.

No alteration of the course of a stream or river would occur with Project implementation. It is anticipated that site drainage patterns would largely remain the same on those candidate sites that are currently developed. Under this condition, the storm drain systems would largely maintain the same existing drainage patterns and connectivity. It is anticipated that there would be a conveyance of a similar amount of water to the storm drain system. Grading of vacant sites could change drainage patterns and would be determined on a project-by-project basis. Storm drain systems for each respective development site would tie into the City's existing storm drain infrastructure.

Regardless of existing site conditions, implementation of construction- and post-construction BMPs and LID features would be required. Sediment-control BMPs would be installed to intercept and filter out soil particles that may have been mobilized by flows during construction activities, before these flows discharge into receiving waters. Construction erosion-control BMPs would be used to protect the soil surface by covering and/or binding the soil particles together or divert runoff away from exposed areas and into more suitable locations.

Under the post-developed condition, all runoff throughout a site would be detained/retained and treated before being connected to the existing public storm drain infrastructure. Also, BMPs and LID features would be required to treat the impervious areas' drainage. BMPs and LID features would be required to encourage infiltration of stormwater runoff, where feasible. The structural BMPs and LID feature design would be required to conform to standards outlined in the San Diego Region MS4 Permit in place at the time a site-specific development is proposed.

Therefore, compliance with EGP policies and applicable Federal, State, and City regulatory standards would avoid/reduce potentially significant hydrology impacts to less than significant.

GENERAL PLAN POLICIES AND MITIGATION MEASURES:

GENERAL PLAN POLICIES:

No General Plan policies are applicable.

MITIGATION MEASURES:

No mitigation measures for were identified in 2016 PEIR Section 4.8.7 and none are necessary for the Project.

LEVEL OF SIGNIFICANCE: Less Than Significant Impact

4.8.4 - Issues 7, 8, 9, and 10: Flooding/Inundation

Impacts related to flooding and inundation would be significant if the Project would:

Place housing within a 100-year flood hazard area as mapped on a Federal Flood Hazard Boundary or FIRM or other flood hazard delineation map;

Place within a 100-year flood hazard area structures which would impede or redirect flood flows;

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; or

Result in inundation by seiche, tsunami, or mudflow.

IMPACTS:

2016 PEIR

The potential impacts concerning flooding are discussed in 2016 PEIR Section 4.8.8 (Issues 7, 8, 9 and 10, pages 4.8-23 through 4.8-25). The 2016 PEIR concluded that none of the housing sites were within a FEMA 100-year flood zone. Six housing sites were within 10-year and 100-year flood problem areas identified by the City. The analysis concluded that although development of the housing sites has the potential to result in flooding issues related to mapped flood hazard areas, it is City policy that future improvement projects consider these flooding problem areas during their design phase. Such projects would be required to provide on-site floodwater storage capacity equal to the runoff displaced by the improvements in a 10-year storm event.

Concerning inundation by tsunami, the 2016 PEIR concluded that none of the housing sites were within a tsunami hazard zone. The 2016 PEIR determined that existing regulations, emergency management plans, and protective structures would enhance the structural integrity of coastal development, and Federal emergency notification plans would assist people in affected areas in successful evacuation and avoidance of tsunamis. No impacts associated with inundation related to tsunamis were identified.

The 2016 PEIR concluded that seiche risk was low. To the south, the San Elijo Lagoon is a large contained body of water; the 2016 PEIR found that seiche would be unlikely to affect the southernmost housing sites given the distance between the lagoon and the sites.

Concerning mudflow, the 2016 PEIR concluded there are steep slopes throughout the area. As with development throughout the City where slopes are present, housing projects on sites with slopes/unstable soils would be required to comply with EMC requirements. The 2016 PEIR concluded that no impact concerning seiches or mudflows would occur with buildout of the housing sites.

Three housing sites were identified as being within a dam inundation area. The City requires that flood hazards be considered before development occurs and various EGP policies address flood hazards. The 2016 PEIR concluded impacts associated with dam inundation would be less than significant following compliance with Mitigation Measure HYD-1.

The additions/changes necessary to make the 2016 PEIR applicable to the revised Project are presented below.

REVISED PROJECT

As previously addressed, the following candidate sites are either within or immediately adjacent to a 100-year flood zone or dam inundation area (Figure 4.8-2):

Cardiff:

- Candidate Site #1: Outside of but proximate to a dam inundation area
- Candidate Site #10: Within a 100-year flood zone and a dam inundation area

Olivenhain:

- Candidate Site #8: Outside of but proximate to a dam inundation area

For these housing sites within a dam inundation area, compliance with EGP policies that address flood hazards would be required before development occurs. Additionally, applications for future development wherein the City has determined a potential for flooding impacts would be subject to compliance with Mitigation Measure HYD-1. These future developments would be reviewed to confirm compliance with EMC §23.40.051, which includes standards for construction in areas of special flood hazard. Therefore, following compliance with Mitigation Measure HYD-1, impacts associated with dam inundation would be less than significant.

There are no candidate sites within a Floodplain Overlay Zone as identified on the City of Encinitas Floodplain Overlay Zone Map. There are no candidate sites within a 10-year flood zone. None of the candidate sites are within a tsunami hazard zone or would be affected by a seiche. The Federal, State, and local regulations identified in the 2016 PEIR would also be applicable to the revised Project.

GENERAL PLAN POLICIES AND MITIGATION MEASURES:

GENERAL PLAN POLICIES:

Refer to Appendix E, *Relevant General Plan Policies*, for the full text of these policies.

- LUE Policy 2.10
- LUE Policy 2.11
- LUE Policy 8.2
- PSE Policy 2.6
- RME Policy 1.1

MITIGATION MEASURES:

The mitigation measures concerning cultural resources/historical resources identified in 2016 PEIR Section 4.8 are presented below, inclusive of any additions/changes necessary for the revised Project (indicated by “deleted text”/”underlined text,” respectively).

HYD-1 Applications for future development of housing sites consistent with the new zone program, wherein the City has determined a potential for flooding impacts, shall be reviewed by the City for compliance with applicable components of the City’s Floodplain Management Regulations, specifically Section 23.40.051, which includes standards for construction in areas of special flood hazard. All future development on housing sites consistent with the new zone program, located within mapped flood problem areas or dam inundation areas, shall be designed to reduce potential flooding hazards subject to the satisfaction of the City Engineer.

LEVEL OF SIGNIFICANCE: Less Than Significant With Mitigation Incorporated

4.8.5 SIGNIFICANT UNAVOIDABLE IMPACTS

No significant unavoidable impacts concerning hydrology and water quality have been identified following compliance with the established regulatory framework, General Plan policies, and recommended mitigation measures.

4.8.6 SOURCES CITED

California, State of, State Water Resources Control Board. 2014 and 2016 California 303(d) List of Water Quality Limited Segments. October 3, 2017.

https://www.waterboards.ca.gov/water_issues/programs/tmdl/2014_16state_ir_reports/category5_report.shtml. Accessed April 20, 2018.

Encinitas, City of. Encinitas Floodplain Overlay Zone Map. February 2016.

Encinitas, City of. Municipal Code Section 30.34.040, Floodplain Overlay Zone.

San Dieguito Water District 2015 Urban Water Management Plan (2016) and Olivenhain Municipal Water District 2015 Urban Water Management Plan (2016).

“Tsunami Inundation Map for Emergency Planning, Encinitas Quadrangle.” California Emergency Management Agency, California Geological Survey, University of Southern California, 1 June 2009. www.conservation.ca.gov/cgs/geologic_hazards/Tsunami/Inundation_Maps/SanDiego/Documents/Tsunami_Inundation_Encinitas_Quad_SanDiego.pdf.