# 3.5 Drainage/Hydrology/Water Quality

This section evaluates potential hydrology impacts associated with each of the four scenarios. This section also evaluates changes in drainage patterns and potential water quality impacts to downstream waters, and prescribes measures that would be incorporated into the Project design for each of the scenarios, where required, to reduce impacts to downstream waters and habitat.

## 3.5.1 Regulatory Setting

### 3.5.1.1 Federal

#### a. Clean Water Act

The United States Environmental Protection Agency (EPA) regulates water quality under the Clean Water Act (also known as the Federal Water Pollution Control Act). Enacted in 1972 and significantly amended in subsequent years, the Clean Water Act is designed to restore and maintain the chemical, physical, and biological integrity of waters in the U.S. The Clean Water Act provides the legal framework for several water quality regulations, including National Pollutant Discharge Elimination System (NPDES) permits, effluent limitations, water quality standards, pretreatment standards, anti-degradation policy, non-point source discharge regulation, and wetlands protection.

The EPA has delegated the responsibility for administration of portions of the Clean Water Act to state and regional agencies. The Clean Water Act requires the states to adopt water quality standards for receiving water bodies and to have those standards approved by the EPA. Water quality standards consist of designated beneficial uses for a particular receiving water body (wildlife habitat, agricultural supply, fishing, etc.), along with water quality criteria necessary to support those uses. Water quality criteria are prescribed concentrations or levels of constituents, such as lead, suspended sediment, and fecal coliform bacteria, or they are narrative statements that represent the quality of water supporting a particular use.

### 3.5.1.2 State

#### a. Porter–Cologne Water Quality Control Act

The Porter–Cologne Water Quality Control Act established the principal California legal and regulatory framework for water quality control. The Porter–Cologne Water Quality Control Act is embodied in the California Water Code. The California Water Code authorizes the State Water Resources Control Board (SWRCB) to implement the provisions of the federal Clean Water Act. The State of California is divided into nine

regions governed by Regional Water Quality Control Boards (RWQCBs). The RWQCBs implement and enforce provisions of the California Water Code and the Clean Water Act under the oversight of the SWRCB. The City of Riverside (City) is located within the purview of the Santa Ana RWQCB ([SARWQCB] Region 8). The Porter–Cologne Act also provides for the development and periodic review of Water Quality Control Plans (Basin Plans) that designate beneficial uses of California's major rivers and groundwater basins and establish water quality objectives for those waters.

## 3.5.1.3 Local

### a. Santa Ana RWQCB

The SARWQCB has adopted a Basin Plan for the Santa Ana Basin (which includes the Project vicinity) that outlines plans, policies, and provisions for water quality management in the region. Beneficial uses of major surface waters and their tributaries are identified and described in the Basin Plan. Storm water flows directly into the City's storm drain system, which then discharges into the Santa Ana River. The Project vicinity ultimately discharges to Reach 3 of the Santa Ana River. The beneficial uses of Reach 3 of the Santa Ana River are shown in Table 3.5-1.

**TABLE 3.5-1**
**BENEFICIAL USES OF RECEIVING WATERS**

| Water Body | Beneficial Uses | Definition |
|---|---|---|
| Santa Ana River—Reach 3 | Agricultural Supply (AGR) | Waters are used for farming, horticulture, or ranching. Uses may include, but are not limited to, irrigation or stock watering. |
| | Groundwater Recharge (GWR) | Groundwater recharge waters, used for natural or artificial recharge of groundwater for purposes that may include future extraction or maintaining water quality. |
| | Rare, Threatened, or Endangered Species (RARE) | Waters support habitats necessary for the survival and successful maintenance of plant or animal species designated under state or federal law as rare, threatened, or endangered. |
| | Water Contact Recreation (REC 1) | Water contact recreation waters, used for recreational activities involving body contact with water where ingestion of water is reasonably possible. Uses may include swimming, wading, water-skiing, skin and scuba diving, or fishing. |
| | Non-contact Water Recreation (REC 2) | Waters are used for recreational activities involving proximity to water, but not normally involving body contact with water where ingestion of water would be reasonably possible. These uses may include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, sightseeing, and aesthetic enjoyment. |

**TABLE 3.5-1**
**BENEFICIAL USES OF RECEIVING WATERS**
**(Continued)**

| Water Body | Beneficial Uses | Definition |
|---|---|---|
| Santa Ana River— Reach 3 (cont.) | Warm Freshwater Habitat (WARM) | Warm freshwater habitat waters support warm water ecosystems that may include preservation and enhancement of aquatic habitats, vegetation, fish/wildlife, and invertebrates. |
| | Wildlife Habitat (WILD) | Wildlife habitat waters support wildlife habitats that may include the preservation and enhancement of vegetation and prey species used by waterfowl and other wildlife. |

The Basin Plan also identifies water bodies that are impaired within the region. Impaired is defined as being affected by the presence of pollutants or contaminants. In order to address these impairments, the Total Maximum Daily Load (TMDL) process is implemented, which dictates allowable pollutant loads for each source, and identifies management measures to assure that water quality standards are attained. Reach 3 of the Santa Ana River (the receiving water for the Project vicinity) is listed as an impaired water body for pathogens on the "2006 Clean Water Act Section 303(d) List of Water Quality Limited Segments Being Addressed by EPA-approved TMDLs."

## b. Municipal Code

The Riverside Municipal Code (RMC) contains several provisions regulating the discharge of storm water and changes in hydrology. For example, Title 14, Public Utilities, Chapter 14.12 of the RMC regulates discharges into the City's sewer and storm drain systems. Chapter 14.12 also prohibits discharges to the City's sewer and storm drain systems that contain pollutants or that would impair the operation of those systems. The chapter also contains specific regulations for industrial dischargers. That chapter also gives the City enforcement authority to declare violations, apply penalties, and impose stop-work orders, monitoring requirements, and other enforcement mechanisms. In addition, Title 17 of the RMC governs grading activities in the City. The purpose of the Grading Code is, in part, to "regulate hillside and arroyo grading in a manner which minimizes the adverse effects of grading on natural landforms, soil erosion, dust control, water runoff, and construction equipment emissions."

The General Plan 2025 includes policies related to hydrology and water quality to reduce potential environmental impacts to water quality, drainage, and urban runoff.

### *Open Space and Conservation Element*

Policy OS-10.6: Continue to enforce RWQCB regulations regarding urban runoff.

Policy OS-10.7: Work with the RWQCB in the establishment and enforcement of urban runoff water quality standards.

Policy OS-10.8: Cooperate with Riverside and San Bernardino counties and adjacent jurisdictions in the review and approval of new developments, which affect the quality and quantity of basin-wide groundwater and surface water resources.

Policy OS-10.9: Evaluate development projects for compliance with NPDES requirements and require new development to landscape a percentage of the site to filter pollutant loads in storm water runoff and provide groundwater percolation zones.

***Public Facilities and Infrastructure Element***

Policy PF-4.1: Continue to fund and undertake storm drain improvement projects as identified in the City of Riverside Capital Improvement Plan.

Policy PF-4.2: Continue to cooperate in regional programs to implement the NPDES program.

Policy PF-4.3: Continue to routinely monitor and evaluate the effectiveness of the storm drain system and make adjustments as needed.

***Land Use and Urban Design Element***

Policy LU-5.1: Minimize public and private development in and in close proximity to any of the City's arroyos.

Policy LU-5.3: Encourage that any new bridges proposed to cross any of the City’s major arroyos are span bridges or soft-bottom culverts that minimize disturbance of the ground and wetland area.

Policy LU-5.4: Continue to require open space easements in conjunction with new development to be recorded over arroyo areas, per the City’s Grading Code.

Policy LU-5.5: Work with Riverside County to develop, implement, and maintain comprehensive management plans for protection of entire arroyo systems.

### 3.5.1.4 Storm Water Runoff Requirements

Development projects in the City are required to control storm water runoff during and after construction (operation) in order to comply with the regulations detailed above.

Construction water quality standards are maintained by the SWRCB. Projects within the City that disturb at least an acre of land must obtain a General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit) from the SWRCB (or have evidence of approval or waiver for construction activities by the SWRCB). The Construction General Permit requires the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP should contain a site map(s) which shows the construction site perimeter, existing and proposed buildings, lots, roadways, storm water collection and discharge points, general topography both before and after construction, and drainage patterns across the Project. The SWPPP must list the Best Management Practices (BMPs) the discharger will use to protect storm water and non-storm water runoff, and the placement of those BMPs. Additionally, the SWPPP must contain a visual monitoring program and a chemical monitoring program for "non-visible" pollutants, to be implemented if there is a failure of BMPs.

Post-construction water quality standards are maintained by a municipal separate storm sewer system (MS4) permit, which is issued by the RWQCBs. On January 29, 2010, the SARWQCB issued a fourth term (renewal) area-wide NPDES MS4 Permit to the Riverside County Flood Control and Water Conservation District (RCFCWCD; the “Principal Permittee”) and co-permittees. The City of Riverside is a co-permittee under the MS4 permit. The co-permittees’ storm water programs are designed to ensure compliance with this permit.

The City’s MS4 Permit regulates post-construction activities related to the quality of discharge through the storm water management program. For example, storm water, such as rain, may travel along street gutters until it drains into a catch basin leading to a storm drain. Storm drains channel water through the City and in the Project vicinity that are discharged into the Santa Ana River. The City requires development projects to adhere to the waste discharge requirements of the City’s MS4 permit, typically through preparation of a project-specific Water Quality Management Plan (WQMP).

On July 29, 2011, the co-permittees of the MS4 Permit (including the City) submitted a draft Technical Guidance Document for WQMPs, as required by Section XII.D of the MS4 Permit. This document provides guidance on requirements for new development projects and significant redevelopment projects. The MS4 Permit requires that a project-specific WQMP be prepared for all projects within the Santa Ana Region of Riverside County that meet the “Priority Development Project” categories and thresholds.

In accordance with Finding II.G.18 in the MS4 Permit, a project-specific WQMP is not required for street, road, or highway capital projects undertaken by co-permittees. Instead, as described in Permit Provision XII.F.1, the co-permittees are required to develop and implement standardized design and post-construction BMP guidance to reduce the discharge of pollutants from such projects to the maximum extent practicable. Finding II.G.18 in the MS4 Permit states:

> Permittees may be subject to flow diversion liability and limited road maintenance budgets and equipment. Street, road and highway projects that function as part of the MS4 also receive runoff and associated pollutants from both existing urban areas and other external sources, including adjacent land use activities, aerial deposition, brake pad and tire wear and other sources that may be outside the co-permittee's authority to regulate and/or economic or technological ability to control. These offsite flows can overwhelm Treatment Control BMPs designed to address the footprint (consistent with the typical requirements for a WQMP) of street, road or highway capital projects incorporating curb and gutter as part of its storm water conveyance function. Despite these limitations, the RWQCB finds that Permittee construction of streets, roads, and highway capital projects may provide an opportunity to address pollutant loads from existing urban areas. However, due to the nature of the facilities and projects, it would be unduly burdensome for the co-permittees to maintain WQMP documents for transportation projects (in addition to Facility Pollution Prevention Plans and other overlapping requirements of this Order). The Permittees are therefore not required to prepare WQMP documents for street, road and highway capital projects, but instead are required to develop functionally equivalent documents that include site-specific consideration utilizing BMP guidance to address street, roads, and highway capital project runoff to the maximum extent practicable.

Accordingly, the co-permittees prepared the “Low Impact Development: Guidance and Standards for Transportation Projects” (Guidance Manual; July 2011) to provide direction to transportation project owners and operators (including City engineers, planners, and MS4 program staff) regarding how to address MS4 permit requirements for public works transportation projects (including Class I bikeway and sidewalk projects) within their jurisdictions.

The Guidance Manual establishes minimum Low Impact Design (LID) principles and BMPs to treat runoff and address hydrologic conditions of concern to the maximum extent practicable, and which shall be evaluated for projects subject to the requirements of the Guidance Manual. Depending on the nature of the project and BMPs selected, the Guidance Manual also establishes source control requirements.

## 3.5.2 Environmental Setting

### 3.5.2.1 Surface Hydrology

California is divided into nine major watersheds, and a RWQCB manages water quality for each watershed. The Project vicinity is located within the RWQCB Middle Santa Ana River Watershed Management Area and in the Santa Ana Hydrologic Unit. For most of the Project vicinity, surface drainage generally flows in a northerly direction into the Santa Ana River.

The Santa Ana River flows from the San Bernardino Mountains to the Pacific Ocean for more than 100 miles. The Santa Ana River is the "receiving water" for more than 2,700 square miles covering portions of San Bernardino, Riverside, and Orange counties. A number of arroyos that are tributary to the Santa Ana River traverse the City of Riverside; portions are in their natural state, portions are disturbed by human activities, and portions are piped under the urbanized areas of the City before they reach the Santa Ana River. The Alessandro Arroyo is one of the major arroyos as defined and protected in the City's Grading Code, Title 17.

The Alessandro Arroyo drains a large area within the City, which is currently used for agriculture, natural open space lands, and development. As defined by Title 17, the arroyo begins in a residential neighborhood off Mission Grove Parkway and flows over the Gage Canal, where it then enters an underground storm drain system which flows into the Santa Ana River and Prado Dam Basin.

### 3.5.2.2 Groundwater Resources

Water resources throughout Riverside County are sustained by groundwater basins. Groundwater is pumped from basins in both wet and dry years. Water resources are drawn from groundwater wells tapped into the Arlington and Riverside basins located directly beneath the City. Groundwater conditions in these basins are influenced by natural hydrologic conditions such as percolation of precipitation, groundwater seepage, and ephemeral stream flow from the six arroyos (as defined by Title 17) that traverse the City. Local groundwater basins are also recharged from natural runoff, treated wastewater, and imported water. Runoff from local rainfall is the main source of recharge for the smaller basins.

In 2005, the City met 97 percent of its water needs from underground resources, while receiving only 3 percent from the Western Municipal Water District (WMWD). Since 2009, Riverside Public Utilities (RPU) has been able to meet 100 percent of its water needs through local groundwater resources. RPU no longer receives water from WMWD. The City does have an agreement with WMWD wherein RPU will supply water to WMWD in emergency situations (RPU 2011).

Per the 2011 Water Master Report, the average annual extractions from 2005 to 2009 by all of the groundwater basins that support the City of Riverside was 333,242 acre-feet per year. The City has water supply wells in the Bunker Hill, Rialto-Colton, Riverside North, Riverside South and Arlington groundwater basins, most of which are located outside of the City's jurisdiction. The City extracts domestic water from the Bunker Hill, Riverside North, and Riverside South basins through 51 wells operated by RPU and the Gage Canal Company. Domestic water is not extracted from the Arlington and Rialto-Colton basins because of poor water quality and lack of transmission lines. The Bunker Hill basin is adjudicated, and its safe-yield and export rights from the basin are well defined. The Bunker Hill, Colton, Riverside North, and Riverside South basins are subject to management under a 1969 judgment.

## 3.5.3 Significance Determination Thresholds

Based on Appendix G of the California Environmental Quality Act (CEQA) Guidelines, impacts related to drainage, hydrology, and water quality would be significant if the proposed Project would:

1. Violate any water quality standards or waste discharge requirements;

2. 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;

3. 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);

4. 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/siltation on- or off-site;

5. 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 flooding on- or off-site;

As discussed in the Initial Study Checklist (Appendix B), the proposed Project would have no impact or a less-than-significant impact in regard to the following criteria and thus will not be addressed further in this section:

- Otherwise substantially degrade water quality;

- Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map;
- 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
- Inundation by a seiche, tsunami, or mudflow.

Due to overlap in the threshold issues and for clarity of analysis, the drainage, hydrology, and water quality thresholds evaluated below are grouped into the three issue headings of: water quality/runoff, groundwater, and drainage patterns.

## 3.5.4 Issue 1: Water Quality Standards/Runoff

Would the proposed Project violate any water quality standards or waste discharge requirements; or 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?

### 3.5.4.1 Impact Analysis

#### Scenario 1

Under Scenario 1, both Crystal View Terrace and Green Orchard Place gates would remain in place and be closed until Overlook Parkway is connected across the Alessandro Arroyo and to Alessandro Boulevard. No construction or ground-disturbing activities would occur under Scenario 1. **No impact** would occur.

#### Scenario 2

Under Scenario 2, the gates at both Crystal View Terrace and Green Orchard Place would be removed. Like Scenario 1, no construction would occur under Scenario 2. Removal of the gates would be conducted as part of routine maintenance and would not involve heavy construction equipment. **No impact** would occur.

#### Scenario 3

Under Scenario 3, the gates at Crystal View Terrace and Green Orchard Place would be removed and Overlook Parkway would be connected across the Alessandro Arroyo and to Alessandro Boulevard through the construction of a fill crossing and a bridge. In

addition, storm drains, water lines, and gas and electric power lines would be extended to tie into existing lines concurrent with roadway construction. Temporary construction activities would occur within a construction easement on either side of the proposed roadways. Construction staging would be accommodated primarily on Overlook Parkway and other existing paved roadways.

The connection of Overlook Parkway under this scenario would provide the necessary roadway for Overlook Parkway to function as an east–west arterial as planned in the Circulation and Community Mobility Element of General Plan 2025. The proposed fill crossing and bridge would not generate any amount of wastewater; therefore, water quality standards affecting this scenario are storm water related. As discussed above in Section 3.5.1.4, projects in the City are required to control storm water runoff during construction and after construction (operation) in order to comply with federal, state, and local water quality standards. Compliance with these standards would ensure that construction would not create or contribute substantial sources of polluted runoff to storm water drainage systems.

This scenario would add 0.9 acre of impervious surface for the fill crossing. Although the road surface would add 0.6 acre of impervious surface for the bridge, the only change to impervious surface would occur in the location of the bridge abutments and columns. In these areas, rip rap and revegetation are proposed to facilitate infiltration and reduce erosion. In addition, the existing 18-inch storm drains (see Figure 2-10) would be extended into the proposed roadway sections of Overlook Parkway and would serve to convey post-construction flows into appropriate facilities, thereby improving the runoff conditions. Thus, this scenario would not create runoff water that would exceed the capacity of the existing storm water drainage system. This scenario would complete the planned drainage system by connecting the sections of Overlook Parkway.

Scenario 3 is evaluated below in terms of how the construction and operational phases for both the fill crossing and the bridge would treat and control storm water runoff.

### *Construction*

Project construction activities for both the fill crossing and bridge have the potential to result in erosion, sedimentation, and the discharge of construction debris. Clearing of vegetation for access and grading activities, for example, could lead to exposed or stockpiled soils susceptible to peak storm water runoff flows. The compaction of soils by heavy equipment could minimally reduce the infiltration capacity of soils and increase runoff and erosion potential. Grading would be required to construct the missing section of roadway between Brittanee Delk Court and Sandtrack Road. This fill crossing construction is anticipated to last approximately two months. Construction of the bridge is proposed to connect Overlook Parkway and span the Alessandro Arroyo. The bridge construction is anticipated to last approximately nine months. The bridge construction

would be divided into three phases: abutment construction (two months), bent construction (one month), and superstructure construction (six months).

Management of construction activities for this scenario would be required to comply with the Construction General Permit. Per this Construction General Permit, the City/and or contractor would be required to submit a Notice of Intent (NOI) to the SWRCB and prepare a SWPPP detailing the storm water management and erosion and sediment control BMPs that would be utilized on each construction site. Construction BMPs shall be required for both the fill crossing and the roadway bridge, including:

- Perimeter protection BMPs
- Sediment control and sediment control tracking BMPs
- "Weather triggered" action plan and BMP implementation plan (40 percent chance of rain), if applicable
- Designated and contained storage areas for materials and wastes
- Daily removal and storage of remnant trash and debris
- A storage, service, cleaning, and maintenance area for vehicles used during construction would be identified
- On-site materials for spill control/containment
- Non-storm water discharge eliminated or controlled
- Upgraded erosion control BMPs for storms within rainy season
- Physical or vegetation erosion control BMPs installed prior to rainy season and maintained throughout season
- Limiting area of exposed soil to amount that can be adequately protected
- Disturbed area not completed and not being actively graded must be fully protected if left for seven or more calendar days.

Erosion control plans with notes and locations of BMPs would be detailed on grading plans and/or within a project-specific SWPPP.

In addition, a Construction Site Monitoring Program (CSMP) would be prepared for both the fill crossing and roadway bridge construction sites, in accordance with requirements set forth in the Construction General Permit. The requirements specify three risk levels for different types of sites. While the requirements for the sites of the varying risk levels differ, there is much similarity. The requirements of the CSMP are detailed below.

**Quarterly Non-storm Water Discharge**: Once per quarter, the permittee is required to conduct a visual inspection. The permittee shall document the presence or evidence of any non-storm water discharge (authorized or unauthorized), pollutant characteristics (floating and suspended material, sheen, discoloration, turbidity, odor, etc.), and the source. All risk level sites are required to perform this quarterly inspection/observation.

**Pre-storm Baseline Inspections**: Within 48 hours of a rain forecast predicting a 50 percent chance of precipitation, a Qualified SWPPP Practitioner (QSP) is required to inspect the construction site for the following:

1. All storm water drainage areas to identify any spills, leaks, or uncontrolled pollutant sources.

2. All BMPs to identify whether they have been properly implemented in accordance with the SWPPP.

3. Any storm water storage and containment areas to detect leaks and ensure maintenance of adequate freeboard.

The inspection results are to be recorded and saved in the SWPPP.

**Rain Event Action Plan:** A QSP is required to create a Rain Event Action Plan within 48 hours of a rain forecast predicting a 50 percent chance of precipitation. A Rain Event Action Plan is customized for all phases or construction (i.e., grading and land development, streets and utilities, vertical construction, final landscaping, and site stabilization).

**Daily BMP Inspections during Rain Events**: All risk levels are required to have the QSP do daily BMP inspections during rain events that take place during business hours and are not deemed unsafe.

**Post-storm Inspection**: Within two business days (48 hours) after each qualifying rain event, the QSP shall conduct post-rain event visual observations (inspections) to (1) identify whether BMPs were adequately designed, implemented, and effective, and (2) identify additional BMPs and revise the SWPPP accordingly.

**Storm Water Discharge Samples**: Risk Level 2 and Risk Level 3 sites require the QSP to obtain samples from all discharge locations to get pH and turbidity readings. At least three separate samples are to be taken at different times or locations; they are to be taken to a laboratory certified for such analyses by the State Department of Health Services. The samples should be delivered to the lab within 48 hours from when they were taken.

Therefore, by obtaining a Construction General Permit through the SWRCB for both the fill crossing and bridge, and subsequently implementing a project-level SWPPP and CSMP, construction-related water quality impacts for this scenario would be **less than significant**.

### *Operation*

The City's MS4 Permit regulates storm water discharge during the post-construction (operational) phase of development projects. The City's MS4 Permit requires that a project-specific WQMP be prepared for most projects. However, a project-specific WQMP is not required for street, road, or highway capital projects undertaken by co-permittees (including the City) of the MS4 Permit. Instead, as described in MS4 Permit Provision XII.F.1, the co-permittees are required to develop and implement standardized design and post-construction BMP guidance to reduce the discharge of pollutants from transportation projects to the maximum extent practicable.

As discussed in Section 3.5.1.4, the City (and other co-permittees) prepared the Guidance Manual in 2011 to address operational storm water control requirements for public works transportation projects within their jurisdictions. As both the fill crossing and roadway bridge would be considered public works transportation projects, they would be required to adhere to all recommendations set forth in the Guidance Manual. The Guidance Manual describes types of LID BMPs and source control BMPs, which would treat pollutants resulting from storm water. However, Provision XII.F.1 recognizes that it may not be feasible to treat all types of pollutants, as these roadways receive runoff and associated pollutants from both existing urban areas and other external sources (including adjacent land use activities, aerial deposition, brake pad and tire wear, and other sources) that may be outside the co-permittees' authority to regulate and/or economic or technological ability to control.

LID and source control BMPs for both roadways have been identified in order to treat pollutants to the maximum extent practicable. LID principles that can be applied to this Project include minimizing the roadway widths, conservation of natural areas, minimizing disturbances to natural drainages, and use of landscaping that minimizes irrigation and runoff. The proposed storm drain systems to be installed in Overlook Parkway would capture some of the existing runoff from nearby residential developments. A culvert would be constructed within the fill crossing to allow for continued flow of storm water within the natural drainage area. For the roadway bridge, a storm drain outlet would be installed under the first abutment of the bridge. A rip rap pad would be installed at the outlet of the below-ground storm drain. The rip rap pad would protect the soil at the outlet from the erosive forces of concentrated runoff, slow the velocity of concentrated runoff, and stabilize slopes with seepage problems or non-cohesive soils, thus further minimizing potential water quality impacts.

Two catch basins would also be installed near Via Vista Drive within the roadway improvement limits, and catch basin filters would be included to handle street flow. This storm drain system would tie into the existing storm drain in Via Vista Drive that outlets into the arroyo to the north of the bridge (see Figures 2-10, 2-11, and 2-12).

Source control BMPs consist of measures to reduce pollutant loads in runoff, particularly for storm events, by reducing the potential for contamination at the source of pollution. Generally, the selected source control BMPs would minimize contact between pollutants and urban runoff during the operational phase of each roadway. Non-structural source control BMPs include the sweeping of transportation surfaces adjoining curb and gutter, and drainage facility inspection and maintenance. Structural source control BMPs, such as MS4 stenciling and signage, landscape and irrigation system design, and protecting slopes and channels, would also be included.

The City is required to implement LID BMP principles and source control BMPs—such as rip rap pads, catch basins, and drainage facility maintenance—in order to minimize potential pollutants to the maximum extent practicable during the operational phases of the fill crossing and bridge. During the final design phase (if this scenario were selected), the BMPs identified above would be documented in the checklist provided in the Guidance Manual. The findings in the checklist would be reviewed and be subject to the approval of the Director of Public Works. Therefore, the Project would comply with applicable water quality standards and waste discharge requirements, and operational impacts associated with water quality would be **less than significant**.

Overall, this scenario would comply with the Construction General Permit during construction of the roadway bridge and fill crossing, and thus would not violate any water quality standards or create or contribute runoff water that would exceed the capacity of storm water drainage systems. This scenario would implement operational BMPs and comply with the regulations set forth in the Guidance Manual during the operational phases of the roadway bridge and fill crossing, and therefore would not violate any water quality standards. This scenario would complete the planned drainage system by connecting the sections of Overlook Parkway; thus it would not create or contribute runoff water that would exceed the capacity of storm water drainage systems. Water quality impacts would be **less than significant**.

## Scenario 4

Under Scenario 4, both Crystal View Terrace and Green Orchard Place gates would be removed and Overlook Parkway would be connected east across the Alessandro Arroyo (roadway bridge) and to Alessandro Boulevard (fill crossing). In addition, Proposed C Street would be constructed west of Washington Street to provide a connection to State Route 91 (SR-91). As discussed above, the construction and operational phases of the fill crossing and bridge would have a less than significant impact in regards to water

quality. The construction and operational phases of the Proposed C Street are discussed below.

### *Construction*

Management of construction activities for the Proposed C Street would be required to comply with the Construction General Permit. Per this Construction General Permit, the City/and or contractor would be required to submit a NOI to the SWRCB and prepare a SWPPP detailing the storm water management and erosion and sediment control BMPs that would be utilized on each construction site. As the Proposed C Street is also a roadway, all of the construction BMPs detailed above for the fill crossing and the roadway bridge shall be required during construction of the Proposed C Street. Similarly, all aspects of the CSMP detailed above shall apply to the Proposed C Street construction site, in accordance with requirements set forth in the Construction General Permit.

Therefore, by obtaining a Construction General Permit through the SWRCB for the construction of the Proposed C Street, and subsequently implementing a project-level SWPPP and CSMP, construction-related water quality impacts for this scenario would be **less than significant**.

### *Operation*

As discussed above, the City (and other co-permittees) prepared the Guidance Manual to address operational storm water control requirements for public works transportation projects within their jurisdictions. As the Proposed C Street would be considered a public works transportation project, it would be required to adhere to all recommendations set forth in the Guidance Manual. The MS4 permit issued to the co-permittees recognizes that it may not be feasible to treat all types of pollutants on new transportation projects, as these roadways receive runoff and associated pollutants from both existing urban areas and other external sources (including adjacent land use activities, aerial deposition, brake pad and tire wear, and other sources) that may be outside the co-permittees' authority to regulate and/or economic or technological ability to control.

The storm drain facilities of the Proposed C Street would be extended from the existing facilities in Washington Street and adjacent roadways and be routed through the new roadway alignment and tie into existing lines near the intersection of Madison and Victoria Avenues. In addition, the Proposed C Street has been designed with hydromodification features, such as grated inlets and curb-opening catch basins, in order to capture surface runoff during rainfall events. The runoff would be directed to treatment facilities to remove any pollutants of concern. The specific sizing and location of the hydromodification features within the Proposed C Street would be determined in accordance with standard engineering requirements.

Detention and treatment systems for the Proposed C Street would similarly be determined in accordance with standard engineering requirements prior to construction activities. These systems—such as drainage swales and infiltration basins—would ensure that runoff would be reduced, could be held during peak flow times on-site, and would be treated before being discharged. During the final design phase (if this scenario were selected), the BMPs identified above would be documented in the checklist provided in the Guidance Manual. The findings in the checklist would be reviewed and be subject to the approval of the Director of Public Works. Therefore, operational impacts associated with water quality would be **less than significant**.

Overall, this scenario would comply with the Construction General Permit during construction of the Proposed C Street and thus would not violate any water quality standards or create or contribute runoff water which would exceed the capacity of storm water drainage systems. This scenario would comply with the Guidance Manual during the operational phase of the Proposed C Street, and therefore would not violate any water quality standards. In addition, the Proposed C Street would include storm drain facilities that manage runoff, thus it would not exceed the capacity of storm water drainage systems. Water quality impacts associated with Scenario 4 would be **less than significant**.

### Off-site

The Traffic Impact Analysis (TIA) prepared for the proposed Project identifies measures to mitigate potentially significant traffic impacts within the Project vicinity. Measures consist of improvements such as changing a two-way stop controlled intersection to a four-way stop control, installing traffic signals, changing traffic signal operations, and adding new or additional right- or left-turn lanes. However, adding new or additional right- or left-turn lanes would only require roadway restriping and minor repaving in previously developed areas, and would not violate any water quality standards or create storm water runoff. **No impacts** are identified.

## 3.5.4.2 Significance of Impacts

Keeping the gates in place at Crystal View Terrace and Green Orchard Place under Scenario 1 or removing them under Scenario 2 would not violate any water quality standards or create storm water runoff. No impact would occur.

Conformance with the requirements of the Construction General Permit would ensure that Project activities under Scenarios 3 and 4 would not violate any water quality standards or create or contribute runoff water which would exceed the capacity of storm water drainage systems. Therefore, water quality impacts would be less than significant.

No impacts associated with off-site improvements would occur.

### 3.5.4.3 Mitigation, Monitoring, and Reporting

No mitigation is required.

## 3.5.5 Issue 2: Groundwater

Would the proposed Project 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)?

### 3.5.5.1 Impact Analysis

#### Scenario 1

Scenario 1 involves keeping the gates in place at Crystal View Terrace and Green Orchard Place, and would not require the use of any water supply; thus, this scenario would not substantially deplete groundwater supplies. Keeping the gates in place would not interfere with groundwater recharge. **No impact** would occur.

#### Scenario 2

Under Scenario 2, the gates at both Crystal View Terrace and Green Orchard Place would be removed; however, this would not affect the use of any water supply or substantially deplete groundwater supplies. **No impact** would occur.

#### Scenario 3

Under Scenario 3, the gates at Crystal View Terrace and Green Orchard Place would be removed and segments of Overlook Parkway would be constructed and storm drains, water lines, and gas and electric power lines would be extended to tie into existing lines.

The construction and subsequent operation of a fill crossing and bridge would not require any potable water supply; thus, this scenario would not require the use of any groundwater supplies. Landscaping in the median of the fill crossing would be done with drought-tolerant native plant or tree species. A water-efficient irrigation system would be installed within the median of the fill crossing.

Groundwater may be encountered during construction activities. In order to minimize the size of the bridge deck over the arroyo, two bridges are proposed: one for eastbound travel lanes, and one for westbound travel lanes. Each bridge would be supported by a single column with a seven-foot diameter. During the installation of each column, groundwater seepage (i.e., dry weather flows) may be encountered during construction

activities. Dewatering activities may consist of pumping minor amounts of groundwater from the area of where the piers would be installed. The abutments to support the bridge have been designed to minimize impacts to the arroyo. As detailed above, the two supporting columns would be seven feet in diameter. Thus, even if dry weather flows are encountered, they are not expected to be a significant amount.

During the final design phase (if this scenario were selected), the Department of Public Works and/or contractor as part of a standard review would evaluate the amount of groundwater that would be extracted as a part of the pier installation process. Construction dewatering is an activity which is permitted and regulated pursuant to the City's MS4 Permit. The permit requirements include notification to the SARWQCB prior to any discharges, specific effluent limitations of the flow to ensure compliance with water quality standards and monitoring and reporting of the discharge activity.

Groundwater could also be affected if a previously undeveloped site is covered with impermeable surfaces that would reduce the amount of percolation and recharge of groundwater. As part of the design for the fill crossing and bridge, storm drain facilities would be installed in order to allow the collected runoff to enter the storm drain system. Currently, the storm drain system is incomplete where there are gaps in Overlook Parkway. Proposed storm drain systems to be installed in Overlook Parkway would capture some of the existing runoff from nearby residential developments. A culvert would be constructed within the fill crossing to allow for continued flow of storm water within the natural drainage area. For the bridge, at the end of the first abutment, a riprap pad would be installed at the outlet of the below-ground storm drain. A storm drain outlet would be installed under the first abutment of the bridge. Two catch basins would also be installed near Via Vista Drive within the roadway improvement limits, and catch basin filters would be included to handle street flow. This storm drain system would tie into the existing storm drain in Via Vista Drive that outlets into the arroyo to the north of the bridge (see Figures 2-9, 2-10, and 2-11).

Therefore, roughly the same amount of water that would have percolated on each site under the current condition will do so in the developed condition and would be directed to specific and appropriate locations (i.e., via the culverts and catch basin filters).

Overall, this scenario would not require potable water sources, and therefore would not deplete groundwater resources or supplies. If groundwater were encountered during construction activities associated with the bridge, all activities would be conducted in conformance with the City's MS4 Permit. Although impermeable surfaces are being introduced, this scenario would not interfere substantially with groundwater recharge. Impacts related to groundwater would be **less than significant**.

## Scenario 4

As discussed above, groundwater-related impacts associated with the construction and operation of the fill crossing and bridge would be less than significant. Groundwater-related impacts due to the construction and operation of the Proposed C Street are discussed below.

The construction and subsequent operation of the Proposed C Street would not require any potable water supply; thus, this scenario would not require the use of any groundwater supplies. Landscaping in the median of the Proposed C Street would be done with drought-tolerant native plant or tree species. A water-efficient irrigation system would be installed within the median of the Proposed C Street. As the Proposed C Street involves construction of a road in a relatively flat area, it is not expected that groundwater would be encountered during construction activities of the Proposed C Street.

Groundwater could also be affected if a previously undeveloped site is covered with impermeable surfaces that would reduce the amount of percolation and recharge of groundwater. As part of the design for the Proposed C Street, storm drain facilities would be installed in order to allow runoff to be directed to the storm drain system. For the Proposed C Street, storm drain facilities would be extended from the existing facilities in Washington Street and adjacent roadways and be routed through the new roadway alignment to tie into existing lines near the intersection of Madison and Victoria Avenues.

Although the new roadway would add impervious surface for the roadbed, implementation of LID principles such as minimizing the road widths and installing drainage swales along the roadway would provide the opportunity for infiltration and percolation of surface flows prior to entering the proposed storm drain facilities. Thus, the addition of impervious surfaces to the previously undisturbed area would not significantly reduce the amount of percolation and recharge of groundwater. The increase in roadway is not expected to be of a level that would substantially deplete groundwater supplies or interfere substantially with groundwater recharge. Further, this scenario would not require potable water sources that would deplete groundwater resources or supplies. Thus, this scenario would not interfere substantially with groundwater recharge. Impacts related to groundwater would be **less than significant**.

## Off-site

The off-site improvements would not 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. **No impacts** are identified.

### 3.5.5.2 Significance of Impacts

As Scenarios 1 and 2 do not involve the use of any water supply, no impact would occur to groundwater resources. Scenarios 3 and 4 involve construction of new roadways but would not require potable water sources that would deplete groundwater resources or supplies. Impacts related to groundwater from Scenarios 3 and 4 would be less than significant.

No impacts would occur from implementation of off-site improvements.

### 3.5.5.3 Mitigation, Monitoring, and Reporting

No mitigation is required.

## 3.5.6 Issue 3: Drainage Patterns

Would the proposed Project 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/siltation on- or off-site; or would result in flooding on- or off-site?

### 3.5.6.1 Impact Analysis

#### Scenario 1

Under Scenario 1, both Crystal View Terrace and Green Orchard Place gates would remain in place and no construction is proposed. Because this scenario would not substantially alter the existing drainage pattern of the site, **no impact** would occur.

#### Scenario 2

Under Scenario 2, the gates at both Crystal View Terrace and Green Orchard Place would be removed. No ground disturbance would occur, and this scenario would not substantially alter the existing drainage pattern of the site. **No impact** would occur.

#### Scenario 3

Under Scenario 3, the gates at Crystal View Terrace and Green Orchard Place would be removed and Overlook Parkway would be connected across the Alessandro Arroyo and to Alessandro Boulevard through construction of a fill crossing and a bridge. In addition, storm drains, water lines, and gas and electric power lines would be extended to tie into existing lines concurrent with roadway construction. Temporary construction activities would occur within a construction easement on either side of the proposed roadways.

Construction staging would be accommodated primarily on Overlook Parkway and other existing roadways.

The drainage pattern of the fill crossing site (i.e., the Eastern Project Impact Area [PIA]; see Figure 2-6) is currently in a southeast to northwest direction. There are also two natural ephemeral drainages within the Eastern PIA. The northern drainage contains a narrow strip of moderate quality southern willow scrub, while the southern drainage is largely unvegetated, but contains a small patch of freshwater marsh. These drainages collect flows from adjacent foothills and residential developments, and both flow northwest into the Alessandro Arroyo.

If the fill crossing were constructed, 0.9 acre of impervious surface area (pavement, concrete) would be added to the Eastern PIA. The median of the fill crossing would be landscaped with native, drought-tolerant plants and/or trees. The installation of a culvert underneath the fill crossing would convey the drainages once the road is constructed. The drainage patterns would continue to flow in the same manner (southeast to northwest). The sizing and location of the culverts within the fill crossing would be determined in accordance with standard engineering requirements.

Surface runoff from rainfall events in the Eastern PIA would be collected using hydromodification features, such as grated inlets and curb-opening catch basins, and then be directed to treatment facilities to remove any pollutants of concern. The sizing and location of the hydromodification features within the fill crossing would be determined in accordance with standard engineering requirements. The treated runoff would then combine with the ephemeral drainages, which would then flow into the Alessandro Arroyo.

As the fill crossing would include detention and treatment systems, runoff would be reduced, could be held during peak flow times on the site, and would be treated before being discharged. As discussed in Section 3.5.4.1, compliance with water quality standards (i.e., implementation of a SWPPP, CSMP, and operational BMPs) would ensure that erosion does not occur either on- or off-site.

Consequently, development of the fill crossing would not cause an increase in flows from the Eastern PIA during storm events, and in turn would not cause substantial erosion or flooding either on- or off-site. Impacts related to drainage patterns in the Eastern PIA would be **less than significant**, and no mitigation measures are required.

In the area of the roadway bridge crossing (i.e., the Arroyo PIA), there is a vegetated waterway known as the Alessandro Arroyo, which is within the Santa Ana River watershed. The arroyo drains southern Riverside foothills and adjacent residential developments into the Santa Ana River, which flows into the Pacific Ocean near Huntington Beach, California. Other than the natural drainage of the canyon, the majority of the water that enters the canyon comes into the site as storm water during the wet

season and from urban runoff from residential housing surrounding the canyon. The steep, erosive terracing and the observation of downed mature trees in the floodplain indicate that the arroyo carries heavy flows. The drainage flows south to north across sandy substrate and was observed to have a braided flow pattern. The Alessandro Arroyo drains into the Santa Ana River and, ultimately, the Pacific Ocean.

If the bridge were constructed, approximately 0.59 acre of impervious surface area (pavement, concrete) would be added to the Arroyo PIA. The design of the bridge has been engineered in a manner to minimize hydrological impacts to the Alessandro Arroyo. In order to reduce the size of the bridge deck over the arroyo, two bridges are proposed: one for eastbound travel lanes, and one for westbound travel lanes. Each bridge would be supported by a single, seven-foot-diameter column and abutments at each end.

The two bridge columns would not significantly alter the flows of the Alessandro Arroyo. A preliminary hydraulic model (Appendix F) showed there would be no impacts downstream of the bridge over the Alessandro Arroyo. Upstream, the velocities would be reduced, and the water surface increases for approximately 100 feet upstream from the bridge due to the pier and abutment of the roadway bridge. The increase is approximately 0.8 inch maximum, and the velocities in that section were reduced by an average of around 0.25 foot per second. The increase in water surface is based on the 100-year storm event, and flows would remain well within the limits of the Alessandro Arroyo. Flows would not increase in a manner that would result in substantial erosion/siltation or flooding either on- or off-site.

In addition, the bridge has been preliminarily designed with hydromodification features. Two curb-opening catch basin filters would be installed near Via Vista Drive to capture surface runoff during rainfall events. The catch basin filters would also remove any pollutants of concern. The sizing and location of these catch basins would be determined in accordance with standard engineering requirements. This storm drain system would tie into the existing storm drain in Via Vista Drive that outlets into the arroyo to the north of the bridge.

As the bridge would include detention and treatment systems, runoff would be reduced, could be held during peak flow times on the site, and would be treated before being discharged. As discussed in Section 3.5.4.1, compliance with water quality standards (i.e., implementation of a SWPPP, CSMP, and operational BMPs) would ensure that erosion does not occur either on- or off-site.

Consequently, the two columns associated with the bridge would not substantially alter the course of the Alessandro Arroyo in a manner which would result in substantial erosion/siltation or flooding on- or off-site. Surface runoff from the roadway bridge would be captured and treated during storm events, and in turn would not cause substantial

erosion or flooding either on- or off-site. Impacts related to drainage patterns in the Arroyo PIA would be **less than significant**, and no mitigation measures are required.

## Scenario 4

Under Scenario 4, the existing Crystal View Terrace and Green Orchard Place gates would be removed, and the roadways would remain permanently open to all traffic. As under Scenario 3, the fill connection between Via Vista Drive and approximately 500 feet west of Sandtrack Road would be constructed and Overlook Parkway would be connected via a bridge over the Alessandro Arroyo. As discussed above, drainage related impacts due to the development of the fill crossing and bridge would be **less than significant**. Drainage-related impacts due to the additional components of Scenario 4 are discussed below.

Under Scenario 4, the Proposed C Street would be constructed as a new alignment for Washington Street. The Proposed C Street would be extended approximately one mile, originating approximately 500 feet north of the intersection of Overlook Parkway and Washington Street, continuing in a northwest direction, and ending at the intersection of Madison Street and Victoria Avenue. In conjunction with the Proposed C Street, other Project components are required, including a cul-de-sac and roadway vacation along Washington Street from Engle Drive to just north of the existing Overlook Parkway and Washington Street intersection; a cul-de-sac and roadway vacation along Dufferin Avenue, west of the Proposed C Street; the realignment of Lenox Avenue/Graylock Avenue to provide a connection to the Proposed C Street and the existing Washington Street; and the vacation of a portion of Madison Avenue and a realignment to the alignment of the Proposed C Street.

The drainage pattern of the Proposed C Street site (i.e., the Western PIA see Figure 2-14) is mostly in a southeast to northwest direction. Surface runoff during rainfall events is gathered in existing storm drain facilities within Washington Street and Victoria Avenue. In addition, a 20-mile concrete-lined waterway, known as the Gage Canal, is located within the southeastern portion of the Western PIA. Although the canal does not convey storm water flows, it does convey irrigation waters pumped from groundwater basins to local agricultural fields.

Because the Proposed C Street would cross the Gage Canal, a culvert would be installed under the Proposed C Street, just east of the existing alignment of Washington Street. As a result of the vacation of the existing Washington Street, the portion of roadway currently covering the Gage Canal would be removed. Thus, the Proposed C Street would not significantly alter the course of the Gage Canal.

Construction of the Proposed C Street would add 12.25 acres of impervious surface to the Western PIA. In addition, approximately 1.57 acres of impervious surface area would be removed during the roadway vacation process.

The storm drain facilities of the Proposed C Street would be extended from the existing facilities in Washington Street and adjacent roadways and be routed through the new roadway alignment and tie into existing lines near the intersection of Madison and Victoria Avenues. In addition, the Proposed C Street has been designed with hydromodification features, such as grated inlets and curb-opening catch basins, in order to capture surface runoff during rainfall events. The runoff would be directed to treatment facilities to remove any pollutants of concern. The sizing and location of the hydromodification features within the Proposed C Street would be determined in accordance with standard engineering requirements during the final design stage (if this scenario were selected).

As the Proposed C Street would include detention and treatment systems, runoff would be reduced, could be held during peak flow times on the site, and would be treated before being discharged. As discussed in Section 3.5.4.1, compliance with water quality standards (i.e., implementation of a SWPPP, CSMP, and operational BMPs) would ensure that erosion does not occur either on- or off-site.

Consequently, the Proposed C Street would not cause an increase in flows from the Western PIA during storm events, and in turn would not cause substantial erosion or flooding either on or off-site. Development of the Proposed C Street would not substantially alter the course of the Gage Canal. Impacts related to drainage patterns in the Western PIA would be **less than significant**, and no mitigation measures are required.

### Off-site

The previously mentioned off-site improvements would not 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/siltation; or would result in flooding. **No impacts** are identified.

## 3.5.6.2 Significance of Impacts

The placement or removal of traffic control devices at Crystal View Terrace and Green Orchard Place under Scenarios 1 and 2 would not substantially alter the drainage patterns of the site. No impact would occur.

Proposed roadways under Scenarios 3 and 4 include storm drain facilities. In the case of the Overlook Parkway fill crossing and bridge, storm drain facilities would improve the conditions for runoff where the road currently ends. This benefit would not substantially alter the existing drainage pattern, as storm water would be directed to appropriate facilities. Construction of the Proposed C Street would not cause an increase in flows during storm events, and in turn would not cause substantial erosion or flooding either on- or off-site. Compliance with water quality regulations (i.e., implementation of a

SWPPP, CSMP, and operational BMPs) would ensure that erosion does not occur either on- or off-site. Consequently, development of both the fill crossing and bridge would not cause an increase in flows during storm events, and in turn would not cause substantial erosion or flooding either on or off-site. Impacts related to drainage patterns would be less than significant.

No impacts would occur from implementation of off-site improvements.

### 3.5.6.3 Mitigation, Monitoring, and Reporting

No mitigation is required.

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