RIVERSIDE COUNTY TRANSPORTATION COMMISSION

Riverside-Downtown
STATION IMPROVEMENTS

# Appendix T. Hydrology/Hydraulics/Stormwater Quality Technical Memorandum

# TECHNICAL MEMORANDUM

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## 1.0 Introduction and Project Description

The Riverside County Transportation Commission (RCTC) and Metrolink are proposing the following improvements to the Riverside-Downtown Station:

1. Station Platform and Tracks
2. Pedestrian Access
3. Parking, Circulation and Streetscape

The proposed improvements include building an additional passenger loading platform and tracks to the east side of the existing station to improve Metrolink service and extending the existing pedestrian overpass to access the new proposed platform. The proposed track would also connect into the existing station layover tracks on the north end of the station, and improvements would provide additional parking and improve traffic flow on the east side of the station. The proposed Project would include the following station improvements:

- Modifying the railroad signal system
- Extending the pedestrian bridge
- Relocating the parking for Americans with Disabilities (ADA)
- Adding parking
- Modifying the bus drop-off area
- Improving the sidewalk and streetscape

The proposed Riverside Downtown Station Improvements Project is considering design options for pedestrian overpass access, parking, circulation and streetscape. Table 1 summarizes the design options as proposed for station improvements.

**Table 1: Summary of Proposed Build Alternative with Design Options**

| Build + Design Option | Description |
|---|---|
| **Pedestrian Overpass Access Improvements** | |
| Pedestrian Overpass Access Design Option 1 | Extend pedestrian overpass access to the new Platform 3 and to the new surface parking lot. |
| **Traffic Circulation and Parking Improvement Options** | |
| Parking Design Option 1A | New surface parking lot east of station<br>*Impacts existing structures and other ancillary structures and residential parcels on the corner of 12th Street and Howard Avenue to facilitate construction of the proposed improvements.* |
| Parking Design Option 1B | Same as Parking Design Option 1A<br>*Avoids relocation impacts to residential parcels on the corner of 12th Street and Howard Avenue.* |
| Parking Design Option 2A | New surface parking lot east of station combined with existing overflow parking lot with the extension of Howard Avenue through to 9th Street<br>*Impacts structures and other ancillary structures and residential parcels on the corner of 12th Street and Howard Avenue. This option requires acquisition of additional parcels north of Howard Avenue and 10th Street, extending north one block to intersect with 9th Street.* |

| Build + Design Option | Description |
|---|---|
| Parking Design Option 2B | Same as Parking Design Option 2A<br>*Avoids relocation impacts to residential parcels on the corner of 12th Street and Howard Avenue.* |
| Parking Design Option 3A | Same as Parking Design Option 1A/2A<br>*Avoids impacts to additional parcels east of the existing overflow parking lot by routing Howard Avenue around the parcels.* |
| Parking Design Option 3B | Same as Parking Design Option 1B/2B<br>*Avoids relocation impacts to additional parcels east of the existing overflow parking lot. Avoids relocation impacts to residential parcels on the corner of 12th Street and Howard Avenue.* |

This technical memorandum discusses the following drainage components for the proposed Riverside-Downtown Station Improvements Project:

- Hydrology
- Groundwater
- Hydraulics
- Floodplains
- Stormwater Quality

Based on preliminary design plans and the urbanized setting of the project site, all design options under consideration are not anticipated to result in significant differences in the magnitude of impacts in the context of the drainage components identified above; the project site is developed and all design options are proposing to convert the same area to a paved parking lot. The analysis provided in this technical memorandum applies to the build alternative and all design options.

# 2.0 Regulatory Setting

Executive Order (EO) 11988 (Floodplain Management) directs all federal agencies to refrain from conducting, supporting, or allowing actions in floodplains unless it is the only practicable alternative. To comply, the following must be analyzed:

- The practicability of alternatives to any longitudinal encroachments.
- Risks of the action.
- Impacts on natural and beneficial floodplain values.
- Support of incompatible floodplain development.
- Measures to minimize floodplain impacts and to preserve/restore any beneficial floodplain values affected by the project.

The base floodplain is defined as "the area subject to flooding by the flood or tide having a one percent chance of being exceeded in any given year." An encroachment is defined as "an action within the limits of the base floodplain."

## 2.1. Federal Requirements: Clean Water Act

In 1972, Congress amended the Federal Water Pollution Control Act, making the addition of pollutants to the waters of the United States (U.S.) from any point source[1] unlawful unless the discharge is in compliance with a National Pollutant Discharge Elimination System (NPDES) permit. This act and its amendments are known today as the Clean Water Act (CWA). Congress has amended the act several times. In the 1987 amendments, Congress directed dischargers of storm water from municipal and industrial/construction point sources to comply with the NPDES permit scheme. The following are important CWA sections:

Sections 303 and 304 require states to issue water quality standards, criteria, and guidelines.

Section 401 requires an applicant for a federal license or permit that wishes to conduct any activity that may result in a discharge to waters of the U.S. to obtain certification from the state that the discharge will comply with other provisions of the act. This is most frequently required in tandem with a Section 404 permit request (see below).

Section 402 establishes the NPDES, a permitting system for the discharges (except for dredge or fill material) of any pollutant into waters of the U.S. This permit program is administered by the Regional Water Quality Control Boards (RWQCBs) in

[1] *A point source is any discrete conveyance such as a pipe or a human-made ditch.*

California. Section 402(p) requires permits for discharges of storm water from industrial/construction and municipal separate storm sewer systems (MS4s).

Section 404 establishes a permit program for the discharge of dredge or fill material into waters of the U.S. This permit program is administered by the U.S. Army Corps of Engineers (USACE).

The goal of the CWA is "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters."

## 2.2. State Requirements: Porter-Cologne Water Quality Control Act

California's Porter-Cologne Act, enacted in 1969, provides the legal basis for water quality regulation within California. This act requires a "Report of Waste Discharge" for any discharge of waste (liquid, solid, or gaseous) to land or surface waters that may impair beneficial uses for surface and/or groundwater of the state. It predates the CWA and regulates discharges to waters of the state. Waters of the State include more than just waters of the U.S., like groundwater and surface waters not considered waters of the U.S. Additionally, it prohibits discharges of "waste" as defined, and this definition is broader than the CWA definition of "pollutant." Discharges under the Porter-Cologne Act are permitted by Waste Discharge Requirements (WDRs) and may be required even when the discharge is already permitted or exempt under the CWA.

The State Water Resources Control Board (SWRCB) and RWQCBs are responsible for establishing the water quality standards (objectives and beneficial uses) required by the CWA and regulating discharges to ensure compliance with the water quality standards. Details about water quality standards in a project area are included in the applicable RWQCB Basin Plan. In California, RWQCBs designate beneficial uses for all water body segments in their jurisdictions and then set criteria necessary to protect those uses. As a result, the water quality standards developed for particular water segments are based on the designated use and vary depending on that use. In addition, the SWRCB identifies waters failing to meet standards for specific pollutants. These waters are then state-listed in accordance with CWA Section 303(d). If a state determines that waters are impaired for one or more constituents and the standards cannot be met through point source or non-point source controls (NPDES permits or WDRs), the CWA requires the establishment of Total Maximum Daily Loads (TMDLs). TMDLs specify allowable pollutant loads from all sources (point, non-point, and natural) for a given watershed.

## 2.3. State Water Resources Control Board and Regional Water Quality Control Boards

The SWRCB administers water rights, sets water pollution control policy, and issues water board orders on matters of statewide application, and oversees water quality functions throughout the state by approving Basin Plans, TMDLs, and NPDES permits. RWCQBs are responsible for protecting beneficial uses of water resources within their regional jurisdiction using planning, permitting, and enforcement authorities to meet this responsibility.

### 2.3.1. National Pollutant Discharge Elimination System (NPDES) Program

#### MUNICIPAL SEPARATE STORM SEWER SYSTEMS (MS4)

Section 402(p) of the CWA requires the issuance of NPDES permits for five categories of storm water discharges, including Municipal Separate Storm Sewer Systems (MS4s). An MS4 is defined as "any conveyance or system of conveyances (roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, human-made channels, and storm drains) owned or operated by a state, city, town, county, or other public body having jurisdiction over storm water, that is designed or used for collecting or conveying storm water."

#### CONSTRUCTION GENERAL PERMIT

Construction General Permit, Order No. 2009-0009-DWQ (adopted on September 2, 2009 and effective on July 1, 2010), as amended by Order No. 2010-0014-DWQ (effective February 14, 2011) and Order No. 2012-0006-DWQ (effective on July 17, 2012). The permit regulates storm water discharges from construction sites that result in a Disturbed Soil Area (DSA) of one acre or greater, and/or are smaller sites that are part of a larger common plan of development. By law, all storm water discharges associated with construction activity where clearing, grading, and excavation result in soil disturbance of at least one acre must comply with the provisions of the General Construction Permit. Construction activity that results in soil disturbances of less than one acre is subject to this Construction General Permit if there is potential for significant water quality impairment resulting from the activity as determined by the RWQCB. Operators of regulated construction sites are required to develop Storm Water Pollution Prevention Plans (SWPPPs); to implement sediment, erosion, and pollution prevention control measures; and to obtain coverage under the Construction General Permit.

The Construction General Permit separates projects into Risk Levels 1, 2, or 3. Risk levels are determined during the planning and design phases and based on potential erosion and transport to receiving waters. Requirements apply according to the Risk Level determined. For example, a Risk Level 3 (highest risk) project would require compulsory storm water runoff pH and turbidity monitoring, and before construction and after construction aquatic biological assessments during specified seasonal windows. For all projects subject to the permit, applicants are required to develop and implement an effective SWPPP. In a Water Pollution Control Program (WPCP) is necessary for projects with DSA less than one acre.

### SECTION 401 PERMITTING

Under Section 401 of the CWA, any project requiring a federal license or permit that may result in a discharge to a water of the U.S. must obtain a 401 Certification, which certifies that the project will be in compliance with state water quality standards. The most common federal permits triggering 401 Certification are CWA Section 404 permits issued by the USACE. The 401 permit certifications are obtained from the appropriate RWQCB, dependent on the project location, and are required before the USACE issues a 404 permit.

In some cases, the RWQCB may have specific concerns with discharges associated with a project. As a result, the RWQCB may issue a set of requirements known as WDRs under the State Water Code (Porter-Cologne Act) that define activities, such as the inclusion of specific features, effluent limitations, monitoring, and plan submittals that are to be implemented for protecting or benefiting water quality. WDRs can be issued to address both permanent and temporary discharges of a project.

# 3.0 Existing Project Site and Conditions

The project site is located within an urbanized environment characterized by existing residential, commercial, and industrial development. The project site is generally bounded by Vine Street to the west, Howard Avenue to the east, 12th Street to the south, and 10th Street to the north.

The Project is located within the City of Riverside, in the relatively flat, lowlands area (the Perris Plain) between the Santa Ana Mountains to the south and west, and the San Bernardino Mountains to the north and east. The San Bernardino Mountains are part of the transverse ranges that trend east to west. The Santa Ana Mountains are part of the Peninsular Mountain Ranges that trend north to south. The Perris Plain is punctuated by low hills and rocky outcrops (WRCRCA, 2003). The Project itself is relatively flat and is at 880 feet in elevation (USGS, 2020). Mount Rubidoux and the Santa Ana River Reach 3 are 1.3 and 1.8 miles to the west of the Project, respectively, and Sugarloaf Mountain, Box Springs Mountain, and Sycamore Canyon are to the east of the Project.

The Project is within the Santa Ana River watershed. Tequesquite Arroyo Creek is located approximately 0.7 mile to the south and runs underneath SR-91. Riverside Canal is located just west of the Project site. It is culverted underground to the north of 14th Street and is daylighted south of 14th Street, approximately 70 feet to the west of the footprint. Lake Evans is 1.25 miles to the northwest of the Project.

Latitude, topography, and the influence of the nearby Pacific Ocean produce a Mediterranean climate in the City of Riverside, consisting of warm, dry summers and mild, wet winters. The relatively arid climate is in part the result of the rain shadow cast by the Santa Ana Mountains (WRCRCA, 2003). Average temperatures are between 54.5 degrees Fahrenheit (F) and 79.4 F, but temperatures range from 42.5 F to 92.9 F. Precipitation falls mostly from November through March, with up to 3 inches per month falling in the winter and no precipitation in the summer. Total annual precipitation averages 13.75 inches (NOAA, 2020).

Soils within the project footprint are Buren fine sandy loam with 2 to 8 percent slopes (eroded), Hanford coarse sandy loam (very deep, well drained) with 2 to 8 percent slopes, and Arlington fine sandy loam (deep) with 2 to 8 percent slopes (NRCS, 2020). However, the majority of the project footprint is covered with paving, concrete, and hardscape with the exception of small landscaped areas. Plant species within the Project area typically consist of non-native and ornamental landscaping. Ruderal and weedy species are commonly found at the margins of hardscape areas, where they can exploit small patches of disturbed soil areas.

There are no natural communities or designated critical habitat within or adjacent to the project footprint. There are no waters or wetlands within the project footprint. The Riverside Canal runs along the western edge of the Project footprint. The canal is in an underground culvert for the majority of the length of the Project area, with a short daylighted segment in an engineered channel, parallel to the southernmost part of the footprint. There is no riparian vegetation associated with the canal, as it is a constructed watercourse.

Habitat elements that can provide connectivity for wildlife include riparian areas, creeks, parks, natural areas, channels and watercourses, and culverts. The WRCMSHCP identifies the Santa Ana River as the nearest core habitat area (a block of habitat of appropriate size, configuration, and vegetation characteristics to generally support the life history requirements of one or more species in the WRCMSHCP). The nearest linkage (connection between core areas) to the Project is to the southeast, between Sycamore Canyon Park, Box Springs Reserve, and Sugarloaf Mountain. Within the Project area, there are no habitat features that provide connectivity for wildlife populations. Highway 215 and SR-91, which act as barriers to wildlife movement, as well as extensive urbanization within 1 mile of the Project, makes the existing condition of the project area unsuitable for supporting wildlife movement and does not currently contribute to habitat connectivity.

The project site is mostly built-out with existing structures and paved surfaces with the exception of parcels located north of Howard Avenue and west of 10th Street. Assessor's parcel numbers (APNs): 211-201-007, 211-201-008, 211-201-037, and 211-201-030 are currently operating as manufacturing and industrial businesses and these parcels are generally used as equipment storage yards. Surface conditions at these parcels consist of paved areas, compacted soil, ornamental landscaping, and non-native vegetation.

Current industrial uses of the site present potential for contamination resulting from leaks or spills from railcars or historic application of surface chemicals during railroad operations. In addition, proposed acquisition of industrial property for the station improvements may contain contaminated soils due to historical industrial operations by the FMC Complex and use of chemical solvents. Results of the Phase 1 Environmental Site Assessment conducted for the proposed Project indicate that the project site overlies a groundwater plume impacted by volatile organic compounds (VOCs), pesticides, herbicides, nitrate, and perchlorate (known as the Riverside Plume). Sampling of groundwater between 2005 and 2008 showed significant VOC impacts (primarily tetrachloroethylene [PCE] and trichloroethylene [TCE]) in the site vicinity[2]. Additional Phase II Environmental Site Assessments and soil sampling were conducted in August and September 2020 confirming the presence of metals and VOCs; however, the full extent of the vertical and horizontal contamination of the project site has not been fully determined.

# 4.0 Hydrology

## 4.1. Affected Environment

As shown in Figure 1, the general drainage patterns for the overall site (including offsite areas) drain toward the west away from the railroad to Howard Street and the flow ultimately drains into the Santa Ana River. The site is mostly impervious, except for areas within an existing industrial parcel west of Howard Avenue and south of 10th Street, as this area contains permeable compacted soil surface. Offsite areas consist mostly of residential areas to the north and east, an industrial solar facility to the south and the existing railroad tracks and station to the west. The sites' low point is located just west of Howard Street on 11th Street, in which the water on the site flows easterly away from the railroad toward the low point. The surrounding site just to the east of the project site generally drains to the west, toward the same low point on 11th Street. At this low point, stormwater is conveyed to two catch basins (at the west end of 11th Street and at the intersection of Howard Ave/11th Street). Furthermore, the existing low point located at 11th Street floods during annual storm events. This is caused by the approximately 10.5 acres of offsite stormwater runoff area contributing flow to this low point. The drainage system is undersized for intercepting and conveying flow from this amount of area. Here, the facility consists of a 3 - 3.5 ft curb inlet catch basin located at the low point that outlets through one 12" pipe.

## 4.2. Environmental Consequences

Common to all design options is the construction of a new passenger loading platform and additional tracks and the removal of the Prism Aerospace building and ancillary structures. The proposed Project could potentially alter drainage patterns and cause onsite and downstream flooding if there are substantial changes to existing site conditions. However, the proposed Project is designed to minimize site topographic changes and will therefore result in insignificant changes to drainage patterns within the project site. Grading activities will be minimized, existing tall structures will be removed and replaced with relatively flat station platforms and a soundwall. All of these improvements will result in a larger detention volume for the site which should reduce the BFE and improve flooding impacts. Changes to onsite drainage patterns would be negligible as the design of the station improvements would maintain the flow pattern away from the railroad tracks toward the low point at 11th Street. In all of the design options, the low point would remain at its current location and connect to the existing 42-in storm drain located at the project site to mimic existing conditions. A noise barrier may be required at the project site, though it will be placed parallel to the overall flood flow direction in the vicinity of the Prism Aerospace Building to be demolished. Due to its much narrower footprint and alignment with the flow direction, its impact would be much less than that of the existing buildings that are to be demolished.

Under all parking lot design options, the proposed Project would increase impervious surface area to approximately 45,000 square feet within an unpaved area at an industrial parcel located at Howard Avenue between 12th Street and 10th Street. The overall project site would be mostly paved except at spot locations where landscaping would be incorporated. The Build Alternative would incorporate grading, drainage, stormwater best management practices (BMPs) and elimination of structures in such a way to prevent additional flooding from occurring in onsite and offsite areas. The stormwater runoff rate increases due to additional impervious surface, but this is minimal (approximately 2 cfs). With the implementation of Low Impact Development (LID) BMPs designed to add volume for retention of stormwater, reduce peak flow rates and/or reduce on-site flow velocities, the overall runoff rate will not significantly impact hydraulic capacity of the downstream system. Furthermore, the project site would maintain the location of the existing low point at 11th Street, since offsite areas drain to this location. As currently designed, the Build Alternative and all design options would not result in substantial impacts to hydrology.

[2] *Phase I Environmental Site Assessment Ten APNs Adjacent to the Riverside Downtown Metrolink Station, Riverside, California, (Ninyo & Moore, April 26, 2018).*

# 5.0 Groundwater

## 5.1. Affected Environment

Based on the results of the Phase 1 Environmental Site Assessment conducted for the proposed Project, groundwater measurements collected in 2008 were anticipated to be encountered at a depth of 100 to 110 feet bgs. The groundwater gradient was reported to flow towards the south-southwest. Groundwater levels, gradient, and flow direction can fluctuate due to seasonal variations, groundwater withdrawal or injection, changes in land use, and other factors. As mentioned previously, the site overlies a groundwater plume impacted by multiple contaminants, primarily VOCs known as the Riverside Plume[3]. Additional Phase II Environmental Site Assessments (conducted between August and September 2020) confirms the initial findings in Phase 1 Study conducted in 2008.

## 5.2. Environmental Consequences

Since the underlying soils at the Prism Aerospace parcel is contaminated, there is potential for contaminated water to enter the groundwater through the project site. However, the Build Alternative and all design options will have less permeable area compared to existing site conditions which will decrease the amount of land enabling infiltration into the groundwater. The proposed Project would not interfere with groundwater discharge, as the project site would be mostly paved to eliminate any runoff from infiltrating into the soil. Converting exposed soil areas to a paved surface parking lot would effectively cap the surface from seepage and significantly reduce further contamination into the groundwater within the project site. Furthermore, any proposed Best Management Practices (BMPs) would be non-infiltrated BMPs which would prevent infiltration into the surrounding soil. BMPs would be designed in accordance with the Riverside County Flood Control Low Impact Development (LID) handbook[4].

To ensure that the proposed Project does not exacerbate current contaminants within the project site, RCTC, Department of Toxics and Substance Control (DTSC) and the Regional Water Quality Control Board (RWQCB) have agreed to limit the use of the project site to a paved surface parking lot. A Land Use Restriction Covenant was issued by DTSC in 2012 for the Prism Aerospace property. Based on preliminary design plans, the proposed Project is consistent with this agreement to construct a paved surface parking lot. Under the Build Alternative and all design options, the contaminated area within the project site will be paved over to prevent further infiltration and contamination. Therefore, the proposed Project is not anticipated to result in substantial impacts to groundwater.

# 6.0 Hydraulics

## 6.1. Affected Environment

The project site is bordered by 14th Street (to the south) and 9th Street (to the north). There is a low point at 11th Street where most of the surface runoff from the surrounding streets is conveyed to. At the low point, there are three existing catch basins that intercept stormwater runoff through a 12-inch storm drain that connects to a 42-inch storm drain. This storm drain ultimately flows into a box culvert under the existing Riverside-Downtown Station (see Figure 1). The existing off-site runoff from the surrounding sites has been estimated at 42 cfs for the 10-year storm and 67cfs for the 100-year storm events. The three existing catch basins take in a substantial amount of flow from both on-site and off-site areas, which causes general flooding at the low point at the western terminus on 11th Street.

[3] Revised Limited Phase II Environmental Site Assessment (Ninyo & Moore, August 2020)

[4] Design Handbook for Low Impact Development Best Management Practices (Riverside County Flood Control and Water Conservation District, September 2011)

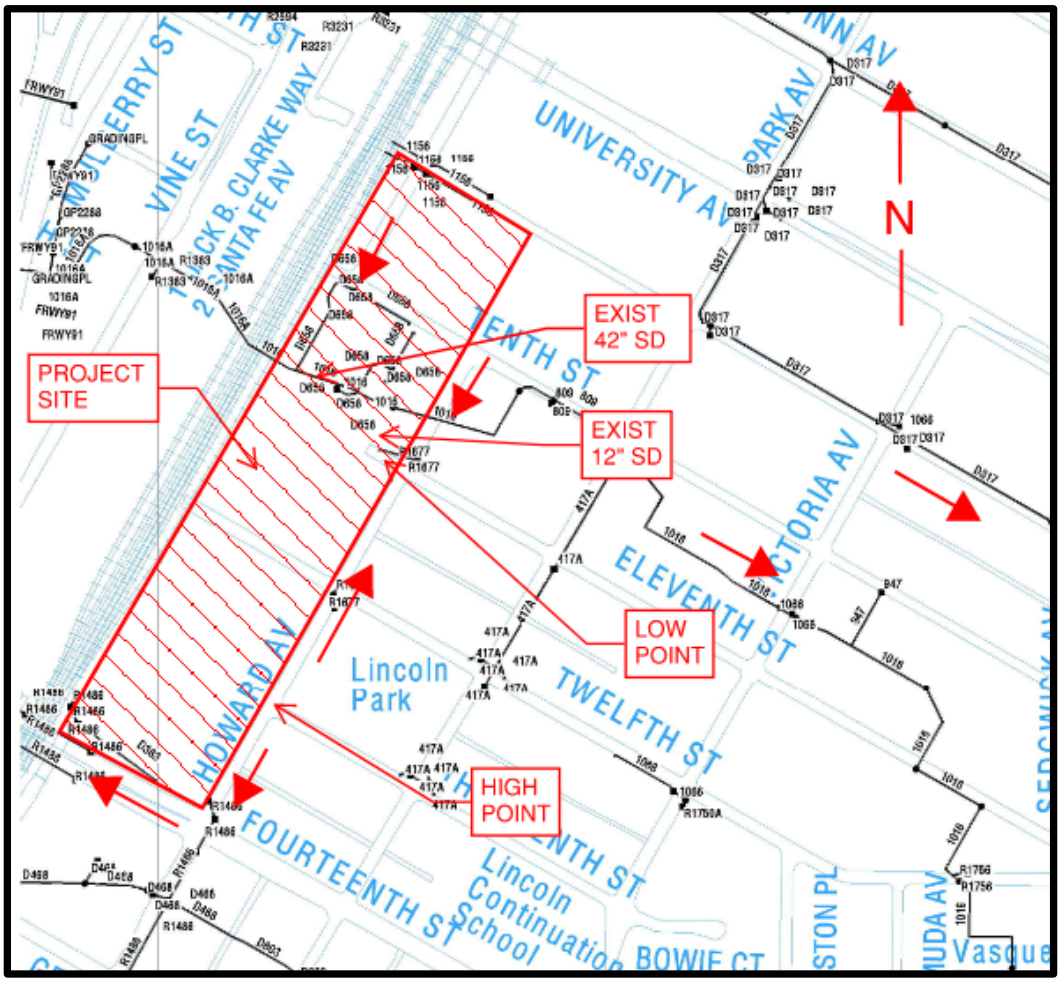


**Figure 1. Existing Storm Drain System Network**

*Source: Storm Drain Map Index (City of Riverside)*

## 6.2. Environmental Consequences

The proposed Project will maintain the existing drainage patterns and add in LID principles that will help slow the water, which will help reduce the rate of runoff from the site (see stormwater section for potential treatment options). The Build Alternative and all design options would result in changes to the surface hydrology at the project site with the construction of station improvements and minor grading activities of up to 3 feet. Common to all design options is the construction of a new passenger loading platform, additional tracks and removal of the Prism Aerospace building and ancillary structures. Removal of the Prism Aerospace building will have negligible effect on the overall drainage as the building will be replaced with paved a parking lot, in which the same existing drainage patterns will be maintained and will reduce the impact to the overall floodplain. A noise barrier may be required at the project site and would be located parallel to the overall flood flow direction in the vicinity of the Prism Aerospace Building to be demolished. Due to its much narrower footprint and alignment with the flow direction the impact of the noise barrier would be much less than that of the existing buildings would be demolished.

The existing pedestrian bridge would be extended to connect to the new platform. Construction of additional structures within the project site and minor grading activities under all design options, may result in the alteration of surface hydrology as the existing flows may be redirected to other areas within or adjacent to the site. The construction of these structures and parking lot will cause a rework of the surface drainage throughout the site to ensure adequate drainage and minimization of flood potential. Design of the station would be compatible with the current topography of the project site, by maintaining the low point on 11th Street to ensure that the proposed onsite storm drain systems could tie into the existing 42-inch storm drain that drains to the west (see Figure 1). Onsite storm drain systems will be designed to convey a local 10-yr and 100-yr storm event in accordance with Riverside County Flood Control District Hydrology Manual Standards.

The existing condition drainage flow pattern routes flow from onsite to the low point on 11th Street, which currently contributes to local storm flooding due to undersized catch basins and pipes. Under the Build Alternative and all design options, the proposed onsite storm drain system would tie into the existing 42-inch storm drain system (downstream of these existing catch basins) which would minimize the amount of flow draining to the low point. Additionally, the existing 42-inch storm drain has

sufficient capacity (existing capacity is approximately 107 cfs) to convey the existing and proposed Project runoff. However, flooding at the project site is anticipated to occur during storm events due to the topography and location of the station within an existing floodplain. Flooding would not be any greater than under existing conditions, as described below.

# 7.0 Floodplains

## 7.1. Affected Environment

The proposed Project is within the vicinity of a 100-year existing floodplain (Zone AE), within the Middle Santa Ana River Watershed, which ultimately flows into the Santa Ana River through Prado Dam. The floodplain offers flood storage for the Santa Ana River to spread out and accommodate temporary storage of flood water, which reduces the erosion potential and flood peaks. Based on the Federal Emergency Management Agency (FEMA) Flood Rate Insurance Map (FIRM), the 100-yr Base Flood Elevation (BFE) is approximately 886 feet for the project site. Figure 2 illustrates the base 100-year floodplain.

## 7.2. Environmental Consequences

The Build Alternative and all design options will utilize the area southeast of the existing passenger loading platform to construct station improvements. The existing passenger loading platform and tracks are already within the boundary of the 100-year floodplain. The Build Alternative involves construction within the floodplain boundary at the site of the existing Prism Aerospace industrial buildings. Demolition of these buildings will remove obstructions within the floodplain which will improve or maintain existing flooding conditions.

The Build Alternative and all design options would be constructed within the 100-year floodplain (Zone AE) which involve redevelopment of the existing site and other modifications within the flood area. Common to the Build Alternative and all design options is the construction of a new passenger loading platform, parking lot, additional tracks and removal of the Prism Aerospace buildings. These new structures would be located near the western boundary of the 100-year floodplain. The existing site is well below the listed BFE of 886 feet as shown in Figure 2. During a 100-year flood event, the majority of the site would be under water for both existing and proposed conditions. The platform and pedestrian bridge would also be under water. This will require certain items such as underground conduits and the elevator system to be sealed from infiltration of flood water and may necessitate the inclusion of flood warning devices.

Construction of additional structures within the floodplain would add mass within the BFE which could alter the floodplain to the adjacent structures. However, the additional mass is minimal compared to the overall floodplain volume and the mass taken out from the floodplain due to the removal of buildings. The Project would be removing the Prism Aerospace buildings which would likely create an improvement to the overall floodplain by removing mass of a large structure under the BFE. A noise barrier may be required on the east side of the station. This barrier would minimize impacts to the water surface and would not significantly obstruct flow given its alignment with the overall topography of the site. Due to its much narrower footprint and alignment per the Noise Study Report, its impact will be much less than that of the existing buildings that are to be demolished. It is expected that the removal of the Prism Aerospace buildings along with reconstruction of the site under the Build Alternative and all design options would maintain the existing ground levels for the majority of the site; therefore, project features would not result in a significant encroachment and would most likely have a positive effect on the overall floodplain as the proposed site elevation where the buildings are to be demolished would be below the BFE. It is expected that the floodplain boundary will stay the same or improve with the construction of the new project since there would be a negligible increase and possible decrease in water surface elevation from the project. This means that the floodplain boundary at 12$^{th}$ street to the south, the boundary of the railroad to the west, the boundary between 9$^{th}$ and 10$^{th}$ street, and the boundary to the east (extending beyond the project limits) would all be consistent with the proposed Project as the existing condition.

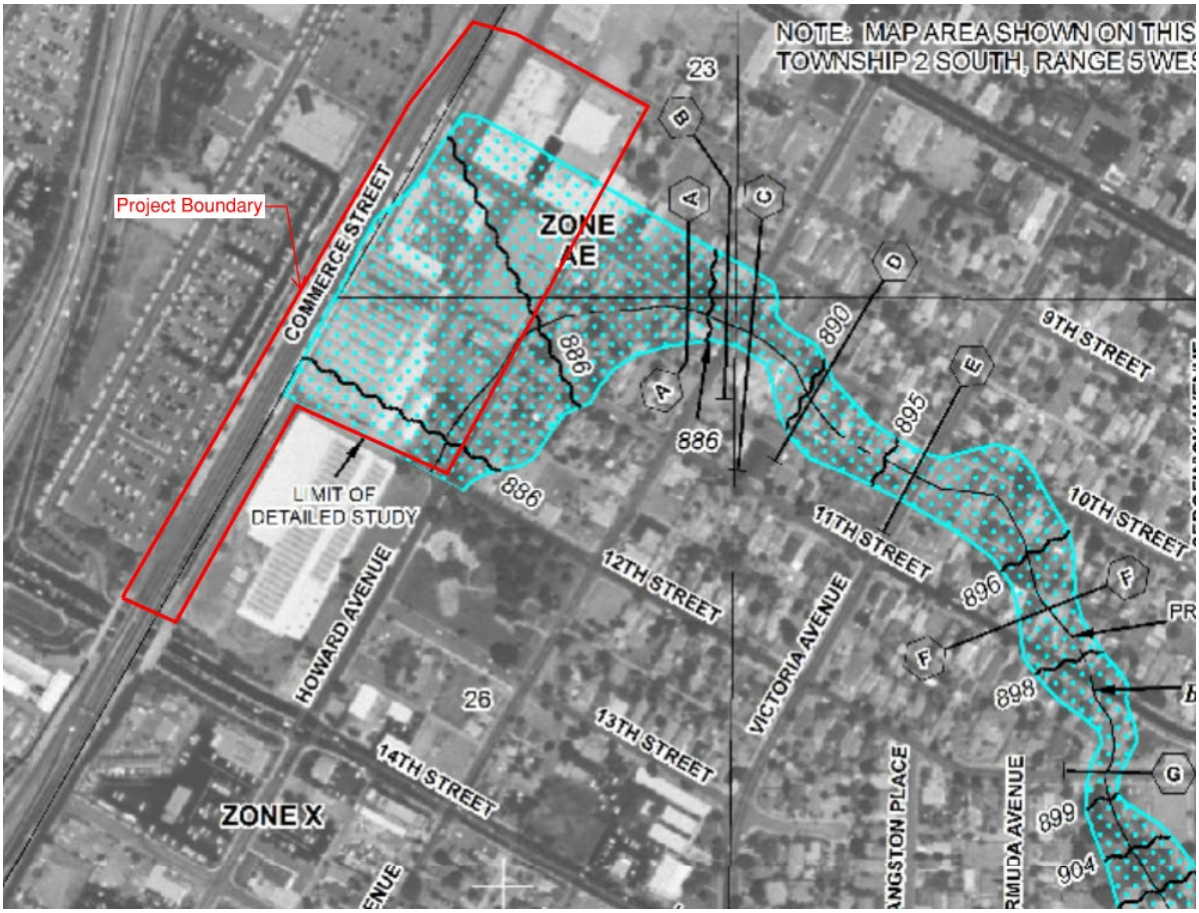


**Figure 1: 100-Year Floodplain Within the Project Boundary**

*Source: Flood Insurance Rate Map (06065C0726G), Federal Emergency Management Agency*

The Prism Aerospace building is located within a designated industrial land use; its removal would benefit the floodplain water quality because there would be less hazardous materials that would be released if a flood occurred. The Phase 1 Environmental Site Assessment (Ninyo & Moore, 2018) prepared for the project, indicates that soil contains polynuclear aromatic hydrocarbons (PAHs), benzidine, tetrachloroethylene (PCE), naphthalene, polychlorinated biphenyls (PCBs), arsenic, and lead. Concentration of these contaminants at some locations could be detrimental to sensitive receptors. The Build Alternative and all design options would pave exposed soil areas to minimize or avoid sources of polluted run-off or contamination from entering the floodplain. The paved site would infiltrate less through the contaminated soils compared to existing conditions and essentially place a cap over the hazardous material.

Given that the proposed Project is within the 100-year floodplain, completely avoiding floods cannot be achieved; the existing station and surrounding buildings would be inundated during a 100-year flood event and the likelihood of flooding would be similar or improved under post-project conditions. As mentioned previously, the proposed Project would result in an incremental increase of approximately 45,000 square feet of impervious surface within the floodplain equating to a negligible increase in surface runoff of 2 cfs which, with LID measures (such as non-infiltration BMPs), would be further reduced. To minimize impacts to the 100-year floodplain, station improvements and structures would also be designed and constructed to reduce impediments within the floodplain. Improvements at the project site would be designed to maintain similar grades as that of existing grades to the greatest extent possible, which would allow the floodplain to use its current storage area and avoid increasing the BFE. As indicated in the FIRM, the City of Riverside is the Flood Plain Coordinator for this site. Therefore, coordination with the City will be required during the final design phase of the project. During design, a hydraulic study showing the proposed improvements and the impacts to the overall BFE will also be required.

# 8.0 Stormwater Quality

## 8.1. Affected Environment

The project site is located within the Santa Ana River Watershed (Middle Santa Ana River), which is a 303d/TMDL watershed. 303d/TMDL watersheds are impaired waters that do not meet state water quality standards. Regulations also require each state to develop total maximum daily loads (TMDLs) from the pollution sources for such impaired water bodies. On Table 2, various regulations are shown in which the proposed Project has to comply with, which includes additional requirements due to the project being in a 303d/TMDL watershed under Water Quality Control Plan and NPDES CGP. The tributary area of the watershed is approximately 480 square miles. Major tributaries to the Santa Ana River Reaches (3 and 4) include Temescal Creek, Day Creek, San Sevaine Channel, Box Springs Channel, and Anza Channel. The Santa Ana River is the receiving water for this project. This body of water carries the following three pollutants that required TMDLs because it is a 303d watershed: pollutant copper; indicator bacteria; and lead.

Table 2 displays the various water quality, drainage and flood control requirements dictated by the various laws, regulations, and plans applicable to the proposed Project. These include overall RWQCB Basin Plans, Federal and State Permits, Local Regulations and Guidance Manuals and Railroad Design Criteria.

**Table 2. Laws, Regulations and Plans Applicable to the Proposed Project[5]**

| Law, Regulation, or Plan | Description | Project Requirement |
|---|---|---|
| Water Quality Control Plan, Santa Ana Region (Basin Plan) | The Water Quality Control for the Santa Ana Region (Basin Plan) outlines the various regulatory processes for the protection of the beneficial uses established for regional waters within the Santa Ana region. | A WQMP would be prepared to comply with this regulation and demonstrate the protection of the beneficial uses within regional waters. This would be completed during the final design phase. |
| NPDES CGP | The CGP (Order No. 2009-009-DWQ), adopted September 2, 2009, became effective July 1, 2019. This permit has been amended twice by Orders, Nos. 2010-0004-DWQ and 2012-0006-DWQ, which are currently in effect. This regulation applies to all stormwater discharges associated with construction activity where clearing, grading, and excavations result in soil disturbance greater than 1 acre. | A SWPPP would be prepared for construction activities associated with the project site to comply with NPDES CGP regulation. This would be completed during pre-construction. |
| NPDES Phase I MS4 Permit | In accordance with the CWA, the Santa Ana Regional Water Quality Control Board developed the NPDES Permit and Waste Discharge Requirements Order No. R8-2010-0033 (MS4 Permit) for the Riverside County Flood Control District, the County of Riverside, and many incorporated cities of Riverside County within the Santa Ana region, which includes City of Riverside | The proposed Project would adopt best practices to comply with this regulation. This would be completed during the final design phase. |
| SCRRA Design Criteria Manual | SCRRA has established engineering criteria for track and bridges within their jurisdiction. This includes drainage, which includes culverts and swales within the SCRRA right-of-way. | Proposed improvements within SCRRA's right-of-way would comply with the standards set forth in this manual, including hydraulic requirements for any storm drain systems within SCRRA's jurisdiction. This would be utilized during the final design phase. |
| Riverside County Flood Control District LID Handbook | This handbook was created by Riverside Flood Control District to assist developers in their efforts to build quality, long lasting BMPs for their developments. | The project would implement LID requirements in design of proposed BMPs. This would be utilized during the final design phase. |

[5] *Acronym definitions: CGP = Construction General Permit; CWA = Clean Water Act; DWQ = Division of Water Quality; MS4 = Municipal Separate Storm Sewer System; No. = number; NPDES = National Pollutant Discharge Elimination System; SCRRA = Southern California Regional Rail Authority; SWPPP = Stormwater Pollution Prevention Plan; WQMP = Water Quality Management Plan*

| Law, Regulation, or Plan | Description | Project Requirement |
|---|---|---|
| Riverside County Flood Control District Hydrology Manual | This manual provides the requirements to comply with drainage requirements for proposed developments. | Drainage calculations would comply with methodologies set forth in this manual. This would be utilized during the final design phase. |

*Sources: 1) Riverside County Flood Control District Hydrology Manual (April 1978); 2) SCRRA Design Criteria Manual (Metrolink, January 2021); 3) Water Quality Control Plan (Santa Ana Regional Water Quality Control Board, 2011)*

## 8.2. Environmental Consequences

### 8.2.1. Temporary (Construction)

The greatest potential for impacts to water quality from the proposed Project would be during the construction phase. The total disturbed soil area (DSA) for the build alternative is estimated to be 17 acres. Excavation, grading, paving, and other construction activities will expose disturbed and loosened soils to erosion by wind and runoff; therefore, construction activities could result in increased erosion and siltation, including potential additional nutrient loading and increased total suspended solid concentration. Erosion and siltation from construction could affect drainages downstream of the project area, which will pose a potentially adverse, although likely minor, impact to water quality.

Construction activities for the project could result in the creation of additional polluted runoff. Grading, paving, and construction activities associated with this project could create additional sources of polluted runoff throughout the project site because of construction related pollution and waste discharge. The proposed project may impact stormwater quality due to construction that will convey pollutants in overall watershed. Runoff generated during construction activities could contribute pollutants to receiving waters. Pollutants associated with construction activities typically include gasoline, oil, rubber particles, herbicides, pesticide, paint, adhesives, tar, other chemicals, and other construction-related pollutants such as, but not limited to:

- Sediment and erosion from grading operations
- Trash and Debris from Waste Management
- Petroleum Hydrocarbons, carboxylic acids from Asphalt Paving
- Oil and grease from Motor Vehicles

These contaminants could affect surface water quality downstream of the project construction site if appropriate construction BMPs are not implemented. Construction activities could release such pollutants onto roadways and soils, from where it will be carried offsite in runoff. Some pollutants can lead to turbidity (i.e., cloudiness), which blocks light transmission and penetration, reduces oxygen levels, affects the food chain, and creates changes in water temperature. During construction, soil-disturbance activities include earth-moving activities such as excavation, trenching, soil compaction and moving, cut and fill activities, and grading. Disturbed soils are susceptible to high rates of erosion from wind and rain and can result in sediment transport via storm water runoff. Pollutants in storm water could also cause chemical degradation and aquatic toxicity in the receiving waters, adversely affecting the survival of plant and animal species, their populations, and the ecosystem structure. As mentioned previously, the Prism Aerospace site contains contaminated soils that could potentially migrate off-site during construction and affect downstream water quality. A soil management plan would be prepared and implemented prior to ground disturbing activities to prevent contaminated soils from affecting water quality.

Given these considerations, construction activities would potentially impact water quality if appropriate preventive measures are not employed. With implementation of Construction Site BMPs (as described below), the proposed Project is not expected to have a significant effect on the water quality of the receiving waters.

### 8.2.2. Permanent (Operations)

When considering impacts to water quality, the amount of additional impervious surface that is proposed within a particular watershed is a primary concern. Converting natural earth surfaces to paved surfaces contributes to higher runoff rates, and it increases the amount of pollutants entering the receiving waters. The proposed Project is expected to increase the volume of downstream flow due to the addition of impervious surface area. With an increase in impervious surface area associated with the Build Alternative and all design options, the potential for roadway pollutants to enter receiving waters increases. The proposed Project will impact stormwater quality due to increase of impervious area of approximately 45,000 square feet from that of existing conditions since peak flows will increase slightly from that of the existing condition. Note that the total watershed area for the Santa Ana River Watershed (Middle Santa Ana River) is approximately 480 square miles. The proposed additional impervious area within the watershed comprises approximately 0.0003 percent of this area. This can be expected to translate into minor localized increases in urban runoff within the project vicinity. With the minor increase in impervious surface, this project would produce an insignificant increase in the total peak flow for the Santa Ana River Watershed area.

Implementation of non-infiltration type BMPs such as lined vegetated swales, bioretention devices, and catch basin inserts as further described below would address increases in stormwater runoff. Stormwater treatment BMPs are proposed as part of

project design in order to minimize the impacts to water quality from post-project conditions. Treatment devices will be sized to capture run-off generated by the total impervious surface area within the project limits.

Moreover, the Build Alternative and all design options may potentially affect water quality due to associated pollutant sources during the operation of the proposed Project which include commuter and freight trains, motor vehicles, station maintenance, illegal dumping, spills, and landscaping care. With the implantation of permanent BMPs (identified below), effects to water quality due to the new project operations would be minimized to the maximum extent practical.

### 8.2.3. Best Management Practices

To address potential impacts to stormwater quality, BMPs are proposed to treat potential pollutants to address potential temporary and permanent impacts:

#### CONSTRUCTION BMPS

The following construction BMPs would be implemented during construction to decrease the potential for pollutants caused by construction of the proposed Project:

- Placing fiber rolls and compost socks to shorten slope length, intercept runoff, reduce runoff velocity, and remove sediment
- Placing inlet protection for any existing catch basins in the vicinity to minimize sedimentation impacts to existing storm drain systems
- Placing mulch or compost blankets to reduce runoff and the transport of sediment
- Solid waste management for litter and debris removal

#### PERMANENT BMPS

Non-infiltration BMPs could be implemented to comply with water quality regulations and to decrease the potential on-site runoff increases. Furthermore, non-infiltration BMPs would be utilized to prevent stormwater from infiltrating contaminated soils as previously discussed. One of the following or a combination of the following potential BMPs could be used throughout the site.

- Lined bioswales, where water is funneled through a vegetated ditch which reduces the overall runoff volume.
- Bioretention, where soil areas act as plant-based filtration to remove pollutants and helps to reduce the overall runoff volume.
- Self-contained tree well boxes are a good example of a potential treatment device that will not allow water to percolate into the groundwater but still be able to have biotreatment.
- Catch basin filter inserts that can filter out hydrocarbons, pollutants with trash capture abilities.

Through the implementation of permanent BMPs, water leaving the site would not substantially degrade the water quality of the downstream facilities in the final condition.

# 9.0 Conclusions and Recommendations

The project site is situated within an urbanized area where most of the construction would occur within an area built with impervious surfaces. Due to existing contamination within the proposed parking lot expansion, the proposed Project and all design options would limit the type of development within the contaminated area to a paved parking lot which would minimize the scope of excavation activities and soil disturbance. Paving these areas would effectively avoid further contamination of the groundwater located on-site; hence, the proposed Project is not expected to result in substantial effects to groundwater.

Implementation of the proposed Project would result in an incremental increase in paved areas (approximately 45,000 square feet) at the proposed parking lot expansion area north of Howard Avenue and west of 10$^{th}$ Street; these industrial parcels are currently operating as equipment storage yards with compacted soils. Under all design options, the unpaved areas would be incorporated into the project as a surface parking lot. Hence, increases in impervious surface areas for all design options would be similar. The proposed Project would result in a minor increase in stormwater runoff rate of 2 cfs, which is not anticipated to result in significant impacts to site hydraulics. Moreover, design of the station improvements, including new structures, would maintain onsite existing drainage patterns so that the rate of surface runoff would not increase and result in additional flooding of both onsite and offsite areas compared to existing conditions. Potential impacts to hydrology and floodplains are not anticipated to be substantial. CEQA evaluation of the drainage components discussed in this technical memorandum is provided in Attachment 1.

The following avoidance, minimization and mitigation measures summarized in Table 3 will be incorporated into the proposed Project under the build alternative and all design options:

**Table 3. Avoidance, Minimization and Mitigation Measures**

| Drainage Component | Avoidance, Minimization and Mitigation Measure |
|---|---|
| Hydrology | Proposed grades will remain similar to existing grades and maintain existing flow paths/patterns. |
| Groundwater | The construction of the paved surface parking lot (under all design options) and implementation of non-infiltration BMPs will be implemented to avoid worsening the existing contamination within the project site. In addition, RCTC will implement the Final Soil Management Plan (as approved by DTSC), to ensure contaminated soils are handled appropriately and avoid potential impacts to groundwater. |
| Hydraulics | Design the on-site storm drain system to connect with the existing 42-inch storm drain system to minimize the amount of flow draining to the low point at Howard Ave/11th Street. |
| Floodplains | To the greatest extent feasible, maintain existing grades at the project site to allow the floodplain to utilize its current storage area and avoid altering the footprint of the 100-yr floodplain. Reduce barriers to flow in floodplain by demolishing Prism Aerospace Structure and placing noise barrier in line with flow direction.<br>Design of station improvements will follow RCTC design standard requirements within floodplains and coordinated with the City of Riverside and County of Riverside Flood Control.<br>Certain items such as underground conduits and the elevator system should be design to be sealed from infiltration of flood water during the final design phase.<br>The inclusion of flood warning devices may also be required.<br>The City of Riverside is the Flood Plain Coordinator for this site. Therefore, coordination with the City will be required during the final design phase of the project. During design, a hydraulic study showing the proposed improvements and the impacts to the overall BFE will be required. |
| Stormwater Quality | During construction of the station improvements, BMPs such as: fiber rolls, inlet protection, etc. will be implemented to comply with Construction General Permit (CGP) requirements. Other construction BMPs, as required by local and regulatory agencies, will be implemented by the construction contractor.<br>As directed by RCTC and/or regulatory agencies, non-infiltration BMPs will be implemented to address additional runoff due to the creation of additional impervious surface. |

# Attachment 1: CEQA Checklist Appendix G, X. Hydrology and Water Quality

## A-1.1 CEQA Checklist Appendix G, X. Hydrology and Water Quality

The proposed Project would result in a significant impact under CEQA on floodplains, hydrology, and water quality if the project components:

1. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality,
2. Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin,
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 through the addition of impervious surfaces, in a manner which would:
   a. Result in substantial erosion or siltation on- or off-site;
   b. Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;
   c. 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; or
   d. impede or redirect flood flows
4. In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation, conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

### A-1.1.1 Threshold A

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

The project may potentially affect water quality due to associated pollutant sources during the operation of the proposed Project which include commuter and freight trains, motor vehicles, station maintenance, illicit discharges, spills, and landscaping care. With the implementation of permanent BMPs, effects to water quality due to the Project operations would be minimized to an insignificant level. Detailed discussions of potential water quality impacts and proposed BMPs to curtail such impacts are provided below for construction and operation of the Project.

#### TEMPORARY IMPACTS (CONSTRUCTION)

The project site is located within the Santa Ana River Watershed (Middle Santa Ana River), which is a 303d/TMDL watershed. 303d/TMDL watersheds are impaired waters that do not meet state water quality standards.

The various construction activities like excavation, grading, paving, and others will expose disturbed and loosened soils to erosion by wind and runoff; therefore, construction activities could result in increased erosion and siltation, including potential additional nutrient loading and increased total suspended solid concentration. Erosion and siltation from construction could affect drainages downstream of the project area, which will pose a potentially adverse, although likely minor, impact to water quality.

Construction activities for the project could result in the creation of additional polluted runoff. Grading, paving, and construction activities associated with this project could create additional sources of polluted runoff throughout the project site because of construction related pollution and waste discharge. The proposed Project may impact stormwater quality due to construction that will convey pollutants to overall watershed. Runoff generated during construction activities could contribute pollutants to receiving water. Pollutants associated with construction activities typically include gasoline, oil, rubber particles, herbicides, pesticide, paint, adhesives, tar, other chemicals, and other construction-related pollutants such as, but not limited to:

- Sediment and erosion from grading operations
- Trash and Debris from Waste Management
- Petroleum Hydrocarbons, carboxylic acids from Asphalt Paving
- Oil and grease from Motor Vehicles

These contaminants could affect surface water quality downstream of the project construction site if appropriate construction BMPs are not implemented. Construction activities could release such pollutants onto roadways and soils, from where it will be carried offsite in runoff. Some pollutants can lead to turbidity (i.e., cloudiness), which blocks light transmission and penetration, reduces oxygen levels, affects the food chain, and creates changes in water temperature. During construction, soil-disturbance activities include earth-moving activities such as excavation, trenching, soil compaction and moving, cut and fill activities, and

grading. Disturbed soils are susceptible to high rates of erosion from wind and rain and can result in sediment transport via storm water runoff. Pollutants in storm water could also cause chemical degradation and aquatic toxicity in the receiving waters, adversely affecting the survival of plant and animal species, their populations, and the ecosystem structure.

Given these considerations, appropriate preventive measures will be employed during construction with the implementation of Construction Site BMPs, as described below.

- Placing fiber rolls and compost socks to shorten slope length, intercept runoff, reduce runoff velocity, and remove sediment
- Placing inlet protection for any existing catch basins in the vicinity to minimize sedimentation impacts to existing storm drain systems
- Placing mulch or compost blankets to reduce runoff and the transport of sediment
- Solid Waste Management for Litter and Debris Removal

The proposed Project is not expected to have a significant effect on the water quality of the receiving waters with the appropriate construction BMPs in place.

#### PERMANENT IMPACTS (OPERATIONS)

When considering impacts to water quality, the amount of additional impervious surface that is proposed within a particular watershed is of primary concern. Converting natural earth surfaces to paved surfaces contributes to higher runoff rates and increases the amount of pollutants entering receiving waters. The proposed Project is expected to increase the volume of downstream flow due to the addition of impervious surface area. The Build Alternative and all design options would increase the amount of impervious surface area of approximately 45,000 square feet and the potential for pollutants to enter receiving waters and peak flows would consequently increase slightly from that of existing condition. However, this increase in the amount of impervious surface area relative to the total watershed area for the Santa Ana River Watershed (Middle Santa Ana River) Area is approximately 480 square miles. The proposed additional impervious area within the watershed comprises approximately 0.0003 percent of this area. This can be expected to translate into minor localized increases in urban runoff within the project vicinity. With the minor increase in impervious surface, this project would produce an insignificant increase in the total peak flow for the Santa Ana River project area.

Implementation of Best Management Practices such as vegetated swales, bioretention devices, and catch basin inserts as further described below would address increases in stormwater runoff. Storm water treatment BMPs are proposed to be incorporated into the project design in order to minimize the impacts to water quality from post-project conditions. Treatment devices will be sized to capture run-off generated by the total impervious surface area within the project limits. This would reduce the impacts to water quality to less than significant levels.

### A-1.1.2 Threshold B

***Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin.***

Based on the results of the Phase 1 Environmental Site Assessment conducted for the proposed Project in which groundwater measurements were collected in 2008, groundwater was anticipated to be encountered at a depth of 100 to 110 feet bgs. The site overlies a groundwater plume impacted by multiple contaminants, primarily VOCs known as the Riverside Plume[6]. Additional Phase II Environmental Site Assessments (conducted between August and September 2020) confirms the initial findings in Phase 1 Study conducted in 2008.

#### TEMPORARY IMPACTS (CONSTRUCTION)

Construction activities could potentially release oils, grease, concrete and other pollutants into the soil. These pollutants could contaminate the groundwater through rainstorms and construction watering activities; however, the preparation and implementation of a Stormwater Pollution Prevention Plan (SWPPP) during all phases of construction would reduce the risk of potential effects to groundwater.

Excavation activities are not expected to reach the groundwater. Construction of the Build Alternative and all design options would require grading and excavation of soil between 5 feet and 10 feet (at some locations) in depth. Groundwater is anticipated to be encountered at a depth of 100 to 110 feet bgs. Therefore, no significant impact to the groundwater is anticipated during construction.

#### PERMANENT IMPACTS (OPERATIONS)

Since the underlying soils at the project site are contaminated, water must be prevented from percolating through the soil to avoid contaminants from entering the groundwater. The Build Alternative and all design options would have less permeable area

[6] *Revised Limited Phase II Environmental Site Assessment (Ninyo & Moore, August 2020)*

compared to existing site conditions, therefore decreasing the amount of infiltration into the groundwater and the overall amount of groundwater recharge. As mentioned previously, the proposed 45,000-foot paved area consist of 0.0003 percent of the overall watershed and would not considerably affect groundwater recharge. Based on coordination with DTSC and RWQCB, both agencies agreed to cap the surface of the project site to prevent water from percolating into the contaminated soil by limiting the use of the project site to an open-paved surface parking lot. This land-use restriction would prevent further contaminants from exacerbating conditions of the Riverside Plume. By preventing further contamination, downstream groundwater management becomes more sustainable. Based on preliminary design plans, the proposed Project is consistent with this agreement to construct a paved surface parking lot. Less than significant impacts are anticipated.

### A-1.1.3 Threshold C (i)

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

This project will be designed to minimize site topographic changes and will therefore result in insignificant changes to drainage patterns within the project site. Grading activities will be minimized, existing tall structures will be removed and replaced with relatively flat station platforms that will not cause significant impact to the overall water surface. Changes to onsite drainage patterns would be negligible as the design of the station improvements would maintain the flow pattern away from the railroad tracks toward the low point at 11th Street. In all of the design options, the low point would remain at its current location and connect to the existing 42-in storm drain located at the project site to mimic existing conditions. More details are provided below.

#### TEMPORARY IMPACTS (CONSTRUCTION)

During construction, the construction contractor may temporarily reroute drainage patterns within the construction site. If not effectively managed through construction site BMPs, this could result in the loosening and migration of soil to other areas beyond the construction site. BMPs that could be used to manage erosion and siltation may include, but are not limited to the following: fiber rolls, compost socks, placing inlet protection for any existing catch basins, mulch or compost blankets, concrete washouts, and silt fences. Additional BMP measures beyond those identified above may be incorporated through the preparation of a stormwater pollution prevention plan (SWPPP), which will identify all BMP measures to control stormwater discharge during construction. Less than significant impacts are anticipated.

#### PERMANENT IMPACTS (OPERATIONS)

The proposed Project will be designed to follow the existing ground and drainage patterns. As stated in Threshold A, the proposed Project will result in an additional 45,000 square feet of impervious area, which will have an incremental increase of approximately 2 cfs if no BMPs are incorporated. The additional runoff would cause the potential for flooding withing the site causing erosion and siltation downstream. It would also increase the potential for erosion downstream as the rate of the downstream system would increase causing waterways to expand beyond the previous limits. With the addition of permanent BMPs as mentioned in Threshold A, the project is expected to control the erosion, siltation and flow. Less than significant impacts are anticipated.

### A-1.1.4 Threshold C (ii/iii)

***Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:***

- ***i) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite,***
- ***ii) 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.***

Under all design options, the proposed Project would increase impervious surface area to approximately 45,000 square feet, though the Build Alternative would maintain onsite existing drainage patterns so that the rate of surface runoff would not increase to cause additional flooding in both onsite and offsite areas. The stormwater runoff rate increase due to additional impervious surface is minimal (approximately 2 cfs), which will not impact hydraulic capacity of the downstream system. Also, the Build Alternative will implement LID BMP measures that would negate the additional 2 cfs rate increase in runoff from the site and possibly decrease the overall site runoff from existing site conditions. More details are provided below.

#### TEMPORARY IMPACTS (CONSTRUCTION)

During construction, drainage patterns could be rerouted and potentially alter the rate of runoff to different discharge points within the site. However, implementation of construction site BMPs, the rate can be controlled to avoid on- and off-site flooding.

The preparation of the SWPPP will actively control the stormwater discharge during the construction of the project. Less than significant impacts are anticipated.

#### PERMANENT IMPACTS (OPERATIONS)

Additional impervious surface area could increase stormwater runoff and has the potential to result on-and off-site flooding. The proposed Project will be paving an additional 45,000 square feet of impervious area, which will have an incremental increase of an estimated 2 cfs. However, the Build Alternative and all design options will be designed to follow the existing ground and drainage patterns to ensure that runoff drains to the existing drainage system. With the addition of permanent BMPs, the Project is expected to result in the same or decreased runoff rate compared to existing conditions and treat potentially polluted stormwater as it slows it down. It is not expected that structures and paved areas would create an impermeable surface large enough to significantly contribute to runoff water in the surrounding area.

The existing site is served by a 42-inch storm drain that exits the site. This storm drain ultimately flows into a box culvert under the current Riverside-Downtown Station that parallels the western border of the site. The existing runoff from the site and surrounding areas have been estimated at 42 cfs for the 10-year storm and 67 cfs for the 100-year storm events. The 42-inch storm drain has an ultimate capacity of up to approximately 107 cfs, which would be adequate capacity for the additional 2 cfs resulting from the Project; however, the proposed Project would address the additional 2 cfs increase through implementation of BMPs. Less than significant impacts is anticipated.

### A-1.1.5 Threshold C (iv)

***Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would impede or redirect flood flows.***

The proposed Project is or within the vicinity of a 100-year existing floodplain (Zone AE) which is part of the Middle Santa Ana River Watershed that ultimately flows into the Santa Ana River through Prado Dam. The floodplain offers flood storage for the Santa Ana River to spread out and accommodate temporary storage of flood water, which reduces the erosion potential and flood peaks. Based on the Federal Emergency Management Agency (FEMA) Flood Rate Insurance Map (FIRM), the 100-yr Base Flood Elevation (BFE) is approximately 886 feet for the project site.

#### TEMPORARY IMPACTS (CONSTRUCTION)

The existing site is between 5 and 13 feet under the BFE, and all construction activities will be below this level. The construction activities include minor grading activities and temporary rerouting of existing drainage patterns and systems. The risk of redirecting flood flows is not significant because the project site is located within the end of a flood zone. Activities that could potentially alter flood flows include the substantial amount of import and stockpile of fill material on-site that could redirect flows outside of the floodplain; however, the proposed Project would not import or stockpile significant amount of fill material on site and the flood storage volume under the BFE will remain the same. Less than significant impacts are anticipated.

#### PERMANENT IMPACTS (OPERATIONS)

Given that the proposed Project is within the 100-year floodplain, completely avoiding floods cannot be achieved; the existing station and surrounding buildings would be inundated during the 100-year flood event and the likelihood of flooding would be similar or reduced under post-project conditions. As mentioned previously, the proposed Project would result in an incremental increase of approximately 45,000 square feet of impervious surface within the floodplain equating to a negligible increase in surface runoff of 2 cfs. Implementing LID measures such as non-infiltration BMPs would likely reduce surface runoff rates.

With the addition of the loading platform and pedestrian bridge (Design Option 1), these structures would be under water if the 100-year flood event occurred. Construction of additional structures within the floodplain would add mass within the BFE and could potentially alter or expand the floodplain to adjacent structures; however, the Build Alternative and all design options would remove the larger Prism Aerospace buildings and ancillary structures, which would result in a net decrease in mass under the BFE; the additional mass to be constructed within the floodplain is less compared to the existing structures and would result in minimal effects to the overall floodplain volume. To minimize impacts to the 100-year floodplain, station improvements and structures would be designed and constructed to minimize and reduce impediments within the floodplain. Improvements at the project site would be designed to maintain similar grades as that of existing grades to the greatest extent possible, which would allow the floodplain to utilize its current storage area and avoid increasing the BFE. Given that the existing train station is within the flood zone and that a net increase of mass will not be constructed under the BFE, the proposed Project would not result in significant floodplain encroachment and result in a net positive effect on the overall floodplain as the proposed site elevation is below the BFE and large structures that currently impede flows would be removed. Less than Significant impacts are anticipated.

### A-1.1.6 Threshold D

***In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation.***

The proposed Project is within a floodplain which could be polluted both during Project construction and Project operations if adequate storm water BMPs are not in place. Detailed descriptions of the flooding hazards and the BMPs that would be incorporated into the design and construction documents to render such impacts insignificant are provided below.

#### TEMPORARY IMPACTS (CONSTRUCTION)

The proposed Project is or within the vicinity of a 100-year existing floodplain, creating a potential to release pollutants if a flood event were to occur during the construction phase of the proposed Project. During a 100-year flood event, the Project site would be inundated and potentially release pollutants in the flood waters during construction. Pollutants associated with construction activities typically include gasoline, oil, rubber particles, herbicides, pesticide, paint, adhesives, tar, other chemicals, and other construction-related pollutants such as trash and debris. Because the existing train station is within the floodplain, the risk of release of such pollutants is the same under the Build Alternative. Construction BMPs would be implemented during construction to ensure that pollutants are not released during a flood event. These would include erosion and sediment control BMPs, drain inlet protection, stabilized entrances and exits, appropriate concrete washout placement and vehicle storage location, rain event action plans, etc. With the incorporation of these BMPs, anticipated impacts will be less than significant.

#### PERMANENT IMPACTS (OPERATIONS)

The proposed Project would construct additional railroad tracks within the vicinity of the station. During a 100-year flood event, the station would be inundated, including existing and proposed railroad tracks containing chemicals associated with railroad ties that could potentially contaminate flood waters. The railroad, however, is located along the high side of the project site. Therefore, it should incur minimal inundation longevity during the storm event. This coupled with the fact that the track is located over pervious track ballast and sub-ballast (which retain pollutants to protect against their transport into the environment), pollutants from the track should be minor and should not be increased due to the project over existing conditions.

Other potential pollutants that could be released during a flood event would originate from Project elements such as the parking lot, where parked cars would be submerged. Considering that these sources of potential pollutants already exist within the site (Riverside-Downtown Station), the proposed Project would not increase the risk of releasing pollutants into the floodwaters from the parking lot. Furthermore, removal of existing industrial buildings within the Project site would decrease the risk of release of other pollutants and chemicals used in commercial and manufacturing activities associated with these uses.

Under the Build Alternative and all design options, exposed soil areas would also be paved, which would cap the underlying contaminated soils from being released into the floodwaters which could amount to an overall improvement in the potential for pollutants to be released due to inundation during flooding; therefore, less than significant impacts are anticipated.

### A-1.1.7 Threshold E

***Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.***

#### TEMPORARY IMPACTS (CONSTRUCTION)

The proposed Project would be consistent with water quality control plans. In accordance with EPA requirements, construction sites that would disturb more than one acre are mandated to prepare a SWPPP. The Build Alternative and all design options would result in up to 8 acres of ground disturbing activities. A SWPPP will be prepared and implemented that would avoid and minimize stormwater pollution through the implementation of BMPs during construction activities.

As stated in Threshold B, construction excavation activities are limited to depths of up to 10 feet and would not reach groundwater; therefore, the proposed Project would not conflict or obstruct with groundwater management plan. Less than significant impacts are anticipated during construction.

#### PERMANENT IMPACTS (OPERATIONS)

The Build Alternative and all design options will add impervious surface area which, without the implementation of stormwater/ flow control BMPs, would be inconsistent with the water quality control plan because of the increase in the rate of runoff. However, implementation of BMPs using the County's Low Impact Development measures would reduce the post design stormwater runoff rate to match the existing conditions and potentially decrease the existing runoff rate. Implementation of these BMPs to reduce the run-off rate to pre-Project conditions would result in consistency with the water quality control plans.

Underlying soils within the Project site contain known hazardous contaminants. The Build Alternative and all design options would prevent further contamination of the groundwater by capping existing exposed soil areas so that less water will infiltrate into the contaminated soil. This both prevents pollutants from entering groundwater from the surface and reduces the potential for migration of the existing plume by preventing groundwater infiltration into the contaminated area which is consistent with the goals and policies of the groundwater management plan. Therefore, less than significant impacts are anticipated.