3.10 WATER QUALITY AND HYDROLOGY

This section presents a discussion of the existing hydrology, hydrological conditions, and drainage patterns in the project area and vicinity as well as a discussion of potential impacts of the Proposed Project on hydrology and drainage. The section begins with a description of the existing environment, followed by a discussion of relevant federal, State and local laws and regulations. Where potential environmental impacts are identified, a mitigation program is developed to reduce these impacts to the extent feasible. Finally, residual impacts and cumulative impacts are discussed.

Information in this section of the EIR evaluates written comments on the NOP received by the Los Angeles Regional Water Quality Control Board (April 4, 2014); Los Angeles County Department of Public Works (April 15, 2014); and the Main San Gabriel Basin Watermaster (April 7, 2014). A copy of each letter can be found in Appendix B of this EIR.

3.10.1 EXISTING ENVIRONMENT

Surface Water

The City of Irwindale is located in the Los Angeles-San Gabriel Hydrologic Unit. The San Gabriel River watershed is the main surface water body in this Unit, covering approximately 689 square miles. The San Gabriel River flows from northeast to southwest through the City, generally flowing parallel to Interstate 605 (I-605). The San Gabriel River headwaters are located in the San Gabriel Mountains to the north. Most of the stormwater runoff in the region is directed to the San Gabriel River.

The upper two reaches of the San Gabriel River watershed consist largely of undisturbed riparian and woodland habitats. The middle reach of the watershed contains most of the open-pit quarries and large spreading grounds utilized for groundwater recharge. The lower reach of the watershed flows through a concrete-lined channel in a heavily urbanized portion of Los Angeles County before becoming a soft bottom channel where it discharges to the Pacific Ocean in the City of Long Beach.

The majority of water flow in the San Gabriel River occurs from November through April. However, a few spring and summer thunderstorms can also provide summer water flow in the San Gabriel River. The majority of the City's stormwater runoff flows are directed to this river.

Historically, flood waters from the San Gabriel River washed large alluvium materials from the San Gabriel Mountains and deposited them in the flatlands of the San Gabriel Valley within the City's boundaries (flood waters are now controlled by the Santa Fe Dam). Within the City, these alluvial deposits can reach a depth of over 600-feet below the current ground surface (bgs) and comprise the mineral resource extracted within the City's active mines. South of the Santa Fe Dam, the San Gabriel River flows through a concrete-lined channel. The bottom of this channel

is native alluvial deposits consisting mostly of sand and gravel that allow rapid percolation of water into the underlying aquifer.

Other surface waters within or near the City include the Santa Fe Dam (70-acre recreational lake), exposed-groundwater bodies in aggregate mines (e.g., Vulcan Durbin, Hanson Aggregate, and United Rock Nos. 1 and 2), Sawpit Wash, Buena Vista Channel, and Big Dalton Wash. In addition, there are a number of groundwater recharge areas operated by the Los Angeles County Flood Control District in and near the City.

Surface water quality within the San Gabriel River is seasonally variable. During the start of the rainy season in October/November, the main contaminate sources for the river is sediment from runoff in the San Gabriel Mountains and stormwater runoff from local streets. Stormwater runoff contains a variety of material such as organics (e.g., gasoline, oils, and lubricating fluids), non-organics (e.g., dirt and dust), and solid waste (e.g., paper, cans, and plastic). However, after the first few rains ("first flush effect"), the amount of these materials in the stormwater runoff decreases significantly.

The Olive Pit mine site does not receive or discharge storm water flows from outside of the Pit. Runoff from the surrounding streets and neighborhoods is intercepted and drained away from the site by the City's stormwater drainage system. (See discussion on page 3.6-2 related to installation of storm drain system). All precipitation that falls on the Olive Pit is retained in the pit. All mining and reclamation activities proposed at the mine site will be designed in accordance to the City of Irwindale's *Technical Guidelines for Drainage and Erosion Control*.

Groundwater

Groundwater basins underlie the surface water network of the Los Angeles Region and are generally composed of young and old alluvial material. These materials consist primarily of sand, gravel, silt, cobbles, and boulders, in various mixtures. The Olive Pit is located within the Main San Gabriel Valley Groundwater Basin (Basin) aquifer that underlies most of the San Gabriel Valley (eastern Los Angeles County) and the City of Irwindale. Groundwater within this basin flows from northeast to southwest.

This Basin is approximately 167 square miles and has a potential fresh water storage capacity of about 8.6 million acre-feet. This Basin is administered by the Main San Gabriel Basin Watermaster (Watermaster). The extent of the San Gabriel Basin is shown in **Figure 3.10-1 Main San Gabriel Basin**. The hydrologic basin or watershed coincides with a portion of the upper San Gabriel River watershed, and the aquifer or groundwater basin underlies most of the San Gabriel Valley. The groundwater basin is bounded by the San Gabriel Mountains to the north, San Jose Hills to the east, Puente Hills to the south, and by a series of hills and the Raymond Fault to the west. The watershed is drained by the San Gabriel River and Rio Hondo, a tributary of the Los Angeles River.

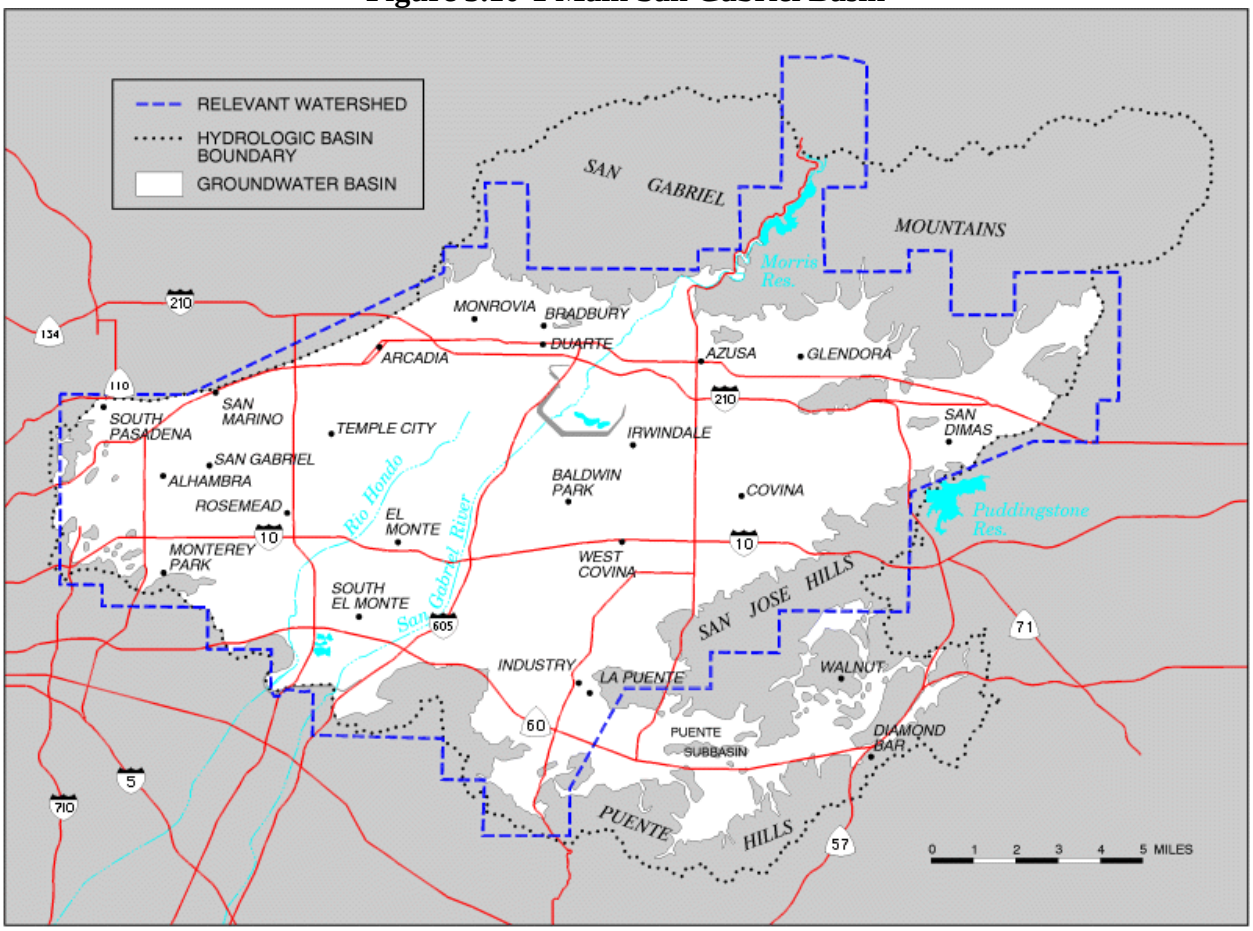
Groundwater levels fluctuate substantially in the Basin due to natural infiltration from major storms, managed surface water spreading operations along the San Gabriel River, and long-term wet and dry climate cycles that normally affect southern California. Historic high groundwater elevations were recorded in 1941 (343 feet AMSL), the historic low was 203 feet AMSL in 1941. Based upon historical records the average groundwater level has been interpolated for the Olive Pit at 330 feet AMSL. Groundwater levels in the upper San Gabriel Valley groundwater basin can fluctuate by several feet during a single year and have altered as much as 45 feet in a single season. Historical data taken at the Baldwin Park Key Well 3030F, located in Baldwin Park, have shown to fluctuate over 130 feet.

Groundwater levels at the Baldwin Park Key Well are used as the benchmark for determining the groundwater level for the entire aquifer. The management goal of the Watermaster is to keep the Key Well water level between 200- and 250-feet AMSL. The groundwater level is currently nearer the upper end of the recommended operating level for the Basin, and is adequate for meeting current water needs in the region. Groundwater levels within Irwindale can range between 50- to 150-feet bgs.

Principal water-bearing formations of the basin are unconsolidated and semi-consolidated sediments which range in size from coarse gravel to fine-grained sands. The major sources of natural recharge are infiltration of rainfall on the valley floor and percolation of runoff from the adjacent mountains. The basin also receives imported water and return flow from applied water. Groundwater levels fluctuate substantially in the Basin due to natural infiltration from major storms, managed surface water spreading operations along the San Gabriel River, and long-term wet and dry climate cycles that normally affect southern California. For example, annual groundwater recharge from all sources from 1972 through 1994 ranged from a low of 28,000 to a maximum of 300,000 acre-feet per year.

Significant groundwater contamination was discovered in the San Gabriel Valley in the late 1970s and early 1980s. The groundwater contamination was caused by historic industrial and agricultural practices in the basin that included improper disposal of solvents and other chemical wastes into the groundwater, resulting in Volatile Organic Carbons (VOC) contamination. Poor agricultural practices by farmers have also resulted in contamination of the groundwater with nitrates (NO_3).

Figure 3.10-1 Main San Gabriel Basin



Source: http://www.watermaster.org/basinmap.html

Much of the San Gabriel Valley groundwater is considered a Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLA) and National Priority List - Superfund (NPL) cleanup site. A number of agencies are involved in remediating this existing groundwater contamination including the Los Angeles RWQCB, the Watermaster, the San Gabriel Valley Water Quality Authority (WQA), and the U.S. Environmental Protection Agency (US EPA).

Water Quality and Contamination Issues

The Basin aquifer contains a large Superfund cleanup site regulated by the U.S. EPA and the San Gabriel Basin Water Quality Authority (WQA). The largest geographical area of the Superfund site is known as the Baldwin Park Operable Unit (BPOU; see **Figure 3.10-2 Baldwin Park Operable Unit**), which underlies the Olive Pit site. Of the areas of contamination in the Basin [listed in the National Priority List], the BPOU is considered the most significant because of the geographic size and degree of contamination. (See **Figure 3.10-3 Radius Map Overview**).

The approximate location of the San Gabriel Valley Area 2 Site is west of Highway 39, south of the San Gabriel Mountains, east of the San Gabriel River, and north of Walnut Creek. Nearly all of the Baldwin Park area is fully developed for residential, commercial, and industrial use. The largest parcels of open land are active and inactive gravel pits and the Santa Fe Flood Control Basin. San Gabriel Valley Area 2 is a ground water plume that parallels the San Gabriel River to the west within the San Gabriel groundwater basin in the Baldwin Park area of Los Angeles County. The plume is about 7.5 miles long and 1.5 miles wide (EDR, 2014)

As stated in the 2014 WQA semi-annual report, "*The groundwater Basin has the dubious distinction of being one of the most contaminated in the nation. The Basin's groundwater is contaminated from the ground disposal—dating back to World War II— of synthetic organic compounds used primarily as solvents in industrial and commercial activities.*" For this reason, the U.S. EPA prioritized this area for investigation back in the late 1980s. By 1994, there was a general consensus on the technical approach including a financial arrangement whereby sales from the water produced by the treatment plant would be used to offset the costs of the project. However, just as designs were being prepared, the discovery of perchlorate prompted a complete reevaluation of cleanup plans.

In 1999, due to the critical need for immediate action, the San Gabriel Basin Water Quality Authority (WQA), the Main San Gabriel Basin Watermaster (Watermaster), and the Upper San Gabriel Valley Municipal Water District joined resources and began implementation of the plan by constructing the first facility to treat both perchlorate and n-nitrosodimethylamine for drinking water at the La Puente Valley County Water District (LPVCWD) well site. Following the success of the LPVCWD project, WQA prescribed additional early actions that built on the LPVCWD project development model. In 2002, eight of the 20 BPOU Potentially Responsible Parties entered into a comprehensive project agreement with WQA, Watermaster and local purveyors to fund the prescribed 22,000 gpm cleanup. The agreement formed the BPOU Project Committee which meets monthly to manage the projects. As of 2007, the construction of the various projects is mostly complete and the Project Committee is looking at ways to optimize and reduce the 30-year operating costs with emerging technologies (Water Quality Authority, Baldwin Park Operable Unit, 2014).

Figure 3.10-2 Baldwin Park Operable Unit

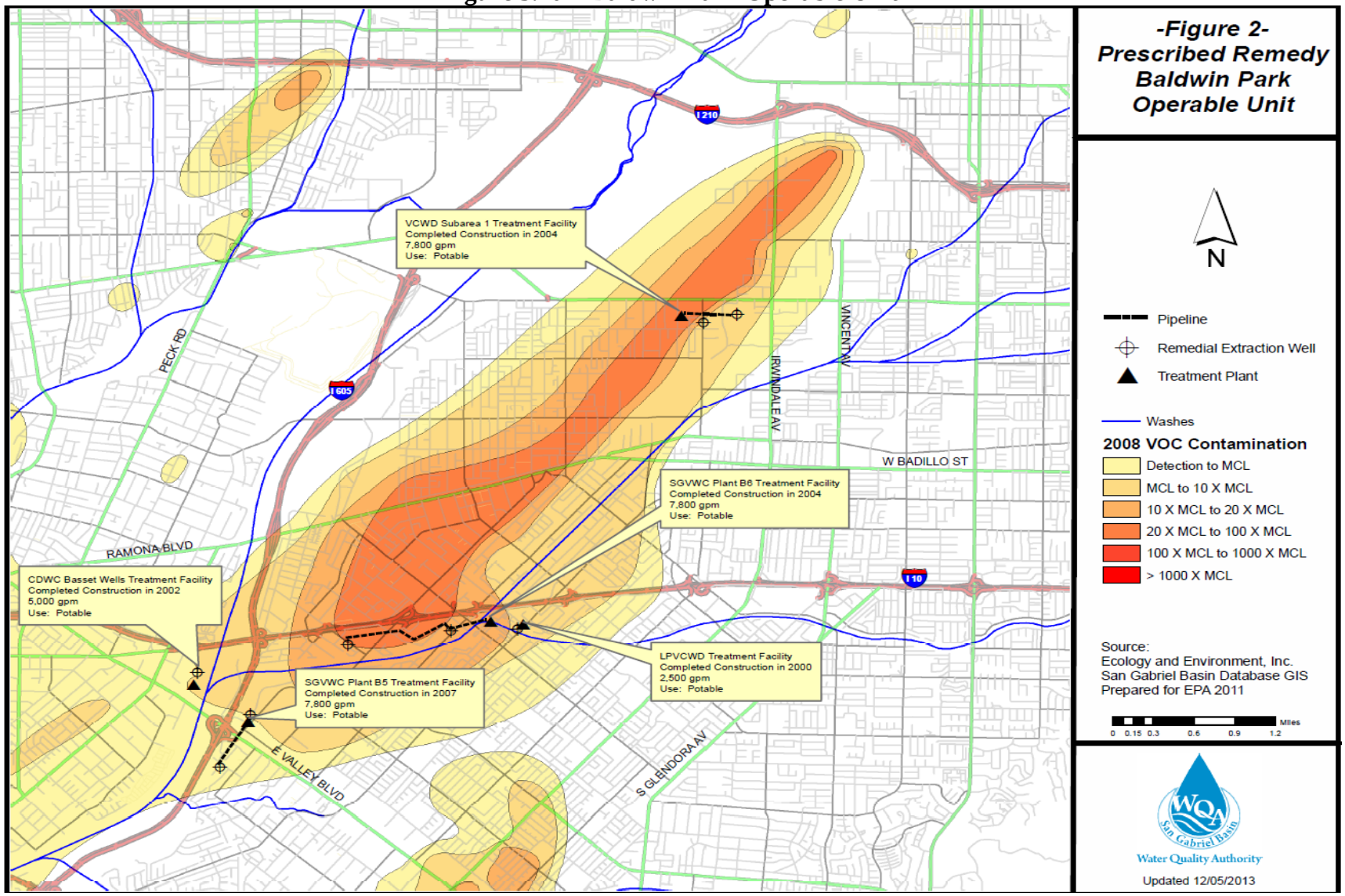


Figure 3.10-3 Radius Overview Map

Olive Pit Mine Site Activities and Process of Mining

The site remains inactive and is in the same configuration that existed when the Pit became inactive in the 1970s. The perimeter of the site remains at street level where surface elevations range from a high of 430 feet AMSL at the northeast corner of the site, to a low of 400 feet AMSL at the southwest corner. Mining of the site left steep slopes that descend into the pit more than 100 feet. The toe of the mined slopes surrounding the pit ranges from a high of 320 feet AMSL in the northeast corner, to a low of 250 feet AMSL on the western edge of the pit. The bottom of the pit is uneven and represents the extraction patterns of the previous mining activities. Thus, there are several depressions and random undulating slopes. The low elevation of the pit bottom is 228 feet AMSL and the high of 300 feet AMSL is in the northeast corner.

The proposed project includes the construction of an on-site access road, and two phases of operational activities. The first operational phase will include mining the eastern portion of the site, followed by reclamation of this area to create an approximately 32-acre pad suitable for development. Reclamation will involve backfilling the extraction void with inert fill materials. The second phase will include mining the remainder of the site utilizing both dry and underwater dredge mining processes. The extraction plan provides steps necessary to fulfill the requirements of the proposed City of Irwindale Conditional Use Permit Application and the Surface Mining and Reclamation Act (SMARA of 1975).

Phase I mining will encompass the eastern 52 acres of the site. Mining will begin at the toe (bottom) of the existing pit area. The maximum depth of excavation during Phase I is anticipated to reach 175 feet AMSL, or 80-100 feet below the current surface level.

Phase I reclamation will begin at the conclusion of the first mining phase. Phase II mining will occur simultaneously with Phase I reclamation. Reclamation of Phase I will include filling the area according the City of Irwindale's *Guidelines for Above-Water* and *Underwater Backfilling of Open-Pit Mines.* Prior to commencing fill operations, removal of disturbed and uncertified fill will occur and placement of compacted fill will be performed in a controlled manner. Backfilling of Phase I will result in an approximately 32-acre pad with a 2:1 slope along the western margin, and will require an estimated eight (8) million cubic yards of fill. Backfill material will originate from the United Rock processing location where it is collected from various sources throughout the greater Los Angeles urban area, including construction demolition materials from construction projects. The total amount of backhaul material brought to the Olive Pit will equal the same as what is extracted from Olive Pit; i.e. approximately one million tons annually. All final fill slopes will be revegetated.

Phase II mining will begin after Phase I mining is completed, and will occur concurrently with Phase I reclamation. Phase II mining consists of the remaining 137 acres of the site and is proposed to be mined to 0 feet AMSL. A 4.7-acre pad will be developed at the base of the pit within the southwest corner of the site and will require approximately 207,600 cubic yards of fill.

All fill for this purpose will originate on-site. During Phase II mining, all resources that occur above the water table will be mined first using a front end loader or excavator. When the water table is encountered, a dredge or other method adapted for underwater mining (e.g., dragline or long reach excavator) will be used to extract materials. Phase II mining will yield an estimated 28-million tons.

Phase II reclamation will commence at the conclusion of Phase II mining or when the mineable aggregate resources have been exhausted at the site. Phase II reclamation will not require fill and consists of utilizing the site for open space, flood control, storm water retention, and/or ground water recharge basin. Minimally, reclamation to any of the suggested end uses would involve stabilization and revegetation of the mined slopes and ensuring public safety through fencing and access restrictions.

Extraction Methods

Initially, material will be extracted through dry mining; thereafter, the use of a dredge or other method for extracting material below the water table will be used. At present, the majority of the pit bottom is found at or below the high water table elevation (±285 feet AMSL). The water table is known to rise and lower dependent upon season and precipitation cycles. All mining activities will be in compliance with the City of Irwindale's *Guidelines for Stability Analyses of Open-Pit Mine Slopes* and *Drainage and Erosion Control for Open-Pit Mines*. (For further discussion on slope stability, refer to section 3.6 Hazards and Hazardous Materials).

Mining Depth

The maximum anticipated depth of mining in Phase I is 175 feet AMSL. This is an average of 100 feet below the existing surface level, with a maximum depth of 125 feet. For Phase II mining, the maximum anticipated depth is down to 0 feet AMSL. As described above, the existing pit floor elevations are variable. In some locations of Phase II, the maximum anticipated depth of mining extends 291 feet below the existing ground surface.

Slope Grading

All final slopes disturbed by the current operation will be reclaimed to a 2H:1V grade. Brow ditches will be placed at the top of the slopes to prevent erosion. If ripping of the surface material becomes necessary to relieve compaction, ripping will be conducted cross slope.

Because the site is an existing excavated mine, no topsoil material is available for use in reclamation. The final slopes will be left in a roughened condition and track-walked to create depressions for erosion control and water retention. Slopes will be seeded when the final slopes are completed and become available for hydroseeding.

Drainage and Erosion Control Measures

As discussed above, all precipitation that falls on the Olive Pit is retained in the pit. Runoff from the surrounding streets and neighborhoods is intercepted and drained away from the Olive Pit.

All active quarry slopes, shall meet the requirements of the City's *Guidelines for Drainage and Erosion Control for Open-Pit Mines* (2004). Provisions for controlling incident erosion and slope vegetative cover need only be applied to permanent slopes above the level of anticipated high groundwater and only applies to slopes created or disturbed by this project. This also applies to all final reclamation fill slopes.

Final quarry slopes that are created or disturbed by this project shall conform to the approved Reclamation Plan and shall meet all of the provisions of the City's *Guidelines for Stability Analyses of Open-Pit Mine Slopes* (2005 and applicable amendments).

Phase I final reclamation fill slopes shall be revegetated in accordance with the City's Guidelines *of Drainage and Erosion Control* (2004), and with the City-approved *Revegetation Plan.* A [draft] *Revegetation Plan* was prepared to comply with the Reclamation Standards identified in the Public Resources Code, Article 9, Section 3705. A copy of the draft plan is provided within the Reclamation Plan within Appendix B of this EIR.

Phase I reclamation fill shall be placed in accordance with the requirements of the City's *Guidelines for Underwater Backfilling of Open-Pit Mines* (2005) and with the City's *Guidelines for Above Water Backfilling of Open-Pit Mines* (2005). These drainage and erosion control measures will be required of the mine operator (United Rock) and are considered standard design features of the project. These measures are proposed to be included as conditions of the project.

Groundwater Protection Measures

No toxic or hazardous substances will be used for the purposes of extracting construction aggregate materials. The equipment used to extract and transport the materials requires diesel fuel, oil, and lubricants. Precautions will be made to eliminate leaks at the site. Refueling of over-the-road trucks will be performed at United Rock's existing processing facility maintenance shop located on Arrow Highway. Off-road equipment operating in the pit will be fueled by mobile fuel trucks. Routine equipment and machinery repairs requiring the use of lubricants, solvents, solutions, grease or other substances will be performed off-site at United Rock's maintenance facilities, and these maintenance operations will be performed at the Olive Pit mine. While the majority of maintenance activities will occur offsite, maintenance of the dredge and other pieces of heavy/stationary equipment that cannot be readily moved offsite will be performed onsite.

Existing slopes created prior to the approval of this reclamation plan shall remain in an "as is" condition. Erosion and sedimentation of slopes disturbed by this project will be managed during all phases of mining and reclamation in accordance with the "Guidelines for Drainage and Erosion Control, Irwindale, California."

These groundwater protection measures will be required of the mine operator (United Rock) and are considered standard conditions of approval by the City on mining operations. These measures will be included as required conditions of the project.

Floodplains

Historic flooding has occurred along the San Gabriel River. As a result of this flooding, the USACE constructed the Santa Fe Dam to act as a control and storage basin. Upstream of the Santa Fe Dam, the San Gabriel River flows through a concrete-lined and walled cannel. Below the dam the channel bottom is native alluvial material. These USACE projects have been designed to accommodate maximum projected stormwater flows from a 100-year storm.

The Federal Emergency Management Agency (FEMA) has indicated on their FEMA Issued Flood Map (FIRM Panel: 06037C1700F / Effective Date: 09/26/2008, accessed June 2014) that the Proposed Project is within a Zone X. A Zone X is defined as: "*Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.*" Therefore, the potential flooding risk at the site is very low, as would be expected on the downstream side of a major regional flood control dam.

3.10.2 REGULATORY SETTING

Federal Clean Water Act (33 U.S.C. 1251 et seq.)

The Federal Clean Water Act (CWA) establishes water quality standards and criteria and programs to maintain beneficial uses of water. For example, CWA Section 208 requires the use of best management practices (BMPs) to control releases of pollutants in stormwater at construction sites. Section 303(d) requires that all activities be evaluated for their effect on impaired water bodies and that plans are made for improving the quality of these water bodies. Section 404 authorizes the United States Army Corps of Engineers (USACE) to evaluate projects that will discharge dredge or fill materials into waters of the U.S. and provides mechanisms for wetland protection. Section 401 requires Regional Water Quality Control Boards (RWQCBs) to monitor and assure compliance of discharges of dredged and fill material to State water quality standards. Section 402(p)(3)(B)(iii) authorizes the National Pollutant Discharge Elimination System (NPDES) permit program to control water pollution by regulating point sources that discharge pollutants into waters of the United States. Point sources are discrete conveyances such as pipes or man-made ditches.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (Division 7 of the California Water Code) was enacted to establish a regulatory program to protect water quality and beneficial uses of all waters of the State of California. It requires the State Water Resources Control Board (SWRCB) and various RWQCBs to plan, implement, manage, and enforce water quality protection and

management. Nine RWQCBs are located throughout the State to administrate statewide water quality control programs and to enact programs pertinent to their region. The Los Angeles RWQCB is the local authority for Los Angeles and the Olive Pit mine site area.

Los Angeles Regional Water Resources Control Board

For control of stormwater discharges from industrial and construction activities, a NPDES Permitting program has been developed and administered by the SWRCB. However, enforcement of specific NPDES Permit requirements is performed by local RWQCBs. Issuance of a NPDES Permit requires preparation of a Notice of Intent (NOI) with the SWRCB and development of a site specific Stormwater Pollution Prevention Program (SWPPP) and monitoring program that incorporates applicable BMPs. SWPPPs are required for all construction sites over one acre. NPDES Permits and SWPPP can be required for industrial sites which may pose a risk to local water quality. Furthermore, construction and industrial activities within the Los Angeles Basin must comply with the Los Angeles Basin Water Quality Control Plan, various Los Angeles RWQCB orders, and County of Los Angeles codes and ordinances.

The **County of Los Angeles Department of Public Works** prepared a Municipal Separate Storm Sewer System National Pollutant Discharge Elimination System (NPDES) Permit (also referred to as a "MS4 Permit"). This Permit was adopted by the Los Angeles Regional Water Quality Control Board on November 8, 2012, and became effective December 28, 2012. In addition to the Los Angeles County Flood Control District and County, the Permit is also issued to 84 municipalities within the County, including the City of Irwindale.

Each Permittee is responsible for implementing its own stormwater program. The MS4 Permit allows Permittees the flexibility to develop Watershed Management Programs to implement the requirements of the Permit on a watershed scale through customized strategies, control measures, and BMPs. Participation in a Watershed Management Program is voluntary and allows a Permittee to address the highest watershed priorities, including complying with the requirements of Receiving Water Limitations, Total Maximum Daily Load Provisions, Prohibitions - Non-Storm Water Discharges, and Minimum Control Measures.

Los Angeles County Stormwater Ordinance

The Los Angeles County Stormwater Ordinance addresses provisions that apply to the discharge or disposal of any stormwater and/or runoff to the storm drain system and/or receiving waters within any unincorporated area covered by the NPDES municipal stormwater permit.

Main San Gabriel Basin Watermaster

The Watermaster has requested the City incorporate the provisions of Watermaster Resolution No. 3-88-57 specifying acceptable fill materials for inert waste landfills. This request will be incorporated into project design and as required by the Watermaster, as well as by adherence to the City's Surface Mining Ordinance, and the requirements of the City's backfilling guidelines as

directed within *Guidelines For Underwater Backfilling Of Open-Pit Mines*, Irwindale, California, Irwindale Backfilling Committee, May 20, 2005; and *Guidelines For Above Water Backfilling Of Open-Pit Mines*, Irwindale, California, Irwindale Backfilling Committee, November 2005.

In addition, the Watermaster has made the following list of requests. In response, each measure is either required under SMARA, the City's guidelines for open-pit mines, or other regulatory agency requirements. The *Olive Pit Mine Reclamation Plan* will be required to adhere to the following measures:

- Water quality monitoring program - Groundwater quality samples shall be regularly collected up gradient and down gradient of mining operations and performed in accordance with Regional Water Quality Control Board waste discharge requirements.
- Site security - There will be restricted access to the site. Adequate and regularly maintained fencing is included, and regular patrols will be performed to inspect and remove any unauthorized or potentially hazardous materials. The site will remain fenced, and all gates will be locked after normal business hours. Refer to Appendix A of the EIR for the Reclamation Plan [specifically, Appendix L: Olive Pit Site Management and Security Plan].
- An "Emergency Response Plan" to be approved by the City will define actions to protect people, property and water quality in the event of hazardous materials releases to the soil or exposed groundwater.
- Financial assurances will be provided and maintained to guarantee completion of post-mining security and reclamation activities. This is required under SMARA §3702.

City of Irwindale

The City relies on regulations established by the State Water Resources Control Board and the Los Angeles Regional Water Quality Control Board for ordinances and codes related to water quality and water rights regulation. In addition, in 2003, the City of Irwindale established four technical committees to address key hydrological (and geology) related issues regarding the operation of open-pit mines within the City. These committees are:

- **Slope Stability Committee** The purpose of this committee was to develop field testing protocols, selection of appropriate analytical techniques for slope stability, interpretation of field and laboratory test data regarding soil shear strengths and discussion of hydrological conditions appropriate for existing and proposed earth slopes in open-pit sand and gravel mines located within the City that would allow for deeper mining.
- **Drainage and Erosion Control Committee** The purpose of this committee was to provide appropriate measures in order to prevent surface water from flowing over rims of

the quarries, protecting quarry slopes, incident-precipitation induced erosion, and to protect quarry slopes from wave-lap erosion.

- **Underwater Backfilling Committee** The purpose of this committee was to develop geotechnical and engineering standards for mining of aggregates below the groundwater level.
- **Above Water Backfilling Committee** The purpose of this committee was to develop technical standards for backfill design, construction, and quality assurance in order to provide land reclamation suitable for land development.

The City initiated special studies to determine whether alternative mining and reclamation methods within its jurisdiction would be possible. The outcome of that program was the City Council's adoption of Resolution No. 2005-89-2016 (December 20, 2005); that is comprised of a series of technical policies for open-pit mines in the City. These policies provide guidance for slope stability analysis, drainage and erosion control, underwater backfilling, and above water backfilling of the sites. They are as follows:

1. *Guidelines For Stability Analyses Of Open-Pit Mine Slopes*, Irwindale, California, Irwindale Slope Stability Committee, December 24, 2003;
2. *Guidelines For Drainage And Erosion Control For Open-Pit Mines*, Irwindale, California, Irwindale Drainage and Erosion Control Committee, July 6, 2004;
3. *Guidelines For Underwater Backfilling Of Open-Pit Mines*, Irwindale, California, Irwindale Backfilling Committee, May 20, 2005; and
4. *Guidelines For Above Water Backfilling Of Open-Pit Mines*, Irwindale, California, Irwindale Backfilling Committee, November 2005.

3.10.3 IMPACT ANALYSIS AND MITIGATION

Methodology

The analysis of potential water quality and hydrological impacts associated with implementation of the Proposed Project assesses the degree to which the Project's short-term construction of the on-site access road, and long-term mining and reclamation operations would change the existing characteristics of the site and surrounding areas.

Preparation of this section is based on the review of the City's ISSC Guidelines, *Olive Pit Mine Reclamation Plan* (United Rock, 2014), *Environmental Data Research Radius Map report* (2014), and various City and County websites. Additional research included literary review of state and private databases for general characterization and mapping of the area.

The *Olive Pit Mine Reclamation Plan* (United Rock, 2014) addresses water related issues in the context of the technical policies for open-pit mines in the City. No specific drainage and erosion

control technical reports accompany the plan, however the plan indicates there will be strict adherence to the City's adopted guidelines.

Threshold of Significance

Significance thresholds for potential impacts are determined based upon the 2014 State CEQA Guidelines, Appendix G. Using the criteria listed below, the Proposed Project would be considered to have a significant adverse water quality and hydrology impact if it were to:

A. Violate any water quality standards or waste discharge requirements.

B. 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.

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

D. 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 flooding on- or off-site?

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

F. Otherwise, substantially degrade water quality.

G. Place housing within a 100-year flood hazard area as mapped on a FEMA map or other flood hazard delineation map.

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

I. 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.

J. Create an inundation by seiche, tsunami, or mudflow.

Analysis

THRESHOLD WQ-1

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

Less than Significant Impact

The Olive Pit mine site does not contain any active waterways, and there is no potential for discharges from the mine pit to surrounding areas. Mining and reclamation efforts would be monitored pursuant to SMARA requirements and according to the approved Reclamation Plan. The operator of the Olive Pit (United Rock) is required, under SMARA (Public Resources Code

§2207), to submit an annual status report on forms provided by the Department of Conservation and directs the lead agency to conduct an inspection of the operations within six months of receipt of the required Annual Report. In addition, the Reclamation Plan is required to adhere to SMARA regulations regarding Drainage, Diversion Structures, Waterways, and Erosion Control (§3706) and Stream Protection, including Surface and Groundwater (§3710). Regulation §3706 provides stipulations regarding the quality of water, recharge potential, and storage capacity of groundwater aquifers. Therefore, the groundwater aquifer is not expected to be diminished as a result of reclamation of this extraction operation.

Mining Impact Analysis

Surface Water Impacts

The Proposed Project at the Olive Pit mine site is self-contained and does not have the ability to discharge off-site into surface water including the San Gabriel River, the Santa Fe Flood Control Basin, or any other surface water bodies. Potential impacts of mining operations are the accumulation of fine-grained sediment (silt) from the mining operations and the potential for the discharge of a hazardous material into the groundwater via contaminated backfill or illegal dumping. The project does not involve the processing of any mined materials on-site; rather, the project proposes to transport all mined material off-site to the existing United Rock processing yard located on Arrow Highway.

Design features that are incorporated into the Project (See also Chapter 3.5, Geology, Soils and Mineral Resources) include controlling surface runoff and drainage within the mine pit. United Rock would be reasonably expected to use standard operating measures to prevent unwanted stormwater flow onto the site. Such standard measures would include by perimeter berms, slope revegetation, and if needed, hay bales, or other control measures, to ensure that side slopes are protected from erosion and gullying. The site will be fenced and locked to prevent illegal dumping, and backfill will be strictly limited and monitored to include approved inert materials only.

The Porter-Cologne Water Quality Control Act requires the State Water Resources Control Board and its regional office (Los Angeles, Region 4 pertains to the project site) to plan, implement, manage, and enforce water quality protection and management. To further protect water quality standards, all construction and industrial activities within the Los Angeles Basin must comply with the Los Angeles Basin Water Quality Control Plan, various Los Angeles RWQCB orders, and County of Los Angeles codes and ordinances.

In addition, the County of Los Angeles Department of Public Works “MS4 Permit” applies to the mine site whereas the mine operator would be required for implementing its own stormwater program including the Watershed Management Program which includes customized strategies, control measures, and BMPs which are site specific to the mine slopes. The Los Angeles County Stormwater Ordinance is another regulatory provision that applies to the discharge or disposal of

any stormwater and/or runoff to the storm drain system and/or receiving waters within any unincorporated area covered by the NPDES municipal stormwater permit. Since the mine site is already excavated to a depth of greater than 100 feet below the surrounding grade, is separated from the stormwater drainage system on surrounding lands, and therefore cannot discharge stormwater or runoff to surrounding areas, these provisions do not apply to the proposed mining project.

Groundwater Quality Impacts

Mining is expected to extend below the water table, increasing the potential risk of future groundwater contamination from illegal, inadvertent, and/or malicious dumping of contaminants. This would potentially jeopardize the public drinking water supply wells downstream of the site. Such a potential will be controlled by appropriate handling of potential contaminants, adequate site security, and groundwater monitoring (where exposed in the quarry and at downstream wells); all of which are activities that are required by the operator under SMARA or the City's mining guideline protocols.

Monitoring practices for contaminants from such an incursion into the BPOU contaminant plume (**Figure 3.10-2 San Gabriel Basin Contamination)** will include an integrated monitoring program described in the reclamation plans, including the location and depth of monitoring points, frequency, and types of analysis, and reporting requirements. The San Gabriel Basin Watermaster and the Basin Authority regulate the groundwater monitoring operation. Therefore, impacts to water quality standards and discharge requirements are determined to be less than significant with adherence to the required monitoring, management, and implementation of BMPs.

Reclamation Impact Analysis

Surface Water Impacts

Reclamation backfilling activities could potentially cause erosion and convey silts and polluted runoff to areas within the mine pit, but have no potential to cause sedimentation of drainages and polluted water supplies on surrounding lands. For that reason, these potential impacts are determined to be less than significant.

Groundwater Quality Impacts

The eastern portion of the Olive Pit mine site to be reclaimed for subsequent land development will be back-filled with inert materials in accordance with the City's *Above Water and Underwater Backfilling Guidelines* and the Main San Gabriel Basin Watermasters Resolution No. 3-88-57. Compliance with these standards and use of the BMPs would reduce potential impacts to groundwater quality to less than significant.

The San Gabriel Basin Watermaster has adopted Resolution No. 3-88-57 regarding inert landfills or mining reclamation plans within their jurisdictional area. The following is a summary of the

main guidelines stated in Resolution No. 3-88-57. Any reclamation plans or changes for an inert landfill should include the following conditions:

1. Inert landfills shall be filled directly by the site operator pursuant to a written plan.
2. Inert landfills may not be filled with tires, wood, plasterboard, or contain organic material such as tree stumps, branches or similar material.
3. There shall be no placing of any material classified as hazardous waste by the State Department of Health Services., County Health Department, United States Environmental Protection Agency, State Water Resources Control Board, the Solid Waste Management Board, or any other responsible Federal, State or local agency.
4. The site must be secured.
5. No materials shall be dumped directly into standing groundwater.
6. The landfill operator shall provide reasonable and adequate monitoring by appropriate test wells to protect the water quality.
7. The landfill operator must maintain a record of all materials placed in the site.
8. The landfill operator must provide adequate closure of the site.

Based on all of the above, impacts are expected to be less than significant and no mitigation is required.

THRESHOLD WQ-2

Would the 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?

Less than Significant Impact

The Proposed Project would not interfere substantially with local groundwater recharge, or produce a net deficit in aquifer volume, or lowering of local groundwater table in the vicinity of the Proposed Project.

As designed, the Proposed Project is projected to yield two separate post-reclamation end land uses; one as a 32-acre developable pad for future land development and the remaining 157 acres as open space and/or a stormwater detention/groundwater recharge basin. Although future development of the 32-acre developable pad could result in a loss of stormwater infiltration on the Project site, that development is expected to be decades out and any analysis would be speculative at this point in time. Future development will be required to undergo additional CEQA analysis when/if a plan proposal is submitted. The portion planned for open space and/or stormwater detention/groundwater recharge basin would not adversely impact groundwater supplies or interfere substantially with groundwater recharge, and if used as a recharge basin,

would serve to augment groundwater. Therefore, potential impacts associated with groundwater supplies or groundwater recharge would be less than significant.

THRESHOLD WQ-3

Would the 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 or siltation on- or off-site?

Less than Significant Impact

There are no local streams or rivers adjacent to or running through the Olive Pit mine site. The site is a closed system and does not receive waters from natural drainage features offsite or discharge waters into offsite features. No natural drainage features, streambed, or stands of functioning riparian habitat occur on the project site. No portions of the site indicate drainage patterns or surface flow through an ordinary high water mark (OHWM). No streambed features and no functioning riparian habitat were evident during the 2014 general biological survey. The site does not abut or occur adjacent to any natural drainage features. Therefore, no adverse impacts to existing streams or rivers will occur with implementation of the Proposed Project.

THRESHOLD WQ-4

Would the Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?

Less than Significant Impact

As noted above, there are no local streams or rivers adjacent to or running through the Olive Pit mine site. The site is a closed system and does not receive waters from natural drainage features offsite or discharge waters into offsite features, and the proposed mining and reclamation actions will not alter any existing drainage patterns. If a portion of the site is ultimately utilized as a recharge basin, the project would serve to augment groundwater recharge and reduce surface runoff. Therefore, no adverse impacts to existing drainage patterns or surface runoff and flooding will occur with implementation of the Proposed Project.

THRESHOLD WQ-5

Would the Project create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional source of polluted runoff?

Less than Significant Impact

The perimeter of the site will be covered with vegetation landscaping and a wall; thus, preventing off-site runoff from entering the facility. The reclaimed 32-acre development site will either be graded to drain into the open portion of the pit, or will be developed with connections

to the City's existing storm drainage collection system. In either case, the Proposed Project has no potential to exceed stormwater drainage capacity or result in polluted stormwater discharges offsite, and these potential effects are less than significant.

THRESHOLD WQ-6

Would the Project otherwise substantially degrade water quality?

Less than Significant Impact

As discussed at length within the THRESHOLD WQ-1 impact analysis above, implementation of the mandatory Erosion and Sediment Control Plan and associated BMPs, as project design features, would reduce any potential degradation of water quality associated with implementation of the Proposed Project to a less than significant level.

THRESHOLD WQ-7

Would the Project place housing within a 100-year flood hazard area as mapped on a FEMA map or other flood hazard delineation map?

No Impact

The Proposed Project is the implementation of the Olive Pit Mine Reclamation Plan. No residential development is proposed that would lie within the 100-year flood hazard zone of any natural stream or drainage. The site is not located within a 100-year floodplain. Therefore, there will be no risk of placing residential structures within a 100-year flood hazard area and there is no impact.

THRESHOLD WQ-8

Would the Project place within a 100-year flood hazard area structures which would impede or redirect flood flows?

Less than Significant Impact

The Project does not propose to construct any structures. Additionally, FEMA has designated the Proposed Project area as a Zone X, defined by FEMA as an "Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood." Therefore, the potential flooding risk at the site is very low and would not be significant. The impact is less than significant.

THRESHOLD WQ-9

Would the Project 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?

Less than Significant Impact

The closest water bodies near the Olive Pit site are the USACE constructed Santa Fe Dam (Flood Control Basin) to the northwest and the San Gabriel River to the west. The only time a significant amount of water is within the Santa Fe Dam is during diversion of heavy flows from the San Gabriel River. During the late spring, summer, and early fall, the water within the dam is low. During the low water levels, the area at the bottom of the dam is used as a regional recreational area.

Beyond the Santa Fe Dam, the San Gabriel River flows through a concrete-lined walled channel. These USACE projects abate the 100-year storm threat of the river. Consequently, the risk of loss, injury, or death involving flooding or failure of these flood control structures is less than significant.

THRESHOLD WQ-10

Would the Project create an inundation by seiche, tsunami, or mudflow?

No Impact

The Olive Pit mine site is located approximately 35 to 40 east miles from the Pacific Ocean. The nearest potential large body of water is the Santa Fe Dam Flood Control Basin controlled by the USACE and various aggregate mining groundwater basins. The Santa Fe Flood Control Basin is used for flood control of the San Gabriel River and groundwater recharge. The potential of seiches within these basins are considered insignificant. Therefore, the risk of landslides, tsunamis and seiches, and subsidence would be less than significant.

No Mitigation Program pertaining to hydrology is warranted.

3.10.4 SIGNIFICANCE AFTER MITIGATION

No mitigation program is required related to water quality and hydrology.

3.10.5 CUMULATIVE IMPACTS

A list of all cumulative projects is provided in Chapter 3.0, *Environmental Setting and Impact Analysis.*

Would the Proposed Project, combined with other related cumulative projects, have a substantial adverse impact on water quality and resources?

No

Based on the cumulative project list, cumulative development may result in development of new residential, commercial, mining activities, industrial, recreational, and medical facilities in the cities of Irwindale, Azusa, Baldwin Park, Duarte, Glendora, and West Covina.

Development at the site and other projects in the vicinity of the Proposed Project may result in similar results relative to water quality and hydrology; however, each project's impacts are localized and independent of one another, and are mitigated (minimized or avoided) on a site-specific basis. Further, while water quality impacts have the ability to compound when taking into account regional water basins, the Proposed Project will be required to adhere to the mandatory Federal, State and local laws, ordinances, regulations, and water quality standards (which do not represent added mitigation measures but are required for all projects). As such, the Project is not expected to cause any cumulatively considerable impacts.