SECTION 4.6:
HYDROLOGY AND WATER QUALITY

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SECTION 4.6:
HYDROLOGY AND WATER QUALITY

This section of this subsequent environmental impact report (SEIR) addresses potential impacts of the project on hydrology and water quality, describes the environmental and regulatory setting, and discusses mitigation measures to reduce impacts where applicable. Issues addressed include impacts on surface and ground water quality, surface water drainage patterns, and groundwater supply.

The information in this section is based on the following hydrology studies which were previously prepared to support the 2008 EIR/EIS and 2019 SEIS, as well as the habitat mitigation and monitoring plan (HMMP) prepared for the offsite mitigation sites:

- *Jurisdictional Delineation for United State Gypsum Company Plaster City Expansion/Modernization Project* (Hernandez Environmental Services [HES] 2016) (Appendix D-2, "2016 Jurisdictional Delineation")
- *Hydrologic and Water Quality Study for the U.S. Gypsum Company Supplemental Environmental Impact Study* (Dudek 2018) (Appendix G-1, "2018 Water Quality Study")
- *Update on Groundwater Conditions Memorandum* (Todd Groundwater 2018) (Appendix G-2, "2018 Groundwater Conditions Memorandum")

4.6.1 Environmental Setting

4.6.1.1 Regional Setting

The Colorado Desert has a typical arid desert climate with low rainfall and extreme temperature ranges. Average annual rainfall in El Centro is approximately three inches. At the Anza Borrego State Park headquarters, located in a canyon along the east side of the Peninsular Range, rainfall can average as high as six to seven inches per year. Most of the rain falls in December through March but August and September can experience severe thunderstorms associated with monsoon conditions bringing moisture from the Gulf of California. During these episodes, it is not uncommon for thunderstorms to drop several inches of rain in just a few hours, causing severe flash flooding, washing out roads, scouring washes and uprooting vegetation (HES 2016).

4.6.1.2 Hydrology and Water Quality Conditions at the Time of the 2008 EIR/EIS

The hydrology and water quality setting for the project site as provided in the 2008 EIR/EIS is summarized in the following paragraphs.

The project site is located within the Ocotillo Valley Groundwater Basin which is located to the west of the southwestern corner of the Salton Sea. This area is also commonly referred to as the Borrego Valley. It is bounded on the southwest by the Vallecito and Fish Creek Mountains, on the west by the Peninsular Ranges, on the north by the Borrego badlands, and on the east by the Salton Sea.

According to the 2008 EIR/EIS, the primary drainage in the Ocotillo Valley is San Felipe Creek. San Felipe Creek extends from the Peninsular Ranges to the Salton Sea. In the area of proposed Well No. 3, the primary surface drainage is the Fish Creek Wash. San Felipe Creek and Fish Creek Wash only flow seasonally, when runoff occurs from the upper reaches of their respective watersheds. In an area approximately 10 miles

northeast of the proposed well site, groundwater discharges from two springs near the confluence of San Felipe Creek and Fish Creek Wash. Prior to 1984, flow from these springs only occurred intermittently. Since 1984, however, flow from these two springs has occurred year-round.

Groundwater is reported to occur in two aquifers. The shallow aquifer is present at depths above approximately 100 feet below ground surface (bgs) in the center of the basin and contains water with TDS levels report in the range of 8,000 ppm. The elevated TDS levels are most likely due to leaching of the saline evaporite deposits in the surficial sediments. An aquitard that may be 100 to 200 feet thick separates the shallow aquifer from the lower aquifer. The lower aquifer extends to at least 650 feet bgs at some locations and contains water with TDS levels reported in the range of 1,400 ppm. Groundwater from the lower aquifer is used for agricultural purposes. According to DWR (Bulletin 118-75), the Ocotillo Valley Groundwater Basin covers an area of about 410 square miles, with a storage capacity of 5,800,000-acre feet and a usable groundwater capacity of 1,900,000 AF.

Groundwater is reported to be discharging to the Salton Sea at rates of 2,200 acre-feet/year to 4,500 acre-feet/year. The rate of outflow from the Ocotillo Valley Groundwater Basin is greater than the rate of inflow, as evidenced by declining water levels in the lower aquifer. Water levels are decreasing at the rate of three feet per year. Approximately one-third to one-half of this decline is due to agricultural pumping and the balance is due to natural outflow. The naturally-occurring groundwater deficit is most likely due to long-term climatic changes and/or drainage of the lower aquifer due to the lowering of the hydrologic base level caused by the disappearance of ancient Lake Cahuilla.

Water quality data and the timing of the change in flow from intermittent to year-round indicate that the discharges at San Felipe Creek Spring and Fish Creek Spring are due to increased rates of irrigation to the west. Excess irrigation water percolates to the shallow aquifer and raises the water table. The elevated water table intersects the surface at the location of the springs. From 1983 through 1996, irrigation rates have ranged from approximately 9,250-acre feet/year to over 12,000-acre feet/year, based on reported groundwater production.

Stream gauge data along San Felipe Creek show that, beginning in 1984, the base flow averaged several cubic feet per second (cfs). Seasonal peak flow generally occurs in late summer or early fall and may reach 50 cfs. If it is assumed that the base flow averages two cfs, then the minimum annual discharge of San Felipe Creek Spring is approximately 1,500-acre feet/year. The actual discharge is likely to be appreciably greater due to seasonal peak flows (Imperial County 2008).

4.6.1.3 Hydrology and Water Quality Conditions at Present

Quarry, Well No. 3, and Associated Pipeline

The following discussion is based primarily on the 2018 Water Quality Study prepared by Dudek (Appendix G-1) and the 2018 Groundwater Conditions Memorandum prepared by Todd Groundwater (Appendix G-2).

Surface Water

The project site falls within a 6,734-acre drainage area (Quarry watershed) in the greater Ocotillo Lower Felipe hydrologic area (HA) located within the Anza-Borrego hydrologic unit (HU) in the Colorado River Basin (Calwater 2.2.1, 2004, cited in Dudek 2018). All existing and proposed components of the project comprise approximately 1,100 acres.

Figure 4.6-1, "Hydrologic Setting," shows the location of the proposed project with reference to the Ocotillo Lower Felipe HA. The 1,100-acre-project site represents approximately 0.34 percent of the 322,686-acre Ocotillo Lower Felipe hydrologic area.

The region is characterized by low average annual rainfall (~4.5 inches), high rates of evapotranspiration, and steep rocky terrain sloping to lower-gradient alluvial filled basins. The hydrology of the region is dominated by the brief but high intensity rainfall events that typically occur during the bi-modal winter or summer rainy seasons. The majority of these rainfall events do not produce runoff, but those with sufficient rainfall intensity can, and often result in channel forming flash floods with high scouring energy and sediment loads. Within the steeper slopes of the Quarry watershed, concentrated runoff is collected within single well-defined channels, many of which are deeply incised. Upon reaching the alluvial basin of the Quarry watershed, coarse sediment loads are deposited with loss of streamflow energy, sometimes clogging channels and directing flow into prior channels (relic channels) or creating new channels. This dynamic has led to the development of a system of braided channels within the alluvial basin of the Quarry watershed, most effectively described as a series of compound channels, where a single dominate low-flow channel meanders through a network of relic channels and terraces, often susceptible to channel relocation during moderate to high discharge events (ACOE 2008, cited in Dudek 2018).

Surface flow generated from the Quarry watershed joins Fish Creek Wash just upstream where Split Mountain Road crosses Fish Creek Wash, at the apex of the Fish Creek Alluvial Fan. Similar to when the flows in the steeper Quarry watershed terrain reach the alluvial valley, surface flows that reach the Fish Creek Alluvial Fan apex lose energy and drop heavier sediment loads, often redirecting flows and forming numerous channels across the valley floor. As a typical alluvial fan, flow can be distributed across multiple channels during a single flow event (ACOE 2008, cited in Dudek 2018). Surface flows are typically lost to shallow infiltration in the soils adjacent to the active channels (and along floodplains) which are then lost to the high evaporative demands of the region. A smaller percentage of the discharge is lost to infiltration through the channel (transmission), which ultimately becomes groundwater recharge. Groundwater recharge is typically highest near the fan apex (Houston 2002, cited in Dudek 2018), where the coarser material is deposited. If surface flows are sufficient enough to overcome the losses within the alluvial fan (infiltration, soil tension, evaporation and evapotranspiration), they ultimately coalesce approximately 11 miles downstream near the confluence with San Felipe Creek.

San Felipe Creek resembles a more defined single-thread channel (ACOE 2008, cited in Dudek 2018) which drains to the Salton Sea approximately 20 miles east of the confluence with Fish Creek Wash. Fish Creek Wash is an ephemeral drainage downstream from the Project, while San Felipe Creek gains intermittent surface flows approximately 11 miles downstream (northeast) from the Quarry. The perennial surface water in this section of the creek is fed by groundwater discharge, not from the infrequent flows generated in Fish Creek. San Felipe Creek is natural habitat for the endemic *Cyprinodon macularius* (desert pupfish) (Black 1980, cited in Dudek 2018).

Existing Floodplain

Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs) identify flood zones and areas that are susceptible to 100-year and 500-year floods. Flood Zone A designates special flood hazard areas subject to inundation by the 1% (100-year) annual chance flood but for which no base flood elevations have been determined. The drainage located in the valley of the proposed project is located within a FEMA flood zone as depicted in Figure 4.6-2, "Existing Floodplain." Portions of the

existing and proposed gypsum mining operations fall within the 100-year flood zone (FEMA 1984, cited in Dudek 2018).

Groundwater

A groundwater basin is defined by the California Department of Water Resources (DWR) as a hydrogeologic unit containing one large aquifer, or a series of stacked aquifers, with definitive lateral and horizontal boundaries (2003). California's Imperial Valley, and the area bordering the Salton Sea, are characterized by one large aquifer composed of numerous smaller interconnected groundwater basins and subbasins. The proposed project is located within the approximately 153,978-acre Borrego Valley Groundwater Basin (7-24), and specifically within the 90,086-acre Ocotillo Wells Sub-Basin (7-24.02), as defined by the California Department of Water Resources (DWR) Bulletin 118.

Two groundwater wells with depth to water information were identified near the project site. Well (12S08E22E001S) located approximately 7 miles north-northwest of the project site, provides groundwater depth data for the past 66 years. Current (2016) groundwater levels at this well indicate that the depth to groundwater is greater than 110 feet. Well 12S9E23D001S, located about 7.5 northeast of the project site, shows groundwater depths greater than 150 feet from 1980 to 2014.

Water Quality

303(d) Listed Water Bodies Fish Creek Wash and San Felipe Creek are not listed on California's Clean Water Act Section 303(d) list of Impaired Waters for any constituents. San Felipe Creek was evaluated for Selenium impairment, but the previous conclusion was reversed after analysis of three fish tissue samples taken from the creek determined that none exceeded the Office of Environmental Health Hazard Assessment (OEHHA) Fish Contaminant Goal.

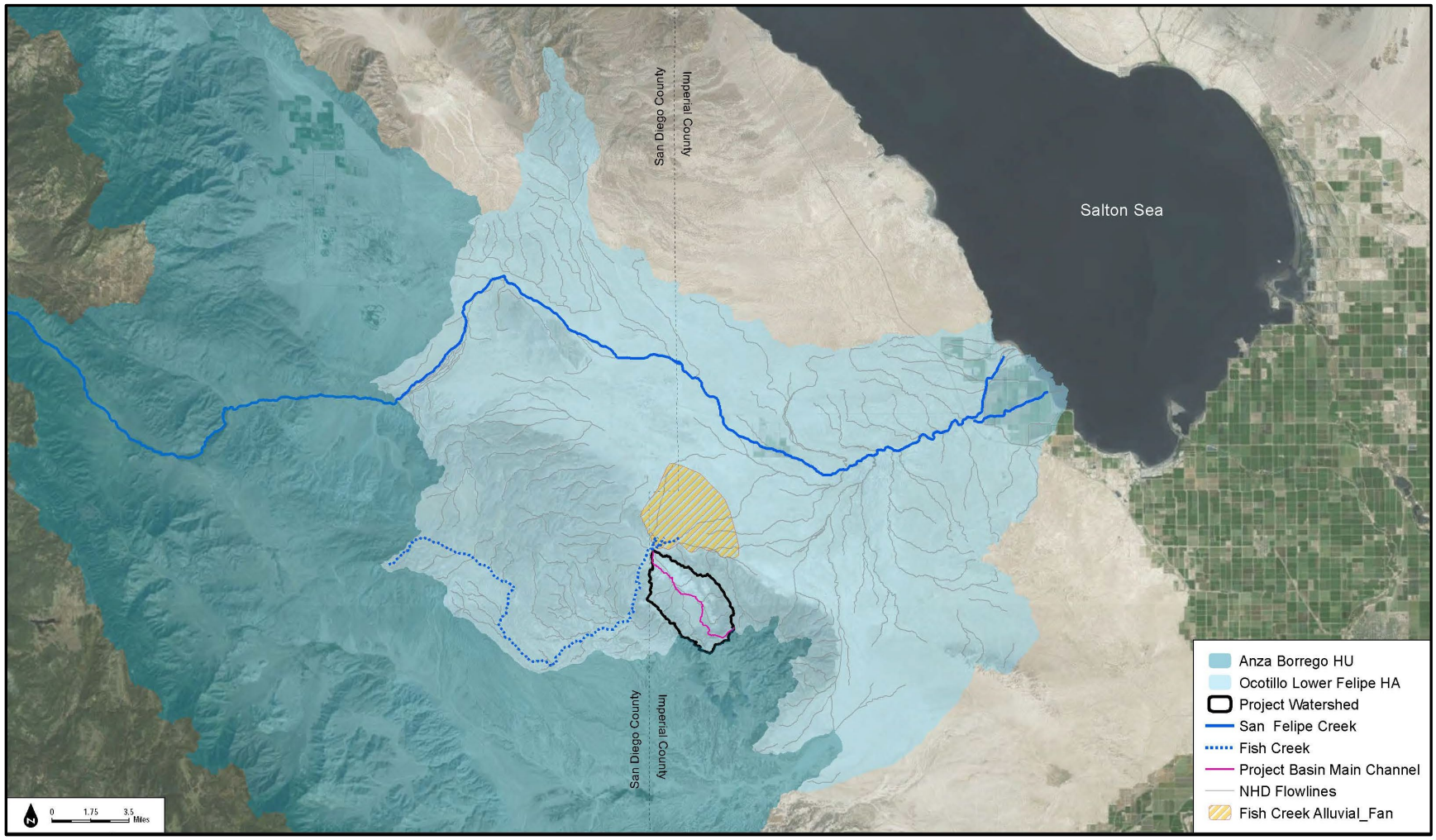
The Salton Sea is 303d listed for a number of contaminants that include arsenic, low dissolved oxygen (DO), nutrients, salinity, and toxicity. The Imperial Valley Drains are listed for sedimentation/siltation and selenium, in addition to a number of pesticides and herbicides. The 303d list indicates that selenium originates from the upper Colorado River basin, which does not include the San Felipe Creek drainage.

A Total Maximum Daily Load (TMDL) has been established for sedimentation/siltation in the Imperial Valley Drains, which reduced the current load of 11,000 tons per year of sediment to 4,600 tons per year. Sediment loads from Fish Creek Wash and San Felipe Creek do not reach the Imperial Valley Drains as San Felipe Creek discharges directly into the Salton Sea.

Groundwater quality for well 12S9E23D001S is generally characterized as sodium chlorite sulfate water. Total dissolved solids (TDS) concentrations range between 1,650 and 1,740 milligrams per liter (mg/L) (Dudek 2018).

Viking Ranch Restoration Site

The following discussion is based entirely on the HMMP prepared for the Viking Ranch site by Dudek (2021; Appendix D-4). A site reconnaissance of the Viking Ranch site was conducted on June 1, 2018, by Hugh McManus of Dudek. The site reconnaissance consisted of walking the site and viewing adjacent properties from the site. Photographs of the Viking Ranch site are included in Appendix C of Appendix D-4.



SOURCE: DUDEK 2018; Figure 2-1
NOTE: Image has been altered by Benchmark Resources and is not printed to scale.

Figure 4.6-1
Hydrologic Setting

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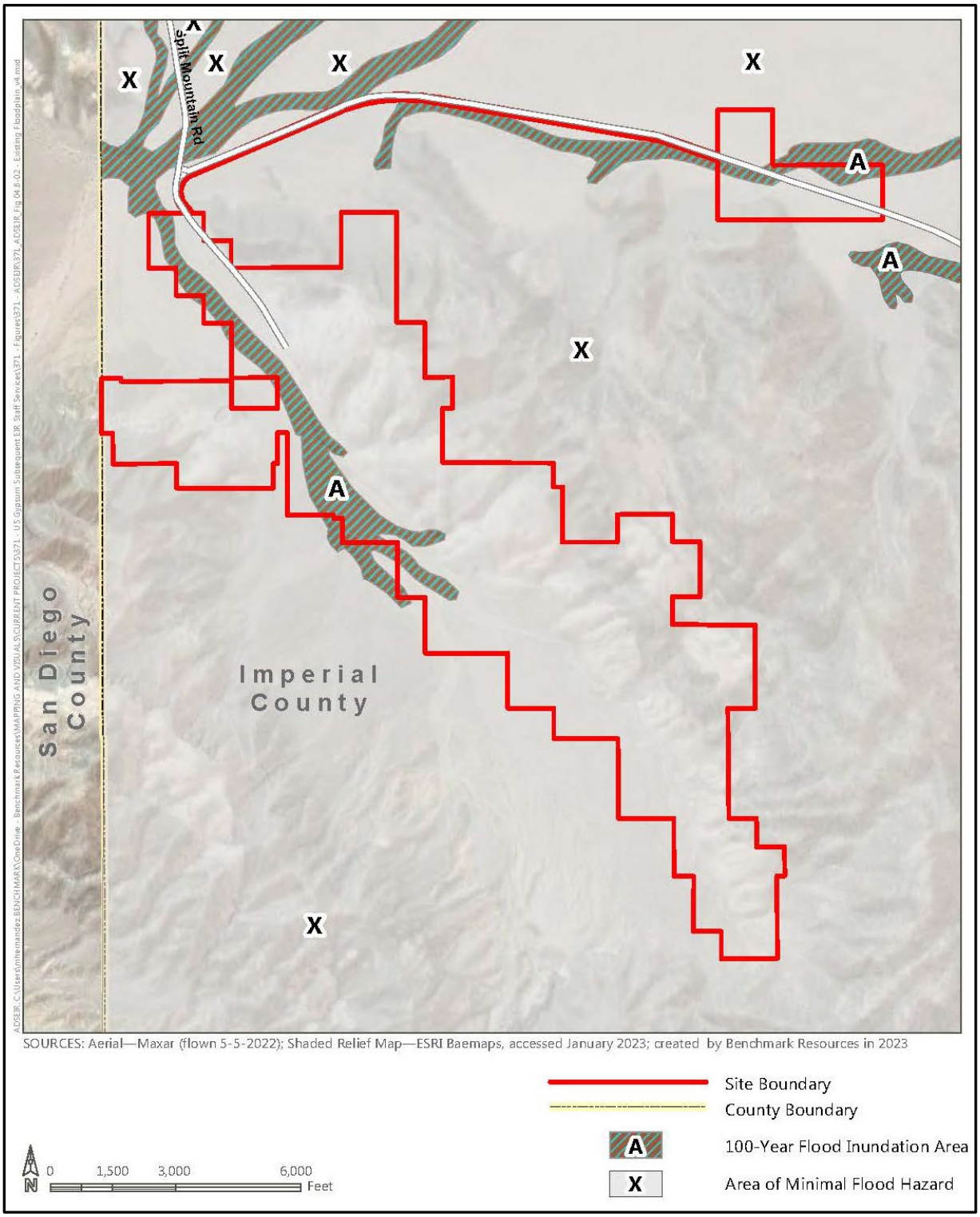

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Figure 4.6-2
Existing Floodplain

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Surface Water

According to Dudek, Coyote Creek splits just northwest of the Viking Ranch site and bisects both the southwestern and northeastern corners of the site. Berms, located along the entire north side of the site, appear to divert flood water from the north to the east and off the site. Surface water appeared to have flowed over areas of the site. Various water-cut channels and mud cracks were observed, likely due to runoff of water from high rainfall events (Dudek 2021).

Surface water was observed by Dudek staff flowing along the southern boundary of the site from the west to the east. The source of the surface water was not observed due to dense vegetation but was likely irrigation water from the adjacent property to the south. Surface water was flowing at roughly 0.25 cubic feet per second (cfs) and sustained flow for over 50 feet prior to infiltrating into the underlying sediments. Plant health and type near the surface water flow indicated that surface water regularly flows in that area. Surface water was not observed flowing off of the site (Dudek 2021).

According to Dudek, no unnatural pits, ponds, or lagoons were observed on site. Ponding of stormwater likely occurs in various low points on the site as observed by the presence of mud cracks. Incised channels, likely associated with Coyote Creek flooding, were observed throughout the site (Dudek 2021).

Traces of Coyote Creek currently bisect the property and, based on observations during the site reconnaissance performed by Dudek (2021), surface water occasionally flows southeast across the site during high rainfall events. According to Dudek (2021), historical aerial imagery and topographic maps show that Coyote Creek meandered across the site creating braided channels through the unconfined basin area. Coyote Creek is within the Borrego Springs Sub-basin 18100203, which lies within the same sub-basin as the proposed Quarry expansion. The area receives water from direct precipitation that flows from Coyote Creek, the surrounding Coyote and Indianhead mountains and which provides runoff to the surrounding watershed, and potentially from irrigation runoff from adjacent farmlands.

Agricultural land modifications were constructed that diverted hydrology of Coyote Creek around the agricultural field. These topographic modifications included excavation of ditches and construction of berms to protect the orchard from flooding. Based on a review of historical aerial imagery, the majority of water was diverted around the north end of the Viking Ranch site (Dudek 2021).

Floodplain

The floodplain on the Viking Ranch site is shown on Figure 2-4, “Old Kane Springs Road Preservation Site.” As a result of it is former use as an orchard, the Viking Ranch site is hydrologically disconnected from the Coyote Creek floodplain. The flow characteristics of the site have been substantially altered from natural conditions and windrows of coarse organic materials (from ground up orchard trees) and onsite topographic modifications impede water flows (Dudek 2021).

Groundwater

Based on sources searched by Environmental Data Resources (EDR), five water wells were mapped within 1 mile of the site. Water wells are located to the south of the site. The most recent water level measurement for the nearest well was recorded in 2008 and is approximately 336.34 feet below ground surface (bgs) (USGS 2018, cited in Dudek 2021). During the site reconnaissance, one additional water well was observed near the southwest corner of the site. The most recent water level measurements from the on-site well was recorded in 2008 and measured 340.10 feet bgs. The highest groundwater

level measurement from the on-site well was recorded in 1998 and measured 250 feet bgs (USGS 2018, cited in Dudek 2021).

Old Kane Springs Preservation Site

According to Dudek (2021), historical aerial imagery and topographic maps show that the Old Kane Springs site receives water from direct precipitation that flows from the Vallecito Mountains into an unnamed stream that flows down to the valley floor. The stream meanders across the site creating braided channels through the unconfined basin area. The Old Kane Springs site is within the Borrego Springs Sub-basin (18100203), which lies within the same sub-basin as the Quarry expansion area.

According to Dudek (2021), USFWS NWI mapping shows riverine features on the site continue off site to the east and flow through the alluvial fan until it widens and becomes undefined near Split Mountain Road, approximately four miles east of the site. At this point, the features are no longer mapped. Hydrologic connectivity to downstream washes or known creeks and rivers in unclear, but it is likely that sheet flows or groundwater from these features that cross the site eventually drain into San Felipe Creek and later the Salton Sea, east of the site.

4.6.2 Regulatory Setting

4.6.2.1 Federal

Federal Water Pollution Control Act (33 USC 1251 et seq.)

The Federal Water Pollution Control Act, commonly known as the Clean Water Act (CWA), established the basic structure for regulating discharges of pollutants into the waters of the United States. This gave U.S. Environmental Protection Agency (EPA) the authority to implement pollution control programs such as setting water quality standards and criteria for contaminants in surface waters. The CWA does not deal directly with groundwater or with water quantity issues. Section 208 requires the use of best management practices (BMPs) to control releases of pollutants in stormwater at construction sites. Section 303(d) requires the states identify waters for which effluent limits are not stringent enough to implement the applicable water quality standards, and to prepare plans for improving the quality of these water bodies. Section 401 requires the federal government to obtain certification from the state that a project is consistent with 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 human-made ditches. Section 404 authorizes the U.S. Army Corps of Engineers to regulate projects that will discharge dredge or fill materials into waters of the United States.

Construction projects and many industrial facilities must obtain NPDES permits to control the release of industrial chemicals in stormwater runoff. Stormwater discharges are generated by runoff from land and impervious areas such as paved streets, parking lots, and building rooftops during rainfall events that often contain pollutants in quantities that could adversely affect water quality. The primary method to control stormwater discharges is through the use of BMPs.

Anti-degradation Standards of the CWA dictate that once the existing uses of a water body have been established—by evaluating the water's quality relative to uses already attained—a State/Tribe must maintain the level of water quality that has been identified as being necessary to support those existing uses. The "use" of a water body is the most fundamental articulation of its role in the aquatic and human environments.

The "designated" uses of a water body are an expression of goals for the water, such as supporting aquatic life and human activities, including recreation and use as a public water supply. That is, these uses may not currently be attained for the water body. The general parameters of a State or Tribe's antidegradation program must address the following three categories:

- *Tier 1:* Protection of water quality for existing uses by maintaining the water quality necessary to support those uses. Tier 1 is applicable to all surface waters;
- *Tier 2:* Protection of high-quality waters, or water bodies where existing water quality conditions are better than necessary to protect CWA 101(a) designated uses. High quality waters must be addressed by the State or Tribe's antidegradation program because of the importance of such waters as a resource with economic, public health, and ecological value; and
- *Tier 3:* Outstanding National Resource Waters (ONRWs), or waters that have unique characteristics to be preserved (e.g., waters of exceptional recreational, environmental, or ecological significance). While States/Tribes are required to have provisions in their antidegradation policy that address ONRWs, it is left to the State/Tribe's discretion to identify waters as ONRWs.

At a minimum, States/Tribes must apply their antidegradation program to activities that are regulated under State, Tribal, or federal law, including:

- Any activity that requires a permit or water quality certification.
- Any activity subject to State/Tribal non-point source control requirements or regulations.
- Any activity that is otherwise subject to State/Tribal regulations specifying that water quality standards are applicable (EPA 2020).

4.6.2.2 State and Regional

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (Division 7 of the California Water Code) [Section 13000 et seq.]) was enacted to establish a regulatory program to protect water quality and beneficial uses of all waters of the State of California. It created the State Water Resources Control Board (SWRCB) and nine regional water quality control boards (RWQCBs) to plan, implement, manage, and enforce water quality protection and management. The RWQCBs are empowered by the Porter-Cologne Water Quality Control Act to require compliance with State and local water quality standards. The project site is located within the Colorado River Basin and is regulated by the Colorado River Basin RWQCB.

State Water Resources Control Board

The SWRCB administers regulations governed by the U.S. Environmental Protection Agency (USEPA) requiring the permitting of stormwater-generated pollution under the National Pollutant Discharge Elimination System (NPDES). In turn, SWRCB's jurisdiction is administered through nine regional water quality control boards.

Statewide Construction General Permit

Dischargers whose projects disturb one or more acres of soil, or less than one acre but are part of a larger common plan of development that in total disturbs one or more acres, are required to obtain coverage under SWRCB Order 2012-0006-DWQ (amending Order 2009-0009-DWQ as amended by 2010- 0014-DWQ), the General Permit for Storm Water Discharges Associated with Construction

and Land Disturbance Activities (Construction General Permit). Construction activity subject to this permit also includes linear underground/overhead projects, such as the proposed pipeline, disturbing at least one acre. Construction and demolition activities subject to this permit include clearing, grading, grubbing, and excavation, or any other activity that results in a land disturbance equal to or greater than 1.0 acre.

Linear Utility Project (LUP) construction includes those activities necessary for installation of underground and overhead linear facilities (e.g., conduits; substructures; pipelines; towers and poles; cables and wires; connectors; switching, regulating, and transforming equipment; and associated ancillary facilities). As Order 2003-0007-DWQ previously regulated LUP construction activities, these projects are now regulated by Attachment A of Order 2012-0006-DWQ.

Permit applicants are required to submit a Notice of Intent (NOI) to the SWRCB and to prepare a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP identifies best management practices (BMPs) that must be implemented to reduce construction effects on receiving water quality based on potential pollutants. The BMPs identified are directed at implementing sediment- and erosion-control measures and other measures to control potential chemical contaminants. The SWPPP also includes descriptions of the BMPs to reduce pollutants in stormwater discharges after all construction phases are completed at the site (postconstruction BMPs).

The Construction General Permit requires a risk-level assessment for construction sites, an active stormwater effluent monitoring and reporting program, rain event action plans, and numeric effluent limitations and numeric action levels for pH and turbidity.

Statewide Industrial General Permit

The SWRCB issued Water Quality Order 97-03-DWQ, NPDES General Permit No. CAS000001 WDRs for discharges of stormwater associated with industrial activities. This General Permit is intended to cover all new or existing stormwater discharges and authorized nonstormwater discharges from facilities required by federal regulations to obtain a permit, including those designated by the RWQCBs, facilities whose operators seek coverage under this General Permit, and facilities required by future USEPA stormwater regulations. Attachment 1 of the permit describes the types of facilities that are covered, summarized as follows:

- facilities that are subject to stormwater effluent limitations guidelines, new source performance standards, or toxic pollutant effluent standards (40 C.F.R. Subchapter N)
- manufacturing facilities,
- mining/oil and gas facilities,
- hazardous waste treatment, storage, or disposal facilities,
- landfills, land application sites, and open dumps that receive industrial waste,
- recycling facilities such as metal scrap yards, battery reclaimers, salvage yards, and automobile yards,
- steam electric-generating facilities,
- transportation facilities that conduct any type of vehicle maintenance such as fueling, cleaning, repairing, etc.,

- sewage treatment plants, and
- certain facilities (often referred to as "light industry") where industrial materials, equipment, or activities are exposed to stormwater.

Requirements of this permit include effluent limitations, receiving water limitations, SWPPP preparation, and stormwater monitoring programs. Facility operators must control pollutant discharges using the best available technology economically achievable and best conventional pollutant control technology. Discharges from facilities must not cause or contribute to a violation of an applicable water quality standard.

Colorado River Basin Regional Water Quality Control Board

As described previously, the project site and off-site mitigation sites are located within the Colorado River Basin and are under the jurisdiction of the Colorado River Basin Regional Water Quality Control Board.

Water Quality Control Plan for the Colorado River Basin

The Colorado River Basin RWQCB implements the Water Quality Control Plan for the Colorado River Basin (Basin Plan), which designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan (California Water Code Sections 13240-13247). The Basin Plan provides quantitative and narrative criteria for a range of water quality constituents applicable to certain receiving water bodies and groundwater basins within the Colorado River Basin. Specific criteria are provided for the larger, designated water bodies within the region, as well as general criteria or guidelines for surface waters and groundwaters. In general, the narrative criteria require that degradation of water quality does not occur due to increases in pollutant loads that will adversely affect the designated beneficial uses of a water body. Surface waters within the Ocotillo Lower Felipe Hydrologic Area (722.20) and groundwaters within the Anza-Borrego Hydrologic Unit (722.00) have been assigned multiple beneficial uses including wildlife habitat, freshwater habitat, recreation, agricultural supply, and groundwater recharge.

Senate Bill 610—Water Supply Assessment

Water Code Sections 10910 through 10915 were amended by Senate Bill 610 (SB 610) in 2002. SB 610 requires that under specific circumstances, as detailed below, an assessment of available water supplies must be conducted. The purpose of the assessment is to determine if available water supplies are sufficient to serve the demand generated by the project, as well as the reasonably foreseeable demand in the region over the next 20 years under average normal year, single dry year, and multiple dry year conditions. Water Code Section 10910 was further amended by SB 1262 on September 24, 2016, to require a Water Supply Assessment to include additional information regarding the groundwater basin designation and adjacent water systems.

California Surface Mining and Reclamation Act

The Surface Mining and Reclamation Act of 1975 (SMARA) (Public Resources Code [PRC], Sections 2710–2796) and its implementing regulations (California Code of Regulations [CCR], Title 14, §3500 et seq.) provide a comprehensive surface mining and reclamation policy with the regulation of surface mining operations to assure that adverse environmental impacts are minimized, and mined lands are reclaimed to a usable condition. SMARA also encourages the production, conservation, and protection of the state's mineral

resources. PRC Section 2207 provides annual reporting requirements for all mines in the state, under which the State Mining and Geology Board is also granted authority and obligations.

SMARA CCR Section 3706 applies to the discussion of the project's potential for hydrology and water quality impacts:

a) Surface mining and reclamation activities shall be conducted to protect on-site and downstream beneficial uses of water in accordance with the Porter-Cologne Water Quality Control Act, Water Code Section 13000, et seq., and the Federal Clean Water Act, 33 U.S.C. Section 1251, et seq.
b) The quality of water, recharge potential, and storage capacity of ground water aquifers which are the source of water for domestic, agricultural, or other uses dependent on the water, shall not be diminished, except as allowed in the approved reclamation plan.
c) Erosion and sedimentation shall be controlled during all phases of construction, operation, reclamation, and closure of a surface mining operation to minimize siltation of lakes and watercourses, as required by the Regional Water Quality Control Board or the State Water Resources Control Board.
d) Surface runoff and drainage from surface mining activities shall be controlled by berms, silt fences, sediment ponds, revegetation, hay bales, or other erosion control measures, to ensure that surrounding land and water resources are protected from erosion, gullying, sedimentation and contamination. Erosion control methods shall be designed to handle runoff from not less than the 20 year/l-hour intensity storm event.
e) Where natural drainages are covered, restricted, rerouted, or otherwise impacted by surface mining activities, mitigating alternatives shall be proposed and specifically approved in the reclamation plan to assure that runoff shall not cause increased erosion or sedimentation.
f) When stream diversions are required, they shall be constructed in accordance with: (1) the stream and lake alteration agreement between the operator and the Department of Fish and Game; and (2) the requirements of the Federal Clean Water Act, Sections 301 (33 U.S.C. 1311) and Section 404 (33 U.S.C. 1344) and/or Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).
g) When no longer needed to achieve the purpose for which they were authorized, all temporary stream channel diversions shall be removed, and the affected land reclaimed.

Sustainable Groundwater Management Act

On September 16, 2014, Governor Edmund G. Brown Jr. Signed a three-bill package known as the Sustainable Groundwater Management Act (SGMA). The legislation allows local agencies to customize groundwater sustainability plans to their regional economic and environmental needs. The three bills that make up SGMA are AB 1739, SB 1319, and SB 1668. The SGMA provides for sustainable management of groundwater basins; enhances local management of groundwater consistent with rights to use or store groundwater; establishes minimum standards for effective; continuous management of groundwater; provides local groundwater agencies with the authority; technical and financial assistance needed to maintain groundwater supplies; avoids or minimizes impacts for land subsidence; improves data collection and understanding of groundwater resources and management; increases groundwater storage and removes impediments to recharge; and empowers local agencies to manage groundwater basins, while minimizing State intervention. The SGMA allows agencies, a combination of local agencies, or counties to establish a Groundwater Sustainability Agency (GSA), who is responsible for developing and implementing a

groundwater sustainability plan (GSP). Imperial County serves as the GSA for all fifteen groundwater basins and subbasins within the County.

4.6.2.3 Local

Imperial County General Plan

The goals, objectives, and policies in the *Imperial County General Plan* are intended to inform decision makers, the general public, public agencies, and those doing business in the County of the County's position on land use-related issues and to provide guidance for day-to-day decision-making. The following objectives and policies contained within the *Imperial County General Plan* pertain to hydrologic resources and the proposed project:

Water Element

Goal 4: Protection of Water Resources from Hazardous Materials. The County will adopt and implement ordinances, policies, and guidelines that assure the safety of County ground and surface waters from toxic or hazardous materials and wastes.

Programs:

- The County of Imperial shall make every reasonable effort to limit or preclude the contamination or degradation of all groundwater and surface water resources in the County.
- All development proposals brought before the County of Imperial shall be reviewed for potential adverse effects on water quality and quantity, and shall be required to implement appropriate mitigation measures for any significant impacts.

Seismic/Public Safety Element and Multi-Jurisdictional Hazard Mitigation Plan

Goal 1: Land Use Planning and Public Safety. Include public health and safety considerations in land use planning.

Objective 1.2: Regulate development within flood-way areas in accordance with Federal Emergency Management Agency (FEMA).

Goal 2: Emergency Preparedness. Minimize potential hazards to public health, safety, and welfare and prevent the loss of life and damage to health and property resulting from both natural and human-related phenomena.

Objective 2.3: Identify potential risk and damage due to inundation from dam failure and/or water releases.

Flood Hazards Programs:

1. Provide technical and policy information regarding flood hazards to developers, interested parties, and the general public.
2. Regulate and restrict development near major water courses and floodplains through application of appropriate land use measures. 3. Both the ground floor elevation of any building for human occupancy

and the driving surface, if designated evacuation routes within the 100-year floodplain, shall be constructed above the projected profile of a 100-year flood event. 4. Require all new development for human occupancy within the 100-year floodplain to be adequately flood-proofed. 5. Establish technical design criteria which minimizes or mitigates impacts associated with crossing of floodplains by development. Unless such engineering alternatives are implemented, development in floodplains is to be restricted or prohibited.

Imperial County Multi-Jurisdictional Hazard Mitigation Plan

Completed in January 2021, the Imperial County Multi-Jurisdictional Hazard Mitigation Plan (MHMP) identifies and rates local hazards and provides goals, objectives, and action plans to mitigate these hazards. The participating jurisdictions are Imperial County; the cities of Brawley, Calexico, Calipatria, El Centro, Holtville, Imperial, and Westmorland; Imperial Irrigation District; and the Imperial County Office of Education. Hazards identified in the MHMP include flooding and dam failure as well as earthquakes, extreme weather, wildfire, hazardous materials, biological threats, volcanoes, and terrorism.

County of Imperial Flood Management Plan

The County of Imperial Department of Public Works (DPW) and the engineering departments of the incorporated areas are responsible for designing, constructing, and maintaining flood control facilities in their respective jurisdictions. These responsibilities include evaluation of proposed construction projects with regard to their potential to increase flood hazard. The County of Imperial Office of Emergency Services (OES) developed the Flood Management Plan (FMP) (County 2007) to identify known flood problems, reduce flooding and flood hazards, and protect the beneficial functions of floodplains. The County of Imperial recognizes that flood management is a comprehensive process that requires constant planning and implementation of flood protection and mitigation measures, strict land use regulations and enforcement, and community-wide awareness and vigilance. Included in this FMP are the County of Imperial and cities of Brawley, Calexico, Calipatria, El Centro, Holtville, Imperial, and Westmorland, with participation and input from the Imperial Irrigation District, Imperial County School District, and the Salton Community Services District.

San Diego County General Plan

The goals and policies of the *San Diego County General Plan* provide direction to future growth and development in the county. The following goals and policies from the *San Diego County General Plan Conservation Element* relate to hydrology and water quality and apply to proposed actions at the Viking Ranch Restoration Site and Old Kane Springs Road Preservation Site, located in unincorporated San Diego County.

Conservation and Open Space Element

Goal COS-4.5: Water Management. A balanced and regionally integrated water management approach to achieve the long-term viability of the County's water quality and supply.

Policy COS-4.1: Water Conservation. Require development to reduce the waste of potable water through use of efficient technologies and conservation efforts that minimize the County's dependence on imported water and conserve groundwater resources.

Policy COS-4.2: Drought-Efficient Landscaping. Require efficient irrigation systems and in new development encourage the use of native plant species and non-invasive drought tolerant/low water use plants in landscaping.

Policy COS-4.3: Stormwater Filtration. Maximize stormwater filtration and/or infiltration in areas that are not subject to high groundwater by maximizing the natural drainage patterns and the retention of natural vegetation and other pervious surfaces. This policy shall not apply in areas with high groundwater, where raising the water table could cause septic system failures, moisture damage to building slabs, and/or other problems.

Policy COS-4.4: Groundwater Contamination. Require land uses with a high potential to contaminate groundwater to take appropriate measures to protect water supply sources.

Policy COS-4.5: Recycled Water. Promote the use of recycled water and gray water systems where feasible.

Goal COS-5: Protection and Maintenance of Water Resources. Protection and maintenance of local reservoirs, watersheds, aquifer-recharge areas, and natural drainage systems to maintain high-quality water resources.

Policy COS-5.1: Impact to Floodways and Floodplains. Restrict development in floodways and floodplains in accordance with policies in the Flood Hazards section of the Safety Element. Development in floodways and floodplains has the potential to alter natural hydrologic flow and cause soil erosion and increased stormwater runoff—including loss of wetland and health issues related to surface and groundwater contamination.

Policy COS-5.2: Impervious Surfaces. Require development to minimize the use of directly connected impervious surfaces and to retain stormwater run-off caused from the development footprint at or near the site of generation.

Policy COS-5.3: Downslope Protection. Require development to be appropriately sited and to incorporate measures to retain natural flow regimes, thereby protecting downslope areas from erosion, capturing runoff to adequately allow for filtration and/or infiltration, and protecting downstream biological resources.

Policy COS-5.4: Invasive Species. Encourage the removal of invasive species to restore natural drainage systems, habitats, and natural hydrologic regimes of watercourses.

Policy COS-5.5: Impacts of Development to Water Quality. Require development projects to avoid impacts to the water quality in local reservoirs, groundwater resources, and recharge areas, watersheds, and other local water sources.

4.6.3 Significance Criteria and Analysis Methodology

4.6.3.1 Significance Criteria

2008 EIR/EIS Significance Criteria

The 2008 EIR/EIS evaluated the project's hydrology and water quality impacts using the following significance criteria:

The significance criteria for this analysis were developed from Appendix G of the CEQA Guidelines. The proposed project would have a significant impact on hydrology and water quality if it would:

- Violate any water quality standards or waste discharge requirements;
- Deplete groundwater supplies such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which a permit has been granted); or
- Otherwise substantially degrade water quality.

CEQA Appendix G Thresholds of Significance

Based on Appendix G of the CEQA Guidelines, the proposed project would have a significant impact to hydrology and water quality if it would:

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

4.6.3.2 Analysis Methodology

Evaluation of the hydrology and water quality impacts in this section is based primarily on the Hydrologic and Water Quality Study prepared by Dudek (2018). This study serves as an update to the 2004 Hydrology Study and Drainage Analysis prepared by Joseph Bonadiman & Associates in support of the 2008 EIR/EIS. The Bonadiman hydrology study included a rainfall/runoff analysis comparing existing with proposed conditions

for the drainage area west of the proposed berm and provided a conclusion that natural flows could be conveyed safely around the berm within a graded channel with a bottom width of 50 feet and a berm height of 5 feet (assuming 2 feet of freeboard). Mitigation Measure 3.3-7, as provided in the 2008 EIR/EIS, consists of this berm and the accompanying conveyance channel, and is required to convey flows around the project site.

While the Bonadiman Hydrology Study incorporated the 50-foot-wide channel to convey flows around the project site, this analysis was conducted following the latest grading plans which do not include the conveyance channel. In addition, the 40-acre Georgia Pacific parcel was not included in the Bonadiman hydrology study (as this parcel was included later). For these reasons, the updated 2018 Hydrologic Study and updated 2016 Jurisdictional Delineation were prepared.

The 2018 Hydrologic Study (Dudek 2018) provides a detailed hydrologic analysis of the Quarry watershed for both the existing and proposed conditions as well as a hydraulic analysis to assist with determining the proposed impacts to the mapped U.S. ACOE jurisdictional area (HES 2016). The hydraulic analysis was specifically designed to identify potential impacts related to the proposed berm intended to divert runoff from entering the extraction sites, and included scour and sediment deposition analyses. Analyses were conducted using a spectrum of storm events relevant to jurisdictional delineation in the arid southwest (2-year, 5-year, 10-year), as well as storm events relevant to design assessment (25-year and 100-year). All existing and proposed components of the project within the Quarry watershed, including the 40-acre George Pacific property, were included in this analysis. Detailed methodologies for the hydrologic and hydraulic analyses are provided in Appendix G-1.

Evaluation of groundwater levels and quality with project implementation were based on the *Update on Groundwater Conditions* memorandum prepared by Todd Groundwater in 2018 (Appendix G-2). Groundwater conditions were assessed with respect to thresholds for short-term water level changes, long-term water level changes, and groundwater quality. The memorandum focuses on recent changes in groundwater conditions that may have contributed to the sudden onset of adverse flow conditions in San Felipe Creek and the San Sebastian Marsh, which is critical habitat for desert pupfish. Current groundwater monitoring of Coyote Wells Valley Basin and changes in groundwater conditions in recent years were examined.

4.6.4 Project Impacts and Mitigation Measures

4.6.4.1 2008 EIR/EIS Impact Analysis

Under the 2008 EIR/EIS, impacts to hydrology and water quality were determined to be less than significant with mitigation or less than significant.

Impacts to Surface Water

Based on hydrology reports completed for the USG Expansion/Modernization Project (Joseph E. Bonadiman & Associates 2004), the 2008 EIR/EIS found that the expansion of the Quarry would generally not produce a significant reduction of runoff of tributaries to Fish Creek because 1) the Quarry expansion is adjacent to a mountain range that provides the smallest contribution of rainfall in the entire drainage area due to topographic and geologic conditions; and 2) rainfall east of the Quarry or within the Quarry will percolate into the ground, recharging the water table. It was concluded that the proposed Quarry expansion will have no effect on the natural groundwater process, and groundwater would continue to transmigrate towards Fish

Creek along the standard pattern. However, the main drainage patterns from the western mountain range of the drainage area produces the largest flow rate tributary to Fish Creek, potentially causing a disruption of periodic flows at the Quarry site. Consequently, the 2008 EIR/EIS includes the following mitigation measure to address the disruption in flow:

> ***Mitigation Measure 3.3-7:*** *An earthen berm will be constructed along the west side of the Quarry in order to preserve the natural drainage pathway. The berm would work as a natural earth channel, to preserve existing flow characteristics in the drainage area and protect the Quarry from flood waters by diverting water away from the Quarry and towards the Fish Creek Wash. This channel requires a minimum 50-foot bottom width for the floodway and 2:1 channel side slopes. The graded channel only requires an earthen berm of approximately 5 feet high, assuming 2 feet of freeboard. The berm would be 5 feet high by 20 feet wide, and would provide an adequate solution to contain and divert run-off.*

Impacts to Groundwater

The 2008 EIR/EIS indicates that the existing and proposed Quarry water wells are located within the Borrego Valley Groundwater Basin (7-24). The Borrego Valley Groundwater Basin is distinctly different from the Coyote Wells Valley Groundwater Basin (7-29) in which the USG production wells for the Plant are located. The Borrego Valley Groundwater Basin consists of sedimentary deposits derived from the surrounding mountain ranges. Groundwater is reported to occur in two aquifers. The shallow aquifer is present at depths above approximately 100 feet below ground surface (bgs) in the center of the basin with total dissolved solids levels reported in the range of 8,000 parts per million (ppm). An aquitard that may be 100 to 200 feet thick separates the shallow aquifer from the lower aquifer. The lower aquifer extends to at least 650 feet bgs at some locations with TDS levels reported in the range of 1,400 ppm. The primary drainage in the Ocotillo Valley is San Felipe Creek. San Felipe Creek extends from the Peninsular Ranges to the Salton Sea. In the area of proposed Quarry Well No. 3, the primary surface drainage is the Fish Creek Wash. San Felipe Creek and Fish Creek Wash only flow seasonally, when runoff occurs from the upper reaches of their respective watersheds. The 2008 EIR/EIS determined that the increase in pumping at the Quarry that would result from development and operation of Well No. 3 would not result in the substantial depletion of the Borrego Valley Groundwater Basin. This is because the proposed increase in pumping would be minimal relative to the existing use of groundwater for agriculture and relative to the natural rate of discharge from the basin. The proposed project would increase groundwater pumping in the Borrego Valley Groundwater Basin from the current permit limit of approximately 7.8 AF/yr to approximately 26 AF/yr. In contrast, the natural discharge from the Borrego Valley Groundwater Basin is 2,200 AF/yr to 4,500 AF/yr and the agricultural pumping ranges from 9,250 AF/yr to over 12,000 AF/yr. Therefore, the potential of the proposed project to have a perceptible effect on the existing water levels or rate of decline of the basin was found to be less than significant. Additionally, water quality data from the USG test hole also demonstrates that the new well would tap groundwater that is part of the lower aquifer. Discharge at San Felipe Creek Spring and Fish Creek Spring is from the shallow aquifer. Therefore, the potential of the proposed project to affect the flow of the springs was found to be less than significant. The 2008 EIR/EIS determined that the potential of pumping at Well No. 3 to degrade water quality by causing the vertical migration of saline water from the shallow aquifer to the deeper aquifer would be less than significant. This is because the USG test hole drilling results indicate that the shallow aquifer is not present in the area of the proposed Well No. 3.

4.6.4.2 2019 SEIS Impact Analysis

The 2019 SEIS further evaluated the proposed project under the National Environmental Policy Act (NEPA) based on the new information provided in the updated technical studies prepared for the project. The 2019 SEIS determined that project impacts related to the redirection of flood flows and water quality would be less than significant and no new mitigation was provided.

4.6.4.3 Substantial Project Changes

Project Revisions

The proposed Quarry expansion, and the proposed Well No. 3 and associated pipeline, are substantially in the same location and same configuration as the features that were evaluated in the 2008 EIR/EIS. Therefore, any minor revisions would not create a new or worsen an existing significant impact related to hydrology and water quality. However, the restoration of the Viking Ranch site and preservation of the Old Kane Springs Road site are proposed in response to mitigation required by the 2019 SEIS, and these are new actions under the proposed project.

Changed Circumstances

The Borrego Valley Groundwater Basin (7-24) was modified in 2016 by the California Department of Water Resources (DWR). The basin was divided into two subbasins: Borrego Valley—Borrego Springs (7-24.01) and Borrego Valley—Ocotillo Wells (7-24.02) (DWR 2021a). The proposed Quarry Well No. 3 is located in the Ocotillo Wells subbasin.

On September 16, 2014, Governor Jerry Brown signed into law a three-bill legislative package—Assembly Bill 1739 (Dickinson), SB 1168 (Pavley), and SB 1319 (Pavley)—collectively known as the Sustainable Groundwater Management Act (SGMA), which requires governments and water agencies of high- and medium-priority basins to halt overdraft and bring groundwater basins into balanced levels of pumping and recharge. Under SGMA, these basins should reach sustainability within 20 years of implementing their sustainability plans. Through SGMA, DWR provides ongoing support to local agencies through guidance, financial assistance, and technical assistance. SGMA empowers local agencies to form Groundwater Sustainability Agencies (GSAs) to manage basins sustainably and requires the preparation of groundwater sustainably plans (GSPs) for crucial (i.e., medium to high priority) groundwater basins in California. Low- and very low-priority basins may adopt these plans, but are not required to, and neither are adjudicated basins. The project site is located within the Ocotillo Wells subbasin of the Borrego Valley Groundwater Basin, which has been designated a very low priority basin (DWR 2021b). In September 2015, the Imperial County Board of Supervisors provided notice to DWR that Imperial County had resolved to assume the role of GSA for all groundwater basins underlying the County. In its resolution to become a GSA (Imperial County Board of Supervisors Resolution No. 2015-122), the County expressed its commitment to sustainable groundwater use and cited its jurisdiction over groundwater basins county-wide. The County also cited its long experience and background in groundwater management and monitoring, including the County Groundwater Management Ordinance. As described under Section 2.2, “Project Background,” of Chapter 2, “Project Description,” the Settlement Agreement replaced Mitigation Measures 3.3-1 and 3.3-2 adopted in the 2008 EIR/EIS with new mitigation measures (Mitigation Measures 3.3-1-A through 3.3-1-G). The measures are intended to ensure that project impacts on individual groundwater wells within the Coyote Wells Groundwater Basin are less than significant. The Quarry is not located within the Coyote Wells Groundwater Basin. Therefore, the Settlement Agreement mitigation measures are not applicable to this analysis.

New Information

A Jurisdictional Delineation (Hernandez Environmental Services 2016), Hydrologic and Water Quality Study (Hydrology Study) (Dudek 2018), and Update on Groundwater Conditions Memorandum (Todd Groundwater 2018) were completed as part of the 2019 SEIS.

The Jurisdictional Delineation identified a total 325.79 acres of unnamed streambeds within Quarry area and found that the expansion of quarrying activities would result in impacts to approximately 134.08 acres of CDFW, USACE, and RWQCB jurisdictional drainages. The Jurisdictional Delineation noted that Well No. 3 and the water supply pipeline would result in filling of all ephemeral streambeds and washes within the waterline/powerline area, and that these activities would result in impacts to 0.21 acres of CDFW, USACE, and RWQCB jurisdictional drainages. No wetland habitat was identified to occur at the Quarry, Well No. 3, or pipeline alignment. Little to no vegetation was observed to occur within any of the drainages evaluated. The Jurisdictional Delineation recommended avoidance and minimization measures to address potential impacts to wildlife, vegetation, and habitat that could occur during the disturbance of drainages during project construction.

The Hydrology Study evaluated the existing and proposed hydrology and water quality conditions for the Quarry watershed. The study focused on changes in hydrology due to mine expansion activities under the USG Expansion/Modernization Project. Based on the results of the study, it was recommended that the berm required by Mitigation Measure 3.3-7 of the 2008 EIR/EIS be armored along the westerly bank with rock riprap to decrease the likelihood and severity of erosion damage to the berm. The Hydrology Study did not evaluate the impacts of the development of the proposed Well No. 3 and associated pipeline, but noted that the 2008 EIR/EIS covered the potential impacts of these project components in detail, and further noted that the installation of the proposed water supply line to the Quarry would result in temporary construction related impacts to a number of ephemeral drainages, but these impacts would be less than significant as the anticipated impacts would not permanently modify the existing drainages.

The Update on Groundwater Conditions Memorandum (Todd 2018) was developed to assess groundwater conditions in the Coyote Wells Valley, Borrego Valley-Borrego Springs, Borrego Valley-Ocotillo Wells, and Ocotillo-Clark Valley groundwater basins, and to identify whether changes in the groundwater conditions of these basins may have contributed to the sudden onset of adverse flow conditions in San Felipe Creek and the San Sebastian Marsh, which is critical habitat for desert pupfish. With regard to the Borrego Valley-Ocotillo Wells subbasin, which the existing Quarry Well No. 2 and proposed Well No. 3 are located, the study notes that information on pumping in Ocotillo Wells is minimal, but the subbasin likely has very limited pumping. DWR estimated pumping of 256 AFY as part of its 2018 SGMA Basin Prioritization Process and Results (DWR 2021b). The study concludes that it is unlikely that the San Sebastian Marsh groundwater depletion is affected by current pumping at Well No. 2 because of the relatively large distance of more than seven miles from the San Sebastian Marsh; because both Well No. 2 pumps from the deeper aquifer; and because the San Sebastian Marsh is located within the Ocotillo-Clark Valley groundwater basin, and the shared boundary between the Ocotillo Wells subbasin and Ocotillo-Clark Valley groundwater basin is the trace of the Coyote Creek Fault and Superstition fault, which are regarded as barriers to groundwater flow. Based on the distance from the marsh, relatively low rate of pumping, and the presence of intervening faults and aquitards, the study concluded that pumping at Quarry Well No. 2 is unlikely to have caused changes in San Felipe Creek and the San Sebastian Marsh. The study also notes that other pumping in the basin is ongoing and minor, and that any changes in the basin since 2008 do not change the findings in the 2008 EIR/EIS.

Based on the results of the Jurisdictional Delineation, the 2019 SEIS recommended new mitigation that requires the restoration and preservation of offsite properties with similar hydrologic functions as the Quarry drainages to off-set the impacts to jurisdictional drainages within the Quarry.

Significance Determination

Based on project revisions, changed circumstances, and new information that may create a new or increased significant impact, the County has amplified and augmented the analysis contained in the 2008 EIR/EIS. This evaluation is provided in the following impact analysis.

4.6.4.4 Subsequent Environmental Analysis

Impact 4.6-1: The Project Could Violate Water Quality Standards or Waste Discharge Requirements or Otherwise Substantially Degrade Surface or Ground Water Quality

Quarry, Well No. 3, and Associated Pipeline

Quarry operations and development of Well No. 3 and the associated pipeline would occur in substantially the same locations and in the same manner as previously described and evaluated in both the 2008 EIR/EIS and the 2019 SEIS. As these project components would remain essentially unchanged, no new or more severe water quality impacts would be expected to occur under the proposed project. However, since publication of the 2008 EIR/EIS, an updated Hydrologic and Water Quality Study (Dudek 2018; Appendix G-1) was prepared for the project which provides new information relevant to this analysis. Following is a summary of the findings of the updated 2018 Hydrology Study on water quality.

The proposed project's potentially adverse effects to downstream water quality are considered less than significant due to the following:

- Most, if not all, water would be retained within the proposed excavation pits. As a result, the total volume of water discharged from the Quarry watershed would be reduced.
- The proposed project is not anticipated to adversely impact the water quality in the Salton or Imperial Valley Drains, which are listed as impaired for nutrients, pesticides, herbicides, arsenic and selenium. While arsenic is present at two parts per million (ppm) in the black anhydrite which occurs at the bottom of the gypsum seam, the potential exposure of this material during mining operations would not result in a significant release of arsenic to downstream waters as this material is not mined and typically left in place. Furthermore, the natural concentrations of arsenic in surrounding soils in Imperial County are likely greater than 2 ppm (Bradford et. al., 1996, cited in BLM 2019) and serve as the primary source of arsenic to the Salton Sea. A reduction in discharge from the Quarry watershed would likely result in a reduction of natural arsenic transported to downstream waters.
- Groundwater elevations from the nearest well (approximately seven miles north-northwest of the project site) are approximately 400 feet below the lowest point in the project site. Impacts on groundwater quality from increased localized infiltration during the infrequent but intense storm events would be negligible.
- The potential effect to downstream water quality conditions related to the dust generated from mining activities would not be considered adverse due to required BMPs for dust control and County of Imperial fugitive dust rules. Any potentially adverse effects would be reduced by the mitigation measures provided in the 2008 EIR/EIS.

For these reasons, the Quarry expansion and development of proposed Well No. 3 and associated pipeline would have a less than significant impact on water quality and would not violate any water quality standards or discharge requirements.

Level of Significance: Less than significant**.**

Mitigation Measures: None required.

Viking Ranch Restoration Site

The Hydrology Study (Dudek 2018) did not evaluate the impacts of the development of proposed Well No. 3 and associated pipeline, but noted that the 2008 EIR/EIS covered the potential impacts of these project components in detail, and further noted that the installation of the proposed water supply line to the Quarry would result in temporary construction related impacts to a number of ephemeral drainages, but these impacts would be less than significant as the anticipated impacts would not permanently modify the existing drainages.

During restoration activities on the site, erosion control and pollution prevention BMPs would be required as part of the SWPPP prepared for the site. These BMPs would likely include scheduling ground disturbing activities outside of the rainy season and stabilizing soils by seeding exposed soils and using straw mulch or mats. Additional BMPs are provided in the HMMP (Dudek 2021) prepared for the site including inspecting and repairing onsite equipment regularly to prevent leaks of hazardous substances. Implementation of BMPs would be overseen by the project biologist or a qualified SWPPP practitioner.

Level of Significance: Less than significant**.**

Mitigation Measures: None required.

Old Kane Springs Road Preservation Site

No development or other ground disturbing activities would be implemented on the Old Kane Springs Road site. Thus, no impacts to water quality would occur.

Level of Significance: Less than significant.

Mitigation Measures: None required**.**

Impact 4.6-2: The Project Could Substantially Decrease Groundwater Supplies or Interfere Substantially with Groundwater Recharge Such That the Project May Impede Sustainable Groundwater Management of the Basin

Quarry, Well No. 3, and Associated Pipeline

Quarry operations and development of Well No. 3 and the associated pipeline would occur in substantially the same locations and in the same manner as previously described and evaluated in both the 2008 EIR/EIS and the 2019 SEIS. However, since publication of the 2008 EIR/EIS, an updated groundwater conditions memorandum (Todd 2018; Appendix G-2) was prepared for the project. Following is a summary of the findings of the 2018 Groundwater Memorandum.

- *Coyote Wells Valley.* The updated groundwater conditions memorandum focused on groundwater conditions in the Coyote Wells Valley Basin, where USG has developed and maintained a monitoring program and implemented performance standards that serve as an early warning to changes in the Coyote Wells Valley Basin. Water levels and water quality data are compiled, analyzed, and reported annually. Only limited changes have occurred in the basin from groundwater users. Changes in the basin since 2008 do not change the findings in the 2008 EIR/EIS.
- *Borrego Valley-Borrego Springs.* The Borrego Valley has been subdivided into the Borrego Springs Subbasin and Ocotillo Wells Subbasin. Critical overdraft conditions in the Borrego Springs Subbasin are a long-term concern that are being addressed through the SGMA process. However, the intensive pumping in this basin is not likely the cause of sudden changes in San Felipe Creek flows because the Borrego Springs pumping has continued over many years at a considerable distance from San Felipe Creek. Changes in the basin since 2008 do not change the findings in the 2008 EIR/EIS.
- *Borrego Valley- Ocotillo Wells.* Existing Well No. 2 and proposed Well No. 3 are in the Ocotillo Wells Subbasin, adjacent to and upstream of San Felipe Creek. Pumping from Well No. 2 is unlikely to have caused changes in San Felipe Creek because of its small pumping, pumping from the deep aquifer, distance from San Sebastian Marsh, and existence of intervening fault barriers. Other pumping in the basin is ongoing and minor. Changes in the basin since 2008 do not change the findings of the 2008 EIR/EIS.
- *Ocotillo-Clark Valley.* San Sebastian Marsh is in Ocotillo-Clark Valley Basin, and thus, this basin was considered in the updated groundwater conditions memorandum. While a systematic impact analysis was not conducted, Todd (2018) notes that groundwater pumping has changed recently in proximity to San Sebastian Marsh. Specifically, groundwater pumping has been reduced by the conversion of historical agricultural lands to a solar farm. While speculative, it is possible that recent cessation of agricultural pumping from deep aquifers, with reduction of irrigation return flows that provide recharge to shallow aquifers, has resulted in downstream loss of creek flow.

Based on the analysis and conclusions of the updated groundwater conditions memorandum, the new information provided in the updated groundwater conditions memorandum does not change the conclusions of the 2008 EIR/EIS with regard to groundwater resources. No new or more severe impacts would occur.

Level of Significance: Less than significant.

Mitigation Measures: None required.

Off-site Mitigation Sites

No development or other activities which could affect groundwater levels are proposed at the Viking Ranch or Old Kane Spring sites. Thus, there would be no impact and no mitigation is required.

Level of Significance: No impact.

Mitigation Measures: None required.

Impact 4.6-3: The Project Could Substantially Alter the Existing Drainage Pattern of the Site Resulting in Substantial Erosion or Siltation, Flooding on or Offsite, the Provision of Substantial Additional Sources of Polluted Runoff, or the Impediment or Redirection of Flood Flows

Quarry Expansion Area

Quarry operations would occur in substantially the same locations and in the same manner as previously described and evaluated in both the 2008 EIR/EIS and the 2019 SEIS. However, since publication of the 2008 EIR/EIS, an updated Hydrologic and Water Quality Study (2018 Hydrologic Study) (Dudek 2018; Appendix G-1) was prepared for the project. Following are excerpts from the 2018 Hydrologic Study which describes and analyzes the anticipated changes to drainage volumes and patterns on and downstream of the project site.

Runoff in the existing, unnamed ephemeral creek bed would be decreased by the proposed Quarry operations. As described in greater detail below, the proposed site grading would capture runoff from the easterly portion of the watershed and convey it into a new drainage system while runoff from the westerly portion would be directed around Quarry operations by the proposed berm and continue to drain into Fish Creek to the north. For this reason, the watershed was analyzed by Dudek as two separate drainage areas corresponding to two separate drainage paths. Hydrology maps are included in Appendix H of Appendix G-1 for the existing and proposed conditions.

Table 4.6-1, "Existing Conditions Unit Hydrograph Peak Flowrate," and Table 4.6-2, "Proposed Conditions Unit Hydrograph Peak Flowrate," show the expected peak flows from the unit hydrograph analyses for the existing and proposed conditions. All input and results from the hydrology model are provided in Appendix H of Appendix G-1.

Table 4.6-1
Existing Conditions Unit Hydrograph Peak Flowrate

2 Year (cfs)	5 Year (cfs)	10 Year (cfs)	25 Year (cfs)	100 Year (cfs)
750	1,500	2,200	3,500	5,800

Source: Dudek 2018

Table 4.6-2
Proposed Conditions Unit Hydrograph Peak Flowrate

Watershed	2 Year (cfs)	5 Year (cfs)	10 Year (cfs)	25 Year (cfs)	100 Year (cfs)
Westerly	450	900	1,300	2,000	3,300
Easterly	350	700	1,011	1,600	2,600

Source: Dudek 2018

Easterly Drainage Area

Although the conveyance of potential flow through the Quarry was not modeled, it is reasonable to assume that most, if not all, runoff generated within the easterly section of the Quarry watershed would be captured and retained within the proposed excavated pits. Any flows exceeding excavation pit storage would be conveyed downstream into the Fish Creek alluvial fan system with a decreased total volume and potentially reduced peak flow rate. Based on the proposed topography within the Quarry, stormwater

captured in the extraction pits would eventually percolate into the local aquifer and/or evaporate. For these reasons, drainage in the easterly drainage area would not result in flooding on or offsite.

Because drainage flows in the easterly drainage area would be impounded onsite and would primarily evaporate or percolate into the ground, the project would not result in on or off-site flooding or significantly increase sediment or otherwise-polluted runoff entering Fish Creek or downstream waterways.

Westerly Drainage Area

The project proposes an earthen berm along the western edge of the proposed Quarry extent in order to direct surface flows generated within the western half of the Quarry watershed northward to Fish Creek, around Quarry activities.

Analysis of the HEC-RAS model results (Appendix H of Appendix G-1) were used by Dudek (2018) to identify locations along the current berm design that would potentially overtop, allowing surface flow into the Quarry. The HEC-RAS 100-year event model indicated five stations where the berm would not provide the required 2-feet of freeboard. Further, the model could not rule out the potential for runoff from a 100-year event to overtop the berm in additional locations. Model stations spaced 500 feet apart may not have captured sections of the berm where water would exceed the proposed 5-foot berm height. For example, the berm intersects the main channel where the channel banks are taller than 8 feet (adjacent Phase 2); at this location the berm would act as a check dam, impounding all flow and overtopping directly into the Quarry excavation pits. Overtopping of the proposed berm could further reduce surface flows and sediment loading to Fish Creek Wash downstream.

To address the identified deficiencies in the existing berm design, Dudek (2018) recommended modifications including, at a minimum, a 50-foot-wide conveyance channel on the western side of the berm. To assist with the conveyance of surface flows around the berm, Dudek further recommended that the berm design include armoring of the westerly bank of the berm with rock riprap to decrease the likelihood and severity of erosion damage to the berm for flows generated by a 25-year design storm. The 25-year storm was selected because the berm is not intended to protect life, property, or civil improvements. In a larger storm event, it would be expected that the riprap armoring would fail and the berm would suffer significant damage or failure. These recommendations would be incorporated into the final berm design by a qualified Civil Engineer as required by Mitigation Measure 4.6-1 below.

Downstream Waterways

As demonstrated above, the project is expected to result in the downstream reduction of surface flow and sediment loading to the Fish Creek Alluvial Fan. The potential reduction in accompanying groundwater recharge at the apex of the Fish Creek Alluvial Fan would likely be offset by increased recharge within the coarse alluvium of the Quarry watershed and is overall considered minimal with the project site contributing less than 1 percent of the total Ocotillo Lower Felipe HA land cover. As the perennial surface waters in the lower San Felipe River are not dependent on surface flows from Fish Creek Wash, the project would have no impact on creek flows or the associated habitat for desert pupfish (see Section 4.2, “Biological Resources”).

In conclusion, the overall drainage patterns of the project site would remain unchanged with any runoff that does not evaporate or percolate into the coarse alluvium ultimately draining to the Fish Creek Alluvial Fan. Because drainage within the Easterly Drainage Area would be impounded, total volumes and peak flow rate

would decrease thus no flooding or other adverse impacts would occur. With implementation of Mitigation Measure 3.3-7 as provided in the 2008 EIR/EIS and Mitigation Measure 4.6-1 as provided below, drainage within the Westerly Drainage Area would be directed northward to the Fish Creek Alluvial Fan consistent with existing conditions and no flooding or other adverse impacts would occur.

Level of Significance Before Mitigation: Potentially significant.

Mitigation Measures: *Implement the following existing mitigation measures (see Section 4.6.4 for the full text of each measure):*

- *2008 EIR/EIS*
  - *Mitigation Measure 3.3-7*

Mitigation Measure: *Implement the following new mitigation measure:*

Mitigation Measure 4.6-1: *The final design for the proposed berm along the westerly edge of the Quarry shall incorporate the recommendations provided in the Hydrologic and Water Quality Study prepared by Dudek dated April 2018 and appended to this SEIR. These recommendations include a 50-foot-wide conveyance channel on the western side of the berm and armoring of the westerly bank of the berm with rock riprap.*

Level of Significance After Mitigation: Less than significant.

Well No. 3 and Associated Pipeline

Development of Well No. 3 and the associated pipeline would occur in substantially the same locations and in the same manner as previously described and evaluated in both the 2008 EIR/EIS and the 2019 SEIS. The 2018 Hydrology Study did not evaluate the impacts of Well No. 3 and associated pipeline, but noted that the 2008 EIR/EIS covered the potential impacts of these project components in detail, and further noted that the installation of the proposed pipeline would result in temporary construction related impacts to a number of ephemeral drainages, but these impacts would be less than significant as the anticipated impacts would not permanently modify the existing drainages.

Level of Significance: Less than significant.

Mitigation Measures: None required.

Viking Ranch Restoration Site

Restoration activities would result in substantial changes to the existing drainage patterns on the Viking Ranch site. According to the 2021 HMMP (Dudek), the overall Viking Ranch site would be graded to be compatible with the surrounding native land surface elevations with rough contour grading of ephemeral channels taking place to create micro-topographic variances as shown in Figure 2-6, "Viking Ranch Conceptual Restoration Plan." The design is intended to re-establish braided flow patterns across the site, consistent with adjacent Coyote Creek wash. Final grading plans and specifications would be prepared by a registered landscape architect and, or civil engineer in consultation with the project biologist and the final grade would be reviewed and approved by the project biologist. As the proposed restoration activities would restore natural hydrologic functioning of the site consistent with the surrounding Coyote Creek wash, no

flooding or other adverse effects would occur. As discussed in Impact 4.6-1, proposed seeding of graded areas would minimize potential erosion once restoration is complete.

Level of Significance: Less than significant.

Mitigation Measures: None required.

Old Kane Springs Road Preservation Site

No grading, development, or other activities which could alter the existing drainage patterns on the Old Kane Springs site are proposed. There would be no impacts to drainage patterns and no erosion or siltation, flooding on or offsite, impediment of flood flows, or release of polluted runoff would occur.

Level of Significance: Less than significant.

Mitigation Measures: None required.

Impact 4.6-4: The Project Could Release Pollutants in the Event of Inundation From Flood, Tsunami, or Seiche

As described previously, portions of the project site are located within a FEMA flood zone as depicted in Figure 4.6-2. The floodplain encompasses the drainage which flows through the center of the valley and adjacent portions of the Quarry, as well as portions of the proposed pipeline alignment, and the proposed site of Well No. 3.

Quarry operations and development of Well No. 3 and the associated pipeline would occur in substantially the same locations and in the same manner as previously described and evaluated in both the 2008 EIR/EIS and the 2019 SEIS. As these project components would remain essentially unchanged, no new or more severe flooding impacts at these sites would occur under the proposed project.

If inundation from a flood event were to occur during project construction at the Viking Ranch site, hazardous materials such as gasoline, diesel fuel, equipment lubricants, and other pollutants could enter floodwaters. However, project BMPs would limit construction to outside of the rainy season thereby minimizing the potential for flooding. Furthermore, all hazardous substances would be stored properly, in accordance with product labeling and appliable state and local regulations.

Neither of the off-site mitigation sites are located close enough to the Pacific Ocean to be affected by a tsunami wave. A seiche is a standing wave in an enclosed or partially enclosed body of water. The off-site mitigation sites are similarly not close enough to any enclosed waterbodies to be affected by a seiche wave. Therefore, this impact would be less than significant, and no mitigation is required.

Level of Significance: Less than significant.

Mitigation Measures: None required.

Impact 4.6-5: The Project Could Conflict with or Obstruct Implementation of a Water Quality Control Plan or Sustainable Groundwater Management Plan

As described previously, the project site is subject to the Water Quality Control Plan for the Colorado River Basin (Basin Plan). As described in Impacts 4.6-1 through 4.6-7 above, the project would not result in any significant hydrology or water quality impacts. Therefore, the proposed project would not interfere with the implementation of the Basin Plan. This impact would be less than significant, and no further mitigation is required.

Level of Significance: Less than significant.

Mitigation Measures: None required.