4.2 GEOLOGY AND MINERAL RESOURCES

This section discusses potential impacts related to risk of geologic hazards and the availability of mineral resources from implementation of the alternatives. Geologic hazards, especially in areas of strong seismic activities, are susceptible to impacts from seismically induced settlement and liquefaction, slope instability, surface rupture, and soil instability. Projects that involve constructing structures could potentially result in substantial risks to property or life. The discussion of impacts on mineral resources is focused on the availability of mineral resources within the Plan Area.

This section discusses and provides analysis for potential impacts in relation to geologic hazards and availability of mineral resources in the Plan Area. The analysis is intended to satisfy Federal, State, and local requirements including CEQA, NEPA, the City of Highland General Plan, City of Redlands General Plan, and County of San Bernardino General Plan goals and policies.

THRESHOLDS AND CRITERIA

The following thresholds of significance are based on Appendix G of the State *CEQA Guidelines* and are consistent with NEPA implementing regulation Section 1508.27. An alternative would result in significant geology and mineral resources impacts if it would cause any of the following to occur:

- Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
    - Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault;
    - Strong seismic ground shaking;
    - Seismic-related ground failure, including liquefaction; and/or
    - Landslides.
- Result in substantial soil erosion or the loss of topsoil.
- Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse.
- Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property.
- Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of waste water.

- Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State.
- Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan.

4.2.1 DIRECT AND INDIRECT EFFECTS

4.2.1.1 Alternative A: No Action Alternative

Geologic Hazards

In the No Action Alternative, the Proposed Action of the USFWS to authorize incidental take of endangered wildlife and impacts on endangered plants for Covered Activities would not be taken. Current mining and water conservation operations would continue. The No Action Alternative does not include the construction of any water, storm drain, or roadway infrastructure or other structures, including inhabitable structures, and would not result in adverse impacts associated with geologic hazards, including rupture of a known earthquake fault, strong seismic ground shaking, or seismic-related ground failure including liquefaction and landslides.

Current aggregate mining would continue to occur in the Plan Area in accordance with existing permits until the permits expire. There are a limited number of structures located within the Plan Area associated with aggregate mining operations and none are habitable (used as residences) and would not pose a high risk of loss, injury, or death.

Slope stability investigations were prepared for existing and proposed slopes for each of the quarries as part of the Mine and Reclamation Plans for Cemex and Robertson's. Based on the analysis, new cut slopes from the existing depths of 40 to 60 feet down to 120 feet and inclined no steeper than 2:1 are expected to be stable against gross failure from long-term conditions including shaking, standing water, and rising groundwater. During excavation, actively mined inner slopes may temporarily be as steep as 90 degrees. Upon excavation to the maximum depth, the final new perimeter slopes will be contoured to a maximum inclination of 2H:1V (2 Horizontal: 1 Vertical). Since no structural end use is contemplated, slope compaction will not be needed to maintain slope stability. The mined slopes should be conducive to reestablishment of natural plant species which will aid in stabilization of the slopes. Per correspondence with Cemex staff, there have not been any slope failures as a result of an earthquake.[1]

Aggregate mining operations use standard open pit mining techniques of pushing material with a dozer, removing and loading material with the loader into haul trucks, and then taking the material to a processing plant. Mining and reclamation activities will be conducted on the finished upper slopes concurrently and are estimated to continue intermittently for the life of the permit depending on market demand and aggregate quality.

[1] Per email from Christine Jones at Robertson's on November 22, 2017.

Reclamation of open mining pits would continue to be in compliance with reclamation standards recommended by the SMARA regulations and outlined in the Mine and Reclamation Plans which is designed to address the need for a continuing supply of mineral resources and to prevent or minimize the negative impacts of surface mining to public health, property, and the environment. The reclamation plans for the proposed new quarries address the steepness of the final slopes with an inclination of 2H:1V (2 Horizontal: 1 Vertical). Re-vegetation of completed 2H:1V slopes as well as monitoring of re-vegetation activities would be initiated upon completion of final grades along portions of the pit slope. Upon termination of a mine in the mining areas, removal of plant facilities, equipment, stockpiles, and other debris from the site shall occur.

Operations within the mining quarries are consistent with standard mining practices and do not impose significant long-term effects related to soil erosion or loss of topsoil due to the reclamation of the terminated mining areas in which measures such as reestablishment of natural plant species and slope stabilization are conducted as required by the State and local regulations. Current aggregate mining activities by Cemex and Robertson's are required to comply with their respective approved Reclamation Plans, in compliance with their operating permits.

Mine and Reclamation Plans include slope inclination, compaction and revegetation requirements based on the slope stability investigations that were prepared for each of the quarries. Operation and reclamation of aggregate mines in the Plan Area consistent with the Cemex, Robertson's, or other operator's Mine and Reclamations Plans would reduce the potential for landslides in the quarries that could result from strong seismic ground shaking and therefore the potential adverse effects of collapsing slopes to a less than significant level.

Currently Robertson's has two mobile trailers at the processing plant that are occupied by employees during business hours. There are no other buildings in the Plan Area with human occupancy.[2] Cemex has 3 buildings with human occupancy in the Plan Area.[3] These existing buildings would continue to be operated and utilized by Robertson's and Cemex employees as they are currently. The No Action Alternative would not result in a new geologic hazard or increase the chances of a geologic hazard occurring in the Plan Area that could adversely affect the existing buildings occupied by Cemex and Robertson's employees.

The Conservation District's management activities comprise all activities needed to support ongoing recharge of water into the Bunker Hill groundwater basin for consumptive use, monitoring of groundwater basins, and pumping to meet consumer needs. The facilities required to support these efforts include pipeline easements, canals, maintenance roads, tanks and recharge basin, and construction of groundwater wells. The Conservation District maintains all of these facilities to keep them operating at optimum levels. On-going operation and maintenance of existing flood control facilities, wells and water infrastructure, access roads, public roadways, and citrus grove would not result in a new geologic hazard or increase the chances of a geologic hazard occurring in the Plan Area

[2] Per email from Christine Goeyvaerts at Robertson's on November 27, 2017

[3] Per email from Christine Jones at Cemex on November 22, 2017

that could adversely affect these facilities or employees conducting the maintenance. On-going operation and maintenance activities carried out within the Plan Area would not result in an increase in potential adverse impacts associated with geologic hazards.

Determination: The No Action Alternative would not result in adverse impacts associated with geologic hazards.

Mineral Resources

The No Action Alternative would result in a gradual slowing of mining activities in the Plan Area as aggregate resources are depleted under the existing permits and leases. Current aggregate mining activities produce an average of 4 to 4.5 MTPY of aggregate materials however, operations are reaching the end of available aggregate reserves under existing permits and leases. Current aggregate mining operators are assumed to mine to completion under the existing permits, but no additional mining would be allowed. The No Action Alternative does not allow for expanded mining activities; however, aggregate would continue to be available until existing permits and leases expire. Therefore, the No Action Alternative would not result in adverse effects on the availability of local aggregate resources.

Determination: The No Action Alternative would not result in adverse impacts related to the loss of locally available aggregate resources.

4.2.1.2 Alternative B: Proposed Action/Projects

Geologic Hazards

The Proposed Action/Projects would not physically alter or remove the existing geologic hazards that exist within the Plan Area. The Proposed Action/Projects, USFWS issuance of take authorization and Conservation District implementation of the HCP, would not have any effects on geologic hazards and associated risk of loss, injury, or death.

The Proposed Projects include both construction and operation of new aggregate mining pits and construction and maintenance of infrastructure for water conservation, flood control, transportation, water wells that are subject to earthquake-related hazards.

GEO-1: Risk of Loss, Injury, or Death
Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:

i) *Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?* ***Less Than Significant Impact.***

ii) *Strong seismic ground shaking?* ***Less Than Significant Impact.***

iii) *Seismic-related ground failure, including liquefaction?* ***Less Than Significant Impact.***

iv) *Landslides?* ***Less Than Significant Impact.***

Aggregate Mining

The embankments in the open-pit mining areas, in existing and new mining areas, would be subject to strong seismic shaking from the San Jacinto and San Andreas Faults. The mining operations and reclamation of open mining pits would continue to be in compliance with reclamation standards recommended by the SMARA regulations and outlined in the Mine and Reclamation Plans. The reclamation plans for the proposed new quarries addresses the steepness of the final slopes with an inclination of 2H:1V (2 Horizontal: 1 Vertical). Re-vegetation of completed 2H:1V slopes as well as monitoring of re-vegetation activities would be initiated upon completion of final grades along portions of the pit slope. Upon termination of a mine in the mining areas, removal of plant facilities, equipment, stockpiles, and other debris from the site shall occur. Mining activities would continue to follow requirements outlined in the respective Mine and Reclamation Plans for Cemex and Robertson's. With compliance with Federal, State and local regulations for mining operations, the aggregate mining would not result in substantial direct or indirect adverse impacts associated with geologic hazards, including rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure, or landslides. Additionally, mining activities would not include construction of new habitable structures and would not pose a greater risk of loss, injury, or death to people or structures compared to existing conditions within the Plan Area. Therefore, less than significant impacts would occur.

Water Conservation

On-going maintenance activities carried out by the Conservation District within the Plan Area would not result in adverse impacts associated with geologic hazards. Construction and maintenance of water conservation facilities, including spreading basins, access roads, wells, and pipelines would not result in substantial changes to the soils and geology in the Plan Area to result in effects on geologic hazards. Strong seismic ground shaking may result in damage to these facilities, however, as there are no existing or proposed sizable structures, potential risks of loss, injury or death from earthquake damage is not anticipated.

Construction of all water conservation infrastructure would be required to be designed and constructed in accordance with the latest applicable seismic safety guidelines, including the standard requirements of the CGBSC. With compliance with the CGBSC, potential impacts on infrastructure from strong ground shaking, seismic related ground failure or landslides that would result in loss, injury or death are reduced to less than significant levels.

Groundwater recharge activities have the potential to elevate the groundwater table and subsequently increase the potential for liquefaction. Based on data the Conservation District has been collecting from five monitoring wells in the Plan Area from 2006 until present, groundwater depths range from the shallowest depth recorded at 14 feet below ground level to the deepest depth recorded at 336 feet below ground level. However, most of the recorded groundwater levels fall within the range of 100-300 feet below ground level. Groundwater recharge in the Plan Area is not expected to result in large areas

of shallow groundwater within 50 feet of the surface**,** which would increase the susceptibility of liquefaction. The Conservation District as part of ongoing operations in the Plan Area will continue to monitor groundwater levels and has the ability to suspend groundwater recharge activities, if groundwater levels become too elevated. Therefore, potential impacts from groundwater recharge activities related to liquefaction are less than significant.

Wells and Water Infrastructure

Construction of all well and water infrastructure would be required to be designed and constructed in accordance with the latest applicable seismic safety guidelines, including the standard requirements of the CGBSC. With compliance with the CGBSC, potential impacts on infrastructure from strong ground shaking, seismic related ground failure or landslides that would result in loss, injury or death are reduced to less than significant levels.

Transportation

All roadway and highway maintenance and improvements would be required to be designed and constructed in accordance with the latest applicable seismic safety guidelines, including the standard requirements of the CGBSC. With compliance with the CGBSC, potential impacts on infrastructure from strong ground shaking, seismic related ground failure or landslides that would result in loss, injury or death are reduced to less than significant levels.

Flood Control

Maintenance of existing flood control structures would not expose people or structures to potential adverse effects, including loss, injury or death associated with rupture of an earthquake fault, strong seismic ground shaking, seismic-related ground failure, or landslides. The Elder/Plunge Creek Restoration project, which includes lead remediation, would not expose people or structures to potential adverse effects. Potential impacts related to geologic hazards are less than significant levels.

Trails

Construction, operation and maintenance of trails would not expose people or structures to potential adverse effects, including loss, injury or death associated with rupture of an earthquake fault, strong seismic ground shaking, seismic-related ground failure, or landslides. Potential impacts related to geologic hazards from the expanded use of trails in the Plan Area are less than significant.

Habitat Enhancement and Monitoring

Habitat enhancement, restoration, monitoring, species surveys and report, and vegetation and fire management would not expose people or structures to potential adverse effects, including loss, injury or death associated with rupture of an earthquake fault, strong seismic ground shaking, seismic-related ground failure, or landslides. Potential impacts related to geologic hazards from habitat enhancement and monitoring activities in the Plan Area are less than significant.

Agriculture

Maintenance of an existing citrus grove, including maintenance of access roads and irrigation infrastructure, and application of herbicides and fertilizers would not expose people or structures to potential adverse effects, including loss, injury or death associated with rupture of an earthquake fault, strong seismic ground shaking, seismic-related ground failure, or landslides. Potential impacts related to geologic hazards from agriculture activities in the Plan Area are less than significant.

Determination: The Proposed Action/Projects would not result in adverse impacts related to geologic hazards including risk of loss, injury or death.

GEO-2: Soil Erosion or Loss of Topsoil

Would the project result in substantial soil erosion or the loss of topsoil? ***Less Than Significant Impact.***

Aggregate Mining

Aggregate mining activities would result in topography modification resulting in the removal of surface vegetation and creation of slopes that may result in soil erosion in the Plan Area. However, Seven Oaks Dam and other flood control facilities in and around the Plan Area have greatly reduced the potential for significant natural runoff that may result in substantial soil erosion. For mined areas that have created steep slopes susceptible to erosion, re-vegetation would be implemented to prevent significant erosion from surface runoff. Operations from mining consists of using standard open pit mining techniques through the pushing of material with a dozer, removing and loading material with the loader into haul trucks, and then taking the material to a processing plant. Perimeter slopes of the mining pits shall have a final slope to be contoured at a maximum inclination of 2H:1V (2 Horizontal: 1 Vertical). Operations and reclamation of open mining pits would continue to be in compliance with reclamation standards recommended by the SMARA regulations and outlined in the Mine and Reclamation Plans developed for each operation. Re-vegetation of completed 2H:1V slopes as well as monitoring of re-vegetation activities would be initiated upon completion of final grades along portions of the pit slope.

Operations Reclamation of the terminated mining areas would include measures such as reestablishment of natural plant species and slope stabilization as required by the State and local regulations. Standard operations requirements and erosion control measures would ensure impacts are reduced to less than significant.

Water Conservation

The proposed water conservation projects are not located in an area that has been identified in the *City of Highland General Plan*, *City of Redlands General Plan*, or *County of San Bernardino General Plan* hazards section as an area susceptible to significant erosion hazard. The predominant soil types in location of the water conservation projects consists of soils that are excessively drained and are nearly level to moderately sloping and therefore are not highly susceptible to erosion. Groundwater recharge facilities are designed to retain and infiltrate stormwater runoff. Therefore, stormwater runoff across

the Plan Area overall is reduced in volume and velocity which in turn would reduce soil erosion potential. Impacts would be less than significant.

Wells and Water Infrastructure

Construction of the wells and water infrastructure would include access roads, connector pipelines, and main pipelines to convey water. Grading for the access roads would result in loss of vegetation. all construction projects are required to comply with the All construction projects would be required to comply with the NPDES General Construction Permit which applies to statewide construction activities including clearing, grading, or excavation that results in the disturbance of at least one acre of total land area. A requirement of the State General Construction Activity NPDES permit is the preparation of a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP must identify and implement Best Management Practices (BMPs) to reduce impacts to surface water from contaminated storm water discharges during the construction, including sediment as a result of erosion. Compliance with the NPDES General Construction Permit will reduce potential impacts associated with soil erosion and loss of topsoil to less than significant levels.

Transportation

Maintenance of existing roadways is not expected to result in substantial soil erosion or loss of topsoil. All construction projects would be required to comply with the NPDES General Construction Permit. Compliance with the NPDES General Construction Permit will reduce potential impacts associated with soil erosion and loss of topsoil to less than significant levels.

Flood Control

Maintenance of existing flood control facilities and access roads is not expected to result in substantial soil erosion or loss of topsoil. All construction projects, including the Elder/Plunge Creek Restoration project, would be required to comply with the NPDES General Construction Permit. Compliance with the NPDES General Construction Permit will reduce potential impacts associated with soil erosion and loss of topsoil to less than significant levels.

Trails

Maintenance of trails is not expected to result in substantial soil erosion or loss of topsoil. All construction projects would be required to comply with the NPDES General Construction Permit. Compliance with the NPDES General Construction Permit will reduce potential impacts associated with soil erosion and loss of topsoil to less than significant levels.

Agriculture

Agriculture activities would not include disturbance of large areas that may increase the potential for soil erosion. Therefore, impacts would be less than significant.

Habitat Enhancement and Monitoring

The habitat enhancement and monitoring activities proposed may result in temporary soil erosion and loss of topsoil. Potential impacts may occur from prescribed burning and mowing, which would reduce vegetation and the soil stability provided by the root systems. However, these areas would be expected to re-vegetate and the new vegetation would provide a measure for erosion control. Therefore, impacts would be less than significant.

GEO-3: Soil Stability

Would the project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse? ***Less Than Significant Impact.***

Mining

With the increase of mining activities, there would be new cut slopes. However, aggregate mining activities are required to comply with their respective approved Reclamation Plans, in compliance with their operating permits, which include slope stabilization measures. Also, Redlands, Highland, and County of San Bernardino have not identified the Plan Area as having susceptibility to landslide/slope stability hazards in their respective general plans and EIRs.

The *County of San Bernardino General Plan* shows that most of the Plan Area is located within areas that have a medium to high susceptibility for liquefaction to occur. However, mining activities shall only allow authorized personnel to be within mining areas. Additionally, no habitable structures exist nor are proposed as part of the Proposed Projects, resulting in no additional risk from existing conditions to people or habitable structures. Liquefaction has the potential to occur within the mining activity areas, but would not result in off-site effects. Upon termination of a mining in a pit reclamation, re-vegetation is then carried out to restore slope stabilization. Impacts related to on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse within the mining areas is considered less than significant.

Water Conservation

As mentioned above, the *City of Redlands General Plan* and the *City of Highland General Plan* have not identified the Plan Area as having susceptibility to landslide/slope stability hazards. The *County of San Bernardino General Plan* shows that most of thePlan Area is located within areas that have a medium to high susceptibility for liquefaction to occur. Water conservation activities would not include new habitable structures and would not allow unauthorized access. As outlined above in Section 4.2.2.2, the Conservation District as part of ongoing operations in the Plan Area will continue to monitor groundwater levels and has the ability to suspend groundwater recharge activities, if groundwater levels become too elevated. Risk of impacts from unstable soils from liquefaction is considered less than significant.

Wells and Water Infrastructure

As mentioned previously, the *City of Redlands General Plan* and the *City of Highland General Plan* have not identified the Plan Area as having susceptibility to landslide/slope stability hazards. The *County of San Bernardino General Plan* shows that most of the Plan Area is located within areas that have a medium to high susceptibility for liquefaction to occur. The Plan Area does not have large variations in topography outside of the mining areas. All new wells and infrastructure projects would be required to be designed and constructed in accordance with the latest applicable seismic safety guidelines, including the standard requirements of the CGBSC. With these measures, impacts would be less than significant.

Transportation

All roadway improvement projects would be required to be designed and constructed in accordance with the latest applicable seismic safety guidelines, including the standard requirements of the CGBSC. With implementation of CGBSC requirements, the risk of impacts from unstable soils from liquefaction is considered less than significant.

Flood Control

All flood control improvements would be required to be designed and constructed in accordance with the latest applicable seismic safety guidelines, including the standard requirements of the CGBSC. Less than significant impacts would occur.

Trails

As mentioned previously, the topography of the Plan Area does not have extreme variations outside of the mined areas and Redlands and Highland have not identified the Plan Area to be susceptible to landslides or slopes stability hazards. Proposed trails are not located adjacent to mining pits with the exception of those proposed along Orange Street and Alabama Street, which would be located along the elevated roadway. Impacts would be less than significant.

Agriculture

Maintenance of the existing citrus grove would not increase the potential for unstable soils. Therefore, impacts would be less than significant.

Habitat Enhancement and Monitoring

Habitat enhancement activities in the Plan Area include soil disturbances from removal of non-native plants and limited grading. However, these impacts would be temporary and would not have a significant impact on susceptibility to potential landslides or liquefaction. Therefore, impacts would be less than significant.

GEO-4: Expansive Soils

Would the project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property? Less Than Significant Impact.

All Proposed Projects

The Plan Area contains ten soil types including: Soboba Stony Loamy Sand (SpC); Psamments and Fluvents (Ps); Hanford Coarse Sandy Loam (HaC); Soboba Gravelly Loamy Sand (SoC); Soboba-Hanford Families Association (AbD); Ramona Sandy Loam (RmC); Hanford Sandy Loam (HbA); Tujunga Gravelly Loamy Sand (TvC); Quarries and Pits soils (GP); and Tujunga Loamy Sand (TuB).

The shrink-swell potential of all ten of these soil types is considered low or moderate. RmC is the only soil that is considered to have a low to moderate shrink-swell potential however, less than 1% of the Plan Area contains this soil type. Furthermore, the cities of Highland and Redlands have not determined the Plan Area to be susceptible to expansive soils, nor do the Projects propose to develop any habitable structures that would cause substantial risk to life or property. Therefore, impacts would be less than significant.

GEO-5: Disposal of Waste Water

Would the project have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water? ***No Impact.***

All Proposed Projects

The Proposed Projects do not include construction or expansion of any habitable structures that would generate waste water. Septic systems or alternative waste water disposal systems are not a part of the Proposed Projects. Therefore, there would be no impacts related to the disposal of waste water.

Mineral Resources

GEO-6: Loss of Availability to a Valuable Mineral Resource

Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state? ***Less Than Significant Impact.***

The Proposed Action/Projects would allow the USFWS to issue take authorization for Covered Activities/Projects, and for the Conservation District to implement the HCP and complete Covered Activities/Projects. Aggregate mining is a Covered Activity that includes both the continuation of existing mining and expansion of new mining.

Currently, aggregate mining and associated support activities, such as haul roads, are occurring within the Plan Area (existing mining) by Cemex and Robertson's. As part of the Proposed Action/Projects, existing mining areas would be expanded for new aggregate mining (new mining). An expansion of the

existing haul road would also occur. Mining infrastructure such as buildings, parking lots, lighting, settling ponds, pits, and haul roads would be operated 24 hours a day. Ongoing mining operations (existing mining) are within the existing mining pits. (Refer to Figure 2.0-1, *Covered Activities* for the location of each mining covered activity).

Under the Proposed Action/Projects, following the land exchange with BLM, the leases for mining would be reassigned to portions of the lands disposed by BLM which would allow for expanded mining operations to occur in these designated areas. Up to 201.3 acres of new mining is covered by the HCP without the land exchange between BLM and the Conservation District. An additional 200.2 acres of new mining is covered by the HCP, following the land exchange, for a combined total of 401.5 acres of new mining, as outlined in Table 4.2-1 below.

Table 4.2-1. Phasing of Mining Activity Covered by HCP

HCP Implementation Phase	Acreage
Phase 1 (pre-BLM exchange)	201.3 acres
Phase 2 (post-BLM land exchange)	200.2 acres
Total New Aggregate Mining	401.5 acres

Current aggregate mining activities produce an average of 4 to 4.5 MTPY of aggregate materials. Mining activities would increase within the lands disposed by BLM following the exchange with the Conservation District. As a result of the Proposed Action/Projects, mining activities would produce an estimated 6 MTPY of aggregate material. Although implementation of the Proposed Action/Projects would result in an increase in the aggregate produced from the Plan Area it would also result in an increase of approximately 1,660 acres to be set aside for habitat conservation, resulting in an overall reduction of lands available for aggregate mining.

The Proposed Action/Projects would help ensure a continued supply of aggregate materials from the Plan Area for the surrounding communities and local economy, as compared to the No Action Alternative, while preserving valuable habitat for sensitive biological resources.

Water Conservation

Although the Plan Area is classified as an MRZ-2 zone and is an area with regionally significant mineral resource value, it supports endangered plants and wildlife and the City of Highland and City of Redlands have designated the Plan Area as Open Space. The new groundwater recharge basins proposed encompass a total of 150 acres and does not constitute a significant loss of availability of mineral resources. Therefore, impacts would be less than significant.

All Other Proposed Projects

The combined area that would be improved or modified for wells and water infrastructure, roadway widening, flood control facilities, and trails, that would no longer be available for mining is approximately 80 acres and would not constitute a substantial loss of a valuable mineral resource. Therefore, impacts would be less than significant.

Determination: Although the Proposed Action/Projects would result in an increase in aggregate materials produced from the Plan Area, from an average of 4 to 4.5 MTPY to an estimated 6 MTPY, it would also set aside approximately 1,660 acres in the Plan Area for habitat conservation that would no longer be available for aggregate mining. The Proposed Action/Projects overall would not result in significant adverse impacts related to the loss of locally available aggregate resources.

GEO-7: Locally-Important Mineral Resources

Would the project result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan? ***Less Than Significant Impact.***

All Proposed Projects

As outlined above in GEO-6, the Plan Area is zoned as an area containing significant mineral deposits (MRZ-2), and the State of California Department of Conservation has recognized this area to have a regionally significant mineral resource value. This area is also considered locally important as it is used by local businesses and is used for development projects in the region.

The Proposed Projects would allow for an expansion of aggregate mining on 402 acres. Approximately 1,660 acres within the Plan Area mapped as MRZ-2 would be conserved habitat and 80 acres designated for other Proposed Projects and would no longer be available for aggregate mining. However, implementation of the Proposed Projects would result in an increased availability of a known mineral resource of value in the region, and potential impacts would be less than significant.

MITIGATION MEASURES

No mitigation measures are necessary.

Residual Impacts after Mitigation

No residual impacts related to geology or mineral resources would occur with implementation of the Proposed Projects. Impacts would be less than significant.

4.2.1.3 Alternative C: 2008 Land Management Plan

Geologic Hazards

Implementation of the 2008 Land Management Plan would not physically alter or remove the existing geologic hazards that exist within the Plan Area, and would not have significant effects on geologic hazards and associated risk of loss, injury, or death.

Implementation of the 2008 Land Management Plan includes both construction and operation of new aggregate mining pits and construction and maintenance of infrastructure for water conservation, flood control, transportation, and water wells that are subject to earthquake-related hazards.

The embankments in the open-pit mining areas would be subject to strong seismic shaking from the San Jacinto and San Andreas Faults. The mining operations and reclamation of open mining pits would continue to be required to be in compliance with reclamation standards recommended by the SMARA regulations and outlined in the Mine and Reclamation Plans. Consistent with Alternative B, Proposed Action/Projects, with compliance with Federal, State and local regulations for mining operations, the aggregate mining under the 2008 Land Management Plan would not result in substantial direct or indirect adverse impacts associated with geologic hazards.

On-going maintenance activities carried out by the Conservation District within the Plan Area would not result in adverse impacts associated with geologic hazards. Construction and maintenance of water conservation facilities, including spreading basins, access roads, wells, and pipelines would not result in substantial changes to the soils and geology in the Plan Area to result in effects on geologic hazards. Strong seismic ground shaking may result in damage to these facilities however as there are no sizable structures, potential risks of loss, injury or death from earthquake damage is not anticipated.

The 2008 Land Management Plan Area is located within the Santa Ana River Wash, an area of relatively shallow historical groundwater levels and excessively drained soils, and therefore susceptible to liquefaction. Groundwater recharge has the potential to result in elevating the groundwater table. Based on data the Conservation District has been collecting from five monitoring wells in the plan area from 2006 until present groundwater depths generally fall within the range of 100-300 feet below ground level. Groundwater recharge in the plan area in accordance with the 2008 Land Management Plan would not be expected to result in large areas of shallow groundwater within 50 feet of the surface**,** which would increase the susceptibility of liquefaction. The Conservation District as part of ongoing operations in the plan area would continue to monitor groundwater levels and has the ability to suspend groundwater recharge activities, if groundwater levels become too elevated. Further, there are not habitable structures, and limited other structures (roadways, bridges, pipelines, wells) that could be adversely affected as a result of liquefaction and result in loss, injury, or death.

Construction of projects pursuant to the 2008 Land Management Plan including, roadways, wells and water pipelines, and storm drains would be susceptible to damage from strong ground shaking. Construction of any infrastructure projects would be required to be designed and constructed in accordance with the latest applicable seismic safety guidelines, including the standard requirements of the CGBSC. With compliance with the CGBSC, potential impacts on infrastructure from strong ground shaking that would result in loss, injury or death is reduced to less than significant levels.

The proposed expanded use of trails, continued operations and maintenance of a citrus grove, and habitat enhancement & monitoring would not substantially adversely affect or be adversely affected by geologic hazards including risk of loss, injury or death of people using trails or conducting operation and maintenance activities in the Plan Area. For more details see the analysis outlined above in **Section 4.2.1.2, GEO-1.**

Determination: The 2008 Land Management Alternative would not result in adverse impacts related to geologic hazards including risk of loss, injury or death.

Mineral Resources

Implementation of the 2008 Land Management Plan would allow for expansion of aggregate mining on approximately 32 more acres than the 2019 HCP (Alternative B: Proposed Action/Projects). Thus, implementation of the 2008 Land Management Plan would result in an increase in aggregate materials produced from the Plan Area as compared to the 2019 HCP.

Implementation of the 2008 Land Management Plan would conserve approximately 312 fewer acres of habitat than would be conserved by implementation of the 2019 HCP. Under the 2019 HCP, these habitat areas conserved will be placed under a conservation easement and would not be available for any future development, including aggregate mining. Thus, the 2008 Land Management Plan would set aside less land for habitat conservation, allow more lands to be available for future aggregate mining.

The 2008 Land Management Plan would help meet the Management Objectives of the SCRMP. However, as compared to the 2019 HCP, the 2008 Land Management Plan would provide a greater supply of aggregate materials from the plan area and preserve less habitat for sensitive biological resources.

Determination: Although the 2008 Land Management Plan would result in an increase in aggregate materials produced, it would also set aside approximately 1,348 acres in the plan area for habitat conservation that would no longer be available for aggregate mining. The 2008 Land Management Plan overall would not result in significant adverse impacts related to the loss of locally available aggregate resources.

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4.3 HYDROLOGY AND WATER QUALITY

This section analyzes the potential impacts of the alternatives on hydrology (surface water flow, groundwater recharge, sediment erosion and deposition) and water quality. It also includes mitigation measures to avoid and minimize potential adverse effects. This section was prepared using objectives and policies from the *City of Redlands General Plan* and the *City of Highland General Plan*, as well as the *County of San Bernardino General Plan*, the Mine and Reclamation Plans for Robertson's and Cemex, the *Upper Santa Ana River Watershed Integrated Regional Water Management Plan 2015*, and the *Water Quality Control Plan for the Santa Ana River Basin*.

THRESHOLDS AND CRITERIA

The following thresholds of significance are based on Appendix G of the State *CEQA Guideline*s and are consistent with NEPA implementing regulation Section 1508.27. An alternative would result in significant hydrology and water quality impacts if it would cause any of the following to occur:

- Violate any water quality standards or waste discharge requirements.
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted).
- 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.
- 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.
- 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.
- Otherwise substantially degrade water quality.
- Place housing within a 100-year flood hazard area as mapped on a Federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map.
- Place within a 100-year flood hazard area structures which would impede or redirect flood flows.
- Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam.

- Cause inundation by seiche, tsunami, or mudflow.

4.3.1 DIRECT AND INDIRECT EFFECTS

4.3.1.1 Alternative A: No Action Alternative

Surface Water and Quality

Mining and water conservation activities would continue to be disjointed and separated throughout the Plan Area. Current mining activities would continue to operate under and would be required to implement BMPs outlined in their respective National Pollutant Discharge Elimination System (NPDES) General Construction Activity and Industrial Stormwater permits, as well as their Mining and Reclamation Plans.

Although mining activities have the potential to affect surface and groundwater quality in the Plan Area by increasing sediment and other pollutants in stormwater runoff, there are multiple regulations that require mining operations to implement BMPs to protect water quality, including the Clean Water Act Section 402 NPDES program and the SMARA.

General Construction Activity NPDES permits are required for mining operations on undisturbed lands that would affect an area of one acre or more. This permit requires preparation of a Storm Water Pollution Prevention Plan (SWPPP) that must identify and implement BMPs to reduce impacts to surface water from contaminated stormwater discharges during grading, excavation, or other surface disturbance. See Appendix C for requirements of a SWPPP.

In addition, Mining and Reclamation Plans have been approved and are being implemented for both the Cemex and Robertson's existing and proposed expansion of operations. As outlined in the respective Mining and Reclamation Plans, aggregate extraction and processing activities result in roughly five percent of unusable material, such as large boulders, that if not sold or crushed would be stockpiled and later used for reclamation purposes. Most Federal and State projects require that excess gravel be washed to rid it of accumulated silt and clay particles. The resulting wash water is filled with those particles. All wash water and processing water is transferred to silt ponds. Since these ponds have no outlet, the water either evaporates or percolates into the ground, leaving the silt on the bottom surface of the ponds. None of the wash water is discharged to surface waters (streams or waters of the US). This material would also be sold or used for reclamation activities, re-vegetation and haul roads. This process would prevent substantial erosion or siltation off-site and prevent byproducts from becoming sources of polluted runoff.

During the operational phase of mining activities, loaders, dozers, excavators, conveyors, and trucks would be used to mine, process, and haul aggregate. Maintenance and repairs of such equipment would typically involve the transport, storage, and use of petroleum products. The use of these products with ongoing aggregate mining and water conservation activities could affect surface water quality if not handled, stored, and disposed of properly. To address these potential impacts the following measures

are employed: 1) Diesel fuel is typically stored in aboveground tanks with a secondary containment structure; 2) delivery and dispensing of lubricants (oils and grease) is usually done on a concrete pad with a collection area that is periodically cleaned; 3) vehicle maintenance is also performed on a concrete pad to prevent contaminants from reaching soil surface; 4) spills are typically contained by use of absorbent materials and then loaded into waste drums for off-site disposal. The specific handling procedures vary with the type of material handled (e.g., flammable and combustible liquids versus non-flammable petroleum hydrocarbons).

Conditional Use Permits (Robertson's Silt Pond Quarry, City of Redlands Conditional Use Permit No. 949[1]) include Conditions of Approval to prepare SWPPPs and Spill Prevention Control and Countermeasures Plan (SPCCP) for all mining activities associated with new excavation areas as outlined below:

- Prior to any mining activity on undisturbed lands related to this Conditional Use Permit, Robertson's shall develop or revise a SWPPP for routine mining activities associated with new excavation areas. The SWPPP shall emphasize structural and nonstructural BMPs to control sediment. Robertson's shall submit the SWPPP to the City of Highland and the City of Redlands for review and approval.
- Prior to any mining activity on undisturbed lands related to this Conditional Use Permit, Robertson's shall develop or revise a SPCCP for all mining area activities and shall outline the methods and locations that would be used for disposal of debris handled or produced on site during excavation. The plan shall also include handling and cleanup procedures of any accidental releases at the mining site. Disposal of maintenance and/or excavation waste is subject to compliance with all applicable waste disposal regulations and requirements. Robertson's shall submit the SPCCP to the City of Redlands and the City of Highland for review and approval.

With implementation of BMPs outlined in the SWPPPs prepared for compliance with the General Construction Activity and Industrial Stormwater permits, as well as Spill Prevention Control Countermeasures Plan and the Mining and Reclamation Plans, the ongoing mining operations would not be expected to substantially degrade water quality and the potential to violate water quality standards of water bodies in or downstream of the Plan Area is significantly reduced.

Ongoing operation and maintenance by the Conservation District could result in adverse impacts to surface water quality, however due to their being limited in nature, frequency, duration, and magnitude, they would not be expected to substantially degrade water quality or violate water quality standards of water bodies in or downstream of the Plan Area. All water that enters the Conservation District facilities goes into the groundwater basin.

[1] Robertson's Silt Pond Quarry, City of Redlands – Conditions of Approval for Conditional Use Permit No. 949, available online at http://www.ci.redlands.ca.us/community/agenda/reports/1039CUP949CONDITION1.pdf

Hydrology and Flooding

Ongoing mining operations would occur adjacent to the existing quarries and processing sites and would continue to be located outside of the low flow channels of the Santa Ana River, Plunge Creek and City Creek. Ongoing mining operations would not include any earthmoving activities or structures that would alter the course of these drainages. Existing berms around quarries would be extended along with expansion of quarries to continue to prevent storm water from these drainages in larger events from flowing into them. Therefore, the ongoing mining operations would not alter the course of a stream or river (Santa Ana River, Plunge Creek, City Creek), in a manner which would result in substantial erosion or flooding on or off-site.

Operation and maintenance of water conservation facilities including channels or dikes would not alter the course of the Santa Ana River or Plunge Creek (Conservation District facilities are not located in or adjacent to Mill Creek or City Creek), nor would other current ongoing activities.

Potential impacts from runoff causing erosion and flooding are less than significant and no mitigation is required.

The FEMA Flood Insurance Rate Maps (FIRMs) identify areas subject to flooding during the 100-year storm event. Based on these FIRM maps and as indicated in the previously referenced Figure 3.3-1, *Surface Hydrology*, portions of the Plan Area within and adjacent to the Santa Ana River, Mill Creek, Plunge Creek, and City Creek are within the 100-year floodplain (or flood hazard zone), and portions of the Plan Area that are at higher elevations and between these drainages are within the 500-year floodplain.

Although portions of the Plan Area are located within the 100-year floodplain, the mining and water conservation do not involve the construction of housing and would not place housing or other structures within a mapped 100-year flood hazard area. People and structures would not be exposed to any increased risk associated with flooding or dam failure and no structures would be placed in the 100-year flood hazard area. Other ongoing activities would not place housing in the 100-year flood hazard area or structures that would impede or redirect 100-year flood flows. Therefore, no impacts would occur, and no mitigation is required.

Since there are no lakes or oceans in proximity of the Plan Area, there is not a risk of seiches or tsunamis occurring within the Plan Area. The Seven Oaks Dam provides protection from mudslides from the San Bernardino Mountains. Therefore, impacts would be less than significant, and no mitigation is required.

Groundwater and Quality

Under the No Action Alternative, water conservation and aggregate mining operations would continue. The existing permitted mining would be mined to completion, but no additional mining permitting is presumed.

As identified in the Cemex and Robertson's Mining and Reclamation Plans, mining would be restricted to no less than 20 feet above groundwater, with no operations allowed in standing groundwater. This is to ensure that sediment and other potential contaminants resulting from mining excavation activities are not directly discharged to the groundwater table and the basin. Existing Conservation District monitoring wells will continue to be used to monitor groundwater levels in the Plan Area. The Conservation District will continue to provide this information to Cemex and Robertson's so that they can comply with this requirement of their respective Mining and Reclamation Plans. Therefore, ongoing mining operations are not expected to adversely affect groundwater quality with implementation of this requirement.

The San Bernardino Basin Area (SBBA) is adjudicated, and therefore, has restricted pumping which is monitored by the Western-San Bernardino Watermaster. The ongoing pumping and water use for aggregate mining would be monitored along with other users in the basin for any pumping beyond the safe yield. Due to the Conservation District's large credit, it is not anticipated that replenishment obligations would be required in the near future even if there is pumping beyond the safe yield in the current drought conditions. However, if total extractions are more than the safe yield as a result of ongoing mining activities, the Conservation District would work with Cemex and/or Robertson's to provide the replenishment obligation. Therefore, ongoing mining operation is not anticipated to 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.

Ongoing water conservation activities are expected to have a continued beneficial impact on the groundwater supply. All water that enters the Conservation District facilities goes into the groundwater basin which is active storage and recovery as defined by the USGS.[2]

Determination: Although continued operation and maintenance activities carried out in the Plan Area as a part of aggregate mining and water conservation could result in adverse effects to surface and groundwater quality, implementation of BMPs and compliance with the General Construction Activity and Industrial Stormwater permits significantly reduced that potential. Alternative A is not anticipated to substantially affect hydrology and water quality within the Plan Area or downstream receiving water bodies.

4.3.1.2 Alternative B: Proposed Action/Projects

Surface Water and Quality

HYD-1: Would the Project Violate any water quality standards or waste discharge requirements? ***Determination: Less Than Significant Impact.***

HYD-6: Would the Project otherwise substantially degrade water quality? ***Determination: Less Than Significant Impact.***

[2] USGS California Water Science Center, https://ca.water.usgs.gov/misc/asr/

Aggregate Mining

As with Alternative A, expanded mining activities would require a General Construction Activity NPDES and preparation of a SWPPP that must identify and implement BMPs to reduce impacts to surface water from contaminated stormwater discharges during grading, excavation, or other surface disturbance. As identified in the Cemex and Robertson's Mining and Reclamation Plans, mining would be restricted to no less than 20 feet above ground water, with no operations allowed in standing groundwater. Existing monitoring wells would be used to monitor groundwater levels and to determine the depth to groundwater. Monitoring would be coordinated with the Conservation District. Expanded mining would also require coverage under an industrial stormwater permit, with development of a written SWPPP, a written assessment of potential sources of pollutants in stormwater runoff and control measures that would be implemented at the facility to minimize the discharge of these pollutants in runoff from the site. These control measures include site-specific BMPs, maintenance plans, inspections, employee training, monitoring, and reporting. Expanded mining would also require maintenance and repairs of equipment that would typically involve the transport, storage, and use of petroleum products. The use of these products with ongoing aggregate mining and water conservation activities could affect water quality if not handled, stored, and disposed of properly. Prior to mining in undisturbed lands mining operators are required to develop or revise a SPCCP as a condition of the Conditional Use Permits with the Cities of Highland and Redlands. Domestic refuse is collected in approved trash bins and hauled to the nearest approved landfill for disposal. Equipment is maintained at the Alabama Street Shop and Orange Street Plant. Used oils, fuels and solvents are required to be collected in accordance with the Department of Toxic Substance and Control regulations and are disposed of appropriately or picked up by an approved hauler for recycling. The current operations maintain a Business Emergency, Hazard Communication and Training Plan with the County of Environmental Health Services Agency.

With implementation of BMPs outlined in the SWPPPs prepared for compliance with the General Construction Activity and Industrial Stormwater permits, as well as the SPCCPs and Mining and Reclamation Plans, the ongoing mining operations would not be expected to substantially degrade water quality and the potential to violate water quality standards of water bodies in or downstream of the Plan Area significantly reduced.

Water Conservation

Maintenance of existing Conservation District facilities would not substantially disturb large areas within the Plan Area that could increase the exposure of sediments to stormwater runoff. Maintenance activities include direct inspection and repair of facilities as well as periodic in basin removal of fine sediments and debris to maintain a high level of infiltration. Sediment and debris are stockpiled in existing storage areas and are later used to repair facilities or are transported offsite. Ongoing maintenance activities would not violate water quality standards or waste discharge requirements or substantially degrade water quality.

Since the construction of new recharge basins would disturb an area greater than one acre, a General Construction Activity permit is required as well as preparation and implementation of a SWPPP. With

implementation of BMPs outlined in the SWPPP, construction of expanded recharge basins would not be expected to substantially degrade water quality and the potential to violate water quality standards or waste discharge requirements would be significantly reduced. Potential impacts are less than significant, and no mitigation is required.

Wells and Water Infrastructure

The construction of some of the proposed wells and associated connector pipelines would only disturb small areas, less than an acre in size, and would not significantly increase the exposure of sediments to stormwater runoff. The construction footprint for some of these facilities is an acre or more, and therefore, would require a General Construction Activity permit and preparation and implementation of a SWPPP with BMPs for erosion and sediment controls and for waste handling and disposal. With implementation of SWPPPs on construction sites of one acre or larger, construction and maintenance of wells and water infrastructure would not be expected to substantially degrade water quality and the potential to violate water quality standards or waste discharge requirements would be significantly reduced. Potential impacts are less than significant, and no mitigation is required.

Transportation

The proposed expansion and maintenance of existing roads generally would not disturb large areas and would not significantly increase the exposure of sediments to stormwater runoff. Any of the proposed expansions that would disturb an area of one acre or more would require a General Construction Activity permit and preparation and implementation of a SWPPP with BMPs for erosion and sediment controls and for waste handling and disposal. With implementation of SWPPPs on construction sites of one acre or larger, construction and maintenance of roadways would not be expected to substantially degrade water quality and the potential to violate water quality standards or waste discharge requirements would be significantly reduced. Potential impacts are less than significant, and no mitigation is required.

Flood Control

Although the Plunge and Elder Creek Multipurpose Habitat Enhancement and Flood Control Reasonably Foreseeable Project would result in modification to the low-flow channel of Plunge Creek, the end result is to remediate lead from an area that was once used as a shooting range and to restore braided channel structure in Plunge Creek, providing additional San Bernardino kangaroo rat (SBKR) habitat and restoring flows in Plunge and Elder Creeks above Orange Street, which are impeded by sedimentation in the stream channels. Completion of the lead remediation would improve water quality in the Plan Area by removing this contaminate in the soils that are subject to storm water runoff. Ongoing maintenance of channels, access roads and levees would not result in large disturbed areas that would expose sediments to stormwater runoff or expose waste or hazardous substances to stormwater runoff.

New drainage facilities at Church Street, Judson Street, Orange Street, and Wabash Street would convey water runoff from areas south of the active channel of the Santa Ana River down into the active channel.

The outlet structures would be designed to ensure that scour and erosion do not occur in the Santa Ana River. The areas that contribute water runoff that would be conveyed through these new drainage facilities would not be altered as a result of the Proposed Project. The areas that contribute water runoff are regulated under the area-wide Municipal Separate Storm Sewer Systems (MS4) permit (Order No. R8-2010-0036) issued to the San Bernardino County Flood Control District and 16 incorporated cities within San Bernardino County. The MS4 permit requires the County and cities to implement the San Bernardino County Areawide Stormwater Program to ensure that the MS4 discharges do not cause or contribute to impairment of downstream receiving waters. With the continued implementation of the Areawide Stormwater Program by the San Bernardino County Flood Control District and the cities of Redlands and Highland, the construction of new flood control facilities and ongoing maintenance would be expected to substantially degrade water quality and the potential to violate water quality standards or waste discharge requirements would be significantly reduced; potential impacts are less than significant.

Trails

The development and operations of the proposed trail system would utilize existing roads and access easements. Since no substantial grading or alteration of natural areas would be conducted, the development and operation of trails would not expose stormwater runoff to new pollutant sources. The development and operations of the trail system would not be expected to substantially degrade water quality and the potential to violate water quality standards or waste discharge requirements would be significantly reduced; potential impacts are less than significant.

Habitat Enhancement and Monitoring

Habitat enhancement and monitoring activities would not substantially alter natural areas which would expose stormwater runoff to significant amounts of sediment or other new pollutant sources. With implementation of the HCP avoidance and minimization measures, continued grove operation and maintenance activities would not expose storm water runoff to new pollutant sources. Therefore, Covered Activities would not violate water quality standards or waste discharge requirements or substantially degrade water quality, and potential impacts are less than significant.

Agriculture

There is a 6.7-acre citrus grove operated within the Plan Area. The grove would continue to be operated and maintained as it currently is, including application of herbicide, insecticide, fungicide, and fertilizer as needed. The HCP includes Avoidance and Minimization Measures (Table 5-4, page 5-30) to related to the use of chemicals and grove management practices. With implementation of the HCP avoidance and minimization measures, continued grove operation and maintenance activities would not expose storm water runoff to new pollutant sources. Operation of the grove would not be expected to substantially degrade water quality and the potential to violate water quality standards or waste discharge requirements would be significantly reduced; potential impacts are less than significant

Groundwater and Quality

HYD-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 (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)? ***Determination: Less Than Significant Impact.***

Aggregate Mining

As outlined in the Mine and Reclamation Plan for Cemex, water consumption for aggregate washing and dust control at the Orange Street Plant is approximately 1,184 acre-feet per year (AFY) or about 4 acre-feet per operating day. Dust control and ready-mix operations at Alabama Street consume approximately 175 AFY or about 0.6 acre-feet per operating day. Water usage depends on actual production and extraction and weather conditions. Water is supplied from existing wells located in the northwestern portion of the Alabama Street Quarry and on the south side of the Orange Street Plant. Water use during mining consists of wetting the excavation areas and haul roads. During reclamation, water would be necessary for dust control on roads and for grading during preparation of the slopes and occasional wetting of re-vegetated slopes if necessary.

As outlined in the Mine and Reclamation Plan for Robertson's, water consumption for the aggregate washing and dust control at the East Basin Plant and the ready-mix production at the Highland facility is approximately 350 AFY or about 1 to 1.25 acre-feet per operating day. Water usage depends on actual production and extraction and weather conditions. Water is supplied from existing wells located in the west and east basins of the Highland and East Basin facilities. Water use during mining consists of wetting the excavation areas and haul roads. During reclamation, water would be necessary for dust control on roads and for grading during preparation of the slopes and occasional wetting of re-vegetated slopes if necessary.

Cemex and Robertson's currently use 2,220 acre-feet and 365 acre-feet per year, respectively. With implementation of the mining component, an additional 264.7 acre-feet per year would be needed for aggregate mining operations. (District 2008)

The additional 264.7 acre-feet per year is anticipated to come from groundwater sources. The additional 264.7 acre-feet per year required is approximately 0.11 percent of the current safe yield of the Bunker Hill subbasin. The additional water needed for expanded mining would be within the Bunker Hill subbasin's safe yield and would not result in the lowering of the existing groundwater levels in the area. Therefore, potential impacts to groundwater are anticipated to be less than significant and no mitigation is required. (District 2008)

The SBBA is adjudicated, and therefore, has restricted pumping which is monitored by the Western-San Bernardino Watermaster. The additional pumping and water use for aggregate mining would be

monitored along with other users in the basin for any pumping beyond the safe yield. Due to the Conservation District's large credit, it is not anticipated that replenishment obligations would be required in the near future even if there is pumping beyond the safe yield in the current drought conditions. However, if total extractions are more than the safe yield as a result of mining activities, the Conservation District would work with Cemex and/or Robertson's to provide the replenishment obligation. Therefore, the Proposed Action are not anticipated to 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.

The Upper Santa Ana River Watershed (USARW) has a long-standing history of collaboration by water resources management agencies to manage the watershed's unique water supply, water quality, flood, and habitat challenges. In 2005, this collaboration allowed the agencies to successfully form the USARW Integrated Regional Water Management Region (Region) and develop an integrated plan for managing water resources in the Region. The IRWMP is a result of that effort. The 2015 IRWMP serves as an update to the IRWMP developed in 2007, and incorporates new information describing the Region updates goals and objectives, re-evaluates strategies, and develops a process for future implementation of the IRWMP. For more information on the 2015 IRWMP see section C.3.2 of Appendix C.

The additional pumping and water use for aggregate mining would be monitored by the Western-San Bernardino Watermaster along with other users in the basin for any pumping beyond the safe yield. Due to the Conservation District's large credit, it is not anticipated that replenishment obligations would be required in the near future even if there is pumping beyond the safe yield in the current drought conditions. However, if total extractions are more than the safe yield as a result of mining activities, the Conservation District would work with Cemex and/or Robertson's to provide the replenishment obligation. Therefore, aggregate mining is not anticipated to 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 mean groundwater table level over time. Potential impacts to groundwater levels are less than significant and mitigation is not required.

Water Conservation

The Proposed Projects include maintenance of existing Conservation District water conservation/recharge facilities and construction of recharge basins (spreading grounds) to be operated by the SBVMWD on Conservation District lands. As outlined above, to meet future demands in the IRWMP Region, the Conservation District will need to import an average of about 62,000 AFY of water each year. During wet years over 37,000 AFY of water would be stored. In dry years, 50,000 AFY would be pumped from storage, thereby reducing the Conservation District service area's dry year need from the State Water Project to 12,000 AFY. The Conservation District's ultimate direct delivery need is about 30%, leaving 18% or 19,000 AFY deficit in dry years. As outlined in the IRWMP, a storage program is currently being developed (the proposed Water Conservation Activities evaluated as part of this DEIS/SEIR) that would store enough water upstream of the Conservation District's service area to make up for this deficit during dry years. Therefore, implementation of the Proposed Projects would help

implement the Upper Santa Ana River Watershed IRWMP to ensure reliability of the SBBA. Therefore, water conservation improvements and maintenance would not 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 mean groundwater table level over time. Potential impacts to groundwater levels are less than significant and mitigation is not required.

Wells and Water Infrastructure

The SBVMWD plans to construct eight new wells, and the City of Redlands plans to construct one new well. As the SBBA is adjudicated, and therefore, has restricted pumping and is monitored by the Western-San Bernardino Watermaster, the additional pumping associated with new wells would be monitored along with other users in the basin, for any pumping beyond the safe yield. Due to the Conservation District's large credit, it is not anticipated that replenishment obligations would be required in the near future even if there is pumping beyond the safe yield in the current drought conditions. However, if total extractions are more than the safe yield the Conservation District would work with the SBVMWD and City of Redlands to provide the replenishment obligation. Therefore, the proposed wells and water infrastructure Projects are not anticipated to 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 mean groundwater table level over time. Potential impacts to groundwater levels are less than significant and mitigation is not required.

Transportation

The Proposed Projects include additional land be designated for additional rights-of-way as well as associated roadway improvements. The roadway improvements would result in an increase in impermeable surfaces, however, this increase would not be substantial and would not substantially interfere with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local mean groundwater table level over time. Potential impacts to groundwater levels are less than significant and mitigation is not required.

Flood Control

Construction, operation and maintenance of flood control facilities such as storm drain outlets and earthen/rock levees would not substantially increase the amount of impermeable surfaces within the Plan Area and therefore the ability for water infiltration to occur. Therefore, construction, operation and maintenance of flood control facilities would not interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local mean groundwater table level over time. Potential impacts to groundwater levels are less than significant and mitigation is not required.

Trails

Construction, operation and maintenance of existing trails would not substantially increase the amount of impermeable surfaces within the Plan Area, and therefore, the ability of water to infiltrate. All trails

would be located on or along existing streets, service roads, or old railroad beds. Therefore, trail improvements would not substantially interfere with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local mean groundwater table level over time. Potential impacts to groundwater levels are less than significant and mitigation is not required.

Habitat Enhancement and Monitoring

Restoration activities include easements and land dedication, control of invasive species (e.g., mowing, hand clearing), species surveys and research, vegetation management, etc. The proposed enhancement and monitoring does not include activities that would increase impermeable surfaces. Therefore, restoration activities would not substantially interfere with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local mean groundwater table level over time. Potential impacts to groundwater levels are less than significant and mitigation is not required.

Agriculture

There is a 6.7-acre citrus grove operated within the Plan Area. Although this activity requires maintenance of access roads and irrigation infrastructure, these activities would not substantially increase the amount of impermeable surfaces that would interfere with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local mean groundwater table level over time. Potential impacts to groundwater levels are less than significant and mitigation is not required.

The potential impacts to groundwater from the proposed Alternative B are anticipated to be less than significant and no mitigation is required.

Drainage Patterns and Drainage Systems

HYD-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? ***Determination: Less Than Significant Impact.***

Aggregate Mining

The proposed expansion of Cemex and Robertson's mining operations would result in expansion of existing operations into adjacent undisturbed areas of the Plan Area. The existing mining operations and proposed expansions are located within the larger floodplain of the upper Santa Ana River and tributaries including Mill Creek, Plunge Creek and City Creek as shown in Figure 3.3-1, *Surface Hydrology*, but not within the active low flow channels of these drainage features.

Expanded mining operations would modify both disturbed and undisturbed landscapes in the Plan Area. This would alter surface topography and, consequently, has the potential to affect drainage patterns in the affected areas. Modification of drainage patterns could result in additional erosion and siltation

impacts, if BMPs used to prevent or minimize erosion are not implemented. Removal of vegetation could also result in increased water and wind erosion as the soils are exposed and no longer stabilized by vegetation and their roots.

As outlined in the Mining and Reclamation Plan for Cemex, the Cemex quarries are protected on the north and east by flood control facilities associated with Plunge Creek, including berms and basins. The Santa Ana River main channel is located to the south. Flooding in the Plan Area from the Santa Ana River main channel has been significantly reduced by construction of the Seven Oaks Dam.

As outlined in the Mining and Reclamation Plan for Robertson's, the Plunge Creek Quarry is designed to become a part of the East Basin flood control basin, and as such, is susceptible to flooding during mining. The mine plan calls for the construction of a flood control berm on the south side of the quarry to control Plunge Creek flood flows. The berm design would be reviewed and approved by the San Bernardino County Flood Control District. The Silt Pond Quarry is bordered on the north by a berm and the Plunge Creek east basin constructed for flood control; on the east by Orange Street and upstream quarries; to the south by vacant land and the Santa Ana River; and to the west by additional quarries. The completion of the Seven Oaks Dam limits future flooding in the wash. All of these facilities would greatly reduce and likely eliminate any significant natural runoff into the Silt Pond Quarry. The East Quarry South is bordered by the remainder of the East Quarry North on the north, numerous Conservation District berms and basins to the east, and the Santa Ana River channel to the south. The Seven Oaks Dam upstream greatly reduces the likelihood of any significant natural runoff into the East Quarry.

The expanded mining operations would occur adjacent to the existing quarries and processing sites and would continue to be located outside of the low flow channels of the Santa Ana River, Plunge Creek and City Creek. Expansion of mining operations would not include any earthmoving activities or structures that would alter the course of these drainages. Existing berms around quarries would be extended along with expansion of quarries to continue to prevent storm water from these drainages in larger events from flowing into them. Therefore, the expanded mining operations would not alter the course of a stream or river (Santa Ana River, Plunge Creek, City Creek), in a manner which would result in substantial erosion or siltation on- or off-site. Potential impacts are less than significant, and no mitigation is required.

Water Conservation

Maintenance of existing Conservation District facilities would not substantially alter the existing drainage pattern of the area. Most of the Conservation District facilities including the basins, spreading grounds, stockpile and processing areas, and roads are located outside of the low flow channels of the Santa Ana River or Plunge Creek. No new channels or dikes that would redirect flows would be constructed and maintenance of the existing channels and dikes would not alter the course of the Santa Ana River or Plunge Creek (Conservation District facilities are not located in or adjacent to Mill Creek or City Creek). The proposed SBVMWD planned basins are not located within low flow channels of the Santa Ana River or Plunge Creek and would not redirect the course of these drainages. Although

construction of these basins would alter the existing drainage pattern within the immediate area, by retaining flows and allowing them to infiltrate as compared to allowing them to sheet flow across the site, this moderate modification would not result in significant erosion or siltation on- or off-site.

The proposed water conservation construction and maintenance would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site. Therefore, impacts would be less than significant, and no mitigation is required.

Wells and Water Infrastructure

The construction of new wells and associated connector pipelines would not occur in the low flow channels of the Santa Ana River, Mill Creek, Plunge Creek or City Creek and would not alter the course of these drainages. A few of the connector pipelines would cross the Santa Ana River, however, as they would be located under the streambed they would not alter the course of the Santa Ana River. Since the footprints of new well sites are small, approximately 0.25 acre per well, they would not result in substantial alteration of the existing drainage pattern of the areas where they would be located. Maintenance of existing pipelines and canals would not alter the drainage pattern of the areas where they are located and would not alter the course of any drainage. The proposed new wells and infrastructure and their maintenance would not substantially alter the existing drainage pattern of the sites or larger 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. Potential impacts are less than significant and no mitigation is required.

Transportation

The proposed expansion of existing roads and maintenance would involve construction that would cross the active channels of the Santa Ana River, Plunge Creek, and City Creek; however, there are existing bridges where Alabama Street, Orange Street, Boulder Avenue, and Greenspot Road cross these drainages. Existing bridges would be widened as necessary to accommodate the proposed expansions but would not alter the existing drainage pattern of the low flow channels of the Santa Ana River, Plunge Creek, and City Creek, such that substantial erosion or siltation on- or off-site would result. Potential impacts are less than significant, and no mitigation is required.

Flood Control

Although the Plunge and Elder Creek Multipurpose Habitat Enhancement and Flood Control Reasonably Foreseeable Project would result in modification to the low flow channel of Plunge Creek, the end result is to restore a braided channel structure in Plunge Creek, providing additional SBKR habitat and restoring flows in Plunge and Elder Creeks above Orange Street, which is impeded by sedimentation in the stream channels. Implementation of this Project would not alter the existing drainage pattern of Plunge Creek in a way that would result in substantial erosion or siltation on- or off-site. Ongoing maintenance of channels, access roads and levees would not alter the existing drainage pattern of the

active channels of the Santa Ana River, Plunge Creek, or City Creek, such that substantial erosion or siltation on- or off-site would result. New drainage facilities at Church Street, Judson Street, Orange Street, and Wabash Street would convey water runoff from areas south of the Santa Ana River down into the low flow channel. However, the storm drain outlets would generally be at grade and would direct water runoff in a downstream direction consistent with the existing drainage pattern of the Santa Ana River. Therefore, potential impacts regarding existing drainage patterns and potential substantial erosion and/or siltation are less than significant and no mitigation is required.

Trails

The development and operations of the proposed trail system would utilize existing roads and access easements. Since no substantial grading or alteration of natural areas would be conducted, the development and operation of trails would not substantially alter the existing drainage pattern of the areas they are located in or alter the course of a drainage. Therefore, impacts would be less than significant, and no mitigation is required.

Habitat Enhancement and Monitoring

Restoration activities include control of invasive species, relocation of covered species, monitoring, surveys and research, and vegetation management. Since no additional grading or substantial alteration of natural areas would be conducted, restoration activities would not substantially alter the existing drainage pattern of the areas they are located in or alter the course of a drainage. Therefore, impacts would be less than significant, and no mitigation is required.

Agriculture

There is a 6.7-acre citrus grove operated within the Plan Area. Although this activity requires maintenance of access roads and irrigation infrastructure, these activities would not substantially alter the existing drainage pattern of the grove area or alter the course of a drainage. Potential impacts are less than significant, and mitigation is not required.

Flooding Hazards

HYD-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? ***Determination: Less Than Significant Impact.***

HYD-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 sources of polluted runoff? ***Determination: Less Than Significant Impact.***

HYD-7: Would the Project place housing within a 100-year flood hazard area as mapped on a Federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map? ***Determination: No Impact.***

HYD-8: Would the Project place within a 100-year flood hazard area structures which would impede or redirect flood flows? ***Determination: Less Than Significant Impact.***

HYD-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? ***Determination: Less Than Significant Impact.***

HYD-10: Would the Project result in inundation by seiche, tsunami, or mudflow? ***Determination: Less Than Significant Impact.***

The proposed expansion of Cemex and Robertson's mining operations would result in expansion of existing operations into adjacent undisturbed areas of the Plan Area. The existing mining operations and proposed expansions are located within the larger floodplain of the upper Santa Ana River and tributaries including Mill Creek, Plunge Creek and City Creek as shown in Figure 3.3-1, *Surface Hydrology*, but not within the low flow channels of these drainage features. Impacts to the floodplain are covered below. The proposed expansion of mining operations would not alter the course of a stream or river. The expansion of haul routes would increase the amount of compacted soils and therefore impervious surfaces. However, this increase is not substantial and would not substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site. The expansion of quarries would result in areas where water would infiltrate readily and would not increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site. Therefore, impacts would be less than significant.

The expansion of haul routes would increase the amount of compacted soils, and therefore, would increase impervious surfaces. However, this increase is not substantial and would not substantially increase the rate or amount of surface runoff that exceeds the capacity of existing or planned stormwater drainage systems. The expansion of quarries would result in areas where water would infiltrate readily and thus would not increase the rate or amount of surface runoff.

The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs) identify areas subject to flooding during the 100-year storm event. Based on these FIRM maps and as indicated in the previously referenced Figure 3.3-1, *Surface Hydrology*, portions of the Plan Area within and adjacent to the Santa Ana River, Mill Creek, Plunge Creek, and City Creek are within the 100-year floodplain (or flood hazard zone), and portions of the Plan Area that are at higher elevations and between these drainages are within the 500-year floodplain.

Although portions of the Plan Area are located within the 100-year floodplain, the Proposed Projects/Covered Activities do not involve the construction of housing and would not place housing or other structures that would impede flood flows within a mapped 100-year flood hazard area. The

proposed Plunge Creek Habitat Enhancement project (CD.06) and proposed Elder/Plunge Creek Restoration project (FC.09) would result in modifications to the flow of the lower reach of Plunge Creek on-site, however, these would not impede flows and would restore the stream to a more natural state. The Proposed Projects/Covered Activities would not substantially alter the existing 100-year floodplain. Therefore, no impacts would occur, and no mitigation is required.

The existing and expanded mining operations are not located in the low flow drainage river or creek beds of the Santa Ana River, Plunge Creek, or City Creek. The closest point at which one of these drainage courses comes to an active quarry is downstream of Boulder Avenue/Orange Street where Plunge Creek is located just north of Robertson's East Basin Plant. There is an existing berm that prevents low flows from Plunge Creek from entering the quarry and mining operation areas. Berms would be expanded along with expansion of quarries and mining operation areas to keep flows in the Santa Ana River, Plunge Creek, or City Creek in their active channels and would not impede or redirect flows. Expanded haul routes would not impede or redirect flood flows. Mining operations would not include the construction of other structures within a 100-year floodplain that would impede or redirect flood flows.

The maintenance of existing water conservation, road, well and grove facilities would not affect flood flows. A few of the water well connector pipelines would cross the Santa Ana River; however, as they would be located under the streambed they would not impede or redirect flood flows. No other facilities are proposed to be constructed within the low flow channels of the Santa Ana River, Plunge Creek, City Creek or Mill Creek that would impede or redirect flood flows. Existing bridges, where Alabama Street, Orange Street, Boulder Avenue, and Greenspot Road cross drainages would be widened as necessary to accommodate the proposed expansions but would not impede or redirect flood flows.

The Plan Area is located within the Seven Oaks Dam inundation zone. No housing would be constructed that would directly increase the number of people within the Plan Area. The expansion of mining operations would result in an increase in employees working in the Plan Area. Construction of roads, wells, pipelines, storm drain outlets, etc. would result in temporary increases of construction workers in the Plan Area. An increase in recreation use of the Plan Area would be expected with designation of trails throughout the Plan Area for public use. However, implementation of the Projects would not result in a substantial increase in the number of people working or recreating in or traveling through the Plan Area. As the Proposed Project would not substantially increase the number of people within the Plan Area and the Seven Oaks Dam has been designed to withstand an earthquake magnitude measuring 8+ on the Richter Scale, it would not expose people or structures to a significant risk of loss, injury, or death involving flooding as a result of the failure of the Seven Oaks Dam, and potential impacts are less than significant.

The San Bernardino County Flood Control District maintains flood control levee structures on the Santa Ana River, Mill Creek, Plunge Creek and City Creek within the Plan Area. These levees help direct stormwater flows through the Plan Area, prevent flooding of areas adjacent to these drainage courses, and protect existing roadways. Since the levees retain stormwater runoff within the improved channels

and do not fully impound stormwater as would a dam, they do not have standing large bodies of water behind them. Therefore, the Project would not expose people or structures to a significant risk of loss, injury, or death involving flooding as a result of the failure of a levee and potential impacts are less than significant.

Seiches are oscillations in enclosed bodies of water that are caused by a number of factors, most often wind or seismic activity. Lakes in seismically active areas are also at risk from seiches. There are no large bodies of water within the Plan Area or immediately upstream of the Plan Area.

The Plan Area is approximately 52 miles northeast of and inland from the Pacific Ocean and is not subject to a tsunami.

A mud slide (also known as a mudflow) occurs when there is fast-moving water and a great volume of sediment and debris that surges down a slope, stream, canyon, arroyo, or gulch with tremendous force. They are similar to flash floods and can occur suddenly without time for adequate warning. Mudflows can ruin substantial infrastructure improvements with the force of the flow itself or by burying improvements with mud and debris. Although the western portion of the Plan Area would normally be susceptible to mudslides, the operation of the Seven Oaks Dam effectively eliminates downstream transport of sediment larger than sand from the Santa Ana Watershed, fulfilling one of the purposes of the dam.

Since there are no lakes or oceans in proximity of the Plan Area, there is not a risk of seiches or tsunamis occurring within the Plan Area. The Seven Oaks Dam provides protection from mudslides from the San Bernardino Mountains. Therefore, impacts would be less than significant, and no mitigation is required.

Water Conservation

Maintenance of existing Conservation District facilities would not substantially alter the existing drainage pattern of the area. Most of the Conservation District facilities including the basins, spreading grounds, stockpile and processing areas and roads are located outside of the active channels of the Santa Ana River or Plunge Creek. No new channels or dikes that would redirect flows would be constructed and maintenance of the existing channels and dikes would not alter the course of the Santa Ana River or Plunge Creek (Conservation District facilities are not located in or adjacent to Mill Creek or City Creek). The proposed SBVMWD planned basins are not located within low flow channels of the Santa Ana River or Plunge Creek and would not redirect the course of these drainages. Although construction of these basins would alter the existing drainage pattern within the immediate area, by retaining flows and allowing them to infiltrate as compared to allowing them to sheet flow across the site, this moderate modification would not result in flooding on- or off-site. Therefore, impacts would be less than significant, and no mitigation is required.

Maintenance of existing Conservation District facilities would not increase impervious surfaces which would increase the amount of runoff water. The new SBVMWD recharge basins would result in areas where water would infiltrate readily and would not increase the rate or amount of surface runoff that

exceeds the capacity of existing or planned stormwater drainage systems. Therefore, impacts would be less than significant, and no mitigation is required.

Water conservation operations include ongoing maintenance of existing basins and facilities. No new facilities are proposed to be constructed within the low flow channels of the Santa Ana River, Plunge Creek, City Creek or Mill Creek that would impede or redirect flood flows. Therefore, there are no impacts and no mitigation is required.

Wells and Water Infrastructure

The construction of wells and associated connector pipelines would not occur in the low flow channels of the Santa Ana River, Mill Creek, Plunge Creek or City Creek and would not alter the course of these drainages. A few of the connector pipelines would cross the Santa Ana River; however, as they would be located underneath the streambed, they would not alter the course of the Santa Ana River. Since the footprints of new well sites are small, approximately 0.25 acre per well, they would not result in substantial increases in impermeable surfaces or alteration of the existing drainage patterns of the areas where they would be located. Maintenance of existing pipelines and canals would not alter the drainage pattern of the areas where they are located and would not alter the course of any drainage. The proposed new wells and infrastructure and their maintenance would not increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site. Therefore, impacts would be less than significant.

As the footprints of new well sites are small, approximately 0.25 acre per well, they would not result in substantial increases in impermeable surfaces that would increase the amount of water runoff. Maintenance of wells, pipelines and channels would not result in a substantial increase in impermeable surfaces. The proposed new wells and infrastructure and maintenance would not increase the rate or amount of surface runoff in a manner that exceeds the capacity of existing or planned stormwater drainage systems. Therefore, impacts would be less than significant, and no mitigation is required.

Water conservation operations include ongoing maintenance of existing basins and facilities. No new facilities are proposed to be constructed within the low flow channels of the Santa Ana River, Plunge Creek, City Creek or Mill Creek that would impede or redirect flood flows. Therefore, there are no impacts and no mitigation is required.

Transportation

The transportation Projects propose that additional land be designated for additional rights-of-way as well as associated roadway improvements. The roadway improvements would result in an increase in impermeable surfaces; however, this increase is not substantial and would not increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site. Therefore, impacts would be less than significant.

The proposed expansion and maintenance of existing roads would cross the low flow channels of the Santa Ana River, Plunge Creek, and City Creek and would be located in their respective 100-year and/or 500-year floodplains. However, there are existing bridges where Alabama Street, Orange Street, Boulder Avenue, and Greenspot Road cross these drainages. Existing bridges would be widened as necessary to accommodate the proposed expansions but would not impede or redirect flood flows. Potential Impacts are less than significant, and no mitigation is required.

Flood Control

Although the Plunge and Elder Creek Multipurpose Habitat Enhancement and Flood Control Reasonably Foreseeable Project would result in modification to the low flow channel of Plunge Creek, the end result is to restore a braided channel structure in Plunge Creek providing additional SBKR habitat and to restore flows in Plunge and Elder Creeks above Orange Street which are currently impeded by sedimentation in the stream channels. Implementation of this Project would not alter the existing drainage pattern of Plunge Creek in a way that would result in flooding on- or off-site. Ongoing maintenance of channels, access roads and levees would not increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site. New drainage facilities at Church Street, Judson Street, Orange Street, and Wabash Street would convey existing water runoff from areas south of the low flow channel of the Santa Ana River that currently sheet flow down into the river. Impacts are less than significant, and no mitigation is required.

Ongoing maintenance of channels, access roads and levees would not increase the rate or amount of surface runoff which would exceed the capacity of existing or planned stormwater drainage systems. New drainage facilities at Church Street, Judson Street, Orange Street, and Wabash Street would convey existing water runoff from areas south of the Santa Ana River that currently sheet flows down into the river. The storm drain outlets would generally be located at grade and direct flows in the existing downstream direction and thus would not impede or redirect flows of the Santa Ana River. The outlets would include energy dissipating design features to reduce potential impacts from erosion. Impacts are less than significant, and no mitigation is required.

The San Bernardino County Flood Control District maintains flood control levee structures on the Santa Ana River, Mill Creek, Plunge Creek and City Creek within the Plan Area. These levees help direct storm water flows through the Plan Area, prevent flooding of areas adjacent to these drainage courses, and protect existing roadways. The Flood Control District would maintain existing and proposed facilities. New drainage facilities at Church Street, Judson Street, Orange Street, and Wabash Street would convey existing water runoff from areas south of the Santa Ana River that currently sheet flows down into river. The storm drain outlets would generally be located at grade and direct flows in the existing downstream direction and thus would not impede or redirect flows of the Santa Ana River. The outlets would include energy dissipating design features to reduce potential impacts from erosion. Impacts are less than significant, and no mitigation is required.

Trails

The development and operations of the proposed trail system would utilize existing roads and access easements. Since no substantial grading or alteration of natural areas would be conducted, the development and operation of trails would not increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site. Also, the proposed trail system would utilize existing roads and access easements. Since no substantial grading or alteration of natural areas would be conducted, the development and operation of trails would not increase impervious surfaces or the rate or amount of surface water runoff that exceeds the capacity of existing or planned stormwater drainage systems. The development and operation of the proposed trail system would utilize existing roads and access easements. Since no substantial grading or alteration of natural areas would be conducted, the development and operation of trails would not impede or redirect flood flows. Therefore, impacts would be less than significant, and no mitigation is required.

Agriculture

There is a 6.7-acre citrus grove operated within the Plan Area. Although this activity requires maintenance of access roads and irrigation infrastructure, these activities would not increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site. In addition to any chemical treatments that may be required to maintain the plants, these activities would not increase impervious surfaces or, therefore, the rate or amount of water runoff that exceeds the capacity of existing or planned stormwater drainage systems. This citrus grove is not located within the 100-year floodplain, but is located within the 500-year floodplain of the Santa Ana River. Although this activity requires maintenance of access roads and irrigation infrastructure, these activities would not impede or redirect flood flows. Potential impacts are less than significant, and mitigation is not required.

Mitigation Measures

In addition, or concurrent with the NPDES requirements and the Mining and Reclamation Plans which were discussed above, the following measures are included as a means of avoiding and minimizing adverse impacts to hydrological resources that occur within the Plan Area:

HYD MM-1 Minimization of Construction Activity in Waters

Construction activity and access roads will be minimized to the extent practicable in all drainages, streams, pools, or other features that could be under the jurisdiction of the USACE, State Water Board, and/or CDFW. If impacts on these features are identified, a formal jurisdictional delineation and permit applications to the regulatory agencies may be required.

HYD MM-2 Reduction of Runoff and Siltation and Pollution Prevention

When stream flows must be diverted, the diversions will be conducted using sandbags or other methods requiring minimal instream impacts. Silt fencing of other sediment trapping materials will be installed at the downstream end of construction activity to

minimize the transport of sediments off site. Settling ponds where sediment is collected will be cleaned out in a manner that prevents the sediment from reentering the stream. Care will be exercised when removing silt fences, as feasible, to prevent debris or sediment from returning to the stream.

Erodible fill material will not be deposited into water courses. Brush, loose soils, or other similar debris material will not be stockpiled within the stream channel or on its banks.

Covered Activities near to or within the HCP Preserve or other natural areas will incorporate plans to ensure that runoff discharged is not altered in an adverse way when compared with existing conditions, which includes landscape irrigation. Stormwater systems will be designed to prevent the release of sediments, toxins, chemicals, petroleum products, exotic plant materials, or other elements that might degrade or harm biological resources or ecosystem processes within the HCP Preserve.

HYD MM-3 Prevention of Water Pollution from Toxic Materials

Covered Activities within or adjacent to the HCP Preserve or other natural areas that use chemicals (herbicides, rodenticides, insecticides) or generate byproducts that are potentially toxic or may adversely affect wildlife and plant species, habitat, or water quality will incorporate measures to ensure that application of such chemicals does not result in any discharge to the HCP Preserve or other natural areas.

Equipment storage, fueling, and staging areas will be located on upland sites with minimal risks of direct drainage into the HCP Preserve or other natural areas. These designated areas will be located in such a manner as to prevent any runoff from entering sensitive habitat including riparian areas. Precautions will be taken to prevent the release of toxic substance into surface waters. Project-related spills of hazardous materials will be reported to appropriate entities—including but not limited to the applicable jurisdictional city or county, USFWS, CDFW, and RWQCB—and will be cleaned up immediately and contaminated soils removed to approved disposal areas.

RESIDUAL IMPACTS AFTER MITIGATION

With implementation of the mitigation measures and NPDES requirements Mining and Reclamation Plans, all hydrological and water quality impacts would be reduced to less than significant levels, and there would be no residual impacts regarding hydrology or water quality.

4.3.1.3 Alternative C: 2008 Land Management Plan

Surface Water and Quality

Implementation of the 2008 Land Management Plan would allow or expansion of mining activities on 32 more acres than the 2019 HCP (Alternative B: Proposed Action/Projects). Although mining activities have the potential to affect surface and groundwater quality in the Plan Area by increasing sediment and other pollutants in stormwater runoff, there are multiple regulations that require mining operations to implement BMPs to protect water quality, including the Clean Water Act Section 402 NPDES program and the Surface Mining and Reclamation Act (SMARA).

As with Alternative B, aggregate mining under Alternative C would also be required to comply with these regulations. With implementation of BMPs outlined in the SWPPPs prepared for compliance with the General Construction Activity and Industrial Stormwater permits, as well as the Mining and Reclamation Plans, the expanded mining operations would not be expected to substantially degrade water quality and the potential to violate water quality standards of water bodies in or downstream of the Plan Area would be significantly reduced.

Most of the proposed construction Projects would disturb an area greater than one acre, and thus a General Construction Activity permit is required as well as preparation and implementation of a SWPPP. These construction Projects include: new recharge basins, road widening, the Plunge and Elder Creek Multipurpose Habitat Enhancement and Flood Control Reasonably Foreseeable Project, and new drainage facilities. With implementation of BMPs outlined in the SWPPPs, construction of these facilities would not be expected to substantially degrade water quality and the potential to violate water quality standards or waste discharge requirements would be significantly reduced. Potential impacts are less than significant, and no mitigation is required.

The construction proposed wells and associated connector pipelines would only disturb small areas, less than an acre in size, and would not significantly increase the exposure of sediments or other pollutants to stormwater runoff. Maintenance of existing Conservation District facilities, roadways, flood control facilities, and trails would not substantially disturb large areas within the Plan Area that could increase the exposure of sediments to stormwater runoff.

The 2008 Land Management Plan does not include avoidance and minimization measures that are in the HCP in Alternative B which were developed to ensure continued grove operation and maintenance activities would not result in pollutants such as pesticides and fertilizers being conveyed downstream in stormwater runoff. Thus, the 2008 Land Management Plan would have a higher potential for pollutants from the citrus grove and other maintenance activities conducted in the Plan Area to affect water quality as compared to Alternative B.

However, with required implementation of BMPs outlined in the SWPPPs for construction projects and mining operations, and due to the small size of areas disturbed from other construction and maintenance activities the 2008 Land Management Plan would not violate water quality standards or

waste discharge requirements or substantially degrade water quality, and potential impacts are less than significant.

Groundwater and Quality

This alternative would allow for expansion of aggregate mining on approximately 32 more acres than the 2019 HCP. Additional mining would require additional water for processing. Water for processing is pumped from the groundwater. However, as with Alternative B, the additional pumping and water use for aggregate mining and for SBVMWD and Redlands new wells would be monitored along with other users in the basin for any pumping beyond the safe yield. Due to the Conservation District's large credit, it is not anticipated that replenishment obligations would be required in the near future even if there is pumping beyond the safe yield in the current drought conditions. However, if total extractions are more than the safe yield as a result of mining activities or for water supply, the Conservation District would work with Cemex, Robertson's, SBVMWD and/or Redlands to provide the replenishment obligation.

The other Projects included in the 2008 Land Management Plan, including roadway improvements and maintenance, construction, operation and maintenance of flood control facilities, operation and maintenance of trails and the citrus grove, and habitat enhancement and monitoring, would not substantially increase impermeable surfaces or interfere with groundwater recharge. Therefore, implementation of the 2008 Land Management Plan would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level.

Drainage Patterns and Drainage Systems

As with Alternative B, the expanded mining operations in the 2008 Land Management Plan would occur adjacent to the existing quarries and processing sites and would continue to be located outside of the low flow channels of the Santa Ana River, Plunge Creek and City Creek. Expansion of mining operations would not include any earthmoving activities or structures that would alter the course of these drainages. Existing berms around quarries would be extended along with expansion of quarries to continue to prevent storm water from these drainages in larger events from flowing into them. Therefore, the expanded mining operations would not alter the course of a stream or river (Santa Ana River, Plunge Creek, City Creek), in a manner which would result in substantial erosion or flooding on- or off-site.

The other Projects included in the 2008 Land Management Plan would not alter the course of a stream or river. No new water conservation channels or dikes that would redirect flows or the proposed SBVMWD planned basins are located within low flow channels of streams and would not redirect the course of these drainages. Although construction of these basins would alter the existing drainage pattern within the immediate area, by retaining flows and allowing them to infiltrate as compared to allowing them to sheet flow across the site, this moderate modification would not result in significant erosion or flooding on- or off-site. The construction of new wells and associated connector pipelines would not occur in the low flow channels of the Santa Ana River, Mill Creek, Plunge Creek or City Creek

and would not alter the course of these drainages. A few of the connector pipelines would cross the Santa Ana River, however, as they would be located under the streambed they would not alter the course of the Santa Ana River.

The proposed expansion of existing roads and maintenance would involve construction that would cross the active channels of the Santa Ana River, Plunge Creek, and City Creek; however, there are existing bridges where Alabama Street, Orange Street, Boulder Avenue, and Greenspot Road cross these drainages. Existing bridges would be widened as necessary to accommodate the proposed expansions but would not alter the existing drainage pattern of the low flow channels of the Santa Ana River, Plunge Creek, and City Creek. Since no substantial grading or alteration of natural areas would be conducted, the development and operation of trails and the citrus grove and habitat enhancement and monitoring would not alter the existing drainage pattern.

Proposed projects included in the 2008 Land Management Plan would not alter the course of a stream or river in the Plan Area (Santa Ana River, Plunge Creek, City Creek), in a manner which would result in substantial erosion or flooding on- or off-site. Potential impacts are less than significant, and no mitigation is required.

Flooding Hazards

Although portions of the 2008 Land Management Plan are located within the 100-year floodplain, the proposed projects do not involve the construction of housing and would not place housing within a mapped 100-year flood hazard area.

The existing and expanded mining operations are not located in the low flow drainage river or creek beds of the Santa Ana River, Plunge Creek, or City Creek. Expanded haul routes would not impede or redirect flood flows. Mining operations would not include the construction of other structures within a 100-year floodplain that would impede or redirect flood flows.

Proposed projects included in the 2008 Land Management Plan also would not impede or redirect flood flows. A few of the water well connector pipelines would cross the Santa Ana River; however, as they would be located under the streambed they would not impede or redirect flood flows. No other facilities are proposed to be constructed within the low flow channels of the Santa Ana River, Plunge Creek, City Creek or Mill Creek that would impede or redirect flood flows. Existing bridges, where Alabama Street, Orange Street, Boulder Avenue, and Greenspot Road cross drainages would be widened as necessary to accommodate the proposed expansions but would not impede or redirect flood flows.

Since there are no lakes or oceans in proximity of the 2008 Land Management Plan, there is not a risk of seiches or tsunamis occurring within the Plan Area. The Seven Oaks Dam provides protection from mudslides from the San Bernardino Mountains. Therefore, impacts would be less than significant, and no mitigation is required.

Determination: There would be less than significant impacts related to water quality, groundwater supplies, drainage patterns and drainage systems, and flooding and other water related hazards within the Plan Area from the 2008 Land Management Plan.