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5.9 MINERAL RESOURCES

This section of the EIR evaluates the potential for implementation of the City of San Bernardino General Plan Update, and the Arrowhead Springs Specific Plan to impact mineral resources in the City San Bernardino and its Sphere of Influence (SOI). This document focuses on those issues determined to be potentially significant as described in the Initial Study completed for this project (See Appendix A).

The analysis in this section is based in part on the following technical report(s):

- *City of San Bernardino General Plan*, Envicom Corporation, Adopted June 2, 1989,
- *DMG Open-File Report 94-08*, Department of Conservation, Division of Mines and Geology, 1995

Minerals are defined as any naturally occurring chemical elements or compounds, formed from inorganic processes and organic substances. Mina ble minerals or an "ore deposit" is defined as a deposit of ore or mineral having a value materially in excess of the cost of developing, mining and processing the mineral and reclaiming the project area. Mineral resources are an integral part of development and economic well-being of a city or county. The wise conservation, extraction and processing of those mineral resources is essential to meeting the needs of society.

Mineral deposits are important to many industries, including construction, transportation, and chemical processing. The first mineral commodity selected by the State Mining and Geology Board for classification by the State Geologist was construction aggregate-sand, gravel, and crushed rock. The value of mineral deposits is enhanced by their close proximity to urban areas; however, these mineral deposits are endangered by the same urbanization that enhances their value. The non-renewable characteristic of mineral deposits necessitates the careful and efficient development of mineral resources to prevent the unnecessary waste of these deposits due to careless exploitation and uncontrolled urbanization.

Mineral Resource Classification

The California Geological Survey Mineral Resources Project provides information about California’s non-fuel mineral resources. The Mineral Resources Project classifies lands throughout the State that contain regionally significant mineral resources as mandated by the Surface Mining and Reclamation Act (SMARA) of 1975. Non-fuel mineral resources include metals such as gold, silver, iron, and copper; industrial metals such as boron compounds, rare-earth elements, clays, limestone, gypsum, salt and dimension stone; and construction aggregate including sand, gravel, and crushed stone. Development generally results in a demand for minerals, especially construction aggregate. The presence or absence of significant sand, gravel, or stone deposits that are suitable sources of aggregate are classified as Mineral Resource Zones (MRZs), as described below. The intent of classification is to assist lead agencies, planners, and the public in the wise use, management, and conservation of California’s mineral resources. As California’s population continues to expand, the demand for minerals, especially building construction such as aggregates, will similarly grow.

- **MRZ-1** – A Mineral Resource Zone where adequate information indicates that no significant mineral deposits are present or likely to be present.
- **MRZ-2** – A Mineral Resource Zone where adequate information indicates that significant mineral deposits are present, or a likelihood of their presence and development should be controlled.
- **MRZ-3** – A Mineral Resource Zone where the significance of mineral deposits cannot be determined from the available data.
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- **MRZ-4** – A Mineral Resource Zone where there is insufficient data to assign any other MRZ designation.

5.9.1 Environmental Setting

5.9.2.1 San Bernardino General Plan

The City of San Bernardino lies on a broad, gently sloping lowland that flanks the southwest margin of the San Bernardino Mountains. The lowland is underlain by alluvial sediments eroded from bedrock in the adjacent mountains and washed by rivers and creeks into the valley region where they have accumulated in layers of gravel, sand, silt and clay. Sediment accumulation has continued for a few million years, during which time increasing thicknesses of sediments have gradually buried the original hill and valley topography of the Bunker Hill-San Timoteo Basin. Shandin Hills and other smaller hill areas in the basin are remnants of the original topography.

The San Bernardino Mountains, Shandin Hills, and other hilly areas are comprised predominantly of Mesozoic and older crystalline basement terrain. Younger sedimentary deposits consist of late Pleistocene alluvium outcropping on the older alluvial fans northeast of the City, and underlying the younger Holocene alluvium of the San Bernardino Valley. These younger sediments accumulated in two different depositional environments. Alluvial fans that extend downslope from the mouths of the San Bernardino Mountain canyons consist of coarser grained and more poorly sorted boulders, cobbles, gravels, sands, silts and clays that decrease in size and abundance to the southwest. Floodplain deposits from the Santa Ana River and Cajon and Lytle Creeks in the vicinity of metropolitan San Bernardino are comprised predominantly of sand, sandy silt, and silt. The alluvial fan and floodplain deposits interfinger and form a highly variable and often times laterally discontinuous layering of various sizes of alluvial materials.

The sediments accumulated in the alluvial fans and floodplain deposits described above have been classified by the California Department of Conservation, Division of Mines and Geology. In the San Bernardino City area, the bulk of construction aggregate is found in the natural sand and gravel deposits of Cajon Wash, Lytle Creek, Warm Creek, City Creek, and the Santa Ana River. Figure 5.9-1 depicts the MRZs as described earlier for the City of San Bernardino and its SOI and as classified in the 1995 California Department of Conservation, Division of Mines and Geology Open-File Report 94-08 (CDC-DMG). The primary goal of mineral resource classification is to identify regionally significant mineral deposits in an effort to conserve and develop them for anticipated aggregate production needs of the region. The remainder of the City is designated as MRZ-1 MRZ-3 and MRZ-4 zones.

The State of California designates a large meandering swath of MRZ-2 area predominately near the western and southern City boundaries. The MRZ-2 areas indicate the existence of construction aggregate deposits that meet certain State criteria for value and marketability based solely on geologic factors. By statute, the Board does not utilize “existing land uses” as a criterion in its classification of Mineral Resource Zones. This may often result in the classification of MRZs which are already developed in a variety of uses and intensities, rendering these areas unsuitable for mineral production. However, additional State studies in San Bernardino include the criteria of “existing land use.” This helps identify resource sectors that contain aggregate resources which remain potentially available from a land use perspective. The regionally significant construction aggregate sectors within City planning areas are depicted in Figure 5.9-2. Private lands within the City limit that are part of the significant construction aggregate sectors are designated IE, Industrial Extractive and IH, Industrial Heavy, to facilitate mineral resource development.
Mineral Resource Zones

MRZ-1  No Significant Mineral Deposits are Likely to be Present
MRZ-2  Significant Mineral Deposits are Likely, Development Should be Controlled
MRZ-3  Significant Mineral Deposits Cannot be Determined from Available Data
MRZ-4  Insufficient Data to Assign any other MRZ Designation

City Boundary
Sphere of Influence Boundary

Note: MRZs reflected and refined in the Industrial Extractive (IE) designation.

Source: California Dept. of Conservation, DMG, Open-File Report 04-08 (1985)
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The presence of resource sectors require that a General Plan show the location of the sectors and incorporate policies for the management of their mineral resources. If a city proposes a land use that is incompatible with mineral extraction in or near resource sectors, it must reveal why the mineral resource is not being protected. In 1985, the City of San Bernardino requested deletion of 12 of their 31 designated Mineral Resource Sectors. Since that time, at least five of the sectors had been deleted by the State, and seven sectors were still being opposed by the City for mineral resource designation (Figure 5.9-2).

5.9.2.2 Arrowhead Springs Specific Plan

The Arrowhead Springs planning area is located in the northeastern portion of the San Bernardino planning area. Generally, the Arrowhead Springs Specific Plan area has the same geological setting as the City of San Bernardino as they are interconnected. However, while the City lies mainly at the base of the steeper slopes of the San Bernardino Mountains, the Arrowhead Springs planning area extends up the flank of the San Bernardino Mountains. The Arrowhead Springs Specific Plan area lies at an elevation of 1,480 feet to 2,400 feet above mean sea level (msl). Arrowhead Springs is located in the Waterman Canyon and East Twin Creek Watersheds and three primary water courses flow through the planning area: the East Twin Creek; Strawberry Creek; and West Twin Creek which flows through Waterman Canyon. The Arrowhead Springs planning area can be described as hilly marked with sharp terrain, valleys, and inaccessible steep slopes of the San Bernardino Mountains. In general the Arrowhead Springs Specific Plan area consists of numerous canyons primarily facing south.

Within areas of the upper plateau and ridges, near the south, the subgrade soils are comprised of moderately dense, deeply weathered gravelly sand with some silts. Within the upper plateau and hillsides near the north, subgrades are expected to consist of grayish brown to gray highly fractured metamorphic rocks, weathered gravelly sand of decomposed granitic origin, and/or calcite as derived from old hot springs. Within the canyon bottoms, subgrade soils consist of alluviums of silty fine sand and fine to medium coarse gravelly sand of variable consistency along with numerous cobbles and isolated rocks. Subgrade soils underlying the upper described alluviums are expected to consist of well consolidated gravelly sand or weathered bedrock of siltstone/sandstone origin, generally compressible in nature.

The sediments accumulated in the alluvial fans and floodplain deposits described above have been partially classified by the California Department of Conservation, Division of Mines and Geology. The Arrowhead Springs area is predominately outside the limit of aggregate classification and zoned as MRZ-4. However, the most southern portion of the area is within the limit of classification and zoned as MRZ-3. Figure 5.9-1 indicates that the MRZ-3 zone lacks adequate information for the Arrowhead Springs area. The primary goal of mineral resource classification was to identify regionally significant mineral deposits in an effort to conserve and develop them for anticipated aggregate production needs of the region. The Arrowhead Springs area does not have sufficient data available to make a determination of any significant mineral deposits.

According to Appendix G of the CEQA Guidelines, a project would normally have a significant effect on the environment if the project would:

- **M-1** 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.
- **M-2** 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.
The following impact analysis addresses thresholds of significance for which the Initial Study disclosed potentially significant impacts. The applicable thresholds are identified in parenthesis after the impact statement.

5.9.4.1 San Bernardino General Plan

GP IMPACT 5.9-1: PROJECT IMPLEMENTATION WOULD NOT RESULT IN THE LOSS OF AVAILABILITY OF A KNOWN MINERAL RESOURCE. [THRESHOLDS M-1 AND M-2]

Impact Analysis: As previously stated the City of San Bernardino further evaluated areas listed by the State as containing regionally significant construction aggregate sectors as shown on Figure 5.9-2 and determined several sectors could not be protected due to incompatible land use and such sectors were opposed by the City. The reasons these sectors are opposed by the City include; rapid growth rate (in excess of 25 percent), identification of rare and endangered plant species, traffic and safety concerns, proximity to highly urbanized areas, inadequate freeway access, and incompatibility with surrounding land uses (lack of a adequate buffer zone).

The aggregate sectors identified on Figure 5.9-2 (not including the contested areas) all fall within Public Flood Control or Industrial land use designations where mineral extraction is an allowed use and thus build-out of the General Plan as proposed does not represent a loss in availability of a known mineral resource.

Relevant General Plan Policies and Programs

The following are City of San Bernardino General Plan policies and programs related to mineral resources:

Natural Resources Element

Policy 12.4.1: Continue to document current extraction sites, including sand and gravel quarries, including the status and duration of existing permits and approvals.

Policy 12.4.2: Impose conditions and enforce mitigation measures on mining operations to reduce dust, noise, and safety hazards associated with removal of construction aggregate and minimize impacts on adjacent properties and environmental resources.

Policy 12.4.3: Determine and designate approved access routes to and from mineral resource sectors to minimize the impacts to vehicular circulation on City streets.

Policy 12.4.4: Require that any applications to permit uses other than mineral extraction or the interim uses defined in areas designated IE, Industrial Extractive include findings to be prepared by the project proponent outlining the reasons why mining is not a feasible use and how the deletion of the area as a potential mineral resource supply impacts the regional supply of aggregate resources.

Policy 12.4.5: Require that the operation and reclamation of surface mines be consistent with the State Surface Mining and Reclamation Act (SMARA) and the Development Code.

Policy 12.4.6: Designate post aggregate extraction reclamation procedures to mitigate potential environmental impacts and safety hazards. Long-term monitoring of the effectiveness of the reclamation procedures should be considered as an integral part of the program.

Policy 12.4.7: Restrict incompatible land uses within the impact area of existing or potential surface mining areas.
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**Policy 12.4.8:** Require that new, non-mining land uses adjacent to existing mining operations be designed to provide a buffer between the new development and the mining operations. The buffer distance shall be based on an evaluation of noise, aesthetics, drainage, operating conditions, biological resources, topography, lighting, traffic, operating hours, and air quality.

### 5.9.4.2 Arrowhead Springs Specific Plan

**AHS Impact 5.9-1:** PROJECT IMPLEMENTATION WOULD NOT RESULT IN THE LOSS OF AVAILABILITY OF A KNOWN MINERAL RESOURCE. [THRESHOLDS M-1 AND M-2]

**Impact Analysis:** The Arrowhead Springs area is predominately outside the limit of aggregate classification and zoned as MRZ-4. However, the most southern portion of the area is within the limit of classification and zoned as MRZ-3. The area of Arrowhead Springs is not considered likely to contain significant sources of mineral resources. Furthermore due to its mountainous terrain and limited access roads pockets of aggregates which may be in the low lying stream bed areas are not likely to be economically viable. Additionally the MWD pipeline would preclude mining in areas where it is located. There are currently no aggregate mining activities in the area. At this time there is no evidence of economically viable mineral resources within the area and development pursuant to the Specific Plan is not anticipated to result in loss of significant resources. However, the future economic feasibility of mining any of the MRZ-3 or MRZ-4 resources would depend on future market conditions and the resource availability within the production-consumption area.

- The intent of SMARA is to promote production and conservation of mineral resources, minimize environmental effects of mining and to ensure that mined lands will be reclaimed to conditions suitable for alternative uses. The act mandates a two-phased mineral resources process called classification-designation. The California Division of Mines and Geology is responsible for the classification phase of the process and the State Mining and Geology Board is responsible for designating areas of significance that are known to contain significant mineral deposits. This objective of providing the information is to provide a basis for local land use decision makers in which the availability of the mineral resource is acknowledged.

- California aggregate companies are heavily regulated and must meet the requirements of up to 80 agencies overseeing federal, state, county, and local laws. Regulations cover environmental, technical, health and safety, aesthetic, cultural, land use, and reclamation standards. Obtaining an operating permit is both intensive and extensive, involving in-depth studies and thorough data compilation. Consulting with communities, regulatory agencies, government officials, and all other interested or affected stakeholders is an equally important procedure. The permitting process often takes from 2-10 years to complete, includes substantial up-front investment by the company, and offers no guarantee of project approval. Once the permit is granted, the regulatory process continues throughout the life of the operation with continued submission of data, and inspections.

Upon implementation of project design features, regulatory requirements, and standard conditions of approval, the following impacts would be less than significant:

**GP Impact 5.9-1** The aggregate sectors identified by the State fall within use designations where mineral extraction is an allowed use; thus build-out of the General Plan as proposed does not represent a loss in availability of a known mineral resource.
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Although not specifically identified by the State, the Arrowhead Springs Specific Plan area is not likely to yield economically significant aggregate sectors due to mountainous terrain and preexisting uses.

5.9.7.1 San Bernardino General Plan

No significant impacts were identified and no mitigation measures are necessary.

5.9.7.2 Arrowhead Springs Specific Plan

No significant impacts were identified and no mitigation measures are necessary.

No significant adverse impacts relating to mineral resources were identified and no mitigation measures are necessary.