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Construction Emissions

The proposed project includes construction of three separate project components: the Centralized Disinfection Facility, pipeline installation, and improvement of well sites. Construction of the Centralized Disinfection Facility would involve site preparation, excavation of approximately 100 cubic yards (yds³) of material from the hillside to create a space for the disinfection equipment, construction of a pad, and installation of the proposed equipment. Pipeline installation would involve installing (trenching and covering) an average of 200 linear feet of pipeline per day. Improvements at each well site would involve construction of pad and installation of a surge tank and minor installation of other equipment.

MGA quantified the project's construction emissions using the California Emissions Estimator Model (CalEEMod version 2011.1.1). Table 5-1 identifies the resulting estimated construction emissions (before mitigation) and compares the project's emissions to the SCAQMD's regional significance thresholds. As shown in this table, construction of the proposed project would not generate air pollutants in excess of the SCAQMD's regional significance thresholds.

| Table 5-1 | | | | | | |
|---|-------------|-------------|------------|------------------|-------------------|-----------------|
| Estimated Construction Emissions (without Mitigation) | | | | | | |
| (lbs/day on the worst day) | | | | | | |
| | CO | NOx | VOC | PM ₁₀ | PM _{2.5} | SO ₂ |
| Centralized Disinfection Facility | 14.4 | 23.6 | 2.9 | 3.5 | 2.2 | 0 |
| Eastside Well Collector Pipeline | 20.6 | 28.3 | 4.8 | 3.6 | 2.3 | 0 |
| Well Site Improvements | 8.2 | 12.6 | 1.8 | 1.1 | 0.9 | 0 |
| Total Concurrent Construction Emissions* | 43.2 | 64.6 | 9.5 | 8.1 | 5.3 | 0.1 |
| SCAQMD Regional Thresholds | 75 | 550 | 100 | 150 | 55 | 150 |
| Significant? | No | No | No | No | No | No |
| <p>* The worst day of concurrent construction activities was assumed to include the combined maximum daily emissions of pipeline installation, well site construction, and the excavation phase of the disinfectant facility construction. This worst day scenario represents a conservative analysis, since it is not likely that pipeline installation and construction of the disinfectant facility would occur concurrently. Differences between total concurrent construction emissions and the sum of the three project components presented in this table is a result of rounding.</p> <p>Note: Calculations assumed watering of the site twice a day during grading and demolition activities as required by SCAQMD Rule 403.</p> | | | | | | |

In addition to comparing project emissions with the Regional Significance Thresholds, Table 5-2, measures the project's emissions against the Localized Significance Thresholds (LSTs). Since the proposed project would not install a stationary pollution source (e.g., on-site generator, power plant, refinery, factory, etc.), only the construction LSTs apply to this project. The appropriate LSTs vary on a project-by-project basis depending on the project's location, the acreage of the construction site, and the distance to the nearest sensitive receptor. The proposed project is located in the West San Gabriel Valley (Source Receptor Area 8) and the project's construction sites would be less than one acre. Sensitive receptors (residences) are located immediately adjacent to portions of the proposed construction sites. These measurables were used to calculate the appropriate screening-level LSTs for the project, based on the SCAQMD's Mass Rate Look Up Tables¹. In this case, the most stringent screening-level LSTs in the West San Gabriel Valley apply to the project (i.e., the LSTs for a project site up to 1 acre with sensitive receptors within 25 meters).

MGA quantified the emissions from on-site project construction activities using the CalEEMod. (Offsite construction emissions are not relevant to the LST analysis since they do not affect the localized air quality conditions.) Table 5.2 compares the peak-day onsite construction emissions (before mitigation) to the

¹ South Coast Air Quality Management District. *Final Localized Significance Threshold Methodology, Appendix C Mass Rate Look Up Tables*. Revised 2008 with Appendix C Revised 2009.

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relevant LSTs. As shown in this table, construction of the proposed project would not generate air pollutants in excess of the SCAQMD's LSTs.

| Table 5-2 Localized Significance Threshold Analysis (without Mitigation) (lbs/day on the worst day for onsite construction activities only) | | | | |
|--|-------------|-------------|------------------------|-------------------------|
| | CO | NOx | PM₁₀ | PM_{2.5} |
| Centralized Disinfection Facility | 13.2 | 23.1 | 3.2 | 2.2 |
| Eastside Well Collector Pipeline | 18.4 | 27.2 | 2.3 | 2.2 |
| Well Site Improvements | 7.0 | 12.1 | 0.8 | 0.8 |
| Worst Case Construction Site Emissions* | 18.4 | 27.2 | 3.2 | 2.2 |
| SCAQMD Localized Significance Thresholds | 535.0 | 69.0 | 4.0 | 3.0 |
| Significant? | No | No | No | No |
| <p>* The worst case construction site would consist of excavation and paving at the same time for pipeline installation. Since each of the three construction components would occur at different locations, each construction site is measured individually against the LSTs. Note: Calculations assumed watering of the site twice a day during grading and demolition activities as required by SCAQMD Rule 403.</p> | | | | |

Since the proposed project would not generate air pollutants in excess of the SCAQMDs regional or localized significance thresholds, the proposed project would not cause or substantially contribute to an existing or projected air quality violation, would not generate pollutants in excess of SCAQMD standards, and would not result in a cumulative considerable net increase of any criteria pollutant.

d. *Expose sensitive receptors to substantial pollutant concentrations?* (2)

Certain residents, such as the very young, the elderly and those suffering from certain illnesses or disabilities, are particularly sensitive to air pollution and are considered sensitive receptors. In addition, active park users, such as participants in sporting events, are sensitive air pollutant receptors due to increased respiratory rates. Land uses where sensitive air pollutant receptors congregate include schools, day care centers, parks, recreational areas, medical facilities, rest homes, and convalescent care facilities. Residences of homes and long-term care facilities may be subject to both long-term/chronic and acute exposures to poor air quality, whereas park users are primarily at risk from acute exposure to air quality.

Sensitive receptors in the project vicinity include the residential areas along the proposed pipeline alignments, residential areas adjacent to the Jones Reservoir/Hamilton Park site, and park uses at Hamilton Park. In many cases, sensitive receptors exist immediately adjacent to the project sites.

To assess a project's impact on nearby sensitive receptors from acute (short-term or hotspot) air pollutant concentrations, the project's construction emissions were compared to the SCAQMD's Localized Significance Thresholds (LSTs). As discussed in Section 5(b and c) and shown in Table 5-2, none of the proposed construction sites would generate air pollution in excess of the screening-level LSTs. Projects that do not generate air pollution in excess of the screening-level LSTs are assumed to not cause concentrations of air pollution that would be harmful to sensitive receptors.

In addition to acute air pollutant exposure, sensitive receptors could be affected by long-term or chronic exposure to poor air quality. In 1998, the California Air Resources Board (CARB) identified particulate matter from diesel-fueled engines (Diesel Particulate Matter or DPM) as a Toxic Air Contaminant (TAC). Impacts from toxic substances are related to cumulative exposure and are assessed over a 70-year period.

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It is assumed that the majority of the heavy construction equipment utilized during construction would be diesel fueled and would emit DPM. Demolition and grading for the project, when the peak diesel exhaust emissions would occur, is expected to take approximately three months, cumulatively, with all construction expected to take approximately eight months and occur in several distinct locations. Because of the relatively short duration of construction compared to a 70-year lifespan, diesel emissions resulting from the construction of the project are not expected to result in a significant impact.

Since the proposed project would not generate air pollutants in excess of the screening-level LSTs and because of the short duration of project construction, the proposed project would not significantly impact sensitive air pollutant receptors.

e. *Create objectionable odors affecting a substantial number of people? (2, 26)*

During construction, equipment exhaust and certain construction materials (e.g., asphalt) may be mildly odorous. However, such odors would be limited to the immediate vicinity of the construction site, would dissipate rapidly, and would cease at the end of construction. Operation of the proposed Centralized Disinfection Facility includes injecting sodium hypochlorite (chlorine) and ammonium hydroxide (ammonia) into the water stream. If not contained, these materials can produce odors. However, these materials would be stored within enclosed tanks and would be injected directly into the water pipeline in an underground vault. Thus, no emission of odors from storage or use of sodium hypochlorite or ammonium hydroxide is anticipated. Therefore, the proposed project would not create objectionable odors affecting a substantial number of people, and would have no associated significant impacts.

6. BIOLOGICAL RESOURCES. Would the project:

a. *Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service? (6)*

The only vegetation that would be affected by the proposed project would be landscaping. The proposed location for the new Centralized Disinfection Facility at the Jones Reservoir is within the confines of an existing reservoir facility in a developed suburban neighborhood. To install this facility a pad would be cut into the existing earthen slope that covers the south perimeter of the buried reservoir tank. This slope is landscaped sparsely with ornamental trees and shrubs, nearly all of which would not be affected by construction. Two non-native shrubs – a bougainvillea (*Bougainvillea sp.*) and a bottle brush (*Callistemon citrinus*) – may need to be removed to clear a pad for the proposed facility.

Given the limited amount and type (non-native) of vegetation on the site and in the vicinity, there are no unique, rare or endangered plant or animal species or habitats that would be impacted by the project. Table 6-1 identifies the threatened and endangered species that have the potential to occur in the general vicinity of Pasadena (i.e., the area encompassing the Pasadena Quadrangle and the surrounding eight quadrangles), as identified in the California Natural Diversity Database. As demonstrated in this table, no threatened or endangered species occur or are expected to occur onsite.

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| Table 6-1 Federal Candidate, Threatened, and Endangered Species with Potential to Occur in the Project Vicinity | | |
|---|--|--|
| Species/Status | Habitat and Distribution | Probability of Occurrence |
| Plants | | |
| San Fernando Valley Spineflower (<i>Chorizanthe parryi</i> var. <i>Fernandina</i>) Federal Status: Candidate CA Status: Endangered | Occurs in coastal sage scrub habitats. The species historical range extended from Lake Elizabeth in Los Angeles County to near Del Mar in San Diego County. | Absent. No suitable habitat onsite and no impervious surface within the project's footprint. |
| Marsh sandwort (<i>Arenaria paludicola</i>) Federal Status: Endangered CA Status: Endangered | Occurs in freshwater wetlands and wetland-riparian habitat. Native to the western coast of North America; now limited to several specific locals. | Absent. No suitable habitat onsite and no impervious surface within the project's footprint. |
| Braunton's milk-vetch (<i>Astragalus brauntonii</i>) Federal Status: Endangered CA Status: None | Occurs in chaparral, valley grassland, coastal sage scrub, closed-cone pine forest habitats. | Absent. No suitable habitat onsite and no impervious surface within the project's footprint. |
| Coast dunes milk-vetch (<i>Astragalus tener</i> var. <i>titi</i>) Federal Status: Endangered CA Status: Endangered | Occurs in coastal strand, northern coastal scrub, coastal sage scrub, wetland-riparian habitats. Historically, populations occurred in San Diego, Los Angeles, and Monterey counties. The current known populations are limited to specific locals in Monterey County. | Absent. No suitable habitat onsite and no impervious surface within the project's footprint. |
| Nevin's barberry (<i>Berberis nevinii</i>) Federal Status: Endangered CA Status: Endangered | Occurs in chaparral, foothill woodland, and coastal sage scrub habitats. The range of known populations extends from northern San Diego County to the Santa Clarita Valley (Los Angeles County). | Absent. No suitable habitat onsite and no impervious surface within the project's footprint. |
| Slender-horned spineflower (<i>Dodecahema leptoceras</i>) Federal Status: Endangered CA Status: Endangered | Occurs in chaparral and coastal sage scrub habitats. Only known to occur in the foothills of the San Gabriel Mountains (Los Angeles County), the San Bernardino Mountains (San Bernardino County), and the San Jacinto Mountains (western Riverside County). | Absent. No suitable habitat onsite and no impervious surface within the project's footprint. |
| Gambel's water cress (<i>Nasturtium gambelii</i>) Federal Status: Endangered CA Status: Threatened | Aquatic species that occurs along the edges of permanent, slow-moving streams and at the edges of freshwater marshes or lakes. Historical range extended from San Bernardino County on the south to San Luis Obispo County on the north, and in central Mexico. Now only known to occur in southern San Luis Obispo County and western Santa Barbara County. | Absent. No suitable habitat onsite and no impervious surface within the project's footprint. |
| Brand's star phacelia (<i>Phacelia stellaris</i>) Federal Status: Candidate CA Status: None | Occurs in coastal strand and coastal sage scrub habitats in coastal areas and on dunes. | Absent. No suitable habitat onsite and no impervious surface within the project's footprint. |

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| Table 6-1 Federal Candidate, Threatened, and Endangered Species with Potential to Occur in the Project Vicinity | | |
|--|---|--|
| Species/Status | Habitat and Distribution | Probability of Occurrence |
| Amphibians | | |
| Arroyo toad <i>(Anaxyrus californicus)</i> Federal Status: Endangered CA Status: None | Occurs in washes, arroyos, sandy riverbanks, and riparian areas with willows, sycamores, oaks, cottonwoods. The species range extends from northwest Baja California to San Luis Obispo County. | Absent. No suitable habitat onsite; no arroyos or streams onsite or in the vicinity. |
| Sierra Madre yellow-legged frog <i>(Rana muscosa)</i> Federal Status: Endangered CA Status: None | Occurs in lakes, ponds, meadow streams, rocky streams, isolated pools, and sunny riverbanks. Range includes mountains extending from Palomar Mountain in the south to the Sierra Nevadas in the north. | Absent. No suitable habitat onsite; no streams or other surface water onsite or in the vicinity. |
| Fish | | |
| Santa Ana sucker <i>(Catostomus santaanae)</i> Federal Status: Threatened CA Status: None | Native range includes Los Angeles, San Gabriel, and Santa Ana River drainages in southern California. | Absent. No ephemeral or perennial streams or surface water onsite. |
| Birds | | |
| Western yellow-billed cuckoo <i>(Coccyzus americanus occidentalis)</i> Federal Status: Candidate CA Status: Endangered | A riparian obligate species that breeds in cottonwood-willow riparian habitat and forages in the riparian canopy. Historic range from southern British Columbia to the Rio Grande in northern Mexico. Currently limited to several isolated locations in California, Arizona, and western New Mexico. | Absent. No riparian habitat onsite and no willow or cottonwood trees onsite. |
| Southwestern willow flycatcher <i>(Empidonax traillii extimus)</i> Federal Status: Endangered CA Status: Endangered | Nests in dense riparian habitats near saturated soils, standing water, or nearby streams. Breeding range includes southern California, Arizona, New Mexico, extreme southern portions of Nevada and Utah, extreme southwest Colorado, and western Texas. | Not expected. No nesting or breeding habitat onsite or in the vicinity. |
| Least Bell's vireo <i>(Vireo bellii pusillus)</i> Federal Status: Endangered CA Status: Endangered | Occurs in riparian habitat, preferably dense willow-riparian habitat. The species' foraging habitat can extend from the riparian habitat into adjacent chaparral, coastal sage scrub, or desert scrub habitats | Not expected. No riparian habitat onsite or in the vicinity and no foraging habitat onsite or in the vicinity. |
| Coastal California gnatcatcher <i>(Poliptila californica californica)</i> Federal Status: Threatened CA Status: None | Occurs in coastal sage scrub below 2,500 feet in elevation in southern California. | Not expected. No coastal sage scrub habitat onsite or in the vicinity. |
| Sources: California Natural Diversity Database Calflora Database CaliforniaHerps.com Center for Plant Conservation National Collection Plant Profile Database Flora of North America (eFloras.org) Database USDA PLANTS Database USFWS Species Profile Database | | |

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b. *Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service? (6)*

There are no designated natural communities in the City. The Final EIR for the 1994 Land Use and Mobility Elements contains the best available City-wide documented biological resources. This EIR identifies the natural habitat areas within the City’s boundaries to be the upper and lower portions of the Arroyo Seco, the City’s western hillside area, and Eaton Canyon.

The proposed Centralized Disinfection Facility would be located within the confines of the existing developed Jones Reservoir site, which is located within a developed urban environment. A small portion of a manmade slope would be disturbed to create an approximately 500-square-foot (ft²) pad for the proposed water disinfection facility. However, this area does not contain any native vegetation. Therefore, the proposed project would not impact any natural communities, sensitive or otherwise.

c. *Have a substantial adverse effect of federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means? (6)*

Natural drainage courses with definable bed and bank and their adjacent wetlands are “waters of the United States” and fall under the jurisdiction of the U.S. Army Corps of Engineers (USACE) in accordance with Section 404 of the Clean Water Act. Jurisdictional wetlands, as defined by the USACE are lands that, during normal conditions, possess hydric soils, are dominated by wetland vegetation, and are inundated with water for a portion of the growing season.

The proposed location for the Centralized Disinfection Facility is on a developed parcel of land in an existing municipal reservoir facility and park compound that does not include any discernable drainage courses, inundated areas, wetland vegetation, or hydric soils, and thus does not include USACE jurisdictional drainages or wetlands. Therefore, the proposed construction would have no impact to federally protected wetlands as defined by Section 404 of the Clean Water Act.

The segment of proposed pipeline along Foothill Boulevard crosses Eaton Wash. However, at this location, under the I-210 Foothill Freeway, Eaton Wash is an underground storm drain and not an open channel. The installation of the proposed pipeline would occur in the soils and base material above the Eaton Wash facility and would not affect Eaton Wash in any way. Therefore, the proposed project would have no impact on this otherwise jurisdictional waterway.

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d. *Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites? (6)*

| | | | |
|--------------------------|--------------------------|--------------------------|-------------------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
|--------------------------|--------------------------|--------------------------|-------------------------------------|

The Centralized Disinfection Facility would be located on the site of an existing municipal facility that is fully developed with utility facilities. All other proposed improvements would occur within the existing City right-of-way (primarily City streets). The adjacent environment is considered urban and developed where the presence of wildlife is rare and limited. As such, the installation of these facilities would not result in a barrier to wildlife migration or movement. Therefore, the project will have no impact to wildlife movement.

e. *Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance? (24)*

| | | | |
|--------------------------|--------------------------|--------------------------|-------------------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
|--------------------------|--------------------------|--------------------------|-------------------------------------|

The only local ordinance protecting biological resources in the City of Pasadena is Ordinance No. 6896 "City Trees and Tree Protection Ordinance". The proposed project would not impact any trees, protected or otherwise. Therefore, the project will have no impact to protected biological resources or preserved trees.

f. *Conflict with the provisions of an adopted Habitat Conservation Plan (HCP), Natural Community Conservation Plan (NCCP), or other approved local, regional, or state habitat conservation plan? (6, 9)*

| | | | |
|--------------------------|--------------------------|--------------------------|-------------------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
|--------------------------|--------------------------|--------------------------|-------------------------------------|

Currently, there are no adopted Habitat Conservation or Natural Community Conservation Plans within the City of Pasadena. There are also no approved local, regional or state habitat conservation plans. Therefore, implementation of this project will not conflict with the provisions of any conservation plans.

7. CULTURAL RESOURCES. Would the project:

a. *Cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5? (6)*

| | | | |
|--------------------------|--------------------------|--------------------------|-------------------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
|--------------------------|--------------------------|--------------------------|-------------------------------------|

The Jones Reservoir is an existing facility constructed in 1949. This reservoir is completely buried. The ancillary buildings on the site are a collection of non-descript utilitarian structures, which were constructed over time for the purpose of housing PWP equipment and facilities, including a pump house, an electrical room, a chlorine enclosure, and an electrical substation. None of the structures or facilities on-site are unique in regard to architectural design, nor are they examples of technological innovations that would require preservation. Additionally, since the site is fully developed with various types of apparatus utilized to conduct the daily operations of a reservoir, it is unlikely that the excavation that may be required to install the new equipment would unearth any items of historical value. The entire site has been previously graded to construct the facilities that are currently present. Furthermore, the proposed project would not materially change the use or appearance of the Jones Reservoir site. Therefore, the proposed improvements at the

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Jones Reservoir site (i.e., the Centralized Disinfection Facility and the overflow grate) would not cause a substantial adverse change in the significance of a historical resource, and the project would have no related impacts.

Likewise, none of the other project components would cause an adverse change in the significance of a historical resource. The Eastside Well Collector pipelines would be installed within existing City right-of-way, primarily beneath City streets. No buildings would be removed or impacted for this pipeline installation. Similarly, no buildings would be removed or impacted by the installation of surge tanks and other improvements at the involved well sites. Therefore, none of the project components would cause a substantial adverse change in the significance of a historical resource, and the project would have no related impacts.

b. *Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5? (6)*

AND

c. *Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature? (6)*

There are no known archeological resources, paleontological resources, or unique geologic features at any of the project locations. The proposed disinfection facility would be constructed on a portion of the Jones Reservoir site that has previously been developed as a reservoir, and the minimal grading that may occur would be into soils that have previously been disturbed (i.e., a manmade slope). The Eastside Well Collector pipelines would be installed within existing City right-of-way, primarily beneath City streets; and the proposed improvements at the well sites would be primarily aboveground on disturbed lots. No areas with undisturbed natural earth materials exist within the project boundaries that may contain undiscovered archeological, paleontological or geologic materials. Therefore, the proposed project would have no impact on archaeological resources, paleontological resources, or unique geologic features.

d. *Disturb any human remains, including those interred outside of formal ceremonies? (6)*

There are no known human remains at any of the project locations. The project locations are not part of formal cemeteries and are not known to have been used for disposal of historic or prehistoric human remains. Thus, human remains are not expected to be encountered during construction of the proposed project. In the unlikely event that human remains are encountered during project construction, State Health and Safety Code Section 7050.5 requires the project to halt until the County Coroner has made the necessary findings as to the origin and disposition of the remains pursuant to Public Resources Code Section 5097.98. Compliance with these regulations would ensure the proposed project would not result in impacts due to disturbing human remains.

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8. ENERGY. Would the proposal:

a. *Conflict with adopted energy conservation plans? (4)*

The project does not conflict with the 1983 adopted Energy Element of the General Plan or Pasadena's Green City Action Plan. The project would result in a nominal (if any) increase in electrical consumption. No increase in water pumping or production is proposed, since groundwater withdrawal is limited by the Raymond Basin Watermaster and the City currently maximizes pumping rights. The only new equipment that would be electrified would be the proposed replacement motor for the Jourdan well, chemical metering pumps (duplex pumps at 0.75 hp each), and security lighting. The replacement motor is expected to be more energy efficient than the existing motor due to advances in technology. Energy use for new security lighting would be minimal.

b. *Use non-renewable resources in a wasteful and inefficient manner? (4)*

The long-term impact from increased energy use by this project is not significant in relationship to the number of customers currently served by the electrical and gas utility companies. The project does not involve the use of non-renewable resources in a wasteful or inefficient manner.

9. GEOLOGY AND SOILS. Would the project:

a. *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? Refer to Division of Mines and Geology Special Publication 42. (17)*

According to the 2002 adopted Safety Element of the City of Pasadena's General Plan, the San Andreas Fault is a "master" active fault and controls seismic hazard in Southern California. This fault is located approximately 21 miles north of Pasadena.

The County of Los Angeles and the City of Pasadena are both affected by Alquist-Priolo Earthquake Fault Zones. Pasadena is in four USGS Quadrants, the Los Angeles, and the Mt. Wilson quadrants were mapped for earthquake fault zones under the Alquist-Priolo Act in 1977. The Pasadena and Condor Peak USGS Quadrangles have not yet been mapped per the Alquist-Priolo Act.

These Alquist-Priolo maps show only one Fault Zone in or adjacent to the City of Pasadena, the Raymond (Hill) Fault Alquist-Priolo Earthquake Fault Zone. This fault is located primarily south of City limits, however, the southernmost portions of the City lie within the fault's mapped Fault Zone. The 2002 Safety Element of the City's General Plan identifies the following three additional zones of potential fault rupture in the City:

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- The Eagle Rock Fault Hazard Management Zone, which traverses the southwestern portion of the City;
- The Sierra Madre Fault Hazard Management Zone, which includes the Tujunga Fault, the North Sawpit Fault, and the South Branch of the San Gabriel Fault. This Fault Zone is primarily north of the City, and only the very northeast portion of the City and portions of the Upper Arroyo lie within the mapped fault zone.
- A Possible Active Strand of the Sierra Madre Fault, which appears to join a continuation of the Sycamore Canyon Fault. This fault area traverses the northern portion of the City as is identified as a Fault Hazard Management Zone for Critical Facilities Only.

No portions of the proposed project are within any of these potential fault rupture zones. Therefore, the proposed project would not expose people or structures to potential substantial adverse effects caused by the rupture of a known fault and no related impacts would result from the proposed project.

ii. *Strong seismic ground shaking? (17)*

The risk of earthquake damage is minimized because new structures are required to be built according to the Uniform Building Code and other applicable codes, and are subject to inspection during construction. Structures for human habitation must be designed to meet or exceed California Uniform Building Code standards for Seismic Zone 4. Conforming to these required standards will ensure the proposed project would not result in significant impacts due to strong seismic ground shaking.

iii. *Seismic-related ground failure, including liquefaction as delineated on the most recent Seismic Hazards Zones Map issued by the State Geologist for the area or based on other substantial evidence of known areas of liquefaction? (19,17)*

The project site is not within a Liquefaction Hazard Zone or Landslide Hazard Zone as shown on Plate P-1 of the 2002 Safety Element of the General Plan. This Plate was developed considering the Liquefaction and Earthquake-Induced Landslide areas as shown on the State of California Seismic Hazard Zone maps for the City. Therefore, the project will have no impacts from seismic related ground failure.

iv. *Landslides as delineated on the most recent Seismic Hazards Zones Map issued by the State Geologist for the area or based on other substantial evidence of known areas of landslides? (19,17)*

The project site is not within a Landslide Hazard Zone as shown on Plate P-1 of the 2002 Safety Element of the General Plan. This Plate was developed considering the Earthquake-Induced Landslide areas as shown on the State of California Seismic Hazard Zone maps for the City. Therefore, the project will have no impacts from seismic induced landslides.

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b. *Result in substantial soil erosion or the loss of topsoil?*

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The Jones Reservoir site is an existing municipal facility that has existed in that location since 1949. The top of the buried reservoir facility is fully improved as a public park with recreational uses such as baseball diamonds, tennis and basketball courts. Buildings and structures located at the northeast corner of the park site and along the southern boundary of the site include paved areas and buildings and structures that house the facilities that accommodate reservoir operations.

There is a significant amount of top soil on top of the buried reservoir in areas that are improved for active recreational uses, primarily for play fields and baseball diamonds. However, this top soil would not be disturbed because of construction or operational activities of the reservoir. Top soil that would be disturbed, however, includes the area of the proposed location of the new disinfection facility where excavation and grading of a hillside embankment will be required. The estimated volume of cut would be 100 cubic yards.

Construction activities may result in the potential for soil erosion. However, adherence to sediment control measures, including slope stabilization and erosion/sedimentation control devices, would be incorporated into the project design during construction, as required by the Clean Water Act and the South Coast Air Quality Management District (Rule 403). Operation of the proposed project would not result in the potential for substantial soil erosion or loss of topsoil. Therefore, the proposed project would not cause any significant impacts related to soil erosion or the loss of topsoil.

c. *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? (17)*

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|--------------------------|--------------------------|--------------------------|-------------------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
|--------------------------|--------------------------|--------------------------|-------------------------------------|

None of the project components are located on known unstable soils or geologic units. Therefore, the proposed project would not cause on- or off-site landslides, lateral spreading, subsidence, liquefaction or collapse. Modern engineering practices and compliance with established building standards, including the California Building Code, will ensure the project will not cause any impacts from unstable geologic units or soils.

d. *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? (17)*

| | | | |
|--------------------------|--------------------------|--------------------------|-------------------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
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According to the 2002 adopted Safety Element of the City's General Plan the project site is underlain by relatively level older alluvial fan derived from the San Gabriel Mountains. This soil consists primarily of sand and gravel and is in the low to moderate range for expansion potential.

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| Potentially Significant Impact | Significant Unless Mitigation is Incorporated | Less Than Significant Impact | No Impact |
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e. *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 wastewater?*

There is an existing sewer and wastewater disposal system in the City of Pasadena. Therefore, soil suitability for septic tanks or alternative wastewater disposal systems is not applicable in this case, and the proposed project would have no associated impacts.

10. GREENHOUSE GAS EMISSIONS. Would the project:

a. *Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?*

AND

b. *Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases?*

“Greenhouse gases” (so called because of their role in trapping heat near the surface of the earth) emitted by human activity are implicated in global climate change, commonly referred to as “global warming.” These greenhouse gases contribute to an increase in the temperature of the earth by allowing incoming short wavelength visible sunlight to penetrate the atmosphere, while restricting outgoing terrestrial long wavelength heat radiation from exiting the atmosphere. The principal greenhouse gases (GHGs) include carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O). Collectively GHGs are measured as carbon dioxide equivalent (CO₂e).

Fossil fuel consumption in the transportation sector (on-road motor vehicles, off-highway mobile sources, and aircraft) is the single largest source of GHG emissions, accounting for approximately half of GHG emissions globally. Industrial and commercial sources are the second largest contributors of GHG emissions with about one-fourth of total emissions. According to climate scientists, California and the rest of the developed world will have to cut emissions by 80 percent from today’s levels to stabilize the amount of CO₂ in the atmosphere and prevent the most severe effects of global climate change.

California has passed several bills and the Governor has signed at least three executive orders regarding greenhouse gases. GHG statutes and executive orders (EO) include Assembly Bill (AB) 32, Senate Bill (SB) 1368, Executive Order (EO) S-03-05, EO S-20-06 and EO S-01-07. AB 32, the California Global Warming Solutions Act of 2006, is one of the most significant pieces of environmental legislation that California has adopted. Most notably AB 32 mandates that by 2020, California’s GHG emissions be reduced to 1990 levels. California Executive Order S-3-05 provides a more long-range goal and requires an 80 percent reduction of GHG from 1990 levels by 2050.

To meet AB 32 mandates and reduce GHG emissions to 1990 levels means cutting approximately 30 percent from business-as-usual emissions levels projected for 2020, or about 15 percent from today’s levels. On a per-capita basis, that means reducing our annual emissions of 14 tons of CO₂ equivalent for every man, woman and child in California down to about 10 tons per person by 2020.

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| Potentially Significant Impact | Significant Unless Mitigation is Incorporated | Less Than Significant Impact | No Impact |
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Mestre Greve Associates (MGA) prepared a Greenhouse Gas Assessment for the proposed project (dated March 13, 2012) to quantify and evaluate the project's GHG emissions. The project's Greenhouse Gas Assessment is included as Appendix B of this Initial Study and the discussion below is based on this technical report.

The proposed project is not expected to result in a considerable long-term increase in GHG emissions. The only GHG emissions that would be generated by operation of the Eastside Well Collector and Centralized Disinfection Facility system would be from electricity consumption from pumping of water at the well sites and emissions from operation, maintenance, and material delivery vehicles. The amount of water pumped from the wells is limited by groundwater pumping rights. Therefore, there would be no increase in water production due to the project and, as a result, no increase in GHG emissions from electricity consumption.

Likewise operation and maintenance of the water system are existing activities and PWP would coordinate operation and maintenance of the proposed facilities with ongoing daily visits to the Jones Reservoir and Eastside Well sites. Thus, there would be no measurable increase in vehicle miles traveled (VMT) for the operation and maintenance of the proposed equipment. The only increase in VMT that would result from the project would be from periodic delivery of disinfectant agents to the disinfection facility. The sodium hypochlorite tank is expected to require refilling about every 23 days in normal operation and every 13 days during peak operation. The ammonium hydroxide tank is expected to require refilling about every 42 days during normal operation and every 25 days during peak operation. These materials would be delivered by trucks that generate GHG emissions. However, these emissions are extremely limited due to the infrequency of deliveries and may be partially offset by the reduction or possible elimination of delivery of disinfection agents (chlorine gas cylinders) to the individual well sites. Therefore, any potential increase in long-term GHG emissions would be considerably less than de minimis.

Construction of the project, however, would generate a measurable amount of GHG emissions from the use of construction equipment and from worker commute trips. MGA estimated the GHG emissions from construction using the CalEEMod (California Emissions Estimator Model) program (version 2011.1.1) published by the South Coast Air Quality Management District (SCAQMD). There are three primary construction activities associated with the project: (1) the installation of the pipelines connecting the existing wells to Jones Reservoir, (2) the installation of the disinfection facility adjacent to Jones Reservoir, and (3) the installation of surge tanks and other equipment at the well sites. The installation of the grating to improve the Jones Reservoir overflow device will not generate considerable GHG emissions.

The project's construction GHG emissions are presented in Table 10-1. For each construction activity the projected annual CO₂, CH₄, and N₂O emissions are presented for each construction activity. The total emissions from all construction activities are presented along with the average emissions amortized over a 30-year span, as recommended by the SCAQMD to account for the lifespan of the project.

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Less Than Significant Impact
No Impact

| Table 10-1 Greenhouse Gas Emissions (Metric Tons [MT]) | | | | |
|--|-----------------|-----------------|------------------|--------------------------------|
| | CO ₂ | CH ₄ | N ₂ O | CO ₂ e ¹ |
| Centralized Disinfection Facility | 56.9 | 0.0 | 0.0 | 57.1 |
| Eastside Well Collector Pipeline | 228.9 | 0.04 | 0.0 | 229.5 |
| Well Site Improvements | 35.5 | 0.0 | 0.0 | 35.6 |
| Total Construction Emissions² | 321.3 | 0.04 | 0.0 | 322.1 |
| Project Life Annual Emissions³ (MT/year) | 10.7 | 0 | 0 | 10.7 |
| ¹ A factor is applied to CH ₄ and N ₂ O emissions to equate the global warming potential of these pollutants to CO ₂ . CO ₂ e is the sum of all GHG pollutants emitted by the activity after the global warming potential factor has been applied to CH ₄ and N ₂ O. ² Differences between total construction emissions and the sum of the three project components presented in this table are a result of rounding. ³ Average emissions are amortized over a 30-year span, as recommended by the SCAQMD to account for the lifespan of the project. | | | | |

The City of Pasadena has not adopted any significance thresholds for GHG emissions and there are no adopted GHG significance thresholds that apply to the project. Both CARB and SCAQMD have been working to establish significance thresholds for GHG impacts and have published draft thresholds for review and comment, but no significance thresholds applicable to general projects have been adopted by these agencies. Nonetheless, CARB's and SCAQMD's proposed thresholds are discussed below and are used as guidance in a qualitative assessment of the project's GHG impact potential.

CARB released a Preliminary Draft Staff Proposal (Staff Proposal) on October 24, 2008 with the objective of developing interim significant thresholds for commercial and residential projects. CARB has proposed a threshold of 7,000 annual metric tons (MT/year) for industrial operational sources but this threshold has not been adopted. At this time, CARB has not proposed thresholds applicable for residential and commercial sources. Therefore, criteria for determining threshold levels for residential and commercial sources have yet to be defined. Under CARB's Staff Proposal, recommended approaches for setting interim significant thresholds for GHG under CEQA are underway. CARB staff proposes to define certain performance standards (e.g., for energy efficiency) by referencing or compiling lists from existing local, state or national standards. For some sub-sources of GHG emissions (e.g., construction, transportation, waste), CARB staff has not identified reference standards.

On December 5, 2008, SCAQMD adopted a GHG significance threshold for Stationary Sources, Rules and Plans where the SCAQMD is lead agency². The SCAQMD's draft GHG Significance Threshold establishes a 5-tier threshold flowchart, with Tier 3 being annual emission screening thresholds. For industrial stationary source projects the SCAQMD adopted a screening threshold of 10,000 MT CO₂e/year. This threshold was selected to capture 90% of the GHG emissions from these types of projects where the combustion of natural gas is the primary source of GHG emissions. SCAQMD concluded that projects with emissions less than the screening threshold would not result in a significant cumulative impact. While not adopted by SCAQMD Board, the Draft Guidance Document suggests a screening threshold for residential and commercial projects of 3,000 MT CO₂e/year. However, this screening threshold was not adopted.

At the most recent SCAQMD GHG working group meeting (November, 2009), SCAQMD staff presented two recommended options for screening thresholds for residential and commercial projects. The first option would have different thresholds for specific land uses. The proposed threshold for residential projects is 3,500 MT CO₂e/year, the commercial threshold is 1,400 MT CO₂e/year, and the mixed-use threshold is 3,000 MT CO₂e/year. The second option would apply the 3,000 MT CO₂EQ/year screening threshold for all

² South Coast Air Quality Management District. *Draft Guidance Document – Interim CEQA Greenhouse Gas (GHG) Significance Threshold*. December 5, 2008.

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| Potentially Significant Impact | Significant Unless Mitigation is Incorporated | Less Than Significant Impact | No Impact |
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commercial/residential projects. Lead agencies would be able to select either option. These thresholds are based on capturing 90% of the emissions from projects and requiring them to comply with the higher tiers of the threshold (i.e., performance requirements or GHG reductions outside of the project). Again, none of the SCAQMD's screening thresholds, other than the industrial stationary source threshold, have been adopted.

Tier 4 in SCAQMD's Draft Guidance Document suggests three options for projects that exceed the screening thresholds, although the specifics of Tier 4 have not been adopted. Under the first option, the project would be excluded if design features and/or mitigation measures resulted in a certain percent lower emissions lower emissions than business as usual. The Draft Guidance Document suggests a 30% reduction, however subsequent SCAQMD staff report suggests a 23.9% reduction to correspond to the land use component of CARB's AB 32 Scoping Plan. Under the second option the project would be excluded if it had early compliance with AB 32 through early implementation of CARB's Scoping Plan measures. Under the third option, the project would be excluded if it met sector based performance standards, which are yet to be adopted. Tier 5 would exclude projects that implement offsite mitigation (GHG reduction projects) or purchase offsets to reduce GHG emission impacts to less than the proposed screening level, which again is yet to be adopted.

Given the small amount of GHG emissions that the proposed project would generate – 10.7 MT/year – which is well below any of the screening thresholds suggested by either CARB or SCAQMD, the proposed project would not cause a significant adverse climate change impact and the proposed project's contribution to global climate change is not considerable.

11. HAZARDS AND HAZARDOUS MATERIALS. Would the project:

a. *Create a significant hazard to the public or the environment through the routine transport, use or disposal of hazardous materials? (14)*

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| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
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AND

b. *Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment? (14)*

| | | | |
|--------------------------|--------------------------|-------------------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
|--------------------------|--------------------------|-------------------------------------|--------------------------|

The proposed disinfection system involves the use, storage, and/or transport of following materials:

- Ammonium hydroxide
- Sodium hypochlorite

Ammonium hydroxide (19%) and sodium hypochlorite (12.5%) would be separately injected into the systems to disinfect the water prior to discharging into the Jones Reservoir. The proposed project is designed to include one (1), above-ground, 1,800 gallon ammonium hydroxide tank and one (1), above-ground, 6,650-gallon sodium hypochlorite tank. The ammonium hydroxide tank is anticipated to be a carbon steel, double-walled tank that would be 6 feet in diameter and 10 feet in height. The sodium hypochlorite tank is anticipated to be a high density, cross-linked, polyethylene, double-walled tank that is 10.25 feet in diameter and 14.25 feet in height. The tanks would be installed outdoors in an area surrounded by a concrete containment curb and covered by a roof structure to provide protection from direct sunlight. During normal anticipated operations the sodium hypochlorite tank would require refilling about

| Potentially Significant Impact | Significant Unless Mitigation is Incorporated | Less Than Significant Impact | No Impact |
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every 23 days and the ammonium hydroxide tank would require refilling about every 42 days. In the peak flow rate scenario, the sodium hypochlorite tank would require refilling about every 13 days and the ammonium hydroxide tank would require refilling about every 25 days. A private chemical vendor would be hired to conduct the deliveries with a trained Pasadena operator onsite to oversee and assist with the delivery process.

Neither chemical requires disposal as both will be used in the water treatment process.

Ammonium hydroxide and sodium hypochlorite are regulated under the California Fire Code (Chapters 27, 31, and 40) and ammonium hydroxide is regulated under CCR Title 19, Division 2, Chapter 4.5, California Accidental Release Program.

PWP would be required to operate the proposed facility in accordance with the following programs that govern the use of hazardous materials:

- **Hazardous Materials Business Plan.** The plan details inventories of chemicals and their relative locations, emergency response procedures, equipment, and employee training policies. The City of Pasadena requires an annual submission to the Fire Department certifying the plan.
- **Injury and Illness Prevention Plan (IIPP).** The California General Industry Safety Order requires that all employers in California prepare and implement an IIPP, which contains a code of safe practice for each job category, methods for informing workers of hazards, and procedures for correcting identified hazards.
- **Emergency Action Plan.** The California General Industry Safety Order requires that all employers in California prepare and implement an Emergency Action Plan. This plan designates employee responsibilities, evacuation procedures and routes, alarm systems, and training procedures.
- **Hazard Communication Plan.** Facilities involved in the use, storage, and handling of hazardous materials are required to prepare a Hazard Communication Plan. The purpose of this plan is to provide safe handling practices for hazardous materials, ensure proper labeling of hazardous materials containers, and ensure employee access to Material Safety Data Sheets (MSDS).
- **California Accidental Release Prevention (CalARP) program.** Facilities that use acutely hazardous materials above certain threshold quantities must prepare a CalARP plan to identify and mitigate the risks of handling the chemicals. Included in the CalARP plan are requirements for employee training, preventive maintenance policies, written operating procedures, investigating incidents, and emergency response planning. Recommendations are made as part of the CalARP plan to ensure that safety issues are addressed and resolved in a timely fashion. A key component of the CalARP plan is the Hazards Review Study. The Hazards Review Study analyzes the specific design of the facility, identifies the most likely scenarios for an accidental release at the facility, identifies measures (engineering controls and administrative controls) to prevent such scenarios, and identifies the emergency procedures for handling such scenarios. The California Emergency Management Agency (CalEMA) is responsible for overseeing the CalARP program and delegates day-to-day administration of the program to various local agencies throughout California. In Pasadena, such authority is delegated to the City of Pasadena Fire Department.

As currently proposed, the project would only require a CalARP plan for ammonium hydroxide (19%). The CalARP Risk Management Plan is required to be submitted to the City of Pasadena Fire Department for review and compliance, and hazardous materials may not be stored or utilized onsite until the Department approves the CalARP Risk Management Plan.

| Potentially Significant Impact | Significant Unless Mitigation is Incorporated | Less Than Significant Impact | No Impact |
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The subsections below describe the potential hazards of the project's use, storage, and transport of hazardous materials.

Ammonium Hydroxide

During the chloramination process, ammonium hydroxide (along with sodium hypochlorite) would be injected into the collected water (in the proposed pipeline) prior to entering the Jones Reservoir. As proposed, ammonium hydroxide would be stored onsite in a non-pressurized tank designed with a capacity of approximately 1,800 gallons. The ammonium hydroxide tank would be double walled and would hold at least 110% of the maximum tank volume, thus containing any accidental spillage. A concrete curb wall would also be constructed around the tank to contain any accidental spillage. A roof structure would cover the tank to eliminate exposure to direct sunlight since warmer temperatures may degrade the chemical, reducing its storage longevity.

The potential hazards of ammonium hydroxide are shown in Table 10-1, and further detailed in the Material Safety Data Sheet (MSDS) for ammonium hydroxide contained in Appendix C of this Initial Study. Ammonium hydroxide is a mixture of mostly water and ammonia. Ammonium hydroxide can affect human health through ingestion, skin contact, eye contact, and inhalation. Ingestion and direct contact is primarily a concern for those professionals handling the substance, which in this case includes delivery personnel, PWP personnel, and, in the case of spillage, first responders. Proper storage of ammonium hydroxide can virtually eliminate the potential ingestion and contact hazards for the general public. The greatest potential risk for the general public of storing ammonium hydroxide onsite is the potential for the substance to be accidentally spilled and vaporize into a gas that could be inhaled.

Ammonium hydroxide (19% solution) is a regulated chemical that requires compliance with the California Accidental Release Prevention (CalARP) program. Pasadena Water & Power has implemented the CalARP program since 2002 with regards to the use of ammonium hydroxide at the City's Power Plant. This program requires PWP to develop and document policies and procedures aimed directly at minimizing the risks of handling ammonium hydroxide. These policies and procedures include training, maintenance, auditing, documenting written operating procedures, emergency action planning, etc. As a required part of the CalARP, engineering studies will be performed to: 1) specify potentially hazardous scenarios and/or design elements of the process; 2) estimate potential accidental releases of ammonium hydroxide; and 3) identify design improvements and specific safety precautions to reduce or eliminate potential risks.

Based on preliminary studies and results of similar facilities using ammonium hydroxide, PWP does not anticipate significant off-site impacts. Since any liquid spill would be double contained, no direct exposure to any individuals off-site is expected. Ammonia hydroxide, if spilled in the liquid form, could evaporate and disperse downwind. Typically though, vapors from an aqueous solution travel only a short distance from the location of the leak and may not even leave the site.

As proposed, all the chemical feed lines would be double contained and leak detection systems provided for the feed systems. In addition, monitoring devices would be placed on the treated water header to monitor and adjust the injection rates of the chemicals. The ammonium hydroxide tank would also include vapor return piping to carry ammonia vapors displaced during the off-loading operation back to the delivery tank truck.

The City of Pasadena considers the potential risks of the proposed use, storage, and delivery of ammonium hydroxide for the proposed disinfection facility to be acceptably low and less than the existing risks of other similar PWP facilities in the City.

Potentially Significant Impact
Significant Unless Mitigation is Incorporated
Less Than Significant Impact
No Impact

Sodium Hypochlorite

During the chloramination process, sodium hypochlorite (along with ammonium hydroxide) would be injected into the collected water (in the proposed pipeline) prior to entering the Jones Reservoir. As proposed, sodium hypochlorite would be stored onsite in a non-pressurized tank designed with a capacity of approximately 6,650 gallons. The sodium hypochlorite tank will be double walled and would hold at least 110% of the maximum tank volume, thus containing any accidental spillage. A concrete curb wall would also be constructed around the tank to contain any accidental spillage. A roof structure would cover the tank to eliminate exposure to direct sunlight since warmer temperatures may degrade the chemical, reducing its storage longevity.

The potential hazards of sodium hypochlorite are shown in Table 11-1, and further detailed in the corresponding Material Safety Data Sheet (MSDS) contained in Appendix C of this Initial Study. Sodium hypochlorite (i.e., bleach) can affect human health through ingestion, skin contact, eye contact, and inhalation. Ingestion and direct contact is primarily a concern for those professionals handling the substance, which in this case includes delivery personnel, PWP personnel, and, in the case of spillage, first responders. Proper storage of sodium hypochlorite can virtually eliminate the potential ingestion and contact hazards for the general public. The greatest potential risk for the general public of storing sodium hypochlorite onsite is the potential for the substance to be accidentally spilled and vaporize into a gas that could be inhaled.

Based on preliminary studies and results of similar facilities using sodium hypochlorite, PWP does not anticipate significant off-site impacts. Since any liquid spill would be double contained, no direct exposure to any individuals off-site is expected. Sodium hypochlorite, if spilled in the liquid form, could evaporate and disperse downwind. However, in such a scenario, the proposed curb wall would limit the surface area of the spill and minimize the vaporization potential of the spill. Typically, vapors from an aqueous solution travel only a short distance from the location of the leak and may not even leave the site.

As proposed, all the chemical feed lines would be double contained and leak detection systems provided for the feed systems. In addition, monitoring devices would be placed on the treated water header to monitor and adjust the injection rates of the chemicals. The sodium hypochlorite tank would also include vapor return piping to carry chlorine vapors displaced during the off-loading operation back to the delivery tank truck.

The City of Pasadena considers the potential risks of the proposed use, storage, and delivery of sodium hypochlorite for the proposed disinfection facility to be acceptably low and less than the existing risks of other similar PWP facilities in the City.

| Table 11-1 Potential Hazards and Health Effects of Materials to be Utilized in the Proposed Disinfection Facility | | | | | |
|---|--|---|---|--|--|
| Hazards Identification | Potential Health Effects | Incompatible Material | Handling and Storage | Accidental Release Measures | Exposure Controls/Personal Protection |
| Ammonium Hydroxide | | | | | |
| Contact with the eyes can cause serious long-term damage. The solution is corrosive and skin contact may cause burns. Concentrated solutions can release dangerous amounts of ammonia vapor into the air. | Ingestion: Toxic. May cause corrosion to the esophagus and stomach. Inhalation: Cause irritation to the respiratory tract. Skin/Eye Contact: May cause irritation and damage. | Copper, copper alloys, galvanized iron, zinc, aluminum, bronze, dimethyl sulphate, mercury, alkali metals, acids, hypochlorites and | Keep in tightly closed container, in a cool, dry ventilated area. Isolate from incompatible substances. Containers of this material may be hazardous when empty because they retain product residues. | Ventilate area. Wear appropriate personal protection. Collect liquid in an appropriate container or absorb with inert material. Do not flush to sewer. | Airborne Exposure Limits for ammonia: OSHA PEL – 50 ppm (NH ₃), ACGIH TLV – 25 ppm (NH ₃)(TWA), 35 ppm (STEL) Skin and eye protection required. |

Potentially Significant Impact
Significant Unless Mitigation is Incorporated
Less Than Significant Impact
No Impact

| Table 11-1 Potential Hazards and Health Effects of Materials to be Utilized in the Proposed Disinfection Facility | | | | | |
|--|--|--|--|---|---|
| Hazards Identification | Potential Health Effects | Incompatible Material | Handling and Storage | Accidental Release Measures | Exposure Controls/Personal Protection |
| | | other chlorine containing compounds. | | | |
| Sodium Hypochlorite | | | | | |
| The solution is corrosive and can cause severe burns to eyes, skin, and respiratory tract. Harmful or fatal if swallowed. Harmful if inhaled. | Ingestion: May cause irritation of the membranes of the mouth and throat, stomach pain, and possible ulceration. Inhalation: May cause burns, cough, pulmonary edema, up to 48 hours after exposure. Skin: May cause moderate skin irritation and reddening of the skin. Prolonged exposure may cause burns, blistering. Eyes: May cause severe irritation such as burns, and eye damage. | Excessive heat, reducing agents, strong mineral acids, ammonia containing compounds. | Store in vented, closed, clean non-corrosive containers in a cool, dry location away from direct sunlight and heat to avoid deterioration. Do not store adjacent to chemicals which may react with the bleach if spillage occurs. If closed containers become heated, the containers should be vented to release decomposition products (mainly oxygen under normal decomposition). Do not mix or contaminate with ammonia, hydrocarbons, acids, alcohols or ethers. | Do not allow spilled material to enter sewers or streams. Flush area with water to dilute spill as much as possible and pump into polyethylene containers for disposal. Avoid heat and contamination with acid materials. Do not use combustible materials such as sawdust to absorb Sodium Hypochlorite solutions. | Skin and eye protection required; respiratory protection required if vapors or mists are present. |
| <u>Acronyms</u> OSHA – Occupational Health and Safety Administration ACGIH – American Conference of Governmental Industrial Hygienists PEL – Permissible Exposure Limit TLV – Threshold Limit Value NIOSH – National Institute for Occupational Safety and Health MSHA – Mine Safety and Health Administration | | | | | |

c. *Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school? (14)*

The Jones Reservoir site is within one-quarter mile of the Eugene Field Elementary School (located across East Sierra Madre Boulevard), and the project involves hazardous material use. However, as described above, potential student exposure to either ammonium hydroxide or sodium hypochlorite is highly unlikely because of the transportation, containment, and use constrictions of these chemicals at the Jones Reservoir site. Furthermore, the handling and storage requirements and accidental release measures included in the CalARP plan and various other safety plans described above in part 11(a and b), effectively mitigate the presence of these materials in proximity to the elementary school.

| Potentially Significant Impact | Significant Unless Mitigation is Incorporated | Less Than Significant Impact | No Impact |
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d. *Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?*

| | | | |
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| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
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The project locations include the City of Pasadena's Jones Reservoir site, City of Pasadena street right-of-way, and the seven involved well sites. None of these locations are listed on the California Department of Toxic Substances Control (DTSC) Envirostor database or in the US Environmental Protection Agency's (EPA) Envirofacts database. Therefore, the proposed project would have no impacts related to listed hazardous material sites.

e. *For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area? (6, 9)*

| | | | |
|--------------------------|--------------------------|--------------------------|-------------------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
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AND

f. *For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area? (6, 9)*

| | | | |
|--------------------------|--------------------------|--------------------------|-------------------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
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The project site is not within an airport land use plan or within two miles of an airport (public or private). The closest airport (more than 10 miles away) is the Bob Hope Airport in Burbank, which is operated by a Joint Powers Authority with representatives from the Cities of Burbank, Glendale, and Pasadena. Therefore, the proposed project would not result in a safety hazard for people residing or working in the vicinity of an airport and would have no associated impacts.

g. *Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan? (17)*

| | | | |
|--------------------------|-------------------------------------|--------------------------|--------------------------|
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
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The City of Pasadena maintains a citywide emergency response plan, which goes into effect at the onset of a major disaster (e.g., a major earthquake). The Pasadena Fire Department maintains the disaster plan. In case of a disaster, the Fire Department is responsible for implementing the plan, and the Pasadena Police Department devises evacuation routes based on the specific circumstance of the emergency. The City has pre-planned evacuation routes for dam inundation areas associated with Devil's Gate Dam, Eaton Wash, and the Jones Reservoir.

The operation of the proposed Eastside Well Collector and Centralized Disinfection Facility Project would not place any permanent physical barriers on any existing public streets. However, there would be temporary lane closures on the streets where new pipelines are proposed during construction of the system. These closures would be temporary and are not anticipated to affect streets beyond those where pipeline replacement activities will occur. The streets that are likely to be subject to lane closure are included in Table 1. None of the temporary lane closures would make the streets fully impassable. In addition, as

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| Potentially Significant Impact | Significant Unless Mitigation is Incorporated | Less Than Significant Impact | No Impact |
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required by Mitigation Measure TRAF-1, a construction traffic management plan would be in place to ensure that access to properties that adjoin streets where pipeline replacement would occur remains open. Therefore, with the implementation of Mitigation Measure TRAF-1, the proposed project would have no significant impact on emergency evacuation plans.

h. Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands? (17)

The project locations are not areas of moderate or very high fire hazard shown on Plate P-2 of the 2002 Safety Element. Therefore, the proposed project would not expose people or structures to a significant risk of loss, injury or death involving wild land fires, and the project would have no associated impacts.

12. HYDROLOGY AND WATER QUALITY. Would the project:

a. Violate any water quality standards or waste discharge requirements? (14, 22)

Installation of the Centralized Disinfection Facility at the existing Jones Reservoir and the proposed collector pipeline that would supply water to the reservoir would improve the quality of water in the system by blending any potential water contaminants in source waters to acceptable levels, and protecting the drinking water with proper disinfection. The collector pipeline would convey groundwater directly from the seven wells to the reservoir where it may blend with imported water prior to distribution to customers. The Centralized Disinfection Facility at the reservoir site would provide the same disinfection method for the well water as the method used by MWD for the imported water. The two sources of water become compatible with no loss in the disinfectant residual that is required for distribution. The new facilities would improve system operational flexibility and ensure that no violation of water quality standards or waste discharge requirements would occur.

b. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (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)? (6)

PWP provides water service to the City of Pasadena and a limited number of customers in adjacent unincorporated areas. The City's 2010 Urban Water Management Plan³ describes PWP's water demand as follows:

Currently, water demands are approximately 30,000 [acre feet per year] AFY, which is about 22% lower than in 2007. This significant reduction in demand is due to mandatory restrictions in water use that PWP implemented in response to a multi-year drought that began in 2008 and ended in 2010, as well as a severe economic recession during this same time. It is estimated that if these two events did not occur, current water demands would be approximately 38,000 AFY.

³ Pasadena, City of. *Urban Water Management Plan*. 2010.

| Potentially Significant Impact | Significant Unless Mitigation is Incorporated | Less Than Significant Impact | No Impact |
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PWP's water sources include:

- Groundwater: PWP obtains approximately 40% of its annual water supply from groundwater in the Raymond Basin. PWP has an adjudicated right to withdraw 12,807 AFY from the Raymond Basin, with additional withdrawal rights provided on a year-to-year basis based on spreading surface water diversions in the Arroyo Seco and Eaton Canyon. In the 2005-2010 period, the combination of groundwater rights and pumping credits from surface runoff spreading has averaged approximately 14,000 AFY⁴. On July 1, 2009, the Raymond Basin Watermaster reduced allowable extractions to all agencies with decreed rights in the Pasadena Subarea of the Raymond Basin (including PWP). Each fiscal year (July 1 to June 30) the Watermaster reduces allowable extractions in increments of 6% so by the 5th fiscal year total reduction of 30% will be achieved.
- Local Surface Water: PWP diverts surface water from the Arroyo Seco and Eaton Canyon to spreading basins that recharge the Raymond Basin. Hence, the additional pumping rights from the Basin noted above.
- Imported Water: PWP meets the balance of its customer's water demand (approximately 60% annually) with imported water from the Metropolitan Water District of Southern California (MWD), managed by the state Department of Water Resources (DWR). The MWD's water sources are the Colorado River Aqueduct and the State Water Project (SWP). Total annual MWD supplies range from a high of about 3.3 million acre feet (MAF) to a low of 1.9 MAF acre feet, depending on the year and the scenario (e.g., normal year vs. dry year).

This project is intended to collect and treat groundwater in the Pasadena Subarea of the Raymond Basin, which would be extracted by the City of Pasadena for drinking water use. The proposed project would not increase PWP's ability to withdraw water from the aquifer, since no new wells are proposed.⁵ Regardless, with or without the proposed project, the amount of groundwater withdrawn from the Raymond Basin is dictated by Raymond Basin Watermaster and PWP would not be allowed to exceed the pumping allocations prescribed by the Watermaster. Therefore, no adverse impacts are anticipated.

- c. *Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner, which would result in substantial erosion or siltation on-or off-site? (22)*

The proposed Eastside Well Collector and Centralized Disinfection Facility Project would improve the efficiency of operations of the Jones Reservoir and related facilities would not alter existing drainage patterns in any way. As such, these activities would result in no erosion or siltation impacts.

The proposed construction of the disinfection facility would occur on the Jones Reservoir site, which is currently improved with the reservoir itself and associated operations and maintenance structures. The top of the reservoir is fully improved as a public park with active recreational uses such as baseball diamonds, tennis, and basketball courts. There are no discernable drainages present on the park site or adjacent to the reservoir operations and maintenance facilities. The installation of the new disinfection facility just east of the existing reservoir facilities would not result in focusing or concentrating any stormwater flows and would not direct stormwater over exposed soils. In addition, none of the proposed improvements to the

⁴ Ibid.

⁵ The proposed project would redirect water from the seven involved wells to Jones Reservoir, rather than serving the water directly to customers.

| Potentially Significant Impact | Significant Unless Mitigation is Incorporated | Less Than Significant Impact | No Impact |
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eastside wells would affect stormwater flows at their respective locations. Regardless, the proposed project is required to comply with the Los Angeles County National Pollutant Discharge Elimination System (NPDES) Permit (Permit # 01-182), as implemented by City ordinance. In accordance with this permit, construction of the proposed project must control potential pollutant sources at the construction site by, at a minimum, complying with the following standard requirements:

1. Sediments generated on the project site shall be retained using adequate Treatment Control or Structural BMPs;
2. Construction-related materials, wastes, spills or residues shall be retained at the project site to avoid discharge to streets, drainage facilities, receiving waters, or adjacent properties by wind or runoff;
3. Non-storm water runoff from equipment and vehicle washing and any other activity shall be contained at the project site; and
4. Erosion from slopes and channels shall be controlled by implementing an effective combination of BMPs (as approved in Regional Board Resolution No. 99-03), such as the limiting of grading scheduled during the wet season; inspecting graded areas during rain events; planting and maintenance of vegetation on slopes; and covering erosion susceptible slopes.

Compliance with these requirements ensures that the construction of the proposed East Well Collector and Disinfection Facility Project would not result in substantial erosion or siltation. After construction, the proposed disinfection facility, improved wells, and new pipelines would have no affect on drainage or stormwater flows. Given the limited potential for erosion and siltation during construction, the required compliance with the Countywide NPDES Permit, and the restoration to largely existing surface conditions after construction, the project would not cause significant erosion or sedimentation impacts.

d. *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? (22)*

There will be a slight increase in runoff resulting from the installation of the Centralized Disinfection Facility because the proposed project would install additional impermeable surfaces at the Jones Reservoir site. However, adequate drainage exists currently on the site and the increase of stormwater runoff will be negligible due to the minimal size of the facility pad (approximately 500 ft²). Therefore, the proposed project would not result in flooding on- or off-site and would have no related significant impacts.

e. *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?*

No measurable increase in runoff would result from installation of the disinfection facility, pipeline installation, or water well improvements. The existing stormwater drainage facilities in the areas where the improvements are proposed are sufficient to handle the proposed improvements. Therefore, no significant adverse impacts on the stormwater drainage system are anticipated.

| Potentially Significant Impact | Significant Unless Mitigation is Incorporated | Less Than Significant Impact | No Impact |
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f. *Otherwise substantially degrade water quality?*

| | | | |
|--------------------------|--------------------------|--------------------------|-------------------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
|--------------------------|--------------------------|--------------------------|-------------------------------------|

The main goal of the project is to provide operational flexibility and to improve the quality of drinking water delivered to the customers. The proposed system would disinfect the extracted water to levels approved by the California Department of Public Health for drinking water. Therefore, no adverse impact is anticipated.

g. *Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or dam inundation area as shown in the City of Pasadena adopted Safety Element of the General Plan or other flood or inundation delineation map? (17)*

| | | | |
|--------------------------|--------------------------|--------------------------|-------------------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
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Housing construction is not planned as part of this project. Therefore, no adverse impact would occur.

h. *Place within a 100-year flood hazard area structures, which would impede or redirect flood flows? (17)*

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|--------------------------|--------------------------|--------------------------|-------------------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
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No portions of the City of Pasadena are within a 100-year floodplain identified by the Federal Emergency Management Agency (FEMA). As shown on FEMA map Community Number 065050, most of the entire City is in Zone X. A few scattered areas are located in Zone D. Both Zone X and Zone D are located outside of the "Special Flood Hazard Areas Subject to Inundation by the 1% Annual Chance of Flood" (100 year floodplain) and no floodplain management regulations are required.

i. *Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam? (17)*

| | | | |
|--------------------------|--------------------------|--------------------------|-------------------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
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As discussed above, no portions of the City of Pasadena are within a 100-year floodplain identified by FEMA. In addition, according to the City's Dam Failure Inundation Map (Plate P-2, of the adopted 2002 Safety Element of the City's General Plan), the City's dam inundation areas are limited to the Arroyo Seco flood control area, where no project equipment would be located, and the area immediately south of the Eaton Wash Dam. While certain proposed pipeline segments and well equipment would be located within the Eaton Wash Dam failure inundation area, the proposed project involves improving the City's water system and, as such, does not pose a significant risk of loss, injury, or death. Furthermore, the risk of inundation due to failure of the Eaton Wash Dam is considerably low, due to the structural integrity of the dam and limited times of the year that water is contained behind the dam. Therefore, the project would have no impact from exposing people or structures to flooding risks, including flooding as a result of the failure of a levee or dam.