THE CITY OF HESPERIA
9700 Seventh Avenue
Hesperia, California 92345
Phone: (760) 947-1000

ENVIRONMENTAL INITIAL STUDY

Project Title:	Fountainhead Development Project
City Project No.:	SPR24-00016
Lead Agency	City of Hesperia 9700 Seventh Avenue Hesperia, CA 92345 Phone: (760) 947-1000
Project Sponsor's Name and Address:	Fountainhead Development 1401 Quail Street, Suite 100 Newport Beach, CA 92660
Contact Person And Phone Number:	Leilani Henry (760) 947-1231
Project Location:	15887-15901 Main Street and 1588 Walnut Street Hesperia, CA 92345 APN: 0413-101-08, -10, -11, -12, -13 and 0413-101-14
Existing Zoning Designation:	Neighborhood Commercial (NC), City of Hesperia Main Street and Freeway Corridor Specific Plan
Existing General Plan Designation:	Neighborhood Commercial (NC), City of Hesperia Main Street and Freeway Corridor Specific Plan
Preparer:	Terra Nova Planning & Research, Inc. 42635 Melanie Place, Suite 101 Palm Desert, CA 92211

TABLE OF CONTENTS

PROJECT DESCRIPTION 3
EVALUATION OF ENVIRONMENTAL IMPACTS: 12
1. AESTHETICS 14
2. AGRICULTURE AND FORESTRY RESOURCES 18
3. AIR QUALITY 20
4. BIOLOGICAL RESOURCES 27
5. CULTURAL RESOURCES 31
6. ENERGY 33
7. GEOLOGY AND SOILS 37
8. GREENHOUSE GAS EMISSIONS 42
9. HAZARDS AND HAZARDOUS MATERIALS 45
10. HYDROLOGY AND WATER QUALITY 53
11. LAND USE AND PLANNING 58
12. MINERAL RESOURCES 59
13. NOISE 61
14. POPULATION AND HOUSING 65
15. PUBLIC SERVICES 67
16. RECREATION 70
17. TRANSPORTATION 71
18. TRIBAL CULTURAL RESOURCES 76
19. UTILITIES AND SERVICE SYSTEMS 78
20. WILDFIRE 85
21. MANDATORY FINDINGS OF SIGNIFICANCE 87

Table 1 Project Summary 4
Table 2 Mojave Desert Air Quality Ambient Air Quality Attainment Classification 21
Table 3 MDAQMD Significant Emissions Thresholds 22
Table 4 Maximum Daily Construction-Related Emission Summary 24
Table 5 Maximum Daily Operation-Related Emission Summary 24
Table 6 Construction Equipment Fuel Consumption Estimates 34
Table 7 Construction Worker Fuel Consumption Estimates 35
Table 8 Operational Energy Demand 36
Table 9 Maximum Daily Construction-Related GHG Emissions 43
Table 10 Maximum Annual Operational-Related GHG Emissions 43

Table 11 Environmental Condition Determination for the Project Site and Vicinity 47
Table 12 Suspect of ACM at the Project Site 49
Table 13 In-door Water Consumption Demand 55
Table 14 Vibration Source Levels for Construction Equipment 63
Table 15 Traffic Impact Report Study Area 72
Table 16 Project Traffic Generation Rates and Forecast 72
Table 17 Project Traffic Generation Forecast for the Year 2025 73
Table 18 Project Driveway Performance at AM and PM Peak Hours 75
Table 19 In-door Water Consumption Demand 82
Table 20 Project Wastewater Generation 83
Table 21 Project Solid Waste Generation 83

Exhibit 1 Regional Location Map 6
Exhibit 2 Vicinity Map 7
Exhibit 3 Project Location 8
Exhibit 4 Site Plan 9
Exhibit 5a McDonalds Building Elevations 10
Exhibit 5b Starbucks Building Elevation 11

Appendix A Air Quality ..... A
Appendix B Geological Technical Report ..... B
Appendix C Phase I Environmental Site Assessment C
Appendix D Phase II Limited Subsurface Investigation Report ..... D
Appendix E Drainage Study ..... E
Appendix F Water Quality Management Plan ..... F
Appendix G Traffic ..... G

PROJECT DESCRIPTION

The proposed Project involves the redevelopment of 1.58± acres of commercial land located in the northeastern portion of the City of Hesperia, California. The site is located in the City's commercial and residential core, delineated in the City of Hesperia Main Street and Freeway Corridor Specific Plan. The property is bound by Main Street to the north, Walnut Street to the south, Seventh Avenue to the east, and Rosa Plaza abuts the site to the west. The site is arranged in a rectangular shape to include six (6) assessor parcels (APN): 0413-101-08, -10, -11, -12, -13, and -14. The site is relatively flat and located at an elevation of 3,260 feet above sea level.

Existing Site Conditions

The proposed Project will be built on a previously developed 1.58± acre parcel. The north half of the site consists of three existing structures that were constructed in 1957, 1967, and 1980. The structures are one-story in height and comprise a total of 1,978 square feet of building space. Currently, the main structure operates as an automobile sale and service/repair shop with an extended outdoor space for automobile display. The second structure is an overhead canopy, a remanent of the gas station that once operated on-site. The third structure is unoccupied. On the south half of the site there are two areas of asphalt concrete pavement improvements. The paved area in the southeast portion of the site is in poor condition due to extensive weathering, severe cracking, and weeds sprouting from the cracks. The second paved area is a concrete slab from a previous development, surrounded by unpaved dirt. There are no structures on the parcel's southern half. A chain link fence borders the southern parcel on its north, south, and east sides, physically separating the area from commercial uses to the north. There is an unused electrical power pole near the site's southeast corner. A single mature Joshua Tree is also identified within the site's southern half. Based on historical aerial photographs, the site's southeast quadrant was utilized for outdoor parking until about 2006. All of the existing structures and pavement will be demolished for the proposed Project.

Surrounding Land Uses

Land uses and development located in vicinity of the Project are outlined below:

- *The land to the north*: Beyond Main Street, there is a two-story commercial center with multiple tenant spaces, operating as office and clinic space. The area is zoned for Neighborhood Commercial.
- *The land to the south*: Beyond Walnut Street, there are two commercial retail building, one offering sales of household appliances and the other providing upholstery services. Adjacent to these facilities there is an undeveloped parcel which appears to have been graded and disturbed by surrounding land uses. The area is zoned for Neighborhood Commercial.
- *The land to the west*: The Rosa Plaza abuts the site to the west. The commercial center consists of three single-store commercial buildings and in total, the center offers 20 tenant spaces. The area is zoned for Neighborhood Commercial.
- *The land to the east*: On the southeast corner of Main Street and Seventh Avenue, there is a convenience store/Chevron gas station and within the same parcel, there is a dine-in restaurant/bar, automobile repair shop, and similar facilities. The area is zoned for Neighborhood Commercial.

Proposed Project

The Project proposes the redevelopment of the subject 1.58± acre parcel for the construction of two (2) fast-food drive-through restaurants. Development is consistent with the parcel's Neighborhood Commercial land use designation and consistent with the permitted land use and development standards under the Main Street and Freeway Corridor Specific Plan and Hesperia Municipal Code. The key physical elements of the proposed Project are outlined below. Exhibit 4 and 5 illustrate the Project development plans.

- *Fast-Food Drive Through Restaurants:* The 1.58± acre parcel would be redeveloped to house two fast-food drive-through restaurants. McDonald and Starbucks being potential occupants. McDonalds is located on the west half and Starbucks is located on the east half of the property.

    - *McDonald's Building*: The building is a single-story dine-in and drive-through fast-food restaurant, totaling to 3,684± square feet. The building's maximum height is 22± feet that includes the screen covering rooftop equipment. The dual drive-through lane begins at the building's south side and extends along the building's eastern perimeter. A total of 39 parking stalls will be provided to service dine-in or in-store pick up orders.

    - *Starbucks' Building*: The building is a single-story drive-through coffee shop, totaling 1,300± square feet. The building's maximum height is 22 feet, including the rooftop screen. The drive-through lane extends along the building's eastern side, adjacent to Seventh Avenue and ends near the site's access point at Main Street. The building will not provide indoor seating. The building will strictly function as an in-store pickup or drive-through facility. A total of 16 stalls will be provided for in-store pickup orders.

- *Landscape*: The site's landscape area will total to 13,210 square feet and will primarily consist of drought tolerant and water conserving vegetation as mandated by the City's Municipal Code. Landscape coverage will be 19% of the overall parcel area.

- *Parking*: Based on the City of Hesperia Municipal Code, 37 parking stalls are required for the McDonald Building and 13 parking stalls are required for the Starbucks Building. The Project will provide a total of 55 parking stalls, of which 39 stalls are for McDonalds use and 16 are for Starbucks use.

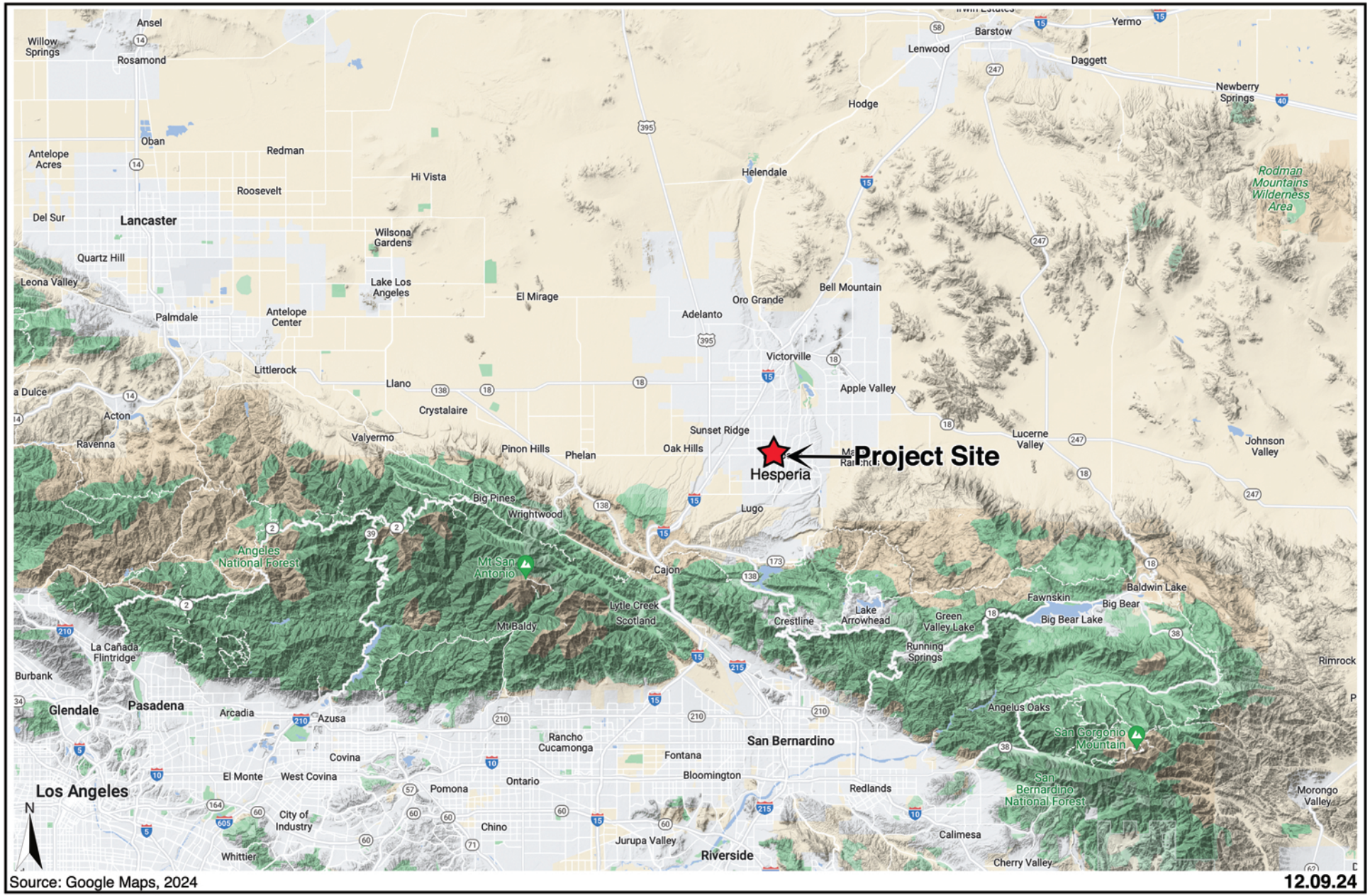
- *Circulation and Roadway Access*: The site provides two (2) access points, consisting of one (1) existing right-in/right-out driveway on the south side of Main Street and one (1) new full-movement unsignalized driveway on the north side of Walnut Street. Both access points are connected by the on-site driveway that serves the entire site. Each drive-through directs traffic to the Main Street access point.

- *Off-site Roadway Improvements*: The Project would restripe Seventh Avenue to provide a 200 foot northbound left-turn pocket at the intersection with Main Street and a 50 foot southbound left-turn pocket at the intersection with Walnut Street. A Class II Bike Lane would also be implemented along the Project frontage on the west side of Seventh Avenue, as well as reconstruct or complete the sidewalks along the site's frontage on Seventh Avenue and Walnut Street.

Table 1
Project Summary

Use	Square Feet
Existing Structures to be Demolished	1,978
McDonalds Restaurant	3,684
Starbucks Coffee Shop	1,300
Landscaping Area	13,210
Parking Spaces	55 Stalls
Driveway and Other Asphalt Surface	48,004
Seventh Avenue Improvements	2,628

Utilities and Service Providers:
Domestic Water: Hesperia Water District
Wastewater Facility: Hesperia Water District
Electricity: Southern California Edison
Gas: Southwest Gas Corporation
Solid Waste: Advanced Disposal
Fire: San Bernardino County Fire Department
Police: San Bernardino County Sheriff's Department



Source: Google Maps, 2024

12.09.24

TERRA NOVA®
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Regional Location Map
Fountainhead Development
Hesperia, California

Exhibit

1

TERRA NOVA®
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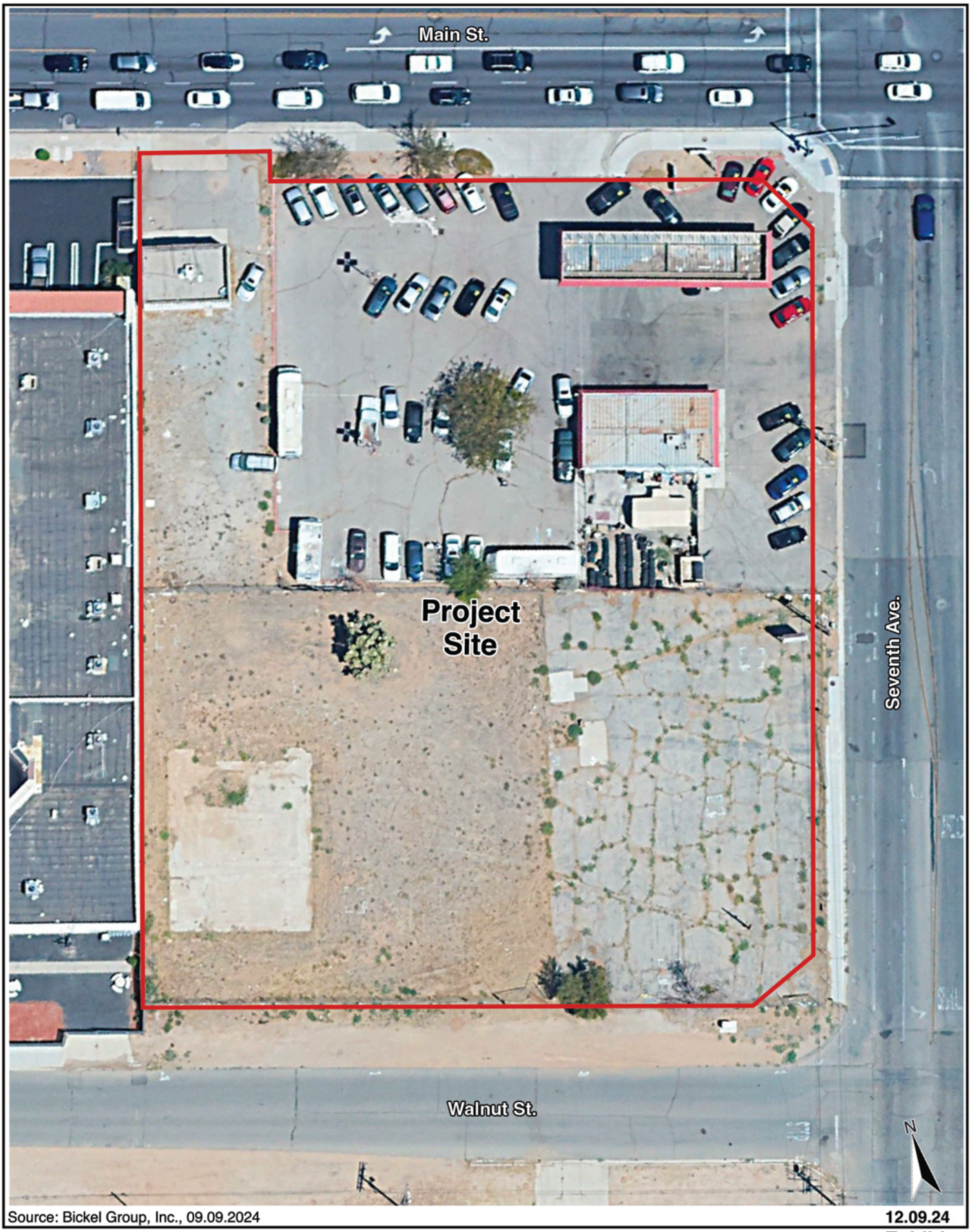
Vicinity Map
Fountainhead Development
Hesperia, California

Exhibit
2



Source: Bickel Group, Inc., 09.09.2024

12.09.24

Exhibit 3

TERRA NOVA®
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Project Location Map
Fountainhead Development
Hesperia, California

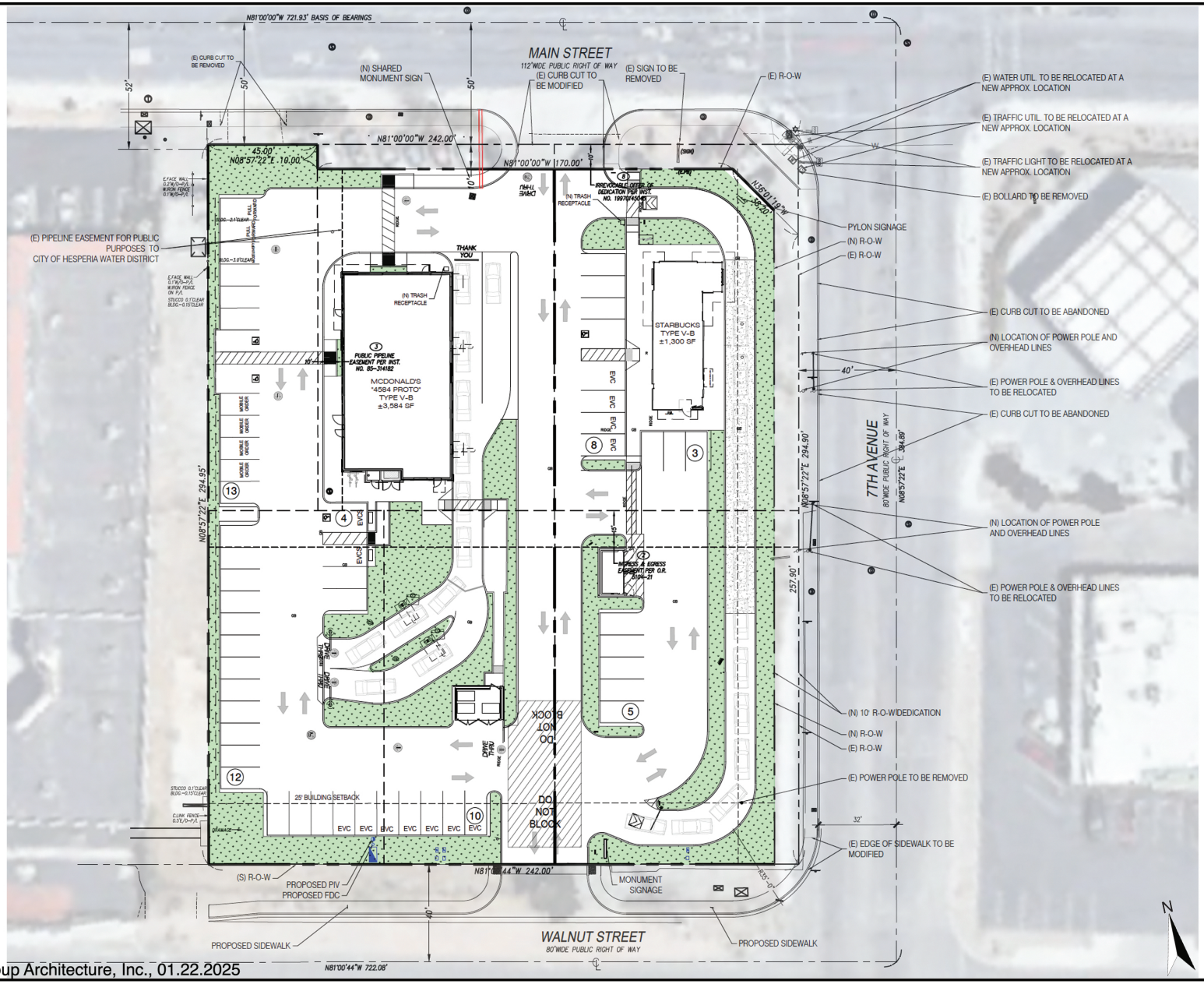

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Exhibit

4

TERRA NOVA®
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Site Plan
Fountainhead Development
Hesperia, California

EAST ELEVATION

NORTH ELEVATION

WEST ELEVATION

SOUTH ELEVATION

Source: Bickel Group Architecture, Inc., 01.09.2025

01.28.25

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McDonald's Building Elevations
Fountainhead Development
Hesperia, California

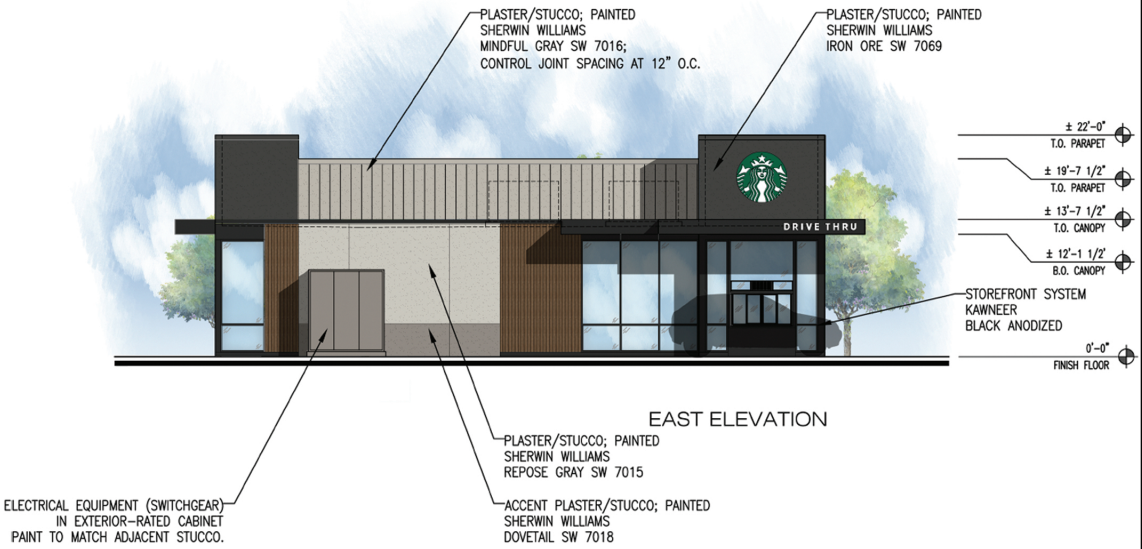
Exhibit

5a

NORTH ELEVATION

WEST ELEVATION

SOUTH ELEVATION



EAST ELEVATION

Source: Bickel Group Architecture, Inc., 12.24.2024

01.28.25

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Starbucks Building Elevations
Fountainhead Development
Hesperia, California

Exhibit

5b

EVALUATION OF ENVIRONMENTAL IMPACTS:

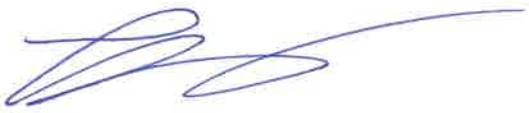
ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

☐	Aesthetics	☐	Agriculture and Forestry Resources	☐	Air Quality
☐	Biological Resources	☐	Cultural Resources	☐	Energy
☐	Geology /Soils	☐	Greenhouse Gas Emissions	☐	Hazards & Hazardous Materials
☐	Hydrology / Water Quality	☐	Land Use / Planning	☐	Mineral Resources
☐	Noise	☐	Population / Housing	☐	Public Services
☐	Recreation	☐	Transportation	☐	Tribal Cultural Resources
☐	Utilities / Service Systems	☐	Wildfires	☐	Mandatory Findings of Significance

DETERMINATION: (To be completed by the Lead Agency)
On the basis of this initial evaluation:

☐	I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
☒	I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
☐	I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
☐	I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
☐	I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

	4/16/25 Date:

1. AESTHETICS – Except as provided in Public Resource Code Section 21099, would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☒	☐
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	☒	☐
d) Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

Sources: City of Hesperia Main Street and Freeway Corridor Specific Plan, amended July 2021; Hesperia Municipal Code, updated October 2024; County of San Bernardin Countywide Plan, October 2020; California Department of Transportation State Scenic Highway System Map, accessed November 2024; Project Material; Google Earth Pro.

Background

The City of Hesperia is a "high desert" region part of the Mojave Desert geomorphic province bound to the south by the Transverse Ranges including San Bernardino Mountains, the Colorado Desert Province to the southeast, to the north by the Sierra Nevada Province, and northeast by the Basin and Range Province. The City is characteristic of the high desert region with isolated mountain ranges separated by expansive desert terrain, sandy slopes, and native desert vegetation that include Joshua Trees, used in the City's emblem.

Discussion of Impacts

a) **Less Than Significant Impact.** The proposed Project involves the redevelopment of the subject 1.58± acre parcel located at 15887-15901 Main Street and 15888 Walnut Street in the northeastern region of the City of Hesperia. The site is developed and used as a commercial car sale and repair shop. The automobile service development has frontage on the southwest corner of Main Street and Seventh Avenue where the three on-site structures are visible. The most notable structure is located on the site's northeast corner, being a one-story tall overhead canopy that functions as an outdoor viewing area for available cars for sale. The automobile repair shop is a single-story structure with two garage doors and customer service area, located 30± feet south from the canopy. Both structures are visible on the south side of Main Street and west side of Seventh Avenue. The third structure is a vacant single-story building on the northwest corner of the site with frontage on Main Street. The building appears abandoned and in poor conditions.

The south half of the parcel is highly disturbed from previous development. On the southeast quadrant, the surface is paved with asphalt and poorly kept with noticeable and extensive cracks throughout the pavement. West of this area, the parcel appears to have been graded in its entirety and a building foundation slab is located near the site's southwest corner. There are no structures on the parcel's southern half. The area is separated from the commercial uses on the north side of the site by fencing.

The Project proposes the construction of two fast-food drive-through restaurants within the subject 1.58± acre parcel. Based on the site plan (See Exhibit 4), the two buildings would be located on the site's northern half to increase visibility along the adjacent corridors including Main Street and Seventh Avenue. Per building standards outlined in the City of Hesperia Main Street and Freeway Corridor Specific Plan (MSFCSP), the Project will conform to the setback, building height, building design, and landscape requirements to secure compliance with the Specific Plan policies regarding the preservation and enhancement of scenic quality. Additionally, all proposed design elements will be reviewed by the City Development Committee to ensure that the Project will complement the visual character and support the high-quality development standards of the area, as mandated by MSFCSP Policy UD-5.3.

The visual character of the surrounding area consists of commercial development as outlined below:

- *North:* Beyond Main Street to the north, there is a two-story building with multiple tenant spaces of which most operate as office/clinic space. Along the perimeter of the building there is parking, with minimal landscaping coverage provided by mature trees.

- *South:* To the south side of Walnut Street, there are two commercial retail buildings, one of which operates as a household appliance retail store with an outdoor yard space used to display or store appliances. West of this site, there is an undeveloped, yet highly disturbed parcel covered by weeds and fenced with chain link.

- *West:* A single-story commercial building abuts the site to the west. The building is part of a larger commercial center, comprised of three large scale buildings that extend along the property's south, west, and east perimeter. The commercial center provides 20 tenant spaces, most of which appear to be occupied. Minimal landscaping is provided along the parcel's frontage with Main Street, Walnut Street, and Eighth Avenue.

- *East:* On the southeast corner of Main Street and Seventh Avenue, there is a convenience store/gas station facility. The overhead fueling station canopy is the most prominent structure for its height and expansive coverage. The convenience store is a single-story building, located south of the fueling station. The parcel is landscaped with desert shrubs, bushes, and trees along its perimeter. Further south, a single-story building serving as a dine-in restaurant/bar is located and sparse palm tree landscaping limits the site's view east of Seventh Avenue.

The dominant scenic views from the Project site include distant views from the surrounding mountain ranges, including San Gorgonio Mountain to the southeast and San Antonio Mountain to the southwest. Mountain views are either located at a distance where scenic views are limited or obstructed by surrounding structures. Local views are dominated by neighboring development and traffic along site-adjacent corridors. As mentioned above, the Project will be designed, constructed, and operated in accordance with the City MSFCSP development standards for Neighborhood Commercial use. Consistent with Hesperia's MSFCSP, the Project will comply with the intended objective of Specific Plan Policy UD-2.1 which requires the establishment of "development and design standards that encourage high quality of construction and lead to the creation of attractive developments."

In accordance with the MSFCSP landscape mandate for commercial uses, the Project will provide greater than 10% landscaping coverage on-site. The total proposed landscape area is 13,210 square feet which equates to 19% of the net lot acreage. The design and layout of the site's landscape area must conform to the landscape design standards as outlined in Chapter 10 (Commercial Design Standards and Guidelines) of the MSFCSP, as well as landscape provisions per the City Municipal Code Chapter 16.20, Article XII (Landscape

Regulations) and Chapter 16.24 (Protected Plants). Through compliance of the MSFCSP and Municipal Code, the proposed Project would minimize the contrast between the Project features and the surrounding visual character of the urbanized area and that of the Mojave Desert natural landscape.

Once operational, views to the site will be minimized by the surrounding landscape along the property's frontage with Main street and Seventh Avenue. There are no quality scenic vistas to Mt. San Gorgonio or Mt. San Antonio from the Project site because surrounding development currently obstructs and dominates the viewshed. The proposed development would not obstruct or minimize the quality of scenic vistas on-site or for those in the surrounding area beyond its existing condition. For these reasons, impacts to scenic vistas by the redevelopment of the subject site would be less than significant.

b) **Less Than Significant Impact.** As illustrated in the San Bernardino County Scenic Routes and Highways Map[1] and the California State Scenic Highway System Map[2] there are no "classified" or "eligible for classification" scenic corridors in the City of Hesperia or within proximity to the Project site. The nearest is the segment of the National Trail Highway (SR-66) located north of Victorville and south of Barstow and classified as a County Scenic corridor. There is no tree, rock outcropping, historical building, or any other qualified scenic resources on-site that is visible from a classified scenic corridor.

Scenic resources on-site are limited due to extensive commercial land use throughout the last decades. However, there is a mature Joshua Tree located on the parcel's southwest quadrant. In Hesperia, Joshua Trees are a protected scenic resource and a classified protected species under the State Desert Native Plants Act. Most notably, the Joshua Tree is a "state threatened" species under the Western Joshua Tree Conservation Act of 2023. The Project applicant will request approval of a take permit by the California Department of Fish and Wildlife (CDFW) to remove the Joshua tree currently on the property, as allowed by State law. Please see complete discussion in the Biological Resources section below. Adverse impacts to scenic resources including trees, rock outcropping, and historical buildings will be reduced to less than significant levels.

c) **Less Than Significant Impact.** There are no protected scenic views in vicinity of the Project site. As discussed in Question (a) of this section, scenic vistas on-site are either obstructed by neighboring structures or located at a distance so as to contribute marginally to scenic resources at the site. Additionally, the MFSCSP does not contain any regulations governing scenic quality other than development standards to which new Project buildings will conform. As such, the Project will not conflict with applicable policies or regulations conserving scenic quality within the Specific Plan Area. Less than significant impacts are anticipated.

d) **Less Than Significant Impact.** The Project occurs within a commercial corridor and is surrounded by similar commercial projects which currently are lighted and contribute to lighting in the area. Sources of nighttime light within the Project site will include light posts in the parking area, security lighting, vehicular headlights, and drive-through digital menu boards. Consistent with Municipal Code Section 16.16.405 (Site Design Standards and Guidelines) all commercial facilities must satisfy the following requirements: 1) provide exterior lighting not overly bright, 2) all outdoor light fixtures must be hooded and directed down towards the ground, and 3) minimize the amount of light pollution on nighttime skies. In accordance with these development standards, the Project would not be permitted to excessively illuminate the site or cause spillage into adjacent properties. As such, the proposed development would not create a new source of substantial light or glare which could otherwise affect daytime and nighttime views in the area. In accordance with local standards, impacts from the use of outdoor light fixtures will remain less than significant.

[1] Countywide Plan Policy Map NR-3, San Bernardino County, October 2020.
[2] California State Scenic Highway System Map, California Department of Transportation, accessed November 2024.

Mitigation: None required.

Monitoring: None required.

2. AGRICULTURE AND FORESTRY RESOURCES -- In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c) Conflict with existing zoning for, or cause rezoning of, forestland (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?	☐	☐	☐	☒
d) Result in the loss of forest land to non-forest use?	☐	☐	☐	☒
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or forest land to non-forest use?	☐	☐	☐	☒

Sources: City of Hesperia Main Street and Freeway Corridor Specific Plan, amended July 2021; California Department of Conservation, Farmland Mapping and Monitoring Program, September 2021; California Department of Conservation, Williamson Act Program, accessed November 2024; Project Material.

Background

The City of Hesperia is a "high desert" region, characterized by an arid desert environment which does not support farmland or forestry productions. There are no agricultural or timberland land uses or permitted land uses under the MSFCSP. Designated land uses under the Specific Plan include residential, commercial, open space, public facilities, institutions, and industrial. The proposed site is designated for Neighborhood Commercial which does not permit agricultural or forestry uses. The parcel's surrounding area is either developed for commercial use or highly disturbed from previous adjacent urban development. There is no agricultural or forestry production or related activities occurring in proximity to the Project site.

Discussion of Impacts

a) **No Impact.** Based on the California Department of Conservation, State Important Farmland Finder Map, there is no prime farmland, unique farmland, or farmland of statewide importance within the City of Hesperia or in proximity to the Project.[3] The City is classified as "Urban and Built-Up Land" and "Other Land," which

[3] California Important Farmland Finder, California Department of Conservation, https://maps.conservation.ca.gov/dlrp/ciff/app/, updated September 2021.

indicates that the City planning area is occupied by structures within a building density of at least 1 unit per 1.5 acres and pockets of vacant, nonagricultural lands surrounded by urban development[4].

The subject 1.58± acre parcel is classified Neighborhood Commercial under the City MSFCSP and the City Updated 2010 General Plan Land Use Map. The designation allows for a variety of commercial development with an emphasis on shopping and service needs. Consistent with the land use, the Project proposes the construction of two fast-food drive-through restaurants, with McDonalds and Starbucks being potential occupants. The parcel will not be converted to non-agricultural use. No impact is anticipated.

b) **No Impact.** The Project site is currently zoned for Neighborhood Commercial. The are no agricultural uses located within or in proximity to the Project site that would be adversely affected by the Project buildout. According to the California Department of Conservation Division of Land Resources Protection, the Project site is not subject to a Williamson Act Contract.[5] As such, no impacts would occur.

c) **No Impact.** The site and its surrounding area are designed and developed for commercial uses. Currently, the 1.58± acre sized parcel is fully paved and developed with three single-story structures on the parcel's northern half. The south half of the parcel is both paved with asphalt and graded extensively by previous land uses. Consistent with the Neighborhood Commercial designation, the Project proposes the development of two drive-through restaurants. There are no lands designated for forestry uses in the City. There would be no conflict with the City's existing zoning, nor would the Project require the rezoning of the parcel for non-forestry use. Forestry production is not permitted at the site under the MSFCSP development guidelines. The Project will not reduce forestry or timberland or convert land use from either designation. No impact to these resources will occur by the Project's implementation.

d) **No Impact.** As discussed above, the Project will not convert forestry land to non-forestry use. The parcel is intended for commercial use. No forestry lands or resources will be impacted by the Project's construction or long-term operation. No impact will occur.

e) **No Impact.** The site is designated for commercial development, and no land use changes are proposed with the Project's implementation. As such, the Project would not result in the loss of farmland for nonagricultural use or forest land for non-forestry use. There is no agricultural or forestry production occurring at the subject site. No conversion impacts will occur.

Mitigation: None required.

Monitoring: None required.

[4] Important Farmland Categories, California Department of Conservation, https://www.conservation.ca.gov/dlrp/fmmp/Pages/Important-Farmland-Categories.aspx, accessed November 2024.

[5] Williamson Act Program, California Department of Conservation, https://www.conservation.ca.gov/dlrp/wa, accessed November 2024.

3. AIR QUALITY – Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☒
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	☐	☐	☒	☐
c) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☐	☒

Sources: MDAQMD CEQA and Federal Conformity Guidelines, February 2020; MDAQMD Rule Book, 2021; 2020-2045 Regional Transportation Plan/Sustainable Communities Strategy of Hesperia, November 2023; Project-specific CalEEMod report (Appendix A), prepared December 2024; Project material; Google Earth Pro.

Background

The City of Hesperia is within the Mojave Desert Air Basin (MDAB), under jurisdiction of the Mojave Desert Air Quality Monitoring District (MDAQMD). The MDAQMD is an air quality monitoring agency responsible for all aspects of air quality management as defined by federal and state law within its jurisdictional boundaries that include the Desert Region of San Bernardino County and the far eastern end of Riverside County.

The MDAQMD monitors air pollutants identified by the U.S. Environmental Protection Agency (USEPA) as being prevalent in the atmosphere and which are known to cause health effects. To minimize exposure to these harmful air pollutants, the USEPA and the California Environmental Protection Agency (CEPA) have established ambient air quality standards (AAQS) which determine the maximum amount of air pollutants that may be present in the air at any given moment so as to ensure minimal adverse effects to sensitive receptors within the community and natural resources.

Ambient air quality standards for the MDAB are subject to federal guidelines known as the National Ambient Air Quality Standard (NAAQS), as well as state guidelines known as the California Ambient Air Quality Standard (CAAQS). Each AAQS focusses on certain air criteria which together include the following:

> **Carbon Monoxide (CO)** is a colorless and odorless gas emitted from the incomplete combustion of all fossil fuels including oil, coal, and natural gas. It interrupts the delivery of oxygen to the brain and can cause dizziness, headaches, and nausea.
>
> **Oxides of Nitrogen and Nitrogen Dioxide (NO_2)** is a yellow-brown colored gas that forms when nitric oxide, emitted primarily from burning of petroleum gas, combines with atmospheric oxygen. NO2. This causes lung damage and breathing difficulties.
>
> **Reactive Organic Gases (ROG)/Volatile Organic Compounds (VOCs)** are primary pollutants that form secondary pollutants, or photochemical smog, when they react with ultraviolet sunlight in the atmosphere.

Sulfur Dioxide (SO_2) is a colorless and pungent gas emitted from coal and oil power plants, refineries, and diesel engines. It can irritate eyes, nose, and airways and cause shortness of breath.

Particulate Matter (PM_{10} and $PM_{2.5}$) refers to suspended air particles with a width of 10 microns down to 2.5 microns. These very small particles may occur as liquid or solid, and when they are inhaled, they cause damage to the respiratory system and aggravate respiratory illnesses.

Lead (Pb) is emitted from metals processing facilities, combustion of leaded fuel, manufacturing of lead-acid batteries. Lead can damage the nervous system, kidneys, and interfere with developmental and reproductive systems.

Ozone (O_3) is a secondary pollutant that forms in the atmosphere when nitrogen oxides and other reactive gases react with ultraviolet sunlight. Ozone can damage the respiratory system and aggravate existing respiratory illnesses, and it also damages vegetation.

The MDAQMD operates two (2) air quality monitoring stations within its jurisdictional area. A monitoring station is located at 17288 Olive Street in the City of Hesperia which detects ozone and PM_{10} levels. The other station is located at 14306 Park Avenue near Victorville and approximately six (6) miles north of the City of Hesperia monitoring site. Based on the data collected from these monitoring stations, the MDAB exceeds certain air pollutant thresholds under both the NAAQS and CAAQS. As shown in Table 2, MDAB is classified as nonattainment for NAAQS 8-hour ozone (Severe-15) and 24-hour PM_{10} (Moderate). The air basin also exceeds the acceptable levels for ozone (Moderate), PM_{10}, and $PM_{2.5}$ as designated in the CAAQS.

Table 2
Mojave Desert Air Quality Ambient Air Quality Attainment Classification

Ambient Air Quality Standard	MDAQMD
Eight-hour Ozone (Federal 70 ppb (2015))	Expected nonattainment; classified Severe-15*
Ozone (State)	Nonattainment; classified Moderate
PM_{10} 24-hour (Federal)	Nonattainment; classified Moderate (portion of MDAQMD in Riverside County is unclassifiable/attainment)
$PM_{2.5}$ Annual (Federal)	Unclassified/attainment
$PM_{2.5}$ 24-hour (Federal)	Unclassified/attainment
$PM_{2.5}$ (State)	Nonattainment*
PM_{10} (State)	Nonattainment
Carbon Monoxide (State and Federal)	Unclassifiable/Attainment
Nitrogen Dioxide (State and Federal)	Unclassifiable/Attainment
Sulfur Dioxide (State and Federal)	Attainment/unclassified
Lead (State and Federal)	Unclassifiable/Attainment
Particulate Sulfate (State)	Attainment
Hydrogen Sulfide (State)	Unclassified
Visibility Reducing Particles (State)	Unclassified

* Note: portion of MDAQMD outside of Western Mojave Desert Ozone Nonattainment Area is unclassified/attainment
Source: California Environmental Quality Act and Federal Conformity Guidelines, Mojave Desert Air Quality Monitoring District, February 2020.

Sources of emissions contributing to the nonattainment classification include stationary and mobile sources. Generally, the highest levels of VOC, NO_x, and CO are associated with mobile sources while the highest emission levels of PM_{10} and $PM_{2.5}$ arise from unpaved road dust, wood fireplace usage, paved road dust, and construction and demolition.

In response to the nonattainment status, the MDAQMD adopted the California Environmental Quality Act and Federal Conformity Guidelines in February 2020. The MDAQMD CEQA guidelines establish air pollutant standards which all new development within the Mojave Desert Air Basin is subject to, including the proposed Project. These thresholds are aimed at managing the maximum amount of air pollutants that a single development may release on a daily or annual basis so as to not conflict with the MDAQMD attainment plan for PM_{10} and ozone. Table 3 reports MDAQMD emission thresholds that are applicable for a Project's construction and operation phase.

Table 3
MDAQMD Significant Emissions Thresholds

Criteria Pollutant	Daily Thresholds (pounds)	Annual Threshold (short tons)
Greenhouse Gases (CO2e)	548,000	100,000
Carbon Monoxide (CO)	548	100
Oxides of Nitrogen (NO_x)	137	25
Volatile Organic Compounds (VOC)	137	25
Oxides of Sulfur (SO_x)	137	25
Particulate Matter (PM_{10})	82	15
Particulate Matter ($PM_{2.5}$)	65	12
Hydrogen Sulfide (H_2S)	54	10
Lead (Pb)	3	0.6

Source: California Environmental Quality Act and Federal Conformity Guidelines, Mojave Desert Air Quality Monitoring District, February 2020.

Emission for the Project's construction and operation were estimated by using the California Emission Estimator Model (CalEEMod) Version 2022.1 that is a land use emission model that quantifies the emission of criteria pollutants associated with the construction and operation phases of development. A Project-specific CalEEMod report was prepared on December 18, 2024 (Appendix A). The following discussion is based on the results.

Discussion of Impacts

a) **No Impact.** According to MDAQMD's CEQA Guidelines, a project is in conformance, if its growth factor is consistent with the Southern California Association of Governments' (SCAG's) 2024-2050 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) employment and population forecast and consistent with MDAQMD growth projection. Conformity with the regional growth forecast can be demonstrated by a project proposed land use pursuant to the City General Plan Land Use.

Regarding the proposed Project, the site is zoned for Neighborhood Commercial under the MFSCSP. The land use allows for a variety of commercial development centered on serving the local community. As it exists, the property is partially developed with the northern side consisting of three structures, two of which are used to operate an automobile sales and repair/service shop, and the southern side consisting of paved and graded areas, but largely unoccupied. In accordance with the parcel's land use, the Project proposes the construction and operation of two (2) drive-through restaurants including a 3,684± square foot McDonald's building and a 1,300± square foot Starbucks building. Implementation would be consistent with the SCAG and MDAQMD projected growth factor, considering that the property will continue to operate as a non-

residential area, avoiding the potential population growth and subsequent increase of emissions related to vehicle trips and vehicle miles traveled. The Project would however provide new employment opportunities. Once operational, both the McDonalds and Starbucks buildings are expected to hire a staff of 39 people in total. The increase in local employment contributes less than one (1) percent (0.082% exact) of SCAG's estimated count of 47,500 jobs in the City of Hesperia by 2050.[6] Additionally, future employees are expected to be residents to the City or adjacent unincorporated areas and thus, home to work vehicle trip lengths would be limited as within or near the City area. Because the Project conforms to the City's specific plan land use designation that was used to calculate SCAG and MDAQMD growth projection, the Project's use of the site has been included in the growth forecast and is therefore consistent with MDAQMD air quality plan. Impacts to MDAQMD as a result of the Project's implementation are negligible.

Lastly, if a project complies with all applicable standards pursuant to MDAQMD's Rule Book, as mandated, then any potential violations or impediments to MDAQMD air quality plan would be avoided. Pursuant to MDAQMD's Rule Book, the Project is required to obtain a construction permit by the Air Pollution Control Office according to Rule 201, as well as an operation permit pursuant to Rule 203. The Project must also not "interfere with the attainment and maintenance of Ambient Air Quality Standards" as mandated by Rule 1300. Consistent with these rules and other applicable rules, adverse effects to the efficiency of the local air quality plan in relation to the Project's implementation would be avoided to the greatest extent.

As shown, the Project is in conformance with the MDAQMD's air quality plan by proposing a development permitted within the City's MSFCSP designated Neighborhood Commercial land use and growth forecast for local employment opportunities within Hesperia. Additionally, air quality control measures as required by MDAQMD will be applied. Therefore, compliance with local, regional, and state guidelines and standards would ensure that the Project does not conflict with or delay the implementation of local or regional air quality plans. No impacts on the implementation of applicable air quality plans would occur.

b) **Less Than Significant Impact.** Cumulative impact is triggered when a project is in non-attainment under the federal and state ambient air quality standards. As shown in Table 2, MDAB is designated as an area of non-attainment for PM_{10} and ozone thresholds by both the NAAQS and CAAQS. In response, MDAQMD adopted the Mojave Desert Planning Area (MDPA) PM_{10} Attainment Plan (1995) and MDAQMD Ozone Attainment Plan (2004). To further manage criteria air pollutants at non-attainment, as well as maintain those in attainment, MDAQMD has implemented total emission thresholds for construction and operation within the air basin on a daily and annual basis. Air pollutant emission related to the Project's construction and operation are compared to the MDAQMD thresholds as outlined in Table 3.

Construction and operation of the proposed Project would emit criteria air pollutants. The following section is a quantitative analysis of the Project's emissions calculated using CalEEMod Version 2022.1 for the following land uses: fast food restaurant with drive through, parking lot, and other asphalt surfaces. The Project would include the demolition of the existing structures and pavement area, totaling to 50,678 square feet. Emission calculations were based on the development of two fast-food restaurants totaling 4,984 square feet, landscape area of 13,210 square feet, 55 parking stalls, and the improvement of 2,628± square feet of Seventh Avenue, located adjacent to the property's eastern boundary.

Construction Emissions

The Project's construction will consist of the following construction phases: demolition, site preparation, grading, building construction, paving, and architectural coating. These construction phases are expected to

[6] 2024-2050 Regional Transportation Plan/Sustainable Communities Strategy: Demographics and Growth Forecast Technical Report, Southern California Association of Governments, April 2024.

occur over a 7-month construction period starting in September 2025 and ending in April 2026. Emissions during this time would consist of construction vehicle trips moving across the site, delivery trucks transporting construction material to and from the site, hauling trucks exporting 700 cubic yards (CY) of material off-site, and workers commuting to and from the site. Table 4 summarizes maximum daily construction emissions and determines whether MDAQMD construction emission thresholds would be exceeded. As shown, the Project would not exceed MDAQMD criteria air pollutant thresholds at any point during the 7-month construction period.

Table 4
Maximum Daily Construction-Related Emission Summary

Construction Emissions	CO	NO_X	ROG	SO_2	PM_{10}	$PM_{2.5}$
Daily Maximum* (pounds/day)	18.4	15.6	4.14	0.03	8.06	4.11
MDAQMD Thresholds (pounds/day)	548	137	137	137	82	65
Exceeds?	**No**	**No**	**No**	**No**	**No**	**No**

(*) Note the highest emission values occur during the winter and thus are represented here, to analyze the worst-case scenario.
Source: CalEEMod (Version 2022.1)

Operation Emissions

Operational emissions refer to ongoing emissions over the Project's lifespan. These emissions come from area source emissions (dust, asphalt surface), energy demand (electricity, natural gas), and mobile sources (vehicle emissions from workers and visitors). Mobile source emissions have been adjusted to account for 1,459 net daily trips calculated by the Project-specific traffic report (See Appendix G). Table 5 summarizes maximum daily operation emission and determines whether related emission thresholds would be exceeded at any point during operation. As shown, no conflicts to MDAQMD's emission thresholds for long-term operation would occur in relation to the Project's implementation.

Table 5
Maximum Daily Operation-Related Emission Summary

Construction Emissions	CO	NO_X	ROG	SO_2	PM_{10}	$PM_{2.5}$
Daily Maximum* (pounds/day)	43.6	4.96	6.85	0.09	7.89	2.06
MDAQMD Thresholds (pounds/day)	548	137	137	137	82	65
Exceeds?	**No**	**No**	**No**	**No**	**No**	**No**

(*) Note the highest emission values occur during the summer and thus are represented here, to analyze the worst-case scenario.
Source: CalEEMod (Version 2022.1)

Cumulative Impact

As previously discussed, cumulative impact occurs if the project exceeds federal or state AAQS or contributes to the MDAB non-attainment classification for PM_{10} and ozone. Since the MDAQMD does not provide thresholds of significance for cumulative emissions generated by multiple projects, a single project's potential for cumulative impact may be analyzed instead. Using MDAQMD emission thresholds imposed on all projects, it may be assumed that less than significant cumulative impact is determined by the project's emission of criteria air pollutants at or below the indicated emission thresholds for construction and operation.

As shown in Table 4 and Table 5, the Project would operate below the daily emission threshold for PM_{10}, ozone, and other air criteria pollutants. Additionally, the Project would adopt best management standards as required by MDAQMD rules to mitigate emission such as fugitive dust control pursuant to Rule 403.

Summary

The Project would emit air pollutants during construction and operation. However, the Project's emissions would fall below significance thresholds set by MDAQMD. Despite the incremental increase, these emissions would not result in a considerable cumulative net increase of non-attainment pollutants. As such, impacts are limited to less than significant.

c) **Less Than Significant Impact.** MDAQMD defines sensitive receptors as groups of people commonly found within residences, schools, daycare centers, playgrounds, and medical facilities. The protection of these areas from land uses that exhibit high emission is critical, considering the increased vulnerability for health issues by sensitive receptors to extended exposure to air pollutants. For this reason, MDAQMD sets significance thresholds for a project near a sensitive receptor as outlined below.

MDAQMD's project types subject to evaluation if located in proximity to sensitive receptors:

- Any industrial projects within 1000 feet
- A distribution center (40 or more trucks per day) within 1000 feet
- A major transportation project (50,000 or more vehicles per day) within 1000 feet
- A dry cleaner using perchloroethylene within 500 feet
- A gasoline dispensing facility within 300 feet[7]

The Project is proposed on the southwest corner of Main Street and Seventh Avenue, where development surrounding the subject site includes a clinic/office building to the north, a gas station/convenience store to the east, a retail shop and vacant parcel to the south, and a commercial plaza immediately to the east. Beyond the Project area there are two residential neighborhoods bordering the commercial zone to the north beyond Yucca Street and south beyond Walnut Street. The nearest sensitive receptor is a single-family residential unit located 140± feet to the southeast from the site.

In consideration of the above listed thresholds, the Project is determined to be neither an industrial warehouse, distribution center, dry cleaner, or gas station. Implementation of the Project would include restriping the portion of Seventh Avenue located adjacent to the site's eastern boundary, as well as construction of sidewalk along Seventh Avenue and Walnut Street. These roadway improvements would not qualify as a major transportation project as defined by MDAQMD who sets a conditional standard of at least 50,000 vehicles. Implementation of the proposed roadway improvements is not expected to increase the existing use of Seventh Avenue, rather it is designed to manage traffic heading west on Main Street and west on Walnut Street from Seventh Avenue and provide access to alternative transportation through the construction of sidewalks and painting of bicycle lanes. As such, the Project would not pose a significant risk to nearby sensitive receptors by its long-term operation. Additionally, as shown in Table 4 and Table 5, the Project would not exceed air criteria thresholds as set by MDAQMD. The Project's emissions for both phases are well below MDAQMD thresholds and therefore, impacts to sensitive receptors are considered less than significant.

d) **No Impact.** Odor detection is subjective and dependent on the individual's sensitivity to smells. Land uses generally associated with odor complaints include agricultural uses (livestock and farming), wastewater treatment plants, food processing plants, chemical plants, composting operations, refineries, landfills, and

[7] MDAQMD California Environmental Quality Act and Federal Conformity Guidelines, February 2020.

fiberglass molding facilities. The Project does not propose the operation of any of these land uses. Therefore, the potential for the Project to create objective odors affecting the surrounding area is low to very low. No impacts are anticipated.

Mitigation: None required.

Monitoring: None required.

4. BIOLOGICAL RESOURCES -- Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
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 Wildlife or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
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 Wildlife or US Fish and Wildlife Service?	☐	☐	☐	☒
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☒
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?	☐	☐	☐	☒
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☒	☐	☐
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

Sources: City of Hesperia General Plan, 2010; City of Hesperia Main Street and Freeway Corridor Specific Plan, amended July 2021; Countywide General Plan EIR, San Bernardino County, June 2019; Hesperia Municipal Code, updated October 2024; Project Material; Google Earth Pro.

Background

The City of Hesperia is located in the San Bernardino County Desert Region, north of County incorporated cities including Victorville and Apple Valley, south of the Mt. San Gorgonio foothills, west of the Interstate-15 Freeway, and east of the Mojave River. The City is characterized by expansive desert terrain, wash channels, desert vegetation including an abundance of Joshua and Juniper Tree woodlands. Characterized by the Mojave Desert Province, the area's arid desert environment experiences an average rainfall between six (6) to seven (7) inches per year, and daytime temperatures range from 56 degrees in the winter to 99 degrees in the summer. The natural landscape sits at an elevation of 3,186 feet.

The City and its Sphere of Influence encompass an approximately 118 square mile area of which the majority is developed for residential, commercial, institutional and industrial use. Undeveloped parcels covered by loose sedimentary soil and natural desert vegetation are scattered throughout the planning area. Although Hesperia is a largely urbanized city, there are approximately 2,125 acres of land preserved and designated for open space within the City and its Sphere of Influence.[8] Open space land uses include numerous washes and other natural water courses that traverse the region.

[8] Open Space Element Exhibit OS-4, City of Hesperia General Plan, 2010.

Based on the Countywide General Plan EIR (2019), the US Fish and Wildlife Service (USFWS) has designated critical habitat within the Desert region for a number of plant and wildlife species including, but not limited to, the desert tortoise, arroyo toad, Mojave ground squirrel, Gila woodpecker, southwestern willow flycatcher, and the Nelson's bighorn sheep. The County has also identified and designated critical habitats for federal, state, and local special status species within the Desert Region, including the City of Hesperia.

Critical habitats according to the USFWS and San Bernardino County identified in Hesperia are summarized in the following section.

- *Desert Tortoise Habitat:* The desert tortoise is typically found on level or sloped ground where the surface sediment is firm enough to support burrows and the area is densely covered by creosote shrub. Tortoise burrows are often seen at the base of shrubs, in the sides of washes and hillsides. Based on the San Bernardino County General Plan Desert Tortoise Habitat Map, the City's northern region is a Class 3 habitat for desert tortoises, indicating the presence of suitable habitat, but certain geographical constraints including development, fragmentation, disturbance, absence of foraging and/or burrowing habitat, or other related factors reduce the probability for occurrence to low. The habitat classification changes to Class 2 along the City's northwest boundary where the probability is medium.

- *Arroyo Toad Habitat*: The arroyo toad inhabits semi-arid regions near washes or intermittent streams, including valley-foothill, willows, sandy banks, and gravelly areas of streams in drier parts. According to the USFWS Southern Arroyo Toad Final Critical Habitat delineation represented in Exhibit OS-2 of the City General Plan, an extended portion of the City's southern area which borders the Mojave River region to the east and crosses along the foothills of Mt. San Gorgonio to the south is classified as critical habitat for arroyo toads. Protection measures are implemented within the classified area so as to avoid or minimize direct and indirect impacts related to urbanization and other human activities to the federally listed species.

- *Mojave Ground Squirrel Habitat:* The Mojave ground squirrel occurs strictly in the Mojave Desert with a preference for sandy to gravelly soils within open desert scrub, alkali scrubs, and Joshua Tree woodland. Under the San Bernardino County General Plan habitat delineation for the Mojave Ground Squirrel, the City's northeastern boundary and the area south of Victorville are identified as livable habitat areas, as shown in the City General Plan Exhibit OS-1.

Within the County's Desert region, a total of 234 special status species (plant and animal) have been documented, of which 17 species are federally listed as endangered or threatened, 19 are listed as state endangered or rare, 1 is a state threatened candidate, 8 are state fully protected, and 203 are non-listed special status species.[9] The desert tortoise, for example, is a state and federally listed threatened species. The arroyo toad is a federally listed endangered species. And the Mojave ground squirrel is a state listed threatened species. Additionally, the Western Joshua Tree is a state threatened species, which is notable considering its prominent occurrence throughout the Mojave Desert Province, including the City of Hesperia.

The Project site is located in the City's northeastern region, part of the City of Hesperia MSFCSP planning area. Designated as Neighborhood Commercial, the subject 1.58± acre parcel is entirely developed. Three structures, totaling to 1,978 square feet of building space, are located on the parcel's northern half. The parcel's southern half is fully disturbed from previous land uses where the southeast quadrant was paved and used for outdoor parking and the southwest quadrant was graded and previously consisted of a structure, as evident by the building foundation located near the site's southwestern corner. Although the site is severely disturbed, there is a single mature Joshua

[9] San Bernardino Countywide Plan Draft PEIR: Biological Resources, County of San Bernardino, June 2019.

Tree on the southwest quadrant. Adjacent to the site, Main Street borders the property to the north, Walnut Street to the south, Seventh Avenue to the east, and a built-up single-story commercial structure abuts the property to the west. The site is located within a highly urbanized and commercial-focused area of the Specific Plan.

Discussion of Impacts

a) **Less Than Significant with Mitigation Incorporated.** The proposed site is located within the City's MSFCSP commercial and residential corridor where extensive development has previously occurred on and near the Project area. Majority of the site is graded, paved, and/or used for building construction. Development on-site began in 1957 and has evolved as new construction plans occurred in 1967 and 1980. Currently, the site consists of three single-story structures, of which two are buildings and one is an overhead canopy, remanence of the gas station that once operated. The parcel's southern half consists of both paved and graded areas. There are no structures in this area nor is the parcel used for commercial purposes. The two distinct land uses are physically divided by a metal wire fence that run along the perimeter of the southern parcel. Within this restricted area, a single mature Joshua Tree is observed.

There is no suitable habitat on-site for the occurrence of special status species within the Project boundary. The parcel has been extensively disturbed from previous construction and commercial operations to the extent of it no longer sustaining a natural environment. Plus, the surrounding areas contribute to on-site disturbance including traffic along Main Street, Walnut Street, and Seventh Avenue and operation activities from surrounding land uses. As such, implementation of the Project would not result in the modification of a natural habitat that could otherwise serve as a critical habitat for federally, state, and local protected special status species.

Buildout would result in the removal of the mature Joshua Tree located on the southern half of the Project site. Any disturbance including removal, would be considerably significant given the listing of the species as a "state threatened" species under the Western Joshua Tree Conservation Act of 2023, and requires mitigation. As part of the Project proposal, a take permit would be submitted to remove the Joshua Tree according to as the requirements stated in the California Department of Fish and Wildlife (CDFW) protocol for the species. The law allows for the destruction of trees, as long as a mitigation fee is paid to allow for the purchase of habitat for the species as a whole. An in-lieu fee would be collected at the time of permit approval to off-set the loss of the tree, and will offset the cost of acquiring, conserving, and managing conservation lands for Joshua Trees. The Project also meets the requirements of the City's native plant protection standards, outlined in Section 16.24.050(B) of the City Municipal Code for the removal of a native tree in Hesperia:

- *HMC Section 16.24.050(B)(5):* The condition or location of the native plant or tree is adjacent to and in such close proximity to existing or proposed structure that the native plant or tree has or will sustain significant damage.

Compliance with State and local standards, as well as implementation of Mitigation Measure BIO-1 will ensure future development activities involving the removal of the Joshua Tree from the Project site do not cause significant impact nor cumulative impact to biological resources in the surrounding area. As such, impacts would be less than significant with mitigation.

b) **No Impact.** There is no wetland or riparian habitat located within the Project site. The site is disturbed and zoned for commercial use. The surrounding area is highly urbanized and designed for commercial retail and service needs. No off-site wetlands or migratory bird nesting areas will be affected by the proposed development considering all construction and operation activities will be confined within the Project boundary. For these reasons, no impacts to riparian habitat and any other sensitive natural community would occur as a result of the Project.

c) **No Impact.** No wetland areas or riparian habitats (i.e., wetlands, vernal pools, critical habitats for sensitive species, etc.) are found on the site. There would be no impacts to these natural habitats.

d) **No Impact.** The City Main Street and Freeway Corridor Specific Plan makes no reference to natural corridors occurring within the specific planning area nor within proximity to the Project site. The Countywide General Plan EIR identifies four habitat linkage and wildlife corridors within the County Desert region, all of which occur outside the City boundary as describe in the EIR and outlined in the following section.

- *San Gabriel-San Bernardino Connection:* Connects two expansive areas of the Angeles and San Bernardino National Forest, including three roughly parallel swaths through the Cajon Wash and Pass. It partially overlaps the Mountain Region.

- *San Bernardino-Little San Bernardino Connection:* Connects San Bernardino National Forest with Joshua Tree National Park and partially overlaps the Mountain Region.

- *San Bernardino-San Jacinto Connection:* Connects the San Bernardino and San Jacinto Mountains, partially in the Mountain Region and does not intersect any major transportation corridors.

- *Joshua Tree-Twentynine Palms Connection*: Connects the Joshua Tree National park and Marine Corps Air Ground Combat Center Twentynine Palms through the Morongo Basin.

Given the Project site's surrounding urban environment, adjacent transit corridors, and on-site disturbance, its utility as a habitat and migration corridor is negligible. As a result, no impacts are anticipated.

e) **Less Than Significant Impact with Mitigation Incorporated.** The entire 1.58± acre parcel is developed. There is no existing natural habitat on-site which would feasibly support the occupation of a biological resource, except for the Joshua Tree located on the southwest quadrant of the property. To avoid substantial impact, the Project requires a take permit issued by the CDFW, pursuant to the Western Joshua Tree Conservation Act, as provided in Mitigation Measure BIO-1. In accordance with state standards and implementation of Mitigation Measure BIO-1, the Project's development would not cause substantial adverse effects to biological resources in relation to a violation with state and/or local preservation policy and ordinance. In doing so, impacts are limited to less than significant levels.

f) **No Impact.** Implementation of the proposed Project would not conflict with the provisions adopted by regional and local Habitat Conservation plan, Natural Community Conservation plan, or other habitat conservation plan. No impact is expected.

Mitigation:

BIO-1 Prior to any ground disturbing activity on the Project site, the applicant shall secure an Incidental Take Permit (ITP) for the removal of the Joshua tree, and provide a copy of the ITP to the City. The applicant shall also secure native plant permits from the City, as required by the Municipal Code.

Monitoring: The Applicant and the City Planning Department would share monitoring responsibilities.

5. CULTURAL RESOURCES -- Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of a historical resource pursuant to § 15064.5?	☐	☐	☐	☒
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?	☐	☐	☒	☐
c) Disturb any human remains, including those interred outside of dedicated cemeteries?	☐	☐	☒	☐

Source: City of Hesperia General Plan, 2010; Project Material; Google Earth Pro.

Background

In December 2010, a cultural assessment was prepared by Michael Brandman Associates for the City General Plan Update. The survey analyzed the City planning area's historical significance and identified sensitive areas where artifacts may occur, based on historical data, location, disturbance, and other contributing factors.

In the report, four (4) historical periods were identified as having cultural significance and prevalence in the area. Those time periods include the Desert Cultural Period (12,000 to 10,000 BC), Western Hunting Culture or Lake Mojave Period (9,000 to 5,000 BC), Pinto Period (5,000 to 2,500 BC), and Protohistoric Period (2,500 BC to 1796 AD). Each period is defined by the type of artifact used. The Desert Cultural Period yields prehistorical tool kits, including small projectile points, choppers, flat scrapers, drills, and digging sticks. The Lake Mojave Period produced numerous flaked lithic sites surrounding the extinct Lake Mojave. The Pinto Period and the Protohistoric Period are identified by the use of Elko and Gypsum in tools.

Approximately 330 cultural sites and finds were identified in the City planning area with an additional 19 resources pending review. Eight of these sites are listed in the following historical archives: the National Register of Historical Places list, California Historic Landmarks list, or the California Points of Historic Intertest list. Areas under consideration for their potential to yield cultural and paleontological resources occur in portions of the Oro Grande wash, Summit Valley, and the Mojave River, as well as an un-named wash adjacent to the Interstate-15 Freeway.[10]

Other cultural resources in the City of Hesperia are comprised of transportation routes, roads, and railways such as the Mojave Trail/Road, the Mormon Trail, the National Old Trails highway, and the Spanish Trail.[11] To preserve their cultural and historical value, these artifacts have been designated as open space to maintain their status and restrict impacts related to urbanization.

The proposed development site occurs within the MSFCSP area. The Specific Plan does not discuss the area's cultural or historical sensitivity. However, based on the Project's location, land use, degree of urbanization, and disturbance, the probability for cultural or historical resources to be uncovered within or near the property are low to very low. The 1.58± site is developed and used as an automobile sale and repair/service shop. Development on-site began in 1957 and since the site has been repeatedly disturbed by construction and operational activities. There is no evidence to suggest the discovery of culturally or historically valuable artifacts within the property at any point in its development phase. Additionally, the site is located within a highly urbanized and disturbed area of Hesperia.

[10] Conservation Element, City of Hesperia General Plan, 2010.
[11] Appendix D, City of Hesperia General Plan EIR, March 2010.

The nearest culturally sensitive area to the subject site is the Mojave River, located 4.28± miles east. Other sensitive areas are located at a greater distance to the Project site.

Discussion of Impacts

a) **No Impact.** The Project site is developed and zoned for Neighborhood Commercial use. Three (3) structures are located on-site, two of which function as an automobile sale and service/repair facility and the remaining structure is a single-story vacant building. These structures were constructed at some point between 1957 when on-site development began to 1980, when the last development period was recorded. At some point in the property's development cycle, the site operated as a gas fuel station, evident by the most notable single-story overhead canopy near the southwest corner of Main Street and Seventh Avenue. None of these structures hold a historical or cultural value to the City of Hesperia. As such, the demolition and redevelopment of the site for the construction of two fast-food drive-through restaurants would not cause a substantial adverse change in the site's historical status.

For these reasons, the site is not considered as a historically sensitive area. No historical resource is expected to occur within the Project site. As such, the implementation of the Project would not significantly change the City's access to or the value of historical resources. No impact would occur.

b) **Less Than Significant Impact.** Previous development has disturbed the site in its entirety. Construction on-site has included excavation, site preparation, paving, and building construction. At no point during ground disturbance were archeological resources uncovered within the site's boundary. The Project's development would not result in the excavation of the site at a greater depth than that already disturbed by previous development. As such, the Project would not disturb soil where archeological resources may occur. The probability for archeological resources to be unearthed during earth moving activities is low to very low. Impacts to archeological resources would be less than significant.

c) **Less Than Significant Impact.** There is no evidence to suggest the use of the site as an unmarked cemetery. No human remains are known to have occurred at the site. It is unlikely for any human remains to be found during the construction process, especially considering the site's extended disturbance from previous construction activities. However, in the case that human remains are found, State law requires that all activities will cease immediately, and the County's Coroner will be notified. The Coroner will make the final determination of the remains' significance and whether Native American tribes should be contacted. Therefore, under state standards, potential impacts to human remains would be reduced to less than significant levels.

Mitigation: None required.

Monitoring: None required.

6. ENERGY -- Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	☒	☐
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☒	☐

Source: The Carl Moyer Program Guidelines, the California Environmental Protection Agency Air Resources Board, approved April 2017; Average Fuel Economy by Major Vehicle Category, Alternative Fuels Data Center, U.S. Department of Energy, last updated January 2024; Project-specific CalEEMod report (Appendix A), prepared December 2024; Project material.

Background

Southern California Edison (SCE) and Southwest Gas Corporation (SGC) are the two (2) energy utility providers serving the City of Hesperia and the Project.

SCE is one of the largest electric utilities in the state, providing electric services to approximately 15 million people within a 50,000 square mile service area encompassing central, coastal, and southern California.[12] At the time of Hesperia's 2010 City General Plan, about 16 percent of the total energy serviced by SCE came from renewable sources including solar, wind, small hydroelectric, geothermal, and biomass/waste[13]. The remaining energy was sourced through nonrenewable options including natural gas, fossil fuel, and nuclear energy. The percentage of renewable energy currently produced by SCE is projected to be much higher given the adoption of Senate Bill 100 (SB 100) that mandates electricity utility providers to transition to clean energy (carbon-free) retail services by 2045. In accordance with law, SCE drafted a Clean Power and Electrification Pathway report in November 2017, outlining the company's approach in introducing carbon-free energy to the energy grid and a specified timeline by when objectives should be implemented.

SGC purchases its natural gas from a variety of sources and distributes and sells in areas throughout California, Arizona, and Nevada. In California, SCG the service area encompasses parts of the north and south, with its southern region including high desert cities such as Barstow, Victorville, and Hesperia. Southwest Gas transmission pipelines are primarily located within the Victorville planning area[14], indicating that the City planning area is serviced by local distribution lines.

Discussion of Impacts

a) **Less Than Significant Impact.** The Project proposes the redevelopment of an existing site to operate a 3,684± square foot McDonald's building with two drive-through lanes and a 1,300± square foot Starbucks building with a single drive-through lane. Construction and operation of the Project would consume energy in the form of electricity, natural gas, and/or gasoline. The following section analyses the energy consumption at each phase of development and determines whether energy use would result in environmental impact due to wasteful, inefficient, or unnecessary consumption.

[12] Southern California Edison Service Area, https://www.sce.com/about-us, accessed November 2024.
[13] Customer Connection, Southern California Edison, October 2009.
[14] Southwest Gas Transmission Pipeline map, Southwest Gas Corporation, accessed December 2024.

Construction Usage

The Project's construction phase will include demolition, site preparation, grading, building construction, paving, and architectural coating. These construction phases are estimated to occur over a 7-month construction period. During this time, energy use would be attributed primarily to the use of heavy construction equipment and construction worker vehicles commuting to and from work.

Table 6 provides a thorough overview of the type of construction equipment that may be found at the site during the specific construction phase and calculates the equipment's fuel consumption based on the construction duration, construction equipment schedule, equipment power rating, and load factors programmed in CalEEMod (Appendix A). The aggregate fuel consumption rate for all equipment is estimated at 18.5 horsepower hours per gallon, per the California Air Resources Board's (CARB's) Carl Moyer Program Guidelines (2017), Table D-21 Fuel Consumption Rate Factor.[15] CalEEMod assumes all construction equipment is diesel powered. The Project construction activities would consume an estimated 13,800 gallons of diesel fuel.

Table 6
Construction Equipment Fuel Consumption Estimates

Construction Phase	Duration (days)	Equipment Type	HP Rating	Qty	Usage Hours	Load factor	HP-hrs/day	Fuel Consumption
Demolition	30	Concrete/ Industrial Saws	33	1	8	0.73	193	313
		Tractors/Loaders/ Backhoes	84	3	8	0.37	746	1,210
		Rubber Tired Dozers	367	1	8	0.40	1174	1,904
Site Preparation	15	Graders	148	1	8	0.41	485	394
		Rubber Tired Dozers	367	1	7	0.40	1028	833
		Tractors/Loaders/ Backhoes	84	1	8	0.37	249	202
Grading	20	Graders	148	1	8	0.41	485	525
		Rubber Tired Dozers	367	1	8	0.40	1174	1,270
		Tractor/Loaders/ Backhoes	84	2	7	0.37	435	470
Building Construction	70	Cranes	367	1	6	0.29	639	2,416
		Forklifts	82	1	6	0.20	98	372
		Generator Sets	14	1	8	0.74	83	314
		Tractor/Loaders/ Backhoes	84	1	6	0.37	186	706
		Welders	46	3	8	0.45	496.8	1,180
Paving	20	Cement and Mortar Mixers	10	1	6	0.56	33.6	36
		Pavers	81	1	6	0.42	204.12	221
		Paving Equipment	89	1	8	0.36	256.32	277
		Rollers	36	1	7	0.38	95.76	104
		Tractors/Loaders/ Backhoes	84	1	8	0.37	248.64	269
Architectural Coating	15	Air Compressors	37	1	6	0.48	107	86
Total Construction Equipment Fuel Demand (Gallons Diesel Fuel)								**13,800**

Source: CalEEMod Version 2022.1

[15] The Carl Moyer Program Guidelines, California Environmental Protection Agency Air Resources Board, https://ww2.arb.ca.gov/sites/default/files/2020-06/2017_cmpgl.pdf, approved April 2017.

Table 7 provides an overview of fuel consumption as it relates to construction workers' commute to and from the site. Estimates are based on trip type (worker, hauling, and vendor), construction duration, rate of daily worker trips, and trip length as modeled by CalEEMod. For purposes of this analysis, it may be assumed that worker trips are by car, hauling trips are by Class 8 truck, and vendor trips are by delivery trucks. The average vehicle fuel economy estimate for each trip type was derived from the U.S. Department of Energy Alternative Fuels Data Center.[16] As shown below, the total worker vehicle fuel consumption for the Project's buildout over a 7-month period is estimated to be 3,783 gallons of fuel.

Table 7
Construction Worker Fuel Consumption Estimates

Construction Phase	Duration (days)	Trip Type	Worker Trips/Day	Trip Length (miles)	VMT	Avg. Fuel Economy (mpg)	Fuel Consumption
Demolition	30	Worker	15	18.5	8,325	24.4	341
		Hauling	19.4	20	11,640	5.7	2,042
Site Preparation	15	Worker	10	18.5	2,775	24.4	114
Grading	20	Worker	10	18.5	3,700	24.4	152
		Hauling	10	20	4,000	5.7	702
Building Construction	70	Vendor	0.8	10.2	571.2	6.8	84
		Worker	2.04	18.5	2,641.8	24.4	108
Paving	20	Vendor	1.55	10.2	316.2	6.8	47
		Worker	12.5	18.5	4,625	24.4	190
Architectural Coating	15	Worker	0.41	18.5	113.8	24.4	5
Total Construction Worker Fuel Demand (Gallons of Fuel)							**3,783**

Source: CalEEMod Version 2022.1

In total, the construction phase would generate a fuel demand of 17,583 gallons of fuel. This fuel consumption will occur once and cease after the 7-month construction period has ended. Nonetheless, the Project would be required to adhere to the state Low Carbon Fuel Standards which are regulatory standards designed to improve transportation fuel efficiency and achieve environmental benefits such as lowering carbon fuel emissions and improving air quality. Compliance with these standards would ensure the Project's fuel consumption during construction does not adversely effects to the surrounding environment. Any potential impacts will be limited and cease after the construction period has been completed.

Operational Usage

At buildout, the Project site would consume electricity to power kitchen appliances (refrigerators, freezers, ovens, etc.), on-line order system, HVAC, and indoor/outdoor lighting. CalEEMod generates default electricity and natural gas consumption based on land use inputs. For the Project, the following land uses were included: fast food restaurant with drive through, parking lot, and other asphalt surfaces, where the fast food designation represents the two commercial buildings, parking lot is the buildings respective parking area, and other asphalt surfaces is the Project's improvements of Seventh Avenue. Table 8 summarizes each land use estimated energy demand.

[16] Average Fuel Economy by Major Vehicle Category, Alternative Fuels Data Center, U.S. Department of Energy, https://afdc.energy.gov/data/10310, updated January 2024.

Table 8 Operational Energy Demand		
Land Use	**Electricity (kWh/yr)**	**Natural Gas (kBTU/yr)**
Fast Food Restaurant with Drive-Through	170,599	555,928
Parking Lot	36,594	0
Other Asphalt Surfaces	0	0
Total Operational Energy Demand	**207,193**	**555,928**
Source: CalEEMod Version 2022.1		

As shown in Table 8, the Project is expected to consume 207,193 kWh per year of electricity and 555,928 kBTU per year of natural gas. In an effort to manage energy use, the Project would be required to comply with applicable energy efficiency standards as outlined in the California Energy Code (Title 24) section of the state Building Standard Code. Since 2023, these mandates have included the installation of solar panels systems on non-residential land uses. The PV system must be designed to meet approximately 60% of the building's energy demand if allowed by the specific climate zone, conditioned floor area, and type of building. The purpose of the PV system is to offset a significant portion of the Project's annual electricity consumption and subsequently lessen the pressure on the local and regional energy grid. Additionally, the transition to renewable energy for energy production also reduces the emission of air pollutants associated with the use of nonrenewable sources for energy production such as coal, natural gas, and nuclear energy. As such, compliance with local and state building and operational energy efficiency standards as outlined in California's Energy Code and Hesperia Municipal Code would ensure the Project's operation phase does not result in wasteful, inefficient, or unnecessary energy consumption. Impacts will be reduced to less than a significant levels.

Summary
The Project would have a minimal temporary impact on energy use during construction and a minimal impact in accordance with state and local energy efficient standards during operation. The energy use for this Project would not be wasteful or inefficient. Therefore, less than significant impacts are expected.

b) **Less Than Significant Impact.** The Project would be subject to California Title 24 and the City's Climate Action Plan (CAP). As discussed above, California Energy Code (Title 24) sets energy efficiency mandates for new building construction to target wasteful energy consumption and promote sustainable building practices. The City's Climate Action Plan, adopted in July 2010, sets guidelines and cost-effective strategies to reduce greenhouse gas (GHG) emissions through various methods including energy conservation and energy efficiency.

As stated in the CAP and Hesperia Municipal Code Section 15.04.010 (California Code Adopted), the City enforces all building regulations concerning the State's Energy Code. To ensure compliance, the City reviews all building plans and the City building inspector evaluates building construction. As such, the Project is not expected to conflict with or obstruct the implementation or efficiency of state and local energy plans. The Project would have less than significant impacts.

Mitigation: None required.

Monitoring: None required.

7. **GEOLOGY AND SOILS** -- Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Directly or indirectly cause 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.	☐	☐	☐	☒
ii) Strong seismic ground shaking?	☐	☐	☒	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☐	☒
iv) Landslides?	☐	☐	☐	☒
b) Result in substantial 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?	☐	☐	☐	☒
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	☐	☒	☐	☐
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?	☐	☐	☐	☒
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☐	☒

Sources: City of Hesperia General Plan, 2010; City of Hesperia General Plan EIR, 2010; Proposed Starbucks Geotechnical Engineering Investigation, Moore Twining Associates, Inc., November 2024 (Appendix B); Alquist-Priolo Site Investigation Reports Map, California Department of Conservation, accessed November 2024; North Frontal Zone of the San Bernardino Mountains, Southern California Earthquake Data Center, accessed November 2024; Project material; Google Earth Pro.

Background

Geological Setting

The City of Hesperia lies across the boundary between the Transverse Ranges Province and the Mojave Desert Province. The southern edge of the City borders the Transverse Range including the San Gabriel and San Bernardino Mountains. The greater part of Hesperia, north of the mountain range, lies within the Mojave Desert Province and consists of natural features such as alluvial fans, desert plains, dry lakebeds, and scattered mountain ranges. The central and northern portions of the City are located on a moderate to low sloping alluvial fan with an elevation ranging from 2,900 to 4,200 feet above sea level.

In the Mojave Desert Province, there are a number of faults with the potential to cause moderate to large earthquakes in the region. In proximity to the City area, the most notable fault zones are the North Frontal fault and the San Andreas fault. Hesperia is closer to the North Frontal than the San Andreas Fault or any other regional fault zones including the Helendale fault to the north, the Cleghorn fault to the south, the Ord Mountains fault to the east, and the Mirage Valley fault to the far northwest. These active earthquake sources have the potential to cause damage. However, the Noth Frontal fault is located outside the City boundary at an approximate distance of 2 miles to the east, and is considered to have the greatest potential for impact with a maximum earthquake magnitude of 7.2.[17]

Under seismic conditions, loose sedimentary deposits underlain by shallow groundwater at a depth no greater than 50 feet may result in seismically induced liquefaction. In Hesperia, loose, unconsolidated sediments occur throughout the planning area, but shallow groundwater occurs only within the Mojave River floodplain which geographically defines the City's eastern boundary. There are no areas in the City identified as having a potential for liquefaction. Additionally, seismic shaking can cause loose, young deposits to become tightly compact, resulting in a reduction of the soil column. There are areas in the Hesperia with the potential for damage related to seismically induced settlement. However, these areas are confined within the City's southern region as shown in Plate 2-2 (Geologic Map) of the City General Plan EIR (2010).

Lastly, the potential for landslides as a result from seismically induced slope instability is possible near the foothills of the San Bernardino Mountains and slopes surrounding the City's southern region as depicted by General Plan Exhibit SF-1 (Seismic Hazards). Seiches due to seismic shaking are limited to the Silverwood Lake, Hesperia Lake, and recharge basin in the City at the time of the earthquake. Seiches are not a significant geologic hazard concern for the City.

Paleontological Resources

The geographical region occupied by the City of Hesperia is considered to have the potential for containing extinct animals such as mammoth, large camel, extinct llama, and extinct horses. Areas underlain by older alluvial deposits have the potential to contain these paleontological resources. However, no known paleontological resources have been identified within the City planning area and the sediments that could potentially support fossil preservations are lacking.

A Project-specific geotechnical report was prepared to analyze and determine the site's susceptibility for geological hazards (Appendix B). The report, prepared by Moore Twining Associates, Inc. on November 15, 2024, focusses on the eastern half of the development site where the Starbucks building is proposed. Although the report's evaluation was for part of the site, the conclusion can be applied to the entire parcel given the site's location and uniform character.

Discussion of Impacts

a.i) **No Impact.** According to Figure 1-2 (Local Active and Potentially Active Faults) of the City 2010 Updated General Plan EIR, Appendix F, there are no classified active or potentially active fault zones crossing the City planning area or the property boundary. Additionally, there are no classified Alquist-Priolo Earthquake Faults Zones as shown by the California Department of Conservation, Alquist-Priolo Site Investigation Reports map[18] and as concluded by the geotechnical report. The probability for surface rupture as a result of a seismic event at the site is very low and therefore, no impacts are anticipated.

[17] Table 1-2 in Appendix F, City of Hesperia General Plan EIR, May 2010.
[18] Alquist-Priolo Site Investigation Reports Map, California Department of Conservation, accessed November 2024.

a.ii) **Less Than Significant Impact.** The closest active fault to the property is the Ord Mountain fault zone, part of the North Frontal Thrust System located 6.50± miles southeast of the site. The Ord Mountain Fault is a thrust fault which occurs when there is a crack in the Earth's crust, causing a vertical shift in the sedimentary rocks and leading the older rock to shift upwards and over the younger rock. In the event of a fault rupture, the Ord Mountain fault is considered to have a maximum earthquake potential of magnitude 7.1.[19] A 0.550g (gravity) Maximum Considered Earthquake peak ground acceleration was calculated by the geotechnical report. At this scale, strong ground shaking from the Ord Mountain Fault would cause minimal damage associated with a Level V Modified Mercalli Intensity (MMI) scale.[20]

To ensure structural integrity during strong ground shaking, the Project design plan is required to conform with the most recent California Seismic Code and applicable development standards as established in the MSFCSP and the City of Hesperia Municipal Code. In accordance with these state and local mandates, the Project's design and construction will incorporate collapse-resistant measures so as to reduce the potential for structural damage or collapse in the event of seismically induced ground shaking. Considering the Project's moderate risk to strong ground shaking and adherence to state and local building standards, there is a low probability for the Project will expose occupants to substantial impact related to property damage from strong ground shaking. Less than significant impacts may be assumed.

a.iii) **No Impact.** Liquefaction occurs when loose, young sediment deposits are in proximity to groundwater at a depth no greater than 50 feet from the surface. Based on the geotechnical report, groundwater was not encountered at the maximum depth explored of 60 feet below the site surface. Data published by the Department of Water Resources identifies a well located about 1.50 miles northwest of the property at an elevation range of 2,808 feet in 1981 to 2,767 feet in 2005. The most recent measurement places groundwater at an elevation of 2,778± feet. With the subject site being at an elevation of about 3,259 feet above mean sea level, groundwater at the site is considered to be greater than 450 feet below site surface. The probability for liquefaction to occur within or in proximity to the Project site is negligible. No impacts would occur.

a.iv) **No Impact.** The property is located in Hesperia's northwest region. Based on observations from aerial photographs of the Project area, there are no slopes, hills, or mountain sides within proximity to the property which would pose a significant risk for seismically induced landslides. The nearest landslide susceptible zone is approximately 4.55 miles southeast, near the Mojave River's eastern boundary as delineated by the City General Plan EIR Plate 1-3 (Seismic Hazard Zones). At such a great distance, the potential for landslides within the area would not result in property damage or physical harm to people within the property boundary. Therefore, the potential for landslides is negligible and no impacts are anticipated.

b) **Less Than Significant Impact.** Soil erosion is the gradual wearing away of landmasses through natural water drainage, and wind, as well as human activities such as agriculture and land development. Development often increases the potential for erosion by removing vegetation, altering natural drainage patterns, and constructing cut and fill slopes that may be more susceptible to erosion than the site's natural condition. To reduce the potential for soil erosion during the site's redevelopment, the Project would be required to adhere the City's erosion control measures as stated in Section 15.16.100 (Slope Planting and Erosion Control) and Section 15.06.110 (National Pollutant Discharge Elimination System Compliance) of the Hesperia Municipal Code. In addition, the Project will be subject to MDAQMD's Rule 403, requiring dust control during construction. These standards are designed to reduce the potential for erosion from water and wind during the development's construction and operation phase. With conformance with these standards and requirements,

[19] North Frontal Zone of the San Bernardino Mountains, Southern California Earthquake Data Center, https://scedc.caltech.edu/earthquake/northfrontal.html, accessed November 2024.

[20] Modified Mercalli Intensity Scale, U.S. Geological Survey, https://www.usgs.gov/programs/earthquake-hazards/modified-mercalli-intensity-scale, accessed November 2024.

the possibility for the proposed commercial development to cause soil erosion is reduced to less than significant levels.

c) **No Impact.** The following section analyses the potential for different types of ground failure to occur at the subject site.

Landslide: The probability for landslides is analyzed in Question a.iv of this Section. No impacts are anticipated.

Lateral Spreading: Lateral spreading occurs when saturated soil or bedrock loses its strength and collectively moves in a liquid-like motion. Lateral spreading is the result of liquefaction in a substrate layer and typically occurs on gentle slopes that range between 0.3 degrees and 3 degrees.[21] The Project site is relatively flat. There are no hillsides or slopes within or near the Project site. In addition, the field survey did not encounter groundwater at the greatest depth explored of 60 feet. Based on estimates, groundwater on-site is considered to be at a depth greater than 450 feet below site grade. Given the lack of slopes near the Project site and groundwater at a depth greater than 50 feet, the probability for lateral spreading to occur in the vicinity of the Project is negligible. No impacts would occur.

Subsidence: Land subsidence is the gradual settlement of the ground surface, typically as a result of excessive groundwater withdrawal. The Hesperia Water District (HWD) pumps groundwater from the Upper Mojave River Valley subbasin that underlies the entirety of the City's planning area and extends north to the greater area of the Mojave Desert Province.[22] In the past, overdraft of the subbasin has occurred, meaning water was withdrawn at a faster rate than replenishment. To relieve some stress from the water subbasin, the HWD has become a retail customer of the Mojave Water Agency which supplies imported groundwater. Management of groundwater levels by the HWD, in accordance with the state Sustainable Groundwater Management Act (SGMA), will reduce the potential for land subsidence associated with excessive pumping of the Mojave River Valley subbasin. As such, subsidence on-site is unlikely to occur. No impacts are expected.

Liquefaction: The probability for liquefaction is analyzed in Question a.iii of this Section. No impacts are anticipated.

Lateral Collapse: Seismic settlement analysis was conducted by evaluating the soil properties from sample B-2 which was gathered by drilling test borings at a depth of 60 feet below site grade. The sample is described as loose to dense compact poorly graded sands, poorly graded sands with silt, and well graded sands with silt. The standard penetration resistance or "N-value" of the soil ranges from 10 to 49 blows per foot. For analysis purposes, the report states that N-values of 30 or greater are not considered to be subject to significant dry seismic settlement. Therefore, seismic settlement on-site is estimated to be negligible. No impact would occur.

d) **Less Than Significant Impact with Mitigation Incorporated.** Based on observations and laboratory results, the subject site surface consists of 2 to 3 inches of asphalt concrete (mainly on the northern half of the property), as well as a variety of soil samples including silty sands, silty and clayey sands, clayey sands, and poorly graded sands. Due to the presence of clay in the soil content, the Project site is susceptible to soil expansion. In response to the site's susceptibility, the geotechnical report recommends the implementation of Mitigation Measure GEO-1 to ensure adequate support for both proposed buildings. This measure requires the implementation of specific grading techniques to assure that stable foundations are created during construction. With implementation of this measure, impacts associated with expansive soil would be less than significant with mitigation.

[21] Appendix F: Safety Element Background Report, City of Hesperia General Plan EIR, February 2020.
[22] 2020 Urban Water Management Plan, Hesperia Water District, June 2021.

e) **No Impact.** The Project build out does not include a septic system to provide wastewater collection and treatment services to the site. There are existing wastewater utility lines within the Project area which will function as access points to connect the Project with the HWD's underground wastewater collection system. The Project is not expected to exceed the soil load bearing capacity by installing an on-site septic system. No impacts would occur.

f) **No Impact.** The Project site is currently developed. There is no evidence to suggest that paleontological resources were uncovered during the initial or repeated construction and redevelopment of the property. Buildout of the Project would require the demolishing and excavation of the site surface at a greater depth than previously disturbed. However, the site lacks older alluvial sediment that generally contain paleontological resources. There is a low probability for paleontological resources to be uncovered during the Project's construction. No impacts to paleontological resources are expected.

Mitigation:

GEO-1 The Project shall refine its final site plan and grading plan in compliance with the list of standard requirements and recommendations as stated in the geological technical report. Some of these standards pertain to the on-site drainage system, site preparation, foundational support, disposal of exported material, use of construction materials, over-excavated areas, and measures to contain moisture migration. Standard requirements to which the Project is mandated to comply include, but are not limited to construction standards pursuant with current American Concrete Institute (ACI) standards, State of California Standard Specifications, State of California Department of Transportation (Caltrans) Standard Specification, and California Occupational Safety and Health Administration (CAL OSHA) requirements. The final Project plan and specification documents shall be reviewed by a qualified geologist to determine whether they are consistent with the stated recommendations. Construction monitoring will be provided by a qualified geologist in order to verify the substrate conditions and make alternative recommendations if the conditions differ from those anticipated.

Monitoring: The Project Applicant, project geologist and the City Building Department share monitoring responsibilities.

8. **GREENHOUSE GAS EMISSIONS** -- Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

Sources: City of Hesperia General Plan, 2010; City of Hesperia Climate Action Plan, 2010; MDAQMD CEQA and Federal Conformity Guidelines, February 2020; Project-Specific CalEEMod Report (Appendix A).

Background

Greenhouse gas emissions (GHGs) are emitted by natural processes and man-made activities which when released into the atmosphere, trap solar radiation in the form of heat, creating the greenhouse gas effect. The introduction of human activities at the turn of the 19th century, with industrialization and other technological advancements, have increased the release of GHGs into the atmosphere, and subsequently increased annual global temperatures. The exacerbation of these effects since then has continued and is represented through drastic climate shifts occurring at a global scale, which are collectively referred to as "climate change" or "global warming".

In response to the environmental impact associated with the release of GHG, the California Global Warming Solution Act (Assembly Bill 32) was adopted in 2006. The Act required California to reduce statewide GHG emissions to 1990 levels by the year 2020. The objective was met in 2014 and later updated to a GHG reduction target of 40% below 1990 levels by year 2030. The California Air Resources Board (CARB) updates the statewide scoping plan in which it builds on previous emission reduction strategies, recommendations, and emission reduction goals to meet the new AB 32 objective.

Hesperia adopted its own Climate Action Plan (CAP) in July 2010. The plan outlines the City's emission inventory and sets strategies on reducing community related and City operation related GHG emissions so as to not conflict or delay implementation of AB 32. Buildout of the City General Plan, including the MSFCSP would be subject to the CAP's reduction strategies, as well as the most current state Green Building Codes.

Construction and operation of the Project would be subject to state and local building codes regarding the reduction of GHG emissions sources and GHG emission thresholds as required by the MDAQMD, California Environmental Quality Act and federal Conformity Guidelines. MDAQMD measures GHG emission on a scale of CO_2 equivalency (CO_2e) because it is a standardized practice to compare the warming potential of different greenhouse gases. As such, the MDAQMD limits emission to be less than or equal to 548,000 pounds of CO_2e per day or 100,000 short tons of CO_2e per year during construction and operation.

The Project's GHG emissions for both construction and operation were projected using CalEEMod Version 2022.1 (Appendix A). The following analysis is based on the results from the air quality analysis.

Discussion of Impacts

a) Less Than Significant Impact. The proposed Project is located within the Mojave Desert Air Basin (MDAB) and thus subject to the MDAQMD regulatory mandates concerning GHGs. In accordance with the U.S. Environmental Protection Agency (USEPA) and the California Air Resources Board (CARB), the MDAQMD monitors and regulates the emission of air pollutants including GHG from stationary and mobile

sources. MDAQMD has not adopted a management program for GHG emissions, however construction and operation emission thresholds for new development within the MDAB have been established to regulate the amount of GHG emitted by a single project.

Construction Emissions

Construction of the Project is expected to last 7-months and would result in temporary GHG emissions due to the operation of construction equipment, production of construction material, energy use, and vehicle trips from hauling materials and worker commutes. CalEEMod estimates a project's GHG emissions based on the designated land use and associated electricity, natural gas, and water consumption, solid waste disposal, and use of air conditioners and/or refrigeration equipment. In terms of construction, emissions sources are going to be limited primarily to mobile sources from heavy equipment and worker commutes, and thus, the Project would emit the least amount of GHGs during the construction phase. As shown in Table 9, the Project's daily maximum GHG emissions occurring in the summer would not exceed MDAQMD's daily GHG emission thresholds of 548,000 pounds of CO_2e.

Table 9
Maximum Daily Construction-Related GHG Emissions

Construction	CO_2e pounds/day
Construction GHG Emission*	4,079
MDAQMD Daily GHG Thresholds	548,000
Exceed?	**No**

(*) Note the highest emission value occurs during the summer and thus is represented here, to analyze the worst-case scenario.
Source: CalEEMod Version 2022.1

Operational Emissions

Six (6) categories of emissions could contribute to the Project's annual GHG emissions over the operational lifetime: area emissions (building footprint), energy (electricity and natural gas), mobile (vehicle and truck trips), water, solid waste, and refrigerant emissions. Table 10 lists the Project's estimated annual emission by category and determines whether the Project would exceed MDAQMD's annual CO_2e threshold. The total annual emissions from the Project falls well below the significance threshold. For this reason, the Project would have less than a significant impact on the environment in relation to release of GHGs.

Table 10
Maximum Annual Operational-Related GHG Emissions

Operation	CO_2e MT/year
Area Emissions	0.07
Energy Emissions	
Electricity	32.7
Natural Gas	29.6
Mobile Emissions	812
Water Emissions	3.55
Solid Waste Emissions	17.5
Refrigerant Emissions	1.26
Total Annual Operation GHG Emission	897
MDAQMD Annual Threshold	100,000
Exceed?	**No**

(*) Note the highest emission value occurs during the summer and thus is represented here, to analyze the worst-case scenario.
Source: CalEEMod Version 2022.1

b) **Less Than Significant Impact.** Hesperia's Climate Action Plan, City Municipal Code, and the State Building Code Title 24, provide standards and guidelines for reducing GHG emissions through various methods and technological improvements regarding the construction and operation of new buildings. Some of these standards include diverting at least 50% of construction and demolition waste from landfills, incorporating energy efficient features and fixtures into the building's final design plan, and mandating inspections of energy systems. Additionally, the redevelopment of underutilized parcels in urbanized areas is highly encouraged by the CAP to increase mixed-use development and thus build community oriented facilities in proximity to residential areas as a way to increase efficiency in public infrastructure and lessen the dependency on single-occupancy vehicles. The CAP was designed to implement requirements of State law, including AB 32, and CARB's implementation plans.

The Project would result in the redevelopment of an existing commercially used parcel to operate two (2) drive-through restaurants, located within the City's MSFCSP commercial corridor. Under these conditions, as well as in compliance with CAP measures and California's Building Code standards, the Project would not have adverse effects on the implementation or efficiency of state or local GHG emission reduction plans or policies. As such, less than significant impacts would occur.

Mitigation: None required.

Monitoring: None required.

9. HAZARDS AND HAZARDOUS MATERIALS -- Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☒	☐	☐
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?	☐	☒	☐	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☒	☐
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?	☐	☐	☐	☒
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 or excessive noise for people residing or working in the project area?	☐	☐	☐	☒
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	☐	☐	☐	☒

Sources: City of Hesperia General Plan, 2010; City of Hesperia General Plan EIR, Appendix G, May 2010; Phase I Environmental Site Assessment Report Former Gas Station and Office Building 15887-15901 Main Street and 1588 Walnut Street, Hesperia, prepared by LandAmerica Assessment Corporation, October 2007 (Appendix C); Phase II Limited Subsurface Investigation Report Former Gas Station 15901 Main Street, Hesperia, prepared by LandAmerica Assessment Corporation, December 2007 (Appendix D); Categories of Hazardous Waste Generators, US Environmental Protection Agency, October 2024; National Priorities List and Superfund Alternative Approach Sites, U.S. Environmental Protection Agency, updated September 2024; Fire Hazard Severity Zone Map, California Department of Forestry and Fire Protection, updated April 2024.

Background

The use of chemicals has become increasingly common in modern times. Hydrocarbon fuel, for example, is a highly flammable chemical used to power cars. Chlorine is a toxic chemical used to purify water. Regulation of these and other chemicals has become increasingly stringent as concerns regarding the physiological and environmental impacts related to exposure has become greater. In response, federal, state, and local policies provide a set protocol in which the transport, use, storage, and disposal of these hazardous material must be managed in order to minimize the risk to exposure. Federal and state agencies are responsible for managing and regulating hazardous material and waste.

The U.S. Environmental Protection Agency (EPA) under the Resource Conservation Act (RCRA) of 1976, is given the authority to control hazardous waste. As stated in the City General Plan 2010 EIR, the EPA defines hazardous material as “substances that may cause or significantly contribute to an increase in mortality or an increase in serious

irreversible, or incapacitating reversible illness; that pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of or otherwise managed; and whose characteristics can be measured by a standardized test of reasonably detected by generators of solid waste through their knowledge of their waste." Hazardous materials can also be ignitable, corrosive, or reactive.

The California Department of Toxic Substance Control (DTSC) defines hazardous material as "substances that are toxic, ignitable, or flammable, reactive, and/or corrosive;" and extremely hazardous material as "substances that show high acute or chronic toxicity, carcinogenity, bio-accumulative properties, persist in the environment, or in water reactive."

In the City of Hesperia, there are different types of businesses that may be producers of hazardous waste. Small commercial businesses such as dry cleaners, auto repair shops, medical facilities, photo processing centers, and metal plating shops are usually generators of hazardous waste. The EPA defines a small quantity generator as a facility that produces between 200 and 2,200 pounds (or 27 to 275 gallons) of hazardous waste per month. Large commercial and industrial businesses including chemical manufacturers, large electroplating facilities, and petroleum refineries generate the largest quantities of hazardous waste. The EPA defines large quantity generators as a facility that produces over 2,200 pounds (or about 275 gallons) of hazardous waste per month. According to the City General Plan EIR, the EPA's RCRA database identified approximately 46 small quantity generators and 2 large quantity generators in 2007. The number of small- and large quantity generators is expected to have increased as the City has developed parcels for commercial, public institution, and industrial use.

Based on the EPA's database, there is no Superfund site in the City, nor has there ever been.[23] According to the State's DTSC database, there is no hazardous site within the City planning area, except for the Southern California Logistic Airport classified as a "Hazardous Waste Facility". The facility is designated "Closed" and thus, no further management or mitigation action is required.[24]

A site-specific Phase I Environmental Site Assessment Report has been prepared by the LandAmerica Assessment Corporation (LAC) to evaluate the environmental conditions on-site due to its previous use as a gas station and office space (Appendix C). The report consists of database research and field survey conducted by a LAC representative on 8th October 2007. A follow up assessment was prepared by LAC in which the Phase II Limited Subsurface Investigation Report (Appendix D) to implement a requirement of the Phase I ESA and evaluate the soil to determine whether the site environmental conditions are consistent from those anticipated by the initial report.

The following analysis is based on the research and findings conducted by the two (2) aforementioned reports.

Discussion of Impacts

a) **Less Than Significant Impact with Mitigation Incorporated.** As described above, a Phase I Environmental Site Assessment Report was prepared by LAC in October 2007. LAC's investigation included a review of aerial photographs, a reconnaissance of adjacent properties, background research, and a review of available local, state, and federal regulatory records pertaining to environmental concerns and the presence of hazardous material at the Project site.

[23] National Priorities List and Superfund Alternative Approach Sites, U.S. Environmental Protection Agency, https://www.epa.gov/superfund/search-superfund-sites-where-you-live, updated September 2024.

[24] EviroStor database, California Department of Toxic Substances Control, https://www.envirostor.dtsc.ca.gov/public/, accessed November 2024.

Database Research

Federal and state environmental records were reviewed to determine the site's environmental condition, as well as the surrounding area within a half mile radius from the property. Table 11 lists each database source and summarizes the potential for environmental impacts related to the presence of hazardous material on and near the Project's vicinity.

Table 11
Environmental Condition Determination for the Project Site and Vicinity

Source	Listing	No Listing	Probability for Environmental Impact
Federal National Priority List (NPL)		X	
Federal Delisted NPL Sites		X	
Federal Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) List		X	
Federal CERCLIS No Further Remedial Action Plan List		X	
Federal RCRA CORRACTS Facilities List		X	
Federal RCRA Non-CORRACTS TSD Facility List		X	
Federal RCRA Generator List	X		There is one (1) RCRA Generator facility within the Project's vicinity. The facility is A2A Auto Body and Glass, located about a quarter mile from the property. Based on its current status, there is a low potential for the Project to have been environmentally impacted.
Federal Institutional Control/Engineering Control Registries		X	
Federal Emergency Response Notification System		X	
State and Tribal Property List		X	
State and Tribal CERCLIS-Equivalent List	X		There is one (1) State CERCLIS-equivalent facility beyond the site's immediate vicinity. The facility is the Crosswalk Charter School, located 0.53 miles from the property. Based on the site's "No Further Action" status and distance, there is no potential for adverse effects to have occurred on-site.
State and Tribal Solid Waste/Landfill Facilities (SWLF)		X	

Table 11
Environmental Condition Determination for the Project Site and Vicinity

Source	Listing	No Listing	Probability for Environmental Impact
State and Tribal Leaking Underground Storage Tank List (LUST)	X		There are two (2) LUST sites within half a mile of the property. These facilities include the Circle K Store at 15852 Main Street, and Hayward Lumber at 931 Main Street. Based on the location of both facilities, there is low potential for the site to have been environmentally impacted.
State and Tribal Underground Storage Tank (UST) List	X		There are three (3) UST sites within a quarter mile from the site, including one on the property. A gas station occupied the site until 1998 during which time three UST were located on site. The USTs were removed in 1998, and studies concluded with the property being a low risk site and recommended for closure. The other UST sites include the Fairstrip Food Store 8 at 16117 Main Street and Hesperia Main Street Motors at 15954 Main Street. Based on their current status, there is a low potential for either of these facilities to cause an environmental impact on-site.
State and Tribal Institutional Control/Engineering Control Registries		X	
State and Tribal Voluntary Cleanup Sites		X	
State and Tribal Brownfield Sites		X	
CA SLIC		X	
San Bernardino County Permits	X		There are ten (10) San Bernardino County permitted facilities within a quarter mile from the property. Of these, only four (4) may have a potential impact based on their location within a 1/8th mile radius from the property. These facilities include the subject site, Dave Automotive Repair at 15940 Walnut Street, Sunset Paint and Body at 15950 Walnut Street, and Hesperia Chevron at 15933 Walnut Street. Given that no hazardous violations have occurred within any of these sites, there is a low potential for environmental impact.

Source: Phase I Environmental Site Assessment Report, Former Gas Station and Office Building 15887-15901 Main Street and 15888 Walnut Street, Hesperia, prepared by LandAmerica Assessment Corporation, October 2007.

Based on the table above, the Project site and its surrounding areas are not subject or potentially subject to federal, state, or county regulation on the basis of a hazardous material violation or exposure to hazardous material. Although the site was utilized as a gas station from 1959 to 1998, during which two 5,000-gallon and one 8,000-gallon USTs were located within the site boundary, the USTs were removed from the Property. Soil samples beneath the USTs were analyzed and the results yield low levels of petroleum hydrocarbons. Based on the findings, the property was considered a low risk site and recommended for closure. The San Bernardino County Fire Department issued a "No Further Action" letter for the property on June 21, 2007. As such, no environmental impacts from hazardous material and waste were detected on-site or in proximity to the property.

Field Survey

An on-site inspection was conducted of the site and its three (3) on-site structures were visually and/or physically observed and viewed from all adjacent roadways. No road or path was identified on the property as being previously used as an avenue for the disposal of hazardous substances or petroleum products. Additionally, no hazardous material disposal site was observed on-site, nor a well or cistern, industrial wastewater disposal/treatment facility, on-site landfill, or any other evidence to indicate the release of hazardous material or petroleum products on-site. Based on the exterior observation, no hazardous area or substance was detected.

The field survey also analyzed the potential for asbestos-containing material (ACM) at the property. The assessment does not ensure the identification of all sources of suscept asbestos at the site, but rather determined the potential for ACM to be present. As shown in Table 12, the following presumed asbestos containing material (PACM) were encountered on-site. Given the good physical conditions of the structures, any PACM may be managed safely under an Operation and Maintenance (O&M) program as mandated by the EPA. However, prior to any Project-related construction, a comprehensive ACM survey is recommended and required pursuant to Mitigation Measure HAZ-1.

Table 12
Suspect of ACM at the Project Site

Suspect ACM	Friable Yes/No	PACM?	Physical Condition
Dry wall and wall joint compound	No	Yes	Good
Floor tiles/mastic	No	Yes	Good
Roofing Materials	No	Yes	Good
Exterior Plaster	No	Yes	Good
Source: Phase I Environmental Site Assessment Report, Former Gas Station and Office Building 15887-15901 Main Street and 15888 Walnut Street, Hesperia, prepared by LandAmerica Assessment Corporation, October 2007.			

Other hazardous substances were analyzed for their potential occurrence within the property. According to the EPA, the property is in a Radon Zone 2, where average estimated radon levels are between 2.0 and 4.0 pCi/L. The potential exposure to radon on-site is not considered significant given the site's non-residential use. Additionally, lead-based paint may be present on-site given the period when the structures were constructed (1957, 1967, and 1980). Painted surfaces appear in good condition and potential for significant impact is considered low due to the site's non-residential use. During the field assessment, no signs or indicators of mold were observed nor any sign of significant water damage.

Following completion of the Phase 1 ESA, a Phase II Limited Substrate Investigation report was prepared to address the need for further subsurface investigation of two abandoned hydrolic lifts.

Removal and Soil Sampling

The lift removal and Phase II limited substrate investigation was conducted on December 5th, 2007. The two hydraulic lifts were removed by a general contractor using a backhoe. The removal did not exhibit evidence of leaking fluid. Inspection of the soil did not produce any visual or odor contamination, except for a small amount near the surface in the garage hydraulic lift. The impacted soil was excavated and disposed by a licensed provider. The volume of oil stained soil was 1± cubic yards. The remaining soil was used to backfill the excavations.

Laboratory Results

A soil sample from the oil stained area was extracted and analyzed for polychlorinated biphenyls (PCBs) and for poly-nuclear aromatic hydrocarbons (PAH). The laboratory report concluded that there are no contaminants identified in the sample. Also, there were no indicators of impact in soil adjacent to the lift located near the portable office trailer and no contaminants were detected in the soil sample that was collected near the bottom of the lift.

Conclusion

The assessments conclude that the site contains 4 abandoned 55-gallon drums and that the potential use of ACM in the structure's dry wall, wall joint compound, floor tiles/mastic, roofing material, and exterior plaster require mitigation.

The presence of these hazardous materials poses a risk to the Project's construction and operation. In response, the report requires the Project to implement Mitigation Measure HAZ-1 andHAZ-2 so as to reduce the potential for hazardous materials impacts associated with the past use of the property to less than significant levels.

Proposed Project Impacts

The following sections analyze the potential for hazardous materials impacts specific to the Project construction and long-term operation and assume that Mitigation Measure HAZ-1 and HAZ-2 are implemented prior to any construction activity.

Project Construction

Construction activities will occur over a 7-month period and consist of excavation, site preparation, grading, building construction, paving, and architectural coating. The use of heavy construction equipment fueled by diesel would occur on-site during these construction phases. Additionally, truck and worker related vehicles could also be powered by diesel. The refueling of construction equipment would occur at a designated station where leakage would be contained so as to prevent the contamination of the surrounding soil, consistent with OSHA and County standards. All diesel fuel would be properly sealed in tanks and would be transported to the site in accordance with state and local standards for the transportation of hazardous substances, as described above.

Other hazardous material that would be used on-site during construction includes solvents, paints, oil, and equipment lubricants. All these materials will be stored and handled in compliance with the City Municipal Code, State and County regulations, and the manufacturer's requirements. As such, the potential for public or environmental harm related to the accidental release of these hazardous materials is expected to be less than significant regarding the transport, use, storage, and disposal of hazardous material typically used in construction sites.

Project Operation

Sources of hazardous material during the Project's operation would predominantly consist of commercial grade cleaners. These cleaners will not be used or stored in a significant quantity so as to pose a risk.

Nonetheless, the use, storage, and disposal of these hazardous materials will be consistent with the local safety standards as outlined in Section 8.08.010 (Hazardous Waste Management Siting Requirements) of the City Municipal Code which refers all provisions and requirements to the San Bernardino County Hazardous Waste Management Plan, as approved by the California Department of Health Services. With compliance with City standards and the County management plan, impacts from the use of hazardous materials on-site would be limited to a less than significant level.

Summary

The Project development, consistent with the findings outlined in the Phase I Environmental Site Assessment Report, would implement Mitigation Measure HAZ-1, and -2 prior to the Project's construction. Pursuant to these mitigations, the site's existing environmental conditions would not result in a significant impact during the Project's construction or operation. The use of hazardous materials during the Project's construction and operation is not expected to be in a significant quantity so as to pose a hazardous risk. The transport, use, storage, and disposal of all hazardous materials will be governed by state, county and/or local standards and the Hesperia Municipal Code. As such, impacts related to their use are expected to be less than significant with mitigation.

b) **Less Than Significant Impact with Mitigation Incorporated.** Due to the site's previous use, there are associated material that pose a hazardous risk to the site's redevelopment including four abandoned 55-gallon waste oil drums, and the potential use of asbestos-containing construction material. Implementation of Mitigation Measure HAZ-1 and HAZ-2, prior to the Project's construction would reduce hazardous impacts. As such, the site's existing hazardous environmental conditions would have no effect on the Project's construction and operation.

The Project's construction would require the use of diesel fuel construction equipment and vehicles. The diesel fuel would be stored in sealed containers and a designated fueling station will be located on-site as to minimize the potential for spills onto the adjacent property. Other hazardous materials on-site during construction include, but are not limited to, solvents, oil, and equipment lubricants. None of these materials will be on-site in a significant quantity so as to pose a hazardous risk. On-site management of construction related hazardous material will be in accordance with the state and local control provisions. As such, impacts related to the use of hazardous material during the Project's construction are expected to be limited.

The sources of hazardous material and waste during the Project operation would primarily consist of commercial grade cleaning chemicals. These chemicals are no expected to be on-site at a high quantity so as to pose a public health or environmental risk. All use of hazardous material on-site will be subject to the County's regulation as outlined in the San Bernardino County Hazardous Waste Management Plan. Consistent with state and local provisions, construction and operation of the proposed drive-through restaurants would not create a significant hazard to the public or the environment through reasonably foreseeable upset or accidental condition involving the release of hazardous material into the environment. For this reason, less than significant impacts with mitigation are anticipated.

c) **Less Than Significant Impact.** The site is located within the City's MSFCSP/Neighborhood Commercial district. There are no schools located within a quarter mile from the property. The nearest is Mesa Grande Elementary School, located at 9172 3rd Avenue and approximately 0.44 miles southeast of the Project site. Given the Project's limited use of hazardous material during construction and operation and distance to the nearest established school, the probability for the Project to emit hazardous emissions or handle hazardous or acutely hazardous material substances within proximity to a school is very low. As such, the Project is not expected to cause adverse impacts to existing or proposed schools. Less than significant impacts would occur.

d) **No Impact.** Government Code Section 65962.5 refers to the Hazardous Waste and Substances Site List, commonly known as the Cortese List. The Cortese List is a management system used by the State and other local agencies to comply with CEQA requirement in providing information of hazardous materials release sites. According to the California Department of Toxic Substance Control Cortese List database, there are no hazardous sites in Hesperia or at the site. The Project's development would not interfere or contribute cumulatively to an existing listed hazardous site. No impacts are expected.

e) **No Impact.** There are two airports in the City of Hesperia including the Hesperia Airport located near the foothill of Mt. San Gorgonio and the Southern California Logistic Airport located near the City's northern boundary. Both airports are located at a distance greater than 2 miles from the Project site. The Hesperia Airport is the nearest to the site, located approximately 2.95± miles to the south. The Project is not within the airports land use or operations planning areas. The Project would not occur within proximity to an airport where safety hazards or excessive noise would expose visitors and workers to adverse impacts. For this reason, no impacts are anticipated.

f) **No Impact.** At no point in the Project's construction or operation would it obstruct or completely block access to site adjacent streets. The City's adopted emergency response plan and/or emergency evacuation plans would be implemented in conjunction with traffic management planning for the Project. As such, no impacts would occur.

g) **No Impact.** According to the California Department of Forestry and Fire Protection (CalFire) map, the Project is not located within an area designated as a Very High Fire Severity Hazard Zone (VHFSHZ).[25] Similarly, the City General Plan Exhibit SF-2 (Very High Fire Hazard Areas, Flood Zones, and Significant Hazardous Material Sites), identifies the site outside a VHFSHZ. The nearest identified VHFSHZ are located along the local mountain range, including the foothills of Mt. San Gorgonio and Mt. San Antonio.

Considering the site's distance from areas designated as VHFSHZ, the potential for the Project to expose occupants directly or indirectly to loss, injury, or death involving wildland fires is low to very low. To further reduce any potential impacts, the Project would comply with the State's current Fire Code and the City's Fire and Building Codes. No impacts are anticipated.

Mitigation:

HAZ-1 An Operations and Maintenance (O&M) Program shall be implemented to safely manage the identified presumed asbestos-containing materials located in the subject building on the property. Prior to any planned demolition, a comprehensive survey for asbestos-containing materials shall be conducted. Removal of identified ACMs, including the preparation of specifications, shall be conducted by a licensed asbestos abatement contractor and/or Certified Asbestos Consultant, according to applicable regulations.

HAZ-2 Prior to any construction activities, the four 55-gallon waste oil drums shall be properly disposed of in accordance with state and local regulations.

Monitoring: The Project Applicant and the City Building Department share monitoring responsibilities.

[25] Fire Hazard Severity Zone Map, California Department of Forestry and Fire Protection, https://experience.arcgis.com/experience/03beab8511814e79a0e4eabf0d3e7247/, updated April 2024.

10. HYDROLOGY AND WATER QUALITY -- Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?	☐	☐	☒	☐
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☒	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner which would: i) Result in substantial erosion or siltation on- or off-site?	☐	☐	☒	☐
ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite?	☐	☐	☒	☐
iii) 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?	☐	☐	☒	☐
iv) Impede or redirect flood flows?	☐	☐	☐	☒
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☐	☒
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☒	☐

Source: City of Hesperia General Plan, Conservation Element (2010), Drainage Study, C3 Civil Engineering, LLC, December 2024 (Appendix E); Mojave River Watershed Water Quality Management Plan for McDonalds and Starbucks, C3 Civil Engineering, LLC, December 2024 (Appendix F).

Background

Domestic Water Supply

The Hesperia Water District (HWD) provides water services to the City's residential, commercial, institutional, and industrial users. HWD pumps water from the Alto Subarea of the Mojave River Groundwater Basin (MRGB) and regional aquifers through its system of 15 active wells, underground distribution pipeline network, and 14 storage reservoirs with a total capacity of nearly 2000 acre feet (AF) or 64 million gallons. The Alto Subarea of the MRGB has a groundwater capacity of 960,000 AF and an available storage capacity of 1,126,000 AF[26] from which HWD withdraws 14,000 AF annually to service a population size greater than 97,000.[27]

Pursuant to the California Urban Water Management Planning Act, the HWA periodically updates a regional Urban Water Management Plan (UWMP). The latest report was updated in July 2021. The UWMP outlines the HWD water supply portfolio and evaluates the water supply reliability under normal, single dry and consecutive dry years over an extended period. Water control and water efficiency plans are included so as to regulate and prevent excessive and wasteful water use.

[26] Appendix J: Water Supply Evaluation, City of Hesperia General Plan EIR, 2010.
[27] Urban Water Management Plan, Hesperia Water District, 2021.

Wastewater Treatment

The City of Hesperia provides wastewater collection services to a portion of the City's residential, commercial, and industrial users. The remaining non-serviced areas are either undeveloped or serviced by an on-site septic tank. The collected wastewater is routed through a gravity sewer pipeline system which connects to the Victor Valley Wastewater Reclamation Authority's (VVWRA) 3-mile interceptor that runs along the northeast boundary of the City and ultimately flows to the regional wastewater treatment plant (RWWTP) that is owned and operated by VVWRA. The VVWRA's RWWTP has a wastewater treatment capacity of 18 million gallons per day (mgd) to which the City discharges a sanitary flow of approximately 2.1 mgd.

To lessen the pressure on the RWWTP, the City has plans to implement sub-regional wastewater reclamation treatment plants (WRPs) to treat all the City's future wastewater flows and create a supply source for its planned recycled water system. Currently, none of the recycled water treated at the RWWTP is distributed within the HWD service area. All of the flows are treated and disposed at the VVWRA's RWWTP.

Flood Control

The San Bernardino County Department of Public Works Flood Control District implements regional flood control measures and related services throughout the County including the incorporated areas such as the City of Hesperia. Based on the County's Flood Control Facilities map, most flood control measures are primarily located outside the City boundaries including a storm drain along the Oro Grande Wash and the Mojave River. Flood control facilities within the City of Hesperia include a storm drain along Antelope Creek Wash, drainage channel on the western portion of the Antelope Creek Wash and a segment of the Hesperia East Channel.[28]

For purpose of analysis, a Project-specific Drainage Study was prepared by C3 Civil Engineering, LLC on December 10, 2024 (Appendix E) to evaluate the Project's proposed underground drainage system efficiency and capacity. A Water Quality Management Plan was also prepared by C3 Civil Engineering, LLC on December 6, 2024 (Appendix F) to outline best management practices the Project would implement at buildout. The following discussion is based on the evaluation and conclusion from each report.

Discussion of Impacts

a) **Less Than Significant Impact.** The site is currently paved and developed with three (3) structures including two (2) building structures located on the site's northwest corner and near the site's frontage with Main Street to the northeast. An overhead canopy structure is located on the southwest corner of Main Street and Seventh Avenue. The southern parcel is paved but largely unoccupied.

The Project proposes the redevelopment of the site to operate a 3,684± square foot McDonald's drive-through restaurant and a 1,300± square foot Starbucks coffee shop with complementary improvements including paved parking lots, sidewalks, and landscaping. Pursuant to Chapter 8.30 (Surface and Groundwater Protection) of the Hesperia Municipal Code, the Project is required to comply with standards regarding stormwater drainage so as to avoid the discharge of polluted runoff that may find its way into the regional groundwater supply.

Based on the Project-specific drainage study, the property currently consists of a drainage system including curbs and gutters that drive water flow to regional catch basins along Main Street and Seventh Avenue. At buildout, the Project proposes a drainage system that would prevent runoff from flowing into adjacent

[28] Flood Control Facilities Map, San Bernardino County Department of Public Works Flood Control District, https://www.arcgis.com/apps/mapviewer/index.html?webmap=6ed1bcba6d7c4e14b76cf07593c9875c, accessed December 2024.

properties as it currently occurs on the southern lot. The report concludes there would be no run-off as a result of the Project's development. Additionally, the Project-specific Water Quality Management Plan lists non-structural and structural source control best management practices (BMPs) the Project would implement once operational. Some of these BMPs include routine catch basin inspections, periodic vacuum sweeping of the site's driveway and parking lots, adoption of a litter/debris control program, and compliance with all applicable ordinance codes regarding water use and stormwater drainage. As such, conformance with applicable standards as mandated by the City Municipal Code and implementation of BMPs would ensure the Project does not result in a decline in the local and regional water quality. Less than significant impacts are anticipated.

b) **Less Than Significant Impact.** The Project site is located within the Hesperia Water District distribution area. As mentioned previously, the site is currently developed and used as an automobile sales and service/repair shop and generates water demand. Buildout of the Project is likely to increase the water demand so as to properly service a McDonald's drive-through restaurant and Starbucks coffee shop on the 1.58± acre lot. Based on the proposed land use (Restaurant) and building square footage, the following water demand was calculated as shown in Table 13.

Table 13
In-Door Water Consumption Demand

Land Use	Water Demand Factor[1] (gal/sf/year)	Water Demand (gpd)	Water Demand (AFY)
Restaurant	331	4,411.18	4.29
% of HDW's 2045 Water Supply and Demand (normal and single dry year)			0.00023
[1]AWWA Commercial and Institutional End Uses of Water, 2000.			

As shown in Table 13, the Project is estimated to have an annual water demand of 4.29 AFY. In comparison with the Hesperia Water District UWMP projected water demand at 18,420 AFY by 2045, the Project would account for less than one percent of total demand. Outdoor water use is not accounted in the Project's annual water usage, yet it is not expected to significantly change or increase the water demand considering the Project is required to plant drought tolerate vegetation to minimize the need for irrigation. In all, the increased water demand by the Project would not exceed HWD water supply or impede the District from supplying its local service area with domestic water now or in the foreseeable future.

In regard to recycled water, the Project is not anticipated to cause any substantial impact considering the City does not currently have a recycled water system nor does the HWD or VVWRA supply the City with recycled water. Based on the Urban Water Management Plan, recycled water as well as natural storm water flow, imported from the Mojave Water Agency (MWA), and irrigation return flow are used to recharge the Mojave River Groundwater Basin. The Project is not anticipated to interrupt or prevent the replenishment of water to the groundwater basin because it will not affect any recharge facility. Therefore, impacts related to the sustainability of groundwater are expected to be minimal.

Overall, the Project would not become an excessive source of water consumption to the extent of preventing HWD from supplying domestic water to its service area nor prevent HWD from implementing groundwater recharge practices. In all, less than significant impacts are anticipated.

c.i) **Less Than Significant Impact.** The following sections summaries the Project's existing and proposed drainage system pursuant to the analysis prepared by the site-specific Drainage Study Report.

Existing Conditions
The site is developed and consists of three structures on the site's northern half. The southern half is graded and paved, including a concrete slab where a building used to be near the lot's southwestern corner.

There are three (3) existing drainage areas on-site which divide the site into a west, north, and south side. The west side gradually slopes from south to north, allowing the water flow to travel off-site and east on Main Street into an existing catch basin connected to the storm drain main on Main Street. The north side gradually slopes from the southwest corner to the northeast corner of the drainage area and routes water flow to a catch basin southwest of the driveway entrance on Main Street. On the south side, the vacant paved portion of the site gradually slopes from the southwest corner to the northeast corner of the drainage area. By curb and gutter, stormwater travels north onto the adjacent property and eventually reach an existing catch basin on Seventh Avenue that is connected to the storm drain main.

Proposed Drainage Pattern
The new stormwater drainage system would manage stormwater for each proposed building. Runoff from the McDonald's building will discharge at grade and sheet flow on the parking lot and street paving. Curb and gutter will convey runoff north to the nearest on-site catch basin. There are three proposed catch basins, located throughout the McDonald's site. Dry wells as well as a detention chamber system will be included to help stormwater infiltrate into the ground within 48-hours of capture. Under a high volume of runoff, stormwater flow will gradually move out of the grated inlets and flow out of a parkway culvert or storm drainpipe and travel east to be collected by the catch basin connected by pipe to the storm drain main on Main Street.

Runoff from the Starbucks site will be managed in a similar manner. The site will convey water flow via curb and gutter to the four proposed catch basins within the area. The underground drainage system will include a detention chamber system, dry wells, and a manhole on the back of the existing catch basin on the northeast corner of Main Street and Seventh Avenue. See Appendix D of this report for the Proposed Drainage Map.

Potential for Erosion or Siltation
The likelihood for soil water erosion during construction is typically moderate to high because earth moving activities destabilize the soil on-site, which may be easily carried by water flow in a storm event. However, prior to construction, the Project will be required to submit an Erosion and Sediment Control Plan (ESC) as mandated by City Municipal Code Section 8.30.210. The ESC plan outlines pollution and erosion prevention measures and BMPs aimed at preventing water erosion during the Project's construction. With compliance to this standard requirement, erosion during construction is expected to be less than significant.

At buildout, the site will consist of ground stabilizing features including asphalt parking lots, paved sidewalks, building foundation, and landscaping along the site's perimeter and through the drive-through and parking area. The potential for erosion during the Project's operation is very low, due to these stabilizing improvements. Less than significant impacts are anticipated.

c.ii) Less Than Significant Impact. The proposed drainage system was evaluated to assure that it could control a 100-year storm as required by Section 16.40.050 (Drainage and Runoff Control) of the Hesperia Municipal Code. This metric analyzes the performance and efficiency level of the drainage system under intense rain and flood conditions. After calculating the existing and proposed runoff for the Project under 100-year storm event, the Drainage Study Report concluded that the Project would generate a lower water flow for the proposed drainage system than the existing drainage. Nonetheless, the proposed drainage system is designed to adequately handle intense water flow by a 100-year storm. With conformance to the City's requirements, the potential for runoff to result in substantial flood on-site or off-site is low to very low. Impacts would be less than significant.

c.iii) Less Than Significant Impact. As discussed in Question c.ii, the Project drainage system is designed to withstand a 100-year flood, meaning run-off on-site would be adequately managed to prevent run-off from flooding the site and adjacent properties. The proposed drainage system will contain the mandated storm flow. For this reason, less than significant impacts would occur.

c.iv) No Impact. There are no streams, rivers, or bodies of water in proximity to the Project site. The nearest is the Mojave River, located approximately 4.66 miles east of the property. At such a distance, water flow along the Mojave River is not expected to interfere or require management to allow for the Project's construction or operation. Potential impacts associated with flooding are negligible. No impacts are anticipated.

d) No Impact. The site is not located near the ocean or a body of water where tsunamis or seiche zones are a concern. According to Exhibit SF-2 of the City General Plan, the City's northern portion encompassing the proposed Project site is located within a FEMA Zone X. The flood zone designation corresponds to areas protected from a 100-year flood and are generally regarded as having a low flood risk. As such, flood hazards due to a tsunami, seiches, or storm events have a no probability of occurrence at or near the site. No impacts would occur.

e) Less Than Significant Impact. The regional Urban Water Management Plan summarizes the HWD's water supply, regional water demand, and outlines water control methods to ensure future water demands are met under all environmental conditions. As analyzed in Question (a) of this Section, implementation of the Project would not substantially interfere or prevent the HWD from meeting the City's water demand now or in the foreseeable future. Nor would the Project prevent the HWD from implementing a recycling system or groundwater basin recharge system. The Project construction and operation would control polluted stormwater runoff. As such, conflicts with the City's water quality control plan and sustainable groundwater management plan are not anticipated as a result of the Project's development. For these reasons, less than significant impact are expected.

Mitigation: None required.

Monitoring: None required.

11. LAND USE AND PLANNING - Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Physically divide an established community?	☐	☐	☐	☒
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒

Sources: City of Hesperia General Plan, 2010; City of Hesperia Main Street and Freeway Corridor Specific Plan, amended July 2021; Project material.

Background

The City of Hesperia Main Street and Freeway Corridor Specific Plan was initially adopted by the City in October 2008 and amended most recently in July 2021. The Specific Plan governs approximately 16 square miles of land adjacent to Interstate-15 and Main Street. Various land uses including residential, commercial, public institution, open space, and industrial, are allowed within the eight (8) development districts outlined in the Specific Plan.

The Project site is zoned Neighborhood Commercial. The land use allows for a variety of community oriented retail and service facilities, including restaurants with dine-in and take-out services and drive-through lanes as complementary to the Plan's goals.

Discussion of Impacts

a) **No Impact.** There are no residential structures or established communities within the Project site. The site has been previously developed and used for commercial use. Pursuant to the parcel's Neighborhood Commercial land use designation, the Project proposes the development of two (2) drive-through restaurants within the property's 1.58± acre parcel. No residential development is proposed in connection to the Project's implementation. Nor would the Project's construction and operation physically divide an established community. As such, no impacts would occur.

b) **No Impact.** The Project is subject to the City's Main Street and Freeway Corridor Specific Plan and the City Municipal Codes as established by the Specific Plan. The Specific Plan establishes development guidelines where development standards are land use specific, including Neighborhood Commercial. The Project is consistent to the Specific Plan development standards and applicable land use policies. Any standard not covered by the Specific Plan is stated in the City Municipal Code. Prior to Project approval, the City will conduct an application review where the Project will be evaluated for consistency and compliance with the City Specific Plan and Municipal Code. As such, the Project's implementation is not expected to conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. No impacts are anticipated.

Mitigation: None required.

Monitoring: None required.

12. MINERAL RESOURCES -- Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) 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?	☐	☐	☐	☒
b) 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?	☐	☐	☐	☒

Sources: City of Hesperia General Plan, 2010; City of Hesperia Main Street and Freeway Corridor Specific Plan, amended July 2021; Guidelines for Classification and Designations of Mineral Lands, California Department of Conservation Division of Mines and Geology, January 2000; Project material; Google Earth Pro.

Background

In the City of Hesperia, mineral resources consist of sand, gravel, and crushed stone. According to the City's General Plan, the Department of Conservation Division of Mines and Geology has identified the potential for concrete aggregate resources in areas within the City but mainly in the Barstow and Victorville areas. Aggregate is typically used in the production of construction material including concrete, asphalt, plaster, stucco, road base, and fill. Although a useful mineral resource, aggregate is not considered a significant mineral deposit due to its abundance in the region.

Under the Surface Mining and Reclamation Act of 1975 (SMARA), the State Geologist is required to provide mineral land classifications to identify and protect mineral resources in urban and non-urban areas of the state. The classification determines the probability for mineral resources to be uncovered and its respective significance. The following four mineral land use classifications are used in the identification of state's land:

- *Mineral Resource Zone 1 (MRZ-1):* Areas where adequate geologic information indicates that no significant mineral deposits are present, or where it is judged that little likelihood exists for their presence.

- *Mineral Resource Zone 2 (MRZ-2):* Areas underlain by mineral deposits where geologic data show that significant measured or indicates resources are present.

- *Mineral Resource Zone 3 (MRZ-3):* Area containing know mineral deposits that may qualify as mineral resources and where future exploration would result in the reclassification of specific area into a MRZ-2 (upgrade) or MRZ-1 (downgrade) category.

- *Mineral Resource Zone 4 (MRZ-4):* Areas where geologic information does not rule out either the presence or absence of mineral resources.

The City planning area has not received a MRZ classification and as such, the City is not subject to provisions outlined in the SMARA or standards imposed by the State Mining and Geology Board (SMGB). The proposed Project located within the City's northeastern region would not be subject to the SMARA or the SMGB regarding the protection and conservation of potentially occurring mineral sites. The City planning area, including the Project site, are unlikely to produce mineral resources of any significant value.

Discussion of Impacts

a) **No Impact.** The proposed Project involves the construction and operation of two drive-through restaurants on a 1.58± acre parcel, zoned for Neighborhood Commercial and located within the MSFCSP. The site is developed and has operated as a commercial business for many years. There are no mining activities occurring on-site nor is the site located in an area where mining activities are permitted. Additionally, there are no mining activities occurring in adjacent property. As a result, no impacts to mineral resources will occur from Project buildout.

b) **No Impact.** As discussed above, there are no mineral resource activities occurring in or near the Project site. Moreover, the proposed Project will not require the rezoning of mineral land use to non-mineral extraction purposes. At no point in the Project's construction or operation would it interfere with the accessibility of mineral resources. For these reasons, no impacts would occur.

Mitigation: None required.

Monitoring: None required.

13. NOISE -- Would the project result in:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☒	☐
b) Generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c) For a project located within the vicinity of a private airstrip or 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 expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

Source: City of Hesperia General Plan, 2010; Hesperia Municipal Code, updated October 2024; On the Job, Worker's Safety and Compensation Commission, accessed November 2024; Federal Transit Administration Transit Noise and Vibration Impact Assessment Manual, U.S. Department of Transportation, September 2018; Hesperia Airport Comprehensive Land Use Plan, San Bernardino County Airport Land Use Commission, January 1991.

Background

Noise is defined as any undesired sound in the environment and can impair the quality of life by impeding rest, sleep, work, and communication. Although vehicle transportation noise is the most prominent source in the City, other sources also contribute to urban noise such as aircraft, railroad, construction equipment, motorized landscaping tools, and air conditioning/heating equipment. Sensitive receptors such as residences, schools, libraries, nursing homes, hospitals, and parks are particularly susceptible to noise.

The proposed Project site is subject to the development standards and provisions outlined in the MSFCSP. The MSFCSP development standards and regulatory guidelines do not establish noise standards or related noise provisions. As such, the City Municipal Code takes precedence in the management of the noise environment within the Specific Plan area. The Project would be required to comply with applicable standards and control measures in regard to ambient noise levels and groundborne vibrations.

Discussion of Impacts

a) **Less Than Significant Impact.** Pursuant to Section 16.20.125 of the Municipal Code, any commercial activities related to the Project's operation of two (2) drive-through restaurants must not exceed a noise threshold of 65 dBA at any time of the day. However, construction related noise is exempt from this provision.

The following section analyzes sources of noise during the Project's construction and operation and evaluates whether disturbance would significantly disturb ambient noise levels within sensitive land uses or exceed the City's noise standards.

Project Construction

Project construction would generate noise primarily through the use of heavy construction equipment including excavators, bulldozers, jackhammers, haul trucks, cement mixers, electric saws, and other power tools. Their use will be confined within the Project site. The nearest sensitive receptors are located south and southeast of the site, on the south side of Walnut Street approximately 140 feet from the nearest point where construction is proposed. Construction noise can reach levels of 80 to 90 dBA for large equipment such as graders and pavers. At a distance of 140 feet, these noise levels would be somewhat attenuated by distance, and the heaviest equipment will travel over the site and not be stationary during the demolition and grading phases of construction. Following grading, heavy equipment use will decrease, and noise levels will also decrease. Additionally, the Project would be required to comply with the Municipal Code which strictly limits construction activities to the less sensitive daytime hours (7 am to 7 pm) and prohibits any activities to occur on Sundays and federal holidays. Consistent with the City's mandates, the Project's construction would not adversely affect sensitive receptors due to excessive noise or violate any applicable noise standard.

Project Operation

The site's existing noise environment consist of traffic related noise along site-adjacent roadways including Main Street, Walnut Street, and Seventh Avenue. In addition, surrounding commercial and retail facilities produce noise which contributes to the local noise environment. Currently, the site operates as an automobile sales and retail/service shop. Typical sources of noise in automotive shops include engine noise, tools, and air compressors. Generally, an automotive shop consists of an estimated noise level above 85 dBA.[29]

The Project proposes the operation of two drive-through restaurants. Sources of noise during operation would primarily consist of vehicles/traffic, menu service call boxes, and on-site activities. None of these sources are expected to exceed noise levels associated with the operation of the current automobile service shop. The menu service boards will be located along the building sides, and the building structures will attenuate the noise they generate. Additionally, the Project will be required to maintain the 65 dBA threshold per the City's Municipal Code for commercial land use. As such, the Project's operation is not expected to exceed existing ambient noise levels or conflict with the local noise standard. Potential noise impacts would be less than significant.

Summary

The Project would generate noise during construction and operation. Construction-related noise would be limited to the Project site where most sensitive receptors are located 140± feet to the southeast. Nonetheless, construction related activities would comply with the City's Municipal Code Section 16.20.125(e) in which construction is limited to less sensitive daytime hours, and no activities are allowed on Sundays and federal holidays. Operation related noise is anticipated to be less invasive and intrusive and will be required to meet the City's noise limits for commercial uses. As such, the Project would not conflict with the City's noise standard for commercial development. For these reasons, less than significant impacts are anticipated.

b) **Less Than Significant Impact.** Under the City Municipal Code Section 16.20.130, the following applicable vibration standards, measures, and exceptions govern sources of groundborne vibration within the proposed Project site:

[29] On the Job, Worker's Safety and Compensation Commission, https://wscc.nt.ca/sites/default/files/documents/How%20Loud%20is%20it%2C%20English.pdf, accessed November 2024.

- No ground vibration shall be allowed which can be felt without the aid of instruments at or beyond the lot line; nor will any vibration be permitted which produced a particle velocity greater than or equal to 0.2 inches per second measures at or beyond the lot line.
- Sources of vibration are not regulated by this code include motor vehicles not under the control of industrial use, and temporary construction, maintenance, or demolition activities between seven a.m. and seven p.m. except Sundays and federal holidays.

Project Construction

The Project would generate groundborne vibration predominantly during its construction phase. Typically, during construction, the use of heavy construction equipment such as excavators, haul trucks, jackhammers, vibratory rollers, and other power tools are generators of groundborne vibration. Table 14 lists commonly used construction equipment and their respective groundborne vibration, measured in peak particles velocity (PPV) or inches per second.

Table 14
Vibration Source Levels for Construction Equipment

Equipment	PPV at 25 feet (in/sec)
Vibratory Roller	0.210
Small Bulldozer	0.003
Jackhammer	0.035
Loaded Trucks	0.076

Source: Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, prepared by the U.S. Department of Transportation, September 2018.

Groundborne vibrations are perceivable to humans at 0.2 PPV. The use of construction equipment on-site would produce groundborne vibration at or below a 0.2 PPV threshold at the sensitive receptors to the south and southeast, because they will be attenuated by distance. The nearest receptor is located 140± feet to the southeast from the site. At this distance and considering that heavy equipment will move throughout the site and thus would not concentrate impacts at one location, impacts are expected to be minimal. Pursuant to the Municipal Code standard for vibration, construction activities would be confined within nonsensitive daytime hours (7 am to 7 pm) and no activities would occur on Sundays or federal holidays. All potential impacts would cease immediately once construction has ended. Therefore, vibration related impacts are expected to be less than significant.

Project Operation

At buildout, the site would consist of two drive-through restaurants with respective dine-in and/or in-store pickup systems. The site's proposed commercial use and operation would not include a significant stationary source of groundborne vibration. Sources of groundborne vibration would occur outside the property boundary and consist of vehicular travel on adjacent corridors. However, vehicles rarely generate vibration perceptible to humans, unless the road is poorly maintained. In all, the Project would not generate a source of groundborne vibration which exceeds the City's threshold of 0.2 PPV.

Summary

Consistent with Hesperia Municipal Code regarding groundborne vibration, the Project construction and operation would not generate a source of vibration which would adversely affect adjacent properties or sensitive receptors. Less than significant impact would occur.

c) **No Impact.** The proposed Project site is not in proximity to an airport land use. The nearest is the Hesperia Airport, located approximately 2.95± miles south of the Project area. The Project is no located within the airport's noise contour as illustrated in Figure II-3 of the Hesperia Airport Comprehensive Land Use Plan.[30] The Project would not expose visitors or workers to excessive noise related to airport use. No impacts would occur.

Mitigation: None required.

Monitoring: None required.

[30] Hesperia Airport Comprehensive Land Use Plan, San Bernardino County Airport Land Use Commission, January 1991.

14. POPULATION AND HOUSING – Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Sources: City of Hesperia General Plan, 2010; Hesperia City, California, U.S. Census Bureau, accessed November 2024; Hesperia City, California Profile, U.S. Census Bureau American Community Survey, accessed November 2024; Demographics and Growth Forecast technical Report, Southern California Association of Governments, September 2020.

Background

The City of Hesperia a is an urbanized environment with complementary land uses including commercial, institutional, open space, and industrial. Based on the 2020 Decennial Census, the City's population consisted of 99,818 residents.[31] At buildout of the General Plan, population growth is expected to exceed 243,000 residents.[32] Most of the local labor force is employed in transportation, construction or maintenance.[33] The median household income was $43,018 in 2010.[34] Since then, City's median household income has increased to $67,348 based on estimates by the U.S. Census Bureau's American Community Survey for 2023.[35]

The Southern California Association of Governments projects a population size of 168,000 residents and labor force of 46,100 in the City by the year 2045.[36]

Discussion of Impacts

a) **No Impact.** The subject site is zoned for Neighborhood Commercial under the MSFCSP. Consistent with the zoning and permitted land use, the proposed redevelopment would result in the construction and operation of two (2) drive-through restaurants within the parcel's 1.58± acres.

Buildout of the Project would provide new employment opportunities related to customer service, food/drink preparation, and management. In total, the development is expected to employ nearly 40 workers, 26 at McDonald's and 18 at Starbucks.

[31] Hesperia City, California, U.S. Census Bureau, https://www.census.gov/quickfacts/fact/table/hesperiacitycalifornia/SBO001212#qf-flag-X, accessed November 2024.
[32] City of Hesperia General Plan Executive Summary, City of Hesperia Planning Department, 2010.
[33] City of Hesperia 2008-2014 Housing Element, City of Hesperia Planning Department, January 2010.
[34] City of Hesperia 2008-2014 Housing Element, City of Hesperia Planning Department, January 2010.
[35] Hesperia City, California Profile, U.S. Census Bureau American Community Survey, https://data.census.gov/profile/Hesperia_city,_California?g=160XX00US0633434, accessed November 2024.
[36] Demographics and Growth Forecast Technical Report, Southern California Association of Governments, September 2020.

Growth inducing sources are generally associated with the development of undeveloped and/or rural areas. The following section outlines growth inducing sources and analyzes the Project's probable contribution.

- *New development in previously undeveloped areas where economic factors may contribute to future development.* The site is developed. Surrounding land uses are largely built out and utilized for commercial purposes. Redevelopment of the site would not induce greater development.

- *Extension of roadways and other transportation facilities.* Site adjacent roadways are paved and currently carry local traffic. Off-site roadway improvements are proposed to facilitate traffic along the segment of Seventh Avenue immediately adjacent to the property as well as provide non-motorized transportation infrastructure include a pedestrian sidewalk and a Class II bike lane. These improvements do not inherently increase traffic volume in the area.

- *Extension of infrastructure and other improvements.* The installation of new utility lines on-site will not induce greater development in the surrounding area considering the area is mostly built out along the commercial corridor.

- *Additional population growth leading to increased demand for goods and services.* The Project is expected to employ approximately 40 workers which could be accommodated by the local labor market.

- *Short-term growth-inducing impacts related to the Project's construction.* The Project's construction would result in temporary employment during the construction phase, but the construction workforce would likely be composed of local residents.

Construction and operation of the Project would not induce an unplanned population growth in the area. No impacts are anticipated.

b) **No Impact.** There are no residential structures or parcels zoned for residential use within the site boundary. As discussed in Section 11 (Land Use and Planning) of this report, buildout of the Project is consistent with the MSFCSP Neighborhood Commercial zoning and development regulations. No housing units are permitted on-site and there are no existing housing units on or near the subject site at risk of displacement by the Project's construction. No impacts will occur.

Mitigation: None required.

Monitoring: None required.

15. PUBLIC SERVICES –	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
Fire protection?	☐	☐	☒	☐
Police protection?	☐	☐	☒	☐
Schools?	☐	☐	☐	☒
Parks?	☐	☐	☐	☒
Other public facilities?	☐	☐	☐	☒

Source: City of Hesperia General Plan, 2010; Fire Department Annual Report (FY 21-22), San Bernardino County Fire Protection District, 2022; About HUSD, Hesperia Unified School District, accessed November 2024; Project material; Google Earth Pro.

Background

Fire Department

The City of Hesperia contracts with the San Bernardino County Fire Protection District (SBCFPD) for fire protection services. The County Fire Department encompasses approximately 20,160 square miles from the Los Angeles County lines on the west, to the Colorado River on the east, to the Nevada State line and Kern and Inyo counties on the north. The SBCFPD services more than 60 communities and cities, totaling a population size greater than 2 million.[37]

The Country Fire Protection District operates 48 fire stations throughout its service area, and has a staff of approximately 1,064 consisting of, but not limited to, Captains, Fire Fighters, Ambulance Operators, and Duty Fire Marshals.[38] In Hesperia, there are three (3) fire stations: Station 302, 304, and Station 305.[39] The nearest to the site is Fire Station No. 302 located at 9430 11th Street, approximately 1.78 miles to the southeast.

Police Protection

Under contract, the San Bernardino County Sheriff's Department provides police services including traffic enforcement, vandalism investigation, and marked-unit patrol to the City of Hesperia. The City Police Department is comprised of 58 sworn law enforcement personnel including one (1) Captain, one (1) Lieutenant, seven (7) Sergeants, five (5) Detectives, and forty-four (44) Deputy Sheriffs.[40] The Department is located at 15840 Smoke Tree Street, approximately 0.32 miles north of the Project site.

[37] San Bernardino County Fire Protection District, https://sbcfire.org/about/.
[38] San Bernardino County Fire Protection District, Annual Report (FY21-22), 2022.
[39] San Bernardino County Fire Protection District, Fire Station and Divisions Areas, https://sbcfire.org/firestations/, accessed November 2024.
[40] City of Hesperia Police Department, https://www.cityofhesperia.us/306/Police.

Schools
The Hesperia Unified School District (HUSD) provides kindergarten through 12-grade educational services and facilities to the City of Hesperia and other cities in the San Bernardino County Desert Region. Currently HSUD operates 35 schools including twelve (12) elementary schools, three (3) middle schools, five (5) high schools, three (3) comprehensive high schools, two (2) continuation high schools, two (2) alternative schools, five (5) charter schools, and three (3) choice schools.[41] Mesa Grande Elementary School, located at 9172 3rd Avenue is the nearest school facility to the Project site, at an approximate distance of 0.43 miles to the southeast.

Parks
The Hesperia Recreation and Park District (HRPD) owns and operates a total of 14 parks and recreation facilities throughout the City. Each park contains different recreational amenities and thus, are typically subdivided into classes including regional parks, community parks, and neighborhood parks. Regional parks consist of camping, equestrian camping, picnic sites, and fishing facilities. Community parks are identified by the HRPD 2006 Master Plan as parks with 10 to 20 acres. Neighborhood parks are also identified by the HRPD Master Plan as parks with 2 to 5 acres. In addition to parks developed by HRPD, the City has also added approximately 7 acres of park land to the City planning area. In relation to the Project site, the nearest park is the Hesperia Civic Plaza Park located at 15833 Smoke Tree Street and approximately 760 feet north of the property.

Discussion of Impacts

a) Less Than Significant Impact and **No Impact.**

Fire Protection: The Project would receive fire protection and suppression services from the San Bernardino County Fire Department Fire Station No. 302 located at 9430 11th Street, at an approximate distance of 1.78 miles southeast of the site. The station is staffed with seven personnel present 24/7/365, as well as equipped with one (1) paramedic engine, two (2) paramedic ambulances, and one (1) brush engine.[42]

Due to the increase population in the City, the Fire Department has experienced an increase of 3 to 5% each year in emergency calls. The average response time by the Department is approximate 7 minutes and 16 seconds. The Insurance Service Office (ISO) ranks fire stations in terms of a community's fire protection needs and services. The rankings range from Class 1 (best) to Class 10 (worst). The Hesperia Fire Department is currently classified as a Class 5 ISO in the developed portion and a Class 9 in the outlying area.

Currently, the site operates as an automobile sales and repair/service shop. Build out of the proposed 3,684± square foot McDonald's building and 1,300± square foot Starbucks building would increase the number of visitors to the property and consequently, increase the demand for fire protection services. However, the site is zoned for commercial use, meaning property use would vary in frequency and volume throughout the day and thus not generate a continuous and high demand for fire protection services. Additionally, the Project would be required to comply with the most current state and local fire and building codes. Compliance with these standards will be verified by the City and Fire Department prior to the issuing a building permit. As such, the Project is not expected to pose a significantly high fire hazard or increase the demand for fire protection beyond the Fire Department's capacity. To avoid potential impacts, the Project, consistent with Municipal Code Section 16.12.076, would pay a development impact fee to cover the financial cost related to the management and future development of local fire stations. With the implementation of City and State standards and regulations, the Project is expected to cause less than a significant impact.

[41] About HUSD, Hesperia Unified School District, https://www.hesperiausd.org/page/our-district, accessed November 2024.
[42] City of Hesperia Fire Stations, https://www.cityofhesperia.us/183/Fire-Stations, accessed November 2024.

Police Protection: The San Bernardino County Sheriff's Department will service the Project site with police protection. Considering the Project's intended commercial land use, the number of visitors is expected to increase the demand of police protection on-site. The increase in demand is unlikely to surpass the service capacity. Therefore, the new construction or expansion of an existing facility is not required. The Project will be obligated to pay a development fee in accordance with Hesperia Municipal Code Section 16.12.076. Potential impacts are therefore expected to be less than significant.

Schools: The Project site is zoned for Neighborhood Commercial per the MSFCSP. Consistent with the land use, the Project proposes the development of two (2) drive-through restaurants. There are no residential structures proposed in connection to the development. The Project is expected to create a total of 40 new work opportunities which will be supplied by the local labor market. Therefore, the construction and operation of the Project is not expected to induce new workers with families into the City. There would be no increase in student enrollment because of the Project's implementation. In addition, the Project will be required to pay the State mandated school fees, which are designed to offset the impacts of commercial development on local schools. No impacts would occur.

Parks/ Other Facilities: As discussed in Section 16 (Recreation) of this report, the Project is unlikely to significantly degrade the quality or accessibility of parks. The opportunity for new employment offered by the Project is expected to be fulfilled by the local community which already make use of open spaces, parks, and other public facilities. For this reason, no impacts are anticipated.

Mitigation: None required.

Monitoring: None required.

16. RECREATION –	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?	☐	☐	☐	☒

Source: City of Hesperia General Plan (2010); Project material; Google Earth.

Background

The City of Hesperia and the HRPD share responsibilities in providing open space recreation and activities to the residents of the City. The HRPD encompasses 100± square miles in the City and portions of unincorporated areas of Oak Hill, Summit Valley, and Phelan. To ensure adequate and continuous access to parks and other outdoor recreational facilities, the HRPD's 2006 Master Plan required a parkland dedication of three (3) acres per 1,000 residents. Consistent with the HRPD, the City General Plan incorporates the parkland standard and adds two (2) acres of open space per 1,000 residents to set a higher standard of five (5) acres of park and open space per 1,000 residents. Based on this provision, access to recreational spaces is secured for present and future use.

The nearest recreational space to the Project site is the Hesperia Civic Center Plaza Park, located at 15833 Smoke Tree Street and approximately 760 feet north of the property.

Discussion of Impacts

a) **No Impact.** The redevelopment of the proposed 1.58± acre parcel would result in the operation of two (2) drive-through restaurants. The buildings' long-term operation is expected to create new job opportunities that would be fulfilled by the local community. As such, neither the Project's construction nor operation would induce a population growth by workers moving into the area with their families. It is expected that all workers will be existing residents that currently visit nearby neighborhood and/or regional parks. For this reason, buildout of the Project would not increase the use of parks or other recreational facilities or cause the accelerated physical deterioration of these facilities. No impacts are anticipated.

b) **No Impact.** The Project site plan includes a 3,684± square foot McDonalds restaurant and a 1,300± square foot Starbuck coffee shop. No outdoor recreational space is proposed as illustrated by the Project's proposed site plan (See Exhibit 4).

Zoned for non-residential use, the Project would not require the construction of recreational facilities on-site to mitigate the physical deterioration related to the increased use of local recreational facilities. The Project is expected to hire 40 employees, supplied by the local labor force. As such, buildout of the Project would not result in adverse impacts to existing recreational facilities or cause environmental impacts in connection to the construction or expansion of recreational facilities. For this reason, no impacts would occur.

Mitigation: None required.
Monitoring: None required.

17. TRANSPORTATION – Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☐	☐	☐	☒
b) Conflict or be inconsistent with CEQA Guidelines § 15064.3, subdivision (b)?	☐	☐	☒	☐
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
d) Result in inadequate emergency access?	☐	☐	☐	☒

Sources: City of Hesperia General Plan, 2010; Focused Traffic Impact Analysis for the Proposed Starbucks and McDonald's Project, Hesperia, Linscott, Law & Greenspan, Engineers, August 2024 (Appendix G); Project material.

Background

A Project-specific traffic report was conducted and prepared by Linscott, Law & Greenspan, Engineers (LLG) in August 2024 (Appendix G). The report evaluates the site's existing and future traffic volume with the development of the proposed Project. Traffic metrics outlined in the City of Hesperia Traffic Impact Analysis Guidelines for Vehicle Miles Traveled (VMT) and Level of Service Assessment (LOS) were used to determine if and to what extent the Project would pose a significant impact to the City's circulation system. The following analysis is based on the study.

Discussion of Impacts

a) **No Impact.** The Project proposes the development of a 3,684± square foot McDonalds building with drive-through system and dine-in area, as well as a 1,300± square foot Starbucks building with a drive-through and in-store pick up service on a 1.58± acre parcel. The site is currently developed and used as an automobile sales and repair/service facility. The existing total building area is 1,978± square feet. Considering that the proposed land use would increase the number of on-site visitors, access to the Project site will be provided by one (1) existing right-in/right-out driveway on the south side of Main Street and one (1) new unsignalized driveway on the north side of Walnut Street. Circulation on-site would occur primarily through the main driveway which connects the two access points. Site-adjacent roadway improvements are proposed and outlined in the following section. The Project improvements are projected to be fully buildout by 2026.

Proposed improvements part of Project buildout includes the following:

- Restripe Seventh Avenue to extend the northbound left-turn pocket at the intersection with Main Street to provide a storage of 200 feet.
- Restripe to extend the southbound left-turn pocket at the intersection with Walnut Street to provide a storage of 50 feet.
- Restripe to provide a Class II Bike Lane along the property's frontage on the west side of Seventh Avenue.
- Reconstruct and complete the pedestrian sidewalk along the site's frontage on the west side of Seventh Avenue and north side of Walnut Street.

Existing Traffic Conditions

Connectivity to the Project site is provided by three (3) site adjacent street corridors including Main Street to the north, Walnut Street to the south, and Seventh Avenue to the east. Additionally, the Victor Valley Transit Authority operates Bus Route 68 in the vicinity with an existing bus stop at the Project's eastern frontage with Seventh Avenue. Bus Route 68 operates on weekdays and weekends through commercialized areas. Pedestrian connection is provided by existing sidewalks on the site's northern frontage with Main Street and partially on the eastern frontage with Seventh Avenue.

Study Area

Table 15 lists the three (3) studied intersections evaluated by the report in relation to Project buildout. Their respective travel lanes and LOS are included.

Table 15
Traffic Impact Report Study Area

Intersection	No. of Lanes/Median Type	LOS D or Better
Seventh Avenue at Main Street	2/undivided	Yes
Seventh Avenue at Walnut Street	2/undivided	Yes
Seventh Avenue at Orange Street	2/undivided	Yes
Source: Hesperia General Plan Update Transportation Technical Report, Hogle-Ireland, Inc., September 2009.		

Project Traffic Volume

In conformance with the City of Hesperia requirements, AM and PM peak hour operating conditions for the unsignalized intersections were evaluated using the Highway Capacity Manual 7th Edition methodology. AM and PM peak hours traffic counts at the intersection of Seventh Avenue-Main Street and Seventh Avenue-Walnut Street were collected by Counts Unlimited Inc. in November 2023 and the traffic count at the intersection of Seventh Avenue-Orange Street was collected in January 2024. Assuming a "Fast-Food Restaurant with Drive-Through Window" and a "Coffee/Donut Shop with Drive-Through Window" land use, the Project is expected to generate 1,459 daily trips with 125 trips produced in the AM peak hour and 85 trips produced in the PM peak hour. The Project trip generation has been adjusted to account for passerby trips that stop at the site on their way to their final destination. Table 16 summarizes the Project's trip generation in relation to land use and passerby reduction factor.

Table 16
Project Trip Generation Rates and Forecast

Land Use	Daily 2-Way	AM Peak Hour			PM Peak Hour		
		Enter	Exit	Total	Enter	Exit	Total
Generation Factors							
Fast-Food Restaurant with Drive-Through Window	467.48	51%	49%	44.61	52%	48%	33.03
Coffee/Donut Shop with Drive-Through Window	533.57	51%	49%	85.88	50%	50%	38.99
Proposed Project Generation Forecast							
McDonald's							
Gross Rates	1722	84	80	164	63	59	122
Pass-by Rates	-431	-34	-32	-66	-25	-24	-49
Net Trip Generation	**1291**	**50**	**48**	**98**	**38**	**35**	**73**

Table 16 Project Trip Generation Rates and Forecast							
Land Use	**Daily 2-Way**	**AM Peak Hour**			**PM Peak Hour**		
		Enter	**Exit**	**Total**	**Enter**	**Exit**	**Total**
Starbucks							
Gross Rates	674	55	53	108	25	24	49
Pass-by Rates	-506	-41	-40	-81	-19	-18	-37
Net Trip Generation	**168**	**14**	**13**	**27**	**6**	**6**	**12**
TOTAL Trip Generation	**1,459**	**64**	**61**	**125**	**44**	**41**	**85**
Source: Focused Traffic Impact Analysis for the Proposed Starbucks and McDonald's Project, prepared by Linscott, Law & Greenspan, Engineers, August 2024.							

Project Year 2025 Traffic Volume

Consistent with the land use categories and existing conditions, the studied intersections would perform at the City's LOS standard of D or better, consistent with the City's Level of Service policy. Table 17 provides an overview the findings as stated in the report.

Table 17 Project Traffic Generation Forecast for the Year 2025										
Study Area	**Time Period**	**Minimum Allowed LOS**	**Existing Traffic Conditions**		**Year 2025 without Project**		**Year 2025 with Project**		**Operational Efficiency**	
			Delay (s/v)	LOS	Delay (s/v)	LOS	Delay (s/v)	LOS	Increase (s/v)	Yes/No
Seventh Avenue at Main Street	AM PM	D	23.3 25.5	C C	26.6 27.2	C C	26.2 29.5	C C	2.6 2.3	No No
Seventh Avenue at Walnut Street	AM PM	D	12.1 14.1	B B	12.3 14.0	B B	13.1 16.7	B C	0.8 2.7	No No
Seventh Avenue at Orange Street	AM PM	D	11.9 12.1	B B	11.4 12.0	B B	11.7 12.1	B B	0.3 0.1	No No
Source: Focused Traffic Impact Analysis for the Proposed Starbucks and McDonald's Project, prepared by Linscott, Law & Greenspan, Engineers, August 2024.										

As shown in Table 17, the Project's buildout would not result in an extended delay or operational deficiency for the studied intersections. The Project would comply with the City's LOS standard by resulting in LOS C or better conditions at all studied intersections. Additionally, the Project's construction of a Class II bicycle lane along the property's frontage on the west side of Seventh Avenue would be consistent with the City of Hesperia Non-Motorized Transportation Plan.

Per the report's conclusions, the Project would provide adequate on-site access, adequate storage at the protected left turns on Main Street and Walnut Street and all studied intersections would operate at a LOS C, which exceeds the City's standard. As such, the Project would conform with the City's transportation plans in relation to vehicle transportation, transit corridors and bicycle and pedestrian facilities. No conflict or violation to the City's circulation plan would occur by the Project's operation.

Summary

The traffic report analyzed the potential adverse impacts related to the operation of two (2) drive-through restaurants on the southwest corner of Main Street and Seventh Avenue, as well as the Project's consistency

with local circulation plans. The report concluded that the Project buildout would be consistent with the City's LOS standard, Non-Motorized Transportation Plan, and development code. As such, the Project would not result in the violation or conflict of any applicable plan, policy, or ordinance governing the local circulation system, pedestrian and bicycle facilities. No impact would occur.

b) **No Impact.** Under CEQA Guidelines Section 15064.3(b), the determination of transportation impact is to be evaluated based on the Project's effect on vehicle miles traveled (VMT). In accordance with CEQA, the Project-specific traffic report also screened the Project to assess if a detailed VMT analysis report would be required. The screening methods were performed as outlined in the City's Traffic Impact Analysis Guidelines for Vehicle Miles Traveled (VMT) and Level of Service Assessment (LOS). Determination is dependent on whether the proposed project satisfied at least one of the VMT screening criteria. The following section outlines the VMT screening criteria and their applicability to the Project.

Transit Priority Area (TPA) Screening
The VMT guidelines state a project may be presumed as having less than a significant if it is located within a TPA area and evidence shows the absence of the following components:

- Has a Floor Area Ration (FAR) of less than 0.75
- Includes more parking for use by residents, customers, or employees of the project than required by the jurisdiction (if the jurisdiction requires the project to supply parking)
- Is inconsistent with the applicable Sustainable Communities Strategy (as determined by the lead agency, with input from the Metropolitan Planning Organization); or
- Replaced affordable residential units with a small number of moderate- to high-income residential units

The Project would not qualify for exemption under this criteria given that the property is not located within a TPA per the San Bernardino County Transportation Authority (SBCTA) VMT screening tool.

Low VMT Area Screening
The VMT guidelines state a project may be presumed as having less than a significant impact if it is located within a low VMT generating area or if the project would generate VMT per resident, per worker, or per service population that is similar to the existing land use in the low VMT area.

The screening concluded with the Project not being located within a low VMT area per the SBCTA VMT screening tool and thus, the Project would not qualify for an exemption under this criteria threshold.

Project Type Screening
The VMT guidelines state a project would have less than a significant impact if the development is a local serving retail project with a building area less than 50,000 square feet because local-serving retail projects generally improve the convenience of shopping close to home and have the effect of reducing vehicle travel.

Under this criterion, the Project would qualify because construction would result in a 3,684± square foot McDonald's building and a 1,300± square foot Starbucks building. In total, the proposed on-site building square footage is approximately 4,984 square feet of restaurant services that will serve the local community. As such, the report states that the Project is exempt from the preparation of any further VMT analysis and may be presumed to have less than a significant impact on transportation. No further analysis regarding VMT is required.

c) **No Impact.** As discussed in Question (a) of this section, the proposes on- and off-site improvements would comply with all applicable transportation plans, policies, and ordinance codes under the City Circulation Element and Hesperia Municipal Code. Buildout of the Project would not substantially increase hazards due to geometric design features such as sharp curves or dangerous intersections, because Project driveways are limited, and provide direct and perpendicular access to existing City streets. Additionally, no adverse impacts would occur by incompatible land use considering the subject site is zoned for commercial use, and is surrounded by similar uses. The Project's construction of two (2) drive-through restaurants would be consistent with the MSFCSP zoning and development guidelines, as required by law. No impacts are anticipated.

d) **No Impact.** Per the traffic report's evaluation for on-site access, the Project's driveways are forecasted to operate at a LOS C or better during the AM and PM peak hours at build out. Table 18 summarizes the report's findings.

Table 18
Project Driveway Performance at AM and PM Peak Hours

Key Intersection	Time Period	Minimum Acceptable LOS	Year 2025 with Project Traffic Conditions	
Project Driveway No. 1 at Main Street	AM PM	D	17.2 18.2	C C
Project Driveway No. 2 at Walnut Street	AM PM	D	9.6 9.7	A A

Source: Focused Traffic Impact Analysis for the Proposed Starbucks and McDonald's Project, prepared by Linscott, Law & Greenspan, Engineers, August 2024.

As shown on Table 18, the Project would not obstruct access on-site nor would it affect emergency access to any adjacent parcels by its off-site improvements as discussed in Question (a). At no time during construction or operation would the Project obstruct or block access to Main Street, Seventh Avenue, or Walnut Street. All construction staging would occur on-site. As such, no impacts would occur.

Mitigation: None required.

Monitoring: None required.

18. TRIBAL CULTURAL RESOURCES – Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code § 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section5020.1(k), or	☐	☐	☐	☒
ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code § 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code § 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☒	☐	☐

Source: Technical Background Report in Support of the Cultural Resource Element: City of Hesperia General Plan Update, Michael Brandman Associates, March 2010; Project material.

Background

The City of Hesperia area lies on the northern edge of a region that may have been utilized by the Serrano tribes, with the southern edge by the Vanyume tribes. The Vanyume inhabited areas along the Mojave River in the Victorville region and spoke a similar dialect to the Serrano. The Serrano spoke the language of the Cupan group of the Takic subfamily of the Uto-Aztecan language family. Prior to first contact with the Spanish, the Serrano population size was approximately 2,000 people. And their region is generally considered to have been in and north of Yucaipa, south of Victorville, west of Twentynine Palms, and east of Cajon Pass. The range of the group was restricted by reliable water sources. Over many years, the Spanish decimated the indigenous groups. Some Serrano survived by the terrain's ruggedness and tendency to disperse as a population in the far eastern portion of the San Bernardino Mountains. Currently, the Serrano descendants are found mostly on the Morongo and San Manuel reservations.[43]

Under Assembly Bill 52 (AB 52), lead agencies are required to analyze the probability for tribal cultural resources to occur within a project area and protect these nonrenewable resources. The State Public Resource Code Section 21074 defines tribal resources as:

- Sites, features, places, cultural landscapes, sacred places, and objects which cultural value to a California Native American tribe that are either of the following: included or determined to be eligible for inclusion in the California Register of Historical Resources, or included in a local register of historical resources as defined in subdivision (k) of Section 5020.1

[43] Technical Background Report in Support of the Cultural Resource Element: City of Hesperia General Plan Update, Michael Brandman Associates, March 2010.

- A resource determined by the lead agency in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Section 5024.1. In applying the criteria set forth in subdivision (c) of Section 5024.1 for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American tribe.

- A cultural landscape that meets the criteria of subdivision (a) is a tribal cultural resource to the extent that the landscape is geographically defined in terms of the size and scope of the landscape.

- A historical resource described in Section 21084.1, a unique archaeological resource as defined in subdivision (g) of Section 21083.2, or a "nonunique archeological resource" as defined in subdivision (h) of Section 21083.2 may also be a tribal cultural resource if it conforms with the criteria of subdivision (a).

Discussion of Impacts

i) **No Impact.** The site is developed. Repeated construction related disturbances have occurred by the site's development and redevelopment in 1957, 1967, and 1980. These development phases included excavation, earthwork, installation of underground tanks, paving, building construction, and other construction activities. Ground disturbance has not yielded tribal cultural resources considering the site is not listed or eligible for listing in the California Register of Historic Resource, or in a local register. As such, no impacts are anticipated.

ii) **No Impact.** As discussed above, the proposed Project site has been disturbed extensively by previous land uses. Ground disturbance related to the Project's construction is not expected to disturb soil at a greater depth than that previously impacted. For this reason, the likelihood for the Project to adversely affect the potential presence of tribal cultural resources is low to very low. Adherence to the set standards as analyzed in Section 5 (Cultural Resources) would furthermore limit the potential effects.

The City has undertaken Tribal Consultation, and as of the time of this analysis, no response has been received. Futher action regarding the protection of potentially occuring tribal resources is therefore not required as part of the Project buildout. No impacts are anticipated.

Mitigation: None required.

Monitoring: None required.

19. UTILITIES AND SERVICE SYSTEMS – Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	☒	☐
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☐	☒	☐
c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the projects projected demand in addition to the providers existing commitments?	☐	☐	☒	☐
d) Generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	☒	☐
e) Comply with federal, state, and local management and reduction statues and regulations related to solid waste?	☐	☐	☐	☒

Source: City of Hesperia General Plan 2010; Hesperia Water District 2020 Urban Water Management Plan, 2021; City of Hesperia Water Master Plan Final Report, July 2008; City of Hesperia Wastewater Master Plan Final Report, July 2008; Victor Valley Water Reclamation Authority, accessed December 2024; City of Hesperia Construction Waste Management Plan Procedures, accessed December 2024.

Background

Domestic Water

Hesperia Water District (HWD) is the local water provider for the City of Hesperia. HWD serves over 27,000 connections and a population exceeding 97,000 people. Based on current land use, population size, and groundwater management, the total City domestic water demand is 14,000± acres foot per year (AFY). The majority is drawn from the Alto Subarea of the Mojave River Groundwater Basin (MRGB) and to a lesser extent, local aquifers located underneath the City. HWD owns and operates an above- and belowground infrastructure utility system consisting of the following components:

- Fifteen (15) active wells within an area that sits on the MRGB
- Water distribution system with pipe size ranging between four (4) to twenty-four (24) inches in diameter
- Fourteen (14) storage reservoirs with a total capacity of nearly 200 AF (or 64 million gallons)

HWD updated its Urban Water Management Plan (UWMP) in 2020. The UWMP analyzes the HWD's water portfolio as well as providing strategies for water control and water reduction methods to ensure stable and reliable water service to meet its current and future 2045 water demand. Consistent with the City General Plan, the UWMP calculates a water use for a population estimated to reach over 130,000 by 2045. A demand of 4,000 acres feet over the 2045 planning period is expected to ensure a reliable supply of groundwater in normal, single dry year, and five consecutive dry year conditions through 2045.

Wastewater Facilities

Hesperia Water District provides wastewater collection services to part of its domestic water service area that flow to a regional wastewater treatment plant owned and operated by the Victor Valley Wastewater Reclamation Authority (VVWRA) and the remaining area is serviced by on-property septic tanks. The underground sewer system includes 60 miles of sewer pipes, 882 manholes, 51 cleanouts, 1 operational lift station, and 1 force main. The flow is routed to the City's connection to VVWRA's 3-mile interceptor that runs along the City's northeast boundary. VVWRA's facility has a wastewater treatment capacity of 18 million gallons per day (mgd).[44] Near the Project site there is an eight (8) inch gravity pipeline under Main Street as shown in Figure ES-2 (Existing System) of the Hesperia Wastewater Master Plan.

Wastewater treated at the VVWRA is not used in the City for recycling purposes. The majority of the treated water is discharged into the Mojave River Basin and a small amount is currently used to irrigate landscaping at the treatment plant. Currently, there is no access to recycled water as an alternative for groundwater use.

Stormwater Drainage System

The Hesperia Development Services Department oversees the City's storm drain and flood control systems while the San Bernardino County Department of Public Works Flood Control District is responsible for providing flood control and related services throughout the County including incorporated areas such as the City of Hesperia. The County Flood Control District has implemented a system of dams, conservation basins, channels, and storm drain in proximity to the City with the purpose of rerouting the flood flow away from developed areas.

Nearby stormwater channels include the Mojave River that bounds the City's eastern limit, the Antelope Creek Wash that branches off the Mojave River and intercepts the City's southeastern portion, and the Oro Grande Wash that extends along the City's western boundary. These major storm channels convey flood flow to non-urban regions within the County area. Interim channels are also located in the City's southeastern portion near the Mojave River and cover the western portion of the Antelope Creek Wash and part of the Hesperia East Channel.[45] These regional flood control measures, in addition to local property-specific drainage systems, as mandated by Hesperia Municipal Code Section 15.06.010(G), protect the City's developed area from flood related hazards.

Electricity

Southern California Edison supplies electricity to Hesperia. The local office address is 12353 Hesperia Road in Victorville, California.

Natural Gas

The Southwest Gas Corporation services natural gas to Hesperia. The local office is located at 13471 Mariposa Road in Victorville, California.

Solid Waste

Advance Disposal Co. (ADC) is contracted by the City for solid water collection. Its local station is located at 17105 Mesa Street in Hesperia. Additionally, Advance Disposal operates a materials recovery facility with a daily capacity of 600 tons. Advance Disposal intends to expand the facility capacity to meet the needs of the City and its service area.

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[44] Victor Valley Wastewater Reclamation Authority, https://www.vvwraca.gov/governance/commissioners, accessed December 2024.

[45] Flood Control Facilities Map, San Bernardino County Department of Public Works Flood Control District, https://www.arcgis.com/apps/mapviewer/index.html?webmap=6ed1bcba6d7c4e14b76cf07593c9875c, accessed December 2024.

Telecommunications
Charter Communications is the cable service provider for the City. Its local office address is 10490 Business Center Drive in Victorville, California.

Discussion of Impacts

a) **Less Than Significant Impact.** The Project site is located within a largely buildout portion of the MSFCSP area. Currently the property is developed and operated as an automobile sales and service/repair shop. Surrounding land uses include a two-story office/clinic building to the north, commercial retail facilities to the south, a commercial plaza to the west, and a convenience store/gas station to the east.

According to utility maps published by the Hesperia GIS Department, there is a sewer gravity line[46] and a water line[47] underneath Main Street and in proximity to the Project site. These lines provide the site and its surrounding areas with connections to these services. Additionally, based on visual observations of photographs taken of the Project site, there are two (2) power polls located along the site boundary to the east. Given that an existing business operates on the site, the Project site is currently being served by electricity and thus included in the Southern California Edison service area.

The Project proposes the implementation of a McDonalds restaurant and a Starbucks coffee shop within the site's 1.58± acres parcel. Implementation of the proposed development would increase the demand for most utility services in contrast with its existing land use given that restaurants and coffee shops typically have a higher demand for water, wastewater collection, solid waste disposal, electricity, and natural gas than the existing auto-related use. However, the demand factor is not expected to exceed the supply capacity of any utility provider nor require the expansion of any facilities to properly service the area including the Project.

The following section outlines each utility source and analyzes the Project's potential impacts related to its demand factor.

Domestic Water
As stated above, the HWD 2020 Urban Water Management Plan analyzes the District's water portfolio and evaluates whether the District may adequately supply water to its service area through 2045. The analysis takes into consideration the City General Plan and MSFCSP land use designations to account for water demands based on current and future development areas. As such, the site's Neighborhood Commercial land use has been included in the UWMP calculations. The UWMP concludes that the District would be able to meet the City's water demand under normal, single dry, and five consecutive dry years scenarios. Implementation of the Project would therefore not disrupt the access to water now or in the foreseeable future. The Hesperia Water District would reliably provide water to all service areas including the Project site. See also Section 10, Hydrology. Therefore, impacts related to water access and consumption would be less than significant.

Wastewater Collection
The Hesperia Wastewater Master Plan evaluates the exiting sanitary flows from residential, commercial, and industrial sources, as well as future wastewater flows from development consistent with the City's Land Use. The evaluation concludes with a list of improvements the City would need to implement to meet current and future wastewater production. The recommendations include the following improvements:

[46] Hesperia Sewer Map, City of Hesperia Geographic Information System Department, https://www.cityofhesperia.us/DocumentCenter/View/4118/Hesperia-Sewer?bidId=, January 2015.
[47] Hesperia Water Map, City of Hesperia Geographic Information System Department, https://www.cityofhesperia.us/DocumentCenter/View/4125/Hesperia-Water-6-16-15compressed?bidId=, June 2015.

- 32 pipelines improvements are recommended with a combined length of approximately 30.7 miles, including a new 3-mile force main to WRP-1 and 27.3 miles of gravity mains
- 2 new lift stations (LS-3 and LS-4)
- 3 new wastewater reclamation treatment plants (WRP-1 to WRP-3)
- 1 new solids lift station
- 0.76 miles of solids pipelines

Consistent with the recommended sewer improvements and implementation phases as outlined in the City Wastewater Master Plan, the HWD expands its sanitary flow capacity as needed to efficiently and adequately provide wastewater collection to its current and future service areas. The Project would not result in a sewer line expansion or relocation that has not been previously planned by the City and HWD. The Project's wastewater flow would eventually be routed to WRP-2 located near the intersection of Osbrink Drive and Santa Fe Avenue East, approximately 3.32 miles northeast of the subject site. At buildout, WRP-2 would have a capacity of 8.5 mgd. The local treatment plant would offset wastewater flow to VVWRA. HWD's collection system and local WRPs are designed and built with the intention to meet the City's current and future wastewater service needs. For this reason, the Project is not expected to exceed the HWD's capacity nor VVWRA treatment capacity. Less than significant impact would occur.

Stormwater Drainage System

The Project site grading plan would address stormwater runoff by complying with drainage standards as stated in Hesperia Municipal Code Section 15.06.090 (Drainage and Terracing). Additionally, the Project would be required to draft a Stormwater Pollution Prevention Plan (SWPPP) where BMPs for stormwater control measures would be implemented during the Project's construction and operation to reduce the potential for stormwater pollution, runoff, and flooding. These requirements ensure on-site stormwater flow is properly managed and controlled to lessen the pressure on the regional flood control system. In compliance with applicable standards in the City Municipal Code, the Project would result in less than significant impacts. For further information on the Project's flood control measures refer to Section 10 (Hydrology and Water Quality) of this report.

Electricity

SCE operates miles of high voltage transmission lines and substations throughout Hesperia to service all developed areas including residential, commercial, and industrial land uses. The power supplied may be sourced from coal, natural gas, nuclear power plants, and/or eligible renewable energy from solar, wind, hydroelectric, and geothermal.[48] SCE is working on expanding and transitioning to clean energy to reach carbon neutrality on electrical retail sales by 2045[49] as mandated by Senate Bill 100 (SB 100). Nonetheless, SCE's operation and reliability to supply energy to the City and Project site are expected to continue. The demand for energy related to the operation of two drive-through restaurants is not expected to exceed SCE capacity. The Project will be required to comply with the California Building Code and Hesperia Municipal Code regarding energy efficiency and conservation to limit the use of electricity. As such, the Project would not become a source of excessive energy use and would not impact SCE capacity in supplying electricity. Therefore, less than significant impacts would occur. Further analysis on the Project's energy demand is discussed in Section 6 (Energy) of this report.

[48] Customer Connection, Southern California Edison, October 2009.
[49] Integrating Distributed Energy Resources, Southern California Edison, https://www.edison.com/innovation/distributed-energy-resources, accessed December 2024.

Natural Gas

Southwest Gas Corporation would supply natural gas to the Project site. Transmission lines are primarily focused within the Victorville area[50], indicating distribution lines underlie the Hesperia planning area to provide services. The demand for natural gas on-site is not expected to be substantial or to require SGC to expand its existing utility infrastructure. Environmental impacts related to natural gas are expected to be less than significant. Also see Section 6 (Energy) for further analysis on the Project's estimated energy demand.

Telecommunication

Cable services provider by Charter Communications has facilities in the Project area, and will serve the Project site. Less than significant impact would occur.

b) **Less Than Significant Impact.** During construction, the Project may use water to control dust. Water use will be temporally and limited during the construction phase. During operation, the Project will require water for indoor use and landscaping. The total water demand from the McDonalds and Starbucks building is estimated to account for less than one percent of HWD's projected 2045 water demand of 18,420 AFY, as shown in Table 19.

Table 19
In-Door Water Consumption Demand

Land Use	Water Demand Factor[1] (gal/sf/year)	Water Demand (gpd)	Water Demand (AFY)
Restaurant	331	4,411.18	4.29
% of HDW's 2045 Water Supply and Demand (normal and single dry year)			0.00023
[1]AWWA Commercial and Institutional End Uses of Water, 2000.			

Outdoor water use for landscape irrigation is expected to be minimal considering the Project is required to plant drought tolerant vegetation. Therefore, water use related to the Project's in-door activities and outdoor irrigation purposes is not expected to substantially increase the local water demand or exceed HWD's water supply capacity. HWD would be able to supply water to the Project and the rest of its service area in normal, single dry, and five consecutive dry years as stated in the City's UWMP. For these reasons, impacts related to water supply as a result of the Project's build out are anticipated to be less than significant.

c) **Less Than Significant Impact.** Currently, the City owns, operates, and maintains a wastewater collection system which connects to VVWRA's 3-mile interceptor that directs flow to the regional wastewater treatment plant (RWWTP) operated by VVWRA. The Project is located within HWD wastewater collection service area and thus, wastewater generated at the site will be routed to VVWRA's RWWTP. According to the City's 2015 Wastewater Management Plan, VVWRA's wastewater treatment has an ultimate capacity of 18 mgd. Based on the Project's land use and total square footage, the site is estimated to generate 389.20 gallons of wastewater per day, which translates to less than one percent of the facility's total capacity. Given the Project is not anticipated to contribute excessively to the wastewater volume treated at the VVWRA's RWWTP, related impacts are expected to be less than significant.

[50] Southwest Gas Transmission Pipeline Map, https://www.swgas.com/7200000200383/Transmission-Map-2015.pdf, accessed December 2024.

Table 20 Project Wastewater Generation		
Land Use	**Generation Rate[1] (gal/sf/day)**	**Wastewater Generation (gpd)**
Fast-Food Restaurant	0.08	389.20
% of VVWRA's RWWTP Treatment Capacity		0.000022
[1] Factor from Primaco Shopping Center ISMND for the City of Hesperia, April 2024.		

d) Less Than Significant Impact. Solid waste will be generated on-site during the Project's construction and operation.

Advance Disposal Co. would service the subject site with solid waste collection and disposal needs. ADC operates a municipal solid waste material recovery facility with a capacity to sort through 50 tons of solid water per hour.[51] The processed waste is then transferred to a permanent landfill outside the City. The waste is transferred to the Victorville Sanitary Landfill located at 18600 Stoddard Wells Road in Victorville which is permitted to process 3,000 tons of solid waste per day and has a remaining capacity of 79,400,000 cubic yards.

Construction Waste

Construction of the Project will require demolition of the property's existing structures. The solid waste produced during demolition will not be salvaged or reused given the likelihood for asbestos containing material as discussed in Section 9 (Hazards and Hazardous Materials) of this report. Other construction waste will be required to fulfill standards as established in the California Green Building Code, Hesperia Municipal Code, and the City's Construction Waste Management Plan. Pursuant to these standards, the Project would be required to draft a Waste Management Plan (WMP) prior to construction and demolition activities and divert at least 50% of all waste generated during the Project's 7-month construction period. Adherence to state and local provisions will reduce impacts related to construction generated waste to less than significant levels.

Operations Waste

Operation of the McDonalds and Starbucks building will result in multiple sources of solid waste generation that include, but are not limited to food packaging, perishable goods, and cleaning products. Based on the Project's land use and projected total labor force of 15 staff members per shift at maximum, the site is estimated to generate 255 pounds of solid waste per day. The Project would account for less than one percent of Victorville Sanitary Landfill daily capacity of 3,000 tons of solid waste per day. As a result, potential impacts would be less than significant.

Table 21 Project Solid Waste Generation		
Land Use	**Generation Rate[1] (lbs/employee/day)**	**Solid Waste Generation (lbs/day)**
Fast-Food Restaurant	17	255
% of Victorville Sanitary Landfill Daily Capacity		0.000043
[1] Waste Disposal and Diversion Findings for Selected Industry Groups, California Department of Resources Recycling and Recovery, 2006.		

[51] Advance Disposal Reopens MSW MRF in California, Recycling Today, https://www.recyclingtoday.com/news/cp-group-advance-disposal-california-mrf-redesign/, August 2014.

e) **No Impacts.** As required by the California Building Code and Hesperia Municipal Code, the Project would adhere to all applicable waste reduction and recycling standards. As such, no conflicts are anticipated and thus, no impacts would occur.

Mitigation: None required.

Monitoring: None required.

20. WILDFIRE – If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☐	☒
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☐	☒
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☐	☒

Sources: City of Hesperia General Plan, 2010; City of Hesperia General Plan EIR (Appendix G), May 2010; Fire and Resources Assessment Program (FRAP) Fire Hazard Severity Zone Viewer, California Department of Forestry and Fire Protection, September 2023; FEMA National Flood Hazard Map.

Background

Wildfire is a serious issue in southern California due to the region's arid conditions, vegetation (fuel), topography, weather, and wildfire history. The probability for wildfire hazards is particularly dangerous in urban-wildland interface (UWI) areas where wildlands approach urban development, posing a severe threat to safety and the potential loss of property and life.

The City of Hesperia, is located in the High Desert, and is characterized by isolated, steep-sided mountain ranges separated by broad alluvial basins. Vegetation typically found in the City planning area includes desert scrub such as alkali sink vegetation, creosote bush scrub, succulent scrub, and Joshua Tree and Juniper woodlands. The limited amount of vegetation and low surface fuel loads limits and reduces the potential for wildfires to spread across the planning area.

Based on the California Department of Forestry and Fire Protection (CalFire) updated Fire Hazard Severity Zone Map, the City of Hesperia is not located within a classified Very High Fire Hazard Severity Zone (FHSZ). The nearest classified area borders the City's southern limit and extends along the foothills of the regional mountains. The City General Plan EIR Exhibit 4-2 (High Fire Hazard Areas) identified the City's western and eastern corners as Very High FHSZ, the southern region as High FHSZ, and the northern region as a mix of Moderate FHSZ and no fire hazard designation. In the event of a fire related emergency, it would be the responsibility of the San Bernardino County Fire Department to provide fire suppression and protection services.

Discussion of Impacts

a) **No Impact.** The design and development of the Project's proposed commercial use would be consistent with the California Fire Code and applicable development and regulatory provisions outlined in the MSFCSP and Hesperia Municipal Code. At no point during construction or operation would the Project obstruct or completely block access to adjacent streets or an existing evacuation route. All construction staging would be confined within the site's boundary. For these reasons, the Project would not substantially impair the efficiency or effectiveness of the City's Local Hazard Mitigation Plan. No impacts would occur.

b) **No Impact.** As shown in the State's Fire Hazard Severity Zone Map, the Project is not located in or near an area designated as a Very High FHSZ. Similarly, the property is not within a fire hazard zone as illustrated by the City General Plan EIR Exhibit 4-2 (High Fire Hazard Areas). The property is relatively flat and there are no slopes within proximity that could otherwise signal a wildfire risk. The potential impacts related to fire hazards occurring near or on the Project site is low to very low.

Although the potential for wildfire hazards is limited, the Project would comply with California Fire Codes and the City development standards and regulations regarding fire safety and fire prevention. Compliance with these standards will be reviewed by the Fire Department prior to issuing building permits. As such, the Project's development would not expose occupants to uncontrolled wildfires. No impacts would occur.

c) **No Impact.** Neither the Project site nor its surrounding area are classified a fire hazard zones within a Local Responsibility Area (LRA). Build out of the two drive-through restaurants would not require the installation of specialized infrastructure such as fire roads, fuel breaks, or emergency water sources, power lines, or other utilities. Environmental impacts related to the build out of utility infrastructures would not occur in connection to the Project build out. No impacts are anticipated.

d) **No Impact.** Under FEMA's National Flood Hazard Map and the City's General Plan EIR Exhibit 3-1 (FEMA Flood Map), the property is located within a FEMA Zone X. The flood zone designation corresponds to areas located outside a 100-year flood area which indicates a low flood hazard risk. Additionally, there are no hills or slopes within proximity to the Project area. For these reasons, the likelihood for the property and on-site occupants to be exposure to fire-induced downward flooding and/or landslide is considered negligible. No impacts would occur.

Mitigation: None required.

Monitoring: None required.

21. MANDATORY FINDINGS OF SIGNIFICANCE	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☒	☐	☐
c) Does the project have environmental effects, which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐

a) **Less Than Significant Impact with Mitigation Incorporated.** As discussed in Section 4 (Biological Resources), build out of the proposed Project would not result in the reduction of suitable ecological habitat for common or special status species considering that the property is currently developed, occupied by commercial land use, and highly disturbed. There is no potential for the Project to substantially affect the accessibility to viable habitat nor cause a decline in a species population in regard to its construction or operation. The Project would not adversely affect any biological resources, expect for the one Joshua Tree located at the site's southern parcel. Given the Joshua Tree is a classified "state threatened" species under the Western Joshua Tree Conservation Act, the Project would be required to submit a take permit to the California Department of Fish and Wildlife and pay an in-lieu fee to cover its share in the cost of preserving and managing conservation areas for Joshua Trees. To reduce the potential for adverse effects, the Project would be required to implement Mitigation Measure BIO-1. As such, any impacts to biological resources would be reduced to less than significant levels with mitigation.

Section 5 (Cultural Resources) discusses the probability for historical and archeological resources to be uncovered at the proposed Project site. As determined, the three (3) existing structures within the northern half of the property do not hold any historical or cultural value to the City. Therefore, the demolition and redevelopment of the site would not affect the City's inventory of historical artifacts and sites. The site has not been specifically studied for the potential occurrence of archaeological resources; however, the site has been repeatedly developed and none of the prior development efforts have yielded artifacts. As such, the likelihood for the site's redevelopment to produce or affect unearthed artifacts is low to very low. Less than significant impacts are expected.

b) **Less Than Significant Impact with Mitigation Incorporated.** Significant impacts to air quality, hazardous material, and transportation generally result in cumulative effects.

As discussed in Section 3 (Air Quality), cumulative impacts occur when a project exceeds federal and state non-attainment air quality standards. The Project located in the Mojave Desert Air Basin (MDAB), is in an area designated as non-attainment for PM_{10} and ozone. CalEEMod was used to estimate the Project's emission of criteria pollutants including CO, NO_x, VOC, SO_x, PM_{10}, $PM_{2.5}$ during the 7-month construction period and long-term operation period. Emissions were compared to the Mojave Desert Air Quality Management District (MDAQMD) significant emission thresholds for criteria pollutants. The results indicate that the Project's maximum emissions for construction and operation would fall far below the MDAQMD emission threshold. So, although the Project would result in an incremental increase of air pollutants, it would not result in a considerable cumulative impact. Any potential impacts would be minimized by the Project's compliance with applicable regulatory standards as outlined in the MDAQMD Rule Book, PM_{10} Attainment Plan, Ozone Attainment Plan, and MDAQMD CEQA and Federal Conformity Guidelines. In accordance with local and regional air quality plans, no cumulative impacts would occur.

Management of hazardous material could also result in cumulative impacts if the project were to contribute to the property's hazardous designation. Section 9 (Hazards and Hazardous Materials) summarizes the property's environmental conditions as evaluated and determined by the site-specific Phase I Environmental Site Assessment Report and Phase II Limited Subsurface Investigation Report. Based on the reports, the Project would not result in a cumulative impact in relation to the site's previous use as a gas station, if Mitigation Measure HAZ-1 and HAZ-2 are implemented prior to construction. Additionally, the Project would be required to demonstrate compliance with state and local regulatory standards regarding the transport, use, storage, and disposal of hazardous materials use or produced during construction and operation. Compliance with standards and mitigations would ensure the proposed Project does not contribute to a cumulative effect to the site's environmental conditions. Less than significant impacts would occur with mitigation.

Cumulative impacts from transportation occurs when project-generated traffic as well as current or future development projects collectively account for the growth in traffic volume. As discussed in Section 17 (Transportation), the Project-specific traffic reports there are no development within a 2 mile distance from the Project site with a cumulative effect. Development of the Project would involve off-site road improvements along the property's eastern frontage on Seventh Avenue. These improvements would involve restriping Seventh Avenue to provide a 200 foot northbound left-turn pocket at the intersection with Main Street and a 50 foot southbound left-turn pocket at the intersection with Walnut Street. A Class II Bike Lane would also be implemented along the Project frontage on the west side of Seventh Avenue, as well as reconstruct or complete the sidewalks along the site's frontage on Seventh Avenue and Walnut Street. Implementation of these features would introduce traffic efficiency along the corridor, as well as provide a source of non-motorized transportation to improve public transit infrastructure within the City's commercial core. These improvements as well as the Project's implementation of a commercial project in service of the community minimize the potential for cumulative impacts in regard to an increase in traffic because the Project provides alternative sources of single vehicle uses and placed development in proximity to residential development to reduce the miles traveled to accesses these frequented facilities. As such, the Project's cumulatively considerable impact would be less than significant.

c) **Less Than Significant Impact with Mitigation Incorporated.** As discussed in Section 7 (Geology and Soils) the Project site is not located in an active fault zone, high risk for strong ground shaking area, or within an area susceptible to geological hazards including liquefaction, landslides, later collapse, subsidence, or lateral collapse. Nonetheless, consistent with the Project-specific geological technical report, the Project would be required to implement Mitigation Measure GEO-1 to ensure any adverse effects related to geological hazards affecting the site are minimized. Although the proposed Project site is not at risk for significant geological hazards, construction and operation of the Project would need to comply with the

most current state and local building code, including seismic, fire, and safety codes. As such, the Project would not expose people to loss, injury or death.

Also, Section 20 (Wildfire) analyses the property's fire hazard risk and determined a low to very low probability given the site's distance from Very High Fire Hazard Severity Zone as illustrated in the State's Fire Hazard Severity Zone Map and City General Plan EIR Exhibit 4-2. The site's risk to flood is also determined as low as indicated by the property's FEMA Zone X designation which is associated with areas with a low flood hazard risk.

Section 13 (Noise) evaluates the Project's potential to cause excessive noise and disrupt the existing ambient environment. Considering the Project construction will be temporary, and any noise related to construction activities will cease after the 7-month construction period, and operational noise will be less invasive and intrusive in comparison to the operation of an automobile sale and repair/service shop, the Project would have a less than significant impact to nearby sensitive receptors. The Project would be required to comply with the City's noise standards for commercial land use, further reducing the potential for adverse effects.

Mitigation Monitoring and Reporting Program				
	Mitigation Measure	**Responsible Agency**	**Timing**	**Verification (Date and Initials)**
BIOLOGICAL RESOURCES				
BIO-1	Prior to any ground disturbing activity on the Project site, the applicant shall secure an Incidental Take Permit (ITP) for the removal of the Joshua tree, and provide a copy of the ITP to the City. The applicant shall also secure native plant permits from the City, as required by the Municipal Code.	Project Applicant, the City Planning Division	Prior to ground disturbance	
GEOLOGY AND SOILS				
GEO-1	The Project shall refine its final site plan and grading plan in compliance with the list of standard requirements and recommendations as stated in the geological technical report. Some of these standards pertain to on-site drainage system, site preparation, foundational support, disposal of exported material, use of construction materials, over excavated areas, and measures to contain moisture migration. Standard requirements by which the Project is mandated to comply include construction standards pursuant with current American Concrete Institute (ACI) standards, State of California Standard Specifications, State of California Department of Transportation (Caltrans) Standard Specification, and California Occupational Safety and Health Administration (CAL OSHA) requirements, to name a few. The final Project plan and specification documents shall be reviewed by a Moore Twining staff to determine whether they are consistent with the stated recommendations. And construction monitoring will be provided by a qualified Moore Twining staff member in order to verify the substrate conditions and make alternative recommendations if the conditions differ from those anticipated.	Project Applicant, project geologist, City Building Department	Prior to construction	
HAZARDS AND HAZARDOUS MATERIALS				
HAZ-1	An Operations and Maintenance (O&M) Program shall be implemented to safely manage the identified presumed asbestos-containing materials located in the subject building on the property. Prior to any planned remolding or demolition, a comprehensive survey for asbestos-containing materials should be conducted. Removal or identified ACMs, including the preparation of specifications, should be conducted by a licensed asbestos abatement contractor and/or Certified Asbestos Consultant, according to applicable regulations.	Project Applicant, City Building Department	Prior to construction	
HAZ-2	Prior to any construction activities, the four 55-gallon waste oil drums shall be properly disposed of in accordance with state and local regulations.			

Appendix A
Air Quality

Fountainhead Hesperia Detailed Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

1.2. Land Use Types

1.3. User-Selected Emission Reduction Measures by Emissions Sector

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

2.2. Construction Emissions by Year, Unmitigated

2.4. Operations Emissions Compared Against Thresholds

2.5. Operations Emissions by Sector, Unmitigated

3. Construction Emissions Details

3.1. Demolition (2025) - Unmitigated

3.3. Site Preparation (2025) - Unmitigated

3.5. Grading (2025) - Unmitigated

3.7. Building Construction (2025) - Unmitigated

3.9. Building Construction (2026) - Unmitigated

3.11. Paving (2026) - Unmitigated

3.13. Architectural Coating (2026) - Unmitigated

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

4.3. Area Emissions by Source

4.3.1. Unmitigated

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

5. Activity Data

5.1. Construction Schedule

5.2. Off-Road Equipment

5.2.1. Unmitigated

5.3. Construction Vehicles

5.3.1. Unmitigated

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

5.5. Architectural Coatings

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

5.6.2. Construction Earthmoving Control Strategies

5.7. Construction Paving

5.8. Construction Electricity Consumption and Emissions Factors

5.9. Operational Mobile Sources

5.9.1. Unmitigated

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

5.10.2. Architectural Coatings

5.10.3. Landscape Equipment

5.11. Operational Energy Consumption

5.11.1. Unmitigated

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

5.13. Operational Waste Generation

5.13.1. Unmitigated

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

5.16.2. Process Boilers

5.17. User Defined

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

5.18.2. Sequestration

5.18.2.1. Unmitigated

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

6.2. Initial Climate Risk Scores

6.3. Adjusted Climate Risk Scores

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

7.2. Healthy Places Index Scores

7.3. Overall Health & Equity Scores

7.4. Health & Equity Measures

7.5. Evaluation Scorecard

7.6. Health & Equity Custom Measures

8. User Changes to Default Data

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Fountainhead Hesperia
Construction Start Date	9/26/2025
Operational Year	2026
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.80
Precipitation (days)	12.8
Location	34.423120583093194, -117.31618429038393
County	San Bernardino-Mojave Desert
City	Hesperia
Air District	Mojave Desert AQMD
Air Basin	Mojave Desert
TAZ	5133
EDFZ	10
Electric Utility	Southern California Edison
Gas Utility	Southwest Gas Corp.
App Version	2022.1.1.29

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description

Fast Food Restaurant with Drive Thru	4.87	1000sqft	0.56	4,865	13,170	—	—	—
Parking Lot	56.0	Space	0.96	0.00	0.00	—	—	—
Other Asphalt Surfaces	0.06	Acre	0.06	0.00	0.00	—	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Unmit.	4.14	15.5	18.8	0.03	2.19	0.84	4,079
Daily, Winter (Max)	—	—	—	—	—	—	—
Unmit.	4.14	15.6	18.4	0.03	8.06	4.11	4,056
Average Daily (Max)	—	—	—	—	—	—	—
Unmit.	0.32	2.70	2.81	0.01	0.91	0.44	627
Annual (Max)	—	—	—	—	—	—	—
Unmit.	0.06	0.49	0.51	< 0.005	0.17	0.08	104
Exceeds (Daily Max)	—	—	—	—	—	—	—
Threshold	137	137	548	137	82.0	65.0	548,000
Unmit.	No	No	No	No	No	No	No
Exceeds (Average Daily)	—	—	—	—	—	—	—
Threshold	137	137	548	137	82.0	65.0	548,000
Unmit.	No	No	No	No	No	No	No

Exceeds (Annual)	—	—	—	—	—	—	—
Threshold	—	—	—	—	—	—	—
Unmit.	—	—	—	—	—	—	Yes

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—
2025	1.57	15.5	16.5	0.03	2.19	0.84	4,079
2026	4.14	14.0	18.8	0.03	0.72	0.51	3,229
Daily - Winter (Max)	—	—	—	—	—	—	—
2025	1.57	15.6	16.1	0.03	8.06	4.11	4,056
2026	4.14	14.0	18.4	0.03	0.72	0.51	3,204
Average Daily	—	—	—	—	—	—	—
2025	0.28	2.70	2.81	0.01	0.91	0.44	627
2026	0.32	1.83	2.26	< 0.005	0.08	0.06	407
Annual	—	—	—	—	—	—	—
2025	0.05	0.49	0.51	< 0.005	0.17	0.08	104
2026	0.06	0.33	0.41	< 0.005	0.01	0.01	67.4

2.4. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Unmit.	6.85	4.96	43.6	0.09	7.89	2.06	10,204
Daily, Winter (Max)	—	—	—	—	—	—	—
Unmit.	5.95	5.33	34.8	0.09	7.89	2.06	9,352
Average Daily (Max)	—	—	—	—	—	—	—

Unmit.	5.52	3.62	25.0	0.05	4.12	1.08	5,419
Annual (Max)	—	—	—	—	—	—	—
Unmit.	1.01	0.66	4.56	0.01	0.75	0.20	897
Exceeds (Daily Max)	—	—	—	—	—	—	—
Threshold	137	137	548	137	82.0	65.0	—
Unmit.	No	No	No	No	No	No	Yes
Exceeds (Average Daily)	—	—	—	—	—	—	—
Threshold	137	137	548	137	82.0	65.0	—
Unmit.	No	No	No	No	No	No	Yes
Exceeds (Annual)	—	—	—	—	—	—	—
Threshold	—	—	—	—	—	—	100,000
Unmit.	—	—	—	—	—	—	No

2.5. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Mobile	6.69	4.81	43.3	0.09	7.88	2.05	9,692
Area	0.15	< 0.005	0.21	< 0.005	< 0.005	< 0.005	0.87
Energy	0.01	0.15	0.13	< 0.005	0.01	0.01	376
Water	—	—	—	—	—	—	21.4
Waste	—	—	—	—	—	—	106
Refrig.	—	—	—	—	—	—	7.61
Total	6.85	4.96	43.6	0.09	7.89	2.06	10,204
Daily, Winter (Max)	—	—	—	—	—	—	—
Mobile	5.83	5.18	34.7	0.09	7.88	2.05	8,841
Area	0.12	—	—	—	—	—	—

Energy	0.01	0.15	0.13	< 0.005	0.01	0.01	376
Water	—	—	—	—	—	—	21.4
Waste	—	—	—	—	—	—	106
Refrig.	—	—	—	—	—	—	7.61
Total	5.95	5.33	34.8	0.09	7.89	2.06	9,352
Average Daily	—	—	—	—	—	—	—
Mobile	5.38	3.46	24.7	0.05	4.11	1.07	4,907
Area	0.13	< 0.005	0.10	< 0.005	< 0.005	< 0.005	0.43
Energy	0.01	0.15	0.13	< 0.005	0.01	0.01	376
Water	—	—	—	—	—	—	21.4
Waste	—	—	—	—	—	—	106
Refrig.	—	—	—	—	—	—	7.61
Total	5.52	3.62	25.0	0.05	4.12	1.08	5,419
Annual	—	—	—	—	—	—	—
Mobile	0.98	0.63	4.52	0.01	0.75	0.20	812
Area	0.02	< 0.005	0.02	< 0.005	< 0.005	< 0.005	0.07
Energy	< 0.005	0.03	0.02	< 0.005	< 0.005	< 0.005	62.3
Water	—	—	—	—	—	—	3.55
Waste	—	—	—	—	—	—	17.5
Refrig.	—	—	—	—	—	—	1.26
Total	1.01	0.66	4.56	0.01	0.75	0.20	897

3. Construction Emissions Details

3.1. Demolition (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Onsite	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—
Off-Road Equipment	1.47	13.9	15.1	0.02	0.57	0.52	2,502
Demolition	—	—	—	—	1.08	0.16	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—
Off-Road Equipment	1.47	13.9	15.1	0.02	0.57	0.52	2,502
Demolition	—	—	—	—	1.08	0.16	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—
Off-Road Equipment	0.12	1.14	1.24	< 0.005	0.05	0.04	206
Demolition	—	—	—	—	0.09	0.01	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.21	0.23	< 0.005	0.01	0.01	34.0
Demolition	—	—	—	—	0.02	< 0.005	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—
Worker	0.07	0.06	1.04	0.00	0.16	0.04	185
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.03	1.48	0.33	0.01	0.38	0.12	1,392
Daily, Winter (Max)	—	—	—	—	—	—	—
Worker	0.06	0.07	0.70	0.00	0.16	0.04	163
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.03	1.57	0.33	0.01	0.38	0.12	1,391
Average Daily	—	—	—	—	—	—	—
Worker	< 0.005	0.01	0.06	0.00	0.01	< 0.005	13.8
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Hauling	< 0.005	0.13	0.03	< 0.005	0.03	0.01	114
Annual	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	< 0.005	< 0.005	2.29
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	0.02	< 0.005	< 0.005	0.01	< 0.005	18.9

3.3. Site Preparation (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Onsite	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—
Off-Road Equipment	1.31	12.1	12.1	0.02	0.56	0.52	2,072
Dust From Material Movement	—	—	—	—	6.26	3.00	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.50	0.50	< 0.005	0.02	0.02	85.1
Dust From Material Movement	—	—	—	—	0.26	0.12	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.09	0.09	< 0.005	< 0.005	< 0.005	14.1
Dust From Material Movement	—	—	—	—	0.05	0.02	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—

Worker	0.03	0.04	0.42	0.00	0.10	0.02	98.1
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.02	0.00	< 0.005	< 0.005	4.15
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.69
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.5. Grading (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Onsite	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—
Off-Road Equipment	1.51	14.1	14.5	0.02	0.64	0.59	2,463
Dust From Material Movement	—	—	—	—	7.09	3.43	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—
Off-Road Equipment	0.08	0.77	0.80	< 0.005	0.04	0.03	135
Dust From Material Movement	—	—	—	—	0.39	0.19	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.14	0.15	< 0.005	0.01	0.01	22.3

Dust From Material Movement	—	—	—	—	0.07	0.03	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—
Worker	0.04	0.05	0.56	0.00	0.13	0.03	131
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.01	0.81	0.17	< 0.005	0.19	0.06	716
Average Daily	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.03	0.00	0.01	< 0.005	7.39
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	0.04	0.01	< 0.005	0.01	< 0.005	39.2
Annual	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	< 0.005	< 0.005	1.22
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	6.49

3.7. Building Construction (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Onsite	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—
Off-Road Equipment	1.07	8.95	10.0	0.02	0.33	0.30	1,807
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.11	0.12	< 0.005	< 0.005	< 0.005	21.2

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.02	0.02	< 0.005	< 0.005	< 0.005	3.51
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—
Worker	0.01	0.01	0.11	0.00	0.03	0.01	26.7
Vendor	< 0.005	0.03	0.01	< 0.005	0.01	< 0.005	26.4
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.32
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.31
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.05
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.05
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.9. Building Construction (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Onsite	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—
Off-Road Equipment	1.01	8.57	9.96	0.02	0.29	0.27	1,807
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—
Off-Road Equipment	1.01	8.57	9.96	0.02	0.29	0.27	1,807

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—
Off-Road Equipment	0.18	1.54	1.79	< 0.005	0.05	0.05	325
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.28	0.33	< 0.005	0.01	0.01	53.9
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—
Worker	0.01	0.01	0.16	0.00	0.03	0.01	29.6
Vendor	< 0.005	0.02	0.01	< 0.005	0.01	< 0.005	26.0
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—
Worker	0.01	0.01	0.11	0.00	0.03	0.01	26.2
Vendor	< 0.005	0.03	0.01	< 0.005	0.01	< 0.005	25.9
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.02	0.00	< 0.005	< 0.005	4.86
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	4.67
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.80
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.77
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.11. Paving (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e

Onsite	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—
Off-Road Equipment	0.47	4.41	6.48	0.01	0.18	0.17	995
Paving	0.13	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—
Off-Road Equipment	0.47	4.41	6.48	0.01	0.18	0.17	995
Paving	0.13	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.24	0.36	< 0.005	0.01	0.01	54.5
Paving	0.01	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.04	0.06	< 0.005	< 0.005	< 0.005	9.02
Paving	< 0.005	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—
Worker	0.06	0.05	0.96	0.00	0.16	0.04	181
Vendor	< 0.005	0.05	0.02	< 0.005	0.01	< 0.005	50.5
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—
Worker	0.05	0.06	0.64	0.00	0.16	0.04	160
Vendor	< 0.005	0.05	0.02	< 0.005	0.01	< 0.005	50.4
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.04	0.00	0.01	< 0.005	9.05

Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	2.76
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	< 0.005	< 0.005	1.50
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.46
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.13. Architectural Coating (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Onsite	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—
Off-Road Equipment	0.12	0.86	1.13	< 0.005	0.02	0.02	134
Architectural Coatings	2.33	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—
Off-Road Equipment	0.12	0.86	1.13	< 0.005	0.02	0.02	134
Architectural Coatings	2.33	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.04	0.05	< 0.005	< 0.005	< 0.005	5.51
Architectural Coatings	0.10	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	0.91
Architectural Coatings	0.02	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.03	0.00	0.01	< 0.005	5.93
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.02	0.00	0.01	< 0.005	5.24
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.22
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.04
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Fast Food Restaurant with Drive Thru	6.69	4.81	43.3	0.09	7.88	2.05	9,692
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	6.69	4.81	43.3	0.09	7.88	2.05	9,692
Daily, Winter (Max)	—	—	—	—	—	—	—
Fast Food Restaurant with Drive Thru	5.83	5.18	34.7	0.09	7.88	2.05	8,841
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	5.83	5.18	34.7	0.09	7.88	2.05	8,841
Annual	—	—	—	—	—	—	—
Fast Food Restaurant with Drive Thru	0.98	0.63	4.52	0.01	0.75	0.20	812
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.98	0.63	4.52	0.01	0.75	0.20	812

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	163
Parking Lot	—	—	—	—	—	—	34.9
Other Asphalt Surfaces	—	—	—	—	—	—	0.00
Total	—	—	—	—	—	—	198
Daily, Winter (Max)	—	—	—	—	—	—	—

Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	163
Parking Lot	—	—	—	—	—	—	34.9
Other Asphalt Surfaces	—	—	—	—	—	—	0.00
Total	—	—	—	—	—	—	198
Annual	—	—	—	—	—	—	—
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	26.9
Parking Lot	—	—	—	—	—	—	5.78
Other Asphalt Surfaces	—	—	—	—	—	—	0.00
Total	—	—	—	—	—	—	32.7

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Fast Food Restaurant with Drive Thru	0.01	0.15	0.13	< 0.005	0.01	0.01	179
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.01	0.15	0.13	< 0.005	0.01	0.01	179
Daily, Winter (Max)	—	—	—	—	—	—	—
Fast Food Restaurant with Drive Thru	0.01	0.15	0.13	< 0.005	0.01	0.01	179
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.01	0.15	0.13	< 0.005	0.01	0.01	179

Annual	—	—	—	—	—	—	—
Fast Food Restaurant with Drive Thru	< 0.005	0.03	0.02	< 0.005	< 0.005	< 0.005	29.6
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	< 0.005	0.03	0.02	< 0.005	< 0.005	< 0.005	29.6

4.3. Area Emissions by Source

4.3.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Consumer Products	0.11	—	—	—	—	—	—
Architectural Coatings	0.01	—	—	—	—	—	—
Landscape Equipment	0.03	< 0.005	0.21	< 0.005	< 0.005	< 0.005	0.87
Total	0.15	< 0.005	0.21	< 0.005	< 0.005	< 0.005	0.87
Daily, Winter (Max)	—	—	—	—	—	—	—
Consumer Products	0.11	—	—	—	—	—	—
Architectural Coatings	0.01	—	—	—	—	—	—
Total	0.12	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—
Consumer Products	0.02	—	—	—	—	—	—
Architectural Coatings	< 0.005	—	—	—	—	—	—
Landscape Equipment	< 0.005	< 0.005	0.02	< 0.005	< 0.005	< 0.005	0.07
Total	0.02	< 0.005	0.02	< 0.005	< 0.005	< 0.005	0.07

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	21.4
Parking Lot	—	—	—	—	—	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	0.00
Total	—	—	—	—	—	—	21.4
Daily, Winter (Max)	—	—	—	—	—	—	—
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	21.4
Parking Lot	—	—	—	—	—	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	0.00
Total	—	—	—	—	—	—	21.4
Annual	—	—	—	—	—	—	—
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	3.55
Parking Lot	—	—	—	—	—	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	0.00
Total	—	—	—	—	—	—	3.55

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	106
Parking Lot	—	—	—	—	—	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	0.00
Total	—	—	—	—	—	—	106
Daily, Winter (Max)	—	—	—	—	—	—	—
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	106
Parking Lot	—	—	—	—	—	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	0.00
Total	—	—	—	—	—	—	106
Annual	—	—	—	—	—	—	—
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	17.5
Parking Lot	—	—	—	—	—	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	0.00
Total	—	—	—	—	—	—	17.5

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	7.61
Total	—	—	—	—	—	—	7.61

Daily, Winter (Max)	—	—	—	—	—	—	—
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	7.61
Total	—	—	—	—	—	—	7.61
Annual	—	—	—	—	—	—	—
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	1.26
Total	—	—	—	—	—	—	1.26

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—

—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Demolition	Demolition	9/26/2025	11/6/2025	5.00	30.0	—
Site Preparation	Site Preparation	11/7/2025	11/27/2025	5.00	15.0	—
Grading	Grading	11/28/2025	12/25/2025	5.00	20.0	—
Building Construction	Building Construction	12/26/2025	4/2/2026	5.00	70.0	—
Paving	Paving	3/17/2026	4/13/2026	5.00	20.0	—
Architectural Coating	Architectural Coating	3/31/2026	4/20/2026	5.00	15.0	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Demolition	Concrete/Industrial Saws	Diesel	Average	1.00	8.00	33.0	0.73
Demolition	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40

Demolition	Tractors/Loaders/Back	Diesel	Average	3.00	8.00	84.0	0.37
Site Preparation	Graders	Diesel	Average	1.00	8.00	148	0.41
Site Preparation	Rubber Tired Dozers	Diesel	Average	1.00	7.00	367	0.40
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	1.00	8.00	84.0	0.37
Grading	Graders	Diesel	Average	1.00	8.00	148	0.41
Grading	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Grading	Tractors/Loaders/Backhoes	Diesel	Average	2.00	7.00	84.0	0.37
Building Construction	Cranes	Diesel	Average	1.00	6.00	367	0.29
Building Construction	Forklifts	Diesel	Average	1.00	6.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	1.00	6.00	84.0	0.37
Building Construction	Welders	Diesel	Average	3.00	8.00	46.0	0.45
Paving	Cement and Mortar Mixers	Diesel	Average	1.00	6.00	10.0	0.56
Paving	Pavers	Diesel	Average	1.00	6.00	81.0	0.42
Paving	Paving Equipment	Diesel	Average	1.00	8.00	89.0	0.36
Paving	Rollers	Diesel	Average	1.00	7.00	36.0	0.38
Paving	Tractors/Loaders/Backhoes	Diesel	Average	1.00	8.00	84.0	0.37
Architectural Coating	Air Compressors	Diesel	Average	1.00	6.00	37.0	0.48

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Demolition	—	—	—	—
Demolition	Worker	12.5	18.5	LDA,LDT1,LDT2

Demolition	Vendor	—	10.2	HHDT,MHDT
Demolition	Hauling	19.4	20.0	HHDT
Demolition	Onsite truck	—	—	HHDT
Site Preparation	—	—	—	—
Site Preparation	Worker	7.50	18.5	LDA,LDT1,LDT2
Site Preparation	Vendor	—	10.2	HHDT,MHDT
Site Preparation	Hauling	0.00	20.0	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—
Grading	Worker	10.0	18.5	LDA,LDT1,LDT2
Grading	Vendor	—	10.2	HHDT,MHDT
Grading	Hauling	10.0	20.0	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	2.04	18.5	LDA,LDT1,LDT2
Building Construction	Vendor	0.80	10.2	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	12.5	18.5	LDA,LDT1,LDT2
Paving	Vendor	1.55	10.2	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	0.41	18.5	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	10.2	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
Architectural Coating	0.00	0.00	7,298	2,433	2,674

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (Cubic Yards)	Material Exported (Cubic Yards)	Acres Graded (acres)	Material Demolished (Building Square Footage)	Acres Paved (acres)
Demolition	0.00	0.00	0.00	50,678	—
Site Preparation	0.00	0.00	14.1	0.00	—
Grading	900	700	15.0	0.00	—
Paving	0.00	0.00	0.00	0.00	1.28

5.6.2. Construction Earthmoving Control Strategies

Control Strategies Applied	Frequency (per day)	PM10 Reduction	PM2.5 Reduction
Water Demolished Area	2	36%	36%

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Fast Food Restaurant with Drive Thru	0.26	0%
Parking Lot	0.96	100%

Other Asphalt Surfaces	0.06	100%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2025	0.00	349	0.03	< 0.005
2026	0.00	346	0.03	< 0.005

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Fast Food Restaurant with Drive Thru	1,459	1,459	1,459	532,535	3,704	11,061	11,061	2,119,067
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
0	0.00	7,298	2,433	2,674

5.10.3. Landscape Equipment

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	180

5.11. Operational Energy Consumption

5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Fast Food Restaurant with Drive Thru	170,599	346	0.0330	0.0040	555,928
Parking Lot	36,594	346	0.0330	0.0040	0.00
Other Asphalt Surfaces	0.00	346	0.0330	0.0040	0.00

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Fast Food Restaurant with Drive Thru	1,476,692	291,565
Parking Lot	0.00	0.00
Other Asphalt Surfaces	0.00	0.00

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Fast Food Restaurant with Drive Thru	56.0	—

Parking Lot	0.00	—
Other Asphalt Surfaces	0.00	—

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
Fast Food Restaurant with Drive Thru	Household refrigerators and/or freezers	R-134a	1,430	0.00	0.60	0.00	1.00
Fast Food Restaurant with Drive Thru	Other commercial A/C and heat pumps	R-410A	2,088	1.80	4.00	4.00	18.0
Fast Food Restaurant with Drive Thru	Walk-in refrigerators and freezers	R-404A	3,922	< 0.005	7.50	7.50	20.0

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

Equipment Type	Fuel Type	Number per Day	Hours per Day	Hours per Year	Horsepower	Load Factor

5.16.2. Process Boilers

Equipment Type	Fuel Type	Number	Boiler Rating (MMBtu/hr)	Daily Heat Input (MMBtu/day)	Annual Heat Input (MMBtu/yr)

5.17. User Defined

Equipment Type	Fuel Type

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	33.8	annual days of extreme heat
Extreme Precipitation	3.50	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	10.8	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	4	0	0	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	N/A	N/A	N/A	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	0	0	0	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	N/A	N/A	N/A	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	4	1	1	4
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	N/A	N/A	N/A	N/A

Wildfire	N/A	N/A	N/A	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	1	1	1	2
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	N/A	N/A	N/A	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	95.3
AQ-PM	40.3
AQ-DPM	44.9
Drinking Water	11.7
Lead Risk Housing	52.1
Pesticides	0.00
Toxic Releases	27.9
Traffic	83.3
Effect Indicators	—
CleanUp Sites	0.00
Groundwater	0.00

Haz Waste Facilities/Generators	50.1
Impaired Water Bodies	0.00
Solid Waste	0.00
Sensitive Population	—
Asthma	76.3
Cardio-vascular	99.4
Low Birth Weights	66.6
Socioeconomic Factor Indicators	—
Education	74.7
Housing	42.3
Linguistic	43.9
Poverty	78.3
Unemployment	95.3

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	14.32054408
Employed	7.583728988
Median HI	21.85294495
Education	—
Bachelor's or higher	12.48556397
High school enrollment	100
Preschool enrollment	4.863338894
Transportation	—
Auto Access	71.35891184
Active commuting	16.43782882

Social	—
2-parent households	26.90876428
Voting	36.59694598
Neighborhood	—
Alcohol availability	69.83190042
Park access	15.51392275
Retail density	28.78224047
Supermarket access	29.7318106
Tree canopy	14.83382523
Housing	—
Homeownership	49.49313486
Housing habitability	49.22366226
Low-inc homeowner severe housing cost burden	63.64686257
Low-inc renter severe housing cost burden	25.04812011
Uncrowded housing	35.72436802
Health Outcomes	—
Insured adults	17.25907866
Arthritis	7.1
Asthma ER Admissions	22.0
High Blood Pressure	18.2
Cancer (excluding skin)	30.9
Asthma	8.7
Coronary Heart Disease	5.6
Chronic Obstructive Pulmonary Disease	2.8
Diagnosed Diabetes	19.9
Life Expectancy at Birth	5.6
Cognitively Disabled	35.0
Physically Disabled	42.3

Heart Attack ER Admissions	8.4
Mental Health Not Good	14.9
Chronic Kidney Disease	14.8
Obesity	21.1
Pedestrian Injuries	19.6
Physical Health Not Good	12.8
Stroke	10.1
Health Risk Behaviors	—
Binge Drinking	65.1
Current Smoker	11.4
No Leisure Time for Physical Activity	24.7
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	0.0
Children	10.6
Elderly	50.9
English Speaking	87.7
Foreign-born	33.0
Outdoor Workers	32.1
Climate Change Adaptive Capacity	—
Impervious Surface Cover	90.8
Traffic Density	21.4
Traffic Access	23.0
Other Indices	—
Hardship	80.1
Other Decision Support	—
2016 Voting	52.1

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	60.0
Healthy Places Index Score for Project Location (b)	13.0
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	No
Project Located in a Low-Income Community (Assembly Bill 1550)	Yes
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Land Use	The lot acreage for the proposed fast food restaurants include building square footage, paved/concrete area, and landscaping area. The parking lot land use encompasses the site's paved/asphalt area which includes drive-through lanes and parking stalls. The proposed Seventh Avenue dedication is accounted under "other asphalt surfaces".
Construction: Construction Phases	The Project's construction will extend over a 7 month period with an estimated operational date in 2026.
Construction: Paving	Paved areas for the fast-food restaurant includes building foundation and sidewalks, and totals to 11,260 square feet (or 0.258 acres). The Parking lot area encompasses the site's total paved/asphalt area of 41,780 square feet (or 0.959 acres). Other asphalt areas consists of the Project's Seventh Avenue dedication for roadway improvements.

Operations: Vehicle Data	Based on the Project's traffic report, the development would generate 1,459 net daily trips with 125 net trips during the AM peak hour and 85 net trips during the PM peak hour. The trip rate includes adjustments for passerby's whose final destination is not the site.
Construction: Dust From Material Movement	During the grading phase, Project estimates a cut of 1,600 CY of which 900 CY will be imported and 700 CY will be exported.

Appendix B
Geological Technical Report

MOORE TWINING ASSOCIATES, INC.

GEOTECHNICAL ENGINEERING INVESTIGATION

PROPOSED STARBUCKS

SOUTHWEST CORNER OF 7th AVENUE AND MAIN STREET

HESPERIA, CALIFORNIA

Project Number: H33201.01

For:

Fountainhead Development
1401 Quail Street, Suite 100
Newport Beach, CA 92660

November 15, 2024

www.mooretwining.com

PH: 559.268.7021
FX: 559.268.7126
2527 Fresno Street
Fresno, CA 93721

MOORE TWINING ASSOCIATES, INC.

November 15, 2024 H33201.01

Fountainhead Development
1401 Quail Street, Suite 100
Newport Beach, CA 92660

Attention: Ms. Vasanthi Okuma

Subject: **Geotechnical Engineering Investigation**
Proposed Starbucks
SWC 7th Avenue and Main Street
Hesperia, California

Dear Ms. Okuma:

We are pleased to submit this geotechnical engineering investigation report prepared for a proposed Starbucks to be located on the southwest corner of 7th Avenue and Main Street in the City of Hesperia, California.

The contents of this report include the purpose of the investigation, scope of services, background information, investigative procedures, our findings, evaluation, conclusions, and recommendations.

It is recommended that Moore Twining Associates, Inc. (Moore Twining) be retained to review those portions of the plans and specifications that pertain to earthwork, pavements, and foundations to determine if they are consistent with our recommendations. This service is not a part of this current contractual agreement; however, the client should provide these documents for our review prior to their issuance for construction bidding purposes.

In addition, it is recommended that Moore Twining be retained to provide inspection and testing services for the excavation, earthwork, pavement, and foundation phases of construction. These services are necessary to determine if the subsurface conditions are consistent with those used in the analyses and formulation of recommendations for this investigation, and if the construction complies with our recommendations. These services are not, however, part of this current contractual agreement. A representative with our firm will contact you in the near future regarding these services.

PH: 559.268.7021
FX: 559.268.7126
2527 Fresno Street
Fresno, CA 93721

We appreciate the opportunity to be of service to Fountainhead Development. If you have any questions regarding this report, or if we can be of further assistance, please contact us at your convenience.

Sincerely,

MOORE TWINING ASSOCIATES, INC.

Allen H. Harker, CEG
Engineering Geologist
Geotechnical Engineering Division

EXECUTIVE SUMMARY

Moore Twining Associates, Inc. (Moore Twining) prepared this geotechnical engineering investigation report for the proposed Starbucks to be located in Hesperia, California.

The subject site is located on the southwest corner of 7th Avenue and Main Street in Hesperia, California. The area indicated for the proposed Starbucks is a 0.596-acre property which includes an auto sales business and auto repair shop in the north half of the site and pavements from a former auto sales businesses in the south half of the site.

The proposed Starbucks development is planned to include a 1,263 square foot single story building with a drive-thru pickup drive lane. Appurtenant construction is anticipated to include concrete walkways, asphaltic concrete and Portland cement concrete parking and drive areas, underground utilities, and landscape areas.

Moore Twining conducted a previous investigation at the subject site when the Starbucks parcel and adjacent McDonald's parcel (west of the Starbucks parcel) were being considered for development of a Circle K convenience store, car wash and gas station. Near surface infiltrations systems were not deemed to be feasible from Moore Twining's previous February 13, 2019 "Results of Percolation Testing" report. However, deeper poorly graded sand layers were previously encountered at the site and were targeted to conduct deeper percolation tests for consideration of infiltration systems such as dry wells to be used as part of the proposed construction.

On October 23, 2024, five (5) test borings were drilled at the site to depths ranging from 15 to 60 feet below site grades (BSG). The subsurface soils encountered generally consisted of very loose to medium dense silty sands extending to depths of about 1½ to 3½ feet across the site. Below the very loose to loose silty sands, the relative density of the silty sands soils improved to medium dense to dense and extended to depths of about 3½ to 13½ feet BSG. Below the silty sands, medium dense silty, clayey sands; medium dense clayey sands; medium dense to dense poorly graded sands with silt; and medium dense well graded sands with silt were encountered extending to a depth of about 33½ feet BSG which was generally underlain by dense poorly graded sands and dense well graded sands with silt extending to the maximum depth explored of 60 feet BSG.

The surface soils encountered are non-plastic and non-expansive. These soils exhibit low compressibility characteristics, slight collapse potential, and moderate to high shear strength properties. The near surface soils exhibit fair support characteristics for pavements when compacted as engineered fill.

Due to the depth to historical groundwater levels in the vicinity of this site (greater than 450 feet BSG), liquefaction is not considered a concern for the proposed development. However, there is potential for dry seismic settlement to occur during shaking from earthquakes. As part of the analysis, the (N1)60s values of 30 or greater (dense to very dense soils) were not considered to be subject to significant dry seismic settlement in the analyses. Based on the analysis, seismic settlement was estimated to be negligible.

EXECUTIVE SUMMARY

Foundations supported directly on the existing loose native silty sands would be subject to excessive static settlement. In order to reduce the potential for excessive settlement of foundations, over-excavation and compaction of the upper 4 feet of the near surface soils, or to a depth of 12 inches below the bottom of the foundations, or to the depth required to remove existing undocumented fill soils, or to at least 12 inches below subsurface improvements (structures, utilities, etc.) to be removed, whichever is greater, followed by scarification and compaction of an additional 8 inches is recommended in the building pad areas to reduce the total and differential static settlement to 1 inch total and ½ inch differential. An allowable bearing capacity of 2,500 pounds per square foot is recommended for foundation design, for dead-plus-live loads.

The closest active fault is the Ord Mountain Fault zone (part of the North Front Thrust System), which is located about 6½ miles southeast of the site. The project site is not located in an Alquist-Priolo Earthquake Fault Zone. Accordingly, the potential for ground rupture at the site is considered low.

Chemical testing of soil samples indicated the soils exhibit a “corrosive” corrosion potential.

Based on Table 19.3.1.1 - Exposure categories and classes from Chapter 19 of ACI 318, the sulfate concentration from chemical testing of soil samples falls in the S0 classification (less than 0.10 percent by weight) for concrete.

This executive summary should not be used for design or construction and should be reviewed in conjunction with the attached report.

TABLE OF CONTENTS

Page

1.0 INTRODUCTION 1

2.0 PURPOSE AND SCOPE OF INVESTIGATION 1
2.1 Purpose 1
2.2 Scope 2

3.0 BACKGROUND INFORMATION 3
3.1 Site Description 3
3.2 Site History and Previous Studies 3
3.3 Anticipated Construction 4

4.0 INVESTIGATIVE PROCEDURES 5
4.1 Field Exploration 5
4.1.1 Site Reconnaissance 5
4.1.2 Drilling Test Borings 5
4.1.3 Soil Sampling 6
4.1.4 Percolation Tests 6
4.2 Laboratory Testing 6

5.0 FINDINGS AND RESULTS 6
5.1 Subsurface Profile 6
5.2 Soil Engineering Properties 7
5.3 Groundwater Conditions 7
5.4 Results of Percolation Testing 7

6.0 EVALUATION 8
6.1 Existing Surface Conditions 8
6.2 Subsurface Conditions 9
6.3 Static Settlement and Bearing Capacity of Shallow Foundations 9
6.4 Seismic Ground Rupture and Design Parameters 10
6.5 Liquefaction and Seismic Settlement 10
6.6 Asphaltic Concrete (AC) Pavements 11
6.7 Portland Cement Concrete (PCC) Pavements 11
6.8 Soil Corrosion 11
6.9 Sulfate Attack of Concrete 12

TABLE OF CONTENTS

Page

7.0 CONCLUSIONS 13

8.0 RECOMMENDATIONS 13
8.1 General 14
8.2 Site Grading and Drainage 15
8.3 Site Preparation 16
8.4 Engineered Fill 20
8.5 Conventional Shallow Spread Foundations 22
8.6 Interior Slabs-on-Grade 27
8.7 Exterior Slabs-on-Grade 29
8.8 Asphaltic Concrete (AC) Pavements 30
8.9 Portland Cement Concrete (PCC) Pavements 32
8.10 Slopes, Shoring and Temporary Excavations 35
8.11 Utility Trenches 36
8.12 Corrosion Protection 39

9.0 DESIGN CONSULTATION 40

10.0 CONSTRUCTION MONITORING 40

11.0 NOTIFICATION AND LIMITATIONS 41

APPENDICES

APPENDIX A - Drawings A-1

Drawing No. 1 - Site Location Map
Drawing No. 2 - Test Boring Location Map

APPENDIX B - Logs of Borings B-1

APPENDIX C - Results of Laboratory Tests C-1

APPENDIX D - Results of Percolation Tests D-1

APPENDIX E - Compaction Test Report, Test Data and Test Locations for Backfill of the Area of Removed Underground Storage Tanks with Engineered Fill E-1

GEOTECHNICAL ENGINEERING INVESTIGATION

PROPOSED STARBUCKS

SOUTHWEST CORNER OF 7th AVENUE AND MAIN STREET

HESPERIA, CALIFORNIA

Project Number: H33201.01

1.0 INTRODUCTION

This report presents the results of a geotechnical engineering investigation for a proposed Starbucks to be located on the southwest corner of 7th Avenue and Main Street in Hesperia, California. Moore Twining Associates, Inc. (Moore Twining) was authorized by Fountainhead Development to perform this geotechnical engineering investigation.

The contents of this report include the purpose of the investigation and the scope of services provided. The site history, previous studies, site description, and anticipated construction are discussed. In addition, a description of the investigative procedures used and the subsequent findings obtained are presented. Finally, the report provides an evaluation of the findings, general conclusions, and related recommendations. The report appendices contain the drawings (Appendix A), the logs of borings and (Appendix B), the results of laboratory tests (Appendix C), the results of percolation tests (Appendix D) and the compaction report, test data and test locations for backfill of the area of removed underground storage tanks with engineered fill (Appendix E).

The Geotechnical Engineering Division of Moore Twining, headquartered in Fresno, California, performed the investigation.

2.0 PURPOSE AND SCOPE OF INVESTIGATION

2.1 Purpose: The purpose of the investigation was to conduct a field exploration and a laboratory testing program, evaluate the data collected during the field and laboratory portions of the investigation, and provide the following:

2.1.1 Evaluation of the near surface soils within the zone of influence of the proposed foundations and pavements with regard to the anticipated foundation and vehicle traffic loads;

2.1.2 Recommendations for 2022 California Building Code seismic coefficients and earthquake spectral response acceleration values;

2.1.3 Geotechnical parameters for use in design of foundations and slabs-on-grade, (e.g., soil bearing capacity and settlement);

2.1.4 Recommendations for site preparation including placement, moisture conditioning, and compaction of engineered fill soils;

2.1.5 Recommendations for the design and construction of new asphaltic concrete (AC) and Portland cement concrete (PCC) pavements;

2.1.6 Recommendations regarding infiltration of storm water;

2.1.7 Recommendations for temporary excavations and trench backfill, and

2.1.8 Conclusions regarding soil corrosion potential.

This report is provided specifically for the Starbucks referenced in the Anticipated Construction section of this report. This investigation did not include a geologic/seismic hazards evaluation, flood plain investigation, compaction tests, environmental investigation, or environmental audit.

2.1.9 **Scope:** Our revised proposal (MTP 24-0548R), dated October 2, 2024, outlined the scope of our services. The actions undertaken during the investigation are summarized as follows.

2.1.10 The conceptual site plan SP-8, dated June 12, 2024, prepared by Greenberg Farrow, was reviewed for project information.

2.1.11 A report entitled, "Geotechnical Engineering Investigation, Proposed Circle K Store, Southwest Corner of 7th Avenue and Main Street, Hesperia, California," prepared by Moore Twining, dated January 24, 2019, Moore Twining Project No. G28812.02, was reviewed. This investigation was previously conducted by Moore Twining for a previous Circle K development on the currently planned Starbucks parcel and the adjacent McDonald's parcel on the west side of the Starbucks parcel.

A report entitled, "Supplemental Report of Percolation Testing, Proposed Circle K Store, Southwest Corner of Main Street and 7th Avenue, Hesperia, California," prepared by Moore Twining, dated February 13, 2019, Moore Twining Project Number G28812.02, was reviewed. The percolation testing conducted by Moore Twining in 2019 included shallow percolation testing in the upper 5 feet below site grade on both the currently planned Starbucks and McDonald's parcels.

In addition, a draft report entitled, "Phase I Environmental Site Assessment, Proposed Circle K, 15901 Main Street, Hesperia, California 92345, prepared by Moore Twining's Environmental Division, dated February 13, 2019, Moore Twining Project Number G28812.01, was reviewed.

2.1.12 A visual site reconnaissance and subsurface exploration were conducted.

2.1.13 Satellite images of the site between the years 1994 and 2023 from online sources, were reviewed.

2.1.14 Laboratory tests were conducted to determine selected physical and engineering properties of the subsurface soils.

2.1.15 Ms. Vasanthi Okuma (Fountainhead Development and Mr. Thomas Hawksworth (C3 Civil Engineering) were consulted during the investigation.

2.1.16 The data obtained from the investigation were evaluated to develop an understanding of the subsurface soil conditions and the engineering properties of the subsurface soils.

2.1.17 This report was prepared to present the purpose and scope, background information, field exploration procedures, findings, evaluation, conclusions, and recommendations.

3.0 BACKGROUND INFORMATION

The existing site features, site history, previous studies, and the anticipated construction are summarized in the following subsections.

3.1.1 Site Description: The site is located at the southwest corner of 7th Avenue and Main Street in Hesperia, California. The north portion of the site was occupied by a Best Buy Auto Sales business, which has an address of 15901 Main Street. The area indicated for the proposed Starbucks development is a 0.596-acre property. The conceptual site plan SP-8, dated June 12, 2024, prepared by Greenberg Farrow, shows a proposed McDonald's fast-food restaurant on the west side of the Starbucks parcel; however, this report only includes a geotechnical engineering investigation for the proposed Starbucks. A site location map is presented on Drawing No. 1 in Appendix A. The site is located at 34.423305 degrees latitude and -117.316065 degrees longitude.

The streets that bound the site are not aligned to true north and are skewed slightly. For the purpose of this report, the assumed north direction is towards Main Street. So, the site is bound to the north by Main Street, to the east by 7th Avenue, to the south by Walnut Street and to the west by the proposed McDonald's parcel with retail shops and a parking lot beyond. The McDonald's parcel adjacent to the west side of the site includes an asphalt concrete paved parking lot in the northern half of the site, and an unpaved dirt lot with a concrete slab-on-grade (about 3,250 square feet) from a previous development in the southern half of the site.

The north half of the Starbucks site is occupied by a retail auto sales and repair business. Also, a canopy is present in the north portion of the site which covered former fuel islands. The existing sales/shop building is located within the building footprint for the proposed Starbucks building and occupies about 1,200 square feet. Equipment surrounded by a chain link fence was noted on the south side of the existing building. A trash enclosure was also noted on the south side of the existing building. Most of the remaining portions of the north half of the site were covered with asphalt concrete pavements in poor condition with large longitudinal and traverse cracking, some areas of raveling, and some patches. Also, underground utility scans identified numerous pipelines throughout the site.

The south half of the site did not include any above grade improvements. However, asphalt concrete pavements covered this area and two small concrete slabs-on-grade (about 160-square-feet and 120-square feet) were located in the western portion of the south half of the site. An exposed pipe was noted as extending vertically from the ground surface on the west side of the 120-square-foot slab-on-grade, and the outline of a trench was noted as extending northeast from the east side of the 120-square-foot slab-on-grade. The exposed pipe on the west side of the 120-square-foot slab-on-grade is believed to be a sewer or septic pipe. An apparent sewer cleanout valve also extended above the ground surface adjacent to the sewer pipe. Another pipe with a steel plate at the top of the pipe extended vertically from the ground surface within the 160-square-foot slab-on-grade. The pavements in the southern half of the Starbucks site were in poor condition with extensive weathering, severe block cracking and weeds growing out of the cracks. A chain link fence surrounded the northern, eastern and southern sides of the southern half of the site with an opening in the fence in the southern portion of the site that provides access to the site. A power pole was noted in the southeast portion of the site with an overhead power line extending southeast of the power pole. A tree was noted along the southern property line in the southwest corner of the site.

3.2 <u>Site History and Previous Studies</u>: As a part of this investigation, a Draft Phase I Environmental Site Assessment Report (Phase I ESA) and on-line aerial images were reviewed regarding the history of the site that are pertinent to this investigation.

The review of historical aerial photographs and city directories, conducted as a part of the Phase I ESA, indicated that the site was occupied by open, undeveloped land since before 1938 until the 1950's. In 1959, a building was present on the site in the north portion. During the 1980's, portions of the southern half of the site were paved, and by at least 1983 until 2004, the northeast portion of the site operated as a gas station. From 2005 to the time of our October 2024 field investigation, Best Buy Auto Sales has operated at the site. At the time of this investigation, the Phase I ESA had identified some records that the underground storage tanks associated with the past fuel facilities had been removed. Three (3) underground storage tanks in the western portion of the fuel canopy and southwest of the fuel canopy were reportedly removed in 1998. Moore Twining's Draft Phase I Environmental Site Assessment prepared for the previous Circle K development indicated that

Advanced Environmental Concepts observed and tested the backfill of two areas for the three (3) underground storage tanks that were removed and summarized their results in a December 1, 1998 report. The results of eleven tests presented in the report prepared by Hi Desert Testing & Inspection for Advanced Environmental Concepts show that the compacted fill met the minimum required 90 percent relative compaction. The initial tests in each area tested placement of fill at depths of about 10 and 11 feet below site grade. Thus, the areas of the excavations made to remove the underground storage tanks were at least about 10 to 11 feet in depth below adjacent site grades. The area of the three (3) removed Underground Storage Tanks appears to be northwest of the proposed Starbucks building (see Drawing No. 2 in Appendix A of this report). The compaction test report, test data and test locations for backfill of the area of the removed underground storage tanks with engineered fill is included in Appendix E of this report.

Aerial images of the site were also reviewed between May 1994 and December 2017. The 1994 and 1995 images of the site appear to show a service station in the northern portion of the site, and an open car sales lot in the southern portion of the site. By 2009, the southern portion of the site was vacant (no cars parked for sale). Between June and December 2017, a small building was removed in the southern half of the site, and two slabs-on-grade (about 160-square-feet and 120-square feet) remained. A sewer or septic pipe also remained adjacent to the west of the 120-square-foot slab-on-grade and an outline of a trench was noted as trending in a northeast direction from the east side of the 120-square-foot slab-on-grade. Another pipe with a steel plate at the top of the pipe extended vertically from the ground surface within the 160-square-foot slab-on-grade. The Draft Phase I ESA report indicated, "The pipes observed during the site reconnaissance indicate that a septic tank may have been associated with the site. As a result, the tank, piping and leach field(s) may be encountered and could impact future development. Additionally, it is unknown whether the historical building foundations located on the site maintained septic systems, and if so, whether they were removed. Costs would be incurred to handle the removal of the tank(s), lines and leach field(s) upon discovery. If the septic system(s) (tanks, piping, leach fields, etc.) is (are) discovered during development, especially in the area of any planned construction, the septic system(s) will need to be removed." The site appears to be consistent with the current site uses in images for various years after the 2017 aerial image of the site was taken.

Moore Twining's Geotechnical Engineering Division prepared a report for the site entitled, "Geotechnical Engineering Investigation, Proposed Circle K Store, Southwest Corner of 7th Avenue and Main Street, Hesperia, California," prepared by Moore Twining, dated January 24, 2019, Moore Twining Project No. G28812.02. The investigation was conducted on both the parcels for the proposed Starbucks and McDonald's development that was previously planned for development of a Circle K store, car wash and gas station. The investigation included drilling five (5) test borings at the site to depths ranging from 15 to 27 feet below site grades (BSG) in January 2019. The maximum depth proposed for the investigation of 50 feet BSG could not be achieved due to auger refusal on materials that were possibly cemented or cobbles at depths of 25 and 27 feet BSG in two attempts to reach the target maximum depth. The soils encountered consisted of silty sands extending to depths ranging from about 20 to 25 feet BSG. Below the silty sand, poorly graded

sands with silt soils were encountered to the maximum depth explored 27 feet BSG. Drilling refusal was encountered at depths of 25 and 27 feet BSG at boring locations B-1 and B-2 due to suspected cobbles. Laboratory testing on the near surface soils indicated the materials were non-plastic, non-expansive, and exhibited moderate compressibility, moderate collapse, and moderate to high shear strength properties. Laboratory testing on the near surface silty sand soils also indicated the near surface soils exhibited good support characteristics for pavements when compacted as engineered fill. Due to the soils exhibiting moderate collapse in the upper 5 feet, the report recommended over-excavation for the proposed Circle K store to a depth of 5 feet below preconstruction site grade, to the depth required to provide at least 2 feet of engineered fill below bottom of footings, to the depth required to remove existing undocumented fill soils and to at least 12 inches below subsurface improvements (structures, utilities, etc.) to be removed, whichever provided the deeper excavation. The Circle K store was recommended to be supported on shallow foundations and designed based on an allowable bearing pressure of 2,500 pounds per square foot for dead-plus-live loads which could be increased by one-third for short duration of seismic loads. Perimeter footings were recommended to extend to a depth of 18 inches below lowest adjacent finished exterior grade, and interior footings were recommended to extend to a minimum depth of at least 12 inches below the bottom of the slab-on-grade. The report recommended the following settlements to be anticipated for design: 1) a total static settlement of 1 inch, 2) a differential static settlement of ½-inch in 40 feet, 3) a total seismic settlement of ¼ inch, and 4) a differential seismic settlement of ¼ inch in 40 feet.

Moore Twining also issued a report for the previous Circle K development entitled, "Supplemental Report of Percolation Testing, Proposed Circle K Store, Southwest Corner of Main Street and 7th Avenue, Hesperia, California," dated February 13, 2019, Moore Twining Project Number G28812.02. An additional boring was drilled in the northeast corner of the site to a depth of 16½ feet BSG, and three (3) percolation test borings were drilled to depths of 3 feet, 4 feet and 5 feet BSG. The percolation tests were conducted within near surface silty sand soils, some of which exhibited cementation. The percolation tests indicated a negligible percolation rate in one of the percolation tests and unfactored infiltration rates of 1.7 inches and 3.0 inches per hour in the other two tests. However, Moore Twining concluded, "Since the borings indicate that the dense cemented soils occur below about 4 to 5 feet across the site and these materials did not have any significant measured infiltration during testing, it does not appear that on-site infiltration of significant stormwater in the near surface soils will be feasible."

No other previous geotechnical engineering, geological, compaction reports, or environmental studies conducted for this site were provided for review during this investigation. If available, these reports should be provided for review and consideration for this project.

3.3 **Anticipated Construction:** The latest conceptual site plan SP-8, dated June 12, 2024, prepared by Greenberg Farrow indicates the Starbucks development will include a 1,263 square foot single story Starbucks building and a drive-thru pick up drive lane. Appurtenant construction is indicated to include concrete walkways, asphaltic concrete and Portland cement concrete parking and drive areas, a trash enclosure, underground utilities, and landscaped areas.

It is anticipated that the proposed Starbucks structure will consist of a one-story building including concrete masonry unit wall or wood-framed construction with concrete slab-on-grade floors. It is anticipated that the proposed building will be supported on shallow spread foundation systems. Basements and loading docks are not anticipated as part of the proposed construction.

Based on our experience with past Starbucks projects, it is assumed the that the proposed Starbucks building will have maximum column loads of about 10 kips and maximum wall loads of about 1.5 kips per linear foot for dead-plus-live loads. In the event that the maximum foundation loads exceed those assumed for design, the recommendations of this report may not be applicable and may need to be revised.

Based on the lack of significant slope or grades differences noted across the site, cuts and fills on the order of 1 to 2 feet are anticipated to achieve level pad grades and provide site drainage.

Near surface infiltrations systems were not deemed to be feasible from Moore Twining's previous February 13, 2019 "Results of Percolation Testing" report. However, deeper poorly graded sand layers were previously encountered at the site and were targeted to conduct deeper percolation tests for consideration of infiltration systems such as dry wells to be used as part of the proposed construction.

4.0 INVESTIGATIVE PROCEDURES

The field exploration and laboratory testing programs conducted for this investigation are summarized in the following subsections.

4.1 Field Exploration: The field exploration consisted of a site reconnaissance, drilling test borings, conducting standard penetration tests, soil sampling and conducting percolation tests.

4.1.1 Site Reconnaissance: The site reconnaissance consisted of walking the site and noting visible surface features. The reconnaissance was conducted by a Moore Twining field engineer on October 23, 2024. The features noted are described in the background information section of this report.

4.1.2 Drilling Test Borings: Prior to drilling, the site was marked for Underground Service Alert for members to mark out the locations of existing public utilities. Also, an underground utility locating service was retained to scan the proposed boring locations to identify potential private on-site underground utilities that could be damaged during drilling. The borings were then offset from marked underground utilities.

The depths and locations of the test borings were selected based on the size of the structures, type of construction, estimated depths of influence of the anticipated foundation loads, and the subsurface soil conditions encountered.

On October 23, 2024, five (5) test borings were drilled at the site to depths ranging from 15 to 60 feet below site grades (BSG). Boring B-1 was intended to be drilled near the southeast corner of the proposed building footprint. However, due to the presence of an existing building and overhead power line trending southeast from the southeast corner of the existing building, boring B-1 had to be drilled on the east side of the existing building. Boring B-1 could not be drilled on the south side of the existing building as this area was occupied by an equipment storage area and surrounded by chain link fencing. Boring B-2 was drilled to 60 feet BSG within the northern portion of the proposed Starbucks building footprint (and north of the existing building) for evaluation of liquefaction. Boring B-3 was drilled to a depth of about 15 feet BSG within the entrance to the proposed drive-thru pickup drive lane area. Two (2) of the borings (P-1 and P-2) were drilled to depths of about 20 feet BSG to install percolation test pipe in the boreholes and conduct percolation tests. At the direction of Mr. Thomas Hawksworth (C3 Civil Engineering), the percolation tests were drilled in the northern portion of the Starbucks parcel and the northern portion of the adjacent McDonald's parcel. The boring locations are shown on Drawing No. 2 in Appendix A of this report. The borings were drilled with a conventional truck-mounted CME-75 drill rig equipped 8-inch outside diameter (O.D.) hollow-stem augers.

The test borings were drilled under the direction of a Moore Twining Geotechnical Engineer. The soils encountered in the test borings were logged during drilling by a representative of our firm. The field soil classification was in accordance with the Unified Soil Classification System and consisted of particle size, color, and other distinguishing features of the soil.

The presence and elevation of free water, if any, in the borings were noted and recorded during drilling and immediately following completion of the borings.

Test boring locations were determined with reference to existing property corners and site features shown on the site plan. The locations of the test borings are described on the boring logs in Appendix B of this report. The test borings were backfilled with material excavated during the drilling operations and patched with asphalt concrete cold patch materials.

4.1.3 Soil Sampling: Standard penetration tests were conducted in the test borings, and both disturbed and relatively undisturbed soil samples were obtained.

The standard penetration resistance, N-value, is defined as the number of blows required to drive a standard split barrel sampler into the soil. The standard split barrel sampler has a 2-inch O.D. and a 1⅜-inch inside diameter (I.D.). The sampler is driven by a 140-pound weight free falling 30 inches. The sampler is lowered to the bottom of the bore hole and set by driving it an initial 6 inches. It is then driven an additional 12 inches and the number of blows required to advance the sampler the additional 12 inches is recorded as the N-value.

Relatively undisturbed soil samples for laboratory tests were obtained by pushing or driving a California modified split barrel ring sampler into the soil. The soil was retained in brass rings, 2.5 inches O.D. and 1-inch in height. The lower 6-inch portion of the samples were placed in close-fitting, plastic, airtight containers which, in turn, were placed in cushioned boxes for transport to the laboratory.

During the drilling of the test borings, bulk samples of soil were also obtained for laboratory testing. Soil samples obtained were taken to Moore Twining's laboratory for classification and testing.

4.1.4 Percolation Tests: Two percolation tests was conducted on October 24, 2024. Percolation test borings P-1 and P-2 were drilled to depths of about 20 feet BSG on October 23, 2024. The locations of the percolation tests are shown on Drawing No. 2 in Appendix A of this report.

Percolation tests were conducted at locations P-1 and P-2 and infiltration rates were estimated from the percolation test data.

The percolation testing was conducted in general conformance with San Bernardino County's Section VII.3.8 in Appendix D of their "Technical Guidance Document for Water Quality Management Plans," effective date September 19, 2013, which utilizes the percolation test procedure per Riverside County Department of Environmental Health. The percolation tests included placement of about 2 inches of gravel at the bottom of the hole and installation of percolation test pipe with gravel in the annulus space to keep the pipe stabilized and reduce the potential for washout of the soils on the sides of the holes within the test zone. On the day prior to the testing, about 5 gallons of water was added to each hole. On the day of the percolation tests, per the procedure for deep percolation tests, the percolation tests included presoaking the percolation test holes with at least 40 to 50 gallons of water in P-1 and about 60 gallons of water in P-2 for a period of 2 hours so that the water flow into the hole held constant at a level of at least 5 times the hole's radius above the bottom of the hole. Testing commenced following the presoak. The sandy soil test method was used. This included making two (2) consecutive measurements to show that at least six (6) inches of water seeped away in less than 25 minutes, and the test method indicates to run the test for an additional hour with measurements taken every ten (10) minutes. During the tests, measurements were taken every 10 minutes for an hour at each percolation test location. Measurements were taken with a precision of 0.25 inches or better. The procedure indicates that the drop that occurs during the final reading is to be used to calculate the percolation rate. As required, the field data included the two (2) 25-minute readings and the readings for an additional hour. The head of the water in the test holes was generally about 27 to 28 inches when refilling the water level.

4.2 Laboratory Testing: The laboratory testing was programmed to determine selected physical and engineering properties of the soils sampled during drilling. The tests were conducted on disturbed and relatively undisturbed samples considered representative of the subsurface soils encountered.

The results of laboratory tests are summarized in Appendix C of this report. These data, along with the field observations, were used to prepare the final test boring logs in Appendix B of this report.

5.0 FINDINGS AND RESULTS

The findings and results of the research, field exploration and laboratory testing are summarized in the following subsections.

5.1 Subsurface Profile: The following paragraphs describe the subsurface conditions encountered at the boring locations drilled.

The borings were all drilled in existing asphalt concrete pavement areas. The five (5) borings drilled (borings B-1 through B-3 and P-1 and P-2) encountered approximately 2 to 3 inches of asphalt concrete. No aggregate base was encountered underlying any of the asphalt concrete pavements at the locations cored. The asphalt concrete pavement was underlain by silty sand soils that extended to depths ranging from about 1½ to 13½ feet BSG. The silty sands were underlain by interbedded layers of silty, clayey sands; clayey sands; poorly graded sands with silt and well graded sands with silt that extended to depths of about 8½ to 33½ feet BSG. These layers were generally underlain by poorly graded sands and well graded sands with silt extending to the maximum depth explored, about 60 feet BSG.

The foregoing is a general summary of the soil conditions encountered in the test borings drilled for this investigation. Detailed descriptions of the soils encountered at each test boring location are presented in the logs of borings in Appendix B of this report. The stratification lines in the logs represent the approximate boundary soil types; the actual in-situ transition may be gradual.

5.2 Soil Engineering Properties: The following is a description of the soil engineering properties as determined from our field exploration and laboratory testing.

Silty Sands: The silty sands encountered were described as very loose to dense, as determined by standard penetration resistance, N-values, ranging from 3 to 32 blows per foot. The moisture content of the silty sands ranged from 4 to 12 percent. Two (2) relatively undisturbed samples revealed dry densities of 113.6 and 116.0 pounds per cubic foot.

A consolidation test conducted on a silty sand sample collected at depths of about 1 to 2½ feet BSG from boring B-2 indicated low compressibility characteristics (about 2.4 percent consolidation under a load of 8 kips per square foot). Upon inundation, the sample exhibited slight swell potential (about 0.1 percent collapse) when wetted under a load of 0.25 kips per square foot. Another consolidation test conducted on a silty sand sample collected at depths of about 5 to 6½ feet BSG from boring B-2 indicated low compressibility characteristics (about 4.0 percent consolidation under a load of 8 kips per square foot). Upon inundation, the sample exhibited slight collapse potential (about 0.4 percent collapse) when wetted under a load of 0.5 kips per square foot. Direct shear tests conducted on silty sand samples collected from depths of about 1 to 2½ feet BSG and 5 to 6½ feet BSG from boring B-2 indicated internal angles of friction of 33 and 41 degrees with cohesion values of 130 and 220 pounds per square foot, respectively.

Silty, Clayey Sands: The silty, clayey sands encountered were described as medium dense, as determined by an SPT equivalent N-value (estimated by driving a California Modified split barrel sampler) of 28 blows per foot. The moisture content of a sample tested was 6.2 percent. One (1) relatively undisturbed sample revealed a dry density of 126.5 pounds per cubic foot. An Atterberg Limits conducted on a silty, clayey sand sample collected from depths of about 3½ to 5 feet BSG from boring B-1 indicated a liquid limit of 21 and a plasticity index of 6.

Clayey Sands: The clayey sands encountered were described as medium dense, as indicated by standard penetration resistance, N-values, ranging from 14 to 30 blows per foot. The moisture content of the samples tested ranged from about 6 to 11 percent. An Atterberg Limit test conducted on a clayey sand sample collected from depths of about 28½ to 30 feet BSG from boring B-2 indicated a liquid limit of 25 and a plasticity index of 8.

Poorly Graded Sands, Poorly Graded Sands with Silt and Well Graded Sands with Silt: The poorly graded sands, poorly graded sands with silt and well graded sands with silt encountered were described as loose to dense as determined by standard penetration resistance, N-values, ranging from 10 to 49 blows per foot. The moisture content of the samples tested ranged from about 4 to 8 percent. One (1) relatively undisturbed sample of poorly graded sand with silt revealed a dry density of 119.2 pounds per cubic foot.

Resistance-Value (R-value) Test: An R-value test conducted on a near surface sample containing a mixture of some silty sand and mostly clayey sand and collected from depths of about 1 to 5 feet BSG from boring B-3 indicated an R-value of 37.

Chemical Tests: Chemical tests performed on a near surface soil sample resulted in a pH value of 7.5; a minimum resistivity value of 3,100 ohms-centimeter; 0.0021 percent by weight concentration of chlorides; and 0.0026 percent by weight concentration of sulfates.

5.3 Groundwater Conditions: Groundwater was not encountered in the test borings drilled at the time of our October 2024 field exploration to the maximum depth explored, about 60 feet BSG.

Based on our review of groundwater data published by the Department of Water Resources, a well located about 1½ miles northwest of the site indicates that groundwater has ranged from an elevation of about 2,808 feet in 1981 to an elevation of about 2,767 feet BSG in 2005 for data collected between the years 1981 and 2017. The most recent measurement from this well in 2017 indicated groundwater at an elevation of about 2,778 feet. Considering the subject site has an average elevation of about 3,259 feet above mean sea level (USGS Topographic Data on Google Earth), groundwater at the site is considered to be greater than 450 feet below site grade.

It should be recognized, however, that groundwater elevations fluctuate with time, since they are dependent upon seasonal precipitation, irrigation, land use, and climatic conditions as well as other factors. Therefore, water level observations at the time of the field investigation may vary from those encountered both during the construction phase and the design life of the project. The evaluation of such factors was beyond the scope of this investigation and report.

5.4 Results of Percolation Testing: The infiltration rate estimated from the percolation test data is summarized in Table No. 1 below. The percolation test data is included in Appendix D of this report.

Table No. 1
Results of Percolation Testing

Location and Depth	Field (Unfactored) Infiltration Rate (Inches per Hour)[1]	Subgrade Soil Type
P-1 at 20.25 feet BSG	3.3	Dense Poorly Graded Sand with Silt
P-2 at 20.2 feet BSG	4.3	Medium Dense Well Graded Sand with Silt

Notes:
BSG - Below site grade
[1] - Includes no factor of safety

It should be noted that the field tests do not consider the long-term effects of subgrade saturation, silt accumulation, groundwater influence, nor vegetation. In general, the infiltration rate of the soils will decrease when the soils are saturated and the reduction in the infiltration rate increases the longer the soils are saturated. Published studies indicate field infiltration rates can significantly overestimate the saturated permeability. In addition, soil bed consolidation, sediment, suspended soils, etc. in the discharge water can result in clogging of the pore spaces in the soil. This clogging effect can also reduce the long-term infiltration rate. Numerous other factors, such as variations in soil type and soil density across the entire area of the system can influence the infiltration rate, both short and long term.

6.0 EVALUATION

The data and methodology used to develop conclusions and recommendations for project design and preparation of construction specifications are summarized in the following subsections. The evaluation was based upon the subsurface soil conditions encountered during this investigation and our understanding of the proposed construction. The conclusions obtained from the results of our evaluations are described in the Conclusions section of this report.

6.1 Existing Surface and Subsurface Conditions: At the time of our field exploration, the surface of the site was occupied by various pavements, a building, a canopy, and slabs-on-grade, which are to be demolished. It is possible some of the existing slabs on grade in the southern half of the site include buried foundations where a building was removed in 2017. In addition, the sewer or septic pipe extending vertically out of the ground in the area of the slabs-on-grade in the southern half of the site and an outline of a trench trending northeast away from one of these slabs-on-grade suggest that subsurface septic system(s) (tanks, piping, leach fields, etc.) may be present. A power pole exists in the southeastern portion of the site, and an overhead line was noted as trending to the southeast away from the power pole. Abundant weed growth was noted within the cracked pavements in the southern half of the site and also in some of the cracked pavements in the northern half of the site. A chain link fence surrounded an equipment storage area on the south side of the existing building in the northern half of the site. A chain link fence also surrounded the northern, eastern and southern sides of the southern half of the site. Also, a tree was also noted along the fence and southern boundary of the site in the southwest corner of the site.

It is our understanding that the existing improvements will be demolished and removed as part of the site preparation for the proposed Starbucks development. As a part of demolition, it is recommended to remove all existing surface and subsurface improvements. Further, all utilities not required for the new construction should be entirely removed, and not abandoned in-place. Numerous underground utilities were noted at the site, including site light (electric), water lines, sewer lines, etc, that should be identified and removed during demolition and site preparation. As previously noted, a subsurface septic system(s) (tanks, piping, leach fields, etc.) may be present in the southern portion of the site in the area of the concrete slabs-on-grade left in-place. These surface and subsurface features and undocumented fill soils should be entirely removed to expose native, undisturbed soils; and the resulting excavations backfilled as engineered fill to the finished grades. The power pole in the southeastern portion of the site will also need to be removed from the site.

Deep shaft foundations may support the existing canopy in the northern half of the site. If the existing canopy is supported by deep shaft foundations, the portion of foundations that extend below 5 feet below final grade, and that are not within 5 feet of any utility trench, may remain in place. The portion of the foundations above five feet below grade, or within 5 lateral feet of adjacent excavations, should be cutoff and removed. The resultant excavations should be backfilled as engineered fill to final grades.

6.2 Static Settlement and Bearing Capacity of Shallow Foundations: The potential for excessive total and differential static settlement of foundations and slabs-on-grade is a geotechnical concern that was evaluated for this project. The increases in effective stress to underlying soils which can occur from new foundations and structures, placement of fill, etc. can cause vertical deformation of the soils, which can result in damage to the overlying structures and improvements. The differential component of the settlement is often the most damaging. In addition, the allowable bearing pressures of the soils supporting the foundations were evaluated for shear and punching type failure of the soils resulting from the imposed foundation loads.

The near surface loose soils encountered in the borings drilled for the proposed Starbucks building are not considered suitable for direct support of proposed structure. In order to reduce the potential for excessive static settlement of foundations and to limit the total and differential static settlement of foundations to 1 inch total and ½ inch differential in 40 feet, it is recommended to support new foundations for the Starbucks structure on engineered fill soils that extend to either: 1) a depth of 4 feet below preconstruction site grade; or 2) to the depth required to provide at least 1 foot of engineered fill below proposed foundations, whichever is greater. In addition, the over-excavation recommended for the proposed Starbucks building will also need to be conducted to remove all surface and subsurface structure such as the existing building, foundations, underground utilities, etc. All undocumented fill soils and soils disturbed from removal of subsurface improvements will also need to be removed during site preparation for the proposed Starbucks building. Provided the building pad areas are prepared in accordance with the recommendations included in this report, a net allowable soil bearing pressure of 2,500 pounds per square foot, for dead-plus-live loads, may be used for design.

The net allowable soil bearing pressure is the additional contact pressure at the base of the foundations caused by the structure. The weight of the soil backfill and weight of the footing may be neglected. The net allowable soil bearing pressure presented was selected using the Terzaghi bearing capacity equations for foundations considering a minimum factor of safety of 3.0 and based on the anticipated static settlements noted in this report.

A structural engineer experienced in foundation and slab-on-grade design should determine the thickness, reinforcement, design details and concrete specifications for the proposed building foundations and slabs-on-grade based on the anticipated settlements estimated in this report.

6.3 Seismic Ground Rupture and Design Parameters: The closest active fault is the Ord Mountain Fault zone (part of the North Front Thrust System), which is located about 6½ miles southeast of the site. The project site is not located in an Alquist-Priolo Earthquake Fault Zone. Accordingly, the potential for ground rupture at the site is considered low.

It is our understanding that the 2022 CBC will be used for structural design, and that seismic site coefficients are needed for design.

Based on the 2022 CBC, a Site Class D represents the on-site soil conditions with standard penetration resistance, N-values averaging between 15 and 50 blows per foot in the upper 100 feet below site grade.

A table providing the recommended seismic coefficients and earthquake spectral response acceleration values for the project site is included in the Foundation Recommendations section of this report. A Maximum Considered Earthquake (geometric mean) peak ground acceleration adjusted for site effects (PGA_M) of 0.550g was determined for the site using the Seismic Design Maps tool provided by the Structural Engineers Association of California (https://seismicmaps.org/).

6.4 Liquefaction and Seismic Settlement: Liquefaction and seismic settlement are conditions that can occur under seismic shaking from earthquake events. Liquefaction describes a phenomenon in which a saturated, cohesionless soil loses strength during an earthquake as a result of induced shearing strains. Lateral and vertical movements of the soil mass, combined with loss of bearing usually results. Fine, well sorted, loose sand, shallow groundwater conditions, higher intensity earthquakes, and particularly long duration of ground shaking are the requisite conditions for liquefaction.

Seismic settlement analyses were conducted based on soil properties from the boring with the deepest advance (B-2) using the computer program LiquefyPro, developed by CivilTech Software. Also, the depth of engineered fill recommended for site preparation was considered in the analysis. A Maximum Considered Earthquake (geometric mean) peak ground acceleration adjusted for site effects (PGA_M) of 0.550g was determined for the site using the Ground Motion Parameter Calculator provided by the United States Geological Survey (http://earthquake.usgs.gov/designmaps/us/application.php). A Maximum Considered Earthquake magnitude of 8.2 was applied in the analysis based on the highest earthquake magnitude determined from probabilistic analysis (hazard deaggregation analysis fro the USGS Unified Hazard Tool (https://earthquake.usgs.gov/hazards/interactive/), and deterministic analysis using the Building Seismic Safety Council 2014 (BSSC2014) Scenario Catalog from the USGS website for the Earthquake Hazards Program (https://earthquake.usgs.gov/scenarios/catalog/bssc2014/). Soil parameters, such as wet unit weight, standard penetration test, N-values, and fines content were input from the boring data for the soil layers encountered throughout the depths explored.

Due to the depth to historical groundwater in the vicinity of this site (greater than 450 feet BSG), liquefaction is not considered a concern for the proposed development. However, there is potential for dry seismic settlement to occur during shaking from earthquakes. As part of the analysis, the (N1)60s values of 30 or greater (dense to very dense soils) were not considered to be subject to significant dry seismic settlement in the analyses. Based on the analysis, seismic settlement was estimated to be negligible.

6.5 Asphaltic Concrete (AC) Pavements: Recommendations for asphaltic concrete pavement structural sections are presented in the "Recommendations" section of this report for proposed asphaltic concrete (AC) pavements. The structural sections were designed using the gravel equivalent method in accordance with the California Department of Transportation Highway Design Manual. The analysis was based on traffic index values ranging from 5.0 to 7.0. The appropriate paving section should be determined by the project civil engineer or applicable design professional based on the actual vehicle loading (traffic index) values. If traffic loading is anticipated to be greater than assumed, the pavement sections should be re-evaluated.

It should be noted that if pavements are constructed prior to the construction of the structures, the additional construction truck traffic should be considered in the selection of the traffic index value. If more frequent or heavier traffic is anticipated and higher Traffic Index values are needed, Moore Twining should be contacted to provide additional pavement section designs.

A Resistance-Value (R-value) test was conducted on a near surface sample containing a mixture of some silty sand and mostly clayey sand that was collected from boring B-3 which was drilled in the entrance area for the proposed drive-thru pickup drive lane for the Starbucks. The test indicated an R-value result of 37. R-values of 45 and 51 were determined in the area of the bordering proposed McDonald's parcel during our previous January 2019 investigation at the subject site for the previously planned Circle K development. However, the previous samples tested contained all silty sand material and did not contain any clayey sand material, thus resulting in higher R-values. Based on the result of the current testing, and considering potential variation in the near surface soils, an R-value of 35 was used to provide the pavement section thickness recommendations.

6.6 Portland Cement Concrete (PCC) Pavements: Recommendations for Portland cement concrete (PCC) pavement structural sections are presented in the "Recommendations" section of this report. The PCC pavement sections are based upon the amount and type of traffic loads being considered and the characteristics of the subgrade soils which will support the pavement. The measure of the amount and type of traffic loads are based upon an index of equivalent axle loads (EAL) from the loading of heavy trucks called a traffic index (T.I).

The recommendations provided in this report for PCC pavements are based on a trash truck loading and the design procedures contained in the Portland Cement Association "Thickness Design of Highway and Street Pavements."

The pavement sections were prepared based on traffic indexes ranging from 6.0 to 8.0. The recommended structural sections were based primarily on the Portland Cement Association "Thickness Design of Highway and Street Pavements." A modulus of subgrade reaction, K-value, for the pavement section, considering a minimum 4-inch layer of aggregate base material (minimum R-value of 78), of 190 psi/in at the top of the aggregate base was used for pavement design.

6.7 Soil Corrosion: The risk of corrosion of construction materials relates to the potential for soil-induced chemical reaction. Corrosion is a naturally occurring process whereby the surface of a metallic structure is oxidized or reduced to a corrosion product such as iron oxide (i.e., rust). The metallic surface is attacked through the migration of ions and loses its original strength by the thinning of the member.

Soils make up a complex environment for potential metallic corrosion. The corrosion potential of a soil depends on numerous factors including soil resistivity, texture, acidity, field moisture and chemical concentrations. In order to evaluate the potential for corrosion of metallic objects in contact with the onsite soils, chemical testing of soil samples was performed by Moore Twining as part of this report. The test results are included in Appendix C of this report. Conclusions regarding the corrosion potential of the soils tested are included in the Conclusions section of this report based on the National Association of Corrosion Engineers (NACE) corrosion severity ratings listed in the Table No. 2 below.

Table No. 2
Soil Resistivity and Corrosion Potential Ratings

Soil Resistivity (ohm cm)	Corrosion Potential Rating
>20,000	Essentially non-corrosive
10,000 - 20,000	Mildly corrosive
5,000 - 10,000	Moderately corrosive
3,000 - 5,000	Corrosive
1,000 - 3,000	Highly corrosive
<1,000	Extremely corrosive

The results of soil sample analyses indicate that the near-surface soils exhibit a "corrosive" corrosion potential to buried metal objects. This is consistent with our previous 2019 test results at the site on the proposed McDonald's parcel during Moore Twining's investigation for the previously planned Circle K development. Appropriate corrosion protection should be provided for buried improvements based on the "corrosive" corrosion potential. If piping or concrete are placed in contact with imported soils, these soils should be analyzed to evaluate the corrosion potential of these soils.

If the manufacturers or suppliers cannot determine if materials are compatible with the soil corrosion conditions, a professional consultant, i.e., a corrosion engineer, with experience in corrosion protection should be consulted to provide design parameters. Moore Twining does not provide corrosion engineering services.

6.8 Sulfate Attack of Concrete: Degradation of concrete in contact with soils due to sulfate attack involves complex physical and chemical processes. When sulfate attack occurs, these processes can reduce the durability of concrete by altering the chemical and microstructural nature of the cement paste. Sulfate attack is dependent on a variety of conditions including concrete quality, exposure to sulfates in soil, groundwater and environmental factors. The standard practice for geotechnical engineers in evaluation of the soils anticipated to be in contact with structural concrete is to perform laboratory testing to determine the concentrations of sulfates present in the soils. The test results are then compared with the exposure classes in Table 19.3.1.1 of ACI 318 to provide guidelines for concrete exposed to soils containing sulfates. It should be noted that other exposure conditions such as the presence of: seawater, groundwater with elevated concentrations of dissolved sulfates, or materials other than soils can result in sulfate exposure categories to concrete that are higher than the concentrations of sulfate in soil. The design engineer will need to determine whether other potential sources of sulfate exposure need to be considered other than exposure to sulfates in soil. The sulfate exposure classes for soils from Table 19.3.1.1 are summarized in the below table.

Table No. 3
ACI Exposure Categories for Water Soluble Sulfate in Soils

Sulfate Exposure Class (per ACI 318)	Water Soluble Sulfate in Soil (Percent by Mass)
S0	Less than 0.10 Percent
S1	0.10 to Less than 0.20 Percent
S2	0.20 to Less than or Equal to 2.00 Percent
S3	Greater than 2.00 Percent

Common methods used to resist the potential for degradation of concrete due to sulfate attack from soils include, but are not limited to the use of sulfate-resisting cements, air-entrainment and reduced water to cement ratios. The laboratory test results for sulfates are included in Appendix C of this report. Conclusions regarding the sulfate test results are included in the Conclusions section of this report.

7.0 CONCLUSIONS

Based on the data collected during the field and laboratory investigations, our geotechnical experience in the vicinity of the project site, and our understanding of the anticipated construction, the following general conclusions are presented.

7.1 The site is considered suitable for the proposed construction with regard to support of the proposed improvements, provided the recommendations contained in this report are followed. It should be noted that the recommended design consultation and observation of clearing, and earthwork activities by Moore Twining are integral to this conclusion.

7.2 The subsurface soils encountered generally consisted of very loose to medium dense silty sands extending to depths of about 1½ to 3½ feet across the site. Below the very loose to loose silty sands, the relative density of the silty sands soils improved to medium dense to dense and extended to depths of about 3½ to 13½ feet BSG. Below the silty sands, medium dense silty, clayey sands; medium dense clayey sands; medium dense to dense poorly graded sands with silt; and medium dense well graded sands with silt were encountered extending to a depth of about 33½ feet BSG which were generally underlain by dense poorly graded sands and dense well graded sands with silt extending to the maximum depth explored of 60 feet BSG.

7.3 Laboratory testing on the near surface soils indicate the materials are non-plastic, non-expansive, and exhibit low compressibility characteristics, slight collapse potential, and moderate to high shear strength properties. The near surface soils exhibit fair support characteristics for pavements when compacted as engineered fill.

7.4 Groundwater was not encountered in the test borings drilled at the time of our October 2024 investigation to the maximum depth explored, about 60 feet BSG. Based on groundwater data published by the Department of Water Resources, the depth to groundwater at the site is considered to be greater than 450 feet below site grade.

7.5 Due to the depth to historical groundwater in the vicinity of this site (greater than 450 feet BSG), liquefaction is not considered a concern for the proposed development. However, there is potential for dry seismic settlement to occur during shaking from earthquakes. As part of the analysis, the (N1)60s values of 30 or greater (dense to very dense soils) were not considered to be subject to significant dry seismic settlement in the analyses. Based on the analysis, seismic settlement was estimated to be negligible.

7.6 The result at percolation test P-1 at 20.25 feet BSG indicated an unfactored infiltration rate of 3.3 inches per hour. The result at percolation test P-2 at 20 feet BSG indicated an unfactored infiltration rate of 4.3 inches per hour. The results indicate that storm water infiltration systems at a depth of 20 feet BSG appear feasible for this site. This report recommends that the lower unfactored infiltration rate of 3.3 inches per hour be considered for use in design for infiltration systems at a depth of 20 feet BSG when including an appropriate factor of safety. Appendix D, Section VII (Technical Guidance Document Appendices) of Technical Guidance Document for Water Quality Management Plans, dated June 7, 2013, prepared by CDM Smith Inc. for the County of San Bernardino Areawide Stormwater Program discusses the factor of safety to be used to be used for design of infiltration facilities. Appendix D, Section VII.4 'Considerations for Infiltration Rate Factor of Safety' indicates, "The factor of safety used to compute the *design infiltration rate* shall not be less than 2.0 but may be higher at the discretion of the design engineer and acceptance of the plan reviewer...."

7.7 Chemical testing of soil samples indicated the soils exhibit a "corrosive" corrosion potential.

7.8 Based on Table 19.3.1.1 - Exposure categories and classes from Chapter 19 of ACI 318, the sulfate concentration from chemical testing of soil samples falls in the S0 classification (less than 0.10 percent by weight) for concrete.

7.9 The potential for fault rupture on the site is low.

7.10 It is our understanding that the existing improvements will be demolished as part of the site preparation for the proposed Starbucks development. To provide adequate support for the planned building and pavement improvements, existing surface and subsurface improvements not required for the new construction should be entirely removed, and not abandoned in-place. Numerous underground utilities were noted at the site, including site light (electric), water lines, sewer lines, etc, that should be identified and removed during demolition and site preparation. A subsurface septic system(s) (tanks, piping, leach fields, etc.) may also be present in the southern portion of the site in the area of the concrete slabs-on-grade left in-place. These surface and subsurface features and undocumented fill soils should be entirely removed to expose native, undisturbed soils; and the resulting excavations backfilled as engineered fill to the finished grades.

In order to reduce the potential for excessive static settlement of foundations and to limit the total and differential static settlement of foundations to 1 inch total and ½ inch differential in 40 feet, it is recommended to support new foundations for the Starbucks structure on engineered fill soils that extend to either: 1) a depth of 4 feet below preconstruction site grade; or 2) to the depth required to provide at least 1 foot of engineered fill below proposed foundations, whichever is greater.

7.11 If the existing canopy is supported by deep shaft foundations, the portion of foundations that extend below 5 feet below final grade, and that are not within 5 feet of any utility trench, may remain in place. The portion of the foundations above five feet below grade, or within 5 lateral feet of adjacent excavations, should be cutoff and removed. The resultant excavations should be backfilled as engineered fill to final grades.

8.0 RECOMMENDATIONS

Based on the evaluation of the field and laboratory data and our geotechnical experience in the vicinity of the project, the following recommendations are presented for use in the project design and construction. However, this report should be considered in its entirety. When applying the recommendations for design, the background information, procedures used, findings, evaluation, and conclusions should be considered. The recommended design consultation and construction monitoring by Moore Twining are integral to the proper application of the recommendations. The Contractor is required to comply with the requirements and recommendations presented in this report.

Where the requirements of a governing agency, utility agency or pipe manufacturer differ from the recommendations of this report, the more stringent recommendations should be applied to the project.

8.1 General

8.1.1 Moore Twining should be retained to review the final grading plans and foundation plans before the plans are released for bidding purposes so that any relevant recommendations can be presented.

8.1.2 When the actual foundation loads are known, this information should be provided to Moore Twining for review to confirm the recommendations for site preparation are appropriate. In the event the foundation loads are different than assumed, the recommendations in this report may need to be revised.

8.1.3 A preconstruction meeting including, as a minimum, the owner, general contractor, earthwork contractor, foundation and paving subcontractors, and Moore Twining should be scheduled by the general contractor at least one week prior to the start of clearing and grubbing. The purpose of the meeting should be to discuss critical project requirements and scheduling.

8.1.4 The Contractor(s) bidding on this project should determine if the information included in the construction documents are sufficient for accurate bid purposes. If the data are not sufficient, the Contractor should notify the owner in writing prior to bidding the project that the data provided in this report is not sufficient to bid the project. This notification should be specific and explain in detail as to what data are not sufficient.

8.2 Site Grading and Drainage

8.2.1 It is critical to develop and maintain site grades which will drain surface and roof runoff away from foundations and floor slabs - both during and after construction. Adjacent exterior finished grades should be sloped a minimum of two percent for a distance of at least ten feet away from the structures, or as necessary to preclude ponding of water adjacent to foundations, whichever is more stringent. Adjacent exterior grades which are paved should be sloped at least 1 percent away from the foundations.

8.2.2 It is recommended that landscape planted areas, etc. not be placed adjacent to the building foundations and/or interior slabs-on-grade. Trees should be setback from the proposed structures at least 10 feet or a distance equal to the anticipated drip line radius of the mature tree. For example, if a tree has an anticipated drip-line diameter of 30 feet, the tree should be planted at least 15 feet away (radius) from proposed or existing buildings.

8.2.3 Landscaping after construction should direct rainfall and irrigation runoff away from the structures and should establish positive drainage of water away from the structures. Care should be taken to maintain a leak-free sprinkler system.

8.2.4 Landscape and planter areas should be irrigated using low flow irrigation (such as drip, bubblers or mist type emitters). The use of plants with low water requirements are recommended.

8.2.5 Rain gutters and roof drains should be provided, and connected directly to the site storm drain system. As an alternative, the roof drains should extend a minimum of 5 feet away from the structures and the resulting runoff directed away from the structures at a minimum of 2 percent.

8.2.6 Stormwater systems that allow wetting of the soils should not be placed directly adjacent to structures or foundations. On a preliminary basis, these types of features should be setback at least 20 feet from foundations. The result at percolation test P-1 at 20.25 feet BSG indicated an unfactored infiltration rate of 3.3 inches per hour. The result at percolation test P-2 at 20 feet BSG indicated an unfactored infiltration rate of 4.3 inches per hour. The results indicate that storm water infiltration systems at a depth of 20 feet BSG appear feasible for this site for infiltration systems such as deeper dry wells. This report recommends that the lower unfactored infiltration rate of 3.3 inches per hour be considered for use in design for infiltration systems at a depth of 20 feet BSG when including an appropriate factor of safety. Shallow infiltration systems should not be considered based on the results of previous percolation testing conducted by Moore Twining at the site in 2019 that identified cemented soils and unfavorable infiltration rates in the near surface soils. Appendix D, Section VII (Technical Guidance Document Appendices) of Technical Guidance Document for Water Quality Management Plans, dated June 7, 2013, prepared by CDM Smith Inc. for the County of San Bernardino Areawide Stormwater Program discusses the factor of safety to be used for design of infiltration facilities. Appendix D, Section VII.4 'Considerations for Infiltration Rate Factor of Safety' indicates, "The factor of safety used to compute the *design infiltration rate* shall not be less than 2.0 but may be higher at the discretion of the design engineer and acceptance of the plan reviewer...."

8.3 Site Preparation

8.3.1 Stripping should be conducted in all areas of existing landscaping to remove surface vegetation and root systems (if any). The general depth of stripping should be sufficiently deep to remove the root systems and organic topsoils. A tree occupied the southwest corner of the site. Tree roots that are encountered during site grading should be excavated to remove all roots larger than ¼-inch or accumulation of organics greater than 3 percent by dry weight.

8.3.2 As part of the site preparation, existing surface and subsurface improvements should be completely removed. Existing subsurface improvements and associated backfill soils should be excavated to at least 12 inches below the improvements removed, to the depth required to remove all disturbed soils, and all fill materials, whichever requires the deeper excavation. Underground utilities to be removed should not be capped and abandoned or crushed and buried in-place. Instead, underground utilities not scheduled to remain should be fully removed from the site along with the

associated trench backfill soils that should be assumed to extend at a 1 horizonal to 1 vertical gradient extending from the bottom of the utility to the ground surface. Excavated soils associated with removal of utilities and other subsurface improvements should be moisture conditioned and compacted as engineered fill as recommended in this report.

8.3.3 For the deep shaft foundations that may support the existing canopy, the portion of foundations that extend below 5 feet below final grade, and that are not within 5 feet of any utility trench, may remain in place. The portion of the foundations above five feet below grade, or within 5 lateral feet of adjacent excavations, should be cutoff and removed. The resultant excavations should be backfilled as engineered fill to final grades.

8.3.4 The fill soils used to backfill the USTs (removed in 1998 from the western portion and southwest side of the existing canopy) were documented to be compacted as engineered fill. When the area of this certified fill is exposed, Moore Twining should observe it and probe it to determine if any unsuitable or loose soils are exposed during the over-excavations for the proposed building and other site improvements. If any unsuitable or loose soils are exposed, these soils should be removed, moisture conditioned as necessary and compacted as engineered fill.

8.3.5 After stripping and removal of existing surface and subsurface improvements, the building pad areas for the proposed Starbucks and over-build zone should be over-excavated to the depths required to meet all of the following requirements, whichever requires the deeper excavation:

1) to at least 1 foot below the bottom of footings,
2) to at least 4 feet below preconstruction site grades,
3) to the depth required to remove existing undocumented fill soils, and
4) to at least 12 inches below the subsurface improvements (structures, utilities, etc.) to be removed.

The horizontal limits of over-excavation should include the footprint of the building, all foundations, all concrete walkways adjacent to the structures, and a minimum of 5 feet beyond these features, whichever is greater. Upon review of the Contractor's survey data (regarding the vertical and horizontal limits of the over-excavation) and approval of the over-excavation by Moore Twining, the bottom of the excavation should be scarified to a minimum depth of 8 inches, moisture conditioned, and compacted as engineered fill.

8.3.6 It is recommended that extra care be taken by the contractor to ensure that the horizontal and vertical extent of the over-excavation and compaction conform to the site preparation recommendations presented in this report. The horizontal limit of over-excavation for the building pad for the proposed Starbucks building and attached concrete walkways should be depicted on the project plans. Moore Twining is not responsible for measuring and verifying the horizontal and vertical extent of over-excavation and compaction. The contractor should verify in writing to the owner and Moore Twining that the horizontal and vertical over-excavation limits were completed in conformance with the recommendations of this report, the project plans, and the specifications (the most stringent applies). It is recommended that this verification be performed by a licensed surveyor. This verification should be provided prior to requesting pad certification from Moore Twining or excavating for foundations.

8.3.7 Following stripping and removal of surface and subsurface improvements, areas to receive miscellaneous lightly loaded foundations, such as site walls, retaining walls or screen walls for trash enclosures, should be over-excavated to a minimum of 1 foot below foundations, to a depth of at least 4 feet below preconstruction site grades, to the depth required to remove undocumented fills, or to at least 12 inches below subsurface improvements (utilities, etc.) to be removed, whichever is greater. The over-excavation for retaining walls/screen walls should extend to at least 3 feet beyond the edges of the foundations or up to improvements to remain, whichever occurs first. The bottom of the over-excavation should be scarified to a depth of at least 8 inches, moisture conditioned and compacted as engineered fill.

8.3.8 Following stripping and removal of surface and subsurface improvements, areas to receive new pavements, exterior slabs on grade outside the building pad preparation limits and areas to receive fill outside the building pad preparation limits should be over-excavated to a depth of 12 inches below pre-construction pavement grades, to the depth required to remove undocumented fill soils, to a depth of 12 inches below the bottom of the new aggregate base section, to at least 12 inches below subsurface improvements (utilities, etc.) to be removed, and to the depth required to remove all disturbed soils, whichever is greater. The exposed surface after over-excavation should be scarified to a minimum depth of 8 inches, moisture conditioned to between optimum and three (3) percent above optimum moisture content and compacted as engineered fill. The limits of

scarification for pavement areas and exterior slabs should extend at least 3 feet beyond the edge of these improvements or up to improvements to remain, whichever occurs first. The upper 12 inches of the subgrade soils beneath the pavement areas should be compacted to at least 95 percent of the maximum dry density as determined by ASTM Test Method D1557.

8.3.9 All fill required to bring the site to final grades should be placed as engineered fill. In addition, all native soils over-excavated should be compacted as engineered fill. Refer to Section 8.4.5 of this report for the moisture content range and minimum percent relative compaction recommendations for engineered fill.

8.3.10 The contractor should locate all on-site water wells (if any) and monitoring wells. All wells scheduled for demolition should be abandoned per state and local requirements. The contractor should obtain an abandonment permit from the local environmental health department, and issue certificates of destruction to the owner and Moore Twining upon completion. At a minimum, wells in building areas (and within 5 feet of building perimeters) should have their casings removed to a depth of at least 8 feet below preconstruction site grades or finished pad grades, whichever is deeper. In parking lot or landscape areas, the casings should be removed to a depth of at least 5 feet below site grades or finished grades. The wells should be capped with concrete and the resulting excavations should be backfilled as engineered fill.

8.3.11 The moisture content and density of the compacted soils should be maintained until the placement of concrete. If soft or unstable soils are encountered during excavation or compaction operations, our firm should be notified so the soils conditions can be examined and additional recommendations provided to address the pliant areas.

8.3.12 Final grading shall produce building pads ready to receive a slab-on-grade which is smooth, planar, and resistant to rutting. The finished pad (before aggregate base is placed) shall not depress more than one-half (½) inch under the wheels of a fully loaded water truck, or equivalent loading. If depressions more than one-half (½) inch occur, the contractor shall perform remedial grading to achieve this requirement at no cost to the owner.

8.3.13 The Contractor should be responsible for the disposal of concrete, asphaltic concrete, soil, spoils, etc. (if any) that must be exported from the site. Individuals, facilities, agencies, etc. may require analytical testing and other assessments of these materials to determine if these materials are acceptable. The Contractor should be responsible to perform the tests, assessments, etc. to determine the appropriate method of disposal.

8.4 Engineered Fill

8.4.1 The on-site near surface soils encountered are predominantly silty sands; silty, clayey sands; and clayey sands. The on-site soils will be suitable for use as engineered fill below the recommended aggregate base section, provided they are free of organics (less than 3 percent by weight and no roots larger than ¼ inch in diameter), irreducible material greater than 3 inches, have an expansion index of less than 20 and the moisture content of the soil is within optimum to three (3) percent above optimum moisture content at the time of placement. This report recommends that interior and exterior slabs-on-grade be underlain by at least 4 inches of aggregate base. If soils other than those considered in this report are encountered, Moore Twining should be notified to provide alternate recommendations.

8.4.2 If materials larger than 3 inches are encountered in the excavated material, the oversize rock should be removed prior to use as engineered fill (mar require hand picking).

8.4.3 The compactability of the native soils is dependent upon the moisture contents, subgrade conditions, degree of mixing, type of equipment, as well as other factors. The evaluation of such factors was beyond the scope of this report; therefore, it is recommended that they be evaluated by the contractor during preparation of bids and construction of the project.

8.4.4 Import fill soil (if any) should be non-recycled, non-expansive and granular in nature with the following acceptance criteria recommended.

Percent Passing 3-Inch Sieve	100
Percent Passing No. 4 Sieve	85 - 100
Percent Passing No. 200 Sieve	10 - 40
Expansion Index (ASTM D4829)	Less than 15
Organics	Less than 3 percent by weight
R-Value	Minimum 35*
Sulfates	< 0.05 percent by weight
Min. Resistivity	>5,000 ohms-cm

* for pavement areas only

Prior to importing fill, the import material shall be certified by the Contractor and the supplier (to the satisfaction of the Owner) that the soils do not contain any environmental contaminates regulated by local, state or federal agencies having jurisdiction. The Contractor shall pay for the environmental testing required to determine compliance with the requirements of this report. This certification shall consist of, as a minimum, recent analytical data specific to the source of the import material including proper chain-of-custody documentation. In lieu of sampling and testing aggregate base materials (or bedding sand) from virgin sand and gravel sources, a letter stating that the aggregate base (or bedding sand) comprises materials entirely from natural (virgin) sources and that the aggregate base (or bedding sand) is non-contaminated may be provided by the Contractor. Moore Twining will sample and test the material after the environmental certification submittal is approved to verify that the proposed material complies with the geotechnical engineering recommendations of this report. The Contractor shall allow a minimum of seven (7) working days for each import source to be tested for the geotechnical properties.

8.4.5 Native and imported engineered fill soil should be placed in loose lifts approximately 8 inches thick, moisture-conditioned to between optimum moisture content and three (3) percent above optimum moisture content, and compacted to a dry density of at least 92 percent of the maximum dry density as determined by ASTM Test Method D1557, with exception that the upper 12 inches of fill and subgrade compacted in pavement areas should be compacted to a minimum of 95 percent of the maximum dry density as determined by ASTM Test Method D1557. Additional lifts should not be placed if the previous lift did not meet the required dry density or if soil conditions are not stable.

8.4.6 In-place density testing should be conducted in accordance with ASTM D 6938 (nuclear methods) at a frequency of at least:

Table No. 4

Area	Minimum Test Frequency
Building Pad	1 test per 5,000 square feet per compacted lift, but not less than two tests per lift
Pavement Subgrade and Mass Grading Outside Building Pads	1 test per 5,000 square feet per compacted lift
Utility Lines	1 test per 150 feet per lift

8.4.7 Open graded gravel and rock material such as ¾-inch crushed rock or ½-inch crushed rock should not be used as backfill, including trench backfill. In the event gravel or rock is required by a regulatory agency for use as backfill (Contractor to obtain a letter from the agency stating the requirement for rock and/or gravel as backfill), all open graded materials shall be fully encased in a geotextile filter fabric, such as Mirafi 140N, to prevent migration of fine grained soils into the porous material. Gravel and rock cannot be used without the written approval of Moore Twining. If the contractor elects to use crushed rock (and if approved by Moore Twining), the contractor will be responsible for slurry cut off walls at the locations directed by Moore Twining. Crushed rock should be placed in thin (less than 8 inch) lifts and densified with a minimum of three (3) passes using a vibratory compactor.

8.4.8 Aggregate base below the interior building slab on grade shall be non-recycled and comply with Class 2 aggregate base (AB) per Caltrans Standard Specifications. Aggregate base used for pavement construction should comply with Class 2 aggregate base in accordance Caltrans Standard Specifications and may include recycled materials. Aggregate base shall be compacted to a minimum relative compaction of 95 percent in accordance with ASTM D1557 standards.

8.5 Shallow Spread Foundations

8.5.1 A structural engineer experienced in foundation design should recommend the thickness, design details and concrete specifications for the foundations based on the estimated settlements. The following static settlements should be anticipated for design: 1) a total static settlement of 1 inch; and 2) a differential static settlement of ½-inch in 40 feet.

8.5.2 Foundations supported on engineered fill prepared as recommended in the Site Preparation section of this report may be designed for a maximum net allowable soil bearing pressure of 2,500 pounds per square foot for dead-plus-live loads. This value may be increased by one-third for short duration wind or seismic loads.

8.5.3 Perimeter foundations should have a minimum depth of 18 inches below the lowest adjacent finished exterior ground surface. Interior footings should have a minimum depth of at least 12 inches below the bottom of the slab-on-grade. All footings should have a minimum width of 15 inches, regardless of load.

8.5.4 The foundations should be continuous around the perimeter of the proposed building to reduce moisture migration beneath the structures. Continuous perimeter foundations should be extended through doorways and/or openings that are not needed for support of loads.

8.5.5 The following seismic factors were developed using online data obtained from the Ground Motion Parameter Calculator provided by the Structural Engineers Association of California website (https://seismicmaps.org/) based upon a latitude of 34.423305 degrees and a longitude of -117.316065 degrees and a Site Class D. The data provided in Table No. 5 are based upon the procedures of the 2022 California Building Code and were not determined based upon a ground motion hazard analysis. The structural engineer should review the values in Table No. 5 and determine whether a ground motion hazard analysis is required for the project considering the seismic design category, structural details, and requirements of ASCE 7-16 (Section 11.4.8 and other applicable sections). If required, Moore Twining should be notified and requested to conduct the additional analysis, develop updated seismic factors for the project, and update the following values.

Table No. 5
Seismic Factors

Seismic Factor	2022 CBC Value*
Site Class	D
Maximum Considered Earthquake (geometric mean) peak ground acceleration adjusted for site effects (PGA_M)	0.550g
Mapped Maximum Considered Earthquake (geometric mean) peak ground acceleration ASCE 7-10 (PGA)	0.500g
Spectral Response At Short Period (0.2 Second), Ss	1.415
Spectral Response At 1-Second Period, S_1	0.547
Site Coefficient (based on Spectral Response At Short Period), Fa	1.0

Seismic Factor	2022 CBC Value*
Site Coefficient (based on spectral response at 1-second period) Fv	See Note
Maximum considered earthquake spectral response acceleration for short period, S_{MS}	1.415
Maximum considered earthquake spectral response acceleration at 1 second, S_{M1}	See Note
Five percent damped design spectral response accelerations for short period, S_{DS}	0.944
Five percent damped design spectral response accelerations at 1-second period, S_{D1}	See Note

Note: Requires ground motion hazard analysis per ASCE Section 21.2 (ASCE 7-16, Section 11.4.8), unless an Exception of Section 11.4.8 of ASCE 7-16 is applicable for the project design.

*The above data is subject to the disclaimers listed in the website https://seismicmaps.org/

8.5.6 All loose soils should be removed from foundation excavations and the excavations should be maintained at near optimum moisture content by periodic wetting. Foundation excavations should be observed by Moore Twining prior to the placement of steel reinforcement and concrete to verify conformance with the intent of the recommendations of this report. The Contractor is responsible for proper notification to Moore Twining and receipt of written confirmation of this observation prior to placement of steel reinforcement.

8.5.7 Structural loads for lightly loaded (less than 1.5 kips per lineal foot) miscellaneous foundations (such as screen walls for the proposed trash enclosures) may be supported engineered fills prepared in accordance with the recommendations included in the Site Preparation section of this report. The lightly loaded foundations should extend to a minimum depth of 12 inches below the lowest adjacent grade and a minimum width of 12 inches, regardless of load. Footings for miscellaneous lightly loaded foundations may be designed for a maximum net allowable soil bearing pressure of 1,500 pounds per square foot for dead-plus-live loads. These values may be increased by one-third for short duration wind or seismic loads.

8.5.8 The bottom surface area of concrete footings or concrete slabs in direct contact with engineered fill can be used to resist lateral loads. An allowable coefficient of friction of 0.40 can be used for design. In areas where slabs are underlain by a synthetic moisture barrier, an allowable coefficient of friction of 0.10 can be used for design.

8.5.9 The allowable passive resistance of the native soils and engineered fill may be assumed to be equal to the pressure developed by a fluid with a density of 350 pounds per cubic foot. The upper 6 inches of subgrade in landscaped areas should be neglected in determining the total passive resistance.

8.6 Interior Slabs-on-Grade

8.6.1 Interior slabs-on-grade should be supported over 4 inches of non-recycled aggregate base over engineered fill extending to the depth recommended below foundations in the Site Preparation section of this report.

8.6.2 The recommendations provided herein are intended only for the design of interior concrete slabs-on-grade and their proposed uses, which do not include construction traffic (i.e., cranes, cement mixers, and rock trucks, etc.). The building contractor should assess the slab section and determine its adequacy to support any proposed construction traffic.

8.6.3 The slabs and underlying subgrade should be constructed in accordance with current American Concrete Institute (ACI) standards.

8.6.4 A vapor retarder should be placed below interior building slabs where moisture could permeate into the interior and create problems. Refer to the American Concrete Institute's Guide to Concrete Floor and Slab Construction (ACI 302.1R) for selection and installation of moisture vapor retarders. It is recommended that a Stegowrap 15 vapor retarder be used where moisture could permeate into the interior and create problems, such as where flooring or floor slab applications will contain moisture sensitive materials (or other slab applications or uses). The vapor retarder should overlay the compacted 4 inch layer of aggregate base. It should be noted that placing the PCC slab directly on the vapor retarder may increase the potential for cracking and curling; however, ACI recommends the placement of the vapor retarding membrane directly below the slab unless a watertight roofing system is in place prior to slab construction to reduce the amount vapor emission through the slab-on-grade. It is recommended that the slab be moist cured for a minimum of 7 days to reduce the potential for excessive cracking.

The underslab membrane should have a high puncture resistance (minimum of approximately 2,400 grams of puncture resistance), high abrasion resistance, rot resistant, and mildew resistant. It is recommended that the membrane be selected in accordance with the current ASTM C 755, Standard Practice For Selection of Vapor Retarder For Thermal Insulation and conform to the current ASTM E 1745 Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs and ASTM E 154 Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Waters, or as Ground Cover. It is recommended that the vapor barrier installation conform to the current ACI Manual of Concrete Practice, Guide for Concrete Floor and Slab Construction (302.1R), Addendum, Vapor Retarder Location and current ASTM E 1643, Standard Practice for Installation of Water Vapor Retarders Used In Contact with Earth or Granular Fill Under Concrete Slabs. In addition, it is recommended that the manufacturer of floor covering, floor covering adhesive or other slab material applications be consulted to determine if the manufacturers have additional recommendations regarding the design and construction of the slab-on-grade, testing of the slab-on-grade, slab preparation, application of the adhesive, installation of the floor covering and maintenance requirements. It should be noted that the recommendations presented in this report are not intended to achieve a specific vapor emission rate.

8.6.5 The membrane should be installed so that there are no holes or uncovered areas. All seams should be overlapped and sealed with the manufacturer approved tape continuous at the laps so they are vapor tight. All perimeter edges of the membrane, such as pipe penetrations, interior and exterior footings, joints, etc., should be caulked per manufacturer's recommendations.

8.6.6 Tears or punctures that may occur in the membrane should be repaired prior to placement of concrete per manufacturer's recommendations. Once repaired, the membrane should be inspected by the contractor and the owner to verify adequate compliance with manufacture's recommendations.

8.6.7 The moisture retarding membrane is not required beneath exposed concrete floors, such as warehouses and garages, provided that moisture intrusion into the structures are permissible for the design life of the structures.

8.6.8 Additional measures to reduce moisture migration (for moisture sensitive floors) and out of plane drying shrinkage cracking for all slab areas should be implemented. These include: 1) constructing a less pervious concrete floor slab by maintaining a water-cement ratio of 0.52 or less in the concrete for slabs-on-grade, 2) ensuring that all seams and utility protrusions are

sealed with tape to create a "water tight" moisture barrier, 3) placing concrete walkways or pavements adjacent to the structures, 4) providing adequate drainage away from the structures, 5) moist cure the slabs for at least 7 days, and 6) locating lawns, irrigated landscape areas, and flower beds away from the structures.

8.6.9 The Contractor shall test the moisture vapor transmission through the slab, the pH, internal relative humidity, etc., at a frequency and method as specified by the flooring manufacturer or as required by the plans and specifications, whichever is most stringent. The results of vapor transmission tests, pH tests, internal relative humidity tests, ambient building conditions, etc. should be within floor manufacturer's and adhesive manufacturer's specifications at the time the floor is placed. It is recommended that the floor manufacturer and subcontractor review and approve the test data prior to floor covering installation.

8.6.10 To reduce the potential for damaging slabs during construction the following recommendations are presented: 1) design for a differential slab movement of ½ inch relative to interior columns; and 2) the construction equipment which will operate on slabs or pavements should be evaluated by the contractor prior to loading the slab.

8.6.11 Backfill the zone above the top of footings at interior column locations, building perimeters, and below the bottom of slabs with an approved backfill as recommended herein for the area below interior slabs-on-grade. This procedure should provide more uniform support for the slabs which may reduce the potential for cracking.

8.7 Exterior Slabs-On-Grade

The recommendations for exterior slabs provided below are not intended for use for slabs subjected to vehicular traffic. They are intended for pedestrian traffic areas.

8.7.1 Exterior improvements that subject the subgrade soils to a sustained load greater than 150 pounds per square foot should be prepared in accordance with recommendations presented in this report for interior slabs-on-grade. Moore Twining can provide alternative design recommendations for exterior slabs, if requested.

8.7.2 Exterior slabs within the building pad preparation limits and exterior slabs outside the building pad preparation limits should be supported on 4 inches of aggregate base overlying subgrade soils prepared in accordance with the recommendations provided in the "Site Preparation" section of this report.

8.7.3 The moisture content of the subgrade soils should be verified to be at least optimum moisture content within 48 hours of placement of the slab-on-grade. If necessary to achieve the recommended moisture content, the subgrade could be over-excavated, moisture conditioned as necessary and compacted as engineered fill.

8.7.4 The exterior slabs-on-grade adjacent to landscape areas should be designed with thickened edges which extend to the bottom of the aggregate base. This should reduce the potential for infiltration of water into the aggregate base below exterior slabs.

8.7.5 Since exterior sidewalks, curbs, etc. are typically constructed at the end of the construction process, the moisture conditioning conducted during earthwork can revert to natural dry conditions. Placing concrete walks and finish work over dry or slightly moist subgrade should be avoided. It is recommended that the general contractor notify Moore Twining to conduct in-place moisture and density tests prior to placing concrete flatwork. Written test results indicating passing density and moisture tests should be in the general contractor's possession prior to placing concrete for exterior flatwork.

8.8 Asphaltic Concrete (AC) Pavements

8.8.1 The subgrade soils for asphaltic concrete pavements should be over-excavated and compacted as recommended in the "Site Preparation" section of the recommendations in this report. As part of the final preparation, the upper 12 inches of the subgrade soils should be moisture conditioned and compacted to a minimum of 95 percent of the maximum dry density determined in accordance with ASTM D 1557.

8.8.2 The following pavement sections are based on an R-value of 35 and traffic index values ranging from 5.0 to 7.0. A minimum of 3 inches of asphalt concrete is recommended below for the pavement sections. It should be noted that if pavements are constructed prior to construction of the buildings, the traffic index value should account for construction traffic. The actual traffic index values applicable to the site should be determined by the project civil engineer.

Table No. 6
Two-Layer Asphalt Concrete Pavements

Traffic Index	AC thickness, inches	AB thickness, inches	Compacted Subgrade, inches
5.0	3.0	4.5	12
5.5	3.0	6.0	12
6.0	3.5	6.5	12
6.5	3.5	8.0	12
7.0	4.0	8.5	12
7.5	4.0	9.5	12
8.0	4.5	10.0	12

AC - Asphaltic Concrete compacted as recommended in this report
AB - Class II Aggregate Base with minimum R-value of 78 and compacted to at least 95 percent relative compaction (ASTM D1557)
Subgrade - Subgrade soils compacted to at least 95 percent relative compaction (ASTM D1557)

8.8.3 The curbs where pavements meet irrigated landscape areas or uncovered open areas should extend at least to the bottom of the aggregate base section. This should reduce subgrade moisture from irrigation and runoff from migrating into the base section and reducing the life of the pavements.

8.8.4 If actual pavement subgrade materials are significantly different from those tested for this study due to unanticipated grading or soil importing, the pavement sections should be re-evaluated for the changed subgrade conditions.

8.8.5 If the paved areas are to be used during construction, or if the type and frequency of traffic are greater than assumed in design, the pavement sections should be re-evaluated for the anticipated traffic.

8.8.6 Pavement section design assumes that proper maintenance, such as sealing and repair of localized distress, will be performed on an as needed basis for longevity and safety.

8.8.7 Pavement materials and construction method should conform to the State of California Standard Specifications.

8.8.8 It is recommended that the base 2 inch thick course of asphaltic concrete consist of a ¾ inch maximum medium gradation. The top course or wear course should consist of a ½ inch maximum medium gradation.

8.8.9 The asphaltic concrete, including the joint density, should be compacted to an average relative compaction of 93 percent, with no single test value being below a relative compaction of 91 percent and no single test value being above a relative compaction of 97 percent of the referenced laboratory density according to ASTM D2041.

8.8.10 The asphalt concrete should comply with the requirements for a Type A asphalt concrete in accordance with the current State of California Department of Transportation (Caltrans) Standard Specification, or the requirements of the governing agency, whichever is more stringent.

8.9 Portland Cement Concrete (PCC) Pavements

Recommendations for Portland Cement Concrete pavement structural sections are presented in the following subsections. The PCC pavement design assumes a minimum modulus of rupture of 500 psi. The design professional should specify where Portland cement concrete pavements are used based on the anticipated type and frequency of traffic.

8.9.1 The subgrade soils for Portland cement concrete pavements should be over-excavated and compacted as recommended in the "Site Preparation" section of the recommendations in this report. As part of the final preparation, the upper 12 inches of the subgrade soils should be moisture conditioned and compacted to a minimum of 95 percent of the maximum dry density determined in accordance with ASTM D 1557.

8.9.2 The following preliminary Portland cement concrete pavement sections have been prepared for Traffic Indices Ranging from 6.0 to 8.0. The design pavement sections should be selected by the civil engineer based on the anticipated traffic loading. If the paved areas are to be used during construction, or if the type and frequency of traffic are greater than assumed in design, the pavement section should be re-evaluated for the anticipated traffic.

Table No. 7
Portland Cement Concrete Pavements

Traffic Index	Average Daily Truck Traffic (ADTT)	PCC thickness (inches)	Aggregate Base (inches)	Compacted Subgrade (inches)
6.0	2.0	6.0	4.0	12.0
7.0	7.3	6.0	4.0	12.0
8.0	22.2	6.5	4.0	12.0

ADTT - Average Daily Truck Traffic based on a loaded garbage/dumpster truck
PCC - Portland Cement Concrete (minimum Modulus of Rupture=500 psi)
Subgrade - Subgrade soils compacted to at least 95 percent relative compaction (ASTM D-1557)

8.9.3 The PCC pavement should be constructed in accordance with American Concrete Institute requirements, the requirements of the project plans and specifications, whichever is the most stringent. The pavement design engineer should include appropriate construction details and specifications for construction joints, contraction joints, joint filler, concrete specifications, curing methods, etc.

8.9.4 Concrete used for PCC pavements shall possess a minimum flexural strength (modulus of rupture) of 500 pounds per square inch. A minimum compressive strength of 3,500 pounds per square inch, or greater as required by the pavement designer, is recommended. Specifications for the concrete to reduce the effects of excessive shrinkage, such as maximum water requirements for the concrete mix, allowable shrinkage limits, contraction joint construction requirements, etc. should be provided by the designer of the PCC slabs.

8.9.5 Jointing is one of the most critical aspects of the PCC pavement design and construction. Joint spacing, joint type and load transfer devices have significant impacts on the pavement design and performance. Thus, the detailing of joints needs to be considered carefully and applied with clear details on the project plans by the pavement designer/detailer. Positive load transfer devices such as dowels are commonly used at contraction joints whenever the designer cannot be assured aggregate interlock will be maintained.

8.9.6 Specifications for the concrete mixtures used in the PCC pavement to reduce the effects of excessive shrinkage (such as curling and excessive shrinkage at joints), including maximum water requirements for the concrete mix, allowable shrinkage limits, curing methods, etc. should be provided by the designer/detailer of the PCC slabs. In addition, as noted in Section 8.9.5, contraction joint requirements should be detailed by the designer/detailer of the PCC pavement to maintain stability. The minimum PCC thickness noted in this report assumes aggregate interlock occurs at contraction joints. However, curling and excessive shrinkage can disengage aggregate interlock and allow greater pavement deflection at free edges.

8.9.7 Contraction and construction joints should include a joint filler/sealer to prevent migration of water into the subgrade soils. The type of joint filler should be specified by the pavement designer. The joint sealer and filler material should be maintained throughout the life of the pavement.

8.9.8 Contraction joints should have a depth of at least one-fourth the slab thickness, e.g., 1.5-inch for a 6-inch slab. Specifications for contraction joint spacing, timing and depth of sawcuts should be included in the plans and specifications.

8.9.9 Stresses are anticipated to be greater at the edges and construction joints of the pavement section. A thickened edge is recommended on the outside of slabs subjected to wheel loads.

8.9.10 Joint spacing in feet should not exceed twice the slab thickness in inches, e.g., 12 feet by 12 feet for a 6-inch slab thickness. Regardless of slab thickness, joint spacing should not exceed 15 feet.

8.9.11 Lay out joints to form square panels. When this is not practical, rectangular panels can be used if the long dimension is no more than 1.5 times the short.

8.9.12 Isolation (expansion) joints should extend the full depth and should be used only to isolate fixed objects abutting or within paved areas.

8.9.13 Pavement section design assumes that proper maintenance such as sealing and repair of localized distress will be performed on a periodic basis.

8.10 Slopes, Shoring and Temporary Excavations

8.10.1 It is the responsibility of the contractor to provide safe working conditions with respect to excavation slope stability. The contractor is responsible for site slope safety, classification of materials for excavation purposes, and maintaining slopes in a safe manner during construction. The grades, classification and height recommendations presented for temporary slopes are for consideration in preparing budget estimates and evaluating construction procedures.

8.10.2 Due to the low cohesion of the onsite soils, temporary excavations should be constructed in accordance with CAL OSHA requirements. Temporary cut slopes should not be steeper than 2:1, horizontal to vertical, and flatter if possible. If excavations cannot meet these criteria, the temporary excavations should be shored.

8.10.3 In no case should excavations extend below a 2H to 1V zone below existing roadways, utilities, foundations and/or floor slabs which are to remain after construction. Excavations which are required to be advanced below the 2H to 1V envelope should be shored to support the soils, foundations, and slabs.

8.10.4 All soils disturbed as part of the shoring removal shall be over-excavated and compacted as engineered fill. In addition, all cavities and void space resulting from the shoring removal activity shall be backfilled with a cementitious grout under pressure to backfill the voids created by removal of the shoring. All voids resulting from removal of shoring shall be backfilled.

8.10.5 Excavation stability should be monitored by the contractor. Slope gradient estimates provided in this report do not relieve the contractor of the responsibility for excavation safety. In the event that tension cracks or distress to the structure occurs, during or after excavation, the owner should be notified immediately and the contractor should take appropriate actions to minimize further damage or injury.

8.11 Utility Trenches

8.11.1 The utility trench subgrade should be prepared by excavation of a neat trench without disturbance to the bottom of the trench. If sidewalls are unstable, the Contractor shall either slope the excavation to create a stable sidewall or shore the excavation. All trench subgrade soils disturbed during excavation, such as by accidental over-excavation of the trench bottom, or by excavation equipment with cutting teeth, should be compacted to a minimum of 92 percent relative compaction prior to placement of bedding material. The Contractor is responsible for notifying Moore Twining when these conditions occur and arrange for Moore Twining to observe and test these areas prior to placement of pipe bedding. The Contractor shall use such equipment as necessary to achieve a smooth undisturbed native soil surface at the bottom of the trench with no loose material at the bottom of the trench. The Contractor shall either remove all loose soils or compact the loose soils as engineered fill prior to placement of bedding, pipe and backfill of the trench.

8.11.2 The trench width, type of pipe bedding, the type of initial backfill, and the compaction requirements of bedding and initial backfill material for utility trenches (storm drainage, sewer, water, electrical, gas, cable, phone, irrigation, etc.) should be specified by the project Civil Engineer or applicable design professional in compliance with the manufacturer's requirements, governing agency requirements and this report, whichever is more stringent. The contractor is responsible for contacting the governing agency to determine the requirements for pipe bedding, pipe zone and final backfill. The contractor is responsible for notifying the Owner and Moore Twining if the requirements of the agency and this report conflict, the most stringent applies. For flexible polyvinylchloride (PVC) pipes, these requirements should be in accordance with the manufacturer's requirements or ASTM D-2321, whichever is more stringent, assuming a hydraulic gradient exists (gravel, rock, crushed gravel, etc. cannot be used as backfill on the project). The width of the trench should provide a minimum clearance of 8 inches between the sidewalls of the pipe and the trench, or as necessary to provide a trench width that is 12 inches greater than 1.25 times the outside diameter of the pipe, whichever is greater. As a minimum, the pipe bedding should consist of 4 inches of compacted (92 percent relative compaction) select sand with a minimum sand equivalent of 30 and meeting the following requirements: 100 percent passing the 1/4 inch sieve, a minimum of 90 percent passing the No. 4 sieve and not more than 10

percent passing the No. 200 sieve. The haunches and initial backfill (12 inches above the top of pipe) should consist of a select sand meeting these sand equivalent and gradation requirements that is placed in maximum 6-inch thick lifts and compacted to a minimum relative compaction of 92 percent using hand equipment. The final fill (12 inches above the pipe to the surface) should be on-site or imported, non-expansive materials moisture conditioned to between optimum and three (3) percent above optimum moisture content and compacted to a minimum of 92 percent relative compaction, except the upper 12 inches of trench backfill in pavement areas should be compacted to a minimum of 95 percent relative compaction. The project civil engineer should take measures to control migration of moisture in the trenches such as slurry collars, etc.

8.11.3 If ribbed or corrugated HDPE or metal pipes are used on the project, then the backfill should consist of select sand with a minimum sand equivalent of 30, 100 percent passing the 1/4 inch sieve, a minimum of 90 percent passing the No. 4 sieve and not more than 10 percent passing the No. 200 sieve. The sand shall be placed in maximum 6-inch thick lifts, extending to at least 1 foot above the top of pipe, and compacted to a minimum relative compaction of 92 percent using hand equipment. Prior to placement of the pipe, as a minimum, the pipe bedding should consist of 4 inches of compacted (92 percent relative compaction) sand meeting the above sand equivalent and gradation requirements for select sand bedding. The width of the trench should meet the requirements of ASTM D2321 listed in table below (minimum manufacturer requirements), or to a minimum of 24 inches, whichever is greater. As an alternative to the trench width recommended above and the use of the select sand bedding, a lesser trench width for HDPE pipes may be used if the trench is backfilled with a 2-sack sand-cement slurry from the bottom of the trench to 1 foot above the top of the pipe.

Table No. 8
Minimum Trench Widths for HDPE Pipe with Sand Bedding Initial Backfill

Inside Diameter of HDPE Pipe (inches)	Outside Diameter of HDPE Pipe (inches)	Minimum Trench Width (inches) per ASTM D2321
12	14.2	30
18	21.5	39
24	28.4	48
36	41.4	64
48	55	80

8.11.4 Open graded gravel and rock material such as ¾-inch crushed rock or ½-inch crushed rock should not be used as backfill including trench backfill. In the event gravel or rock is required by a regulatory agency for use as backfill (Contractor to obtain a letter from the agency stating the requirement for rock and/or gravel as backfill), all open graded materials shall be fully encased in a geotextile filter fabric, such as Mirafi 140N, to prevent migration of fine grained soils into the porous material. Gravel and rock cannot be used without the written approval of Moore Twining. If the contractor elects to use crushed rock (and if approved by Moore Twining), the contractor will be responsible for slurry cut off walls at the locations directed by Moore Twining. Crushed rock should be placed in thin (less than 8 inch) lifts and densified with a minimum of three (3) passes using a vibratory compactor.

8.11.5 Utility trench backfill placed in or adjacent to building areas, exterior slabs or pavements should be placed in 8 inch lifts, moisture conditioned to between optimum and three (3) percent above the optimum moisture content and compacted to at least 92 percent of the maximum dry density as determined by ASTM Test Method D1557, except the upper 12 inches of trench backfill in pavement areas should be compacted to a minimum of 95 percent relative compaction. Lift thickness can be increased if the contractor can demonstrate the minimum compaction requirements can be achieved. The contractor should use appropriate equipment and methods to avoid damage to utilities and/or structures during placement and compaction of the backfill materials.

8.11.6 On-site soils and approved imported engineered fill may be used as final backfill (12 inches above the pipe to the ground surface) in trenches.

8.11.7 Jetting of trench backfill is not allowed to compact the backfill soils.

8.11.8 Where utility trenches extend from the exterior to the interior limits of a building, lean concrete should be used as backfill material for a minimum distance of 2 feet laterally on each side of the exterior building line to prevent the trench from acting as a conduit to exterior surface water.

8.11.9 Storm drains and/or utility lines should be designed to be "watertight." If encountered, leaks should be immediately repaired. Leaking storm drain and/or utility lines could result in trench failure, sloughing and/or soil movement causing damage to surface and subsurface structures, pavements, flatwork, etc. In addition, landscaping irrigation systems should be monitored for leaks. The Contractor is required to video inspect or pressure test the wet utilities prior to placement of foundations, slabs-on-grade or pavements to verify that the pipelines are constructed properly and are "watertight." The Contractor shall provide the Owner a copy of the results of the testing. The Contractor is required to repair all noted deficiencies at no cost to the owner.

8.11.10 The plans should note that all utility trenches, including electrical lines, irrigation lines, etc. should be compacted to a minimum relative compaction of 92 percent per ASTM D-1557 except for the upper 12 inches below pavements which should be compacted to at least 95 percent relative compaction.

8.11.11 Utility trenches should not be constructed within a zone defined by a line that extends at an inclination of 2 horizontal to 1 vertical downward from the bottom of building foundations.

8.12 Corrosion Protection

8.12.1 Based on National Association of Corrosion Engineers (NACE) corrosion severity ratings listed in the Table No. 1 and the analytical results of sample analyses indicate the one sample tested had a resistivity value of 3,100 ohms-centimeter. This is consistent with data for two samples that had a resistivity values of 4,269 and 4,402 ohms-centimeter that were previously tested in 2019 on the proposed adjacent McDonald's parcel during Moore Twining's investigation for the previously planned Circle K development. Based on the resistivity values, the soils exhibit a "corrosive" corrosion potential. Therefore, buried metal objects should be protected in accordance with the manufacturer's recommendations based on a "corrosive" corrosion potential. The evaluation was limited to the effects of soils to metal objects; corrosion due to other potential sources, such as stray currents and groundwater, was not evaluated. If piping or concrete are placed in contact with deeper soils or engineered fill, these soils should be analyzed to evaluate the corrosion potential of these soils.

8.12.2 Corrosion of concrete due to sulfate attack is not anticipated based on the concentration of sulfates determined for the near-surface soils of 0.0026 percent by dry weight. According to provisions of ACI 318, section 4.3 , the sulfate concentration falls in the negligible classification (0.00 to 0.10 percent by weight) for concrete. Therefore, no restrictions are required regarding the type, water-to-cement ratio, or strength of the concrete used for foundation and slabs due to the sulfate content. However, a low water to cement ratio of 0.52 or less is recommended for slabs on grade as recommended in the "Interior Slab on Grade" section of this report.

8.12.3 These soil corrosion data should be provided to the manufacturers or suppliers of materials that will be in contact with soils (pipes or ferrous metal objects, etc.) to provide assistance in selecting the protection and materials for the proposed products or materials. If the manufacturers or suppliers cannot determine if materials are compatible with the soil corrosion conditions, a professional consultant, i.e., a corrosion engineer, with experience in corrosion protection should be consulted to design parameters. Moore Twining is not a corrosion engineer; thus, cannot provide recommendations for mitigation of corrosive soil conditions. It is recommended that a corrosion engineer be consulted for the site specific conditions.

9.0 DESIGN CONSULTATION

9.1 Moore Twining should be retained to review those portions of the contract drawings and specifications that pertain to earthwork operations, pavements and foundations prior to finalization to determine whether they are consistent with our recommendations. This service is not part of this current contractual agreement..

9.2 It is the client's responsibility to provide plans and specification documents for our review prior to their issuance for construction bidding purposes.

9.3 If Moore Twining is not retained for the plan review, we assume no liability for the misinterpretation of our conclusions and recommendations. This review is documented by a formal plan/specification review report provided by Moore Twining.

10.0 CONSTRUCTION MONITORING

10.1 It is recommended that Moore Twining be retained to observe the excavation, earthwork, and foundation phases of work to determine that the subsurface conditions are compatible with those used in the analysis and design.

10.2 Moore Twining can conduct the necessary observation and field testing to provide results so that action necessary to remedy indicated deficiencies can be taken in accordance with the plans and specifications. Upon completion of the work, a written summary of our observations, field testing and conclusions will be provided regarding the conformance of the completed work to the intent of the plans and specifications. This service is not, however, part of this current contractual agreement.

10.3 In the event that the earthwork operations for this project are conducted such that the construction sequence is not continuous, (or if construction operations disturb the surface soils) it is recommended that the exposed subgrade that will receive floor slabs be tested to verify adequate compaction and/or moisture conditioning. If adequate compaction or moisture contents are not verified, the fill soils should be over-excavated, scarified, moisture conditioned and compacted are recommended in the Recommendations of this report.

10.4 The construction monitoring is an integral part of this investigation. This phase of the work provides Moore Twining the opportunity to verify the subsurface conditions interpolated from the soil borings and make alternative recommendations if the conditions differ from those anticipated.

10.5 If Moore Twining is not afforded the opportunity to provide engineering observation and field-testing services during construction activities related to earthwork, foundations, pavements and trenches; then, Moore Twining will not be responsible for compliance of any aspect of the construction with our recommendations or performance of the structures or improvements if the recommendations of this report are not followed. It is recommended that if a firm other than Moore Twining is selected to conduct these services that they provide evidence of professional liability insurance of at least $3,000,000 and review this report. After their review, the firm should, in writing, state that they understand the conclusions and recommendations of this report and agree to conduct sufficient observations and testing to ensure the construction complies with this report's recommendations. Moore Twining should be notified, in writing, if another firm is selected to conduct observations and field-testing services prior to construction.

10.6 Upon the completion of work, a final report should be prepared by Moore Twining. This report is essential to ensure that the recommendations presented are incorporated into the project construction, and to note any deviations from the project plans and specifications. The client should notify Moore Twining upon the completion of work to prepare a final report summarizing the observations during site preparation activities relative to the recommendations of this report. This service is not, however, part of this current contractual agreement.

11.0 NOTIFICATION AND LIMITATIONS

11.1 The conclusions and recommendations presented in this report are based on the information provided regarding the proposed construction, and the results of the field and laboratory investigation, combined with interpolation of the subsurface conditions between boring locations. The nature and extent of subsurface variations between borings may not become evident until construction.

11.2 If variations or undesirable conditions are encountered during construction, Moore Twining should be notified promptly so that these conditions can be reviewed and our recommendations reconsidered where necessary. It should be noted that unexpected conditions frequently require additional expenditures for proper construction of the project.

11.3 If the proposed construction is relocated or redesigned, or if there is a substantial lapse of time between the submission of our report and the start of work (over 12 months) at the site, or if conditions have changed due to natural cause or construction operations at or adjacent to the site, the conclusions and recommendations contained in this report should be considered invalid unless the changes are reviewed and our conclusions and recommendations modified or approved in writing.

11.4 Changed site conditions, or relocation of proposed structures, may require additional field and laboratory investigations to determine if our conclusions and recommendations are applicable considering the changed conditions or time lapse.

11.5 The conclusions and recommendations contained in this report are valid only for the project discussed in Section 3.3, Anticipated Construction. The use of the information and recommendations contained in this report for structures on this site not discussed herein or for structures on other sites not discussed in this report is not recommended. The entity or entities that use or cause to use this report or any portion thereof for other structures or site not covered by this report shall hold Moore Twining, its officers and employees harmless from any and all claims and provide Moore Twining's defense in the event of a claim.

11.6 This report is issued with the understanding that it is the responsibility of the client to transmit the information and recommendations of this report to developers, owners, buyers, architects, engineers, designers, contractors, subcontractors, and other parties having interest in the project so that the steps necessary to carry out these recommendations in the design, construction and maintenance of the project are taken by the appropriate party.

11.7 This report presents the results of a geotechnical engineering investigation only and should not be construed as an environmental audit or study.

11.8 Our professional services were performed, our findings obtained, and our recommendations prepared in accordance with generally-accepted engineering principles and practices. This warranty is in lieu of all other warranties either expressed or implied.

11.9 Reliance on this report by a third party (i.e., that is not a party to our written agreement) is at the party's sole risk. If the project and/or site are purchased by another party, the purchaser must obtain written authorization and sign an agreement with Moore Twining in order to rely upon the information provided in this report for design or construction of the project.

We appreciate the opportunity to be of service to Fountainhead Development. If you have any questions regarding this report, or if we can be of further assistance, please contact us at your convenience.

Sincerely,
MOORE TWINING ASSOCIATES, INC.
Geotechnical Engineering Division

Allen H. Harker, CEG
Certified Engineering Geologist

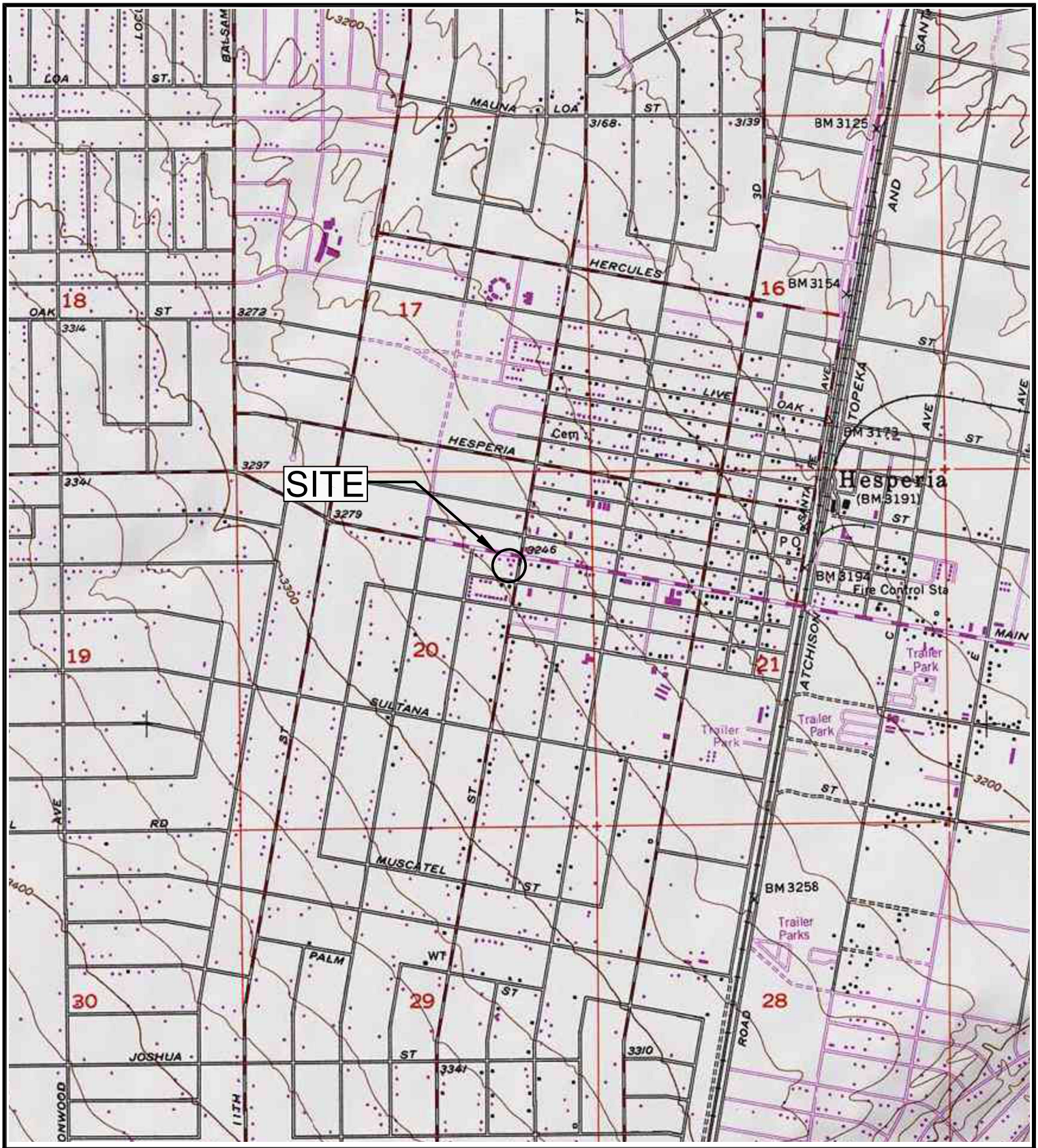
Harry D. Moore, RGE
President

APPENDIX A

DRAWINGS

Drawing No. 1 - Site Location Map

Drawing No. 2 - Test Boring Location Map



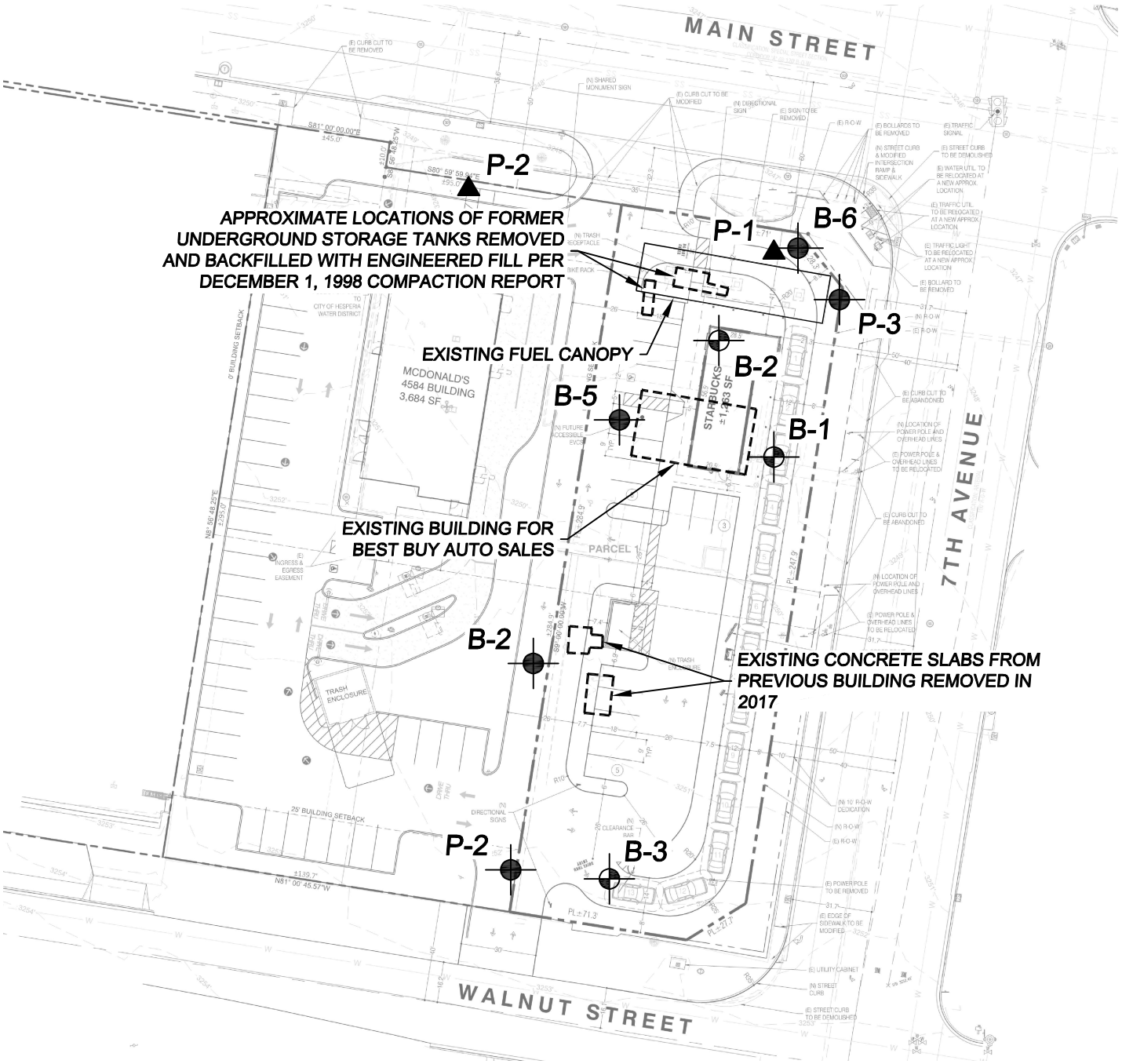
SOURCE: U.S.G.S. TOPOGRAPHIC MAP, 7 ½ MINUTE SERIES
HESPERIA, CALIFORNIA QUADRANGLE 1978, PHOTOREVISED 1980

0 2000
APPROXIMATE SCALE
IN FEET

SITE LOCATION MAP
PROPOSED STARBUCKS
SOUTHWEST CORNER OF MAIN STREET AND 7TH AVENUE
HESPERIA, CALIFORNIA

FILE NO.: 33201-01-01	DATE: 11/08/2024
DRAWN BY: RM	APPROVED BY:
PROJECT NO. H33201.01	DRAWING NO. 1

MOORE TWINING ASSOCIATES, INC.



APPROXIMATE TEST BORING LOCATION

APPROXIMATE PERCOLATION TEST LOCATION

APPROXIMATE LOCATIONS OF PREVIOUS BORINGS DRILLED BY MOORE TWINING IN 2018 WITHIN OR NEAR THE STARBUCKS PARCEL

N

0 60

APPROXIMATE SCALE IN FEET

TEST BORING AND PERCOLATION TEST BORING LOCATION MAP
PROPOSED STARBUCKS
SOUTHWEST CORNER OF MAIN STREET AND 7TH AVENUE
HESPERIA, CALIFORNIA

FILE NO. 33201-01-02	DATE DRAWN: 11/08/2024
DRAWN BY: RM	APPROVED BY:
PROJECT NO. H33201.01	DRAWING NO. 2

MOORE TWINING ASSOCIATES, INC.

APPENDIX B

LOGS OF BORINGS

This appendix contains the final logs of borings. These logs represent our interpretation of the contents of the field logs and the results of the field and laboratory tests.

The logs and related information depict subsurface conditions only at these locations and at the particular time designated on the logs. Soil conditions at other locations may differ from conditions occurring at these test boring locations. Also, the passage of time may result in changes in the soil conditions at these test boring locations.

In addition, an explanation of the abbreviations used in the preparation of the logs and a description of the Unified Soil Classification System are provided at the end of Appendix B.

MOORE TWINING ASSOCIATES, INC.

Test Boring: B-1

Project: Proposed Starbucks in Hesperia

Project Number: H33201.01

Drilled By: 2R Drilling

Drill Type: CME 75

Auger Type: 8" O.D. Hollow Stem Augers

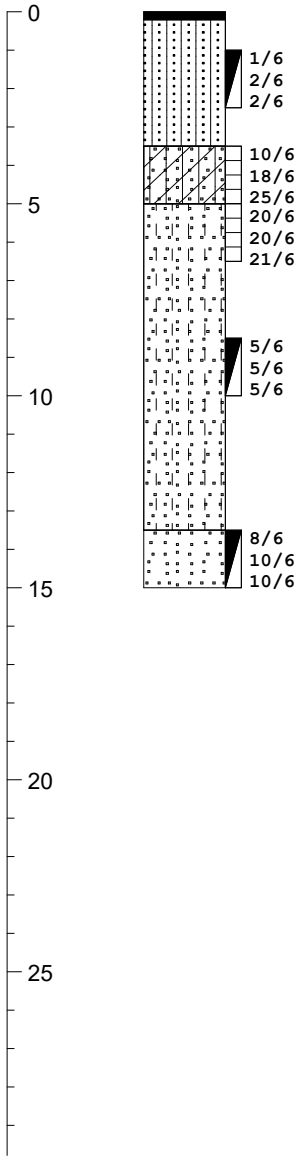
Hammer Type: 140 Pound Auto Trip

Logged By: A.V.

Date: October 23, 2024

Elevation: N/A

Depth to Groundwater First Encountered During Drilling: N/E



ELEVATION/ DEPTH (feet)	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
	AC	Asphalt Concrete = 2.5 inches			
	SM	SILTY SAND; loose, moist, fine to medium grained, brown, trace gravel		4	5.0
	SC-SM	SILTY, CLAYEY SAND; medium dense, moist, fine to coarse grained, brown, with a little fine gravel	From 3.5-5': DD = 126.5 pcf Gravel = 5.2% Sand = 74.4% -200 = 20.4% LL = 21 PI = 6	43	6.2
	SP-SM	POORLY GRADED SAND WITH SILT; medium dense, moist, fine to coarse grained, brown, with a little fine gravel		41	6.0
		At 8.5 feet - Loose, light brown	From 5-6.5': DD = 119.2 pcf	10	
			From 8.5-10': Gravel = 5.4% Sand = 84.1% -200 = 10.5% LL = Non-viscous PI = Non-plastic		
	SP	POORLY GRADED SAND; medium dense, moist, fine to coarse grained, light brown, trace fine gravel		20	
		Bottom of Boring B-1 at 15 feet			

Figure Number 1

MOORE TWINING ASSOCIATES, INC.

Test Boring: B-2

Project: Proposed Starbucks in Hesperia

Project Number: H33201.01

Drilled By: 2R Drilling

Drill Type: CME 75

Auger Type: 8" O.D. Hollow Stem Augers

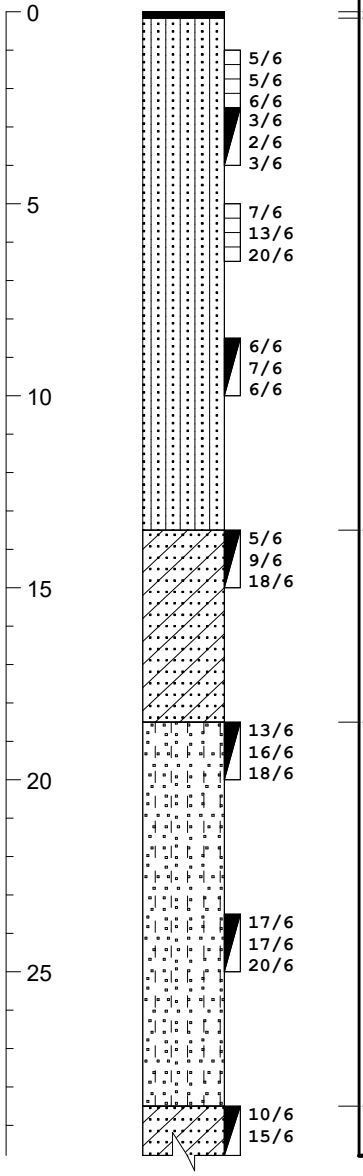
Hammer Type: 140 Pound Auto Trip

Logged By: A.V.

Date: October 23, 2024

Elevation: N/A

Depth to Groundwater First Encountered During Drilling: N/E



ELEVATION/ DEPTH (feet)	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
	AC	Asphalt Concrete = 2 inches			
	SM	SILTY SAND; loose, damp, fine to medium grained, brown, trace subangular gravel	From 0.2-5': pH = 7.5 SR = 3,100 ohm-cm Cl = 0.0021% SS = 0.0026%	11	3.6
				5	
		Medium dense, moist	From 1-2.5': DD = 113.6 pcf ø = 33° c = 130 psf	33	6.0
		Fine to coarse grained, with trace clay			7.1
			From 5-6.5': DD = 116.0 pcf ø = 41° c = 220 psf	13	
	SC	CLAYEY SAND; medium dense, moist, fine to medium grained, brown, trace coarse gravel		27	6.5
	SP-SM	POORLY GRADED SAND WITH SILT; dense, moist, fine to coarse grained, brown		34	
				37	7.8
	SC	CLAYEY SAND; medium dense,	From 28.5-30': Gravel = 5.1%	25	10.9

Figure Number 2

MOORE TWINING ASSOCIATES, INC.

Test Boring: B-2

Project: Proposed Starbucks in Hesperia

Project Number: H33201.01

Drilled By: 2R Drilling

Drill Type: CME 75

Auger Type: 8" O.D. Hollow Stem Augers

Hammer Type: 140 Pound Auto Trip

Logged By: A.V.

Date: October 23, 2024

Elevation: N/A

Depth to Groundwater First Encountered During Drilling: N/E

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
30	10/6		moist, fine to coarse grained, brown, with a little fine gravel	Sand = 65.2% -200 = 29.7% LL = 25 PI = 8		
35	11/6 15/6 17/6	SP	POORLY GRADED SAND; dense, moist, fine to coarse grained, light brown		32	6.8
40	12/6 16/6 22/6				38	
45	7/6 14/6 18/6	SM	SILTY SAND; dense, moist, fine grained, brown		32	12.1
		SW-SM	WELL GRADED SAND WITH SILT; dense, damp, fine to coarse grained, brown, with some fine gravel			4.4
50	11/6 19/6 20/6			From 48.5-50': Gravel = 11.6% Sand = 79.7% -200 = 8.7%	39	
55	15/6 19/6 30/6		Increase in coarse sand content		49	
	17/6 18/6				43	

Figure Number 2

MOORE TWINING ASSOCIATES, INC.

Test Boring: B-2

Project: Proposed Starbucks in Hesperia

Project Number: H33201.01

Drilled By: 2R Drilling

Drill Type: CME 75

Auger Type: 8" O.D. Hollow Stem Augers

Hammer Type: 140 Pound Auto Trip

Logged By: A.V.

Date: October 23, 2024

Elevation: N/A

Depth to Groundwater First Encountered During Drilling: N/E

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
60	25/6		Bottom of Boring B-2 at 60 feet			
65						
70						
75						
80						
85						

Figure Number 2

MOORE TWINING ASSOCIATES, INC.

Test Boring: B-3

Project: Proposed Starbucks in Hesperia

Project Number: H33201.01

Drilled By: 2R Drilling

Drill Type: CME 75

Auger Type: 8" O.D. Hollow Stem Augers

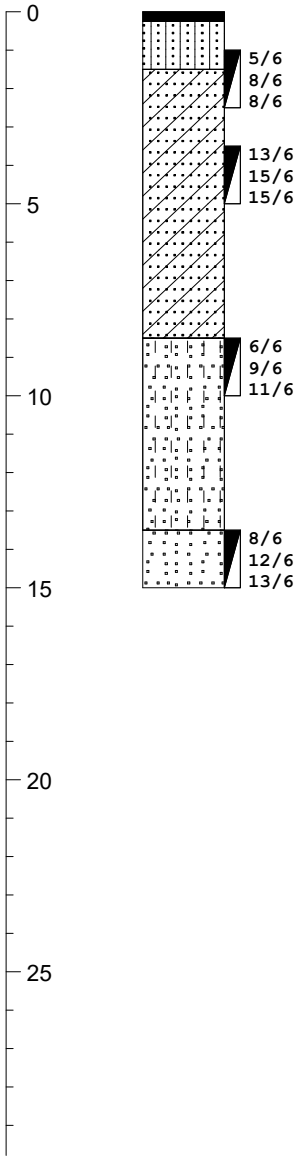
Hammer Type: 140 Pound Auto Trip

Logged By: A.V.

Date: October 23, 2024

Elevation: N/A

Depth to Groundwater First Encountered During Drilling: N/E



ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
		AC	Asphalt Concrete = 3 inches			
		SM	SILTY SAND; medium dense, moist, fine to medium grained, brown	From 1-5': R-value = 37	16	7.8
		SC	At 1.5 feet - CLAYEY SAND; medium dense, moist, fine to coarse grained, brown, trace fine gravel At 3.5 feet - Weakly cemented		30	
		SP-SM	POORLY GRADED SAND WITH SILT; medium dense, moist, fine to coarse grained, brown, trace fine gravel		20	
		SP	POORLY GRADED SAND; medium dense, moist, fine to coarse grained, light brown		25	
			Bottom of Boring B-3 at 15 feet			

Figure Number 3

MOORE TWINING ASSOCIATES, INC.

Test Boring: P-1

Project: Proposed Starbucks in Hesperia

Project Number: H33201.01

Drilled By: 2R Drilling

Drill Type: CME 75

Auger Type: 8" O.D. Hollow Stem Augers

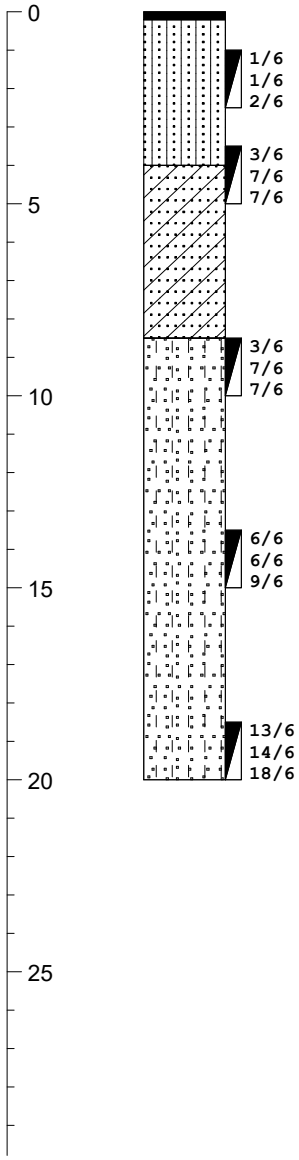
Hammer Type: 140 Pound Auto Trip

Logged By: A.V.

Date: October 23, 2024

Elevation: N/A

Depth to Groundwater First Encountered During Drilling: N/E



ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
		AC	Asphalt Concrete = 2.5 inches			
		SM	SILTY SAND; very loose, damp, fine to coarse grained, brown, trace gravel		3	4.2
			Medium dense		14	8.1
		SC	CLAYEY SAND; medium dense, moist, fine to coarse grained, brown, trace gravel			
		SP-SM	POORLY GRADED SAND WITH SILT; medium dense, moist, fine to coarse grained, brown, with trace fine gravel		14	5.5
					15	
			Dense, slight decrease in fines content	From 18.5-20': Gravel = 3.9% Sand = 84.9% -200 = 11.2% LL = Non-viscous PI = Non-plastic	32	5.3
			Bottom of Percolation Test Boring P-1 at 20 feet			

Figure Number 4

MOORE TWINING ASSOCIATES, INC.

Test Boring: P-2

Project: Proposed Starbucks in Hesperia

Project Number: H33201.01

Drilled By: 2R Drilling

Drill Type: CME 75

Auger Type: 8" O.D. Hollow Stem Augers

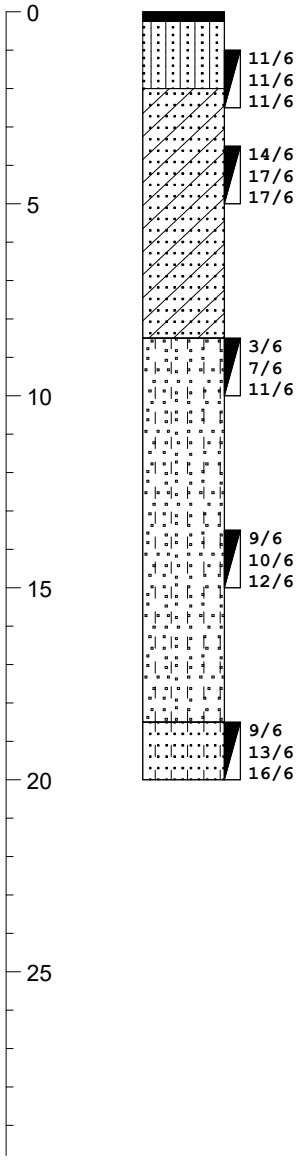
Hammer Type: 140 Pound Auto Trip

Logged By: A.V.

Date: October 23, 2024

Elevation: N/A

Depth to Groundwater First Encountered During Drilling: N/E



ELEVATION/ DEPTH (feet)	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
	AC	Asphalt Concrete = 3 inches			
	SM	SILTY SAND; medium dense, moist, fine to medium grained, brown		22	6.0
	SC	At 2 feet - CLAYEY SAND; medium dense, moist, fine to coarse grained, brown, trace fine gravel		34	6.1
		At 3.5 feet - Dense, with weak to moderate cementation			
	SP-SM	POORLY GRADED SAND WITH SILT; medium dense, damp, fine to coarse grained, brown, trace fine gravel and clay		18	3.5
				22	
	SW-SM	WELL GRADED SAND WITH SILT; medium dense, damp, fine to coarse grained, brown, with fine a little fine gravel	From 18.5-20': Gravel = 8.1% Sand = 82.0% -200 = 9.9%	29	4.1
		Bottom of Percolation Test Boring P-2 at 20 feet			

Figure Number 5

KEY TO SYMBOLS

Symbol	Description
Strata symbols	
	Asphalt Concrete
	SM: Silty sand
	SC-SM: Silty, Clayey Sand
	SP-SM: Poorly graded sand with silt
	SP: Poorly graded sand
	SC: Clayey sand
	SW-SM: Well graded sand with silt

Symbol	Description
Misc. Symbols	
	Boring continues
Soil Samplers	
	Standard penetration test
	California Modified split barrel ring sampler

Notes:

1. Exploratory borings were drilled on 10/23/24 using a CME 75 drill rig equpped with 8" outside diameter hollow stem augers.

2. Groundwater was not encountered during drilling of the borings.

3. Boring locations were measured or paced from existing site features.

4. These logs are subject to the limitations, conclusions, and recommendations in this report.

5. The "N-value" reported for the California Modified Split Barrel Sampler is the uncorrected field blow count. This value should not be interpreted as an SPT equivalent N-value.

6. Abbreviations used are:

DD = Natural dry density (pcf)	LL = Liquid Limit (%)
+4 = Percent retained on the No. 4 sieve (%)	PI = Plasticity Index (%)
-200 = Percent passing the No. 200 sieve (%)	EI = Expansion Index
Sand = Percent passing the No. 4 sieve and retained on No. 200 sieve (%)	Gravel = Percent passing 3-inch and retained on No. 4 sieve (%)
SR = Soil resistivity (ohm-cm)	
pH = Soil pH	SS = Soluble sulfates (%)
Cl = Soluble chlorides (%)	O.D. = Outside Diameter
ø = Internal Angle of Friction (degrrees)	c = Cohesion (psf)
pcf = pounds per cubic foot	psf = pounds per square foot
N/A = Not applicable	N/E = Not encountered

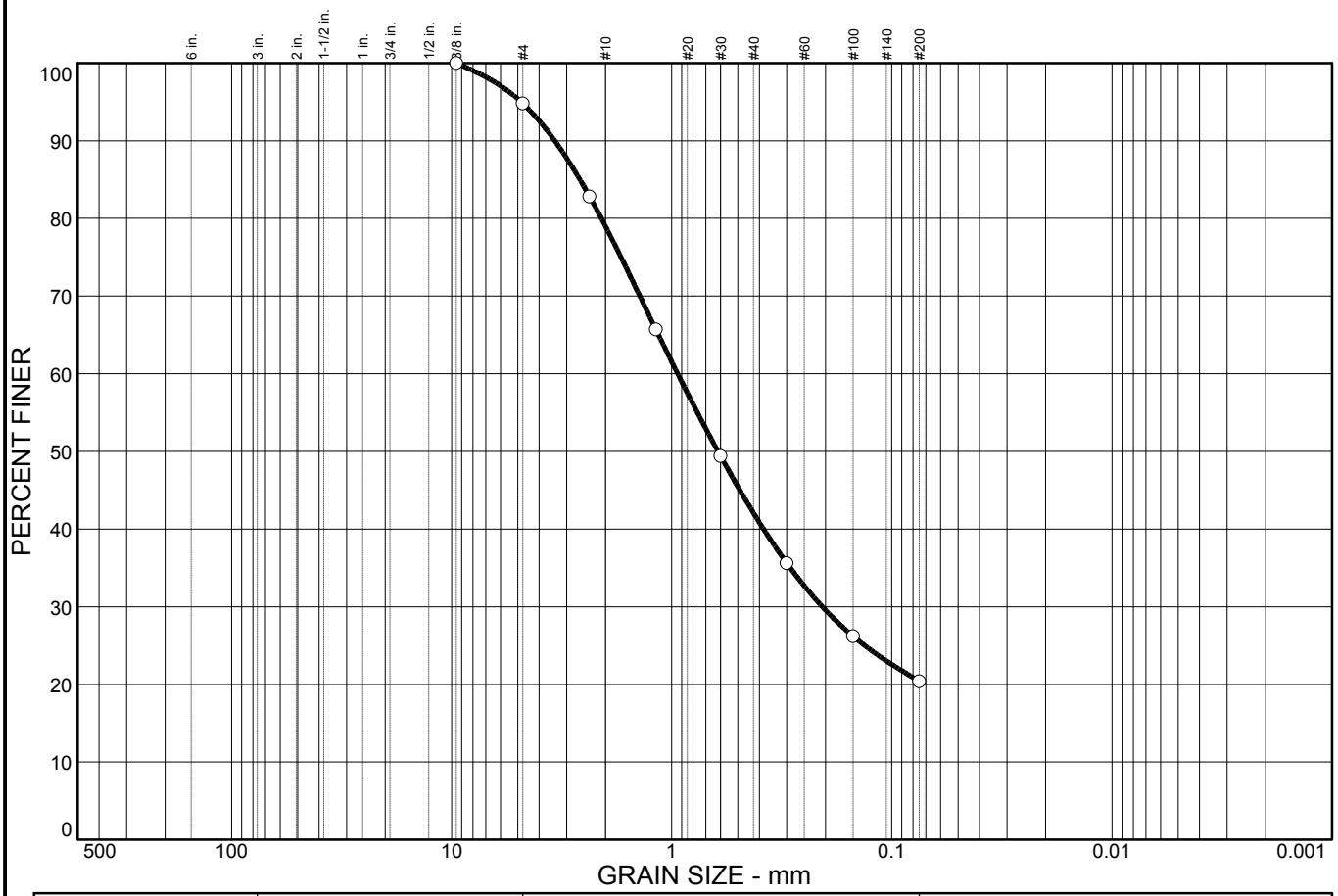
APPENDIX C

RESULTS OF LABORATORY TESTS

This appendix contains the individual results of the following tests. The results of the moisture content and dry density tests are included on the test boring logs in Appendix B. These data, along with the field observations, were used to prepare the final test boring logs in Appendix B.

These Included:	**To Determine:**
Moisture Content (ASTM D2216)	Moisture contents representative of field conditions at the time the sample was taken.
Dry Density (ASTM D2937)	Dry unit weight of sample representative of in-situ or in-place undisturbed condition.
Grain-Size Distribution (ASTM D422)	Size and distribution of soil particles, i.e., sand, gravel and fines (silt and clay).
Atterberg Limits (ASTM D4318)	Determines the moisture content where the soil behaves as a viscous material (liquid limit) and the moisture content at which the soil reaches a plastic state
Consolidation (ASTM 2435)	The amount and rate at which a soil sample compresses when loaded, and the influence of saturation on its behavior.
Direct Shear (ASTM D3080)	Soil shearing strength under varying loads and/or moisture conditions.
R-Value (ASTM D 2844)	The capacity of a subgrade or subbase to support a pavement section designed to carry a specified traffic load.
Sulfate Content (Cal Test 417)	Percentage of water-soluble sulfate as (SO4) in soil samples. Used as an indication of the relative degree of sulfate attack on concrete and for selecting the cement type.
Chloride Content (Cal Test 422)	Percentage of soluble chloride in soil. Used to evaluate the potential attack on encased reinforcing steel.
Resistivity (ASTM G187)	The potential of the soil to corrode metal.
pH (Cal Test 643)	The acidity or alkalinity of subgrade material.

Particle Size Distribution Report



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	5.2	15.8	36.9	21.7	20.4	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/8 in.	100.0		
#4	94.8		
#8	82.8		
#16	65.7		
#30	49.4		
#50	35.6		
#100	26.2		
#200	20.4		

* (no specification provided)

Material Description

Silty, clayey sand

Atterberg Limits

PL= 15 LL= 21 PI= 6

Coefficients

D_{85}= 2.61 D_{60}= 0.940 D_{50}= 0.616
D_{30}= 0.207 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= SC-SM AASHTO=

Remarks

Sample No.: B-1 **Source of Sample:** **Date:** 10/23/24
Location: **Elev./Depth:** 3.5-5'

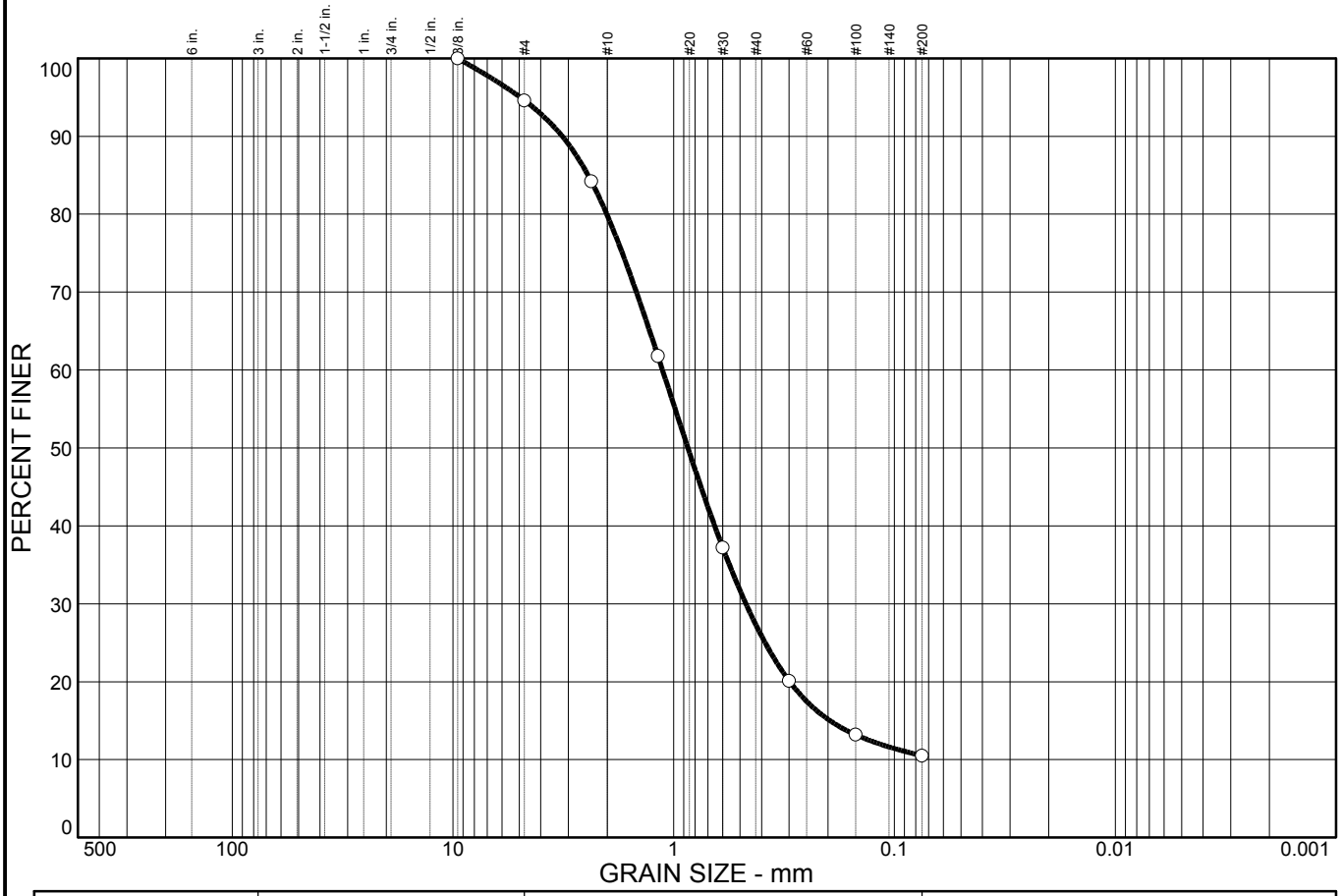
Moore Twining Associates, Inc.

Fresno, CA

Client: Fountainhead Development
Project: Proposed Starbucks

Project No: H33201.01 **Figure** 1

Particle Size Distribution Report



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	5.4	14.8	52.5	16.8	10.5	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/8 in.	100.0		
#4	94.6		
#8	84.2		
#16	61.8		
#30	37.2		
#50	20.1		
#100	13.2		
#200	10.5		

* (no specification provided)

Material Description

Poorly graded sand with silt

Atterberg Limits

PL= NP LL= NV PI= NP

Coefficients

D_{85}= 2.44 D_{60}= 1.12 D_{50}= 0.863
D_{30}= 0.471 D_{15}= 0.196 D_{10}=
C_u= C_c=

Classification

USCS= SP-SM AASHTO=

Remarks

Sample No.: B-1 **Source of Sample:** **Date:** 10/23/24
Location: **Elev./Depth:** 8.5-10'

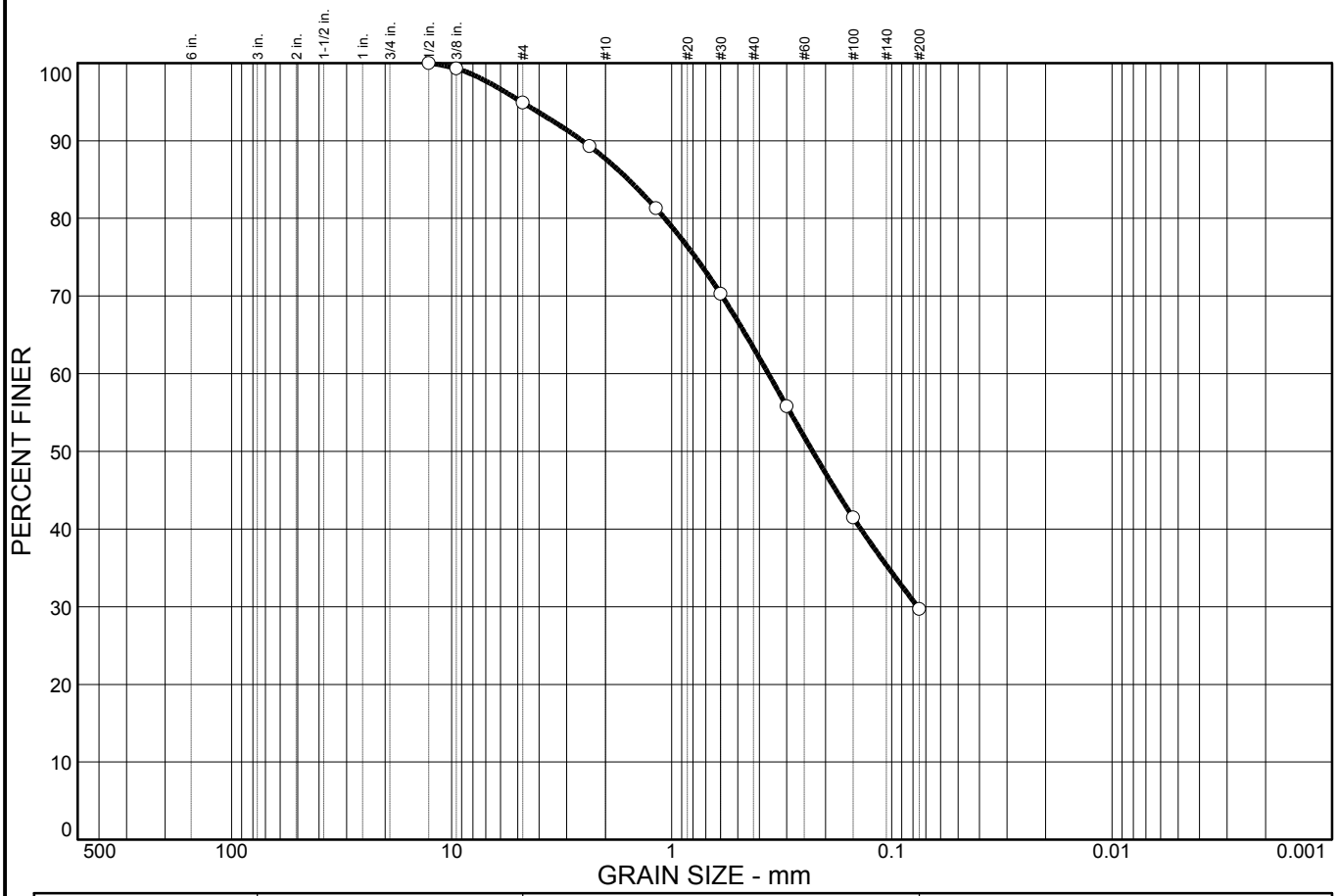
Moore Twining Associates, Inc.

Fresno, CA

Client: Fountainhead Development
Project: Proposed Starbucks

Project No: H33201.01 **Figure** 2

Particle Size Distribution Report



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	5.1	7.2	24.3	33.7	29.7	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1/2 in.	100.0		
3/8 in.	99.3		
#4	94.9		
#8	89.3		
#16	81.3		
#30	70.3		
#50	55.8		
#100	41.5		
#200	29.7		

* (no specification provided)

Material Description

Clayey sand

Atterberg Limits

PL= 17 LL= 25 PI= 8

Coefficients

D_{85}= 1.57 D_{60}= 0.364 D_{50}= 0.229
D_{30}= 0.0764 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= SC AASHTO=

Remarks

Sample No.: B-2 **Source of Sample:** **Date:** 10/23/24
Location: **Elev./Depth:** 28.5-30'

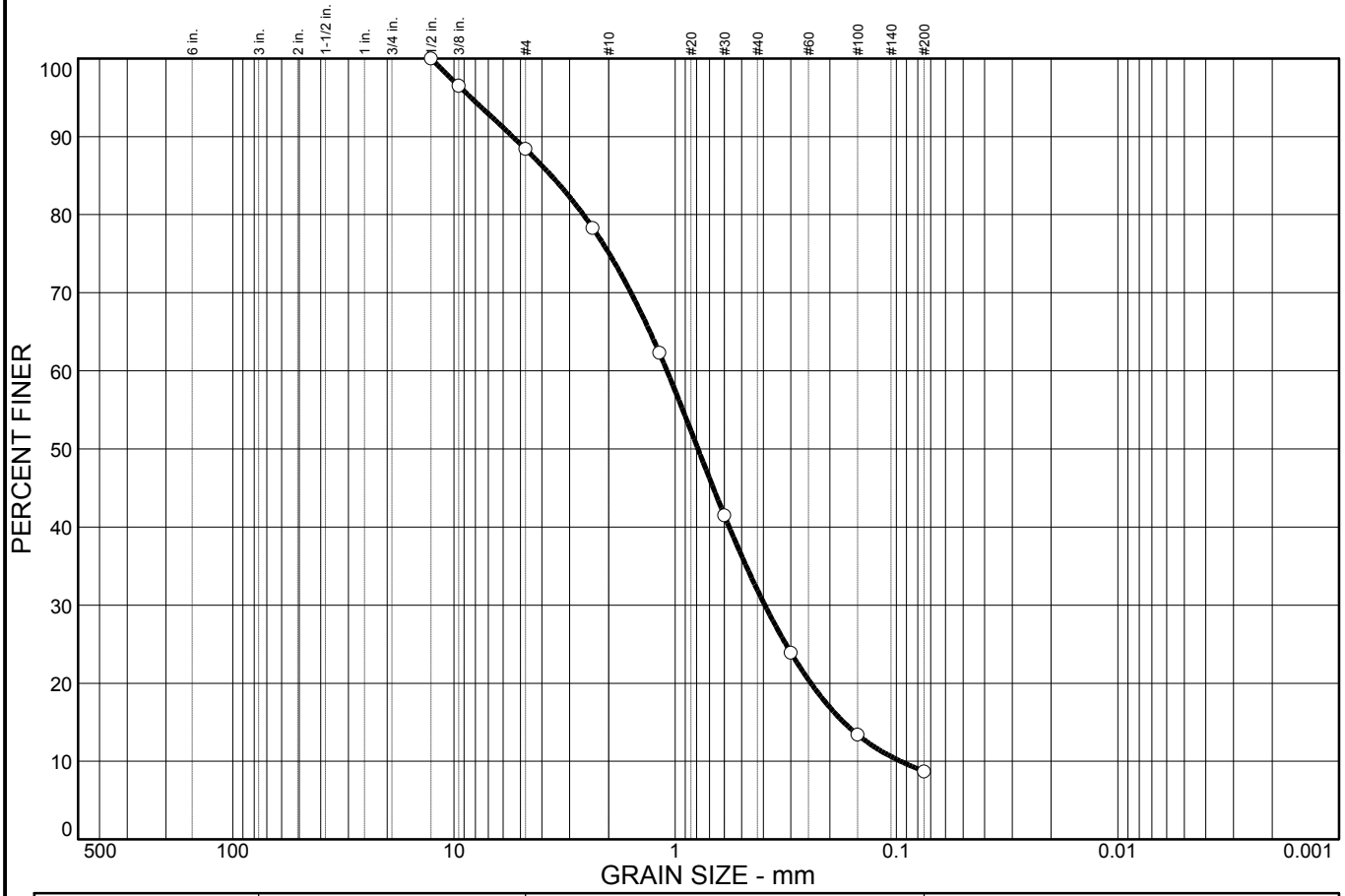
Moore Twining Associates, Inc.

Fresno, CA

Client: Fountainhead Development
Project: Proposed Starbucks

Project No: H33201.01 **Figure** 3

Particle Size Distribution Report



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	11.6	13.3	43.2	23.2	8.7	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1/2 in.	100.0		
3/8 in.	96.5		
#4	88.4		
#8	78.3		
#16	62.3		
#30	41.5		
#50	23.9		
#100	13.4		
#200	8.7		

* (no specification provided)

Material Description

Well-graded sand with silt

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 3.63 D_{60}= 1.09 D_{50}= 0.789
D_{30}= 0.394 D_{15}= 0.173 D_{10}= 0.0957
C_u= 11.40 C_c= 1.49

Classification

USCS= SW-SM AASHTO=

Remarks

Sample No.: B-2 **Source of Sample:** **Date:** 10/23/24
Location: **Elev./Depth:** 48.5-50'

Moore Twining Associates, Inc.

Fresno, CA

Client: Fountainhead Development
Project: Proposed Starbucks

Project No: H33201.01 **Figure** 4

Particle Size Distribution Report

% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	3.9	10.0	49.8	25.1	11.2	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/8 in.	100.0		
#4	96.1		
#8	88.8		
#16	73.7		
#30	49.3		
#50	25.6		
#100	15.0		
#200	11.2		

* (no specification provided)

Material Description

Poorly graded sand with silt

Atterberg Limits

PL= NP LL= NV PI= NP

Coefficients

D_{85}= 1.88 D_{60}= 0.792 D_{50}= 0.611
D_{30}= 0.351 D_{15}= 0.150 D_{10}=
C_u= C_c=

Classification

USCS= SP-SM AASHTO=

Remarks

Sample No.: P-1 **Source of Sample:** **Date:** 10/23/24
Location: **Elev./Depth:** 18.5-20'

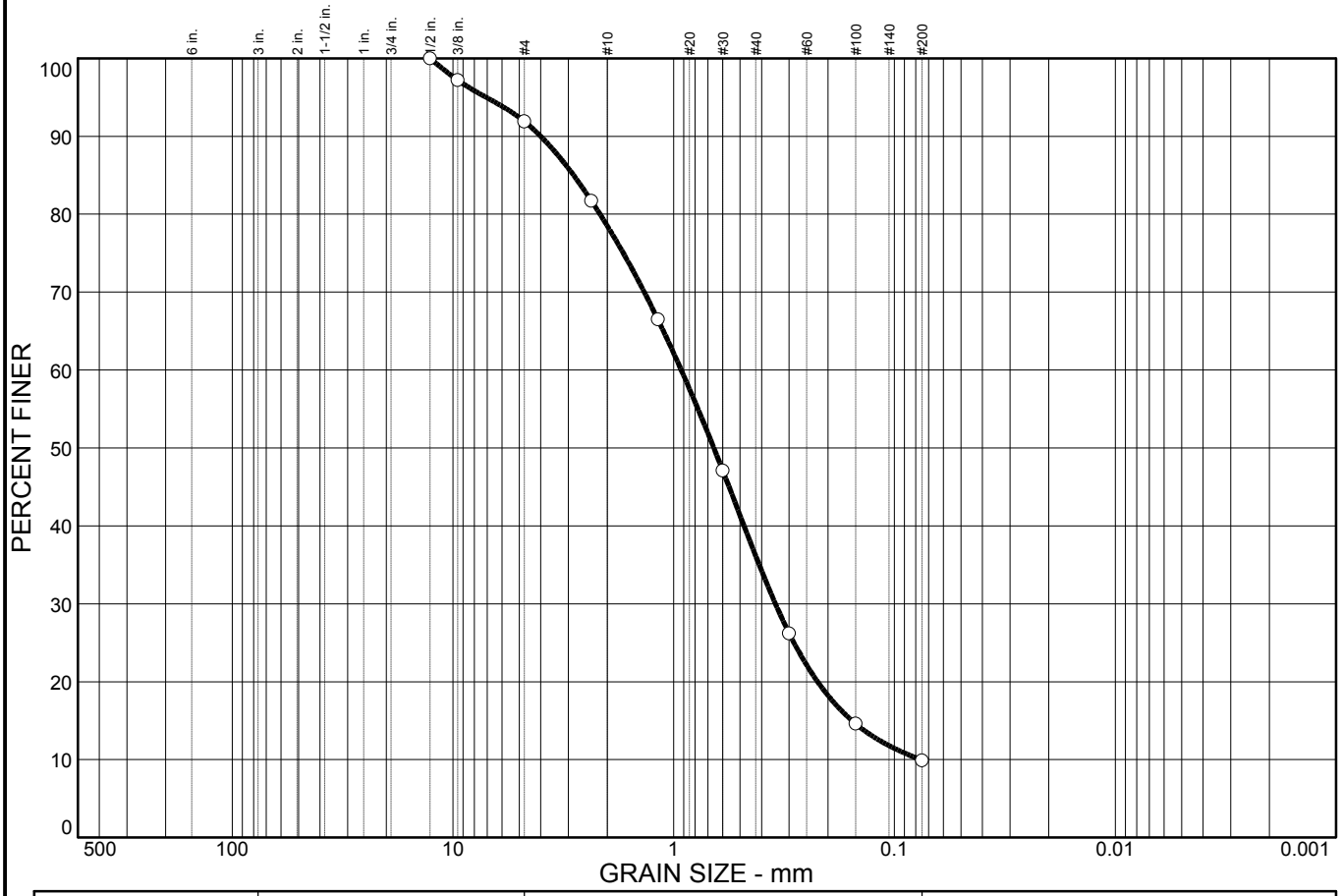
Moore Twining Associates, Inc.

Fresno, CA

Client: Fountainhead Development
Project: Proposed Starbucks

Project No: H33201.01 **Figure** 5

Particle Size Distribution Report



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	8.1	13.4	42.4	26.2	9.9	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1/2 in.	100.0		
3/8 in.	97.2		
#4	91.9		
#8	81.7		
#16	66.5		
#30	47.1		
#50	26.2		
#100	14.6		
#200	9.9		

* (no specification provided)

Material Description

Well-graded sand with silt

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 2.85 D_{60}= 0.925 D_{50}= 0.658
D_{30}= 0.346 D_{15}= 0.156 D_{10}= 0.0765
C_u= 12.09 C_c= 1.69

Classification

USCS= SW-SM AASHTO=

Remarks

Sample No.: P-2 **Source of Sample:** **Date:** 10/23/24
Location: **Elev./Depth:** 18.5-20'

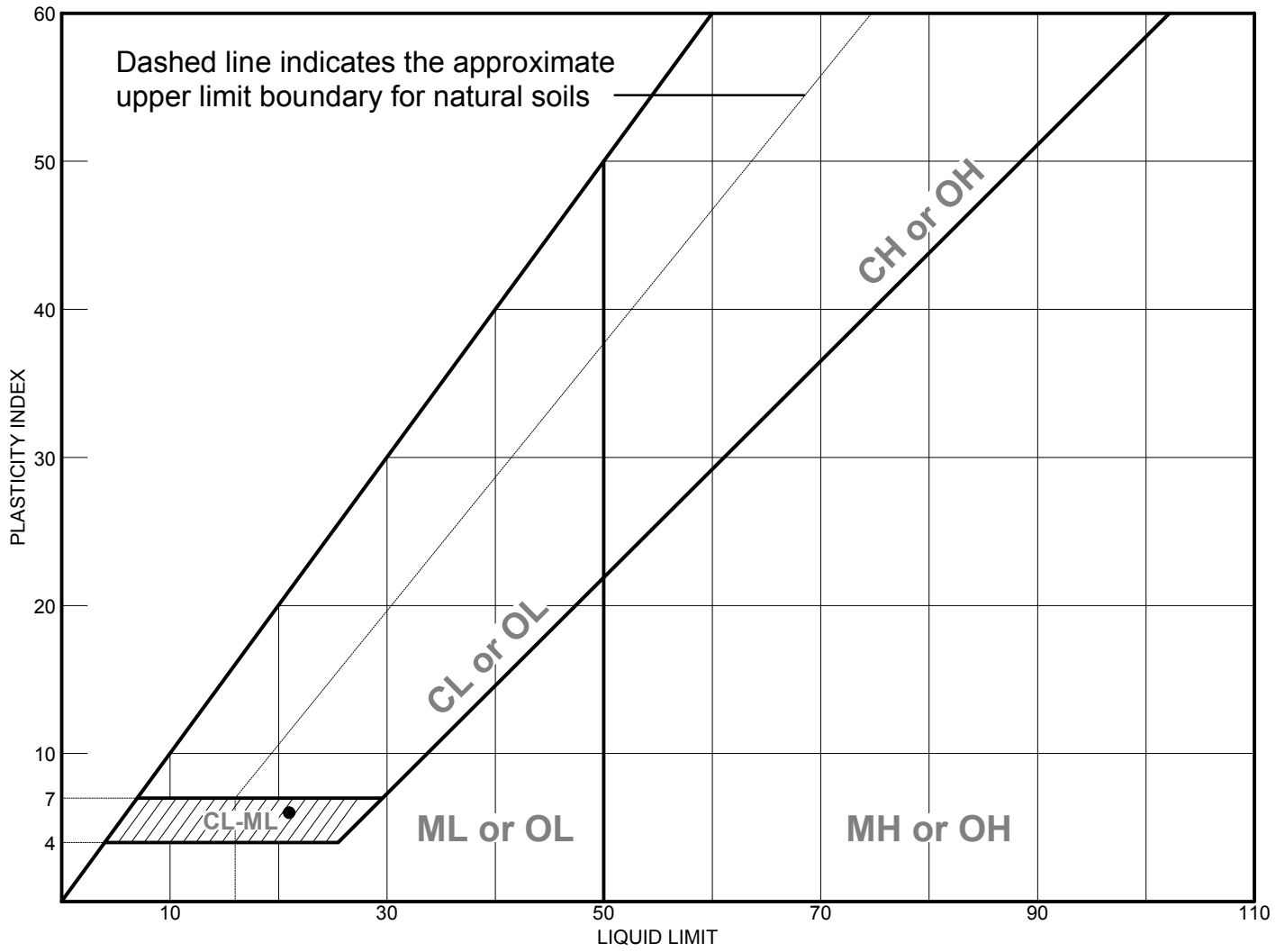
Moore Twining Associates, Inc.

Fresno, CA

Client: Fountainhead Development
Project: Proposed Starbucks

Project No: H33201.01 **Figure** 6

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Silty, clayey sand	21	15	6	42.1	20.4	SC-SM

Project No. H33201.01 **Client:** Fountainhead Development

Project: Proposed Starbucks

● **Source:** **Sample No.:** B-1 **Elev./Depth:** 3.5-5'

Remarks:

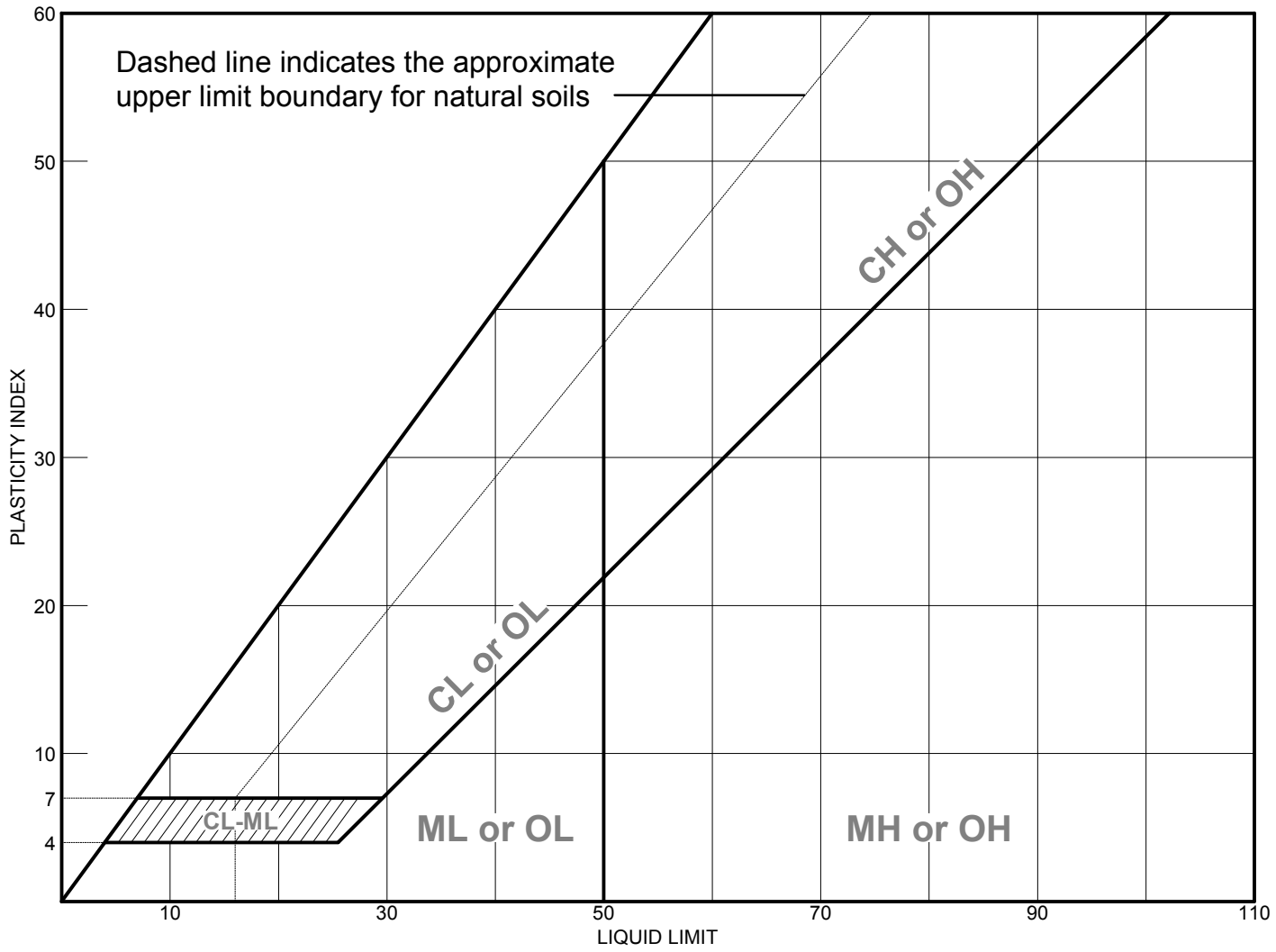
●

Moore Twining Associates, Inc.

Fresno, CA

Figure 7

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Poorly graded sand with silt	NV	NP	NP	27.3	10.5	SP-SM

Project No. H33201.01 **Client:** Fountainhead Development

Project: Proposed Starbucks

● **Source:** **Sample No.:** B-1 **Elev./Depth:** 8.5-10'

Remarks:

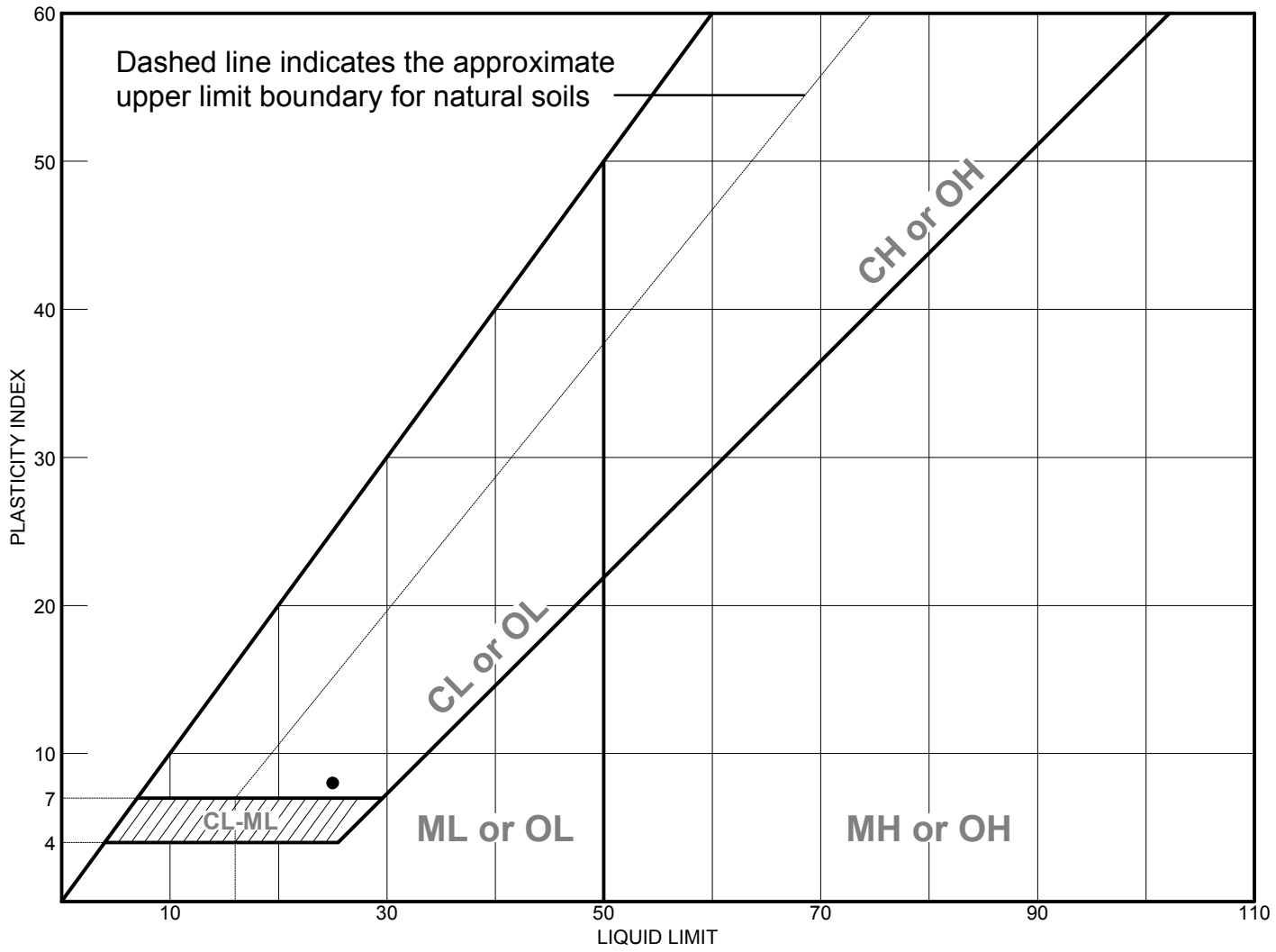
●

Moore Twining Associates, Inc.

Fresno, CA

Figure 8

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Clayey sand	25	17	8	63.3	29.7	SC

Project No. H33201.01 **Client:** Fountainhead Development

Project: Proposed Starbucks

● **Source:** **Sample No.:** B-2 **Elev./Depth:** 28.5-30'

Remarks:

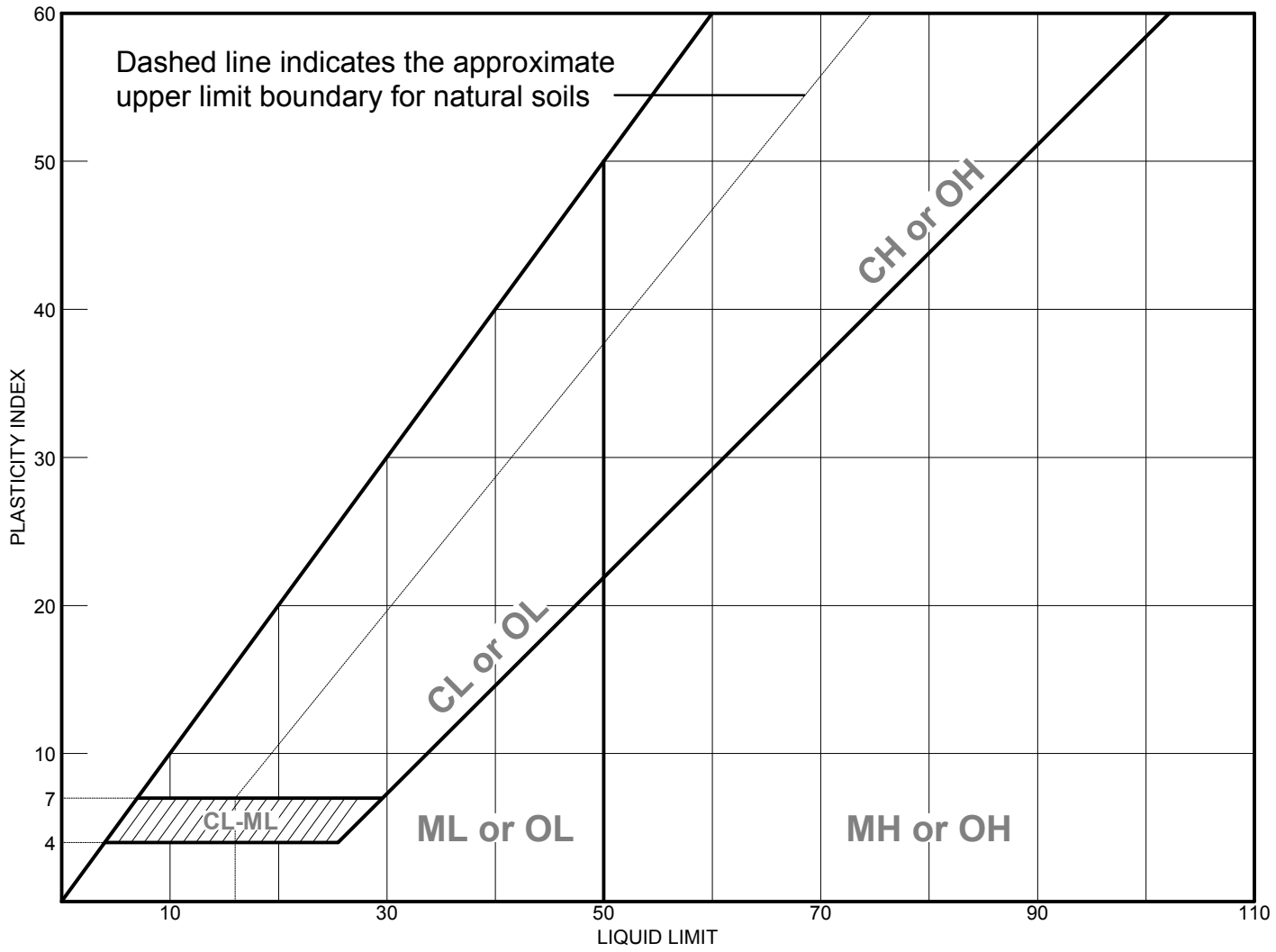
●

Moore Twining Associates, Inc.

Fresno, CA

Figure 9

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Poorly graded sand with silt	NV	NP	NP	36.3	11.2	SP-SM

Project No. H33201.01 **Client:** Fountainhead Development

Project: Proposed Starbucks

● **Source:** **Sample No.:** P-1 **Elev./Depth:** 18.5-20'

Remarks:

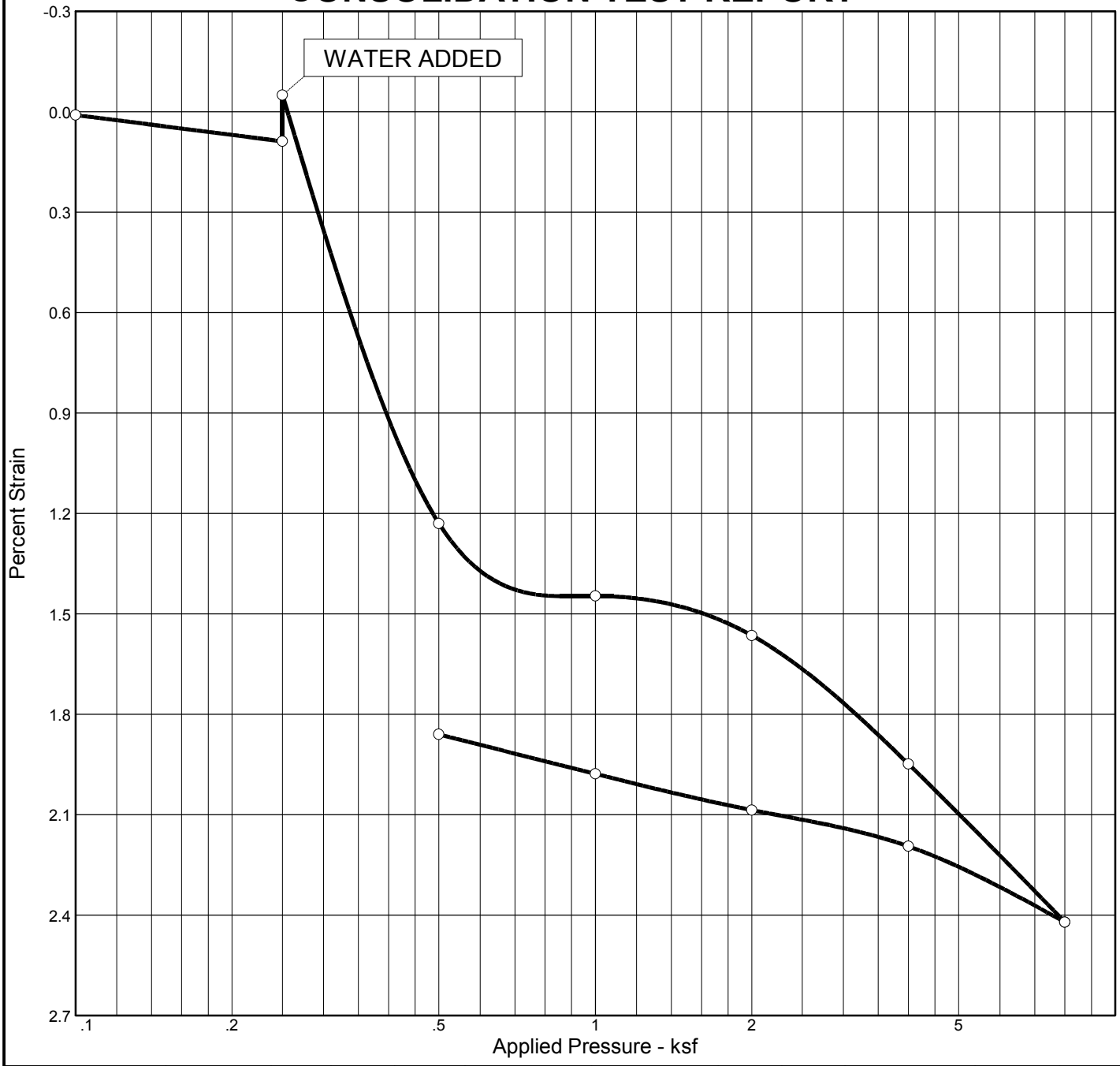
●

Moore Twining Associates, Inc.

Fresno, CA

Figure 10

CONSOLIDATION TEST REPORT



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (ksf)	P_c (ksf)	C_c	C_s	Swell Press. (ksf)	Swell %	e_o
Sat.	Moist.											
31.0 %	5.3 %	113.8			2.65		3.05	0.02	0.01	0.27	0.1	0.454

MATERIAL DESCRIPTION	USCS	AASHTO
Silty sand		

Project No. H33201.01 **Client:** Fountainhead Development

Project: Proposed Starbucks

Source: **Sample No.:** B-2 **Elev./Depth:** 1-2.5'

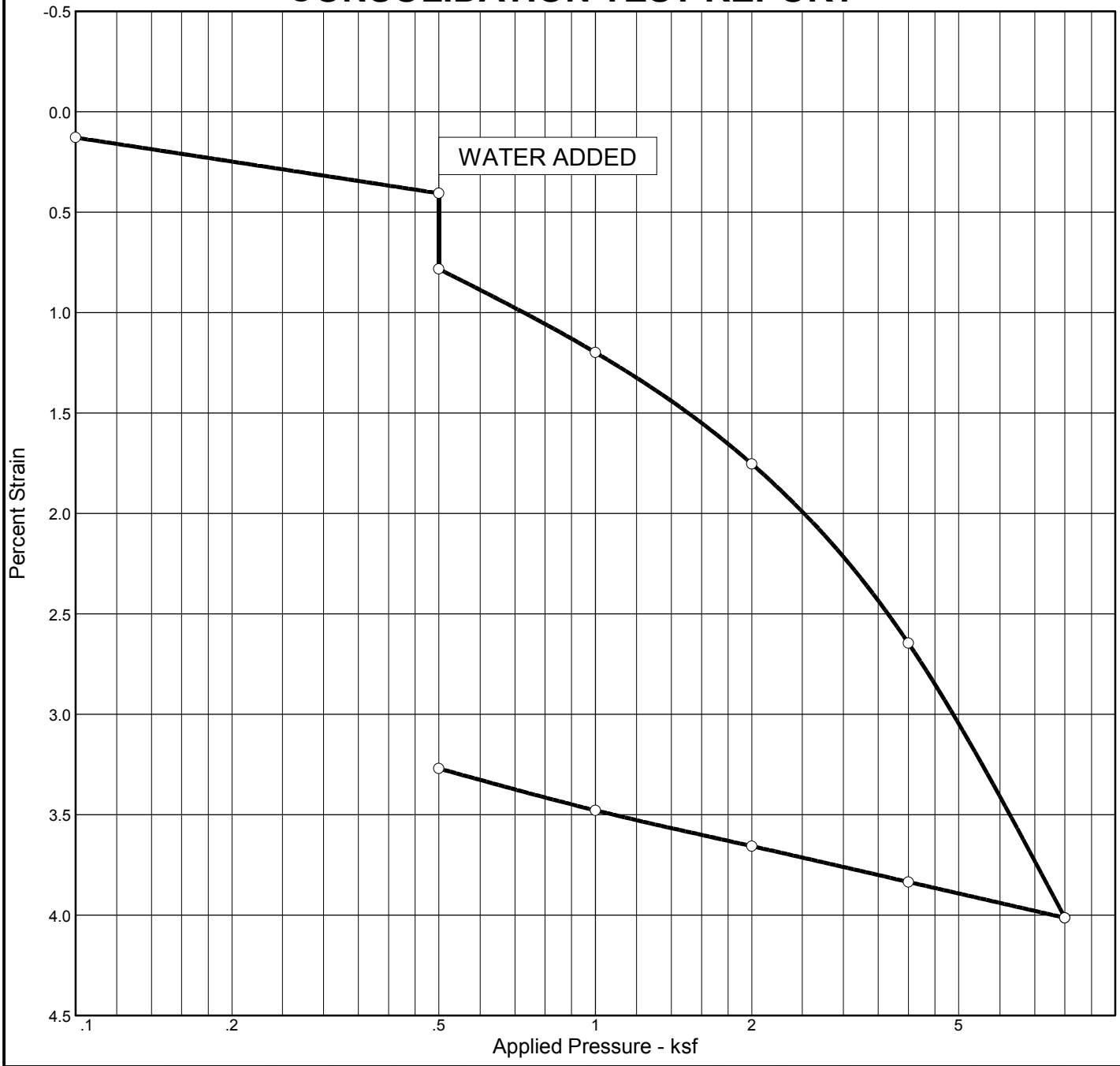
Remarks:

Moore Twining Associates, Inc.

Fresno, CA

Figure 11

CONSOLIDATION TEST REPORT



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (ksf)	P_c (ksf)	C_c	C_s	Swell Press. (ksf)	Clpse. %	e_o
Sat.	Moist.											
66.2 %	8.6 %	122.9			2.65		3.54	0.06	0.01		0.4	0.346

MATERIAL DESCRIPTION	USCS	AASHTO
Silty sand		

Project No. H33201.01 **Client:** Fountainhead Development

Project: Proposed Starbucks

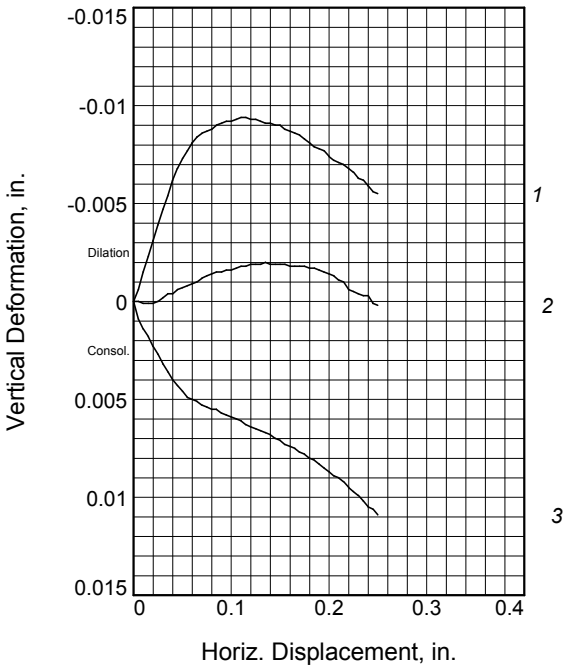
Source: **Sample No.:** B-2 **Elev./Depth:** 5-6.5'

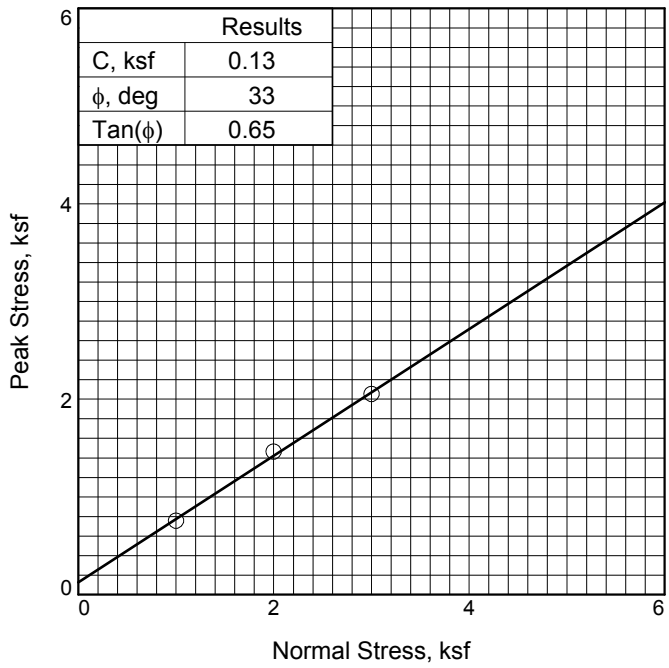
Remarks:

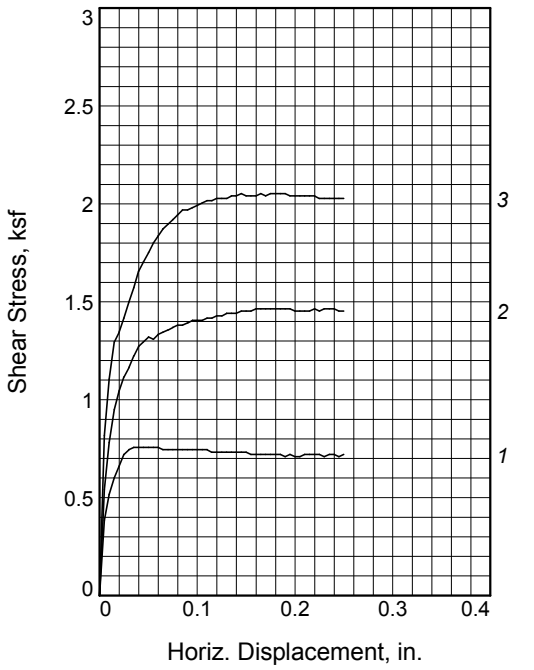
Moore Twining Associates, Inc.

Fresno, CA

Figure 12







Sample No.		1	2	3
Initial	Water Content, %	7.9	5.2	6.4
	Dry Density, pcf	115.4	117.6	115.8
	Saturation, %	48.4	33.7	39.5
	Void Ratio	0.4333	0.4072	0.4292
	Diameter, in.	2.42	2.42	2.42
	Height, in.	1.00	1.00	1.00
At Test	Water Content, %	15.6	14.7	15.4
	Dry Density, pcf	115.6	117.9	116.1
	Saturation, %	96.0	96.5	96.2
	Void Ratio	0.4311	0.4033	0.4250
	Diameter, in.	2.42	2.42	2.42
	Height, in.	1.00	1.00	1.00
Normal Stress, ksf		1.00	2.00	3.00
Peak Stress, ksf		0.76	1.46	2.05
Displacement, in.		0.04	0.16	0.14
Ultimate Stress, ksf				
Displacement, in.				
Strain at peak, %		1.4	6.6	6.0

Sample Type:
Description: Silty sand

Specific Gravity= 2.65
Remarks:

Figure 13

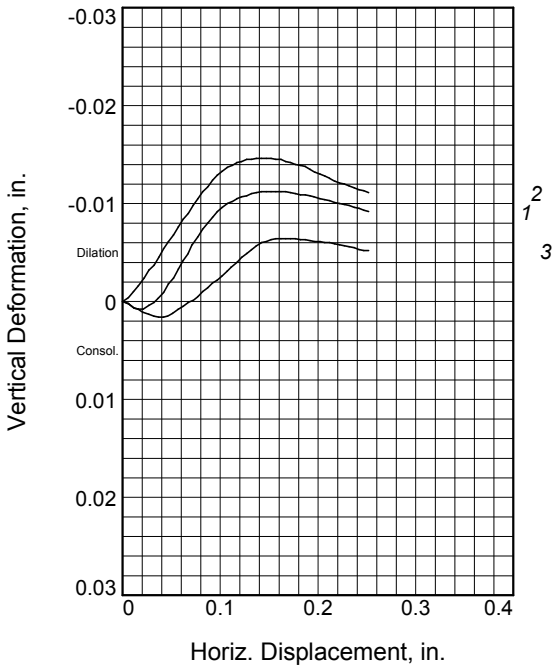
Client: Fountainhead Development

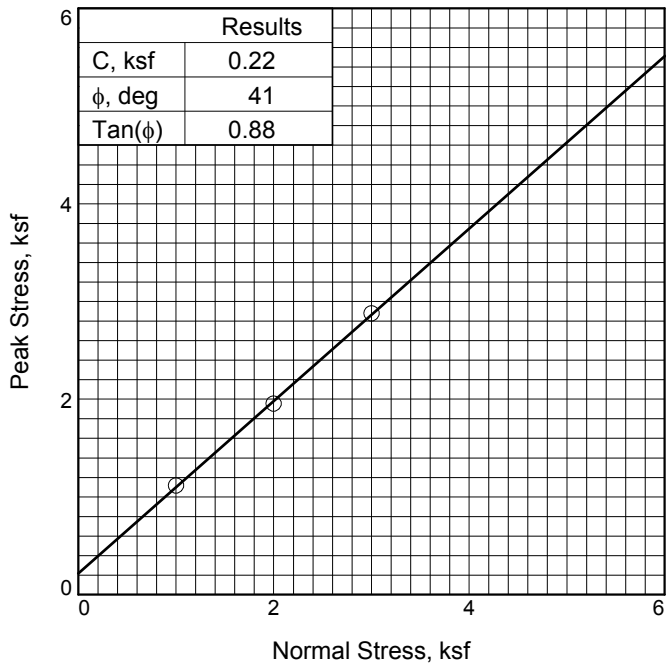
Project: Proposed Starbucks

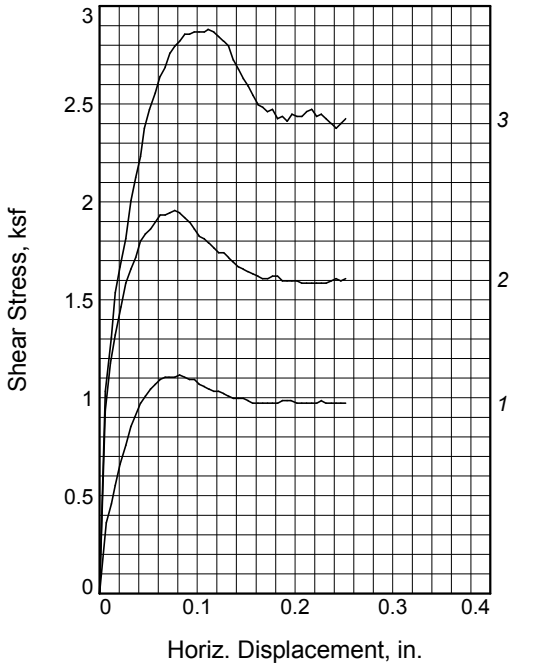
Sample Number: B-2 **Depth:** 1-2.5'

Proj. No.: H33201.01 **Date Sampled:** 10/23/24

DIRECT SHEAR TEST REPORT
Moore Twining Associates, Inc.
Fresno, CA







Sample No.		1	2	3
Initial	Water Content, %	10.3	9.3	8.3
	Dry Density, pcf	110.9	117.6	114.4
	Saturation, %	55.7	60.3	49.2
	Void Ratio	0.4924	0.4069	0.4458
	Diameter, in.	2.42	2.42	2.42
	Height, in.	1.00	1.00	1.00
At Test	Water Content, %	18.1	14.8	15.9
	Dry Density, pcf	111.0	117.8	114.7
	Saturation, %	98.0	96.9	95.4
	Void Ratio	0.4907	0.4038	0.4417
	Diameter, in.	2.42	2.42	2.42
	Height, in.	1.00	1.00	1.00
Normal Stress, ksf		1.00	2.00	3.00
Peak Stress, ksf		1.12	1.96	2.88
Displacement, in.		0.08	0.08	0.11
Ultimate Stress, ksf				
Displacement, in.				
Strain at peak, %		3.4	3.2	4.6

Sample Type:
Description: Silty sand

Specific Gravity= 2.65
Remarks:

Figure 14

Client: Fountainhead Development

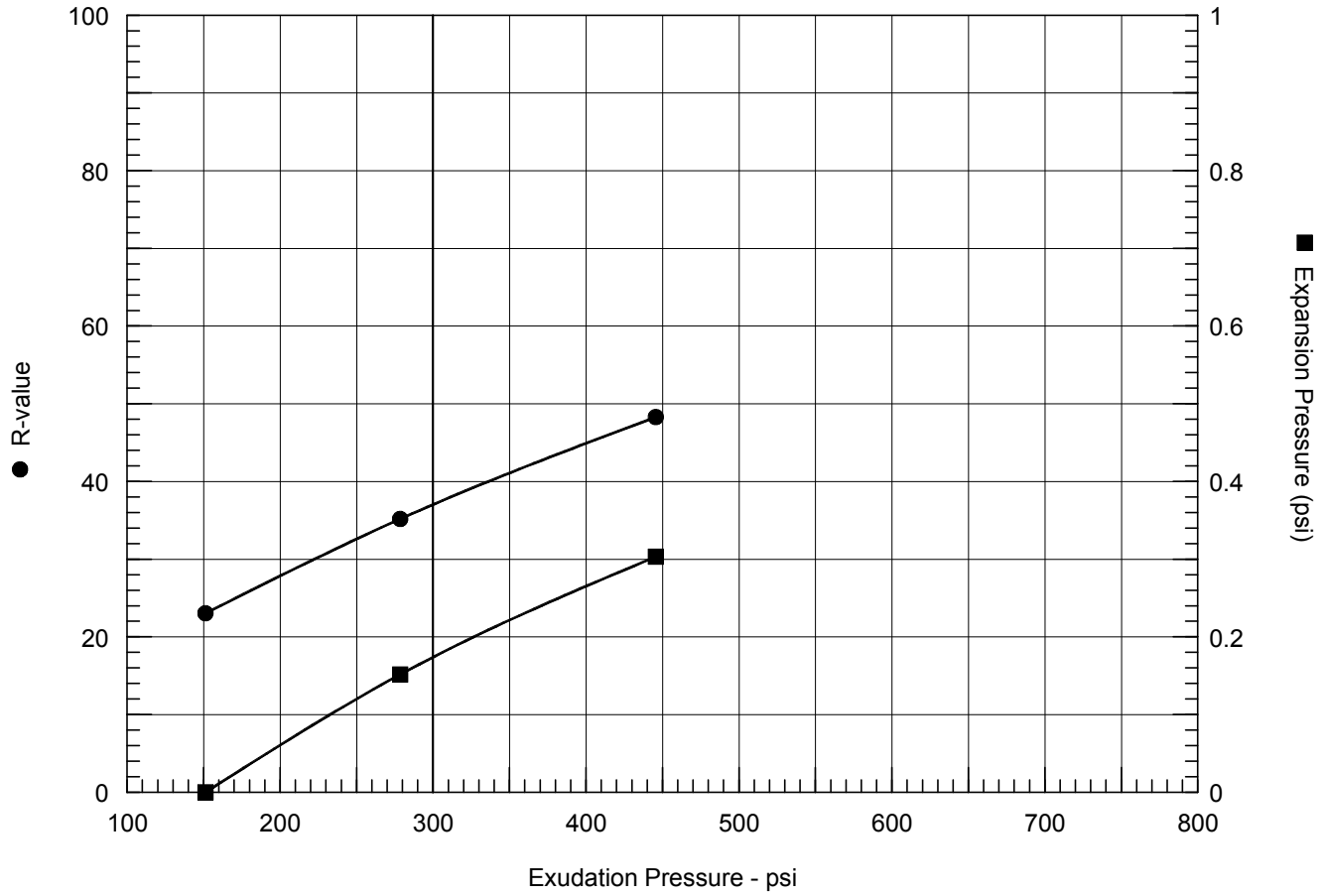
Project: Proposed Starbucks

Sample Number: B-2 **Depth:** 5-6.5'

Proj. No.: H33201.01 **Date Sampled:** 10/23/24

DIRECT SHEAR TEST REPORT
Moore Twining Associates, Inc.
Fresno, CA

R-VALUE TEST REPORT



Resistance R-Value and Expansion Pressure - ASTM D 2844

No.	Compact. Pressure psi	Density pcf	Moist. %	Expansion Pressure psi	Horizontal Press. psi @ 160 psi	Sample Height in.	Exud. Pressure psi	R Value	R Value Corr.
1	350	127.7	11.6	0.30	71	2.44	446	50	48
2	200	125.3	12.5	0.15	93	2.51	279	35	35
3	100	122.0	13.5	0.00	115	2.58	151	22	23

Test Results	Material Description
R-value at 300 psi exudation pressure = 37 **Exp. pressure at 300 psi exudation pressure =** 0.17 psi	Mix of silty sand and clayey sand

Project No.: H33201.01
Project: Proposed Starbucks
Sample Number: B-3 **Depth:** 1-5'
Date: 11/8/2024

Tested by: CG
Checked by: MS
Remarks:

R-VALUE TEST REPORT

Moore Twining Associates, Inc.

Figure 15

MOORE TWINING ASSOCIATES, INC.
California ELAP Certificate #1371

2527 Fresno Street
Fresno, CA 93721
(559) 268-7021 Phone
(559) 268-0740 Fax

November 07, 2024

Work Order #: **KJ29014**

Allen Harker
MTA Geotechnical Division
2527 Fresno Street
Fresno, CA 93721

RE: Proposed Starbucks

Enclosed are the analytical results for samples received by our laboratory on **10/29/24** . For your reference, these analyses have been assigned laboratory work order number **KJ29014**.

All analyses have been performed according to our laboratory's quality assurance program. All results are intended to be considered in their entirety, Moore Twining Associates, Inc. (MTA) is not responsible for use of less than complete reports. Results apply only to samples analyzed.

If you have any questions, please feel free to contact us at the number listed above.

Sincerely,

Moore Twining Associates, Inc.

Lauren Cox
Client Services Representative

Figure 16

MOORE TWINING ASSOCIATES, INC.
California ELAP Certificate #1371

2527 Fresno Street
Fresno, CA 93721
(559) 268-7021 Phone
(559) 268-0740 Fax

MTA Geotechnical Division	**Project:** Proposed Starbucks	**Reported:**
2527 Fresno Street	**Project Number:** H33201.01	11/07/2024
Fresno CA, 93721	**Project Manager:** Allen Harker	

Analytical Report for the Following Samples

Sample ID	Notes	Laboratory ID	Matrix	Date Sampled	Date Received
B-2 @ 0.2-5		KJ29014-01	Soil	10/23/24 00:00	10/29/24 11:00

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

MOORE TWINING ASSOCIATES, INC.
California ELAP Certificate #1371

2527 Fresno Street
Fresno, CA 93721
(559) 268-7021 Phone
(559) 268-0740 Fax

MTA Geotechnical Division	**Project:** Proposed Starbucks	**Reported:**
2527 Fresno Street	**Project Number:** H33201.01	11/07/2024
Fresno CA, 93721	**Project Manager:** Allen Harker	

B-2 @ 0.2-5

KJ29014-01 (Soil)

Analyte	Result	Reporting Limit	Units	Batch	Prepared	Analyzed	Method	Flag
Inorganics								
Chloride	**0.0021**	0.00060	% by Weight	[CALC]	11/02/24	11/02/24	[CALC]	
Chloride	**21**	6.0	mg/kg	B4J3113	10/31/24	11/02/24	Cal Test 422	
pH	**7.5**	0.10	pH Units	B4J3113	10/31/24	11/04/24	Cal Test 643 M	
Sulfate as SO4	**0.0026**	0.00060	% by Weight	[CALC]	11/02/24	11/02/24	[CALC]	
Sulfate as SO4	**26**	6.0	mg/kg	B4J3113	10/31/24	11/02/24	Cal Test 417	

Notes and Definitions

DUP1	A high RPD was observed between a sample and this sample's duplicate.
PREP	Modified preparation by pulverizing sample to pass #40 sieve and soaked for a minimum of 12 hours using a minimum dilution ratio of 1:10
ND	Analyte NOT DETECTED at or above the reporting limit
mg/kg	milligrams per kilogram (parts per million concentration units)

MOORE TWINING ASSOCIATES, INC.

Project Name:	Proposed Starbucks	Report Date:	11/7/2024
		Sample Date:	10/23/2024
Project Number:	H33201.01		
		Sampled By:	AV
Subject:	Minimum Resistivity, ASTM G187	Tested By:	RS
Material Description:	Silty sand	Test Date:	11/4/2024
Location:	B-2 @ 0.2-5'		

Laboratory Test Results, Minimum Resistivity - ASTM G187

Total Water Added, mls	Resistivity, Ohm-cm
25 mls	9,000
50 mls	6,000
75 mls	4,400
100 mls	3,400
125 mls	3,100
150 mls	3,200

Remarks: Min. Resistivity is 3,100 Ohm-cm

Figure 17

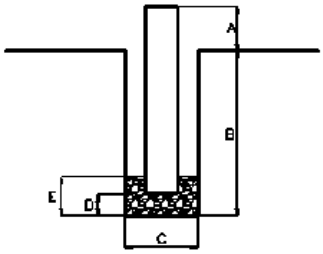
PH: 559.268.7021
FX: 559.268.7126
2527 Fresno Street
Fresno, CA 93721

APPENDIX D

RESULTS OF PERCOLATION TESTS

PERCOLATION TEST
No. P-1

Project:	Proposed Starbucks	**Project No.**	H33201.01
Location:	SWC of Main Street and 7th Avenue, Hesperia, CA	**Test Date:**	10/24/2024
Coordinates:			



A. Top of Pipe Above Ground	0 Inches
B. Depth of Hole	243 Inches
C. Diameter of Hole	8 Inches
D. Depth of Gravel Below Pipe	5 Inches
E. Total Gravel Layer Thickness	60 Inches
F. Pipe Length	238 Inches
G. Pipe Diameter	2 Inches

Pre-saturated: 40-50 gallons of water for required 2-hour presoak
Water was constantly filled up to about 2.45 feet from bottom of hole on 10/24/24

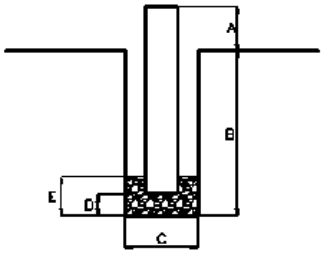
Gravel Correction Factor: 2.6

Trial	Date	Time	Depth To Water* (feet)	Time Interval (min)	Water Drop (inches)	Unfactored Percolation Rate, (minutes per inch)	Unfactored Infiltration Rate, (Inches per hour)
1	10/24/2024	8:40:00	17.9				
	10/24/2024	8:41:25	18.4	1.42	6	0.6	7.2
2	10/24/2024	8:41:25	18.4				
	10/24/2024	8:43:50	18.9	2.42	6	1.0	5.4
Refill 3	10/24/2024	8:45:30	17.9				
Begin Test	10/24/2024	8:55:30	19.28	10.00	16.56	1.5	3.5
Refill 4	10/24/2024	8:57:30	17.9				
	10/24/2024	9:07:30	19.27	10.00	16.44	1.6	3.5
Refill 5	10/24/2024	9:09:25	17.9				
	10/24/2024	9:19:25	19.27	10.00	16.44	1.6	3.5
Refill 6	10/24/2024	9:21:25	17.9				
	10/24/2024	9:31:25	19.25	10.00	16.2	1.6	3.4
Refill 7	10/24/2024	9:32:55	17.9				
	10/24/2024	9:42:55	19.23	10.00	15.96	1.6	3.3
Refill 8	10/24/2024	9:44:20	17.9				
	10/24/2024	9:54:20	19.22	10.00	15.84	1.6	3.3
Refill 9	10/24/2024	9:56:30	17.9				
	10/24/2024	10:06:30	19.22	10.00	15.84	1.6	3.3

* Depth to water measured from top of pipe

PERCOLATION TEST
No. P-2

Project:	Proposed Starbucks	**Project No.**	H33201.01
Location:	SWC of Main Street and 7th Avenue, Hesperia, CA	**Test Date:**	10/24/2024
Coordinates:			



A. Top of Pipe Above Ground	1 Inches
B. Depth of Hole	242 Inches
C. Diameter of Hole	8 Inches
D. Depth of Gravel Below Pipe	5 Inches
E. Total Gravel Layer Thickness	60 Inches
F. Pipe Length	238 Inches
G. Pipe Diameter	2 Inches

Pre-saturated: 60 gallons of water for required 2-hour presoak
Checked Water was constantly filled up to about 2.4 feet from bottom of hole on 10/24/24
Gravel Correction Factor: 2.6

Trial	Date	Time	Depth To Water* (feet)	Time Interval (min)	Water Drop (inches)	Unfactored Percolation Rate, (minutes per inch)	Unfactored Infiltration Rate, (Inches per hour)
1	10/24/2024	11:40:00	17.85				
	10/24/2024	11:41:45	18.35	1.75	6	0.7	5.7
2	10/24/2024	11:41:45	18.35				
	10/24/2024	11:44:05	18.85	2.33	6	1.0	5.4
Refill 3	10/24/2024	11:45:50	17.9				
Begin Test	10/24/2024	11:55:50	19.5	10.00	19.2	1.3	4.3
Refill 4	10/24/2024	11:57:30	17.8				
	10/24/2024	12:07:30	19.41	10.00	19.32	1.3	4.1
Refill 5	10/24/2024	12:09:30	17.9				
	10/24/2024	12:19:30	19.5	10.00	19.2	1.3	4.3
Refill 6	10/24/2024	12:21:15	17.9				
	10/24/2024	12:31:15	19.51	10.00	19.32	1.3	4.3
Refill 7	10/24/2024	12:33:00	17.9				
	10/24/2024	12:43:00	19.5	10.00	19.2	1.3	4.3
Refill 8	10/24/2024	12:44:30	17.9				
	10/24/2024	12:54:30	19.5	10.00	19.2	1.3	4.3

* Depth to water measured from top of pipe

APPENDIX E

COMPACTION TEST REPORT, TEST DATA AND TEST LOCATIONS FOR BACKFILL OF THE AREA OF REMOVED UNDERGROUND STORAGE TANKS WITH ENGINEERED FILL

This appendix contains the compaction test report, test data and test locations, prepared by Hi Desert Testing & Inspection, dated December 1, 1998, for backfill of the removed underground storage tanks with engineered fill in the vicinity of the former fuel canopy. The area of the removed Underground Storage Tanks are also shown on Drawing No. 2 in Appendix A of this report.

Dan Goodwin,
Hi Desert
Testing & Inspection

December 1, 1998
HDT&I P.N. 81041
Report No. 1

ADVANCED ENVIRONMENTAL CONCEPTS, INC.
4400 Ashe Road #206
Bakersfield, CA 93313
(805)831-1646

Attention: Mr. Jonathan L. Buck
Reference: 15901 Main Street, Hesperia, California.

Gentlemen:

In accordance with your request, a representative of this office observed backfilling of two gas tank excavations at the referrenced site, and performed random representative testing of compacted backfill. Samples of the soils were delivered to our laboratory where maximum density and optimum moisture were determined.

Results of our inspections and testing indicates backfill compaction complies with minimum requirements. Results are shown on the attached sheet.

Respectively submitted,
HI DESERT TESTING & INSPECTION

REGISTERED PROFESSIONAL ENGINEER
JERRY L. MILES
No. 42593
Exp 3/31/2000
CIVIL
STATE OF CALIFORNIA

Dan D. Goodwin

Jerry L. Miles, P.E.
RCE 42593

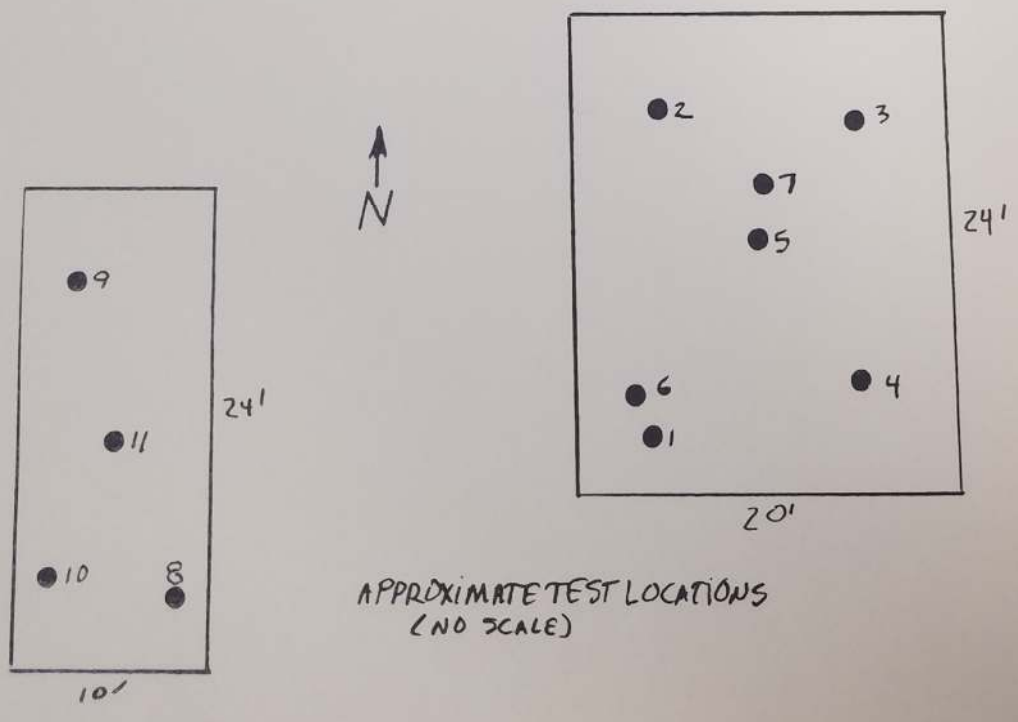
TEST RESULTS

ASTM D 1557-91 TEST METHODS FOR LABORATORY COMPACTION CHARACTERISTICS OF SOIL USING MODIFIED EFFORT

SAMPLE NO.	MAXIMUM DENSITY, P.C.F.	OPTIMUM MOISTURE CONTENT, %
1	126.5	11.0
2	124.0	9.5

ASTM D 2922-91 TEST METHOD FOR DENSITY AND UNIT WEIGHT OF SOIL IN PLACE BY NUCLEAR METHOD.

Test No.	Depth From Finished Grade Ft.	Dry Density, P.C.F.	Maximum Density, P.C.F.	Relative Density, %	Required R.D., %
1	11.0	119.6	126.5	94.5	90
2	9.0	119.8	126.5	94.7	90
3	7.0	125.4	126.5	99.1	90
4	6.0	120.4	126.5	95.2	90
5	4.0	112.8	124.0	91.0	90
6	2.0	121.0	124.0	97.6	90
7	0.5	122.7	124.0	99.0	90
8	10.0	119.9	124.0	96.7	90
9	8.0	121.4	124.0	97.9	90
10	6.0	120.7	124.0	97.3	90
11	0.5	117.1	124.0	94.4	90



APPROXIMATE TEST LOCATIONS (NO SCALE)

DG/cg

Appendix C
Phase I Environmental Site Assessment

Prepared For

FOUNTAINHEAD DEVELOPMENT
1400 QUAIL STREET, SUITE 135
NEWPORT BEACH, CALIFORNIA 92660

PHASE I ENVIRONMENTAL SITE ASSESSMENT REPORT

FORMER GAS STATION AND OFFICE BUILDING
15887-15901 Main Street and 15888 Walnut Street
Hesperia, CA 92345

Date Issued: October 16, 2007
LAC Project Number: 07-54108.1

Prepared By

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LandAmerica Commercial Services

Project No. 07-54108.1
October 16, 2007

Ms. Elizabeth Meloy
Foutainhead Development
1400 Quail Street
Suite 135
Newport Beach, California 92660

RE: Phase I Environmental Site Assessment
Former Gas Station and Office Building
15887-15901 Main Street and 15888 Walnut Street
Hesperia, CA 92345

Dear Ms. Meloy:

LandAmerica Assessment Corporation (LAC) is pleased to provide the results of our Phase I Environmental Site Assessment of the Former Gas Station and Office Building located at 15887-15901 Main Street and 15888 Walnut Street, Hesperia, California. This assessment was authorized on September 27, 2007, and performed in general accordance with ASTM E 1527-05, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process.

This assessment included a site reconnaissance as well as research and interviews with representatives of the public, property ownership, site manager, and regulatory agencies. An assessment was made, conclusions stated, and recommendations outlined.

We appreciate the opportunity to provide environmental services to Foutainhead Development. If you have any questions concerning this report, or if we can assist you in any other matter, please contact Fred Howlett at 732-942-6200.

Very truly yours,

LANDAMERICA ASSESSMENT CORPORATION

Nasim Ahmed, REA
Professional Associate

Fred Howlett
Client Manager

TABLE OF CONTENTS

EXECUTIVE SUMMARY iv

1.0 INTRODUCTION 1

1.1 Purpose 1
1.2 Detailed Scope of Services 1
1.3 Significant Assumptions 1
1.4 Limitations and Exceptions 2
1.5 Special Terms and Conditions 2
1.6 Use Reliance 2

2.0 SITE DESCRIPTION 3

2.1 Location and Legal Description 3
2.2 Site and Vicinity General Characteristics 3
2.3 Current Use of the Property 3
2.4 Description of Site Improvements 4
2.5 Current Use of Adjoining Properties 4

3.0 USER PROVIDED INFORMATION 5

3.1 Title Records 5
3.2 Environmental Liens or Activity and Use Limitation 5
3.3 Specialized Knowledge 5
3.4 Commonly Known or Reasonably Ascertainable Information 5
3.5 Valuation Reduction for Environmental Issues 5
3.6 Owner, Property Manager, and Occupant Information 5
3.7 Reason for Performing Phase I ESA 6

4.0 RECORDS REVIEW 7

4.1 Standard Environmental Record Sources 7
4.2 Additional Environmental Record Sources 12
4.2.1 County Recorder/ Assessor 12
4.2.2 Fire/Police Officials 12
4.2.3 Building Department 12
4.2.4 Other Agencies 12
4.3 Physical Setting Sources 12
4.3.1 Topography 12
4.3.2 Soils/Geology 13
4.3.3 Hydrology 13
4.3.4 Flood Zone Information 13
4.3.5 Oil and Gas Exploration 13
4.4 Historical Use Information On The Property 14
4.4.1 Aerial Photographs 14
4.4.2 Fire Insurance Maps 15
4.4.3 City Directories 16
4.4.4 Historical Topographic Maps 17
4.4.5 Additional Historical Record Sources 17
4.4.6 Prior Assessment Reports 17
4.5 Historical Use Information on Adjoining Properties 18

5.0 SITE RECONNAISSANCE 19

5.1 Methodology And Limiting Conditions 19

5.2 General Site Setting 19
5.3 Exterior Observations 19
5.3.1 Solid Waste Disposal 19
5.3.2 Surface Water Drainage 19
5.3.3 Wells and Cisterns 19
5.3.4 Wastewater 19
5.3.5 Additional Site Observations 20
5.4 Interior Observations 20
5.5 Potential Environmental Conditions 20
5.5.1 Hazardous Materials and Petroleum Products Used or Stored at the Site 20
5.5.2 Evidence of Releases 20
5.5.3 Polychlorinated Biphenyls (PCBs) 20
5.5.4 Landfills 21
5.5.5 Pits, Ponds, Lagoons, Sumps, and Catch Basins 21
5.5.6 On-Site ASTs and USTs 21
5.5.7 Radiological Hazards 21
5.5.8 Drinking Water 21
5.5.9 Additional Hazard Observations 21
5.5.10 Asbestos-Containing Materials (ACM) 22
5.5.11 Radon 22
5.5.12 Lead-Based Paint 23
5.5.13 Mold Evaluation 23
6.0 INTERVIEWS 25
6.1 Interview with Owner 25
6.2 Interview with Site Manager 25
6.3 Interview with Occupants 25
6.4 Interview with Local Government Officials 25
6.5 Interview with Others 25
7.0 FINDINGS AND CONCLUSIONS 26
7.1 Findings 26
7.1.1 On-Site Environmental Conditions 26
7.1.2 Off-Site Environmental Conditions 26
7.1.3 Previously Resolved Environmental Conditions 26
7.1.4 De Minimis Environmental Conditions 26
7.2 Opinion 26
7.3 Conclusions 27
7.4 Recommendations 27
7.5 Deviations 27
8.0 REFERENCES 28
9.0 SIGNATURES OF ENVIRONMENTAL PROFESSIONALS 29
10.0 QUALIFICATIONS OF ENVIRONMENTAL PROFESSIONALS 30
10.1 Definition of an Environmental Professional 30
10.2 Relevant Experience 30

FIGURES

Figure 1 Site Location Map
Figure 2 Site Plan
Figure 3 Topographic Map

APPENDIX

Appendix A	Site Photographs	
Appendix B	Historical Research Documentation	
	Exhibit B-1	Aerial Photographs
	Exhibit B-2	Fire Insurance Maps
	Exhibit B-3	Historical Topographic Maps
Appendix C	Regulatory Records Documentation	
	Exhibit C-1	Mapped Database Report
	Exhibit C-2	General Public Records
Appendix D	Interview Records	
Appendix E	Client-Provided Documentation	
Appendix F	Other Supporting Documentation	
Appendix G	Qualifications Of Envionmental Professionals	

EXECUTIVE SUMMARY

LandAmerica Assessment Corporation (LAC) has performed a Phase I Environmental Site Assessment (ESA) in general accordance with the scope of work and limitations set forth by Foutainhead Development for the Former Gas Station and Office Building located at 15887-15901 Main Street and 15888 Walnut Street, Hesperia, California (the "Property").

The Phase I Environmental Site Assessment is designed to provide Foutainhead Development with an assessment concerning environmental conditions (limited to those issues identified in the report) as they exist at the property. This assessment was conducted utilizing generally accepted ESA industry standards in accordance with ASTM E 1527-05, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process.

The Property consists of a rectangular-shaped parcel approximately 1.65 acres in size. The Property is designed and used for commercial purposes. Currently, the Property is developed with three structures that were constructed in 1957, 1967 and 1980. The structures at the Property are one story in height, and comprise a total of 1,978 square feet of building space. The Property offers a total of three tenant spaces for commercial use. No manufacturing or industrial tenants are present at the Property. The Property also consists of gravel paved area located on the western portion of the Property.

The Property is situated in a commercial area of Hesperia, California. The Property is bound to the north by Main Street, beyond which is Hesperia Professional Center; to the east by 7th Avenue, beyond which is Chevron Station and Character Bar & Grill; to the south by Walnut Street, beyond which is a furniture store and undeveloped; and to the west by Rose Plaza. Based upon topographic map interpretation and site observations, groundwater flow beneath the site is inferred to be in a northeasterly direction.

LAC obtained and reviewed a database report from FirstSearch for the Property and the surrounding area. Based on the database report, one facility (Alliance Auto Center) was identified on UST and San Bernardino County Permit lists located on the Property. LAC also identified four UST and two LUST sites located within the prescribed search radii list. All of the UST and LUST sites identified were either cross or downgradient of the Property and therefore not considered to be a Recognized Environmental Conditions (REC).

Conclusions

LAC has performed a Phase I Environmental Site Assessment in conformance with the scope and limitations of ASTM Practice E 1527-05 of Former Gas Station and Office Building located at 15887-15901 Main Street and 15864-15888 Walnut Street, Hesperia, California, the Property. Any exceptions to or deletions from this practice are described in Section 1.4 of this report. This assessment has revealed no evidence of recognized environmental conditions in connection with the Property, except for the following:

- Two abandoned belowground hydraulic lifts were observed at the Property. No knowledge of previous equipment service and maintenance operations was available.

- Four abandoned 55-gallon waste oil drums were noted at the Alliance Auto Center.

- Based on the date of construction (1957, 1967 and 1980) there is a potential that ACM was used in construction materials. Suspect ACM identified included dry wall and wall joint compound, floor tiles/mastic, roofing materials and exterior plaster. Generally, these materials appeared to be in good condition.

Recommendations

Based on the findings of this ESA, LAC recommends the following:

- LAC recommends a limited subsurface investigation in the area the abandoned below grade hydraulic lifts in order to evaluate if the hydraulic fluids from the existing lifts have impacted soils and/or groundwater at the Property. Furthermore, the hydraulic oil tanks should be removed from the pits and should be properly disposed of in accordance with the local and state guidelines.

- Four 55-gallon waste oil drums should be properly disposed of in accordance with the local and state guidelines.

- An Operations and Maintenance (O&M) Program should be implemented in order to safely manage the identified presumed asbestos-containing materials located in the subject buildings on the Property. Prior to any planned remodeling or demolition, a comprehensive survey for asbestos-containing materials should be conducted. Removal of identified ACMs, including the preparation of specifications, should be conducted by a licensed asbestos abatement contractor and/or Certified Asbestos Consultant, according to applicable regulations.

The following table summarizes the findings of the significant elements of this investigation.

Assessment Component	Acceptable	Routine Solution	Phase II	Estimated Cost	Reference Section
Historical Review	X				4.4
On-Site Operations			X (a)	$8,000 - $10,000	5.3 / 5.4
Hazardous Materials		X (b)		$1,000 - $1,500	5.5.1
Waste Generation	X				5.5.1.2
PCBs	X				5.5.3
Asbestos		X (c)		$400	5.5.10
Lead in Drinking Water	X				5.5.8
Storage Tanks	X				5.5.6
Surface Areas	X				4.2.2
Regulatory Database Review	X				4.1
Adjoining Properties	X				2.5, 4.5
Other					

1.0 INTRODUCTION

LandAmerica Assessment Corporation (LAC) was retained by Foutainhead Development to conduct a Phase I Environmental Site Assessment (ESA) of the Former Gas Station and Office Building located at 15887-15901 Main Street and 15888 Walnut Street, Hesperia, California (the Property). The protocol used for this assessment is in general conformance with ASTM E 1527-05, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process.

On October 8, 2007, Nasim Ahmed, a representative of LAC, conducted a site reconnaissance to assess the possible presence of petroleum products and hazardous materials at the Property. LAC's investigation included a review of aerial photographs, a reconnaissance of adjacent properties, background research, and a review of available local, state, and federal regulatory records regarding the presence of petroleum products and/or hazardous materials at the Property.

LAC contracted Environmental Data Resource (EDR) of Milford, Connecticut, to perform a computer database search for local, state, and Federal regulatory records pertaining to environmental concerns for the Property and properties in the vicinity of the Property (see Section 3.0).

1.1 Purpose

The purpose of this Phase I Environmental Site Assessment (ESA) was to identify existing or potential Recognized Environmental Conditions (as defined by ASTM Standard E-1527-05) in connection with the Property. LAC understands that the findings of this study will be used by Foutainhead Development to evaluate a pending financial transaction in connection with the Property.

1.2 Detailed Scope of Services

The scope of work for this ESA is in general accordance with the requirements of ASTM Standard E 1527-05. LAC warrants that the findings and conclusions contained herein were accomplished in accordance with the methodologies set forth in the Scope of Work. These methodologies are described as representing good commercial and customary practice for conducting an Environmental Site Assessment of a property for the purpose of identifying recognized environmental conditions.

No other warranties are implied or expressed.

1.3 Significant Assumptions

There is a possibility that even with the proper application of these methodologies there may exist on the Property conditions that could not be identified within the scope of the assessment or which were not reasonably identifiable from the available information. LAC believes that the information obtained from the record review and the interviews concerning the site is reliable. However, LAC cannot and does not warrant or guarantee that the information provided by these other sources is accurate or complete. The methodologies of this assessment are not intended to produce all inclusive or comprehensive results, but rather to provide Foutainhead Development with information relating to the Property.

1.4 Limitations and Exceptions

The findings and conclusions contain all of the limitations inherent in these methodologies that are referred to in ASTM 1527-05.

1.5 Special Terms and Conditions

The conclusions and findings set forth in this report are strictly limited in time and scope to the date of the evaluations. The conclusions presented in the report are based solely on the services described therein, and not on scientific tasks or procedures beyond the scope of agreed-upon services or the time and budgeting restraints imposed by the client. No subsurface exploratory drilling or sampling was done under the scope of this work. Unless specifically stated otherwise in the report, no chemical analyses have been performed during the course of this ESA.

Some of the information provided in this report is based upon personal interviews, and research of available documents, records, and maps held by the appropriate government and private agencies. This is subject to the limitations of historical documentation, availability, and accuracy of pertinent records and the personal recollections of those persons contacted.

1.6 Use Reliance

All reports, both verbal and written, are for the benefit of Foutainhead Development. This report has no other purpose and may not be relied upon by any other person or entity without the written consent of LAC.

2.0 SITE DESCRIPTION

2.1 Location and Legal Description

The address of the Property is 15887-15901 Main Street and 15864 and 15888 Walnut Street, Hesperia, CA 92345 (the "Property"). The Property is located in a residential and commercial area of San Bernardino County. According to San Bernardino County Assessor's Office, the assessor's parcel numbers of the Property are 0413-101-08, 0413-101-10, 0413-101-11, 0413-101-12, 0413-101-13 and 0413-101-14. The legal description is appended to this report.

According to the San Bernardino County Tax Assessor's office, the Property is currently owned by Mohammad and Saboohi Riaz who have owned the portion of Property since 1991, Avit and Suhail Khoury who have owned the portion of Property since 1998 and Normand Adams who has owned the portion of Property since 2006.

2.2 Site and Vicinity General Characteristics

The Property is located in a residential and commercial area that is characterized by numerous residential and commercial developments. The Property is zoned C2 – commercial by the City of Hesperia.

The Property consists of a rectangular-shaped parcel approximately 1.65 acres in size. The Property is designed and used for commercial purposes. Currently, the Property is developed with three structures that were constructed in 1957, 1967 and 1980. The structures at the Property are one story in height, and comprise a total of 1,978 square feet of building space. The Property offers a total of three tenant spaces for commercial use. No manufacturing or industrial tenants are present at the Property. The Property also consists of gravel paved area located on the western portion of the Property.

Access to the Property is provided from Main Street, 7th Avenue and Walnut Street. The open-surface parking areas adequately accommodate customer and employee automobiles. Storm drains are located in various locations in the parking area along curbs and in landscaped areas. Drainage is accomplished via concrete swales which direct surface water to storm drains located along the surrounding streets. No other structures or significant surface features were noted on the Property at the time of the reconnaissance.

2.3 Current Use of the Property

At the present time, the Property is developed with three structures and asphalt and gravel paved parking area. Two structures are located on the northern portion of the property and one structure is located on the southern property. There is a canopy located in the northeast corner of the Property. In addition, there is an abandoned storage shed and a trailer located on the southern portion of the Property. The northern portion of the Property is currently utilized for used car sales purposes while the southern portion of the Property is vacant (formerly used as used car sales purposes). Alliance Auto Center occupies the northern portion of the Property. Alliance Auto Center utilizes the Property for used car sales and auto smog check purposes.

Two aboveground hydraulic lifts and one abandoned belowground hydraulic lift were noted inside the auto repair building. In addition, a smog check machine, tools, parts and miscellaneous

materials were noted inside the auto repair building. Miscellaneous materials were also note outside behind the building. Four 55-gallon waste oil drums placed on a secondary containment were noted inside the trash enclosure along the eastern boundary of the Property. Minor oil stains were noted, however, no floor cracks were observed.

A concrete paved area and abandoned belowground hydraulic lift were noted in the southwest corner of the Property. Oil stains were noted near the hydraulic lift, however, no significant floor cracks were observed.

An abandoned storage shed is located central portion of the Property. Several automotive chemical containers were noted inside the storage shed. No stains/spills and/or floor cracks were observed.

2.4 Description of Site Improvements

The buildings are of wood-framed stud bearing wall construction with concrete slab foundation. The exterior wall finish consists of painted plaster. The interior of the building consists of painted gypsum drywall walls, and 2' x 4' acoustical ceiling panels. Carpet and vinyl floor tiles cover the interior floor while the composition roofing materials covers the building roofs.

The Hesperia Water District supplies drinking water to the Property from the municipal distribution system. Sanitary discharges from the Property are discharged into the municipal sanitary sewer system. The subject site area is serviced by the City of Hesperia. No other structures or significant surface features were noted on the Property at the time of the reconnaissance.

Heating is provided by gas-fired package heating, ventilation, and air conditioning (HVAC) units or gas-fired split HVAC systems. Electricity is provided to the Property by Southern California Edison. Natural gas is provided by Southern California Gas Company.

2.5 Current Use of Adjoining Properties

During the vicinity reconnaissance, LAC observed the following land use on properties in the immediate vicinity of the Property.

North: Areas immediately adjacent to the north of the Property include Main Street, with the Hesperia Professional Center (15888 Main Street) beyond.

South: Areas immediately adjacent to the south of the Property include Walnut Street, with a furniture store and undeveloped land beyond.

East: Areas immediately adjacent to the east of the Property include 7th Avenue, with the Chevron Station (15933 Main Street) and Character Bar & Grill (9517 7th Avenue) beyond.

West: Areas immediately adjacent to the west of the Property include Rose Plaza (15885 Main Street).

3.0 USER PROVIDED INFORMATION

Pursuant to ASTM E 1527-05, LAC requested the following site information from Foutainhead Development (User of this report) and from the Key Site Manager. The Key Site Manager was assigned by Foutainhead Development.

3.1 Title Records

LAC requested title records from the User and Key Site Manager; however, title records were not available at the Property and were not provided to LAC for review.

3.2 Environmental Liens or Activity and Use Limitation

LAC requested information from the User and Key Site Manager regarding knowledge of environmental liens, activity and use limitations for the Property. The site contact was not aware of any environmental liens associated with the Property. In addition, the site contact had no knowledge of any use or activity limitations

3.3 Specialized Knowledge

LAC inquired with the User and Key Site Manager regarding any specialized knowledge of environmental conditions associated with the Property. The User and Key Site Manager were not aware of any environmental conditions associated with the Property.

3.4 Commonly Known or Reasonably Ascertainable Information

LAC inquired with the User and Key Site Manager regarding any commonly known or *reasonably ascertainable* information within the local community about the Property that is material to *recognized environmental conditions* in connection with the Property.

3.5 Valuation Reduction for Environmental Issues

LAC inquired with the User and Key Site Manager regarding any knowledge of reductions in property value due to environmental issues. The site contact was not aware of any valuation reductions associated with the Property.

3.6 Owner, Property Manager, and Occupant Information

The following information regarding the Owner, Property Manager and Occupants was provided by the User and Key Site Manager.

Property Owner:	Mohammad and Saboohi Riaz; Avit and Suhail Khoury; and Normand Adams.
Property Manager:	None
Occupants:	Alliance Auto Center

3.7 Reason for Performing Phase I ESA

The purpose of this ESA was to identify existing or potential Recognized Environmental Conditions (as defined by ASTM Standard E-1527-05) in connection with the Property. This ESA was also performed to permit the *User* to satisfy one of the requirements to qualify for the *innocent landowner*, *contiguous property owner*, or *bona fide prospective purchaser* limitations on scope of Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) (42 U.S.C. §9601) liability (hereinafter, the "*landowner liability protections*," or "*LLPs*"). ASTM Standard E-1527-05 constitutes "*all appropriate inquiry* into the previous ownership and uses of the *property* consistent with good commercial or customary practice" as defined at 42 U.S.C. §9601(35)(B).

LAC understands that the findings of this study will be used by Foutainhead Development to evaluate a pending financial transaction in connection with the Property.

4.0 RECORDS REVIEW

4.1 Standard Environmental Record Sources

Information from standard Federal and state environmental record sources was provided through FirstSearch. Data from governmental agency lists are updated and integrated into one database, which is updated as these data are released. This integrated database also contains postal service data in order to enhance address matching. Records from one government source are compared to records from another to clarify any address ambiguities. The demographic and geographic information available provides assistance in identifying and managing risk. The accuracy of the geocoded locations is approximately +/-300 feet.

In some cases, location information supplied by the regulatory agencies is insufficient to allow the database companies to geocode facility locations. These facilities are listed under the unmappables ("orphan sites") section within the FirstSearch report. A review of the unmappable facilities indicated that none of these facilities are within the ASTM minimum search distance from the Property.

Regulatory information from the following database sources regarding possible recognized environmental conditions, within the ASTM minimum search distance from the Property, was reviewed. Specific facilities are discussed below if determined likely that a potential recognized environmental condition has resulted at the Property from the listed facilities. Please refer to Appendix C-1 for a complete listing.

Federal NPL

The National Priorities List (NPL) is the Environmental Protection Agency (EPA) database of uncontrolled or abandoned hazardous waste sites identified for priority remedial actions under the Superfund Program.

The Property is not listed as a NPL facility. No NPL sites are located within one mile of the Property.

Federal Delisted NPL Sites

The NPL Delisted Sites are sites previously on the NPL list which have been remediated and have been removed from the EPA's priority list.

The Property is not listed as a Delisted NPL facility. No Delisted NPL sites are located within one half mile of the Property.

Federal CERCLIS List

The Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) list is a compilation of sites that the EPA has investigated or is currently investigating for a release or threatened release of hazardous substances.

The Property is not listed as a CERCLIS facility. No CERCLIS sites are listed within one-half mile of the Property.

Federal CERCLIS NFRAP Sites List

The CERCLIS No Further Remedial Action Planned (NFRAP) List is a compilation of sites that the EPA has investigated, and has determined that the facility does not pose a threat to human health or the environment, under the CERCLA framework.

The Property is not listed as a CERCLIS-NFRAP facility. No CERCLIS-NFRAP sites are listed within one half mile of the Property.

Federal Resource Conservation and Recovery Act (RCRA) CORRACTS Facilities List

The EPA Resource Conservation and Recovery Act (RCRA) Program identifies and tracks hazardous waste from the point of generation to the point of disposal. The RCRA Treatment, Storage and Disposal (TSD) database is a compilation by the EPA of reporting facilities that treat, store or dispose of hazardous waste. The CORRACTS database is the EPA's list of treatment storage or disposal facilities subject to corrective action under RCRA.

The Property is not listed as a RCRA CORRACTS TSD facility. No RCRA CORRACTS TSD facilities are listed within one mile of the Property.

Federal Resource Conservation and Recovery Act (RCRA) Non-CORRACTS TSD Facilities List

The RCRA TSD database is a compilation by the EPA of reporting facilities that treat, store or dispose of hazardous waste.

The Property is not listed as a RCRA-TSD facility. No RCRA TSD sites are listed within one-half mile of the Property.

Federal RCRA Generator List

The RCRA program identifies and tracks hazardous waste from the point of generation to the point of disposal. The RCRA Generators database is a compilation by the EPA of reporting facilities that generate hazardous waste.

The Property is not listed as a RCRA facility. One RCRA Generator facility is listed within one-fourth mile of the Property. This facility is identified as A2A Auto Body and Glass located approximately 0.24 mile to the northeast of the Property. This site is not listed as having violations that would impact the Property. Based on the current status, there is a low potential for the subject property to have been environmentally impacted.

Federal Institutional Control/Engineering Control Registries

The Federal Institutional Control/Engineering Control Registries is a database used to record institutional controls, land use restrictions and engineering control requirements on contaminated propertied.

No Federal Institutional Control or Engineering Controls were listed for the Property.

Federal Emergency Response Notification System (ERNS)

The Emergency Response Notification System (ERNS) is a national database used to collect information on reported release of oil or hazardous substances.

No ERNS sites were listed on the Property or on the adjacent properties.

State and Tribal Priority List (NPL equivalent)

The California Environmental Protection Agency, Department of Toxic Substances Control maintains a State Priority List (SPL) of sites considered to be actually or potentially contaminated and presenting a possible threat to human health and the environment.

The Property is not listed as a SPL facility. No SPL sites are listed within one mile of the Property.

State and Tribal CERCLIS-Equivalent List

The California Environmental Protection Agency, Department of Toxic Substances Control maintains a State CERCLIS-equivalent list (SCL) of sites under investigation that could be actually or potentially contaminated and presenting a possible threat to human health and the environment.

The Property is not listed as a State CERCLIS facility. One SCL sites are listed within one-half mile of the Property. This site is identified as Crosswalk Charter School located approximately 0.53 mile to the southeast of the Property. The status of this site is listed as No Further Action. Based on the current regulatory status and distance, this site is not considered a recognized environmental condition to the Property.

State and Tribal Solid Waste/Landfill Facilities (SWLF)

This list is maintained by the California Integrated Waste Management Board. In 1977, this list was created to identify active and inactive sanitary landfills, transfer stations and disposal facilities.

The Property is not listed as a SWLF facility. No SWLF facilities are listed within one-half mile of the Property.

State and Tribal Leaking Underground Storage Tank List (LUST)

The California State Water Quality Control Board compiles lists of all reported leaks of hazardous substances from underground storage tanks.

Two LUST sites are listed within one-half mile of the Property. These sites are discussed below:

- **Circle K Store (15853 Main Street)** is approximately 0.41 mile to the northwest of the Property. This facility is reported to have experienced an unauthorized gasoline release. The media affected at this is unknown. The status of this site is listed as **Leak Being Confirmed.** Based on the location (crossgradient) and distance, there is a **low potential** for the Property to have been environmentally impacted.

- **Hayward Lumber (931 Main Street)** is approximately 0.05 mile to the northeast of the Property. Although, this site is listed as 0.05 mile to the northeast of the Property in the database report, however, site reconnaissance conducted by LAC did not reveal any lumber facility within one-fourth mile of the Property. Based on the distance, there is a **low potential** for the Property to have been environmentally impacted.

State and Tribal Underground Storage Tank List (UST)

The California State Water Quality Control Board compiles a list of registered UST locations.

Four registered UST facilities are listed within one-fourth mile of the Property. These sites are discussed below:

- **Alliance Service Center (15901 Main Street)** is one of the addresses included on the Property, and was identified as a UST facility. Based on the available information, a gas station occupied the Property until 1998 and operated two 5,000-gallon USTs and one 8,000-gallon UST on the premises. These USTs were removed from the Property in 1998. Soil samples were collected from beneath the USTs, piping and dispensers, and from the soil stockpiles for analytical testing. The soil samples were analyzed for TPHg, Benzene, toluene, xylene, ethylbenzene and MTBE. Low levels of petroleum hydrocarbons were detected in the soil samples analyzed. Based on this investigation, the Property was considered a low risk site and recommended for closure. On June 21, 2007, the San Bernardino County Fire Department issued a "No Further Action" letter to Mohammad Riaz.

- **Fairstrip Food Store 8 (16117 Main Street)** is approximately 0.12 mile to the northeast of the Property and listed twice. This site is not listed on LUST or any other toxic release databases that would impact the Property. Based on the current status of this site, there is a **low potential** for the Property to have been environmentally impacted.

- **Hesperia Main Street Motors (15954 Main Street)** is approximately 0.22 mile to the northwest of the Property. This site is not listed on LUST or any other toxic release databases that would impact the Property. Based on the current status of this site, there is a **low potential** for the Property to have been environmentally impacted.

State and Tribal Institutional Control/Engineering Control Registries

The California Environmental Protection Agency, Department of Toxic Substances Control compiles a list of Institutional Control and Engineering Controls.

The Property is not listed as having an Institutional Control or Engineering Control.

State and Tribal Voluntary Cleanup Sites

The California Environmental Protection Agency, Department of Toxic Substances Control compiles a list of Voluntary Cleanup Sites.

The Property is not listed as a Voluntary Cleanup Site. No Voluntary Cleanup Sites are listed within one-half mile of the Property.

State and Tribal Brownfield Sites

The California Environmental Protection Agency, Department of Toxic Substances Control compiles a list of Brownfield Sites.

The Property is not listed as a Brownfield Site. No Brownfield Sites are listed within a half mile of the Property.

CA SLIC

CA SLIC Region comes from California Regional Water Quality Control Board.

The Property is not listed as SLIC facility. No SLIC facilities are listed within one-half mile of the Property.

San Bernardino County Permits

The San Bernardino County Permits database is compiled by the San Bernardino County Fire Department, Hazardous Materials Division.

Ten San Bernardino County Permit facilities are listed within one-fourth mile of the Property. Six of ten sites are located beyond one-eighth mile of the Property. Based on the distance, these six sites are not considered a recognized environmental condition to the Property. The remaining four sites are located within one-eighth mile of the Property and are discussed below:

- **Alliance Service Center (15901 Main Street)** is one of the addresses included on the Property, and was identified as a San Bernardino Count Permit facility. Based on available information, a hazardous material handling permit has been issued to Alliance Service Center for the storage, handling and generation of hazardous materials and wastes at the Property. No violation was found against Alliance Service Station that would impact the Property. Based on the above information, this facility is not considered a recognized environmental condition to the Property.

- **Dave Automotive Repair (15940 Walnut Street)** is approximately 0.06 mile to the southeast of the Property, and was identified as a San Bernardino Count Permit facility. Based on available information, a hazardous material handling permit has been issued to Dave Automotive Repair for the storage, handling and generation of hazardous materials and wastes at the Property. No violation was found against Dave Automotive Repair that would impact the Property. Based on the above information, this facility is not considered a recognized environmental condition to the Property.

- **Sunset Paint and Body (15950 Walnut Street)** is approximately 0.07 mile to the southeast of the Property, and was identified as a San Bernardino Count Permit facility. Based on available information, a hazardous material handling permit has been issued to Dave Automotive Repair for the storage, handling and generation of hazardous materials and wastes at the Property. No violation was found against Dave Automotive Repair that would impact the Property. Based on the above information, this facility is not considered a recognized environmental condition to the Property.

- **Hesperia Chevron (15933 Walnut Street)** is approximately 0.10 mile to the northeast of the Property, and was identified as a San Bernardino Count Permit facility. Based on

available information, a hazardous material handling permit has been issued to Dave Automotive Repair for the storage, handling and generation of hazardous materials and wastes at the Property. No violation was found against Dave Automotive Repair that would impact the Property. Based on the above information, this facility is not considered a recognized environmental condition to the Property.

4.2 Additional Environmental Record Sources

4.2.1 County Recorder/ Assessor

Information regarding environmentally-related liens or easements was requested from San Bernardino County Assessor. The information was not readily available. Such information requires a record search at the County Recorder. No special easements are shown on the County Assessor Parcel Map on, or adjacent to, the Property. The subject Property is not listed on the California Department of Toxic Substances Deed Restrictions database in the EDR database report.

4.2.2 Fire/Police Officials

The Hesperia Fire Department was contacted for evidence indicating the presence of USTs and for the use of hazardous materials. However, personnel at this Department indicated that they do not maintain UST records.

4.2.3 Building Department

Records from Hesperia Building Department were reviewed for evidence indicating the developmental history of the subject Site, and for the presence of documentation relative to underground storage tanks. The records indicated that Black Gold Gas Station occupied the Property (15901 Main Street) in 1989. In addition, a permit was issued for the construction of a 19-unit motel (Travel Lodge) at 15895 Main Street in 1990. No records of demolition were indicated in the files and no records indicative of the current or past presence of USTs were noted.

4.2.4 Other Agencies

A Freedom of Information Request (FOIA) was submitted to the San Bernardino Fire Department for records indicating current or past usage of hazardous materials, USTs or aboveground storage tanks (ASTs) at the Property. However, as of the release of this report, a response has not yet been received. Upon receipt of any pertinent information, this ESA will be amended to incorporate same.

4.3 Physical Setting Sources

4.3.1 Topography

The United States Geological Survey (USGS), Baldy Mesa Quadrangle 7.5-Minute series topographic map was reviewed for this ESA. This map was published by the USGS in 1956 and was photorevised in 1978. According to the contour lines on the topographic map, the Property is located at approximately 3,280 feet above mean sea level (MSL). The contour lines in the area of the Property indicate the area is sloping gently to the northeast. The property is depicted as developed with four small structures. No

production wells or other significant surface features are as depicted as present on the USGS map.

4.3.2 Soils/Geology

The Property is located in the southern portion of the Mojave Desert, along the northern flank of the San Gabriel Mountains, at an approximate elevation of 3,280 feet above mean sea level.

The regional sediments in the area of the Property were primarily deposited in a low to moderate energy stream environment, as evidenced by the predominant fine-to-medium grained sand fraction. Intermittent episodes of lower and higher energy environments are evident by the presence of silts and gravels, respectively. Such stratigraphy is consistent with broad, low-to-medium gradient, alluvial fan distributary systems where main flow channels episodically alter their course as influenced by topographic los and highs that form during the on-going sedimentation. Buried channels with these fans typically minor the surface gradient and transmit groundwater in a similar manner.

4.3.3 Hydrology

Under natural, undisturbed conditions, shallow groundwater flow generally follows the topography of the land surface and, on this basis, the topography suggests that groundwater flow across the site is in a northeasterly direction. However, localized conditions can alter flow direction and thus the presumed flow may not coincide with the actual in the subject area. Shallow groundwater in the vicinity of the Property is anticipated to be at a depth of approximately 60’ below ground surface.

The nearest surface water in the vicinity of the Property is the Mojave River located approximately 4.0 miles to the northeast of the Property. No settling ponds, lagoons, surface impoundments, wetlands or natural catch basins were observed at the Property during this investigation.

4.3.4 Flood Zone Information

According to the map image produced at ESRI/Federal Emergency Management Agency (FEMA) Project Impact Hazard Site, the Property is not located in a flood zone. The map was derived from the effective Flood Insurance Rate Map (FIRM) but the base cartographic map information such as roads, rivers, and political boundaries were not. Therefore, information derived from this map image should be considered an advisory tool for general hazard awareness.

4.3.5 Oil and Gas Exploration

California Division of Oil and Gas maps ad records were researched for data regarding the presence of petroleum-producing properties and/or “wildcat” oil or gas wells in the site vicinity. No oil and gas wells were identified on the Property and in the immediate vicinity of the Property.

4.4 Historical Use Information On The Property

Based on the historical document, the northern Property was utilized for gas station purposes from 1959 to 1998. In addition, southern portion of the Property was utilized for used car sales purposes from 1980 to 2006. Prior to 1959, the Property was undeveloped land. The northern portion of the Property has been utilized for used car sales purposes since 1990's.

In 1998, two 5,000-gallon and one 8,000-gallon USTs were removed from the Property. Soil samples were collected from beneath the USTs, piping and dispensers, and from the soil stockpiles for analytical testing. The soil samples were analyzed for TPHg, Benzene, toluene, xylene, ethylbenzene and MTBE. Low levels of petroleum hydrocarbons were detected in the soil samples analyzed. Based on this finding, the Property was considered a low risk site and recommended for closure. On June 21, 2007, the San Bernardino County Fire Department issued a "No Further Action" letter to Mohammad Riaz.

4.4.1 Aerial Photographs

Available aerial photographs dated 1953, 1959, 1968, 1980, 1989, 1994 and 2005 list all years reviewed, from GeoSearch, Inc. were reviewed for this ESA. Copies of selected photographs are included in Appendix B-1 of this report. The photographs are discussed below:

Date: 1953
Scale: 1" = 500'
Photo I.D. No.: NA

Description: The 1953 aerial photograph shows the Property and the surrounding properties as undeveloped. Main Street is visible to the north of the Property. 7th Avenue and Walnut Street are not visible.

Date: 1959
Scale: 1" = 500'
Photo I.D. No.: NA

Description: The 1959 aerial photograph shows the northeastern portion of the Property is developed with a gas station and the northwestern portion of the Property is developed with a small structure. The remaining portion of the Property is undeveloped. The properties to the north, east and west are undeveloped and the property to the south is developed with residential/commercial improvements. Main Street, 7th Avenue and Walnut Street are visible. Developments are visible in the general area.

Date: 1968
Scale: 1" = 500'
Photo I.D. No.: NA

Description: The 1968 aerial photograph shows no major changes to the Property and the surrounding properties in comparison to 1959 photograph. In addition, more developments are visible to the south of the Property.

Date: 1972
Scale: 1" = 500'
Photo ID: NA

Description: The 1972 aerial photograph shows no major changes to the Property and the surrounding properties in comparison to 1968 photograph.

Date: 1980
Scale: 1" = 500'
Photo ID: NA
Description: The 1980 aerial photograph shows the northeastern portion of the Property is developed with a gas station and the northwestern portion of the Property is developed with a small structure. The southern portion of the Property is utilized for used car purposes. Two small structures are visible on the southern portion of the Property. The property to the east is developed with commercial structures. The property to the south is developed with a small commercial structure and the properties to the north and west are undeveloped. More developments are visible in the general area.

Date: 1989
Scale: 1" = 500'
Photo ID: NA

Description: The 1989 aerial photograph shows no major changes to the Property and the properties east and south of the Property in comparison to 1980 photograph. The property to the north is developed with an office building and the property to the west is developed with a retail center.

Date: 1994
Scale: 1" = 500'
Photo ID: NA

Description: The 1994 aerial photograph shows no major changes to the Property and the surrounding properties in comparison to 1989 photograph.

Date: 2005
Scale: 1" = 500'
Photo ID: NA

Description: The 2005 aerial photograph shows the northeastern portion of the Property is developed with a gas station and the northwestern and southern portions of the Property are utilized for used car lot purposes. A concrete paved area and a structure is visible in the southwestern portion of the Property. The surrounding properties are developed with commercial structures. A gas station is visible to the east of the Property. More developments are visible in the general area.

4.4.2 Fire Insurance Maps

LAC requested historical Sanborn Fire Insurance maps for the Property from Environmental Data Resources (EDR), and was subsequently informed that no such maps

for the Property or immediate vicinity are maintained in EDR's collection, which ranges from 1887-1994. A copy of the "no coverage" notification is included in Appendix B, herein.

4.4.3 City Directories

Historical City directories were reviewed at the Haines Library of Fullerton, California for past names and business that were listed for the Property and adjoining properties. The findings are presented in the following table:

YEAR	ON-SITE	ADJOINING PROPERTIES
1994	Norm Adams Concrete (15887) Alliance Service Center (15901) Sills Auto Sales (15888)	North – Multiple Office Listings
		East – No Listings
		South – No Listings
		West – Multiple Retail Listings
1998	Norm Adams Concrete (15887) Alliance Service Center (15901) Sills Auto Sales (15888)	North – Multiple Office Listings
		East – No Listings
		South – No Listings
		West – Multiple Retail Listings
2000	Norm Adams Concrete (15887) Alliance Service Center (15901) Sills Auto Sales (15888)	North – Multiple Office Listings
		East – Hesperia Chevron
		South – No Listings
		West – Multiple Retail Listings
2002	Alliance Service Center (15901) Sills Auto Sales (15888)	North – Multiple Office Listings
		East – No Listings
		South – No Listings

YEAR	ON-SITE	ADJOINING PROPERTIES
		West – Multiple Retail Listings
2004	Alliance Service Center (15901) Sills Auto Sales (15888)	North – Multiple Office Listings
		East – No Listings
		South – No Listings
		West – Multiple Retail Listings
2006	Angel's Auto Expo (15887) Alliance Service Center, Best Buy Auto Sales (15901) Sills Auto Sales (15888)	North – Multiple Office Listings
		East – No Listings
		South – No Listings
		West – Multiple Retail Listings

4.4.4 Historical Topographic Maps

LAC obtained historical topographic maps from topozone.com. Copies of the historical topographic maps are included in Appendix B-4.

Date: 1978
Description: This map depicts the Property as developed with five small structures. The properties to the east, south and west are depicted as developed with several small structures. The property to the north is depicted as undeveloped. No production wells or other significant surface features are as depicted as present on the USGS map.

4.4.5 Additional Historical Record Sources

Historical use of the Property was researched using other standard historical sources. No other research was conducted or deemed necessary for this assessment.

4.4.6 Prior Assessment Reports

LAC was provided with several prior environmental investigation reports that were conducted at the Property. Following is a summary, in order of date prepared (earliest to most recent) of these reports:

A gas station occupied the Property until 1998 and operated two 5,000-gallon UST and one 8,000-gallon USTs on the premises. These USTs were removed from the Property in 1998. Soil samples were collected from beneath the USTs, piping and dispensers, and from the soil stockpiles for analytical testing. The soil samples were analyzed for TPHg, Benzene, toluene, xylene, ethylbenzene and MTBE. Low levels of petroleum hydrocarbons were detected in the soil samples analyzed. Based on this investigation, the

Property was considered a low risk site and recommended for closure. On June 21, 2007, the San Bernardino County Fire Department issued a "No Further Action" letter to Mohammad Riaz.

4.5 Historical Use Information on Adjoining Properties

By review of the standard historical sources referenced above, the historical uses of the adjoining properties are summarized below:

North: Prior to the current use as a Professional Center, the property to the north was undeveloped from 1953 to 1980.

South: Prior to the current use as a furniture store, the property to the south was undeveloped.

East: Prior to the current use as gas station (Chevron Station) and a restaurant (Character Bar & Grill), the property to the east was undeveloped.

West: Prior to the current use as a retail center (Rose Plaza), the property to the west was undeveloped.

5.0 SITE RECONNAISSANCE

5.1 Methodology And Limiting Conditions

The Property was inspected by Nasim Ahmed on October 8, 2007. The weather at the time of the site visit was sunny with the temperature in upper 80's. Mr. Mohammad Riaz, Mr. Norm Adams and Mr. Khoury provided site access and accompanied LAC.

5.2 General Site Setting

The Property consists of a rectangular-shaped parcel approximately 1.65 acres in size. The Property is designed and used for commercial purposes. Currently, the Property is developed with three structures that were constructed in 1957, 1967 and 1980. The structures at the Property are one story in height, and comprise a total of 1,978 square feet of building space. The Property offers a total of three tenant spaces for commercial use. No manufacturing or industrial tenants are present at the Property. The Property also consists of gravel paved area located on the western portion of the Property.

5.3 Exterior Observations

The periphery of the Property was visually and/or physically observed, as well as the periphery of the structure on the Property. The Property was viewed from all adjacent public thoroughfares. No road or path was identified on the Property as likely to have been used as an avenue for the disposal of hazardous substances or petroleum products.

5.3.1 Solid Waste Disposal

Solid waste on the Property is collected in a 10-cubic yard dumpster in the parking area. The solid waste is collected once a week by Advance Disposal. The dumpster was noted to contain miscellaneous cardboard at the time of the Property reconnaissance and no indication of potentially hazardous material disposal was noted during LAC's reconnaissance.

5.3.2 Surface Water Drainage

Surface water drainage from the Property is via sheet flow to the curb and gutter systems located along the surrounding streets. Storm drains are located in various locations throughout the parking lots, along curbs and in landscaped areas, which discharge to the municipal stormwater management system. Storm water runoff from the unpaved portion of the Property percolates into the ground.

5.3.3 Wells and Cisterns

No aboveground evidence of wells or cisterns was observed during the site reconnaissance.

5.3.4 Wastewater

No indications of industrial wastewater disposal or treatment facilities were observed during the onsite reconnaissance.

5.3.5 Additional Site Observations

Two aboveground hydraulic lifts and one abandoned belowground hydraulic lift were noted inside the auto repair building. In addition, a smog check machine, tools, parts and miscellaneous materials were noted inside the auto repair building. Miscellaneous materials were also note outside behind the building. Four 55-gallon waste oil drums placed on a secondary containment were noted inside the trash enclosure along the eastern boundary of the Property. Minor oil stains were noted, however, no floor cracks were observed.

A concrete paved area and abandoned belowground hydraulic lift were noted in the southwest corner of the Property. Oil stains were noted near the hydraulic lift, however, no significant floor cracks were observed.

5.4 Interior Observations

LAC inspected 100% of common areas within the subject buildings, and a representative number of rooms at the Property.

5.5 Potential Environmental Conditions

5.5.1 Hazardous Materials and Petroleum Products Used or Stored at the Site

The following table identifies the hazardous materials and hazardous wastes found to be used, stored or generated on the Property.

HAZARDOUS SUBSTANCES/WASTES NOTED ONSITE				
SUBSTANCE	CONTAINER SIZE/ TOTAL AMOUNT	LOCATION	SUBSTANCE USE	DISPOSAL METHOD (IF APPLICABLE)
Waste oil	Four 55-gallon containers	Alliance Auto Center	Auto repair	Starlite Reclamation

5.5.1.1 Unlabeled Containers and Drums

No unlabeled containers or drums were observed during the site reconnaissance.

5.5.1.2 Disposal Locations of Regulated/ Hazardous Waste

No obvious indications of hazardous waste generation, storage or disposal were observed on the Property or were indicated during interviews.

5.5.2 Evidence of Releases

No obvious indications of hazardous material or petroleum product releases, such as stained areas or stressed vegetation, was observed during the site reconnaissance or reported during interviews.

5.5.3 Polychlorinated Biphenyls (PCBs)

Older transformers and other electrical equipment could contain polychlorinated biphenyls (PCBs) at a level that subjects them to regulation by the U.S. EPA. PCBs in electrical equipment are controlled by United States Environmental Protection Agency

regulations 40 CFR, Part 761. Under the regulations, there are three categories into which electrical equipment can be classified:

- Less than 50 parts per million (PPM) of PCBs – "*Non-PCB" transformer*
- 50 ppm-500 ppm – "*PCB-Contaminated" electrical equipment*
- Greater than 500 ppm – "*PCB" transformer*

LAC did not observe any electrical transformers on the Property during the site reconnaissance.

5.5.4 Landfills

No evidence of on-site landfilling was observed or reported during the site reconnaissance.

5.5.5 Pits, Ponds, Lagoons, Sumps, and Catch Basins

No evidence of on-site pits, ponds, lagoons was observed or reported during the site reconnaissance. No evidence of sumps or catch basins, other than used for stormwater removal, was observed or reported during the site reconnaissance.

5.5.6 On-Site ASTs and USTs

No evidence of aboveground or underground storage tanks was observed during the Site reconnaissance.

Based on the available information, a gas station occupied the Property until 1998 and operated two 5,000-gallon and one 8,000-gallon USTs on the premises. These USTs were removed from the Property in 1998. Soil samples were collected from beneath the USTs, piping and dispensers, and from the soil stockpiles for analytical testing. The soil samples were analyzed for TPHg, Benzene, toluene, xylene, ethylbenzene and MTBE. Low levels of petroleum hydrocarbons were detected in the soil samples analyzed. Based on this investigation, the Property was considered a low risk site and recommended for closure. On June 21, 2007, the San Bernardino County Fire Department issued a "No Further Action" letter to Mohammad Riaz.

5.5.7 Radiological Hazards

No radiological substances or equipment was observed or reported stored on the subject site.

5.5.8 Drinking Water

The Property is connected to the city water supply provided by Hesperia Water District. According to the Water Quality Report, the drinking water supplied to the site is within state and federal standards, including lead and copper.

5.5.9 Additional Hazard Observations

No additional hazards were observed on the site.

5.5.10 Asbestos-Containing Materials (ACM)

In accordance with the Scope of Services, LAC has conducted a limited, visual evaluation of interior, accessible areas for the presence of suspect asbestos containing materials (ACM) at the Property. The objective of this visual survey was to note the presence and condition of suspect ACM observed. Based on the date of construction (1957, 1967 and 1980) there is a potential that ACM was used in construction materials. In addition, the Occupational Safety and Health Administration (OSHA) regulation 29 CFR 1926.1101 requires certain construction materials to be *presumed* to contain asbestos, for purposes of this regulation. All thermal system insulation (TSI), surfacing material, and asphalt/vinyl flooring that are present in a building constructed prior to 1981 and have not been appropriately tested are presumed asbestos containing material (PACM).

The survey consisted of noting observable materials (materials which were readily accessible and visible during the course of the site reconnaissance) that are commonly known to potentially contain asbestos. This activity was not designed to discover all sources of suspect ACM, PACM, or asbestos at the site; or to comply with any regulations and/or laws relative to planned disturbance of building materials such as renovation or demolition, or any other regulatory purpose. Rather, it is intended to give the lender an indication if significant (significant due to quantity, accessibility, or condition) potential sources of ACM or PACM are present at the Site. Additional sampling, inspection, and evaluation will be warranted for any other use.

No building plans or specifications, which may be useful in determining areas likely to have used ACM, were made available for review.

The following table represents a summary suspect ACM observed in this facility.

SUSPECT ACM				
Suspect ACM	Estimated Quantity of ACM (SF/LF)	Friable Yes/No	PACM?	Physical Condition
Dry wall and wall joint compound		No	Yes	Good
Floor tiles/mastic		No	Yes	Good
Roofing Materials		No	Yes	Good
Exterior Plaster		No	Yes	Good

According to the EPA, ACM and PACM that is intact and in good condition can, in general, be managed safely in-place under an Operations and Maintenance (O&M) program until removal is dictated by renovation, demolition, or deteriorating material condition. Prior to any disturbance of the construction materials within this facility, a comprehensive ACM survey is recommended.

5.5.11 Radon

The US EPA has prepared a map to assist National, State, and local organizations to target their resources and to implement radon-resistant building codes. The map divides the country into three Radon Zones, Zone 1 being those areas with the average predicted indoor radon concentration in residential dwellings exceeding the EPA Action limit of 4.0 picoCuries per Liter (pCi/L). It is important to note that the EPA has found homes with elevated levels of radon in all three zones, and the EPA recommends site specific

testing in order to determine radon levels at a specific location. However, the map does give a valuable indication of the propensity of radon gas accumulation in structures. Review of the EPA Map of Radon Zones places the Property in Zone 2, where average predicted radon levels are between 2.0 and 4.0 pCi/L. Based on the non-residential use of site buildings, radon is not considered a significant environmental concern for the Property.

5.5.12 Lead-Based Paint

In accordance with the Scope of Services, LAC has conducted a limited, visual evaluation to note the condition of painted surfaces at the property. Due to the date of construction (1957, 1967 and 1980), lead-based paint may be present. The objective of this visual survey was to note the presence and condition various painted surfaces. In general, the painted surfaces appeared in good condition, as no chalking, peeling or flaking paint was observed. Based on the non-residential use of site buildings, lead-based paint is not considered a significant environmental concern for the Property.

5.5.13 Mold Evaluation

As part of this assessment, LAC performed a limited visual inspection for the conspicuous presence of mold. A class of fungi, molds has been found to cause a variety of health problems in humans, including allergic, toxicological, and infectious responses. Molds are decomposers of organic materials, and thrive in humid environments, and produce spores to reproduce, just as plants produce seeds. When mold spores land on a damp spot indoors, they may begin growing and digesting whatever they are growing on in order to survive. When excessive moisture or water accumulates indoors, mold growth will often occur, particularly if the moisture problem remains undiscovered or unaddressed. As such, interior areas of buildings characterized by poor ventilation and high humidity are the most common locations of mold growth. Building materials including drywall, wallpaper, baseboards, wood framing, insulation and carpeting often play host to such growth. Moisture control is the key to mold control. Molds need both food and water to survive; since molds can digest most things, water is the factor that limits mold growth.

The EPA recommends the following action to prevent the amplification of mold growth in buildings:

- Fix leaky plumbing and leaks in the building envelope as soon as possible;
- Watch for condensation and wet spots. Fix source(s) of moisture problem(s) as soon as possible;
- Prevent moisture due to condensation by increasing surface temperature or reducing the moisture level in air (humidity). To increase surface temperature, insulate or increase air circulation. To reduce the moisture level in air, repair leaks, increase ventilation (if outside air is cold and dry), or dehumidify (if outdoor air is warm and humid);
- Keep heating, ventilation, and air conditioning (HVAC) drip pans clean, flowing properly, and unobstructed;
- Vent moisture-generating appliances, such as dryers, to the outside where possible;

- Maintain low indoor humidity, below 60% relative humidity (RH), ideally 30-50%, if possible;
- Perform regular building/HVAC inspections and maintenance as scheduled;
- Clean and dry wet or damp spots within 48 hours;
- Don't let foundations stay wet. Provide drainage and slope the ground away from the foundation.

LAC observed the accessible interior areas of the Property structure(s), including interior walls and ceilings (in the units observed), in-unit and common mechanical closets, areas under sinks, and flat roofs (for evidence of water ponding) for the presence of conspicuous mold or observed water intrusion or accumulation. LAC did not note conspicuous visual or olfactory indications of the presence of mold, nor did LAC observe obvious indications of significant water damage. No sampling was conducted as part of this assessment.

This activity was not designed to discover all areas, which may be affected by mold growth on the Property. Rather, it is intended to give the client an indication as to whether or not conspicuous (based on observed areas) mold growth is present at the Property. This evaluation did not include a review of pipe chases, HVAC systems or areas behind enclosed walls and ceilings.

6.0 INTERVIEWS

6.1 Interview with Owner

Mohammad Riaz,

Norm Adams, (760) 964-5401

6.2 Interview with Site Manager

No Property Manager was interviewed

6.3 Interview with Occupants

Mohammad Riaz,

6.4 Interview with Local Government Officials

City of Hesperia Building Department, (760) 947-1218

City of Hesperia Fire Department, (760) 947-8023

San Bernardino County Assessor's Office, (909) 387-8307

6.5 Interview with Others

No other persons were interviewed.

7.0 FINDINGS AND CONCLUSIONS

7.1 Findings

7.1.1 On-Site Environmental Conditions

LAC noted the following on-site environmental conditions during the course of this assessment:

Two abandoned belowground hydraulic lifts were observed at the Property. No knowledge of previous equipment service and maintenance operations was available.

Four abandoned 55-gallon waste oil drums were noted at the Alliance Auto Center.

Based on the date of construction (1957, 1967 and 1980) there is a potential that ACM was used in construction materials. Suspect ACM identified included dry wall and wall joint compound, floor tiles/mastic, roofing materials and exterior plaster. Generally, these materials appeared to be in good condition.

7.1.2 Off-Site Environmental Conditions

No off-site environmental conditions were identified that were considered likely to impact the Property.

7.1.3 Previously Resolved Environmental Conditions

A gas station occupied the Property until 1998 and operated two 5,000-gallon UST and one 8,000-gallon USTs on the premises. These USTs were removed from the Property in 1998. Soil samples were collected from beneath the USTs, piping and dispensers, and from the soil stockpiles for analytical testing. The soil samples were analyzed for TPHg, Benzene, toluene, xylene, ethylbenzene and MTBE. Low levels of petroleum hydrocarbons were detected in the soil samples analyzed. Based on this investigation, the Property was considered a low risk site and recommended for closure. On June 21, 2007, the San Bernardino County Fire Department issued a "No Further Action" letter to Mohammad Riaz.

7.1.4 De Minimis Environmental Conditions

No *de minimis* environmental conditions were identified in connection with the Property during the course of this assessment.

7.2 Opinion

Two abandoned belowground hydraulic lifts were observed at the Property. No knowledge of previous equipment service and maintenance operations was available. It is unknown whether the subsurface media has been impacted from these abandoned belowground hydraulic lifts.

7.3 Conclusions

LAC has performed a Phase I Environmental Site Assessment in conformance with the scope and limitations of ASTM Practice E 1527-05 of Former Gas Station and Office Building located at 15887-15901 Main Street and 15864 and 15888 Walnut Street, Hesperia, California, the Property. Any exceptions to or deletions from this practice are described in Section 1.4 of this report. This assessment has revealed no evidence of recognized environmental conditions in connection with the Property, except for the following:

- Two abandoned belowground hydraulic lifts were observed at the Property. No knowledge of previous equipment service and maintenance operations was available.

- Four abandoned 55-gallon waste oil drums were noted at the Alliance Auto Center.

- Based on the date of construction (1957, 1967 and 1980) there is a potential that ACM was used in construction materials. Suspect ACM identified included dry wall and wall joint compound, floor tiles/mastic, roofing materials and exterior plaster. Generally, these materials appeared to be in good condition.

7.4 Recommendations

Based on the findings of this ESA, LAC recommends the following:

- LAC recommends a limited subsurface investigation in the area the abandoned below grade hydraulic lifts in order to evaluate if the hydraulic fluids from the existing lifts have impacted soils and/or groundwater at the Property. Furthermore, the hydraulic oil tanks should be removed from the pits and should be properly disposed of in accordance with the local and state guidelines.

- Four 55-gallon waste oil drums should be properly disposed of in accordance with the local and state guidelines.

- An Operations and Maintenance (O&M) Program should be implemented in order to safely manage the identified presumed asbestos-containing materials located in the subject buildings on the Property. Prior to any planned remodeling or demolition, a comprehensive survey for asbestos-containing materials should be conducted. Removal of identified ACMs, including the preparation of specifications, should be conducted by a licensed asbestos abatement contractor and/or Certified Asbestos Consultant, according to applicable regulations.

7.5 Deviations

This Phase I ESA substantially complies with the scope of services and ASTM 1527-05, as amended, except for exceptions and/or limiting conditions as discussed in Section 1.4.

8.0 REFERENCES

Reports, Plans, and Other Documents Reviewed:

American Society for Testing and Materials, *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process*, ASTM Designation: E 1527-2005.

United States Geological Survey, *EPA Map of Radon Zones (Document EPA-402-R-93-071),* accessed via the Internet, February 2007.

United States Geological Survey Topographic Map 1996, 7.5 minute series, *Baldy Mesa Quadrangle*, scale 1:24,000, U.S. Geological Survey.

First Search Technologies Corporation, to Cottage Street, Norwood, MA 02062, *Environmental First Search Report,* September 12, 2007.

AGENCIES CONTACTED:

City of "Hesperia"

Building Department

Planning Department

Fire Department

County of "San Bernardino"

Fire Department

Assessor Office

State of "California"

Regional Water Quality Control Board

9.0 SIGNATURES OF ENVIRONMENTAL PROFESSIONALS

We declare that, to the best of our professional knowledge and belief, we meet the definition of *Environmental professional* as defined in §312.10 of 40 CFR 312 and we have the specific qualifications based on education, training, and experience to assess a *property* of the nature, history, and setting of the subject *property*. We have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

Nasim Ahmed, REA
Professional Associate

Fred Howlett
Client Manager

10.0 QUALIFICATIONS OF ENVIRONMENTAL PROFESSIONALS

10.1 Definition of an Environmental Professional

An Environmental Professional means: *(1)* a person who possesses sufficient specific education, training, and experience necessary to exercise professional judgment to develop opinions and conclusions regarding conditions indicative of releases or threatened releases (see §312.1(c)) on, at, in, or to a property, sufficient to meet the objectives and performance factors in §312.20(e) and (f). *(2)* Such a person must: (i) hold a current Professional Engineer's or Professional Geologist's license or registration from a state, tribe, or U.S. territory (or the Commonwealth of Puerto Rico) and have the equivalent of three (3) years of full-time relevant experience; or (ii) be licensed or certified by the federal government, a state, tribe, or U.S. territory (or the Commonwealth of Puerto Rico) to perform environmental inquiries as defined in §312.21 and have the equivalent of three (3) years of full-time relevant experience; or (iii) have a Baccalaureate or higher degree from an accredited institution of higher education in a discipline of engineering or science and the equivalent of five (5) years of full-time relevant experience; or (iv) have the equivalent of ten (10) years of full-time relevant experience. *(3)* An environmental professional should remain current in his or her field through participation in continuing education or other activities. *(4)* The definition of environmental professional provided above does not preempt state professional licensing or registration requirements such as those for a professional geologist, engineer, or site remediation professional. Before commencing work, a person should determine the applicability of state professional licensing or registration laws to the activities to be undertaken as part of the inquiry identified in §312.21(b). *(5)* A person who does not qualify as an environmental professional under the foregoing definition may assist in the conduct of all appropriate inquiries in accordance with this part if such person is under the supervision or responsible charge of a person meeting the definition of an environmental professional provided above when conducting such activities.

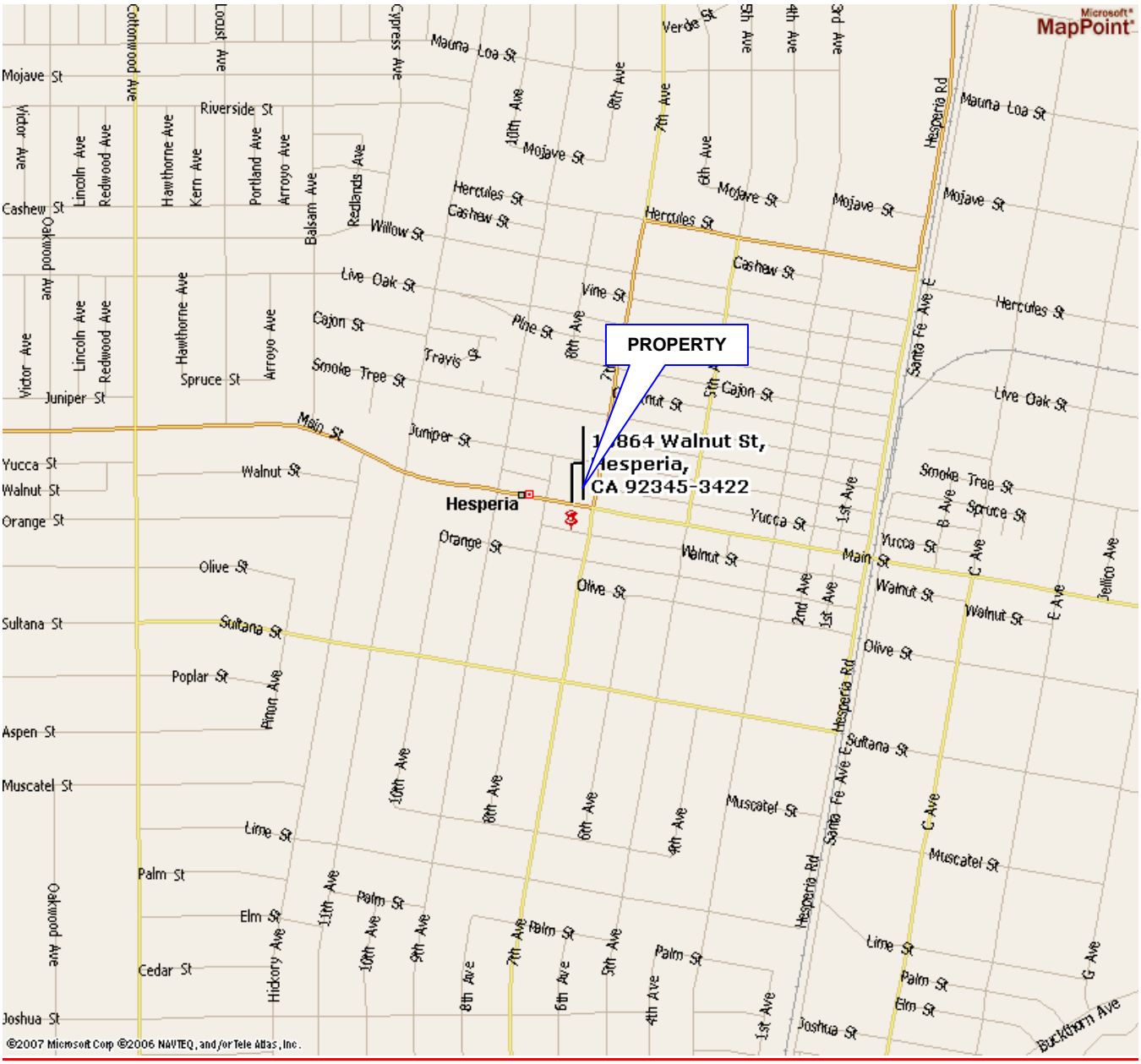
10.2 Relevant Experience

Relevant experience, as used in the definition of environmental professional in this section, means: participation in the performance of all appropriate inquiries investigations, environmental site assessments, or other site investigations that may include environmental analyses, investigations, and remediation which involve the understanding of surface and subsurface environmental conditions and the processes used to evaluate these conditions and for which professional judgment was used to develop opinions regarding conditions indicative of releases or threatened releases (see §312.1(c)) to the subject property.

Resumes for the Environmental Professionals involved in this project are included in Appendix G.

FIGURES

SITE LOCATION MAP
SITE PLAN
SITE TOPOGRAPHIC MAP



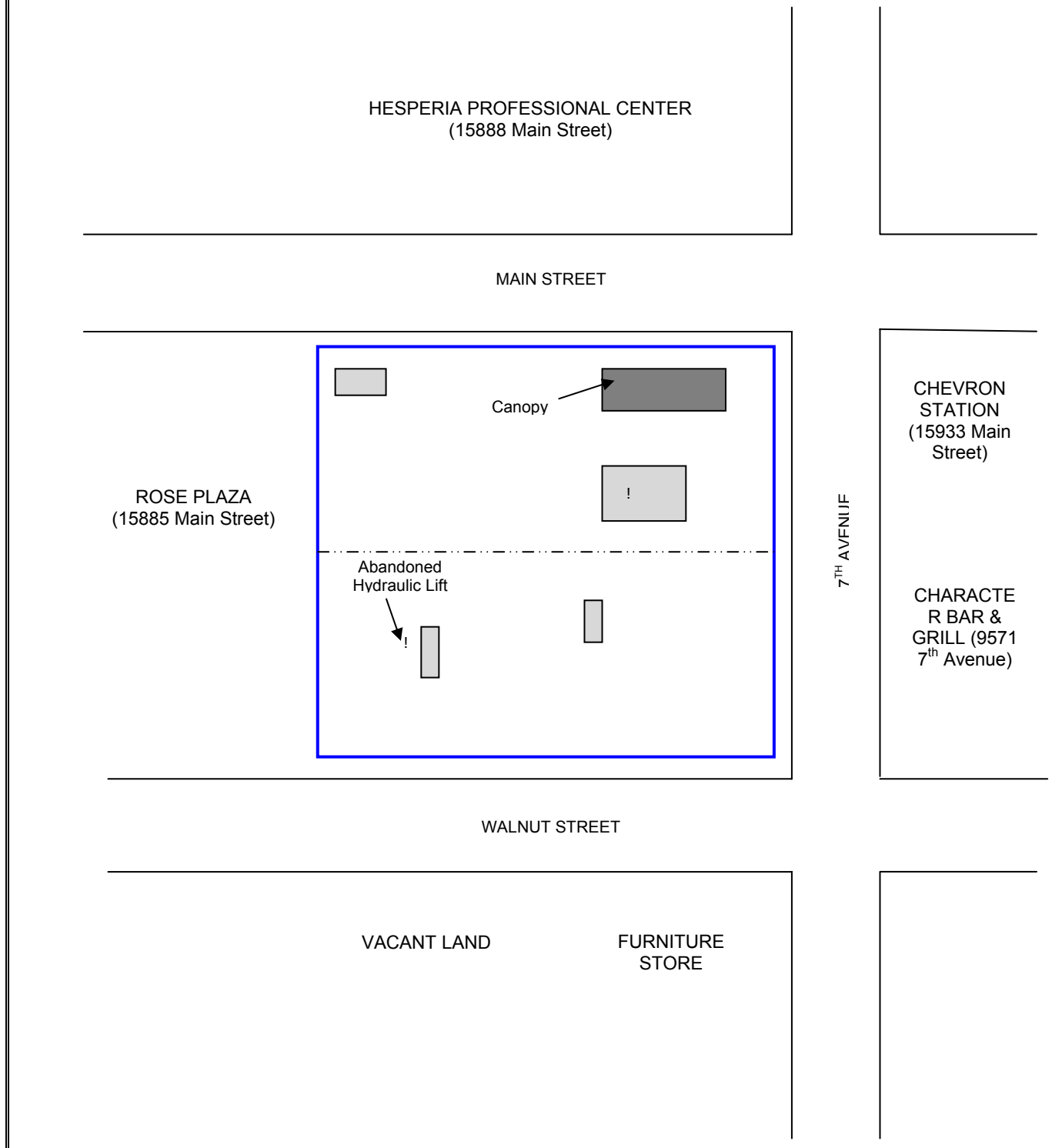
SITE LOCATION MAP

DRAWING NOT TO SCALE N↑

LandAmerica Commercial Services

Site Name: Former Gas Station & Office Bldg.
15864 Walnut Street
Hesperia, CA 92345

Project Number: 07-54108.1



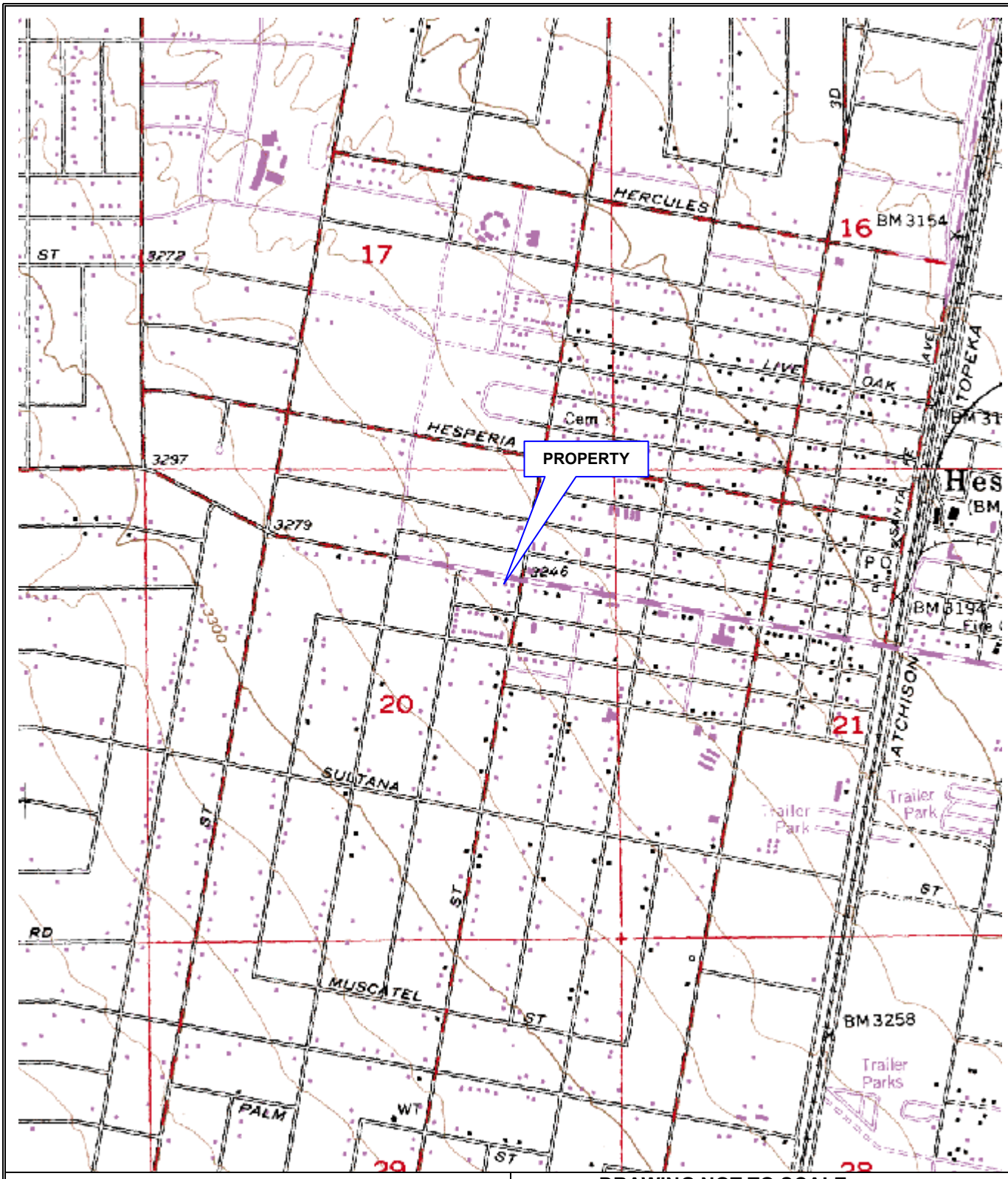
SITE PLAN

DRAWING NOT TO SCALE N↑

LandAmerica Commercial Services

Site Name: **Former Gas Station & Office Bldg.**
15864 Walnut Street
Hesperia, CA 92345

Project Number: **07-54108.1**



TOPOGRAPHIC MAP

DRAWING NOT TO SCALE

Source: USGS 7.5 Minute Topographic Map Hesperia, CA Quadrangle 1981

N↑

LandAmerica Commercial Services

Site Name: **Former Gas Station & Office Bldg.**
15864 Walnut Street
Hesperia, CA 92345

Project Number: **07-54108.1**

APPENDIX A

SITE PHOTOGRAPHS

Photograph Number 1: Photograph of the Property taken from north

Photograph Number 2: Photograph of the Property taken from northeast

Photograph Number 3: Photograph of the Property taken from northwest

Photograph Number 4: Photograph of the Property taken from southeast

Photograph Number 5: Photograph of the Property taken from south

Photograph Number 6: Photograph of the Property taken from southwest

Photograph Number 7: Hesperia Professional Center to the north

Photograph Number 8: Chevron Station to the east

Photograph Number 9: Furniture store and undeveloped land to the south

Photograph Number 10: Rose Plaza to the west

Photograph Number 11: Auto repair building

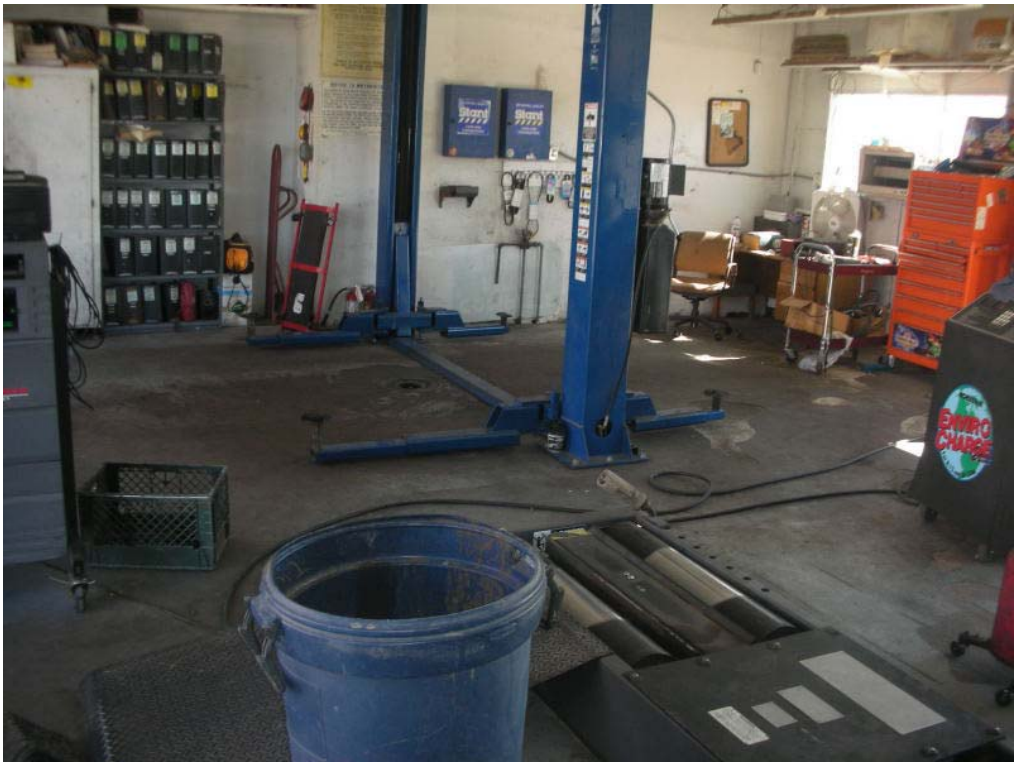
Photograph Number 12: Canopy

Photograph Number 13: Building on the northwestern portion of the Property

Photograph Number 14: Building on the southern portion of the Property

Photograph Number 16: Abandoned belowground hydraulic lift next to the trailer

Photograph Number 17: Waste containers inside the trash enclosure



Photograph Number 18: Auto repair area

Photograph Number 19: Abandoned belowground hydraulic lift in the auto repair area

Photograph Number 20: Air compressor next to the auto repair building

Photograph Number 21: Abandoned automotive tires behind the auto repair building

Photograph Number 22: Miscellaneous materials inside the storage shed

Photograph Number 23: Abandoned automotive tires

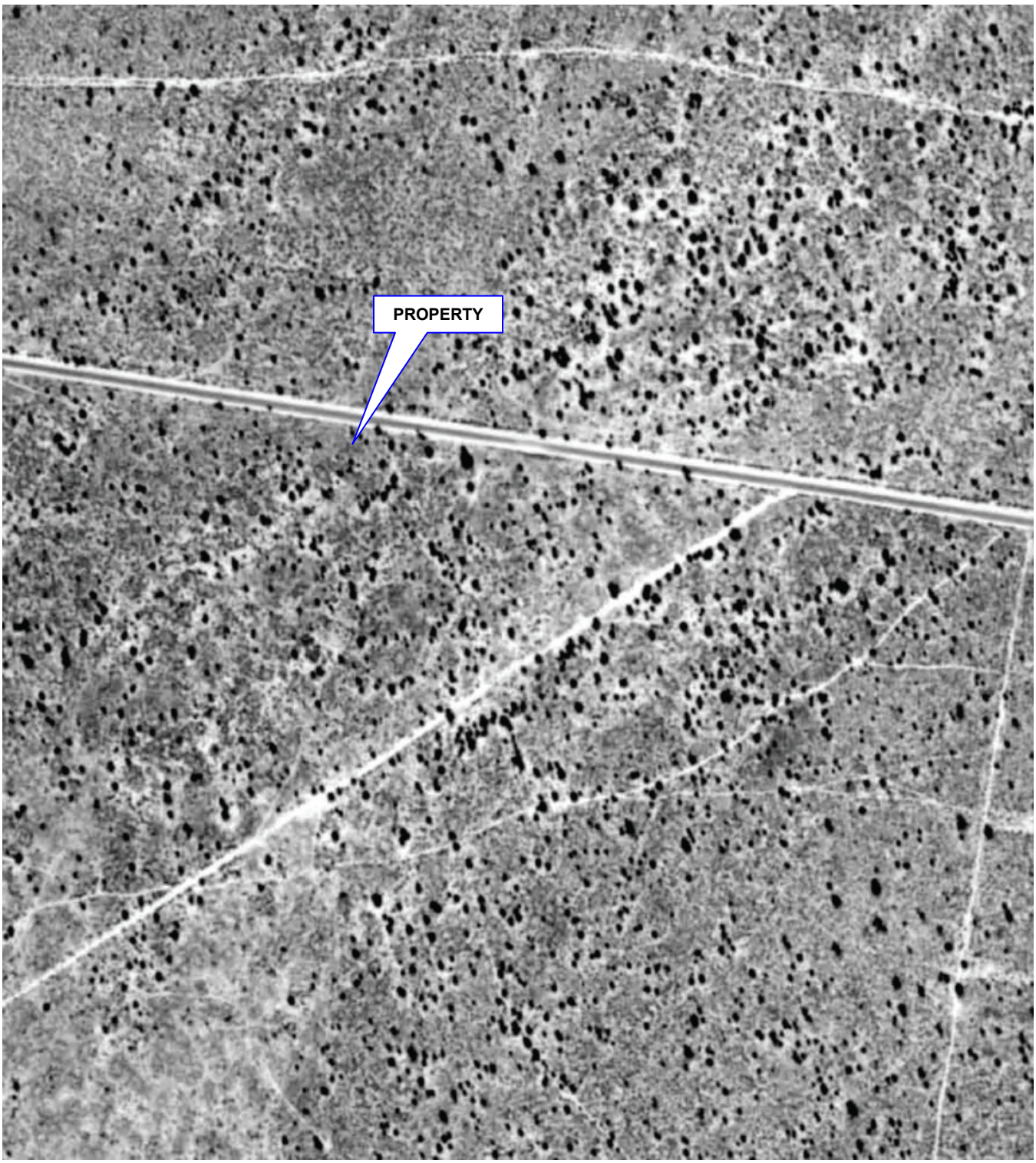
Photograph Number 24: Trash dumpster

APPENDIX B

HISTORICAL RESEARCH DOCUMENTATION

EXHIBIT B-1

AERIAL PHOTOGRAPHS



AERIAL PHOTOGRAPH

Scale:1” 500
Date: 1953
Photo ID No. NA

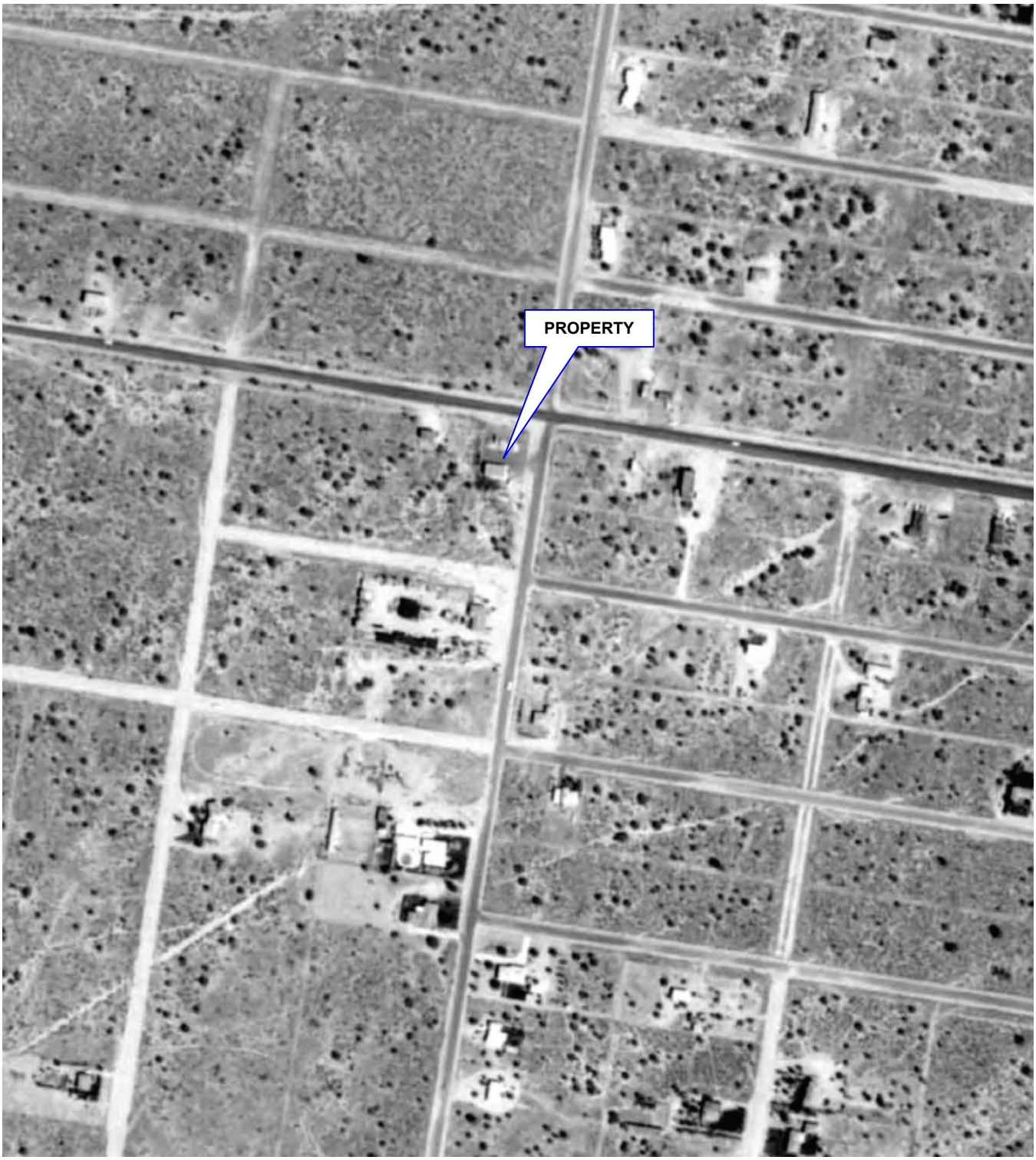
N

LandAmerica Commercial Services

Site Name: Former Gas Station & Office Bldg.

15864 Walnut Street
Hesperia, CA 92345

Project Number: 07-54108.1



AERIAL PHOTOGRAPH

Scale:1” 500
Date: 1959
Photo ID No. NA

N

LandAmerica Commercial Services

Site Name: Former Gas Station & Office Bldg.

15864 Walnut Street
Hesperia, CA 92345

Project Number: 07-54108.1

AERIAL PHOTOGRAPH

Scale:1” 500
Date: 1968
Photo ID No. NA

N

LandAmerica Commercial Services

Site Name: Former Gas Station & Office Bldg.
15864 Walnut Street
Hesperia, CA 92345

Project Number: 07-54108.1

AERIAL PHOTOGRAPH

Scale:1” 500
Date: 1973
Photo ID No. NA

N

LandAmerica Commercial Services

Site Name: Former Gas Station & Office Bldg.
15864 Walnut Street
Hesperia, CA 92345

Project Number: 07-54108.1

AERIAL PHOTOGRAPH

Scale:1” 500
Date: 1980
Photo ID No. NA

N

LandAmerica Commercial Services

Site Name: Former Gas Station & Office Bldg.

15864 Walnut Street
Hesperia, CA 92345

Project Number: 07-54108.1

AERIAL PHOTOGRAPH

Scale:1" 500
Date: 1989
Photo ID No. NA

N

LandAmerica Commercial Services

Site Name: Former Gas Station & Office Bldg.
15864 Walnut Street
Hesperia, CA 92345

Project Number: 07-54108.1

AERIAL PHOTOGRAPH

Scale:1” 500
Date: 1995
Photo ID No. NA

N

LandAmerica Commercial Services

Site Name: Former Gas Station & Office Bldg.
15864 Walnut Street
Hesperia, CA 92345

Project Number: 07-54108.1

AERIAL PHOTOGRAPH

Scale:1” 500
Date: 2005
Photo ID No. NA

N

LandAmerica Commercial Services

Site Name: Former Gas Station & Office Bldg.
15864 Walnut Street
Hesperia, CA 92345

Project Number: 07-54108.1

EXHIBIT B-2

FIRE INSURANCE MAPS

HISTORICAL FIRE INSURANCE MAPS

NO MAPS AVAILABLE

10/5/2007

07-54108

15864 WALNUT ST
HESPERIA, CA 92345

[illegible]

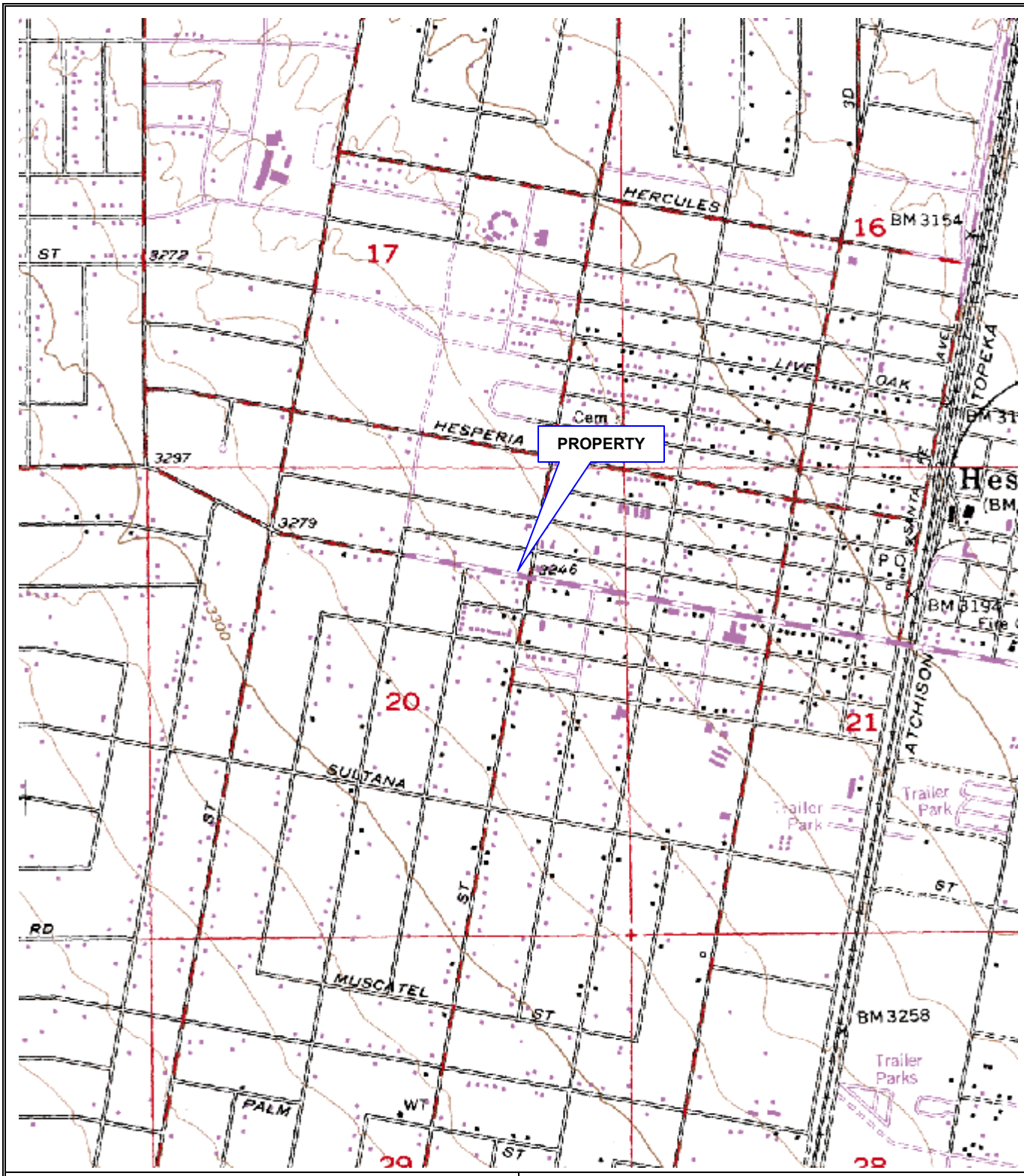
[illegible]

[illegible]

FirstSearch Technology Corporation *10 Cottage Street, Norwood, MA 02062*
Tel: 781-551-0470 Fax: 781-551-0471

EXHIBIT B-3

HISTORICAL TOPOGRAPHIC MAPS



HISTORICAL TOPOGRAPHIC MAP

Exhibit B-3
DRAWING NOT TO SCALE

N↑

Source: USGS 7.5 Minute Topographic Map Hesperia, CA Quadrangle 1981

LandAmerica Commercial Services

Site Name: **Former Gas Station & Office Bldg.**
15864 Walnut Street
Hesperia, CA 92345

Project Number: **07-54108.1**

APPENDIX C

REGULATORY RECORDS DOCUMENTATION

EXHIBIT C-1

MAPPED DATABASE REPORT

TRACK ➤ INFO SERVICES, LLC

Environmental FirstSearch™ Report

Target Property: Former Gas Station and Office Building

15864 WALNUT ST

HESPERIA CA 92345

Job Number: 07-54108

PREPARED FOR:

LandAmerica Assessment Corporation

1320 Harbor Bay Parkway, Suite 260

Alameda, CA 94502

10-05-07

Tel: (866) 664-9981 *Fax: (818) 249-4227*

Environmental FirstSearch is a registered trademark of FirstSearch Technology Corporation. All rights reserved.

Environmental FirstSearch
Search Summary Report

Target Site: 15864 WALNUT ST
HESPERIA CA 92345

FirstSearch Summary

Database	Sel	Updated	Radius	Site	1/8	1/4	1/2	1/2>	ZIP	TOTALS
NPL	Y	07-10-07	1.00	0	0	0	0	0	0	0
NPL Delisted	Y	07-10-07	0.50	0	0	0	0	-	0	0
CERCLIS	Y	07-18-07	0.50	0	0	0	0	-	0	0
NFRAP	Y	07-18-07	0.50	0	0	0	0	-	0	0
RCRA COR ACT	Y	06-06-06	1.00	0	0	0	0	0	0	0
RCRA TSD	Y	06-06-06	0.50	0	0	0	0	-	0	0
RCRA GEN	Y	06-06-06	0.25	0	0	1	-	-	0	1
RCRA NLR	Y	06-06-06	0.12	0	0	-	-	-	0	0
Federal IC / EC	Y	07-17-07	0.25	0	0	0	-	-	0	0
ERNS	Y	12-31-06	0.12	0	0	-	-	-	0	0
Tribal Lands	Y	12-01-05	1.00	0	0	0	0	0	0	0
State/Tribal Sites	Y	08-15-06	1.00	0	0	0	0	1	0	1
State Spills 90	Y	01-03-07	0.12	0	0	-	-	-	0	0
State/Tribal SWL	Y	09-24-07	0.50	0	0	0	0	-	0	0
State/Tribal LUST	Y	04-24-07	0.50	0	0	0	1	-	1	2
State/Tribal UST/AST	Y	01-03-07	0.25	0	3	1	-	-	0	4
State/Tribal EC	Y	NA	0.25	0	0	0	-	-	0	0
State/Tribal IC	Y	04-27-07	0.25	0	0	0	-	-	0	0
State/Tribal VCP	Y	08-15-06	0.50	0	0	0	0	-	0	0
State/Tribal Brownfields	Y	03-27-06	0.50	0	0	0	0	-	0	0
State Permits	Y	03-29-07	0.25	0	4	6	-	-	0	10
State Other	Y	08-08-07	0.25	0	0	0	-	-	1	1
- TOTALS -				0	7	8	1	1	2	19

Notice of Disclaimer

Due to the limitations, constraints, inaccuracies and incompleteness of government information and computer mapping data currently available to TRACK Info Services, certain conventions have been utilized in preparing the locations of all federal, state and local agency sites residing in TRACK Info Services's databases. All EPA NPL and state landfill sites are depicted by a rectangle approximating their location and size. The boundaries of the rectangles represent the eastern and western most longitudes; the northern and southern most latitudes. As such, the mapped areas may exceed the actual areas and do not represent the actual boundaries of these properties. All other sites are depicted by a point representing their approximate address location and make no attempt to represent the actual areas of the associated property. Actual boundaries and locations of individual properties can be found in the files residing at the agency responsible for such information.

Waiver of Liability

Although TRACK Info Services uses its best efforts to research the actual location of each site, TRACK Info Services does not and can not warrant the accuracy of these sites with regard to exact location and size. All authorized users of TRACK Info Services's services proceeding are signifying an understanding of TRACK Info Services's searching and mapping conventions, and agree to waive any and all liability claims associated with search and map results showing incomplete and or inaccurate site locations.

Environmental FirstSearch
Site Information Report

Request Date:	10-05-07	**Search Type:**	COORD
Requestor Name:	marci mccullough	**Job Number:**	07-54108
Standard:	FIRSTSEARCH_RADIUS_ _SB	**Filtered Report**	

Target Site: 15864 WALNUT ST
HESPERIA CA 92345

Demographics

Sites:	19	**Non-Geocoded:**	2	**Population:**	NA
Radon:	NA				

Site Location

	Degrees (Decimal)	**Degrees (Min/Sec)**		**UTMs**
Longitude:	-117.316448	-117:18:59	**Easting:**	470921.516
Latitude:	34.422624	34:25:21	**Northing:**	3808866.907
			Zone:	11

Comment

Comment:

Additional Requests/Services

Adjacent ZIP Codes: 0 Mile(s)

ZIP Code	City Name	ST	Dist/Dir	Sel

Services:

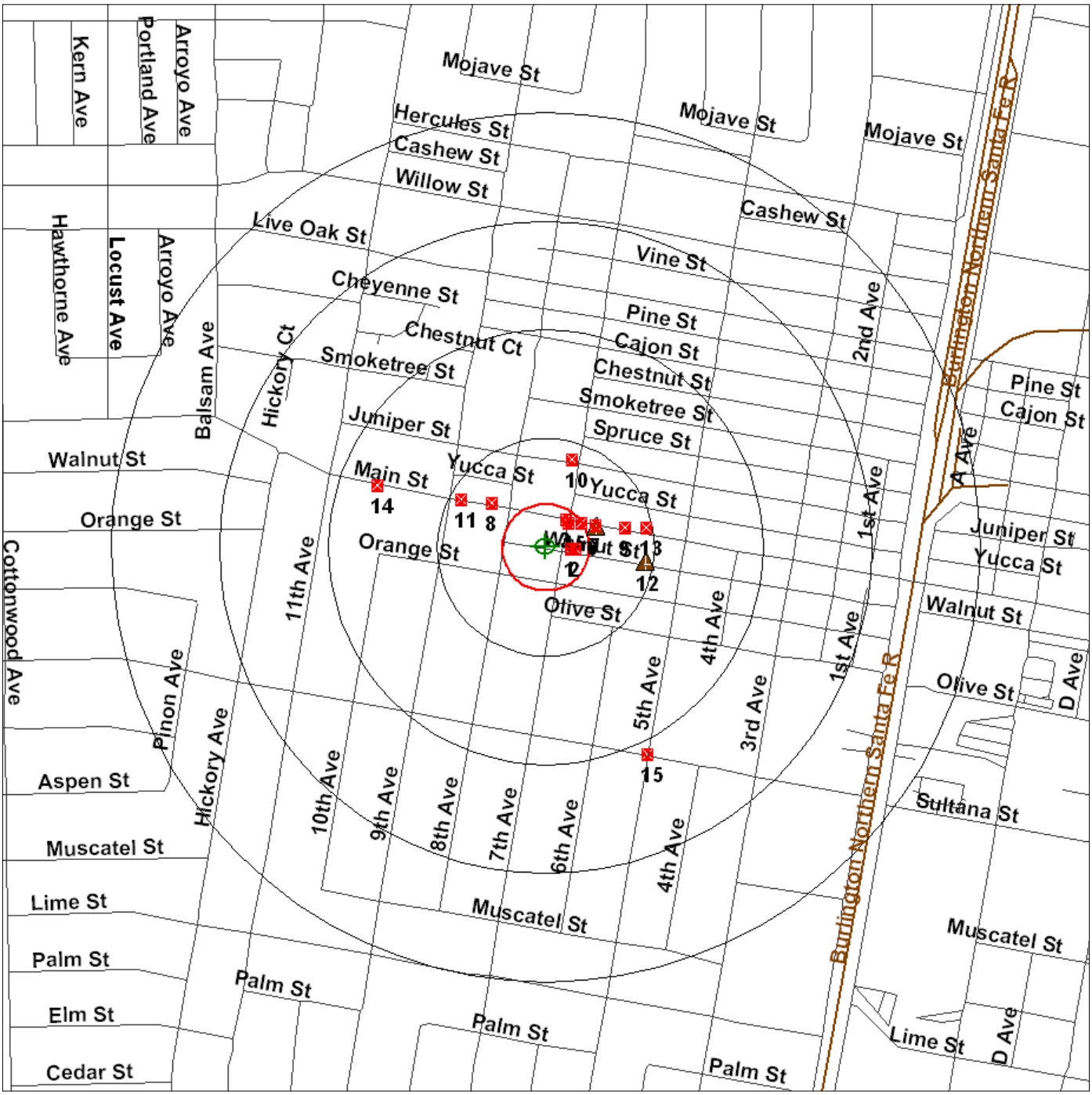
	Requested?	Date
Sanborns	Yes	10-05-07
Aerial Photographs	No	
Historical Topos	No	
City Directories	No	
Title Search/Env Liens	No	
Municipal Reports	No	
Online Topos	Yes	10-05-07

Environmental FirstSearch

1 Mile Radius

Single Map:

15864 WALNUT ST, HESPERIA CA 92345



Source: U.S. Census TIGER Files

Target Site (Latitude: 34.422624 Longitude: -117.316448) .....

Identified Site, Multiple Sites, Receptor .....

NPL, DELNPL, Brownfield, Solid Waste Landfill (SWL), Hazardous Waste

Triballand.....

Railroads .....

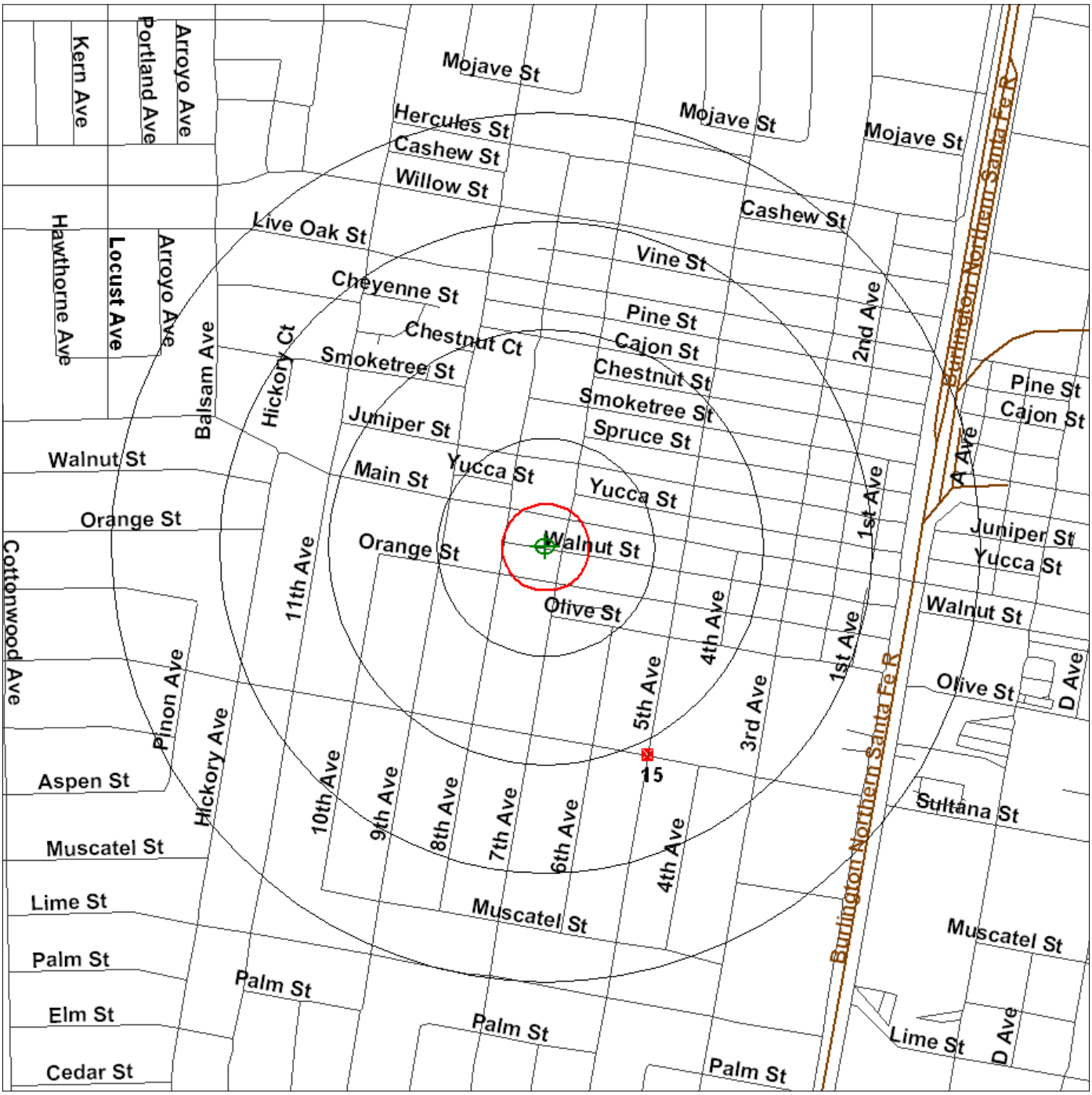
Black Rings Represent 1/4 Mile Radius; Red Ring Represents 500 ft. Radius

Environmental FirstSearch

1 Mile Radius

FIRSTSEARCH_RADIUS_ _SB: NPL, RCRACOR, STATE

15864 WALNUT ST, HESPERIA CA 92345



Source: U.S. Census TIGER Files

Target Site (Latitude: 34.422624 Longitude: -117.316448) .....

Identified Site, Multiple Sites, Receptor .....

NPL, DELNPL, Brownfield, Solid Waste Landfill (SWL), Hazardous Waste

Triballand.....

Railroads .....

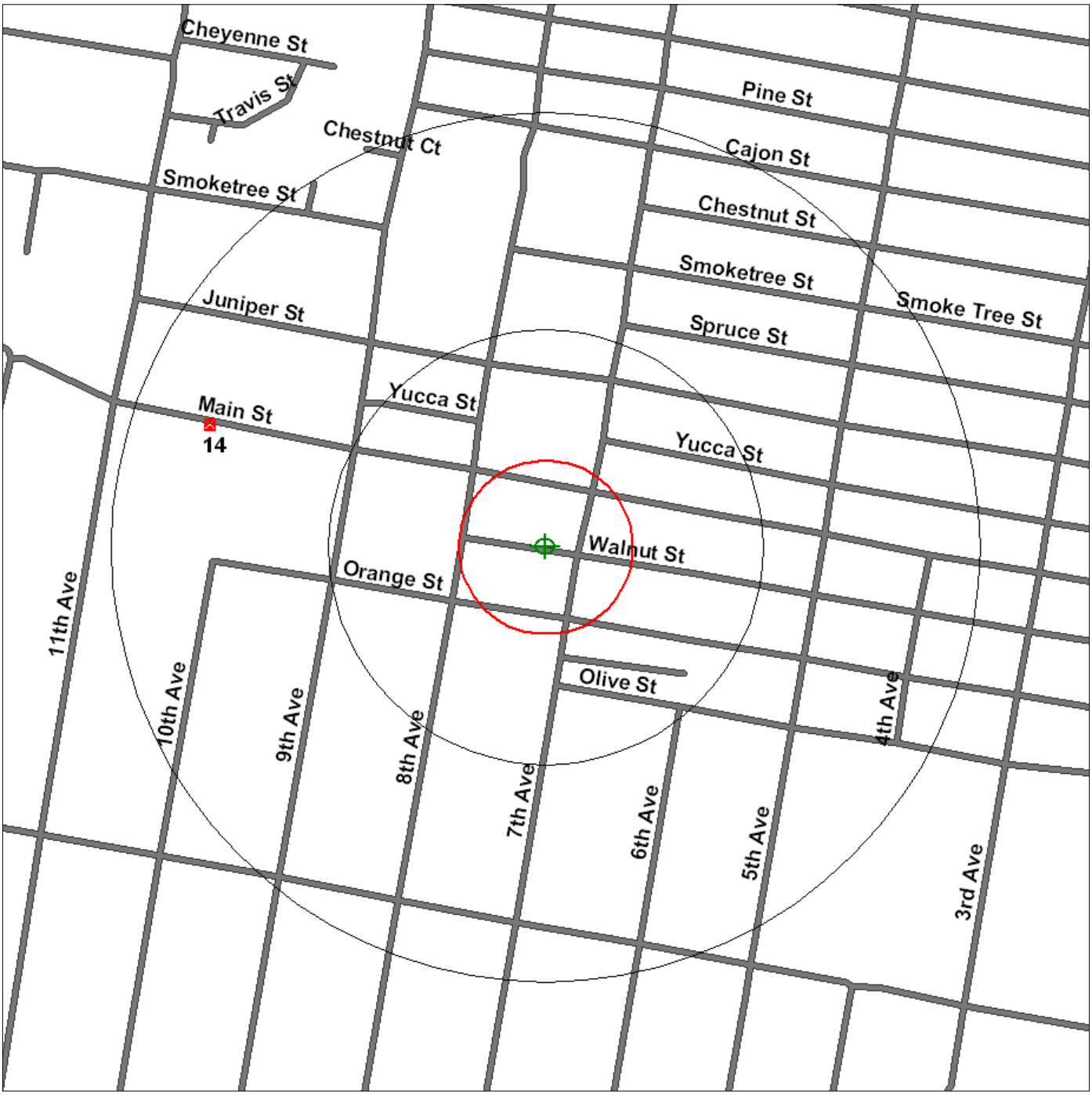
Black Rings Represent 1/4 Mile Radius; Red Ring Represents 500 ft. Radius

Environmental FirstSearch

.5 Mile Radius

FIRSTSEARCH_RADIUS_ _SB: Multiple Databases

15864 WALNUT ST, HESPERIA CA 92345



Source: U.S. Census TIGER Files

Target Site (Latitude: 34.422624 Longitude: -117.316448) .....

Identified Site, Multiple Sites, Receptor .....

NPL, DELNPL, Brownfield, Solid Waste Landfill (SWL), Hazardous Waste

Triballand.....

Railroads .....

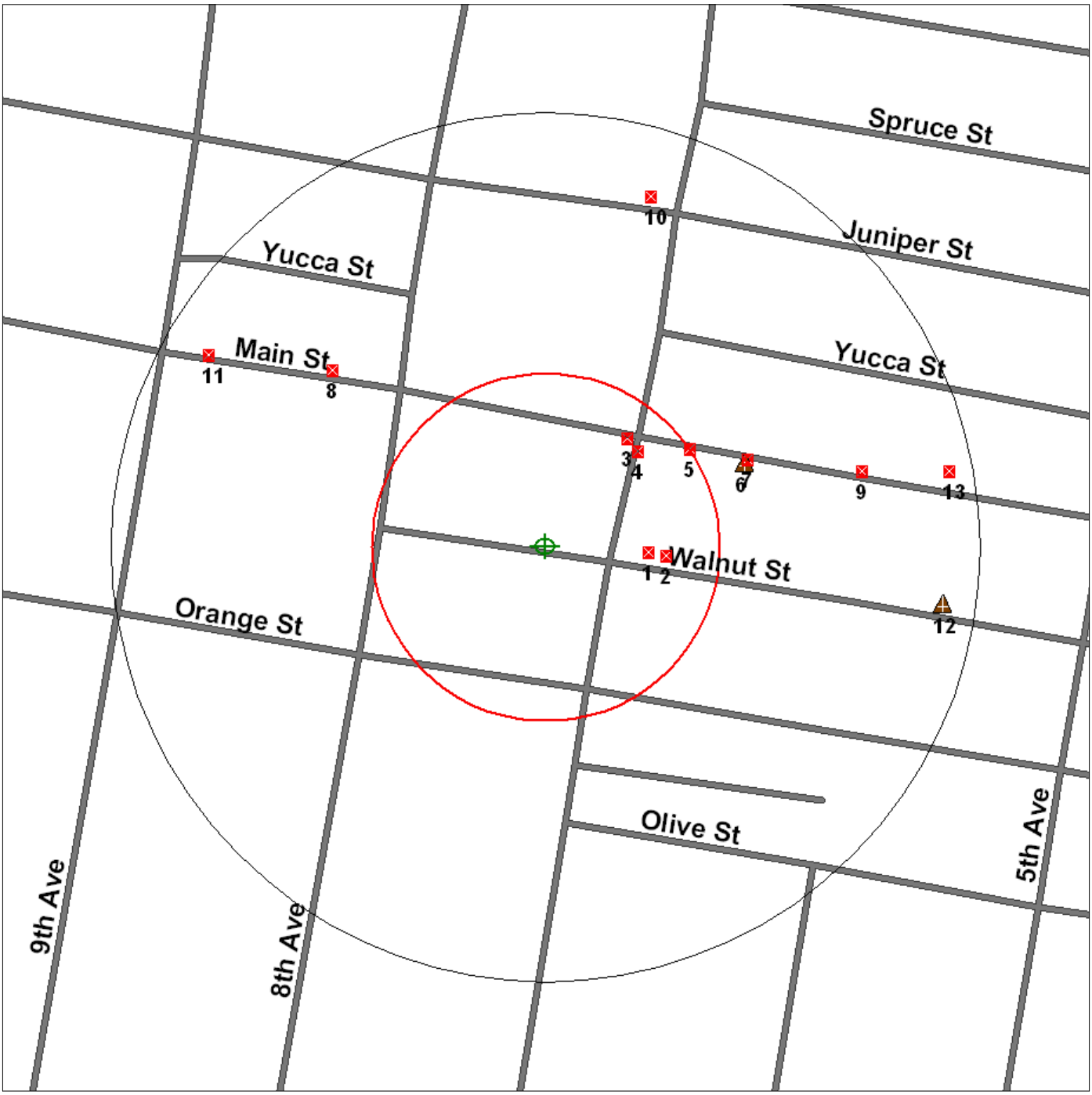
Black Rings Represent 1/4 Mile Radius; Red Ring Represents 500 ft. Radius

Environmental FirstSearch

.25 Mile Radius

FIRSTSEARCH_RADIUS_ _SB: Multiple Databases

15864 WALNUT ST, HESPERIA CA 92345



Source: U.S. Census TIGER Files

Target Site (Latitude: 34.422624 Longitude: -117.316448) .....

Identified Site, Multiple Sites, Receptor .....

NPL, DELNPL, Brownfield, Solid Waste Landfill (SWL), Hazardous Waste

Triballand.....

Railroads .....

Black Rings Represent 1/4 Mile Radius; Red Ring Represents 500 ft. Radius

Environmental FirstSearch

.12 Mile Radius

FIRSTSEARCH_RADIUS_ _SB: Multiple Databases

15864 WALNUT ST, HESPERIA CA 92345

Source: U.S. Census TIGER Files

Target Site (Latitude: 34.422624 Longitude: -117.316448) .....

Identified Site, Multiple Sites, Receptor .....

NPL, DELNPL, Brownfield, Solid Waste Landfill (SWL), Hazardous Waste

Triballand.....

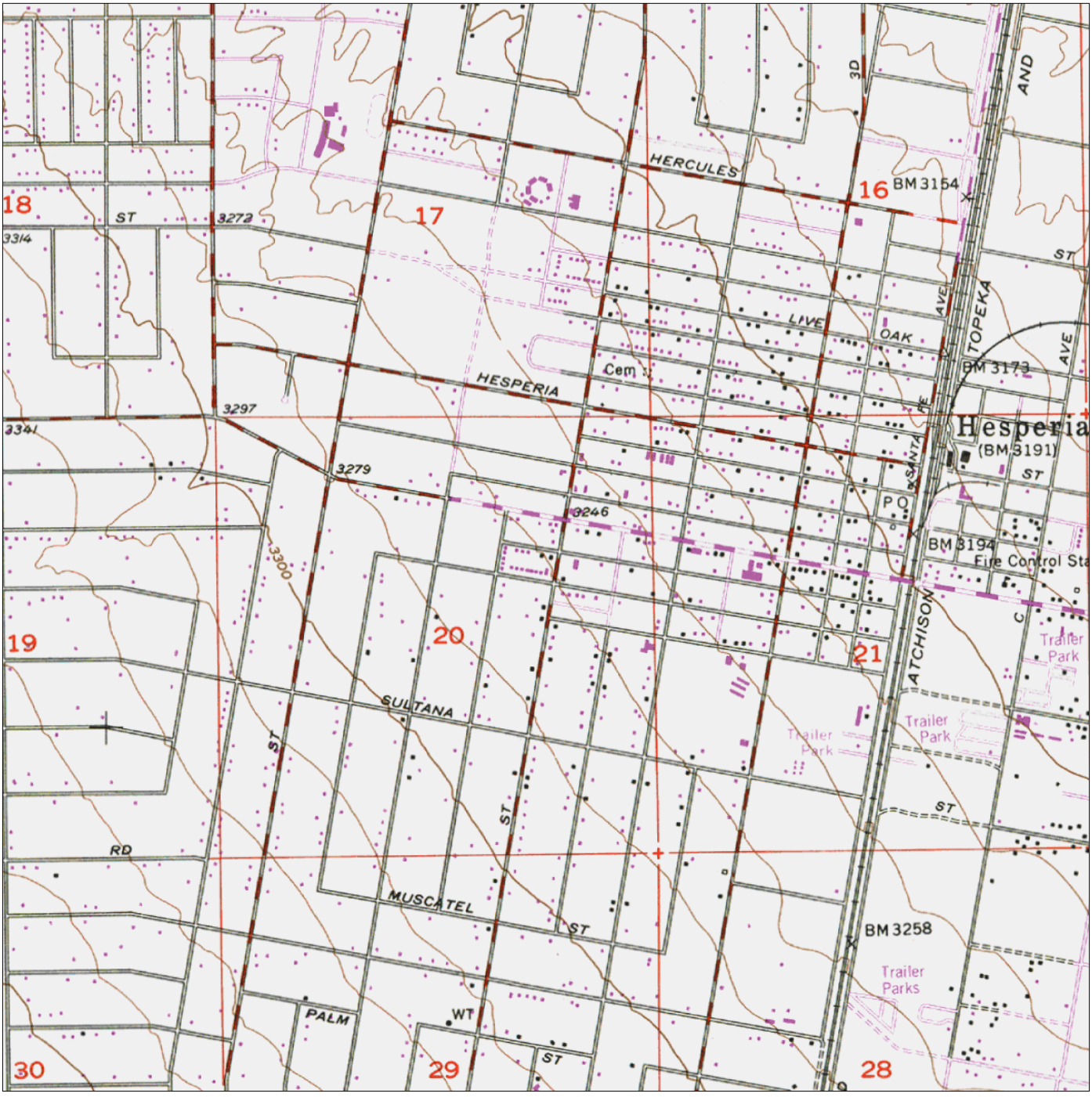
Railroads .....

Black Rings Represent 1/4 Mile Radius; Red Ring Represents 500 ft. Radius

Site Location Map

Topo : 1.25 Mile Radius

15864 WALNUT ST, HESPERIA CA 92345



SOURCE: SCANNED USGS TOPOGRAPHIC QUADRANGLES
SCANNED BY MAPTECH AND USGS
DISTRIBUTED AUGUST, 2005.

Black Rings Represent 1/4 Mile Radii; Red Ring Represents 500 ft. Radius

0 825 1,650 3,300 4,950 6,600
Feet

Data Supplied by:

Prepared by FirstSearch Technology Corporation 10-05-07

JOB NO. 07-54108

Map Name: HESPERIA
Map Reference Code: 34117-D3-TF-024
Date Created: 1956
Contour Interval: 20 feet
Date Revised: 1980

FIGURE NO. 1

Environmental FirstSearch
Sites Summary Report

Target Property: 15864 WALNUT ST
HESPERIA CA 92345

JOB: 07-54108

TOTAL: 19 **GEOCODED:** 17 **NON GEOCODED:** 2 **SELECTED:** 0

Page No.	DB Type	Site Name/ID/Status	Address	Dist/Dir	Map ID
1	PERMITS	DAVE S AUTOMOTIVE REPAIR FA0008739	15940 WALNUT ST HESPERIA CA 92345	0.06 SE	1
2	PERMITS	SUNSET PAINT and BODY INC. FA0008880	15950 WALNUT ST HESPERIA CA 92345	0.07 SE	2
3	PERMITS	ALLIANCE SERVICE CENTER FA0000850	15901 MAIN ST HESPERIA CA 92345	0.08 NE	3
4	UST	ALLIANCE SERVICE CENTER HESPERIA_NOTPROV9	15901 MAIN ST HESPERIA CA	0.08 NE	4
4	PERMITS	HESPERIA CHEVRON FA0008770	15933 MAIN ST HESPERIA CA 92345	0.10 NE	5
5	UST	FASTRIP FOOD STORE 8 TISID-STATE41029/ACTIVE	16117 MAIN HESPERIA CA 92345	0.12 NE	6
6	UST	HESPERIA FASTRIP FOOD HESPERIA_399161	16117 MAIN ST HESPERIA CA	0.12 NE	6
7	PERMITS	G and M AUTOMOTIVE FA0003374	15963 MAIN ST HESPERIA CA 92345	0.13 NE	7
8	PERMITS	CITY HALL FA0009518	15776 MAIN ST HESPERIA CA 92345	0.16 NW	8
9	PERMITS	A and A AUTO BODY and PAINT SHOP FA0008653	16152 MAIN ST HESPERIA CA 92345	0.19 NE	9
10	PERMITS	VERIZON WIRELESS FA0009133	9600 7TH AVE HESPERIA CA 92345	0.21 NE	10
10	UST	HESPERIA MAIN STREET MOTORS TISID-STATE7888/INACTIVE	15954 MAIN HESPERIA CA	0.22 NW	11
11	PERMITS	HARD ROCK OFF ROAD FA0009128	16094 WALNUT ST HESPERIA CA 92345	0.23 SE	12
11	PERMITS	JEEPERS OFF ROAD FA0010124	16094 WALNUT ST HESPERIA CA 92345	0.23 SE	12
12	RCRAGN	A2A AUTO BODY and GLASS CAD983673021/SGN	16152 MAIN ST HESPERIA CA 92345	0.24 NE	13
13	LUST	CIRCLE K 1034 T0607100709/LEAK BEING CONFIRMED	15853 MAIN ST HESPERIA CA 92345	0.41 NW	14
14	STATE	CROSSWALK CHARTER SCHOOL CAL19880088/NO ACTION - FOR CALM	SULTANA STREET/5TH AVENUE HESPERIA CA 92345	0.53 SE	15

Environmental FirstSearch
Sites Summary Report

Target Property: 15864 WALNUT ST
HESPERIA CA 92345

JOB: 07-54108

TOTAL: 19 **GEOCODED:** 17 **NON GEOCODED:** 2 **SELECTED:** 0

Page No.	DB Type	Site Name/ID/Status	Address	Dist/Dir	Map ID
15	LUST	HAYWARD LUMBER T0607100725/POLLUTION CHARACTERI	931 MAIN ST HESPERIA CA 92345	NON GC	
16	OTHER	NCLRCA276	15985 JUNIPER ST APT B HESPERIA CA	NON GC	

Environmental FirstSearch
Site Detail Report

Target Property: 15864 WALNUT ST
HESPERIA CA 92345

JOB: 07-54108

PERMITS

SEARCH ID: 6 **DIST/DIR:** 0.06 SE **MAP ID:** 1

NAME: DAVE S AUTOMOTIVE REPAIR
ADDRESS: 15940 WALNUT ST
HESPERIA CA 92345
San Bernardino
CONTACT:

REV: 09/26/06
ID1: FA0008739
ID2:
STATUS:
PHONE:

COUNTY OF SAN BERNARDINO HAZARDOUS WASTE GENERATORS PERMITS INFORMATION:

Permit Category: *SPECIAL GENERATOR(B)*
Permit Number: *PT0015460*
Status: *ACTIVE*
Expiration Date: *12/31/2006 12:00:00AM*
Facility Phone:
Owner Name: *DAVID HASTINGS*
Owner Address:
Owner Address:
Owner Phone:

COUNTY OF SAN BERNARDINO HAZARDOUS WASTE GENERATORS PERMITS INFORMATION:

Permit Category: *SPECIAL HANDLER*
Permit Number: *PT0015461*
Status: *ACTIVE*
Expiration Date: *12/31/2006 12:00:00AM*
Facility Phone:
Owner Name: *DAVID HASTINGS*
Owner Address:
Owner Address:
Owner Phone:

Environmental FirstSearch
Site Detail Report

Target Property: 15864 WALNUT ST
HESPERIA CA 92345

JOB: 07-54108

PERMITS

SEARCH ID: 11 **DIST/DIR:** 0.07 SE **MAP ID:** 2

NAME: SUNSET PAINT and BODY INC.
ADDRESS: 15950 WALNUT ST
HESPERIA CA 92345
San Bernardino
CONTACT:

REV: 09/26/06
ID1: FA0008880
ID2:
STATUS:
PHONE:

COUNTY OF SAN BERNARDINO HAZARDOUS WASTE GENERATORS PERMITS INFORMATION:

Permit Category: *SPECIAL GENERATOR(B)*
Permit Number: *PT0015462*
Status: *ACTIVE*
Expiration Date: *12/31/2006 12:00:00AM*
Facility Phone:
Owner Name: *FOWLER, DAN*
Owner Address:
Owner Address:
Owner Phone:

COUNTY OF SAN BERNARDINO HAZARDOUS WASTE GENERATORS PERMITS INFORMATION:

Permit Category: *SPECIAL HANDLER*
Permit Number: *PT0015464*
Status: *ACTIVE*
Expiration Date: *12/31/2006 12:00:00AM*
Facility Phone:
Owner Name: *FOWLER, DAN*
Owner Address:
Owner Address:
Owner Phone:

Environmental FirstSearch
Site Detail Report

Target Property: 15864 WALNUT ST
HESPERIA CA 92345

JOB: 07-54108

PERMITS

SEARCH ID: 4 **DIST/DIR:** 0.08 NE **MAP ID:** 3

NAME: ALLIANCE SERVICE CENTER
ADDRESS: 15901 MAIN ST
HESPERIA CA 92345
San Bernardino
CONTACT:

REV: 09/26/06
ID1: FA0000850
ID2:
STATUS:
PHONE:

COUNTY OF SAN BERNARDINO HAZARDOUS WASTE GENERATORS PERMITS INFORMATION:

Permit Category: *SPECIAL GENERATOR(B)*
Permit Number: *PT0015685*
Status: *ACTIVE*
Expiration Date: *12/31/2006 12:00:00AM*
Facility Phone:
Owner Name: *RIAZ, MOHAMMED*
Owner Address:
Owner Address:
Owner Phone:

COUNTY OF SAN BERNARDINO HAZARDOUS WASTE GENERATORS PERMITS INFORMATION:

Permit Category: *SPECIAL HANDLER*
Permit Number: *PT0015686*
Status: *ACTIVE*
Expiration Date: *12/31/2006 12:00:00AM*
Facility Phone:
Owner Name: *RIAZ, MOHAMMED*
Owner Address:
Owner Address:
Owner Phone:

Environmental FirstSearch
Site Detail Report

Target Property: 15864 WALNUT ST
HESPERIA CA 92345

JOB: 07-54108

UST

SEARCH ID: 13 **DIST/DIR:** 0.08 NE **MAP ID:** 4

NAME: ALLIANCE SERVICE CENTER
ADDRESS: 15901 MAIN ST
HESPERIA CA
SAN BERNARDINO
CONTACT:

REV: 05/19/2003
ID1: HESPERIA_NOTPROV9
ID2:
STATUS:
PHONE:

CITY OF HESPERIA UST LIST NFORMATION
According to the City of Hesperia Fire Prevention Bureau the following information is current as of 01/08/04

Permit Number: *NOTPROV9*
Permit For: *To Operate Three (3) Underground Storage*
Certification Number:
Status: *Closed or Pulled Tanks*
Year Expired:
Month Expired:
Business Owner:
Business Phone:

PERMITS

SEARCH ID: 9 **DIST/DIR:** 0.10 NE **MAP ID:** 5

NAME: HESPERIA CHEVRON
ADDRESS: 15933 MAIN ST
HESPERIA CA 92345
San Bernardino
CONTACT:

REV: 09/26/06
ID1: FA0008770
ID2:
STATUS:
PHONE:

COUNTY OF SAN BERNARDINO HAZARDOUS WASTE GENERATORS PERMITS INFORMATION:
Permit Category: *HAZMAT HANDLER - UST ONLY*
Permit Number: *PT0015713*
Status: *ACTIVE*
Expiration Date: *12/31/2006 12:00:00AM*
Facility Phone:
Owner Name: *CHHEUY, KEVIN*
Owner Address:
Owner Address:
Owner Phone:

Environmental FirstSearch
Site Detail Report

Target Property: 15864 WALNUT ST
HESPERIA CA 92345

JOB: 07-54108

UST

SEARCH ID: 14 **DIST/DIR:** 0.12 NE **MAP ID:** 6

NAME: FASTRIP FOOD STORE 8
ADDRESS: 16117 MAIN
HESPERIA CA 92345
San Bernardino
CONTACT:

REV: 01/01/94
ID1: TISID-STATE41029
ID2:
STATUS: ACTIVE
PHONE:

UST HISTORICAL DATA

This site was listed in the FIDS Zip Code List as a UST site. The Office of Hazardous Data Management produced the FIDS list. The FIDS list is an index of names and locations of sites recorded in various California State environmental agency databases. It is sorted by zip code and as an index, details regarding the sites were never included.

The UST information included in FIDS as provided by the Office of Hazardous Data Management was originally collected from the SWEEPS database. The SWEEPS database recorded Underground Storage Tanks and was maintained by the State Water Resources Control Board (SWRCB). That agency no longer maintains the SWEEPS database and last updated it in 1994. The last release of that 1994 database was in 1997.

Oversight of Underground Storage Tanks within California is now conducted by Certified Unified Program Agencies referred to as CUPA s. There are approximately 102 CUPA s and Local Oversight Programs (LOP s) in the State of California. Most are city or county government agencies. As of 1998, all sites or facilities with underground storage tanks were required by Federal mandate to obtain certification by designated UST oversight agencies (in this case, CUPA s) that the UST/s at their location were upgraded or removed in adherence with the 1998 RCRA standards.

Information from the FIDS/SWEEPS lists were included in this report search to help identify where underground storage tanks may have existed that were not recorded in CUPA databases or lists collected by Track Info Services. This may occur if a tank was removed prior to development of recent CUPA UST lists or never registered with a CUPA.

Environmental FirstSearch
Site Detail Report

Target Property: 15864 WALNUT ST
HESPERIA CA 92345

JOB: 07-54108

UST

SEARCH ID: 15 **DIST/DIR:** 0.12 NE **MAP ID:** 6

NAME: HESPERIA FASTRIP FOOD
ADDRESS: 16117 MAIN ST
HESPERIA CA
San Bernardino
CONTACT:

REV: 07/10/2000
ID1: HESPERIA_399161
ID2:
STATUS:
PHONE:

CITY OF HESPERIA UST LIST NFORMATION

According to the City of Hesperia Fire Prevention Bureau the following information is current as of 01/08/04

Permit Number:	*399161*
Permit For:	*To Operate Four (4) Underground Storage*
Certification Number:	*6601*
Status:	*Active*
Year Expired:	*2000*
Month Expired:	*12*
Business Owner:	*Nadir Malik*
Business Phone:	*244-1059*

Environmental FirstSearch
Site Detail Report

Target Property: 15864 WALNUT ST
HESPERIA CA 92345

JOB: 07-54108

PERMITS

SEARCH ID: 7 **DIST/DIR:** 0.13 NE **MAP ID:** 7

NAME: G and M AUTOMOTIVE
ADDRESS: 15963 MAIN ST
HESPERIA CA 92345
San Bernardino
CONTACT:

REV: 09/26/06
ID1: FA0003374
ID2:
STATUS:
PHONE:

COUNTY OF SAN BERNARDINO HAZARDOUS WASTE GENERATORS PERMITS INFORMATION:

Permit Category: *SPECIAL GENERATOR(B)*
Permit Number: *PT0015334*
Status: *ACTIVE*
Expiration Date: *12/31/2006 12:00:00AM*
Facility Phone:
Owner Name: *MAY, DON*
Owner Address:
Owner Address:
Owner Phone:

COUNTY OF SAN BERNARDINO HAZARDOUS WASTE GENERATORS PERMITS INFORMATION:

Permit Category: *SPECIAL HANDLER*
Permit Number: *PT0015335*
Status: *ACTIVE*
Expiration Date: *12/31/2006 12:00:00AM*
Facility Phone:
Owner Name: *MAY, DON*
Owner Address:
Owner Address:
Owner Phone:

Environmental FirstSearch
Site Detail Report

Target Property: 15864 WALNUT ST
HESPERIA CA 92345

JOB: 07-54108

PERMITS

SEARCH ID: 5 **DIST/DIR:** 0.16 NW **MAP ID:** 8

NAME: CITY HALL
ADDRESS: 15776 MAIN ST
HESPERIA CA 92345
San Bernardino
CONTACT:

REV: 09/26/06
ID1: FA0009518
ID2:
STATUS:
PHONE:

COUNTY OF SAN BERNARDINO HAZARDOUS WASTE GENERATORS PERMITS INFORMATION:

Permit Category: *HAZMAT HANDLER 0-10 EMPLOYEES*
Permit Number: *PT0016237*
Status: *ACTIVE*
Expiration Date: *12/31/2006 12:00:00AM*
Facility Phone:
Owner Name: *CITY OF HESPERIA*
Owner Address:
Owner Address:
Owner Phone:

Environmental FirstSearch
Site Detail Report

Target Property: 15864 WALNUT ST
HESPERIA CA 92345

JOB: 07-54108

PERMITS

SEARCH ID: 3 **DIST/DIR:** 0.19 NE **MAP ID:** 9

NAME: A and A AUTO BODY and PAINT SHOP
ADDRESS: 16152 MAIN ST
HESPERIA CA 92345
San Bernardino
CONTACT:

REV: 09/26/06
ID1: FA0008653
ID2:
STATUS:
PHONE:

COUNTY OF SAN BERNARDINO HAZARDOUS WASTE GENERATORS PERMITS INFORMATION:

Permit Category: *SPECIAL GENERATOR(B)*
Permit Number: *PT0015663*
Status: *ACTIVE*
Expiration Date: *12/31/2006 12:00:00AM*
Facility Phone:
Owner Name: *MARTINEZ, JOHN*
Owner Address:
Owner Address:
Owner Phone:

COUNTY OF SAN BERNARDINO HAZARDOUS WASTE GENERATORS PERMITS INFORMATION:

Permit Category: *SPECIAL HANDLER*
Permit Number: *PT0015664*
Status: *ACTIVE*
Expiration Date: *12/31/2006 12:00:00AM*
Facility Phone:
Owner Name: *MARTINEZ, JOHN*
Owner Address:
Owner Address:
Owner Phone:

Environmental FirstSearch
Site Detail Report

Target Property: 15864 WALNUT ST
HESPERIA CA 92345

JOB: 07-54108

PERMITS

SEARCH ID: 12 **DIST/DIR:** 0.21 NE **MAP ID:** 10

NAME: VERIZON WIRELESS
ADDRESS: 9600 7TH AVE
HESPERIA CA 92345
San Bernardino
CONTACT:

REV: 09/26/06
ID1: FA0009133
ID2:
STATUS:
PHONE:

COUNTY OF SAN BERNARDINO HAZARDOUS WASTE GENERATORS PERMITS INFORMATION:

Permit Category: *HAZMAT HANDLER 0-10 EMPLOYEES*
Permit Number: *PT0015223*
Status: *ACTIVE*
Expiration Date: *12/31/2006 12:00:00AM*
Facility Phone:
Owner Name: *VERIZON WIRELESS*
Owner Address:
Owner Address:
Owner Phone:

UST

SEARCH ID: 16 **DIST/DIR:** 0.22 NW **MAP ID:** 11

NAME: HESPERIA MAIN STREET MOTORS
ADDRESS: 15954 MAIN
HESPERIA CA
San Bernardino
CONTACT:

REV: 01/01/94
ID1: TISID-STATE7888
ID2:
STATUS: INACTIVE
PHONE:

UST HISTORICAL DATA

This site was listed in the FIDS Zip Code List as a UST site. The Office of Hazardous Data Management produced the FIDS list. The FIDS list is an index of names and locations of sites recorded in various California State environmental agency databases. It is sorted by zip code and as an index, details regarding the sites were never included.

The UST information included in FIDS as provided by the Office of Hazardous Data Management was originally collected from the SWEEPS database. The SWEEPS database recorded Underground Storage Tanks and was maintained by the State Water Resources Control Board (SWRCB). That agency no longer maintains the SWEEPS database and last updated it in 1994. The last release of that 1994 database was in 1997.

Oversight of Underground Storage Tanks within California is now conducted by Certified Unified Program Agencies referred to as CUPA s. There are approximately 102 CUPA s and Local Oversight Programs (LOP s) in the State of California. Most are city or county government agencies. As of 1998, all sites or facilities with underground storage tanks were required by Federal mandate to obtain certification by designated UST oversight agencies (in this case, CUPA s) that the UST/s at their location were upgraded or removed in adherence with the 1998 RCRA standards.

Information from the FIDS/SWEEPS lists were included in this report search to help identify where underground storage tanks may have existed that were not recorded in CUPA databases or lists collected by Track Info Services. This may occur if a tank was removed prior to development of recent CUPA UST lists or never registered with a CUPA.

Target Property: 15864 WALNUT ST
HESPERIA CA 92345

JOB: 07-54108

PERMITS

SEARCH ID: 8 **DIST/DIR:** 0.23 SE **MAP ID:** 12

NAME: HARD ROCK OFF ROAD
ADDRESS: 16094 WALNUT ST
HESPERIA CA 92345
San Bernardino
CONTACT:

REV: 09/26/06
ID1: FA0009128
ID2:
STATUS:
PHONE:

COUNTY OF SAN BERNARDINO HAZARDOUS WASTE GENERATORS PERMITS INFORMATION:

Permit Category: *HAZMAT HANDLER 0-10 EMPLOYEES*
Permit Number: *PT0015218*
Status: *INACTIVE*
Expiration Date: *12/31/2004 12:00:00AM*
Facility Phone:
Owner Name: *HARD ROCK OFF ROAD*
Owner Address:
Owner Address:
Owner Phone:

PERMITS

SEARCH ID: 10 **DIST/DIR:** 0.23 SE **MAP ID:** 12

NAME: JEEPERS OFF ROAD
ADDRESS: 16094 WALNUT ST
HESPERIA CA 92345
San Bernardino
CONTACT:

REV: 09/26/06
ID1: FA0010124
ID2:
STATUS:
PHONE:

COUNTY OF SAN BERNARDINO HAZARDOUS WASTE GENERATORS PERMITS INFORMATION:

Permit Category: *HAZMAT HANDLER 0-10 EMPLOYEES*
Permit Number: *PT0017290*
Status: *ACTIVE*
Expiration Date: *1/31/2007 12:00:00AM*
Facility Phone:
Owner Name: *BELL, TROY J.*
Owner Address:
Owner Address:
Owner Phone:

Environmental FirstSearch
Site Detail Report

Target Property: 15864 WALNUT ST
HESPERIA CA 92345

JOB: 07-54108

RCRAGN

SEARCH ID: 1 **DIST/DIR:** 0.24 NE **MAP ID:** 13

NAME:	A2A AUTO BODY and GLASS	**REV:**	6/6/06
ADDRESS:	16152 MAIN ST	**ID1:**	CAD983673021
	HESPERIA CA 92345	**ID2:**	
	SAN BERNARDINO	**STATUS:**	SGN
CONTACT:	VINCENT RAMIREZ	**PHONE:**	6199497037

SITE INFORMATION

CONTACT INFORMATION: VINCENT RAMIREZ
16152 MAIN ST
HESPERIA CA 92345

PHONE: 6199497037

UNIVERSE INFORMATION:

NAIC INFORMATION

ENFORCEMENT INFORMATION:

VIOLATION INFORMATION:

Target Property: 15864 WALNUT ST
HESPERIA CA 92345

JOB: 07-54108

LUST

SEARCH ID: 17 **DIST/DIR:** 0.41 NW **MAP ID:** 14

NAME: CIRCLE K 1034
ADDRESS: 15853 MAIN ST
HESPERIA CA 92345
SAN BERNARDINO
CONTACT:

REV: 04/24/07
ID1: T0607100709
ID2:
STATUS: LEAK BEING CONFIRMED
PHONE:

RELEASE DATA FROM THE CALIFORNIA STATE WATER RESOURCES CONTROL BOARD LUSTIS DATABASE

Please note that some data previously provided by the State Water Resources Control Board in the LUSTIS database is not currently being provided by the agency in the most recent edition. Incidents that occurred after the year 2000 may not have much information. Field headers with blank information following after should be interpreted as unreported by the agency.

LEAD AGENCY: *REGIONAL BOARD*
REGIONAL BOARD: *6V*
LOCAL CASE NUMBER:
RESPONSIBLE PARTY: *CIRCLE K CORPORATION*
ADDRESS OF RESPONSIBLE PARTY:
SITE OPERATOR: *CIRCLE K CORPORATION*
WATER SYSTEM: *HESPERIA, CITY OF*

CASE NUMBER: *6B3600186T*
CASE TYPE: *UNDEFINED*
SUBSTANCE LEAKED: *GASOLINE*
SUBSTANCE QUANTITY:
LEAK CAUSE: *LOOSE FITTING*
LEAK SOURCE: *PIPING*
HOW LEAK WAS DISCOVERED: *NO DESCRIPTION*
DATE DISCOVERED (blank if not reported): *1990-03-09 00:00:00*
HOW LEAK WAS STOPPED:
STOP DATE (blank if not reported):
STATUS: *LEAK BEING CONFIRMED*
ABATEMENT METHOD (please note that not all code translations have been provided by the reporting agency):
ENFORCEMENT TYPE (please note that not all code translations have been provided by the reporting agency): *NONE TAKEN*
DATE OF ENFORCEMENT (blank if not reported): *1965-01-01 00:00:00*

ENTER DATE (blank if not reported): *1990-07-11 00:00:00*
REVIEW DATE (blank if not reported): *1990-07-11 00:00:00*
DATE OF LEAK CONFIRMATION (blank if not reported): *1990-07-11 00:00:00*
DATE PRELIMINARY SITE ASSESSMENT PLAN WAS SUBMITTED (blank if not reported):
DATE PRELIMINARY SITE ASSESSMENT PLAN BEGAN (blank if not reported):
DATE POLLUTION CHARACTERIZATION PLAN BEGAN (blank if not reported):
DATE REMEDIATION PLAN WAS SUBMITTED (blank if not reported):
DATE REMEDIAL ACTION UNDERWAY (blank if not reported):
DATE POST REMEDIAL ACTION MONITORING BEGAN (blank if not reported):
DATE CLOSURE LETTER ISSUED (SITE CLOSED) (blank if not reported):
REPORT DATE (blank if not reported): *1990-03-12 00:00:00*

MTBE DATA FROM THE CALIFORNIA STATE WATER RESOURCES CONTROL BOARD LUSTIS DATABASE

MTBE DATE(Date of historical maximum MTBE concentration):
MTBE GROUNDWATER CONCENTRATION (parts per billion):
MTBE SOIL CONCENTRATION (parts per million):
MTBE CNTS: *0*
MTBE FUEL: *1*
MTBE TESTED: *SITE NOT TESTED FOR MTBE. INCLUDES UNKNOWN AND NOT ANALYZED*
MTBE CLASS: ***

Environmental FirstSearch
Site Detail Report

Target Property: 15864 WALNUT ST
HESPERIA CA 92345

JOB: 07-54108

STATE

SEARCH ID: 2 **DIST/DIR:** 0.53 SE **MAP ID:** 15

NAME: CROSSWALK CHARTER SCHOOL
ADDRESS: SULTANA STREET/5TH AVENUE
HESPERIA CA 92345
LOS ANGELES
CONTACT:

REV: 07/18/05
ID1: CAL19880088
ID2:
STATUS: NO ACTION - FOR CALMORTGAGE ON
PHONE:

OTHER SITE NAMES (blank below = not reported by agency)
CROSSWALK CHARTER SCHOOL

GENERAL SITE INFORMATION
File Name (if different than site name):

Status: *NO ACTION - FOR CALMORTGAGE ONLY*
AWP Site Type: *PROPOSED SCHOOL SITE PROPERTY*
NPL Site: *U*
Fund:
Status Date: *06292005*
Lead: *DEPT OF TOXIC SUBSTANCES CONTROL*
Staff: *SLEWIS*
DTSC Region and RWQCB : *CYPRESS*
Branch: *SCHOOL EVALUATION*
RWQCB:
Site Access:
Groundwater Contamination:
Number of Sources Contributing to Contamination at the Site:

OTHER AGENCY ID NUMBERS (blank below = not reported by agency)
ID SOURCE NAME, and VALUE: *CALSTARS CODE 404635-11*

BACKGROUND INFORMATION (blank below = not reported by agency)
The site includes residences, schools, retail stores, and libraries. Many buildings are vacant and many properties are undeveloped.

PROJECTED ACTIVITIES (blank below = not reported by agency)
Activity: ***PHASE 1 - CALMORTGAGE AND SCHOOL SITE PROPERTIES***
Activity Status: *NO ACTION - FOR CALMORTGAGE ONLY*
Completion Due Date:
Revised Completion Due Date:
Date Activity Actually Completed: *06292005*
Yards of Solids Removed:
Yards of Solids Treated:
Gallons of Liquid Removed:
Gallons of Liquid Treated:

DTSC COMMENTS REGARDING THIS SITE (blank below = not reported by agency)
Comments Date: ***06292005***
: *DTSC reviewed a Phase I Environmental Assessment and has made a No Action determination for this Site.*

Environmental FirstSearch
Site Detail Report

Target Property: 15864 WALNUT ST
HESPERIA CA 92345

JOB: 07-54108

LUST

SEARCH ID: 19 **DIST/DIR:** NON GC **MAP ID:**

NAME: HAYWARD LUMBER
ADDRESS: 931 MAIN ST
HESPERIA CA 92345
SAN BERNARDINO
CONTACT:

REV: 04/24/07
ID1: T0607100725
ID2:
STATUS: POLLUTION CHARACTERIZATION
PHONE:

RELEASE DATA FROM THE CALIFORNIA STATE WATER RESOURCES CONTROL BOARD LUSTIS DATABASE

Please note that some data previously provided by the State Water Resources Control Board in the LUSTIS database is not currently being provided by the agency in the most recent edition. Incidents that occurred after the year 2000 may not have much information. Field headers with blank information following after should be interpreted as unreported by the agency.

LEAD AGENCY: *LOCAL AGENCY*
REGIONAL BOARD: *6V*
LOCAL CASE NUMBER:
RESPONSIBLE PARTY: *HAYWARD LUMBER*
ADDRESS OF RESPONSIBLE PARTY:
SITE OPERATOR:
WATER SYSTEM:

CASE NUMBER: *6B3600257T*
CASE TYPE: *AQUIFER AFFECTED*
SUBSTANCE LEAKED: *not listed*
SUBSTANCE QUANTITY:
LEAK CAUSE:
LEAK SOURCE:
HOW LEAK WAS DISCOVERED:
DATE DISCOVERED (blank if not reported):
HOW LEAK WAS STOPPED:
STOP DATE (blank if not reported):
STATUS: *POLLUTION CHARACTERIZATION*
ABATEMENT METHOD (please note that not all code translations have been provided by the reporting agency):
ENFORCEMENT TYPE (please note that not all code translations have been provided by the reporting agency):
DATE OF ENFORCEMENT (blank if not reported):

ENTER DATE (blank if not reported):
REVIEW DATE (blank if not reported): *1999-06-01 00:00:00*
DATE OF LEAK CONFIRMATION (blank if not reported):
DATE PRELIMINARY SITE ASSESSMENT PLAN WAS SUBMITTED (blank if not reported):
DATE PRELIMINARY SITE ASSESSMENT PLAN BEGAN (blank if not reported):
DATE POLLUTION CHARACTERIZATION PLAN BEGAN (blank if not reported): *1993-01-12 00:00:00*
DATE REMEDIATION PLAN WAS SUBMITTED (blank if not reported):
DATE REMEDIAL ACTION UNDERWAY (blank if not reported):
DATE POST REMEDIAL ACTION MONITORING BEGAN (blank if not reported):
DATE CLOSURE LETTER ISSUED (SITE CLOSED) (blank if not reported):
REPORT DATE (blank if not reported): *1992-10-23 00:00:00*

MTBE DATA FROM THE CALIFORNIA STATE WATER RESOURCES CONTROL BOARD LUSTIS DATABASE
MTBE DATE(Date of historical maximum MTBE concentration):
MTBE GROUNDWATER CONCENTRATION (parts per billion):
MTBE SOIL CONCENTRATION (parts per million):
MTBE CNTS: *0*
MTBE FUEL: *0*
MTBE TESTED: *NOT REQUIRED TO BE TESTED*
MTBE CLASS: *

Environmental FirstSearch
Site Detail Report

Target Property: 15864 WALNUT ST
HESPERIA CA 92345

JOB: 07-54108

OTHER

SEARCH ID: 18 **DIST/DIR:** NON GC **MAP ID:**

NAME:
ADDRESS: 15985 JUNIPER ST APT B
HESPERIA CA
SAN BERNARDINO
CONTACT:

REV: 06/15/07
ID1: NCLRCA276
ID2:
STATUS:
PHONE:

NATIONAL CLANDESTINE LABORATORY REGISTER INFORMATION FOR THE STATE OF CALIFORNIA:

Seizure Date: *6/18/2004*

Environmental FirstSearch Descriptions

NPL: ***EPA*** NATIONAL PRIORITY LIST - The National Priorities List is a list of the worst hazardous waste sites that have been identified by Superfund. Sites are only put on the list after they have been scored using the Hazard Ranking System (HRS), and have been subjected to public comment. Any site on the NPL is eligible for cleanup using Superfund Trust money.
A Superfund site is any land in the United States that has been contaminated by hazardous waste and identified by the Environmental Protection Agency (EPA) as a candidate for cleanup because it poses a risk to human health and/or the environment.
FINAL - Currently on the Final NPL
PROPOSED - Proposed for NPL

NPL DELISTED: ***EPA*** NATIONAL PRIORITY LIST Subset - Database of delisted NPL sites. The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.
DELISTED - Deleted from the Final NPL

CERCLIS: ***EPA*** COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY INFORMATION SYSTEM (CERCLIS)- CERCLIS is a database of potential and confirmed hazardous waste sites at which the EPA Superfund program has some involvement. It contains sites that are either proposed to be or are on the National Priorities List (NPL) as well as sites that are in the screening and assessment phase for possible inclusion on the NPL.
PART OF NPL- Site is part of NPL site
DELETED - Deleted from the Final NPL
FINAL - Currently on the Final NPL
NOT PROPOSED - Not on the NPL
NOT VALID - Not Valid Site or Incident
PROPOSED - Proposed for NPL
REMOVED - Removed from Proposed NPL
SCAN PLAN - Pre-proposal Site
WITHDRAWN - Withdrawn

NFRAP: ***EPA*** COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY INFORMATION SYSTEM ARCHIVED SITES - database of Archive designated CERCLA sites that, to the best of EPA's knowledge, assessment has been completed and has determined no further steps will be taken to list this site on the National Priorities List (NPL). This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.
NFRAP – No Further Remedial Action Plan
P - Site is part of NPL site
D - Deleted from the Final NPL
F - Currently on the Final NPL
N - Not on the NPL
O - Not Valid Site or Incident
P - Proposed for NPL
R - Removed from Proposed NPL
S - Pre-proposal Site
W – Withdrawn

RCRA COR ACT: ***EPA*** RESOURCE CONSERVATION AND RECOVERY INFORMATION SYSTEM SITES - Database of hazardous waste information contained in the Resource Conservation and Recovery Act Information (RCRAInfo), a national program management and inventory system about hazardous waste handlers. In general, all generators, transporters, treaters, storers, and disposers of hazardous waste are required to provide information about their activities to state environmental agencies. These agencies, in turn pass on the information to regional and national EPA offices. This regulation is governed by the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984.
RCRAInfo facilities that have reported violations and subject to corrective actions.

RCRA TSD: ***EPA*** RESOURCE CONSERVATION AND RECOVERY INFORMATION SYSTEM TREATMENT, STORAGE, and DISPOSAL FACILITIES. - Database of hazardous waste information contained in the Resource Conservation and Recovery Act Information (RCRAInfo), a national program management and inventory system about hazardous waste handlers. In general, all generators, transporters, treaters, storers, and disposers of hazardous waste are required to provide information about their activities to state environmental agencies. These agencies, in turn pass on the information to regional and national EPA offices. This regulation is governed by the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984.
Facilities that treat, store, dispose, or incinerate hazardous waste.

RCRA GEN: ***EPA*** RESOURCE CONSERVATION AND RECOVERY INFORMATION SYSTEM GENERATORS - Database of hazardous waste information contained in the Resource Conservation and Recovery Act Information (RCRAInfo), a national program management and inventory system about hazardous waste handlers. In general, all generators, transporters, treaters, storers, and disposers of hazardous waste are required to provide information about their activities to state environmental agencies. These agencies, in turn pass on the information to regional and national EPA offices. This regulation is governed by the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984.
Facilities that generate or transport hazardous waste or meet other RCRA requirements.
LGN - Large Quantity Generators
SGN - Small Quantity Generators
VGN – Conditionally Exempt Generator.
Included are RAATS (RCRA Administrative Action Tracking System) and CMEL (Compliance Monitoring & Enforcement List) facilities.

RCRA NLR: ***EPA*** RESOURCE CONSERVATION AND RECOVERY INFORMATION SYSTEM SITES - Database of hazardous waste information contained in the Resource Conservation and Recovery Act Information (RCRAInfo), a national program management and inventory system about hazardous waste handlers. In general, all generators, transporters, treaters, storers, and disposers of hazardous waste are required to provide information about their activities to state environmental agencies. These agencies, in turn pass on the information to regional and national EPA offices. This regulation is governed by the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984.
Facilities not currently classified by the EPA but are still included in the RCRAInfo database. Reasons for non classification:
Failure to report in a timely matter.
No longer in business.
No longer in business at the listed address.
No longer generating hazardous waste materials in quantities which require reporting.

Federal IC / EC: ***EPA*** BROWNFIELD MANAGEMENT SYSTEM (BMS) - database designed to assist EPA in collecting, tracking, and updating information, as well as reporting on the major activities and accomplishments of the various Brownfield grant Programs.
FEDERAL ENGINEERING AND INSTITUTIONAL CONTROLS- Superfund sites that have either an engineering or an institutional control. The data includes the control and the media contaminated.

ERNS: ***EPA/NRC*** EMERGENCY RESPONSE NOTIFICATION SYSTEM (ERNS) - Database of incidents reported to the National Response Center. These incidents include chemical spills, accidents involving chemicals (such as fires or explosions), oil spills, transportation accidents that involve oil or chemicals, releases of radioactive materials, sightings of oil sheens on bodies of water, terrorist incidents involving chemicals, incidents where illegally dumped chemicals have been found, and drills intended to prepare responders to handle these kinds of incidents. Data since January 2001 has been received from the National Response System database as the EPA no longer maintains this data.

Tribal Lands: ***DOI/BIA*** INDIAN LANDS OF THE UNITED STATES - Database of areas with boundaries established by treaty, statute, and (or) executive or court order, recognized by the Federal Government as territory in which American Indian tribes have primary governmental authority. The Indian Lands of the United States map layer shows areas of 640 acres or more, administered by the Bureau of Indian Affairs. Included are Federally-administered lands within a reservation which may or may not be considered part of the reservation.

State/Tribal Sites: ***CA EPA*** SMBRPD / CAL SITES- The California Department of Toxic Substances Control (DTSC) has developed an electronic database system with information about sites that are known to be contaminated with hazardous substances as well as information on uncharacterized properties where further

studies may reveal problems. The Site Mitigation and Brownfields Reuse Program Database (SMBRPD), also known as CalSites, is used primarily by DTSC's staff as an informational tool to evaluate and track activities at properties that may have been affected by the release of hazardous substances.
The SMBRPD displays information in six categories. The categories are:
1. CalSites Properties (CS)
2. School Property Evaluation Program Properties (SCH)
3. Voluntary Cleanup Program Properties (VCP)
4. Unconfirmed Properties Needing Further Evaluation (RFE)
Please Note: FirstSearch Reports list the above sites as DB Type (STATE).
5. Unconfirmed Properties Referred to Another Local or State Agency (REF)
6. Properties where a No Further Action Determination has been made (NFA)
Please Note: FirstSearch Reports list the above sites as DB Type (OTHER).
Each Category contains information on properties based upon the type of work taking place at the site. For example, the CalSites database is now one of the six categories within SMPBRD and contains only confirmed sites considered as posing the greatest threat to the public and/or the potential public school sites will be found within the School Property Evaluation Program, and those properties undergoing voluntary investigation and/or cleanup are in the Voluntary Cleanup Program.
CORTESE LIST-Pursuant to Government Code Section 65962.5, the Hazardous Waste and Substances Sites List has been compiled by Cal/EPA, Hazardous Materials Data Management Program. The CAL EPA Dept. of Toxic Substances Control compiles information from subsets of the following databases to make up the CORTESE list:
1. The Dept. of Toxic Substances Control; contaminated or potentially contaminated hazardous waste sites listed in the CAL Sites database. Formerly known as ASPIS are included (CALSITES formerly known as ASPIS).
2. The California State Water Resources Control Board; listing of Leaking Underground Storage Tanks are included (LTANK)
3. The California Integrated Waste Management Board; Sanitary Landfills which have evidence of groundwater contamination or known migration of hazardous materials (formerly WB-LF, now AB 3750).
Note: Track Info Services collects each of the above data sets individually and lists them separately in the following First Search categories in order to provide more current and comprehensive information: CALSITES: SPL, LTANK: LUST, WB-LF: SWL

State Spills 90: ***CA EPA*** SLIC REGIONS 1 - 9- The California Regional Water Quality Control Boards maintain report of sites that have records of spills, leaks, investigation, and cleanups.

State/Tribal SWL: ***CA IWMB/SWRCB/COUNTY*** SWIS SOLID WASTE INFORMATION SYSTEM-The California Integrated Waste Management Board maintains a database on solid waste facilities, operations, and disposal sites throughout the state of California. The types of facilities found in this database include landfills, transfer stations, material recovery facilities, composting sites, transformation facilities, waste tire sites, and closed disposal sites. For more information on individual sites call the number listed in the source field..
Please Note: This database contains poor site location information for many sites in the First Search reports; therefore, it may not be possible to locate or plot some sites in First Search reports.
WMUDS-The State Water Resources Control Board maintained the Waste Management Unit Database System (WMUDS). It is no longer updated. It tracked management units for several regulatory programs related to waste management and its potential impact on groundwater. Two of these programs (SWAT & TPCA) are no longer on-going regulatory programs as described below. Chapter 15 (SC15) is still an on-going regulatory program and information is updated periodically but not to the WMUDS database. The WMUDS System contains information from the following agency databases: Facility, Waste Management Unit (WMU), Waste Discharger System (WDS), SWAT, Chapter 15, TPCA, RCRA, Inspections, Violations, and Enforcement's.
Note: This database contains poor site location information for many sites in the First Search reports; therefore, it may not be possible to locate or plot some sites in First Search reports.
ORANGE COUNTY LANDFILLS LIST- A list maintained by the Orange County Health Department.

State/Tribal LUST: ***CA SWRCB/COUNTY*** LUSTIS- The State Water Resources Control Board maintains a database of sites with confirmed or unconfirmed leaking underground storage tanks. Information for this database is collected from the states regional boards quarterly and integrated with this database.
SAN DIEGO COUNTY LEAKING TANKS- The San Diego County Department of Environmental Health maintains a database of sites with confirmed or unconfirmed leaking underground storage tanks within its HE17/58 database. For more information on a specific file call the HazMat Duty Specialist at phone number listed in the source information field.

State/Tribal UST/AST: ***CA EPA/COUNTY/CITY*** ABOVEGROUND STORAGE TANKS LISTING-The

Above Ground Petroleum Storage Act became State Law effective January 1, 1990. In general, the law requires owners or operators of AST's with petroleum products to file a storage statement and pay a fee by July 1, 1990 and every two years thereafter, take specific action to prevent spills, and in certain instances implement a groundwater monitoring program. This law does not apply to that portion of a tank facility associated with the production oil and regulated by the State Division of Oil and Gas of the Dept. of Conservation.
SWEEPS / FIDS STATE REGISTERED UNDEGROUND STORAGE TANKS- Until 1994 the State Water Resources Control Board maintained a database of registered underground storage tanks statewide referred to as the SWEEPS System. The SWEEPS UST information was integrated with the CAL EPA's Facility Index System database (FIDS) which is a master index of information from numerous California agency environmental databases. That was last updated in 1994. Track Info Services included the UST information from the FIDS database in its First Search reports for historical purposes to help its clients identify where tanks may possibly have existed. For more information on specific sites from individual paper files archived at the State Water Resources Control Board call the number listed with the source information.
INDIAN LANDS UNDERGROUND STORAGE TANKS LIST- A listing of underground storage tanks currently on Indian Lands under federal jurisdiction. California Indian Land USTS are administered by US EPA Region 9.
CUPA DATABASES & SOURCES- Definition of a CUPA: A Certified Unified Program Agency (CUPA) is a local agency that has been certified by the CAL EPA to implement six state environmental programs within the local agency's jurisdiction. These can be a county, city, or JPA (Joint Powers Authority). This program was established under the amendments to the California Health and Safety Code made by SB 1082 in 1994.
A Participating Agency (PA) is a local agency that has been designated by the local CUPA to administer one or more Unified Programs within their jurisdiction on behalf of the CUPA. A Designated Agency (DA) is an agency that has not been certified by the CUPA but is the responsible local agency that would implement the six unified programs until they are certified.
Please Note: Track Info Services, LLC collects and maintains information regarding Underground Storage Tanks from majority of the CUPAS and Participating Agencies in the State of California. These agencies typically do not maintain nor release such information on a uniform or consistent schedule; therefor, currency of the data may vary. Please look at the details on a specific site with a UST record in the First Search Report to determine the actual currency date of the record as provided by the relevant agency. Numerous efforts are made on a regular basis to obtain updated records.

State/Tribal IC: ***CA EPA*** DEED-RESTRICTED SITES LISTING- The California EPA's Department of Toxic Substances Control Board maintains a list of deed-restricted sites, properties where the DTSC has placed limits or requirements on the future use of the property due to varying levels of cleanup possible, practical or necessary at the site.

State/Tribal VCP: ***CA EPA*** SMBRPD / CAL SITES- The California Department of Toxic Substances Control (DTSC) has developed an electronic database system with information about sites that are known to be contaminated with hazardous substances as well as information on uncharacterized properties where further studies may reveal problems. The Site Mitigation and Brownfields Reuse Program Database (SMBRPD), also known as CalSites, is used primarily by DTSC's staff as an informational tool to evaluate and track activities at properties that may have been affected by the release of hazardous substances.
The SMBRPD displays information in six categories. The categories are:
1. CalSites Properties (CS)
2. School Property Evaluation Program Properties (SCH)
3. Voluntary Cleanup Program Properties (VCP)
4. Unconfirmed Properties Needing Further Evaluation (RFE)
5. Unconfirmed Properties Referred to Another Local or State Agency (REF)
6. Properties where a No Further Action Determination has been made (NFA)
Please Note: FirstSearch Reports list the above sites as DB Type VC. Each Category contains information on properties based upon the type of work taking place at the site. The VC category contains only those properties undergoing voluntary investigation and/or cleanup and which are listed in the Voluntary Cleanup Program.

RADON: ***NTIS*** NATIONAL RADON DATABASE - EPA radon data from 1990-1991 national radon project collected for a variety of zip codes across the United States.

State Permits: ***CA COUNTY*** SAN DIEGO COUNTY HE17 PERMITS- The HE17/58 database tracks establishments issued permits and the status of their permits in relation to compliance with federal, state, and local regulations that the County oversees. It tracks if a site is a hazardous waste generator, TSD, gas station, has underground tanks, violations, or unauthorized releases. For more information on a specific file call the HazMat Duty Specialist at the phone number listed in the source information field.

SAN BERNARDINO COUNTY HAZARDOUS MATERIALS PERMITS- Handlers and Generators Permit Information Maintained by the Hazardous Materials Division.

State Other: ***CA EPA/COUNTY*** SMBRPD / CAL SITES- The California Department of Toxic Substances Control (DTSC) has developed an electronic database system with information about sites that are known to be contaminated with hazardous substances as well as information on uncharacterized properties where further studies may reveal problems. The Site Mitigation and Brownfields Reuse Program Database (SMBRPD), also known as CalSites, is used primarily by DTSC's staff as an informational tool to evaluate and track activities at properties that may have been affected by the release of hazardous substances.
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4. Unconfirmed Properties Needing Further Evaluation (RFE)
Please Note: FirstSearch Reports list the above sites as DB Type (STATE).
5. Unconfirmed Properties Referred to Another Local or State Agency (REF)
6. Properties where a No Further Action Determination has been made (NFA)
Please Note: FirstSearch Reports list the above sites as DB Type (OTHER).
Each Category contains information on properties based upon the type of work taking place at the site. For example, the CalSites database is now one of the six categories within SMPBRD and contains only confirmed sites considered as posing the greatest threat to the public and/or the potential public school sites will be found within the School Property Evaluation Program, and those properties undergoing voluntary investigation and/or cleanup are in the Voluntary Cleanup Program.
LA COUNTY SITE MITIGATION COMPLAINT CONTROL LOG- The County of Los Angeles Public Health Investigation Compliant Control Log.
ORANGE COUNTY INDUSTRIAL SITE CLEANUPS- List maintained by the Orange County Environmental Health Agency.
RIVERSIDE COUNTY WASTE GENERATORS-A list of facilities in Riverside County which generate hazardous waste.
SACRAMENTO COUNTY MASTER HAZMAT LIST-Master list of facilities within Sacramento County with potentially hazardous materials.
SACRAMENTO COUNTY TOXIC SITE CLEANUPS-A list of sites where unauthorized releases of potentially hazardous materials have occurred.

State Other: ***US DOJ*** NATIONAL CLANDESTINE LABORATORY REGISTER - Database of addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the U.S. Department of Justice ("the Department"), and the Department has not verified the entry and does not guarantee its accuracy. All sites that are included in this data set will have an id that starts with NCLR.

EXHIBIT C-2

GENERAL PUBLIC RECORDS

LandAmerica Commercial Services

NOT APPLICABLE FOR THIS REPORT

APPENDIX D

INTERVIEW RECORDS

RECORD OF COMMUNICATION						
Site Name: **Former Gas Station and Office Building**			Location (city): **Hesperia, California**			
Communication with: **Mohmmad Riaz**						
Of: **Property owner**						
Location: **Hesperia**			Phone:			
Communication via	**X**	Telephone		Letter		In Person
Recorded By: **Nasim Ahmed**			Of: **LAC**			
At: (time): **2:00 PM**			On (date): **October 8. 2007**			
Re: **Site Access**						
Summary of Communication: **Provided site access**						
Conclusions/Required Action/Follow-up: **None**						
ROC 1 of 3						

RECORD OF COMMUNICATION						
Site Name: **Former Gas Station and Office Building**			Location (city): **Hesperia, California**			
Communication with: **Elizabeth**						
Of: **San Bernardino County Fire**						
Location: **San Bernardino**			Phone: **(909) 386-8401**			
Communication via		Telephone	**X**	Letter		In Person
Recorded By: **Nasim Ahmed**			Of: **LAC**			
At: (time):			On (date): **October 4,, 2007**			
Re: **UST records**						
Summary of Communication: **No records were available at the time this report was prepared**						
Conclusions/Required Action/Follow-up: **The report will be updated**						
ROC 2 of 3						

RECORD OF COMMUNICATION						
Site Name: **Former Gas Station and Office Building**			Location (city): **Hesperia, California**			
Communication with: **Administrative Assistant**						
Of: **Hesperia Building Department**						
Location: **Hesperia**			Phone: **(760) 947-1000**			
Communication via		Telephone		Letter	**X**	In Person
Recorded By: **Nasim Ahmed**			Of: LAC			
At: (time): **3:30 PM**			On (date): **October 8, 2007**			
Re: **Building Records**						
Summary of Communication: **Provided building records**						
Conclusions/Required Action/Follow-up: **None**						
ROC 3 of 3						

APPENDIX E

CLIENT PROVIDED DOCUMENTATION

LandAmerica Commercial Services

LandAmerica Assessment Corporation
1320 Harbor Bay Parkway Suite 260
Alameda CA 94502
Phone: 510-337-2855
Fax: 510-337-2865

ASTM E-1527-05 PHASE I ENVIRONMENTAL SITE ASSESSMENT USER QUESTIONNAIRE AND DISCLOSURE STATEMENT

KM

User: In order to qualify for one of the *Landowner Liability Protections (LLPs)* offered by the Small Business Liability Relief and Brownfields Revitalization Act of 2001 (the "*Brownfields Amendments*"), the *user* must provide the following information (if available) to the *environmental professional*. Failure to provide this information could result in a determination that "*all appropriate inquiry*" is not complete.

1. PROPERTY INFORMATION:

Property Name: Hesperia – 7th & Main		
Property Address: 15901 Main Street, 15864 Walnut St.		
City: Hesperia	State: CA	Zip:
Assessor's Parcel Number: APN 0413-101-08-0000, 0413-101-10-0000, 0413-101-11-0000, 0413-101-12-0000, 0413-101-13-0000, & 0413-101-14-0000		

2. COMPLETED BY

Signature: Elizabeth F Mely	Date: 9/27/07
Printed Name: Elizabeth Mely	Title: VP legal

3. ASTM-REQUIRED INQUIRIES

Property Owner: Name: 0413-101-08 & 14 - Mohammad and Saboohi Riaz, 0434-101-12 - Norman E and Jacqueline Adams, 0413-101-10, APN 0413-101-11, and APN 0413-101-13-0-000 - Suhail N. Khoury & Avit S. Khoury Phone: Fax:	
Key Site Manager (Site contact): Name: Phone: Fax:	
1) Environmental cleanup liens that are filed or recorded against the site (40 CFR 312.25). Are you aware of any environmental cleanup liens against the *property* that are filed or recorded under federal, tribal, state or local law?	☐ Yes ☒ No
2) Activity and land use limitations that are in place on the site or that have been filed or recorded in a registry (40 CFR 312.26). Are you aware of any AULs, such as *engineering controls*, land use restrictions or *institutional controls* that are in place at the site and/or have been filed or recorded in a registry under federal, tribal, state or local law?	☐ Yes ☒ No
3) Specialized knowledge or experience of the person seeking to qualify for the LLP (40 CFR 312.28). As the *user* of this *ESA* do you have any specialized knowledge or experience related to the *property* or nearby properties? For example, are you involved in the same line of business as the current or former *occupants* of the *property* or an adjoining *property* so that you would have specialized knowledge of the chemicals and processes used by this type of business?	☐ Yes ☒ No

Please return completed form and any attachments via fax to:
LandAmerica Assessment Corporation, 1320 Harbor Bay Parkway, Suite 260, Alameda, CA 94502
Telephone: 510-337-2855 Fax: 510-337-2865

4) Relationship of the purchase price to the fair market value of the *property* if it were not contaminated (40 CFR 312.29). Does the purchase price being paid for this *property* reasonably reflect the fair market value of the *property*? If you conclude that there is a difference, have you considered whether the lower purchase price is because contamination is known or believed to be present at the *property*?	[X] Yes [ ] No
5) Commonly known or *reasonably ascertainable* information about the *property* (40 CFR 312.30). Are you aware of commonly known or *reasonably ascertainable* information about the *property* that would help the *environmental professional* to identify conditions indicative of releases or threatened releases? For example, as *user*, (a.) Do you know the past uses of the *property*? (b.) Do you know of specific chemicals that are present or once were present at the *property*? (c.) Do you know of spills or other chemical releases that have taken place at the *property*? (d.) Do you know of any environmental cleanups that have taken place at the *property*?	[X] Yes [ ] No
6) The degree of obviousness of the presence of likely presence of contamination at the *property*, and the ability to detect the contamination by appropriate investigation (40 CFR 312.31). As the *user* of this *ESA*, based on your knowledge and experience related to the *property* are there any *obvious* indicators that point to the presence or likely presence of contamination at the *property*?	[ ] Yes [X] No

Please provide an explanation of all affirmative answers or attached additional documentation.

Tank removal report + NFA letter already provided to Land America.

7) Please state reason for procuring this Phase 1 ESA:

[X] Qualify for Innocent Landowner defense to CERCLA Liability.

[ ] Other: (state below) We are prospective purchasers of the subject properties.

In addition, certain information should be collected, if available, and provided to the *environmental professional*. This information is intended to assist the *environmental professional* but is not necessarily required to qualify for one of the *LLPs*. The information includes:

(a) the reason why the Phase I is required,

(b) the type of *property* and type of *property* transaction, for example, sale, purchase, exchange, etc.,

(c) the complete and correct address for the *property* (a map or other documentation showing *property* location and boundaries is helpful),

(d) the scope of services desired for the Phase I (including whether any parties to the *property* transaction may have a required standard scope of services on whether any considerations beyond the requirements of Practice E 1527 are to be considered),

(e) identification of all parties who will rely on the Phase I *report*,

(f) identification of the site contact and how the contact can be reached,

(g) any special terms and conditions which must be agreed upon by the *environmental professional*, and

(h) any other knowledge or experience with the *property* that may be pertinent to the *environmental professional* (for example, copies of any available prior *environmental site assessment reports*, documents, correspondence, etc., concerning the *property* and its environmental condition).

Please return completed form and any attachments via fax to:
LandAmerica Assessment Corporation, 1320 Harbor Bay Parkway, Suite 260, Alameda, CA 94502
Telephone: 510-337-2855 Fax: 510-337-2865

APPENDIX F

OTHER SUPPORTING DOCUMENTATION

LandAmerica Commercial Services

LandAmerica Assessment Corporation
1320 Harbor Bay Parkway Suite 260
Alameda CA 94502
Phone: 510-337-2855
Fax: 510-337-2865

ASTM E-1527-05 PHASE I ENVIRONMENTAL SITE ASSESSMENT PRE-SURVEY QUESTIONNAIRE AND DISCLOSURE STATEMENT

Site Contact: Please complete this questionnaire before the Consultant's site visit. For those questions that are not applicable to the subject please respond with an "N/A". This document must be signed by the Owner or his/her representative (Item No. 2). If you have any questions about how to answer any of the questions please call LAC If additional pages for response are necessary please attach them to this form. Clearly mark all references to the appropriate question number(s). This document and your written response to same will be an exhibit in LAC's report.

1. PROPERTY INFORMATION:

Property Name: WALNUT AND 7TH ST.		
Property Address: 15864 WALNUT ST.		
City: HESPERIA	State: CA	Zip: 92345
Assessor's Parcel Number: 0413-101-10-0-000, 0413-101-11-0-000, 0413-101-13-0-000		

2. COMPLETED BY

Signature	Date 10-2-07
Printed Name: ~~AVIT KHOURY~~ SUHAIL K HOURY	Title: OWNER

3. ASTM-REQUIRED INQUIRIES

Property Owner: SUHAIL N. AND AVIT S. KHOURY	
Name: SUHAIL N. AND AVIT S. KHOURY Phone: 7604036825 Fax: 760.241.6788	
Key Site Manager (Site contact): Name: MARLENE KHOURY Phone: 805.358.1754 Fax: 760.241.1135	
If not residential Property, please provide list of tenants, including contact names and phone numbers.	
Are you aware of any environmental cleanup liens against the property that are filed or recorded under federal, tribal, state or local law. If so, please documents along with completed questionnaire to LAC	☐ Yes ☑ No
Are you aware of any Activity Use Limitations (AULs) such as engineering controls, land use restrictions or institutional controls that are in place at the site and/or have been filed or recorded in a registry under federal, tribal, state or local law? If so, please send documents along with completed questionnaire to LAC	☐ Yes ☑ No
Do you have any specialized knowledge or experience related to the property or nearby properties? For example, are you involved in the same line of business the current or former occupants of the property or an adjoining property so that you would have specialized knowledge of the chemicals and processes used by this type of business?	☑ Yes ☐ No
Do you have any specialized knowledge that would be material in identifying recognized environmental conditions in connection with the Property?	☐ Yes ☑ No
Does the purchase price being paid for this property reasonably reflect the fair market value of the property? If you conclude that there is a difference, have you considered whether the lower purchase price is because contamination is known or believed to be present at the Property?	☐ Yes ☑ No
Are you aware if commonly known or reasonably ascertainable information about the property that would help the environmental professional to identify conditions indicative of releases or threatened releases?	☐ Yes ☑ No

Please return completed form and any attachments via fax to:
LandAmerica Assessment Corporation, 1320 Harbor Bay Parkway, Suite 260, Alameda, CA 94502
Telephone: 510-337-2855 Fax: 510-337-2865

For example: Do you know the past use of the property? Do you know specific chemicals that are present or once were present at the property? Do you know of spills or other chemical releases that have taken place at the property? Do you know of any environmental cleanups that have taken place at the property?	NO
Based on your knowledge and experience related to the property are there any obvious indicators that point to the presence or likely presence of contamination at the property?	☐ Yes ☑ No

Please attach explanation of all affirmative answers.

8) Please state reason for procuring this Phase 1 ESA:

☐ Qualify for Innocent Landowner defense to CERCLA Liability

☑ Other: (state below) Buyer's inspection for purchase, AND development.

4. PLEASE PROVIDE A GENERAL SITE DESCRIPTION BY COMPLETING THE FOLLOWING TABLE:

Legal description/ boundary survey/ plat available (please send to NAC if "yes") 0413-101-10, 11, 13	☐ Yes ☑ No
Total Property Size ±35,090.00	
Total number of buildings (0) zero	
Total square footage of buildings N/A	
Date of construction N/A	
Dates of significant renovation N/A	
Waste water discharge ☑ Municipal Sanitary Sewer ☐ On-site septic system ☐ Other	
Potable water source ☑ Community Water Supplier ☐ On-site well ☐ Other	
Please describe prior use of property, if known: Car lot	

5. PREVIOUS INVESTIGATIONS:

Have any previous environmental investigations been performed at the site? ☐ Yes ☑ No	
INVESTIGATION TYPE **If yes, please describe conclusions, and attach copy of report(s)**	
☐ Phase 1 ESA	N/A
☐ Phase 2 ESA	N/A

Have any previous environmental investigations been performed at the site? ☐ Yes ☑ No	
INVESTIGATION TYPE **If yes, please describe conclusions, and attach copy of report(s)**	
☐ Tank Tightness Testing	N/A
☐ Asbestos Survey/ O&M	N/A
☐ Radon	N/A
☐ Lead-based Paint	N/A
☐ Lead in Water	N/A
☐ Operations & Maintenance Plan(s)	N/A
☐ Other	N/A

6. ON SITE OPERATIONS

Are you aware of any of the following conditions, either past or present, on the site?		
Condition	**Response**	**If yes, please describe**
1. Stored Chemicals	☐ Yes ☑ No	
2. Underground Storage Tanks	☐ Yes ☑ No	
3. Aboveground Storage Tanks	☐ Yes ☑ No	
4. Spills or Releases	☐ Yes ☑ No	
5. Dump Areas/ Landfills	☐ Yes ☑ No	
6. Waste Treatment Systems	☐ Yes ☑ No	
7. Clarifies/ Separators	☐ Yes ☑ No	
8. Air stacks/ Vents/ Odors	☐ Yes ☑ No	
9. Floor Drains/Sumps	☐ Yes ☑ No	
10. Stained Soil/ Impacted Vegetation	☐ Yes ☑ No	
11. On-site OWNED Electrical Transformers	☐ Yes ☑ No	
12. Hydraulic lifts/ Elevators	☐ Yes ☑ No	
13. Dry Cleaning Operations	☐ Yes ☑ No	
14. Wetlands/ Flooding	☐ Yes ☑ No	
15. Oil/ Gas/ Water/ Monitoring Wells	☐ Yes ☑ No	
16. Environmental Cleanups	☐ Yes ☑ No	
17. Environmental Permits	☐ Yes ☑ No	If yes, please describe and ATTACH ALL COPIES of permits. Please attach last three waste manifests.
a) Industrial Discharge	☐ Yes ☑ No	
b) POTW (NPDES)	☐ Yes ☑ No	
c) Hazardous Waste Generator	☐ Yes ☑ No	
d) Air Quality	☐ Yes ☑ No	
e) Flammable Materials	☐ Yes ☑ No	

Are you aware of any of the following conditions, either past or present, on the site?		
Condition	**Response**	**If yes, please describe**
f) AST/UST	☐ Yes ☑ No	
g) Waste Manifest(s)	☐ Yes ☑ No	
h) Other	☐ Yes ☑ No	

7. OFF SITE ENVIRONMENTAL CONCERNS

Are you aware of any of the following conditions, either past or present, Adjacent to the site?		
Condition	**Response**	**If yes, please describe**
Gasoline Stations	☑ Yes ☐ No	
Dry Cleaners	☐ Yes ☑ No	
Industrial Uses	☐ Yes ☑ No	
Other	☐ Yes ☑ No	

HISTORICAL TENANT REPORT

INTRODUCTION

The purpose of this Historical Tenant Report is to identify the tenants (be it the owner or lessee) of 15885,15887-15901,15888,15933 MAIN ST & 15888 WALNUT ST, HES over the last 50 years.

Sources for the research includes various city directories, street address directories and criss-cross directories published from 1920 forward. The actual site address as well as neighboring addresses on the same block are also investigated for informational purposes, and to cover a potential address change of the subject site.

BBL has used its best effort but makes no claims as to the completeness of the referenced sources or completeness of the search. For additional information call (619) 793-0641.

DIRECTORY INFORMATION

The three general types of directories researched for the Historical Tenant Report are the 1) city directory, 2) street address directory, and 3) criss-cross directory. All three either are devoted to or have sections that list the Tenant and telephone number of given street addresses by their street name and address. These telephone directories, not as readily available to the public as white pages or yellow pages, are excellent for uncovering names, business names and the nature of businesses as listed by street address.

In addition to the actual site address the following neighboring addresses have been researched for commercial listings as well:

15885 MAIN ST
15887 MAIN ST
15888 MAIN ST
15888 WALNUT ST
15901 MAIN ST
15933 MAIN ST

The actual site address, as it is known presently, is marked by an asterisk in the findings of the search as reported on the following pages.

2006

15885 MAIN ST	MEMBERS OWN CREDIT UNION AZTECA TAE KWON DO ANTIQUES TRAVELER FINDERS KEEPERS SHABBY CHIC & LIL BIT COUNTRY BRIAN MOTORS CAR RENTAL QUALITY HEALTHCARE CLINIC NU-WEST MOTOR SPORTS
15887 MAIN ST	ANGELS AUTO EXPO
15888 MAIN ST	HANSEN, ERIC R DO FINANCIAL TITLE CO BURNS FIRE PROTECTION SYSTEMS HEALTHY BEGINNINGS VALENCIA, RAINILDA P MD
15888 WALNUT ST	SILLS AUTO SALES
15901 MAIN ST	ALLIANCE SERVICE CTR BEST BUY AUTO SALES
15933 MAIN ST	No Commercial Listings
Source:	DIGITAL DIRECTORY ASSISTANCE

2004

15885 MAIN ST	HIGH DESERT APPLIANCE II ALL AMERICA POSTAL CTR SHABBY CHIC & LIL BIT COUNTRY ME & MOM FASHIONS HESKETH'S PLACE FINDERS KEEPERS BRIAN MOTORS CAR RENTAL M & M VIDEO GAMES ANTIQUES TRAVELER ROSE REALTY
15887 MAIN ST	No Commercial LIstings
15888 MAIN ST	REMAX PERFORMANCE PLUS SALAZAR, JUVILUSAN S MD HESPERIA PHARMACY FAMILY VISION CTR
15888 WALNUT ST	SILLS AUTO SALES
15901 MAIN ST	ALLIANCE AUTO DEALER ALLIANCE SERVICE CTR
15933 MAIN ST	No Commercial LIstings
Source:	DIGITAL DIRECTORY ASSISTANCE

2002

15885 MAIN ST	ANGIE'S DECORATIONS LOS DOMINGOS RESTAURANT HESKETH'S PLACE BRIAN MOTORS ROSE REALTY HIGHER CALLING CHURCH SHEAR IMAGES HAIR DESIGN MAIN STREET PAGING & CELLULARMORAN HOME BUILDERS LAWYERS TITLE CO

15887 MAIN ST	No Commercial LIstings
15888 MAIN ST	LLOYD'S PHARMACY GENTE MEDICAL CLINIC HESPERIA PROFESSIONAL CTR WOODFIELD MEDICAL GROUP ATS COMPUTER TRAINING CTR SUMMIT OF SOUTHERN CALIFORNIA
15888 WALNUT ST	SILLS AUTO SALES
15901 MAIN ST	ALLIANCE AUTO DEALER ALLIANCE SERVICE CTR
15933 MAIN ST	No Commercial LIstings
Source:	DIGITAL DIRECTORY ASSISTANCE

2000

15885 MAIN ST	MISS JENNY'S ANTIQUES II HESKETH'S PLACE ROSE REALTY LOS DOMINGOS RESTAURANT BRIAN MOTORS LAWYERS TITLE CO SHEAR IMAGES HAIR DESIGN PAL HUMANE SOCIETY K'S KUBBY HOLE BRANAMAN & THIBODEAU BOOKKPNG
15887 MAIN ST	NORM ADAMS CONCRETE
15888 MAIN ST	WESTERN EMPIRE SECURITY ANIMAL MEDICAL CTR DESERT VALLEY COMMUNITY LAW HESPERIA PROFESSIONAL CTR GENTE MEDICAL CLINIC DREAMCATCHER ENTERPRISES HANNON CHIROPRACTIC LUEDEMANN, RON residential G WOODFIELD MEDICAL GROUP
15888 WALNUT ST	SILLS AUTO SALES
15901 MAIN ST	ALLIANCE AUTO DEALER
15933 MAIN ST	HESPERIA CHEVRON BCE CHECK CASHING
Source:	DIGITAL DIRECTORY ASSISTANCE

1998

15885 MAIN ST	COBBLESTONE SQUARE MISS JENNYS ANTIQUES II MISS JENNYS ANTIQUES DOMINGOS APPLE PIE ANTIQUES ANTIQUE IMPORTS CAROUSEL OF BEAUTY
15887 MAIN ST	NORM ADAMS CONCRETE
15888 MAIN ST	BENNETT MC ALLISTER INC MC ALLISTER, BENNETT OD ROBERTS, STEPHEN W MD ANIMAL MEDICAL CTR HENTE MEDICAL CLINIC

	AUTOMATED TECHNICAL SVC
	HESPERIA PROFESSIONAL CTR
	WOODFIELD MEDICAL GROUP
	ARIZA, HORACIO MD
	LLOYDS PHARMACY
15888 WALNUT ST	SILLS AUTO SALES
15901 MAIN ST	ALLIANCE SERVICE CTR
15933 MAIN ST	No Commercial LIstings
Source:	DIGITAL DIRECTORY ASSISTANCE

1994

15885 MAIN ST	BUILDERS CARPET WORLD
	CAROUSEL OF BEAUTY
	OPTOMETRIC VISION CENTER
	DOMINGOS MEXICAN RESTAURANT
	A & V FLOOR COVERING SUPPLY
	ALICE HOUSE OF RIBS
	ROSE REALTY
	RENICKS BOOT REPAIR
	SONJAS TREASURES
	MISS JENNYS ANTIQUES
15887 MAIN ST	NORM ADAMS CONCRETE
15888 MAIN ST	BELTONE HEARING AID CENTER
	ANDREWS, FRANK J PHD
	ANIMAL MEDICAL CENTER
	BARLOW, JEFF DDS
	HANNON, CLIVE B
	ASSEMBLYWOMAN HONEYCUTT
15888 WALNUT ST	SILLS AUTO SALES
15901 MAIN ST	ALLIANCE SERVICE CENTER
15933 MAIN ST	No Commercial LIstings
Source:	DIGITAL DIRECTORY ASSISTANCE

erhardino County – EPWA/Land Management Dept.

CE OF BUILDING AND SAFETY

PERMIT

CITY 104857

Permit No.

To be filled in by Applicant – PLEASE PRINT OR TYPE

Owner's Name: Martin & MacFarlane D.B.A. Martin Outdoor Phone No. (805) 948-0772

Mailing Address: 45424 N. Sierra Hwy City: Lancaster Zip: 93534

JOB SITE ADDRESS: 15887 Main St. CITY: Hesperia

PARCEL NO.: 413-101-12 (Sec. Twn. Rng.) | Lot No. | Block No.: 101 | Tract No.

Intended Permit Use: Off-site Sign | F.H.A. ☐ Yes ☐ No

SEWAGE SYSTEM ☐ Public ☐ Private ☐ Repair Min. Depth ____ S.F./100 gal. ____

Lot Dimensions	No. Stories	No. Bedrms.	No. Dwelling Units	No. Fireplaces
45' x 150'				

No. Bldgs. Now on Lot: one | How Used: Office

Contractor: Martin Outdoor | When Plans Reviewed, Notify: Martin Outdoor

Contractor's Mailing Address: 45424 N. Sierra Hwy City: Lancaster Zip: 93534 Phone No.: 805-948/07[illegible]

FLOOR	EXT. WALLS	INT. WALLS	CEILING	ROOF	HEATING
Concrete	Masonry	Masonry	Open Beam	Wood	Elect.
Wood	Frame	Frame	Plaster	Comp. Sh.	Nat. Gas
	Stucco	Plaster	Sheetrock	Built-up	L.P.G.
	Siding	Sheetrock	Wood	Metal	Solar
	Metal	Wood	Fiber Board	Tile	Solid/Oil

DIVISION OF INDUSTRIAL SAFETY PERMIT CERTIFICATION

The California Health and Safety Code requires a Division of Industrial Safety Permit as a prerequisite to permit issuance unless the applicant signs one of the Certificates below.

☒ I certify that no excavation 5 or more feet in depth, into which a person is required to descend, will be made in connection with work authorized by this permit, and that no building, structure, scaffolding, falsework, or demolition or dismantling thereof, will be more than 36 feet high.

☒ As owner/builder I will not employ anyone to do [illegible] ould require a permit from the Division of Industrial Safety, as noted above unless such pe[illegible] permit from that division.

Division of Industrial Safety Permit No. ____

WORKERS' COMPENSATION INSURANCE CERTIFICATION

☐ I certify that in the performance of the work for which this permit is issued I shall not employ any person in any manner so as to become subject to the Workers' Compensation laws of California.

Workers' Compensation Insurance Policy No. ____ Expiration Date 10-1-86

I hereby affirm that there is a construction lending agency for the performance of the work for which this permit is issued (Sec. 3097, Civ.C.).

Lender's Name: NONE

Lender's Address: ____

I have read this application and agree to comply with all laws regulating construction.

Owner's Signature ____

Contractor's Signature Albert J. Smith License No. 451323

By ____ Zone C2 - T340 DEPARTMENT USE ONLY Plan Check Valuation ____

Minimum Setback Distances

____ Front Setback from Center Line ____ R/W ____

____ Rear Setback from Rear Property Line

____ Side Street Setback from Center Line ____ R/W ____

____ Side Setback from Property Line

____ Side Setback from Property Line

NOTE MIN 1' FROM side property line as well as 2' dedication required survey required

03-1358-469 Rev. 12/83

Index No. 138-92 | Region 402

Application Date 3-20-86 | By BW

Plans	Plot	Gr.	Type	Plan No.
2			Con	

Date Permit Issued 4/7/86

Use Number 39 | Hazardous Fire Area ☐

	Sq. Ft.	Factor P.S.F.	Adjusted Area or Valuation
1	288	15.00	4,320
2			
3			
Gar.			
Porch			
F.P.			

Valuation $ 2 | Adjusted Area

Grading Cu. Yds.

ELECT. ILLUMINATED SIGN = 26.00

PLUMB.

MECH.

Plan Rev. Fee	$ 72	00
Const. Fee	80	—
Elec. Fee	26	—
Plumb. Fee		
Mech. Fee		
Solar Fee		
Grading Fee		
Energy Fee		
Misc. Fee		
Permit Fee	14	—
Surveyor		
TOTAL FEE	$ 192	—

VALIDATION SPACE OR RECEIPT NO.

Cash/Check Paid By ____

2070

780169

CITY OF HESPERIA
DEPARTMENT OF BUILDING AND SAFETY
BUILDING PERMIT

PRESS FIRMLY

THIS IS A BUILDING PERMIT WHEN PROPERLY FILLED OUT, SIGNED, AND VALIDATED, AND IS SUBJECT TO EXPIRATION IF WORK THEREUNDER IS NOT COMMENCED OR IS SUSPENDED OR ABANDONED FOR 180 DAYS.

JOBSITE ADDRESS 15895 / 15887 MAIN ST.

APN 413-101-14 LOT ____ TRACT ____

CROSS STREET 7th AVE

OWNER HEMANT CHHATRALA

ADDRESS SVL Box 7477

CITY VICTORVILLE ZIP 92392 TEL 243-4293

APPLICANT HEMANT CHHATRALA TEL 243-4293

CONTRACTOR MOUSLEY CONSTRUCTION

ADDRESS 14455 PARK AVE

CITY VICTORVILLE ZIP 92392 TEL 241-7742

STATE LIC. NUMBER ____

ARCH/ENG/ DESIGNER CHIRICAN BERGIAM

ADDRESS 14455 PARK AVE

CITY VICTORVILLE ZIP 92392 TEL 241-7742

PROPOSED USE MOTEL (19 UNIT + MGR) Travel Lodge

NO. DWEL. UNITS 19 NO. STORIES 2 NO. BEDROOMS ____

LOT DIMENSIONS ____

NO. OF BLDGS ON LOT ____ HOW USED ____

☐ LICENSED CONTRACTORS DECLARATION: I hereby affirm that I am licensed under provisions of Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code, and my license is in full force and effect.

☑ OWNER-BUILDER DECLARATION: I hereby affirm that I am exempt from the Contractor's License Law for the following reason (Sec. 7031.5, Business and Professions Code: Any city or county which requires a permit to construct, alter, improve, demolish, or repair any structure, prior to its issuance, also requires the applicant for such permit to file a signed statement that he is licensed pursuant to the provisions of the Contractor's License Law (Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code) or that he is exempt therefrom and the basis for the alleged exemption. Any violation of Section 7031.5 by any applicant for a permit subjects the applicant to a civil penalty of not more than five hundred dollars ($500).):

☐ I, as owner of the property, or my employees with wages as their sole compensation, will do the work, and the structure is not intended or offered for sale (Sec. 7044, Business and Professions Code: The Contractor's License Law does not apply to an owner of property who builds or improves thereon, and who does such work himself, or through his own employees, provided that such improvements are not intended or offered for sale. If, however, the building or improvement is sold within one year of completion, the owner-builder will have the burden of proving that he did not build or improve for the purpose of sale.)

☑ I, as owner of the property, am exclusively contracting with licensed contractors to construct the project (Sec. 7044, Business and Professions Code: The Contractor's License Law does not apply to an owner of property who builds or improves thereon, and who contracts for such projects with a contractor(s) licensed pursuant to the Contractor's License Law.)

☐ I am exempt under Sec. ____ B. & P.C. Attach Certificate.

Date ____ Owner ____

WORKERS' COMPENSATION DECLARATION: I hereby affirm that I have a certificate of consent to self-insure, or a certificate of Workers' Compensation Insurance, or a certified copy thereof (Sec. 3800, Lab. C.).

☐ Certified copy is hereby furnished.

☐ Certified copy is filed with the Building Inspection Department or ____ Department.

CERTIFICATE OF EXEMPTION FROM WORKERS' COMPENSATION INSURANCE: This section need not be completed if the permit is for one hundred ($100) or less. I certify that in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the Workers' Compensation Laws of California.

Date ____ Applicant ____

NOTICE TO APPLICANT: If, after making this Certificate of Exemption, you should become subject to the Worker's Compensation provisions of the Labor Code, you must forthwith comply with such provisions or this permit shall be deemed revoked.

DIVISION OF INDUSTRIAL SAFETY PERMIT CERTIFICATION:

☐ I hereby certify that no excavation five (5) or more feet in depth into which a person is required to descend, will be made in connection with work authorized by this permit, and that no building structure, scaffolding, falsework, or demolition or dismantling thereof, will be more than thirty-six (36) feet high. (Chap. 3.2, Grp 2, Art 2, Sec 341, Title 8, C.A.C.).

☐ As owner-builder, I will not employ anyone to do work which would require a permit from the Division of Industrial Safety, as noted above, unless such person has a permit to do such work from the division.

☐ Division of Industrial Safety Permit No. ____

CONSTRUCTION LENDING AGENCY: I hereby affirm that there is a construction lending agency for the performance of the work for which this permit is issued (Sec. 3097, Civ. C.).

Lender's Name ____

Lender's Address ____

CERTIFICATE OF COMPLIANCE AND AUTHORIZATION OF ENTRY: I certify I have read this application and state that the information given is correct. I agree to comply with all state laws and city ordinances relating to building construction, and authorize a representative of the Department of Building and Safety to enter upon the property for which I have applied for this permit for the purpose of making inspections.

X Chhatrala 9/21/90

Signature of Applicant or Agent — Date

APPLICATION DATE 9-21-90 PERMIT NUMBER 1611 USE CODE 20

ISSUE DATE ____ TYPE CONST. V-1hr. OCC. GROUP R-1

ZONING ____ SETBACKS FRONT Per App. Plot REAR ____ SIDE/SIDE STREET ____ SIDE ____ RW ____ RW ____ IMPROVEMENTS

SEWAGE DISPOSAL ☐ PUBLIC ☐ PRIVATE PMT # ____ SQ. FT./100 GAL ____

GRADING ☐ CU. YDS. EXC. ____ CU YDS FILL ____

BUILDING FEES

TYPE	SQ. FT.	FACTOR PSF	ADJ. AREA/VALUATION
1	7982	1.0	7982
2			
Comb	520	.20	104
Canopy	400	.20	~~80~~ AC
Covered Porch	28	.20	~~6~~
PORCH			

VALUATION 345,000 ADJ. AREA 8212

ELECTRICAL / MECHANICAL / PLUMBING

QUANTITY	DESCRIPTION	FEE

FEE TOTALS

CONSTRUCTION	
PLAN REVIEW	699.71
ELECTRIC	
PLUMBING	
MECHANICAL	
GRADING	
ISSUANCE	
SMIP	
PARK FEE	
SCHOOL FEES	

TOTAL FEES 699.71

COMMENTS ____

RECPT NO. ____ PAID BY CK 2866 VALIDATION ____

15895 Main

402 SAN BERNARDINO COUNTY-EPWA/LAND MANAGEMENT DEPT
OFFICE OF BUILDING AND SAFETY P E R M I T APPLICATION
THIS IS NOT A PERMIT UNTIL ISSUED

PERMIT NBR 402 88 00466 201L 01 | PAGE 1 OF 1

APPL DATE 02/17/88 | ISSUE DATE 00/00/00

PROPOSED USE: AUTOMOTIVE REPAIR CONST.
CURRENT USE:

PARCEL NUMBER 0413-101-14-0000

TRACT	BLK	LOT	SEC	TWN	RNG	PRCL MAP	PRCL
	000	000	NE20	04N	04W	0	0

COMMUNITY PLAN	ZONE/LAND USE DISTRICT	GENERAL PLAN
	C2-T 544	COM

SUBDIVISION NAME | SUBDIVISION PARCEL NO

LOT DIMENSION 97X150
#BLDGS ON LOT

CONST TYPE III1
GROUP B1

APPLICANT NAME, MAILING ADDRESS, AND PHONE NUMBER
WHITE OAK DEVELOPMENT
14338 PARK AVE 4
VICTORVILLE CA 92392-0000
(619) 241 - 2336

#PLANS RECD 0 LAND USE PLOT 0
STD PLAN/ICBO

INDEX NBR 158-93
FHA

OWNER NAME, MAILING ADDRESS, AND PHONE NUMBER
ATTRACTIVE INVESTMENTS INC
9454 WILSHIRE BLVD 820
BEVERLY HILLS CA 90212-0000
(213) 858 - 6700

GRADING	INITIAL	ACTUAL
CU.YDS. EXC.		
CU.YDS. FILL		

JOB SITE ADDRESS
15887 MAIN ST - Not correct address
HESPERIA CA 92345-0000
CROSS STREET 7TH ST
INSPECTN ACCESS

TYPE	SQ. FT.	FACTOR/P.S.F.	ADJSTED AREA/VALUATN
01	5752	45.00	258840.00

CALC. VALU 258,840.00 | ADJUSTED AREA 5752

CONTRACTOR NAME | LICENSE NUMBER

MAILING ADDRESS, PHONE NUMBER

ITEM CNT	DESCRIPTION	DETAIL	TOTALS
	COMMER/INDUST CONST		1,264.40
8	TO 600V/200AMP SERV	136.00	
5752	FIXTURES	596.50	
	ELEC SUB-TOTAL		732.50
16	FIXTURE/TRAP	116.80	
1	BLD SEWER PUBLIC CO	17.00	
8	WATER HEATER	87.20	
1	GAS PIPING OUTLETS	10.90	
1	WATER PIPING	10.90	
8	WATER DIST CONNECTI	38.40	
	PLUM SUB-TOTAL		281.20
8	VENT FAN SINGLE DUC	48.80	
	MECH SUB-TOTAL		48.80
	ISSUANCE FEE		17.00
	SMIP SURCHARGE		38.83
	TOTAL AMOUNT		2,382.73

MINIMUM SETBACK DISTANCES

MECHANICAL EQUIP NOT PERMITTED IN REQUIRED SIDE SETBACKS

NO. STORIES	NO. DWELLING UNITS	NO. BEDROOMS	FLOOR
1			

EXT. WALLS	INT. WALLS	CEILING

ROOF	HEATING	FIREPLACES	
		METAL	MASRY

WATER	SEWER	MIN DEPTH	S.F./100	SIZE	NEW/REPAIR
	PUBLIC	000	000	0000	NEW

COMMENTS
RE-CONSTRUCTION PAID
SCHOOL FEES DUE NEED SEWER LETTER

AMT WAIVED .00 AMT PAID 2,382.73
PAYOR NAME: UNGVARI, JOHN PAID 04/07/88
RECEIPT : 4009 EMPL: HUDSON, P

DEPARTMENT OF BUILDING AND SAFETY
BUILDING PERMIT

PRESS FIRMLY

THIS IS A BUILDING PERMIT WHEN PROPERLY FILLED OUT, SIGNED, AND VALIDATED, AND IS SUBJECT TO EXPIRATION IF WORK THEREUNDER IS NOT COMMENCED OR IS SUSPENDED OR ABANDONED FOR 180 DAYS.

JOBSITE ADDRESS 15901 MAIN & 7TH

APN 413-101-08 LOT ____ TRACT ____

CROSS STREET ____

OWNER BLACK GOLD GAS STA.

ADDRESS P.O BOX 3757

CITY ONTARIO ZIP ____ TEL 714 983-7743

APPLICANT ____ TEL. ____

CONTRACTOR MARSHALL PIPELINE

ADDRESS LIVE OAK & HESPERIA RD

CITY Hesperia ZIP ____ TEL 244-6288

STATE ____

LIC. NUMBER ____

ARCH/ENG/ DESIGNER ____

ADDRESS ____

CITY ____ ZIP ____ TEL. ____

PROPOSED USE SEWER CONNECTION

NO. DWEL. UNITS ____ NO. STORIES ____ NO. BEDROOMS ____

LOT DIMENSIONS ____

NO. OF BLDGS ON LOT ____ HOW USED ____

X ____

LICENSED CONTRACTORS DECLARATION: I hereby affirm that I am licensed under provisions of Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code, and my license is in full force and effect.

☐

OWNER-BUILDER DECLARATION: I hereby affirm that I am exempt from the Contractor's License Law for the following reason (Sec. 7031.5, Business and Professions Code: Any city or county which requires a permit to construct, alter, improve, demolish, or repair any structure, prior to its issuance, also requires the applicant for such permit to file a signed statement that he is licensed pursuant to the provisions of the Contractor's License Law (Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code) or that he is exempt therefrom and the basis for the alleged exemption. Any violation of Section 7031.5 by any applicant for a permit subjects the applicant to a civil penalty of not more than five hundred dollars ($500).):

☐ I, as owner of the property, or my employees with wages as their sole compensation, will do the work, and the structure is not intended or offered for sale (Sec. 7044, Business and Professions Code: The Contractor's License Law does not apply to an owner of property who builds or improves thereon, and who does such work himself, or through his own employees, provided that such improvements are not intended or offered for sale. If, however, the building or improvement is sold within one year of completion, the owner-builder will have the burden of proving that he did not build or improve for the purpose of sale.)

☐ I, as owner of the property, am exclusively contracting with licensed contractors to construct the project (Sec. 7044, Business and Professions Code: The Contractor's License Law does not apply to an owner of property who builds or improves thereon, and who contracts for such projects with a contractor(s) licensed pursuant to the Contractor's License Law.)

☐ I am exempt under Sec. ____, B. & P.C. (Attach Certificate).

Date ____ Owner ____

WORKERS' COMPENSATION DECLARATION: I hereby affirm that I have a certificate of consent to self-insure, or a certificate of Workers' Compensation Insurance, or a certified copy thereof (Sec. 3800, Lab. C.).

☐ Certified copy is hereby furnished.

☐ Certified copy is filed with the Building Inspection Department or ____ Department.

CERTIFICATE OF EXEMPTION FROM WORKERS' COMPENSATION INSURANCE: This section need not be completed if the permit is for one hundred ($100) or less. I certify that in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the Workers' Compensation Laws of California.

Date ____ Applicant ____

NOTICE TO APPLICANT: If, after making this Certificate of Exemption, you should become subject to the Worker's Compensation provisions of the Labor Code, you must forthwith comply with such provisions or this permit shall be deemed revoked.

DIVISION OF INDUSTRIAL SAFETY PERMIT CERTIFICATION:

☐ I hereby certify that no excavation five (5) or more feet in depth into which a person is required to descend, will be made in connection with work authorized by this permit, and that no building structure, scaffolding, falsework, or demolition or dismantling thereof, will be more than thirty-six (36) feet high. (Chap. 3.2, Grp 2, Art 2, Sec 341, Title 8, C.A.C.).

☐ As owner-builder, I will not employ anyone to do work which would require a permit from the Division of Industrial Safety, as noted above, unless such person has a permit to do such work from the division.

☐ Division of Industrial Safety Permit No. ____

CONSTRUCTION LENDING AGENCY: I hereby affirm that there is a construction lending agency for the performance of the work for which this permit is issued (Sec. 3097, Civ. C.).

Lender's Name ____

Lender's Address ____

CERTIFICATE OF COMPLIANCE AND AUTHORIZATION OF ENTRY: I certify I have read this application and state that the information given is correct. I agree to comply with all state laws and city ordinances relating to building construction, and authorize a representative of the Department of Building and Safety to enter upon the property for which I have applied for this permit for the purpose of making inspections.

X Keith Funk
Signature of Applicant or Agent

Date

APPLICATION DATE 4-26-89
PERMIT NUMBER 1996
USE CODE ____
ISSUE DATE 4-27-89
TYPE CONST. ____
OCC. GROUP ____

ZONING ____

SETBACKS
FRONT ____
REAR EX 10 FT 109
SIDE/SIDE STREET ____
SIDE ____
RW ____
RW ____

IMPROVEMENTS
☐ ____
☐ ____
☐ ____
☐ ____

SEWAGE DISPOSAL
☒ PUBLIC
☐ PRIVATE
PMT # 576
SQ. FT./ 100 GAL. ____

GRADING ☐ CU. YDS. EXC. ____ CU YDS FILL ____

BUILDING FEES

TYPE	SQ FT	FACTOR PSF	ADJ. AREA/VALUATION
1			
2			
3			
4			
GARAGE			
PORCH			

VALUATION ____ ADJ. AREA ____

	QUANTITY	DESCRIPTION	FEE
ELECTRICAL			
PLUMBING			
MECHANICAL			

FEE TOTALS

CONSTRUCTION	
PLAN REVIEW	
ELECTRIC	
PLUMBING	52.41
MECHANICAL	
GRADING	
ISSUANCE	
SMIP	
PARK FEE	
SCHOOL FEES	

TOTAL FEES 52.41

COMMENTS ____

RECPT NO. 1222 PAID BY CK 11087 VALIDATION ____

WHITE—Department Copy, YELLOW—Finance Copy, PINK—Assessor Copy, GOLDENROD—File Copy, GREEN— Applicants Copy

▪ADVANCED ENVIRONMENTAL CONCEPTS INC▪

Advanced Environmental Concepts, Inc. is pleased to present the following:

Tank Closure Report

for

Alliance Auto Center

15901 Main Street
County of San Bernardino • Hesperia, California

This report has been prepared for:

SCE & E, Inc.
Mr. John Walther

December 1998

4400 ASHE ROAD. #206 • BAKERSFIELD. CA 93313 805/831-1646 • FAX 805/831-1771

Table of Contents

		Page
1.0	INTRODUCTION	1
2.0	BACKGROUND	1
3.0	SITE GEOLOGY and DEPTH TO GROUNDWATER	2
4.0	TANK REMOVAL PROCEDURES	2
4.1	Soil Sample Locations and Collection Procedures	2
5.0	LABORATORY ANALYSES and RESULTS	3
6.0	FINDINGS	4
7.0	RECOMMENDATIONS	4
8.0	LIMITATIONS	4
9.0	CLOSING	5

Appendices:

Project Maps/Figures:

Figure 1: Location Map
Figure 2: Sampling Location Map

(A) Tank Removal Permits
(B) Tank Disposal Documentation
(C) Marine Chemist
(D) Hazardous Waste Disposal Manifest
(E) Laboratory Results/Chain-of-Custody Documents
(F)) Compaction Report

• ENVIRONMENTAL CONCEPTS WITH DESIGN IN MIND •
4400 ASHE ROAD. #206 • BAKERSFIELD. CA 93313 805/831-1646 • FAX 805/831-1771

1.0 INTRODUCTION

This report presents the results of a preliminary soil investigation performed November 16-18, 1998 by **Advanced Environmental Concepts, Inc.** (AEC). The purpose of this project was to evaluate whether petroleum hydrocarbons have leaked from two 5,000 gallon, or one 8,000 gallon gasoline underground storage tanks (UST's), product piping, and/or fuel dispensers.

The objective was to assess the soil beneath the storage tanks and dispenser locations for hydrocarbons following removal of the UST's, and product piping by AEC. The above described tanks, dispensers, and piping were located at 15901 Main Street, Hesperia, California (**Figure 1**).

The tank removal and subsequent soil sampling procedures were performed under the supervision of the Hesperia Fire Department (HFD), represented by Mr. Donn Funderburk, Fire Inspector.

The following report includes background information regarding existing site characteristics, local geology and hydrology, tank removal procedures, sample collection procedures, analytical results, and related conclusions and recommendations. Report appendices contain Tank Removal Permits (**Appendix A**), Tank Disposal Documentation (**Appendix B**), Marine Chemist Certification (Appendix C), Hazardous Waste Disposal Manifest for liquid and rinseate (**Appendix D**), Laboratory Reports/Chain-of-Custody Documents (**Appendix E**), and compaction report (**Appendix F**).

2.0 BACKGROUND

SCE & E, Inc. contracted AEC to provide the following tank removal services:

1) Excavate the backfill surrounding the UST's;

2) Monitor excavated soil for contamination;

3) Triple-rinse and decontaminate the tanks prior to removal using a steam cleaner;

4) Remove liquid rinseate and transport for offsite disposal;

5) Have a marine chemist certify the UST's as non-hazardous;

6) Remove and transport the UST's offsite for disposal;

7) Provide qualified personnel to collect representative soil samples in accordance with Hesperia Fire Department regulations;

8) Perform required analytical testing of soil samples by a State of California certified analytical laboratory;

9) Summarize the above described services in the form of a "Tank Closure Report".

• ENVIRONMENTAL CONCEPTS WITH DESIGN IN MIND •

4400 ASHE ROAD. #206 • BAKERSFIELD. CA 93313 805/831-1646 • FAX 805/831-1771

3.0 SITE GEOLOGY and DEPTH TO GROUNDWATER

The site is located in the southern portion of the Mojave Desert, along the northern flank of the San Gabriel Mountains, at an approximate elevation of 3,100 feet above mean sea level. Commercial retail parcels occupy the areas immediately surrounding the site and Main Street is the primary route through Hesperia.

The regional sediments in the area of the subject site were primarily deposited in a low to moderate energy stream environment, as evidenced by the predominant fine-to-medium grained sand fraction. Intermittent episodes of lower and higher energy environments are evident by the presence of silts and gravels, respectively. Such stratigraphy is consistent with broad, low-to-medium gradient, alluvial fan distributary systems where main flow channels episodically alter their course as influenced by topographic lows and highs that form during the on-going sedimentation. Buried channels within these fans typically mirror the surface gradient and transmit groundwater in a similar manner.

The sidewalls and floor of the excavation were composed of dry, compact, fine to medium grained, brown sand (SP). These sediments extended to a depth of fifteen feet below grade level (BGL), the total depth of the excavated gasoline tank pit.

The depth of the first unconfined ground water beneath the site is estimated at approximately 60 feet BGL.

4.0 TANK REMOVAL PROCEDURES

On November 16, 1998, AEC began excavation of the three gasoline UST's located at the site. The 8,000 gallon UST was located south of the islands (trending north-south), and the two 5,000 gallon UST's ran east-west and were located beneath the canopy between the west and central islands. The UST's were under asphalt and concrete. The top and sides of the UST's were uncovered using a backhoe. No visually stained soil was observed adjacent to the top, sides, and ends of the tanks. Remaining liquid was removed using a vacuum truck and the tanks were triple-rinsed using a steam cleaner and certified as non hazardous by Mr. Carlton Bruce, Marine Chemist.

On November 18, 1998, Mr. Donn Funderburk from the Hesperia Fire Department approved the removal of the gasoline UST's. The tanks were removed from the excavation using a crane, loaded on flatbed trucks, and transported to American Metals Recycling in Fontana for recycling.

4.1 Soil Sample Location and Collection Procedures

Upon completion of the tank removal procedures, a total of twelve soil samples were collected at the subject site. All sample collection locations and procedures were conducted in accordance with permit requirements of the HFD. The following protocol was observed during sampling procedures:

1) A backhoe, or hand auger was used to excavate a representative sample of native soil from beneath each of the UST's and dispenser area and bring the samples to surface grade for collection;

2) A qualified AEC representative, pushed a brass sleeve into an undisturbed portion of the soil within the backhoe bucket, leaving no head space in the sleeve;

3) Each sleeve was then capped with a teflon-lined lid, sealed with tape, labeled, and stored in a cooler chilled to approximately 4-degrees Centigrade;

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4) The soil samples were recorded on a Chain-of-Custody document to ensure sample integrity and traceability;

5) Analytical tests were performed by Baseline Analysis, Inc., a California Certified Laboratory located in Huntington Beach, California.

5.0 LABORATORY ANALYSIS and RESULTS

The analyses specified and performed on the soil samples collected from beneath the gasoline UST's and dispensers were in accordance with State of California Department of Health Services (DHS) for total hydrocarbons as gasoline (method 8015M), volatile aromatics by EPA method 8020, and MTBE.

Results of the laboratory analyses are summarized in **Table 1**. The laboratory reports and Chain of Custody documents are presented in **Appendix D** of this report. Units are in milligrams per kilogram (mg/kg), which are equivalent to parts per million (ppm).

TABLE 1
Soil Samples - Gasoline Tank Removals
11/18/98
(ppm)

Sample I.D.	TPHg	Benzene	Toluene	Xylenes	Ethyl-benzene	MTBE
8KN @ 13'	ND	ND	ND	ND	ND	ND
8KS @ 13'	ND	ND	ND	ND	ND	ND
S5KE @ 15'	ND	ND	ND	ND	ND	ND
S5KW @ 15'	ND	ND	ND	ND	ND	ND
N5KE @ 15'	ND	ND	ND	ND	ND	ND
NE-DISP @ 2'	ND	ND	ND	ND	ND	ND
SE-DISP @ 2'	ND	ND	ND	ND	ND	ND
NC-DISP @ 2'	15	ND	0.22	0.14	0.021	ND
SC-DISP @ 2'	4.2	ND	0.073	0.15	0.018	ND
NW-DISP @ 2'	ND	ND	ND	ND	ND	ND
SW-DISP @ 2'	ND	ND	ND	ND	ND	ND
Detection Limits (mg/kg)	1.0	0.005	0.005	0.005	0.005	0.005

TPHg: Total Petroleum Hydrocarbons as Gasoline
ND: Non-detected at indicated level of detection

6.0 FINDINGS

- Trace to non-detectable concentrations of gasoline range petroleum hydrocarbons, volatile organic compounds, and MTBE were indicated in analytical results from the samples collected beneath the gasoline UST's and dispensers.

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7.0 RECOMMENDATIONS

Based on the trace to non-detectable concentrations of TPH-g and volatile organic compounds indicated within laboratory analyses of soil samples collected from beneath the gasoline UST's and dispensers at the Alliance Auto Center, **Advanced Environmental Concepts, Inc.** (AEC) recommends no additional assessment and mitigation. Therefore, AEC respectfully requests closure for this site.

8.0 LIMITATIONS

This work has been performed in accordance with generally accepted tank removal and environmental science and engineering practices. Conclusions and recommendations are based upon information collected and compiled during the tank removal and data supplied by the Client. No other warranty, expressed or implied, is given.

The soil samples for this project were obtained on a finite grid; hence, the laboratory results are indicative of discrete samples and are not meant to be misconstrued as representative of unsampled areas.

~ ~

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9.0 CLOSING

Advanced Environmental Concepts, Inc. appreciates the opportunity to be of service to SCE & E, Inc. on this project. If there are any questions or if additional information should be required regarding this report, please do not hesitate to contact our office at (805) 831-1646.

Sincerely,

Advanced Environmental Concepts, Inc.

REGISTERED ENVIRONMENTAL ASSESSOR
JONATHAN L. BUCK
No. 01508
Expires: 6/99
STATE OF CALIFORNIA

Jonathan L. Buck
Senior Geologist

~~~~~~~~~~~~~~~~~~~~~~~~

All environmental site work with which **Advanced Environmental Concepts, Inc.** was involved, was performed under my supervision to ensure proper sampling protocol and environmental assessment. This report has been technically reviewed by the undersigned.

REGISTERED GEOLOGIST
JOSEPH A. DUNWOODY III
5504
STATE OF CALIFORNIA

Joseph A. Dunwoody III
Registered Geologist #5504

DOC28IU

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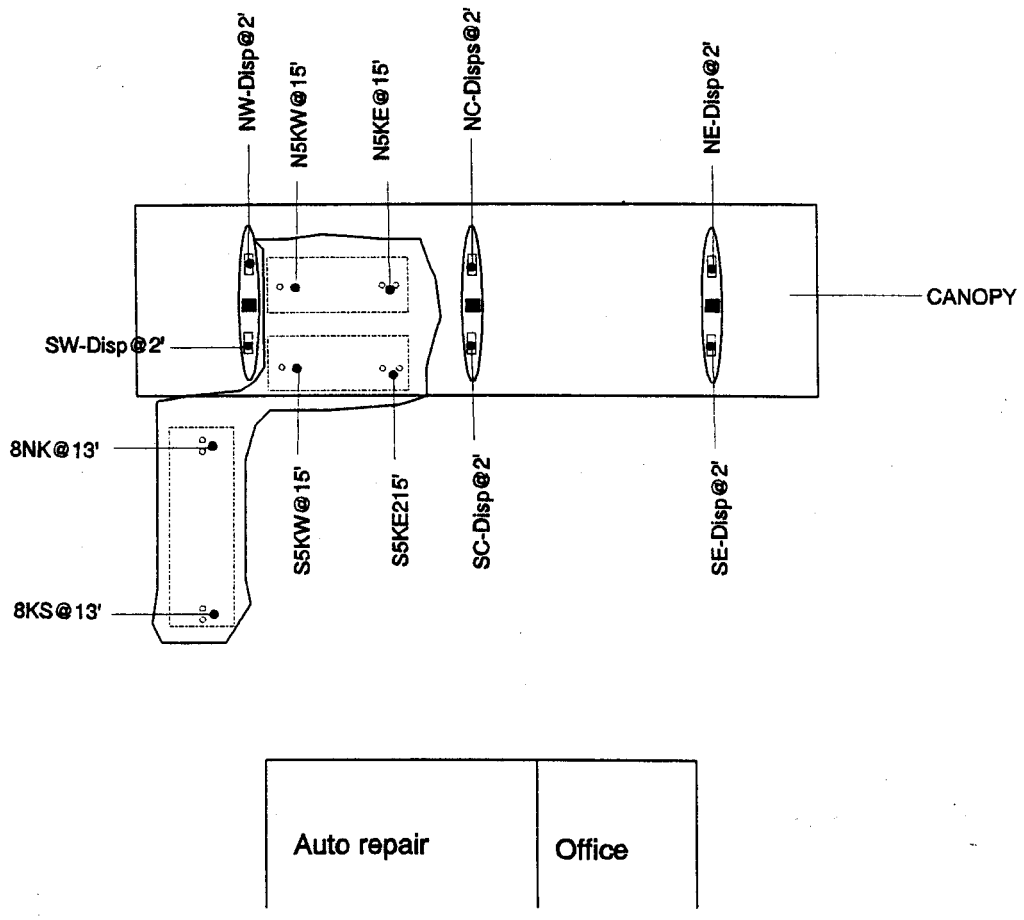

ADVANCED ENVIRONMENTAL CONCEPTS INC

ADVANCED ENVIRONMENTAL CONCEPTS
P.O. BOX 40672 BAKERSFIELD, CA 93384

- Site Map -

Alliance Auto Center

19501 Main Street

County of San Bernardino • Hesperia, Ca

FIGURE

2

COUNTY FIRE DEPARTMENT

COUNTY OF SAN BERNARDINO
PUBLIC AND SUPPORT
SERVICES GROUP

PAT A. DENNEN
Fire Chief
County Fire Warden

OFFICE OF THE FIRE MARSHAL
HAZARDOUS MATERIALS DIVISION
620 South "E" Street • San Bernardino, CA 92415-0153
(909) 386-8401 • Fax (909) 386-8460

June 21, 2007

Mohammed Riaz
15901 Main St.
Hesperia, CA 92345

SUBJECT: UNDERGROUND STORAGE TANK REMOVAL FOR ALLIANCE AUTO CENTER, 15901 MAIN ST., HESPERIA, CA

The Department has received the sample results and closure report submitted by Advanced Environmental Concepts Inc. on 06/18/07. After review of the report prepared by you or your agent, it has been determined that the extent of contamination, or lack thereof, would indicate that no further investigation is warranted at this time.

It is important to note that this letter cannot be construed as a release of liability for the site or declaration that the site is free from contamination. Should further projects or environmental investigations reveal additional contaminants on site, you will be responsible and held liable for the investigation and remedial actions.

If you have any questions, please call (909) 386-8464.

Jackson Crutsinger

JACKSON CRUTSINGER, R.E.H.S., R.H.S.P
HAZARDOUS MATERIALS SPECIALIST III
HAZARDOUS MATERIALS DIVISION
SITE REMEDIATION/LOCAL OVERSIGHT PROGRAM

JC/vc

cc: Advanced Environmental Concepts Inc. – Wendy Scheidt

05/04/2007 17:39 ---76 BEST BUY AUTO SALES PAGE 02

Certificate of Treatment/Recycling

ISSUED TO

MOH
~~HAN~~AMMAD RIAZ

FOR

MANIFEST NUMBER 98092840 DATE RECEIVED 11/17/98

The aqueous waste received on the above manifest will be treated to standards mandated by the FEDERAL CLEAN WATER ACT and to effluent requirements established by the Sanitation Districts of Los Angeles County. Waste Treatment and Recycling is performed under permits granted to DeMENNO/KERDOON, a California corporation, by the California Department of Health Services, in coordination with the Environmental Protection Agency, in accordance with the provisions of the Resource Conservation and Recovery Act (RCRA) of 1976, together with applicable federal and state regulations including but not limited to waste discharge requirements established by the Sanitation Districts of Los Angeles County.

When the above described waste material is accepted by DeMENNO/KERDOON and Treated/Recycled and the aqueous phase discharged for further treatment by the Sanitation Districts, the certificate holder's responsibility for the waste material is eliminated under both RCRA and Proposition 65. Upon request, DeMENNO/KERDOON will issue this certificate that all waste material has been handled in accordance with applicable permits and the certificate holder's liability has been terminated.

DeMENNO/KERDOON
"Compliance Through Recycling"

By: _____ Date: 12/3/98

Cyrus Pourhassian
Laboratory Manager

2000 North Alameda Street ❑ Compton ❑ California ❑ 90222
Telephone (310)537-7100 ❑ Facsimile (310)639-2946

nced Environmental Concepts, Inc. is pleased to present the following:

Tank Closure Report

for

Alliance Auto Center

15901 Main Street
County of San Bernardino • Hesperia, California

is report has been prepared for:

E & E, Inc.
John Walther

December 1998

Table of Contents

		Page
1.0	INTRODUCTION	1
2.0	BACKGROUND	1
3.0	SITE GEOLOGY and DEPTH TO GROUNDWATER	2
4.0	TANK REMOVAL PROCEDURES	2
4.1	Soil Sample Locations and Collection Procedures	2
5.0	LABORATORY ANALYSES and RESULTS	3
6.0	FINDINGS	4
7.0	RECOMMENDATIONS	4
8.0	LIMITATIONS	4
9.0	CLOSING	5

Appendices:

Project Maps/Figures:

Figure 1: Location Map
Figure 2: Sampling Location Map

(A) Tank Removal Permits
(B) Tank Disposal Documentation
(C) Marine Chemist
(D) Hazardous Waste Disposal Manifest
(E) Laboratory Results/Chain-of-Custody Documents
(F)) Compaction Report

) INTRODUCTION

is report presents the results of a preliminary soil investigation performed November 16-18, 1998 by **vanced Environmental Concepts, Inc.** (AEC). The purpose of this project was to evaluate whether roleum hydrocarbons have leaked from two 5,000 gallon, or one 8,000 gallon gasoline underground age tanks (UST's), product piping, and/or fuel dispensers

e objective was to assess the soil beneath the storage tanks and dispenser locations for hydrocarbons owing removal of the UST's, and product piping by AEC. The above described tanks, dispensers, and ng were located at 15901 Main Street, Hesperia, California (**Figure 1**).

e tank removal and subsequent soil sampling procedures were performed under the supervision of the peria Fire Department (HFD), represented by Mr. Donn Funderburk, Fire Inspector.

following report includes background information regarding existing site characteristics, local geology l hydrology, tank removal procedures, sample collection procedures, analytical results, and related clusions and recommendations. Report appendices contain Tank Removal Permits (**Appendix A**), Tank posal Documentation (**Appendix B**), Marine Chemist Certification (Appendix C), Hazardous Waste posal Manifest for liquid and rinseate (**Appendix D**), Laboratory Reports/Chain-of-Custody Documents pendix E), and compaction report (**Appendix F**).

BACKGROUND

E & E, Inc contracted AEC to provide the following tank removal services:

1) Excavate the backfill surrounding the UST's;

2) Monitor excavated soil for contamination;

3) Triple-rinse and decontaminate the tanks prior to removal using a steam cleaner;

4) Remove liquid rinseate and transport for offsite disposal;

5) Have a marine chemist certify the UST's as non-hazardous;

6) Remove and transport the UST's offsite for disposal;

7) Provide qualified personnel to collect representative soil samples in accordance with Hesperia Fire Department regulations;

8) Perform required analytical testing of soil samples by a State of California certified analytical laboratory;

9) Summarize the above described services in the form of a "Tank Closure Report".

SITE GEOLOGY and DEPTH TO GROUNDWATER

ite is located in the southern portion of the Mojave Desert, along the northern flank of the San Gabriel ntains, at an approximate elevation of 3,100 feet above mean sea level. Commercial retail parcels by the areas immediately surrounding the site and Main Street is the primary route through Hesperia

egional sediments in the area of the subject site were primarily deposited in a low to moderate energy st m environment, as evidenced by the predominant fine-to-medium grained sand fraction. Intermittent odes of lower and higher energy environments are evident by the presence of silts and gravels, ectively. Such stratigraphy is consistent with broad, low-to-medium gradient, alluvial fan distributary ems where main flow channels episodically alter their course as influenced by topographic lows and that form during the on-going sedimentation. Buried channels within these fans typically mirror the ce gradient and transmit groundwater in a similar manner.

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TANK REMOVAL PROCEDURES

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lovember 18, 1998, Mr. Donn Funderburk from the Hesperia Fire Department approved the removal gasoline UST's. The tanks were removed from the excavation using a crane, loaded on flatbed trucks, ransported to American Metals Recycling in Fontana for recycling

4.1 Soil Sample Location and Collection Procedures

Upon completion of the tank removal procedures, a total of twelve soil samples were collected at the subject site. All sample collection locations and procedures were conducted in accordance with permit requirements of the HFD. The following protocol was observed during sampling procedures:

1) A backhoe, or hand auger was used to excavate a representative sample of native soil from beneath each of the UST's and dispenser area and bring the samples to surface grade for collection;

2) A qualified AEC representative, pushed a brass sleeve into an undisturbed portion of the soil within the backhoe bucket, leaving no head space in the sleeve;

3) Each sleeve was then capped with a teflon-lined lid, sealed with tape, labeled, and stored in a cooler chilled to approximately 4-degrees Centigrade;

4) The soil samples were recorded on a Chain-of-Custody document to ensure sample integrity and traceability;

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LABORATORY ANALYSIS and RESULTS

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TABLE 1
Soil Samples - Gasoline Tank Removals
11/16/98
(ppm)

le I.D.	TPHg	Benzene	Toluene	Xylenes	Ethyl-benzene	MTBE
@ 13'	ND	ND	ND	ND	ND	ND
2 13'	ND	ND	ND	ND	ND	ND
@ 15'	ND	ND	ND	ND	ND	ND
@ 15'	ND	ND	ND	ND	ND	ND
@ 15'	ND	ND	ND	ND	ND	ND
SP @ 2'	ND	ND	ND	ND	ND	ND
SP @ 2'	ND	ND	ND	ND	ND	ND
SP @ 2'	15	ND	0.22	0.14	0.021	ND
SP @ 2'	4.2	ND	0.073	0 15	0 018	ND
SP @ 2'	ND	ND	ND	ND	ND	ND
SP @ 2'	ND	ND	ND	ND	ND	ND
	1.0	0.005	0 005	0 005	0 005	0.005

g/kg)

Total Petroleum Hydrocarbons as Gasoline
n-detected at indicated level of detection

FINDINGS

Trace to non-detectable concentrations of gasoline range petroleum hydrocarbons, volatile organic compounds, and MTBE were indicated in analytical results from the samples collected beneath the gasoline UST's and dispensers.

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RECOMMENDATIONS

ed on the trace to non-detectable concentrations of TPH-g and volatile organic compounds indicated within
ratory analyses of soil samples collected from beneath the gasoline UST's and dispensers at the Alliance
Center, **Advanced Environmental Concepts, Inc.** (AEC) recommends no additional assessment and
on. Therefore, AEC respectfully requests closure for this site.

LIMITATIONS

s work has been performed in accordance with generally accepted tank removal and environmental science
engineering practices. Conclusions and recommendations are based upon information collected and
ed during the tank removal and data supplied by the Client. No other warranty, expressed or implied,

oil samples for this project were obtained on a finite grid; hence, the laboratory results are indicative of
ite samples and are not meant to be misconstrued as representative of unsampled areas.

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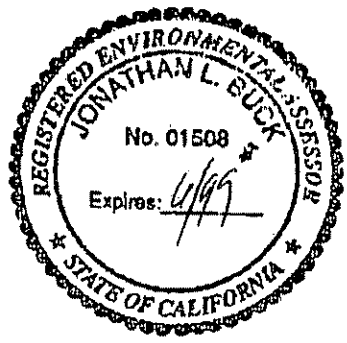
CLOSING

anced Environmental Concepts, Inc. appreciates the opportunity to be of service to SCE & E, Inc. on s project. If there are any questions or if additional information should be required regarding this report, ease do not hesitate to contact our office at (805) 831-1646.

erely,

anced Environmental Concepts, Inc.



than L. Buck
or Geologist

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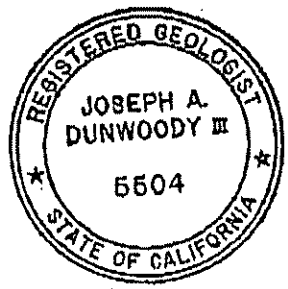
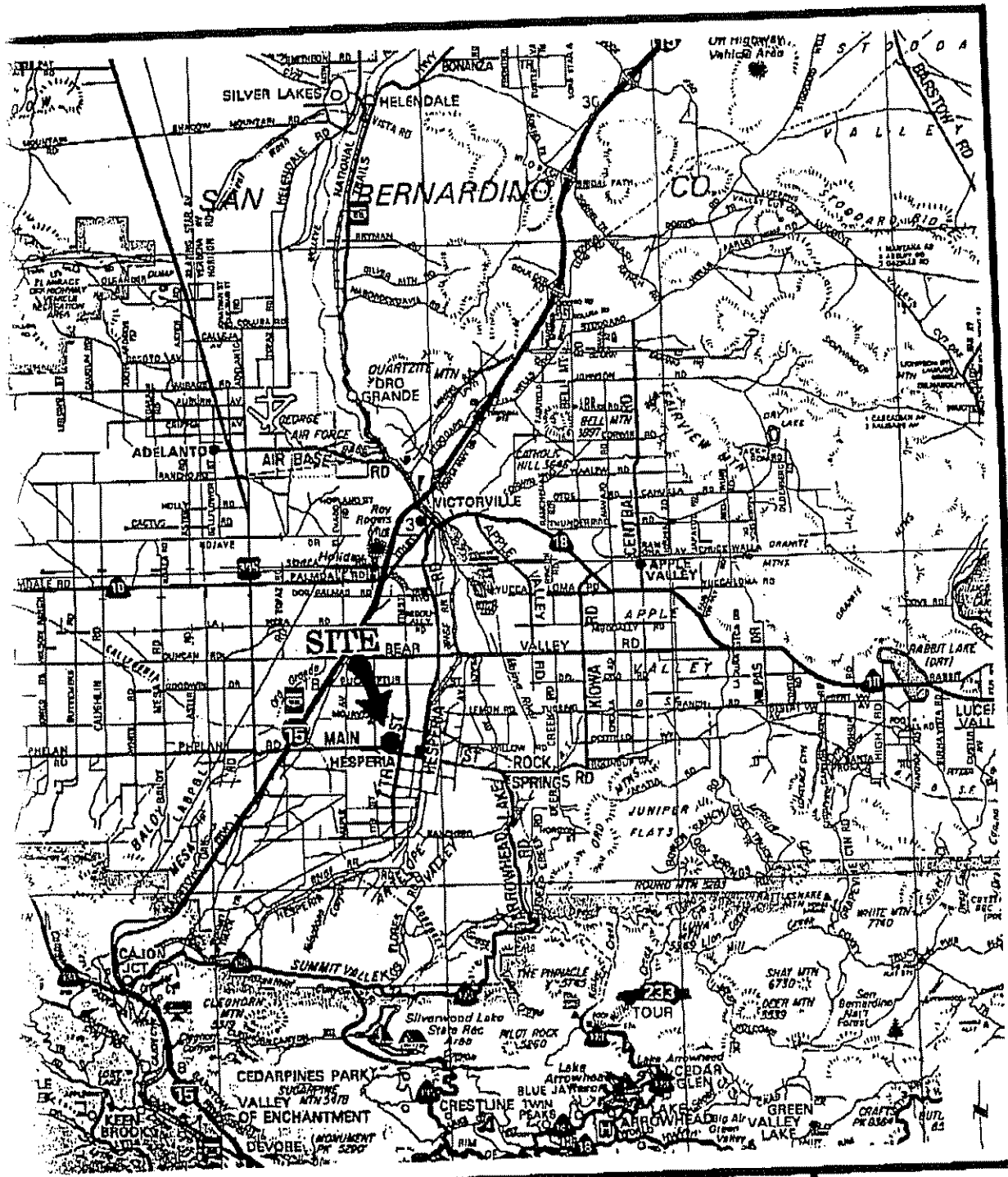
environmental site work with which **Advanced Environmental Concepts, Inc.** was involved, was formed under my supervision to ensure proper sampling protocol and environmental assessment. This ort has been technically reviewed by the undersigned.



ph A. Dunwoody III
istered Geologist #5504

PROJECT MAPS / FIGURES



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ADVANCED ENVIRONMENTAL CONCEPTS
P.O. BOX 40872 BAKERSFIELD, CA 93384

- Site Location Map -

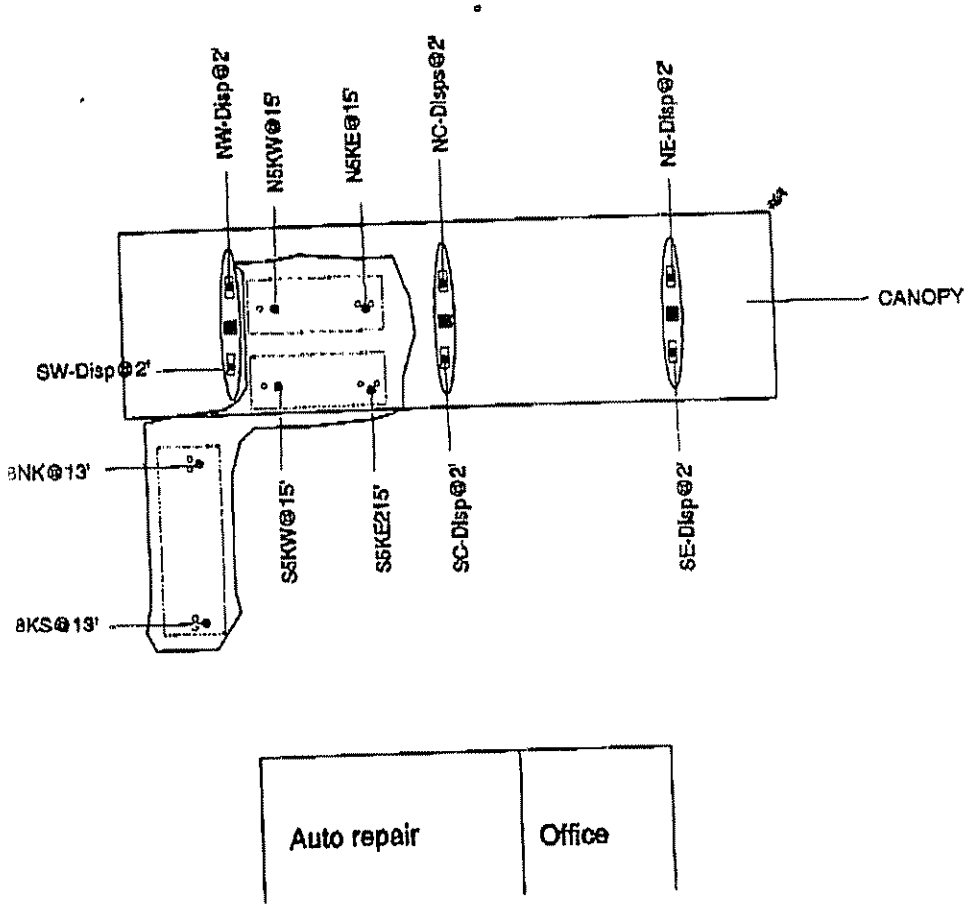
Alliance Auto Center

19501 Main Street

County of San Bernardino • Hesperia, CA

FIGURE

1



ADVANCED ENVIRONMENTAL CONCEPTS INC

ADVANCED ENVIRONMENTAL CONCEPTS
P.O. BOX 40872 BAKERSFIELD, CA 93384

- Site Map -

Alliance Auto Center

19501 Main Street

County of San Bernardino • Hesperia, Ca

FIGURE

2

Advanced Environmental Concepts, Inc.

"Appendix A"

TANK REMOVAL PERMIT

CITY OF HESPERIA
DEPARTMENT OF BUILDING AND SAFETY
BUILDING PERMIT

PRESS FIRMLY

APPLICATION DATE / ISSUE DATE / PERMIT NUMBER / USE CODE / TYPE / OCC. GROUP / VALIDATION / CONST.

LOT ____ TRACT ____

ZIP ____ TEL ____

ZIP ____ TEL ____

ZIP ____ TEL ____

NO. STORIES ____ NO. BEDROOMS ____

HOW USED ____

ZONING

SETBACKS
FRONT ____ R/W ____
REAR ____
SIDE/SIDE STREET ____ R/W ____
SIDE ____

IMPROVEMENTS

SEWAGE DISPOSAL: PUBLIC / PRIVATE — PMT # ____ SQ. FT / 100 GAL ____

GRADING: CU. YDS. EXC. ____ CU YDS FILL ____

TYPE	SQ. FT.	FACTOR	ADJ. AREA/VALUATION
1			
2			
3			
4			
GARAGE			
PORCH			

VALUATION ____ ADJ. AREA ____

QUANTITY	DESCRIPTION	FEE

CONSTRUCTION ____
PLAN REVIEW ____
ELECTRIC ____
PLUMBING ____
MECHANICAL ____
GRADING ____
ISSUANCE ____
SMIP ____
PARK FEE ____
SCHOOL FEES ____

TOTAL FEES $671.00

COMMENTS ____

RECPT NO. ____ PAID BY ✓ ____ BY ____

APPLICANTS COPY

Advanced Environmental Concepts, Inc.

"Appendix B"

TANK DISPOSAL DOCUMENTATION

AMERICAN METAL RECYCLING, INC.

2202 S. MILLIKEN AVE. • ONTARIO, CA 91761
(909) 988-8000

Nº 51003

TANK DISPOSAL FORM

Date: 11/18/98
Job#
P.O.#

CTOR: Advanced Environmental
DR S:
B S Mohammad Riaz
DR S: 15901 Main St. Hesp. Ca 92345
ION: A.M.R. 2202 S. MILLIKEN AVE., ONTARIO, CA 91761

TIME	PROJECTED TANKS	ORDERED BY:	UC. NO.

INSTRUCTIONS: D Nieto & Sons

TIME IN:
TIME OUT:

Services Rendered	Cost
Disposal Fee	
Extensive Loading Time	
Disposal Fee with Permit	
Fiberglass Tank Disposal Fee Per Tank	
Fiberglass Delivered	
Bobtail Disposal	
Cancellation Fee	
CHARGES	$ 0

curred are per load unless specified. Terms are net 30 date of invoice. Contractor's signature represents e of terms for payment, and confirms that tank removal with State laws.

CONTRACTOR'S SIGNATURE

TANKS RECEIVED

QTY	GALLONS	TYPE F*	TYPE S*	NET TONS	TOTAL
	200	☐	☐	.14	
	500	☐	☐	.21	
	550	☐	☐	.24	
	1000 - 12 ft	☐	☐	.44	
	1000 - 8 ft.	☐	☐	.01	
	1500	☐	☐	.87	
	2000	☐	☐	.97	
	2500	☐	☐	1.14	
	3000	☐	☐	1.32	
	4000	☐	☐	1.66	
2	5000	☐	☒	2.42	
	6000	☐	☐	2.64	
	7500	☐	☐	3.25	
1	8000	☐	☒	3.44	
	9000	☐	☐	3.82	
	10000	☐	☐	4.33	
	12000	☐	☐	4.93	

NO. OF TANKS 3 TOTAL NET TONS

*F - FIBERGLASS *S - STEEL 105

CERTIFICATE OF TANK DISPOSAL / DESTRUCTION

I CERTIFY THE RECEIPT AND ACCEPTANCE OF THE TANK(S) AS SPECIFIED ABOVE. ALL MATERIALS SPECIFIED HAVE BEEN COMPLETELY DESTROYED FOR SCRAP PURPOSES ONLY.

Louise Doyle
AUTHORIZED REP.

11/18/98
DATE

Advanced Environmental Concepts, Inc.

"Appendix C"

MARINE CHEMIST CERTIFICATE

eck & Assoc., Inc.
R TESTING LABORATORY
ONE: (562) 492-9646

MARINE CHEMIST CERTIFICATI

Serial # 09512

Environmental Concepts Inc — Mohamed Riz — 18 Nov 98
by — Vessel Owner or Agent — Dat

12-1,2+3 — Steel U.S.T.'s — 15901 Main Street, Hesperia Ca
Type of Vessel — Specific Location of Vess

On-LEL-Visual — 1200
Tests Performed — Time Survey Complete

L 9512-1 (8000 gal) — 0% L.E.L — NOT SAFE for Workers
12-2 (5,000 gal) — < 8% O_2
12-3 (5,000 gal) — Safe for Hot Work

- Tanks have been cleaned and are safe to pull + transport for scrapping.

) of any physical or atmospheric adversely affecting the STANDARD SAFETY DESIGNATIONS assigned to bove spaces, or if any doubt, immediately stop all work and contact the undersigned Marine Chemist.

ansfer of ballast or manipulation of valves or closure equipment tending to alter conditions in pipe lines, tanks or compartments subject to gas accumulation, proved in this Certificate, requires inspection and endorsement or reissue of Certificate for the spaces so affected. All lines, vents, heating coils, valves, and ourtenances shall be considered "not safe" unless otherwise specifically designated.

DESIGNATIONS (partial list, paraphrased from NFPA 306 Subsections 2-3.1 through 2-3.5, and Subsection 6-3.2)

S: Means that in the compartment of space so designated: (a) the oxygen content of the atmosphere is at least 19.5 percent by volume; and that, (b) toxic sphere are within permissible concentrations; and that, (c) the residues are not capable of producing toxic materials under existing atmospheric conditions while d on the Marine Chemist's Certificate.

KERS: Means that in the compartment of space so designated, the requirements of Safe for Workers have not been met.

CTIONS: Means that in any compartment or space so designated, entry for work may be made only if conditions of proper protective equipment, clothing, and

K: Means that in any compartment designated: (a) oxygen content of the atmosphere is at least 19.5 percent by volume, with the exception of inerted spaces ork is to be performed; and that, (b) the concentration of flammable materials in the atmosphere is below 10 percent of the lower flammable limit; and that, (c) pable of producing a higher concentration than permitted by (b) above under existing atmospheric conditions in the presence of fire, and while maintained as Chemist's Certificate; and further, that, (d) all adjacent spaces containing or having contained flammable or combustible materials have been cleaned e spread of fire, or are satisfactorily inerted, or, in the case of fuel tanks or lube oil tanks, or engine room or fire room bilges, have been treated in accordance t's requirements.

VORK: Means that in the compartment so designated, the requirements of Safe for Hot Work have not been met.

MENT. This is to certify that I have personally determined that all spaces in the foregoing list are in accordance with NFPA 306 Control of Gas Hazards on the condition of each to be in accordance with the assigned designation.

eceipt of this Certificate under Section 2-6 of NFPA 306 and ions under which it was issued.

Company — 11/18/98

This Certificate is based on conditions existing at the time the inspection herein set forth was completed and is issued subject to compliance with all qualifications and instructions.

Signed — 609

Advanced Environmental Concepts, Inc.

"Appendix D"

HAZARDOUS WASTE DISPOSAL MANIFEST

orm designed for use on elite (12-pitch) typewriter

see instructions on back of page 6.

Department of Toxic Substances Co
Sacramento, California

ORM HAZARDOUS STE MANIFEST	1. Generator's US EPA ID No. CAC001487800	Manifest Document No.	2. Page 1 of 1	Information in the shaded areas is not required by Federal law

3. Generator's Name and Mailing Address
mmad RIAZ
01 MAIN ST #ESPERIA, CA 92345
's Phone 1760 - 244-3871

4a. State Manifest Document Number 98092840
4b. State Generator's ID
4c. State Transporter's ID
4d. Transporter's Phone (805)393-1161
4e. State Transporter's ID
4f. Transporter's Phone ( ) -
4g. State Facility's ID CA7080010A335
4h. Facility's Phone (310)537-7100

er 1 Company Name — 6. US EPA ID Number
RONMENTAL SERVICES, INC. — C A T 0 0 0 6 2 4 3 4 7
Company Name — 8. US EPA ID Number

5. Transporter 2 Company Name — 6. US EPA ID Number
Company Name — 8. US EPA ID Number

9. Facility Name and Site Address — 10. US EPA ID Number
O/KERDOON
. ALAMEDA ST
, CA 90222 — C A T 0 8 0 0 1 3 3 5 2

scription (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste Number
MABLE LIQUID, N.O.S. 3, UN1993, PGII		TC	063	G	State 243 EPA/Other D001
THIS WASTE STREAM HAS BEEN QUALIFIED FOR RECYCLING/TREATMENT AT THE DEMENNO/KERDOON FACILITY IN COMPTON, CALIFORNIA. THIS FACILITY HAS THE NECESSARY PERMITS TO RECEIVE YOUR WASTE STREAMS QUALIFIED. OUR EPA NUMBER IS CAT000613562					State EPA/Other
					State EPA/Other
					State EPA/Other

scriptions for Materials Listed Above — J. Handling Codes for Wastes Listed Above
a. TANK RINSATE — P-01 — b.
c. — d.

ructions and Additional Information

A PPE WHEN HANDLING
PHONE 800-458-3036

IFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed d, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

ity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is that I can afford.

MAD Riaz	Signature Mohammad Riaz	Month 1 1	Day 1 7	Year 9 8
wledgement of Receipt of Materials				
Stef	Signature John P. Stef	Month 1 2	Day 1 7	Year 9 8
wledgement of Receipt of Materials				
	Signature	Month	Day	Year
Space				

rator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

rick Hodgson	Signature Rick Hodgson	Month 1 1	Day 1 7	Year 9 8

DO NOT WRITE BELOW THIS LINE.

Advanced Environmental Concepts, Inc.

"Appendix E"

LABORATORY RESULTS/ CHAIN-OF-CUSTODY DOCUMENTS

BASELINE ON-SITE ANALYSIS™

Baseline On-Site Analysis

P. O. Box 2243 Toll Free: (888) 753-7553
Huntington Beach, CA 92647 FAX: (714) 842-2847

Laboratory Report

Client:	AEC, Inc	**Report Date:**	12/7/98
Client Address:	4400 Ashe Road #206 Bakersfield, California	**Lab Project Number:**	98256
		Client Project Number:	N/A
Project Name:	Alliance Auto	**Date Sampled:**	11/18/98
Project Address:	19501 Main Street Hesperia, California	**Date Received:**	11/24/98
		Date Analyzed:	11/24-28/98
Contact:	John Buck	**Sample Matrix:**	Soil

Analyses Requested:

1. **M8015 - TPH as Gasoline**
2. **EPA 8020A - Volatile Aromatics with MTBE**

On November 18, 1998, *Baseline* received twelve soil samples collected from the project shown above. A Chain-of-Custody Record is attached.

Baseline analyzed all of the samples for Total Petroleum Hydrocarbons as gasoline (M8015/LUFT) and Volatile Aromatics (EPA 8020A) including MTBE. In this report, *Baseline* presents the results and QA/QC summary for all of the above mentioned analyses.

Brian K. Kato

Approved

Brian K. Kato, Laboratory Manager

BASELINE ON-SITE ANALYSIS™

Baseline On-Site Analysis

P O Box 2243 Toll Free: (888) 753-7553
Huntington Beach, CA 92647 FAX: (714) 842-2947

Laboratory Report

Client: AEC, Inc
Client Address: 4400 Ashe Road #206, Bakersfield, California

Project Name: Alliance Auto
Project Address: 19501 Main Street, Hesperia, California

Contact: John Buck

Report Date: 12/7/98
Lab Project Number: 98256
Client Project Number: N/A

Date Sampled: 11/18/98
Date Received: 11/24/98
Date Analyzed: 11/24-28/98
Sample Matrix: Soil

Sample ID	TPH-Gasoline (mg/kg)	MTBE (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)
8KN @ 13'	ND<1.0	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005
8KS @ 13'	ND<1.0	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005
S5KE @ 15'	ND<1.0	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005
S5KW @ 15'	ND<1.0	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005
N5KE @ 15'	ND<1.0	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005
N5KW @ 15'	ND<1.0	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005
NE-DISP @ 2'	ND<1.0	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005
SE-DISP @ 2'	ND<1.0	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005
NC-DISP @ 2'	15	ND<0.005	ND<0.005	0.22	0.021	0.14
SC-DISP @ 2'	4.2	ND<0.005	ND<0.005	0.073	0.018	0.15
NW-DISP @ 2'	ND<1.0	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005
SW-DISP @ 2'	ND<1.0	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005
Method Blank	ND<1.0	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005

ND: Not Detected at the indicated Practical Quantification Limit (Reporting Limit)

BASELINE ON-SITE ANALYSIS™

Baseline On-Site Analysis

P. O. Box 2243 Toll Free: (888) 753-7553
Huntington Beach, CA 92647 FAX: (714) 842-2947

Laboratory Report

Client:	AEC, Inc	**Report Date:**	12/7/98
Client Address:	4400 Ashe Road #206 Bakersfield, California	**Lab Project Number:**	98256
		Client Project Number:	N/A
Project Name:	Alliance Auto	**Date Sampled:**	11/18/98
Project Address:	19501 Main Street Hesperia, California	**Date Received:**	11/24/98
		Date Analyzed:	11/24-28/98
Contact:	John Buck	**Sample Matrix:**	Soil

Quality Control Summary

Analytes	Matrix Spike Recovery (%)	Matrix Spike Duplicate Recovery (%)	RPD (%)	QC Sample
TPH as Gasoline (LUFT)	99	98	1	SW-DISP @ 2'
Volatile Aromatics (EPA 8020A)				
Toluene	97	95	2	SW-DISP @ 2'
Total Xylenes	96	94	2	SW-DISP @ 2'
Acceptable Limits:	65-130	65-130	0-30	

Project Name: ALLIANCE AUTO

Client Project #:

Project Address: 19701 Main St

Hesperia, CA

Sampler's Signature:

Turn Around Requested:
- ☐ 24-Hour-Rush
- ☐ 48-Hour-Rush
- ☒ Normal
- ☐ Mobile Lab

Page 1 of 2

Lab Use Only.
Sample Condition as received:
Chilled Yes / No
Sealed Yes / No

Sample	Sample Location	Date	Time	Laboratory Sample Number	Sample Matrix: Soil(S) Sludge(SL), Aqueous(A)	TPH-g / BTEX / MTBE	Number of Containers	Container / Comments
SKNE13		11/18/98			S	/	1	
SKSE13					S	/	1	
SSKE@15'					S	/	1	
SSKW@15'					S	/	1	
NSKE @15'					S	/	1	
NSKW @15'					S	/	1	
NE-DISP @22'					S	/	1	
SE-DISP @22'					S	/	1	
NC-DISP @22'					S	/	1	
SC-DISP @22'					S	/	1	

① Relinquished by: (Signature)	Date	② Received by: (Signature)	Date	10	Total Number of Containers
Company: AEC	Time	Company:	Time		
③ Relinquished by: (Signature)	Date	④ Received by Laboratory: (Signature) Brian K. Yates	Date 11/24/98		
Company:	Time	Company: BASELINE	Time 1604		

ADVANCED ENVIRONMENTAL CONCEPTS INC

805 / 831-1646
FAX 805 / 831-1771

4100 ASHE ROAD #208
BAKERSFIELD, CA 93313

17:49 --76 BEST BUY AUTO SALES PAGE 05

Project Name: ALLIANCE AUTO

Project Address: 19501 Main St Hesperia CA

Sampler's Signature:

Turn Around Requested:
- ☐ 24-Hour-Rush
- ☐ 48-Hour-Rush
- ☑ Normal
- ☐ Mobile Lab

Lab Use Only. Sample Condition as received: Chilled Yes / No; Sealed Yes / No

Sample	Sample Location	Date	Time	Laboratory Sample Number	Sample Matrix: Soil(S) Sludge(SL), Aqueous(A)	TPH-5 / BTXE	Number of Containers	Container / Comments
NW-01@2'		11/18/98			S	X	1	
SW-01@2'		"			S	X	1	

Total Number of Containers: 2

❶ Relinquished by: (Signature)	Date	❷ Received by: (Signature)	Date
Company: AEC	Time	Company:	Time
❸ Relinquished by: (Signature)	Date	❹ Received by Laboratory: (Signature) B. K. Kato	Date 11/24/98
Company:	Time	Company: BASELINE	Time 1600

ADVANCED ENVIRONMENTAL CONCEPTS INC
805 / 831-1846
FAX 805 / 831-1771
4400 ASHE ROAD #205
BAKERSFIELD, CA 93313

17:49 --76 BEST BUY AUTO SALES PAGE 06

Advanced Environmental Concepts, Inc.

"Appendix F"

COMPACTION REPORT

Dan Goodwin,
Hi Desert
Testing & Inspection

December 1, 1998
HDT&I P.N. 81041
Report No. 1

ADVANCED ENVIRONMENTAL CONCEPTS, INC.
1400 Ashe Road #206
Bakersfield, CA 93313
(805)831-1646

Attention: Mr. Jonathan L. Buck
Reference: 15901 Main Street, Hesperia, California

Gentlemen:

In accordance with your request, a representative of this office observed backfilling of two gas tank excavations at the referrenced site, and performed random representative testing of compacted backfill. Samples of the soils were delivered to our laboratory where maximum density and optimum moisture were determined.

Results of our inspections and testing indicates backfill compaction complies with minimum requirements. Results are shown on the attached sheet.

Respectively submitted,
HI DESERT TESTING & INSPECTION

Dan D. Goodwin

REGISTERED PROFESSIONAL ENGINEER
JERRY L. MILES
No. 42593
Exp 3/31/2000
CIVIL
STATE OF CALIFORNIA

Jerry L. Miles, P.E.
RCE 42593

December 1, 1998
HDT&I P.N. 81041
Report No. 1
Page 2

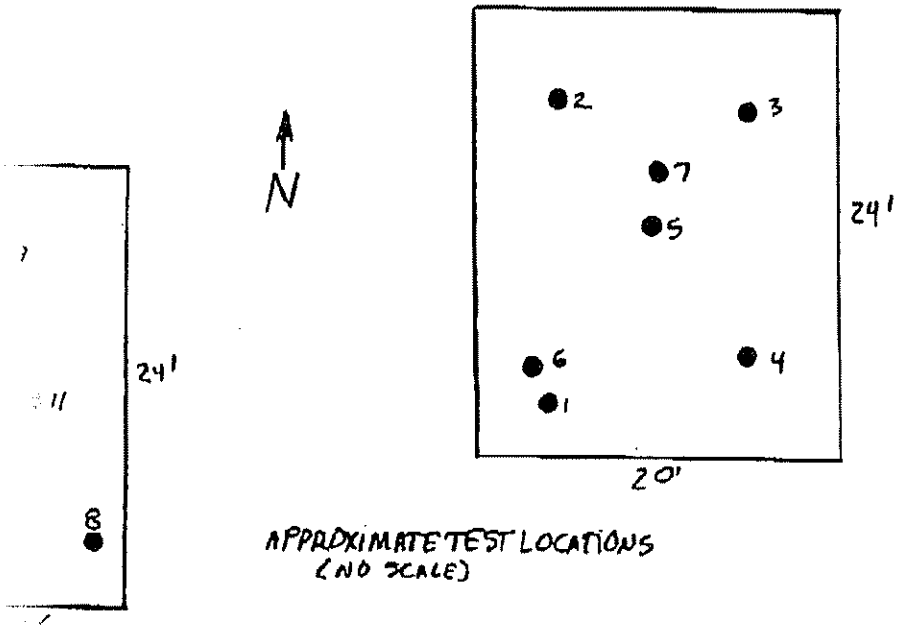
TEST RESULTS

ASTM D 1557-91 **TEST METHODS FOR LABORATORY COMPACTION CHARACTERISTICS OF SOIL USING MODIFIED EFFORT**

AMPLE NO.	MAXIMUM DENSITY, P.C.F.	OPTIMUM MOISTURE CONTENT, %
1	126.5	11.0
2	124.0	9.5

STM D 2922-91 **TEST METHOD FOR DENSITY AND UNIT WEIGHT OF SOIL IN LACE BY NUCLEAR METHOD.**

Test No.	Depth From Finished Grade Ft.	Dry Density, P.C.F.	Maximum Density, P.C.F.	Relative Density, %	Required R.D., %
1	11.0	119.6	126.5	94.5	90
2	9.0	119.8	126.5	94.7	90
3	7.0	125.4	126.5	99.1	90
4	6.0	120.4	126.5	95.2	90
5	4.0	112.8	124.0	91.0	90
6	2.0	121.0	124.0	97.6	90
7	0.5	122.7	124.0	99.0	90
8	10.0	119.9	124.0	96.7	90
9	8.0	121.4	124.0	97.9	90
10	6.0	120.7	124.0	97.3	90
1	0.5	117.1	124.0	94.4	90



APPROXIMATE TEST LOCATIONS
(NO SCALE)

DG/cg

LandAmerica Commercial Services

LandAmerica Assessment Corporation
1320 Harbor Bay Parkway Suite 260
Alameda CA 94502
Phone: 510-337-2855
Fax: 510-337-2865

ASTM E-1527-05 PHASE I ENVIRONMENTAL SITE ASSESSMENT PRE-SURVEY QUESTIONNAIRE AND DISCLOSURE STATEMENT

Site Contact: Please complete this questionnaire before the Consultant's site visit. For those questions that are not applicable to the subject please respond with an "N/A". This document must be signed by the Owner or his/her representative (Item No. 2). If you have any questions about how to answer any of the questions please call LAC. If additional pages for response are necessary please attach them to this form. Clearly mark all references to the appropriate question number(s). This document and your written response to same will be an exhibit in LAC's report.

1. PROPERTY INFORMATION:

Property Name: BEST BUY AUTO SALES		
Property Address: 15887 MAIN ST.		
City: HESPERIA	State: CA.	Zip: 92345
Assessor's Parcel Number: 0413-101-12		

2. COMPLETED BY

Signature: Jacqueline Adams	Date: 10-1-07
Printed Name: JACQUELINE ADAMS	Title: OWNER

3. ASTM-REQUIRED INQUIRIES

Property Owner:
Name: NORMAN E. & JACQUELINE ADAMS Phone: 760-244-7167 Fax: 760-244-9214

Key Site Manager (Site contact):
Name: MOHAMMAD RIAZ Phone: 760-244-3344 Fax: 760-244-4835

SAME

If not residential Property, please provide list of tenants, including contact names and phone numbers.

Are you aware of any environmental cleanup liens against the property that are filed or recorded under federal, tribal, state or local law. If so, please documents along with completed questionnaire to LAC	☐ Yes ☑ No
Are you aware of any Activity Use Limitations (AULs) such as engineering controls, land use restrictions or institutional controls that are in place at the site and/or have been filed or recorded in a registry under federal, tribal, state or local law? If so, please send documents along with completed questionnaire to LAC	☐ Yes ☑ No
Do you have any specialized knowledge or experience related to the property or nearby properties? For example, are you involved in the same line of business the current or former occupants of the property or an adjoining property so that you would have specialized knowledge of the chemicals and processes used by this type of business?	☐ Yes ☑ No
Do you have any specialized knowledge that would be material in identifying recognized environmental conditions in connection with the Property?	☐ Yes ☑ No
Does the purchase price being paid for this property reasonably reflect the fair market value of the property? If you conclude that there is a difference, have you considered whether the lower purchase price is because contamination is known or believed to be present at the Property?	☐ Yes ☑ No
Are you aware if commonly known or reasonably ascertainable information about the property that would help the environmental professional to identify conditions indicative of releases or threatened releases? For example: Do you know the past use of the property? Do you know specific chemicals that are present or once were present at the property? Do you know of spills or other chemical releases that have taken	☐ Yes ☑ No

Please return completed form and any attachments via fax to:
LandAmerica Assessment Corporation, 1320 Harbor Bay Parkway, Suite 260, Alameda, CA 94502
Telephone: 510-337-2855 Fax: 510-337-2865

place at the property? Do you know of any environmental cleanups that have taken place at the property?	
Based on your knowledge and experience related to the property are there any obvious indicators that point to the presence or likely presence of contamination at the property?	☐ Yes ☑ No

Please attach explanation of all affirmative answers.

8) Please state reason for procuring this Phase 1 ESA:

☐ Qualify for Innocent Landowner defense to CERCLA Liability

☑ Other: (state below)

PRE SALE OF PROPERTY

4. PLEASE PROVIDE A GENERAL SITE DESCRIPTION BY COMPLETING THE FOLLOWING TABLE:

Legal description/ boundary survey/ plat available (please send to NAC if "yes") TOWN OF HESPERIA W 45 FT E 242 FT 150 FT BLK 275 EX WATER RTS AND EX 1/2 INT MIN RTS WIT	☐ Yes ☑ No
Total Property Size 6750 SQ FT	
Total number of buildings 1	
Total square footage of buildings APPROX 400 SQ FT	
Date of construction 1957	
Dates of significant renovation 1985	
Waste water discharge	☐ Municipal Sanitary Sewer ☒ On-site septic system ☐ Other
Potable water source	☒ Community Water Supplier ☐ On-site well ☐ Other
Please describe prior use of property, if known: PROFESIONAL OFFICE BUILDING	

5. PREVIOUS INVESTIGATIONS:

Have any previous environmental investigations been performed at the site? ☐ Yes ☑ No	
INVESTIGATION TYPE **If yes, please describe conclusions, and attach copy of report(s)**	
☐ Phase 1 ESA	
☐ Phase 2 ESA	
☐ Tank Tightness Testing	
☐ Asbestos Survey/ O&M	

Have any previous environmental investigations been performed at the site?

☐ Yes ☑ No

Are you aware of any of the following conditions, either past or present, on the site?		
Condition	**Response**	**If yes, please describe**
h) Other	☐ Yes ☑ No	

7. OFF SITE ENVIRONMENTAL CONCERNS

Are you aware of any of the following conditions, either past or present, Adjacent to the site?		
Condition	**Response**	**If yes, please describe**
Gasoline Stations	☑ Yes ☐ No	.2 MILES AWAY
Dry Cleaners	☐ Yes ☑ No	
Industrial Uses	☐ Yes ☑ No	
Other	☐ Yes ☑ No	

COUNTY FIRE DEPARTMENT

COUNTY OF SAN BERNARDINO
PUBLIC AND SUPPORT
SERVICES GROUP

OFFICE OF THE FIRE MARSHAL
HAZARDOUS MATERIALS DIVISION
620 South "E" Street • San Bernardino, CA 92415-0153
(909) 386-8401 Fax (909) 386-8460

PAT A. DENNEN
Fire Chief
County Fire Warden

June 21, 2007

Mohammed Riaz
15901 Main St.
Hesperia, CA 92345

SUBJECT: UNDERGROUND STORAGE TANK REMOVAL FOR ALLIANCE AUTO CENTER, 15901 MAIN ST., HESPERIA, CA

The Department has received the sample results and closure report submitted by Advanced Environmental Concepts Inc. on 06/18/07. After review of the report prepared by you or your agent, it has been determined that the extent of contamination, or lack thereof, would indicate that no further investigation is warranted at this time.

It is important to note that this letter cannot be construed as a release of liability for the site or declaration that the site is free from contamination. Should further projects or environmental investigations reveal additional contaminants on site, you will be responsible and held liable for the investigation and remedial actions.

If you have any questions, please call (909) 386-8464.

Jackson Crutsinger

JACKSON CRUTSINGER, R.E.H.S., R.H.S.P
HAZARDOUS MATERIALS SPECIALIST III
HAZARDOUS MATERIALS DIVISION
SITE REMEDIATION/LOCAL OVERSIGHT PROGRAM

JC/vc

cc: Advanced Environmental Concepts Inc. – Wendy Scheidt

...H. UFFER
County ...inistrative Office
...BY J. KANOLD
Assistant ...nty Administrative
...nd Support
...ces Group

Board of Supervisors
BILL POSTMUS ... First District
PAUL BIANE ... Second District
JOSIE GONZALES ... Fifth District
DENNIS HANSBERGER ... Third District
GARY C. OVITT ... Fourth District

APPENDIX G

QUALIFICATIONS OF ENVIRONMENTAL PROFESSIONALS

"Nasim Ahmed"

Professional Associate

Education: B.S., Chemical Engineering, BUET, Bangladesh, 1988
M.S., Chemical Engineering, USC, Los Angeles, California, 1991

Licenses/Registrations: CA EPA Registered Environmental Assessor I, (REA I-08051)

Summary of Professional Experience

Mr. Nasim Ahmed has 12 years experience conducting Phase I and II Environmental Site Assessments of commercial, industrial and multi-family residential properties throughout the United States for a wide range of clients. He has also managed environmental planning and permit requirements associated with underground storage tank installations, monitoring and removals.

In addition, Mr. Ahmed has managed site characterization, feasibility studies & remedial investigation, design remedial systems, prepared remedial action plan, for petroleum hydrocarbons and solvent contaminated soil and groundwater for commercial and industrial properties. Mr. Ahmed also provided technical aspect of the projects to the clients.

For an environmental consulting firm Mr. Ahmed served as Project Engineer, where he performed and managed environmental site assessments on various industrial, commercial, and residential properties. Assessments included limited and comprehensive surveys for asbestos, lead-based paint, lead-in-drinking-water and radon gas emissions. He also managed subsurface investigations to determine the presence of contamination in soil and groundwater, prepared written reports in formats prescribed by various fiduciary institutions and performed peer reviews on environmental site assessments completed by other environmental firms.

Mr. Ahmed's diversity across private industrial environments is a major contribution to LandAmerica Assessment Corporation's Professional Associate team in the Northeastern United States.

FRED HOWLETT
Project Manager

Education:	B.S. - Environmental Science, Richard Stockton College, Pomona, NJ
Registration(s):	NJDEP Subsurface Evaluation Certification and UST Closure Licensed, No. 0019710 OSHA 40-hour Hazardous Materials Safety Certification, '95 OSHA 8-hour HAZWOPER Annual Refresher, '95-Current
Years of Experience:	9

Summary of Professional Experience

Mr. Howlett has over 9 years of experience in the environmental consulting field. He has performed and managed hundreds of environmental site assessments for residential, commercial and industrial properties. Many of the assessments completed on industrial sites were performed in accordance with New Jersey's Property Transfer Law known as Industrial Site Recovery Act (formerly Environmental Cleanup Responsibility Act), the Voluntary Cleanup Program and the Brownfield's Program.

In addition to environmental site assessments, Mr. Howlett has also performed and managed Phase II site assessments, underground storage tank management and closure activities, remedial investigations of soil and groundwater, and environmental cleanups under various regulatory programs. The clients serviced for these projects included industrial and commercial clients, financial institutions, real estate developers, insurance providers, individual investors, and government agencies. Management responsibilities included consulting clients, negotiations with the regulatory agencies and the use of innovative remedial technologies for cost effective mitigation of project sites.

Mr. Howlett worked for Handex Environmental. His responsibilities included the management of environmental projects form the initial site investigation stage to the development and implementation of remedial action work plans. Other responsibilities included business development, proposal preparation, management of staff, project estimating, project budget management and the development of site specific health and safety plans.

Appendix D
Phase II Limited Subsurface Investigation Report

Prepared For:

FOUNTAINHEAD PALACE, LP
3636 BIRCH STREET, SUITE 270
NEWPORT BEACH, CALIFORNIA 92660

PHASE II
LIMITED SUBSURFACE INVESTIGATION REPORT

FORMER GAS STATION
15901 Main Street
Hesperia, California 92345

Date Issued: December 12, 2007
Project Number: 07-54108.3

Prepared By:

LANDAMERICA ASSESSMENT CORPORATION
8008 Corporate Center Drive, Suite 115, Charlotte, NC 28226
Telephone: 704.543.4221 Facsimile: 704.543.4295

LandAmerica Commercial Services

LandAmerica Commercial Services

□e□e□□er 12□2007

Mr□□□u□g □□r□
F□u□□i□□e□d □□□□□e□□□
3636 □ir□□ □ree□□ui□e 270
□e□□r□□e□□□□□□i□□r□i□92660

Re: Phase II Limited Subsurface Investigation Report
Former Gas Station
15901 Main Street
Hesperia, California 92345
Project No.: 07-54108.3

□e□r Mr□□r□□

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PURPOSE

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BACKGROUND INFORMATION

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UTILITY LOCATING

HEALTH AND SAFETY PLAN

SUBSURFACE INVESTIGATION

Soil Sampling

Laboratory Analytical Results

[illegible]

CONCLUSIONS

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

LANDAMERICA ASSESSMENT CORPORATION

[illegible] [illegible]

[illegible] [illegible]

[illegible] [illegible]

FIGURES

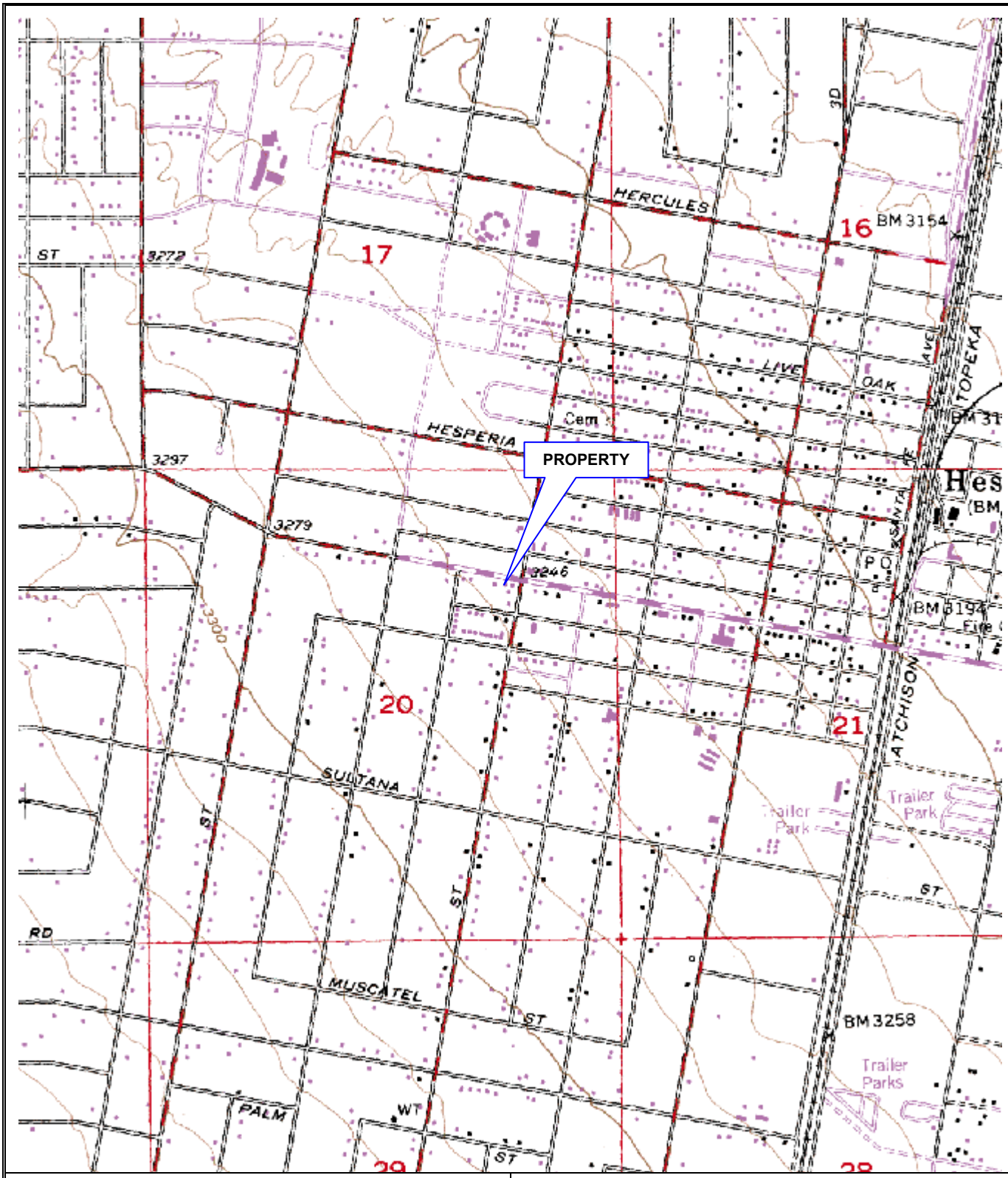

FIGURE 1
TOPOGRAPHIC MAP

Source: USGS 7.5 Minute Topographic Map Hesperia, CA Quadrangle 1981

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LandAmerica Commercial Services

Site Name: **Former Gas Station & Office Bldg.**
15887 Main Street
Hesperia, CA 92345

Project Number: **07-54108.2**

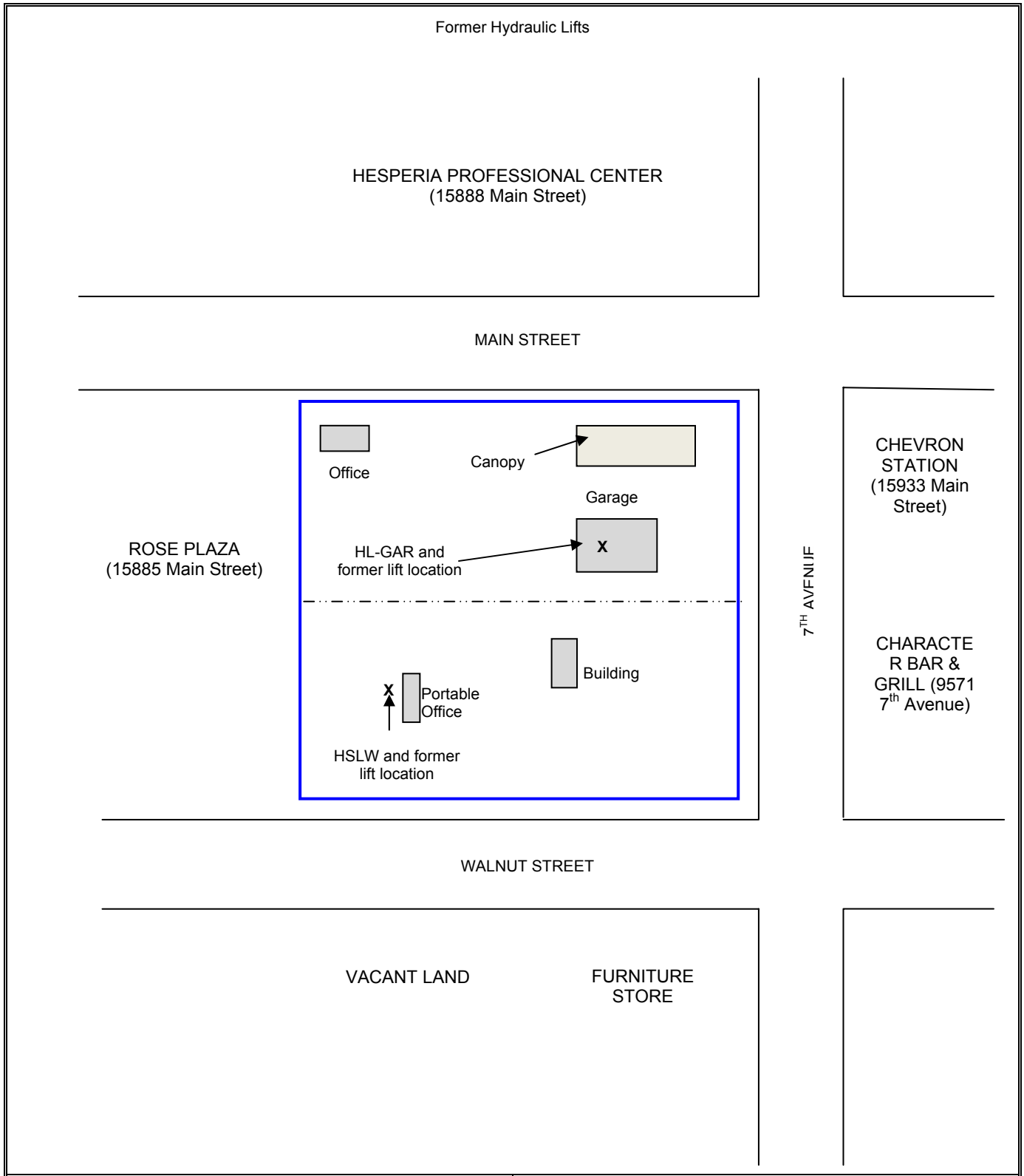


FIGURE 2
SAMPLE LOCATION MAP

DRAWING NOT TO SCALE N↑

LandAmerica Commercial Services

Site Name: **Former Gas Station & Office Bldg.**
15887 Main Street
Hesperia, CA 92345

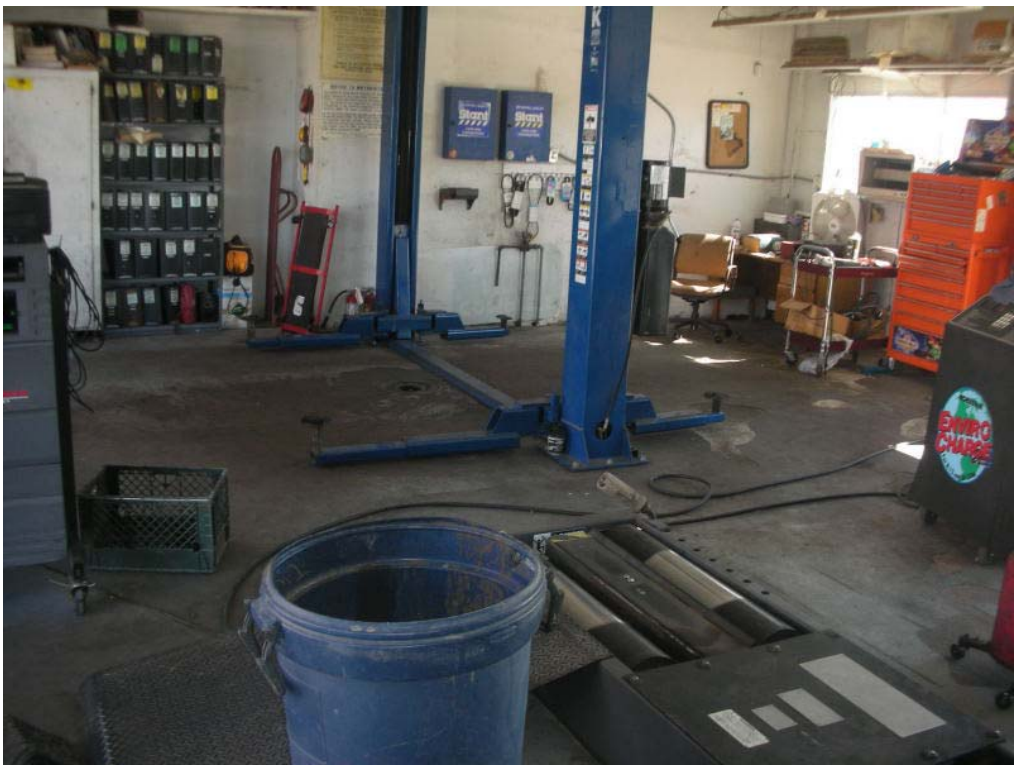
Project Number: **07-54108.2**

APPENDICES

APPENDIX I

PHOTOGRAPHS

Photograph Number 1: View south of the Garage & Canopy at the Site taken from north across Main St.



Photograph Number 2: Garage interior before removal of hydraulic lift (center of photo)

Photograph Number 3: Garage building following removal of hydraulic lift

Photograph Number 4: Hydraulic lift removal excavation in Garage

Photograph Number 5: Hydraulic lift cylinder removed from garage

Photograph Number 6: View west of buildings on the southern portion of the Site. Hydraulic lift is behind portable office in the background, southwestern corner of Site.

Photograph Number 7: Below-ground hydraulic lift next to the portable building in SW corner before removal

Photograph Number 8: Hydraulic lift removal excavation behind portable building in SW corner.

Photograph Number 9: Hydraulic left cylinder in southwest corner after removal

APPENDIX II

LABORATORY ANALYTICAL REPORT

ASSOCIATED LABORATORIES
806 North Batavia - Orange, California 92868 - 714/771-6900 *FAX 714/538-1209*

CLIENT Land America Assesment Corp. (11356)
ATTN: Dale Lanier
8008 Corporate Center Dr.
Suite #115
Charlotte, NC 28226

LAB REQUEST 202188
REPORTED 12/09/2007
RECEIVED 12/03/2007

PROJECT PO# 07-54108.2 Hesperia Ca

SUBMITTER Client

COMMENTS

This laboratory request covers the following listed samples which were analyzed for the parameters indicated on the attached Analytical Result Report. All analyses were conducted using the appropriate methods as indicated on the report. This cover letter is an integral part of the final report.

Order No.	Client Sample Identification
853076	HL-SW
853077	HL-Gar
853078	Laboratory Method Blank

Thank you for the opportunity to be of service to your company. Please feel free to call if there are any questions regarding this report or if we can be of further service.

ASSOCIATED LABORATORIES by,

Edward S. Behare, Ph.D.
Vice President

NOTE: Unless notified in writing , all samples will be discarded by appropriate disposal protocol 30 days from date reported.

The reports of the Associated Laboratories are confidential property of our clients and may not be reproduced or used for publication in part or in full without our written permission. This is for the mutual protection of the public, our clients, and ourselves.

TESTING & CONSULTING
Chemical
Microbiological
Environmental

Order #: 853076
Matrix: SOLID
Date Sampled: 12/03/2007
Time Sampled: 12:00
Sampled By:

Client: Land America Assesment Corp.
Client Sample ID: HL-SW
Sample Description: Hydraulic Lift Southwest Corner

Analyte	Result	DF	DLR	Units	Date/Analyst	
8082 - Polychlorinated Biphenyls (PCBs) by GC						
PCB-1016	ND	1	0.03	mg/Kg	12/06/07	MP
PCB-1221	ND	1	0.06	mg/Kg	12/06/07	MP
PCB-1232	ND	1	0.05	mg/Kg	12/06/07	MP
PCB-1242	ND	1	0.05	mg/Kg	12/06/07	MP
PCB-1248	ND	1	0.08	mg/Kg	12/06/07	MP
PCB-1254	ND	1	0.03	mg/Kg	12/06/07	MP
PCB-1260	ND	1	0.03	mg/Kg	12/06/07	MP
Surrogates				**Units**	**Control Limits**	
DCB(Sur)	108			%	50 - 135	
8310 PAH's by HPLC						
Acenaphthene	ND	1	0.5	mg/Kg	12/05/07	RB
Acenaphthylene	ND	1	0.5	mg/Kg	12/05/07	RB
Anthracene	ND	1	0.05	mg/Kg	12/05/07	RB
Benzo(a)anthracene	ND	1	0.05	mg/Kg	12/05/07	RB
Benzo(a)pyrene	ND	1	0.05	mg/Kg	12/05/07	RB
Benzo(b)fluoranthene	ND	1	0.05	mg/Kg	12/05/07	RB
Benzo(ghi)perylene	ND	1	0.05	mg/Kg	12/05/07	RB
Benzo(k)fluoranthene	ND	1	0.05	mg/Kg	12/05/07	RB
Chrysene	ND	1	0.05	mg/Kg	12/05/07	RB
Dibenzo(a,h)anthracene	ND	1	0.05	mg/Kg	12/05/07	RB
Fluoranthene	ND	1	0.05	mg/Kg	12/05/07	RB
Fluorene	ND	1	0.15	mg/Kg	12/05/07	RB
Indeno(1,2,3-cd)pyrene	ND	1	0.05	mg/Kg	12/05/07	RB
Naphthalene	ND	1	0.5	mg/Kg	12/05/07	RB
Phenanthrene	ND	1	0.1	mg/Kg	12/05/07	RB
Pyrene	ND	1	0.05	mg/Kg	12/05/07	RB
Surrogates				**Units**	**Control Limits**	
p-Terphenyl (sur)	102			%	55 - 140	

DLR = Detection limit for reporting purposes, ND = Not Detected below indicated detection limit, DF = Dilution Factor

Order #: 853077
Matrix: SOLID
Date Sampled: 12/03/2007
Time Sampled: 13:30
Sampled By:

Client: Land America Assesment Corp.
Client Sample ID: HL-Gar
Sample Description: Hydrualic Lift Garage

Analyte	Result	DF	DLR	Units	Date/Analyst	
8082 - Polychlorinated Biphenyls (PCBs) by GC						
PCB-1016	ND	1	0.03	mg/Kg	12/06/07	MP
PCB-1221	ND	1	0.06	mg/Kg	12/06/07	MP
PCB-1232	ND	1	0.05	mg/Kg	12/06/07	MP
PCB-1242	ND	1	0.05	mg/Kg	12/06/07	MP
PCB-1248	ND	1	0.08	mg/Kg	12/06/07	MP
PCB-1254	ND	1	0.03	mg/Kg	12/06/07	MP
PCB-1260	ND	1	0.03	mg/Kg	12/06/07	MP
Surrogates				**Units**	**Control Limits**	
DCB(Sur)	107			%	50 - 135	
8310 PAH's by HPLC						
Acenaphthene	ND	1	0.5	mg/Kg	12/05/07	RB
Acenaphthylene	ND	1	0.5	mg/Kg	12/05/07	RB
Anthracene	ND	1	0.05	mg/Kg	12/05/07	RB
Benzo(a)anthracene	ND	1	0.05	mg/Kg	12/05/07	RB
Benzo(a)pyrene	ND	1	0.05	mg/Kg	12/05/07	RB
Benzo(b)fluoranthene	ND	1	0.05	mg/Kg	12/05/07	RB
Benzo(ghi)perylene	ND	1	0.05	mg/Kg	12/05/07	RB
Benzo(k)fluoranthene	ND	1	0.05	mg/Kg	12/05/07	RB
Chrysene	ND	1	0.05	mg/Kg	12/05/07	RB
Dibenzo(a,h)anthracene	ND	1	0.05	mg/Kg	12/05/07	RB
Fluoranthene	ND	1	0.05	mg/Kg	12/05/07	RB
Fluorene	ND	1	0.15	mg/Kg	12/05/07	RB
Indeno(1,2,3-cd)pyrene	ND	1	0.05	mg/Kg	12/05/07	RB
Naphthalene	ND	1	0.5	mg/Kg	12/05/07	RB
Phenanthrene	ND	1	0.1	mg/Kg	12/05/07	RB
Pyrene	ND	1	0.05	mg/Kg	12/05/07	RB
Surrogates				**Units**	**Control Limits**	
p-Terphenyl (sur)	96			%	55 - 140	

DLR = Detection limit for reporting purposes, ND = Not Detected below indicated detection limit, DF = Dilution Factor

Order #: 853078
Matrix: SOLID
Date Sampled:
Time Sampled:
Sampled By:

Client: Land America Assesment Corp.
Client Sample ID: Laboratory Method Blank

Analyte	Result	DF	DLR	Units	Date/Analyst	
8082 - Polychlorinated Biphenyls (PCBs) by GC						
PCB-1016	ND	1	0.03	mg/Kg	12/06/07	MP
PCB-1221	ND	1	0.06	mg/Kg	12/06/07	MP
PCB-1232	ND	1	0.05	mg/Kg	12/06/07	MP
PCB-1242	ND	1	0.05	mg/Kg	12/06/07	MP
PCB-1248	ND	1	0.08	mg/Kg	12/06/07	MP
PCB-1254	ND	1	0.03	mg/Kg	12/06/07	MP
PCB-1260	ND	1	0.03	mg/Kg	12/06/07	MP
Surrogates				**Units**	**Control Limits**	
DCB(Sur)	114			%	50 - 135	
8310 PAH's by HPLC						
Acenaphthene	ND	1	0.5	mg/Kg	12/05/07	RB
Acenaphthylene	ND	1	0.5	mg/Kg	12/05/07	RB
Anthracene	ND	1	0.05	mg/Kg	12/05/07	RB
Benzo(a)anthracene	ND	1	0.05	mg/Kg	12/05/07	RB
Benzo(a)pyrene	ND	1	0.05	mg/Kg	12/05/07	RB
Benzo(b)fluoranthene	ND	1	0.05	mg/Kg	12/05/07	RB
Benzo(ghi)perylene	ND	1	0.05	mg/Kg	12/05/07	RB
Benzo(k)fluoranthene	ND	1	0.05	mg/Kg	12/05/07	RB
Chrysene	ND	1	0.05	mg/Kg	12/05/07	RB
Dibenzo(a,h)anthracene	ND	1	0.05	mg/Kg	12/05/07	RB
Fluoranthene	ND	1	0.05	mg/Kg	12/05/07	RB
Fluorene	ND	1	0.15	mg/Kg	12/05/07	RB
Indeno(1,2,3-cd)pyrene	ND	1	0.05	mg/Kg	12/05/07	RB
Naphthalene	ND	1	0.5	mg/Kg	12/05/07	RB
Phenanthrene	ND	1	0.1	mg/Kg	12/05/07	RB
Pyrene	ND	1	0.05	mg/Kg	12/05/07	RB
Surrogates				**Units**	**Control Limits**	
p-Terphenyl (sur)	104			%	55 - 140	

DLR = Detection limit for reporting purposes, ND = Not Detected below indicated detection limit, DF = Dilution Factor

ASSOCIATED LABORATORIES
QA REPORT FORM

Determinative Method : EPA 8082 Preparative Method: EPA 3545

QC Sample: 202188-853076

Matrix: SOLID

Analysis Date: 12/6/2007

Batch Date: 12/05/07 (pcb-120507s)

Applies to: LR 202188

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RESULTS

REPORTING UNITS = mg/Kg

Test	Sample Result	Spike Added	Spike Recovered		% Rec		RPD	QC Limits	
			MS	MSD	MS	MSD		RPD	% Rec
Aroclor 1260	ND	0.500	0.527	0.545	105	109	3	35	50-125

**** Outside Control Limits due to matrix interference***

ND = Not Detected

% Rec - MS & MSD = Percent Recovery from Matrix Spike & Matrix Spike Duplicate

RPD = Relative Percent Difference of Matrix Spike and Matrix Spike Duplicate recoveries

LAB CONTROL SPIKE RECOVERY / METHOD BLANK

REPORTING UNITS = mg/Kg

Test	Spike Added	Spike Recovered	% Rec LCS	QC Limit
Aroclor 1260	0.500	0.532	106	70-130

Method Blank = All ND

% Rec - LCS = Percent Recovery from Lab Control Spike

ASSOCIATED LABORATORIES

QA REPORT FORM

Method : EPA 8310 Preparative Method: EPA 3545

QC Sample: 202188-853076

Matrix: SOLID

Date Analyzed : 12/5/2007

Batch Date: 12/5/2007 (pah-120507s)

Applies to: LR 202188

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RESULT

REPORTING UNITS = mg / Kg

Test	Sample Result	Spike Added	MS Result	MSD Result	%Rec MS	%Rec MSD	RPD	QC Limits RPD	QC Limits %REC
Phenanthrene	ND	0.250	0.239	0.261	96	104	9	40	35-155
Pyrene	ND	0.250	0.303	0.285	121	114	6	45	45-200
Benzo(b)fluoranthene	ND	0.250	0.268	0.273	107	109	2	35	35-135
Benzo(k)fluoranthene	ND	0.250	0.265	0.288	106	115	8	35	35-140
Benzo(a)pyrene	ND	0.250	0.273	0.287	109	115	5	35	35-128
Benzo(ghi)perylene	ND	0.250	0.227	0.235	91	94	3	40	40-150

* Outside Control Limits due to matrix interference

ND = Not Detected

RPD = Relative Percent Difference of Matrix Spike and Matrix Spike Duplicate

% Rec-MS & MSD = Percent Recoveries from Matrix Spike & Matrix Spike Duplicate

LCS RECOVERY / METHOD BLANK

REPORTING UNITS = mg / Kg

Test	Spike Added	LCS Result	LCS % Rec	Limits % Rec
Phenanthrene	0.250	0.292	117	40-155
Pyrene	0.250	0.342	137	50-200
Benzo(b)fluoranthene	0.250	0.312	125	40-128
Benzo(k)fluoranthene	0.250	0.306	122	40-128
Benzo(a)pyrene	0.250	0.312	125	40-128
Benzo(ghi)perylene	0.250	0.292	117	45-159

Method Blank = All ND

ASSOCIATED LABORATORIES
806 North Batavia - Orange, California 92868
714/771-6900 FAX 714/538-1209

CHAIN OF CUSTODY RECORD

Date 12-3-07 Page 1 of 1

Assigned LR# 20188

CLIENT: LAND AMERICA

ADDRESS: Alameda, CA

Is this the address the final report is to be sent to? Yes ✓ No ___
If "No" list mailing address in "Special Instructions" section at the bottom of this Chain of Custody.

CONTACT PERSON: Gary Halbert

SAMPLED BY (Circle One): (Client) Assoc. Lab Personnel

PROJECT IDENTIFICATION/LOCATION: Hesperia, CA

PURCHASE ORDER #: 07-54108.2

SAMPLER: (Print AND Sign) Gary J. Halbert
Gary J Halbert

PHONE #: (949 493-4757

FAX #: ( ) ghalbert@cox.net
cc: dlanier@landam.com

SAMPLE TURNAROUND TIME:

Requested Turnaround Time (CIRCLE ONE)*
Priority Charges Apply to Rush Turn Around Times
RUSH: Same Day 24 Hr 48 Hr 72 Hr
STANDARD: Standard TAT **(5 to 10 Working Days)
Other 5-7 day
* Availability of Same Day/24/48/72 Hr TAT Varies Based Upon Test Method Requirements.
**Standard TAT Varies According to Analyses.

SAMPLE CONDITION INFO - *FOR LAB USE ONLY:*
Samples Intact: Yes ____ No ____
Sample Seals Intact: Yes ____ No ____ N/A ____
Cooler Seals Intact: Yes ____ No ____ N/A ____

	SAMPLE ID	SAMPLE OR LOCATION DESCRIPTION	DATE	TIME	MATRIX (See Codes Below)	# OF CONTAINERS	TEST REQUIRED
1	HL SW	Hydraulic Lift, Southwest Corner	12/3/07	12:00	soil	#1 + #2	PCB, PAH
2							
3	HL-Gar	Hydraulic lift, Garage	12/3/07	1:30 pm	soil	#1 + #2	PCB, PAH
4							
5							
6							
7							
8							
9							
10							

MATRIX: GW=Ground Water DW=Drinking Water WW=Waste Water SW=Storm Water S=Solid/Soil A=Air L=Liquid F=Food (Use the codes shown here to identify the matrix above)

Relinquished by: (Print AND Sign)***	Received By: (Print AND Sign)	Date/Time:
Gary Halbert Gary Halbert	Kathleen Stewart	12/5/07
Relinquished by: (Print AND Sign)***	Received By: (Print AND Sign)	Date/Time:
Relinquished by: (Print AND Sign)***	Received by Lab for Analysis: (Print AND Sign)	Date/Time:

***By signing this Chain of Custody you are authorizing the analyses shown above. Gary Halbert (Print AND Sign) Gary J Halbert

Special Instructions:
15 : W

COC DISTRIBUTION:
White with report. Yellow to AL. Pink to Client's Courier.

Appendix E
Drainage Study

DRAINAGE STUDY

McDonalds and Starbucks

PROJECT ADDRESS:
SWC Main Street & 7th Avenue
Hesperia, California

Fountainhead Palace, LP
1401 Quail Street, Suite 100
Newport Beach, CA 92660

DATE: 12/10/2024

C3 CIVIL ENGINEERING, LLC
10870 W FAIRVIEW AVE
STE 102-1187
BOISE, ID 83713
208.918.0998

Table of Contents

Section 1 – Project Description 3
Section 2 – Drainage Patterns 4
Section 3 – Methodology 6
Section 4 – Calculations 6
Section 5 – Summary 10
Appendix 11

Section 1 – Project Description

Existing Conditions:

The site is currently partially occupied by a used auto sales lot on the northern parcels. There is one building on the main auto sales area and an out building on the westernmost side of the northern half. The southern half of the project site is partially paved but otherwise unoccupied.

The site is bordered on the west by a commercial shopping center, medical offices across Main Street to the north, A gas station and sports bar to the east across Seventh Avenue, and an appliance store and open space to the south across Walnut Street.

Proposed Conditions:

Proposed improvements begin with the demolition of current buildings and paving. The improvements on the project will include two drive-thru establishments, one coffee and one fast food. A drive aisle will traverse between Main Street and Walnut Street between the two drive-thru establishments and will provide adequate points of access for both. New paving and landscaping will accompany the project to fit zone requirements.

Section 2 – Drainage Patterns

Existing Drainage Patterns:

With an existing curb and building in the middle of the project site, it creates three separate drainage areas.

On the west side of the existing curb (DA-1), a gradual slope from south to north allows storm water to gather at the end of the drainage area and eventually discharge on to Main Street. By curb and gutter, the drainage from this area will travel east on Main Street into an existing catch basin that is connected to the storm drain main on Main Street.

On the north side of the existing curb and building (DA-2), the site gradually slopes from the southwest corner to the northeast corner of the drainage area. There is an existing grated catch basin southwest of the driveway entrance on Main Street, that was created as the low spot of the site to capture any runoff and pipe into an existing seepage pit.

On the south side of the existing curb and building (DA-3) is a vacant lot that gradually slopes from the southwest corner to the northeast corner of the drainage area. Stormwater will discharge into the adjacent property and eventually discharge onto 7th Avenue. By curb and gutter, storm water will travel north and collect at an existing catch basin on 7Th Avenue that is connected to the storm drain main. Once the development has been completed, stormwater will no longer flow across the adjacent property.

Proposed Drainage Patterns:

DA-1 includes the proposed McDonald's site. Runoff from the building will discharge at grade and sheet flow onto the parking lot and street paving. Curb and gutter will collect and convey runoff north to the nearest catch basin. There are three proposed catch basins throughout the drainage area. Storm water will be piped into the proposed StormTech Detention Chamber System for stormwater detention and attenuation. Due to poor soil infiltration characteristics in this area, dry wells will be used in addition to an ADS Stormtech system to help infiltrate into the ground within 48-hours of capture. The high flow will flow out of two of the three grated inlets and flow out of a parkway culvert or storm drainpipe to Main Street. The first grated inlet to discharge stormwater out into a storm drain out the back of the grated inlet and daylight into the back of an existing catch basin on Main Street. Once the elevation of the storm water on the site has surpassed a certain elevation, storm water will then discharge from the second grated inlet in the NEC of the property. Storm water will discharge onto the parkway culvert located at the north of the property. From this parkway culvert, storm water will travel east and then collected on the southwest corner of Main Street and 7th Avenue. This catch basin is connected by

pipe to the storm drain main on Main Street. Dimensions and design for the underground systems and drywell structure are provided in the Appendix.

DA-2 includes the proposed Starbucks site. Runoff from the building will discharge at grade and sheet flow onto the parking lot and street paving. Curb and gutter will collect and convey runoff north to the nearest catch basin. There are four proposed catch basins throughout the property. Storm water will then be piped into the proposed StormTech Detention Chamber System for stormwater detention and attenuation. Due to poor soil infiltration characteristics of the soil in this area, dry wells will be used in addition to an ADS Stormtech system to help infiltrate into the ground within 48-hours of capture. Once the elevation of the storm water on the site has surpassed a certain elevation in the underground system and drywell, storm water will bypass the diversion manhole and will be piped to the back of the existing catch basin on the NEC of Main Street and 7th Avenue. Dimensions and design for the underground systems and drywell structure are provided in the Appendix.

Run-On:

There are no areas of run-on this site.

Hydromodification:

This project is exempt from hydromodification.

Section 3 – Methodology

The two primary methods used in the San Bernardino County area to determine design discharges are the Rational Method and the Unit Hydrograph method. The Rational method is generally intended for use on small watersheds of less than 640-acres while the Synthetic Unit Hydrograph method is intended for use on watersheds in excess of these limits. For the purposes of this report, we will be using the Rational Method for the 100-year storm event.

RATIONAL METHOD

The Rational method is commonly used for determining peak discharge from relatively small drainage areas. The Rational method is based on the following equation:

Q = C I A

Where:

Q = peak discharge, in cubic feet per second (cfs)

C = runoff coefficient, proportion of the rainfall that runs off the surface (no units)

I = average rainfall intensity for a duration equal to the Tc for the area, in inches per hour (Note: If the computed Tc is less than 5 minutes, use 5 minutes for computing the peak discharge, Q). I is obtained from the Intensity-Duration Curves from the SB Manual.

T_c = Time of Concentration (min.)

Soil Group B – see appendix for Soil Hydrologic Soil Groups Map

AMC III for 100-year storm calculations

A = drainage area contributing to the design location, in acres

Intensity-Duration Curve = 1.19" for 100-year storm @ 60-minutes

F_M= 0.08 in/hr. (per Table C.2 from Hydrology Manual)

For this study, HydroCAD software was used to model the Rational Method using Intensity-Duration-Frequency (IDF) curves from the San Bernardino County Manual. The IDF curves were input based on the criteria below from Figure D-3 from the San Bernardino County Hydrology Manual.

A plot of the IDF curve is included in the Appendix.

The Tc values for each subarea were determined using nomographs from Figure D-1 from the San Bernardino County Hydrology Manual. These Tc values are directly input for each subarea in the HydroCAD model. A Tc of 5 minutes was used for initial subareas with calculated Tc values less than 5 minutes.

The runoff coefficient (C) for each surface cover is also directly input for each subarea. The runoff coefficient is calculated based on section D.5 of the San Bernardino Hydrology Manual. The following factor was used for calculation of the runoff coefficient:

F_p = Loss rate for Soils Group B (in/hr) from San Bernardino Hydrology Manual (0.30 for soil group B)

Each subarea is entered into the HydroCAD model as a Subcatchment and linked to a downstream node. A Subcatchment is defined in the HydroCAD manual as *"a relatively homogenous area of land that typically drains into a reach or pond."* A Reach is defined as *"a uniform stream, channel, or pipe that conveys water from one point to another"*. A Pond is defined as *"a pond, swamp, dam, catch basin, manhole, drywell, or other impoundment that fills with water from one or more souces and empties in a manner determined by a weir, culvert, or other outlet device(s)."* A Pond is also used to model the end point of the drainage study. A model of the drainage catchment area was created using Subcatchments, Reaches and Ponds. A diagram of the model is included in the Appendix for the existing and proposed conditions.

In the HydroCAD program, the rainfall duration and corresponding peak flow rate are calculated based on the Tc for each subarea using the Rational Method for the frequency storm specified. The program allows for the 2-, 5-, 10-, and 100-year storm frequencies. As noted above, the 100-year storm frequency will be calculated in this study.

Detention Modeling:

The San Bernadino County Hydology Manual uses the Modified Puls method (also referred to as the Storage-Indication Method) for detention basin modeling. HydroCAD uses several methods for reach routing, including the Storage-Indication Method. For this project, we selected the Storage-Indication Method for analyzing detention basin routing. This method was used within the Rational Method model to evaluate time-discharge rates for the two underground storage chamber systems. Please see the calculations in the Appendix for details.

Section 4 – Calculations

Runoff Calculations

Using the San Bernardino County Hydrology Manual, the existing and proposed runoff for the project was calculated for the 100-Year Storm Event. The runoff calculations are shown below.

Existing Conditions:

DA-1

A = 0.166 acres

Impervious % = 72%

F_m = 0.08"/hr

T_c = 4.8 min (see appendix for nomograph)

I = 7.0 in/hr (see appendix for Intensity-Duration)

Q = 0.90 * (I-F_m) *A

$Q_{EX\ DMA\ 1}$ = 0.90 * (I-F_m) *A = 0.90 * (7.0-0.08) * 0.166 = 1.03 cfs

$Q_{EX\ DMA\ 1}$= 1.03cfs

DA-2

A = 0.569 acres

Impervious % = 99%

F_m = 0.08"/hr

T_c = 5.1 min (see appendix for nomograph)

I = 6.7 in/hr (see appendix for Intensity-Duration)

Q = 0.90 * (I-F_m) *A

$Q_{EX\ DMA\ A}$ = 0.90 * (I-F_m) *A = 0.90 * (6.7-0.08) * 0.569 = 3.39 cfs

$Q_{EX\ DMA\ A}$ = 3.39 cfs

DA-3

A = 0.903 acres

Impervious % = 99%

F_m = 0.08”/hr

T_c = 5.1 min (see appendix for nomograph)

I = 3.7 in/hr (see appendix for Intensity-Duration)

Q = 0.90 * (I-F_m) *A

$Q_{EX\ DMA\ A}$ = 0.90 * (I-F_m) *A = 0.90 * (3.7-0.08) * 0.903 = 2.94 cfs

$Q_{EX\ DMA\ A}$ = 2.94 cfs

Proposed Conditions:

See Appendix to view HydroCAD Calculation for the proposed drainage area calculation.

Section 5 – Summary

Based on the calculations provided in Section 4,

100-yr Storm Event

Subarea #	Existing Q_{Peak} (cfs)	Proposed Q_{Peak} (cfs)
Outlet #1	1.03	0.46
Outlet #2	3.39	2.06
Outlet #3	2.94	1.84
Total:	7.94	4.36

Appendix

R1W | R2W | R3W

T4N T3N T2N T1N T1S

PROJECT SITE

SOURCE: GEOLOGY MAP

SOURCE: 1970 SCS SURVEY

EDWARDS AIR FORCE BASE

MOJAVE DESERT

MOJAVE RIVER

MARINE CORPS SUPPLY CENTER (YERMO AREA)

MARINE CORPS SUPPLY CENTER (DAGGETT AREA)

MARINE CORPS BASE

GEORGE AIR FORCE BASE

NORTON AIR FORCE BASE

JOSHUA TREE NATIONAL MONUMENT

LEGEND

SOIL GROUP BOUNDARY

A SOIL GROUP DESIGNATION

BOUNDARY OF INDICATED SOURCE

INDEX MAP

Scale 1:250,000

5 0 5 10 15 20 Statute Miles

5 0 5 10 15 20 25 30 Kilometers

5 0 5 10 15 Nautical Miles

CONTOUR INTERVAL 200 FEET
WITH SUPPLEMENTARY CONTOURS AT 100 FOOT INTERVALS
TRANSVERSE MERCATOR PROJECTION

BLACK NUMBERED LINES INDICATE THE 10,000 METER UNIVERSAL TRANSVERSE MERCATOR GRID, ZONE 11

1985 MAGNETIC DECLINATION FROM TRUE NORTH VARIES FROM 15½° (280 MILS) EASTERLY FOR THE CENTER OF THE WEST EDGE TO 16° (270 MILS) EASTERLY FOR THE CENTER OF THE EAST EDGE

BASE MAP REPRODUCED FROM U.S.G.S. "SAN BERNARDINO" TOPOGRAPHIC MAP

SCALE REDUCED BY 1/2

LOCATION DIAGRAM

SAN BERNARDINO COUNTY

HYDROLOGY MANUAL

HYDROLOGIC SOILS GROUP MAP FOR SOUTHCENTRAL AREA

FIGURE C-11

NOAA Atlas 14, Volume 6, Version 2
Location name: Hesperia, California, USA*
Latitude: 34.4236°, Longitude: -117.3156°
Elevation: 3249 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**1.04** (0.864-1.27)	**1.45** (1.20-1.78)	**2.02** (1.66-2.46)	**2.47** (2.02-3.06)	**3.12** (2.46-3.98)	**3.62** (2.81-4.73)	**4.15** (3.14-5.56)	**4.72** (3.47-6.48)	**5.48** (3.86-7.87)	**6.11** (4.15-9.06)
10-min	**0.744** (0.618-0.912)	**1.04** (0.864-1.27)	**1.44** (1.19-1.76)	**1.77** (1.45-2.19)	**2.23** (1.76-2.86)	**2.60** (2.01-3.39)	**2.98** (2.25-3.98)	**3.38** (2.48-4.65)	**3.94** (2.77-5.64)	**4.37** (2.98-6.49)
15-min	**0.600** (0.496-0.736)	**0.840** (0.696-1.03)	**1.16** (0.956-1.42)	**1.43** (1.17-1.76)	**1.80** (1.42-2.30)	**2.10** (1.62-2.74)	**2.40** (1.82-3.21)	**2.72** (2.00-3.75)	**3.17** (2.24-4.55)	**3.53** (2.40-5.24)
30-min	**0.440** (0.364-0.538)	**0.616** (0.508-0.752)	**0.850** (0.700-1.04)	**1.05** (0.854-1.29)	**1.32** (1.04-1.69)	**1.53** (1.19-2.00)	**1.76** (1.33-2.35)	**1.99** (1.47-2.74)	**2.32** (1.64-3.33)	**2.58** (1.76-3.83)
60-min	**0.299** (0.247-0.365)	**0.417** (0.345-0.510)	**0.576** (0.475-0.706)	**0.709** (0.579-0.876)	**0.894** (0.706-1.14)	**1.04** (0.805-1.36)	**1.19** (0.900-1.59)	**1.35** (0.993-1.86)	**1.57** (1.11-2.26)	**1.75** (1.19-2.60)
2-hr	**0.214** (0.177-0.261)	**0.287** (0.237-0.350)	**0.386** (0.318-0.473)	**0.470** (0.384-0.580)	**0.588** (0.464-0.751)	**0.682** (0.528-0.890)	**0.780** (0.589-1.04)	**0.885** (0.650-1.22)	**1.03** (0.726-1.48)	**1.15** (0.781-1.70)
3-hr	**0.177** (0.146-0.216)	**0.234** (0.193-0.287)	**0.313** (0.258-0.383)	**0.379** (0.310-0.468)	**0.473** (0.374-0.605)	**0.549** (0.424-0.716)	**0.628** (0.474-0.840)	**0.712** (0.523-0.980)	**0.831** (0.585-1.19)	**0.926** (0.630-1.38)
6-hr	**0.123** (0.102-0.151)	**0.162** (0.134-0.198)	**0.215** (0.177-0.264)	**0.260** (0.213-0.322)	**0.325** (0.257-0.415)	**0.377** (0.291-0.492)	**0.431** (0.326-0.577)	**0.490** (0.360-0.674)	**0.574** (0.404-0.823)	**0.641** (0.436-0.952)
12-hr	**0.079** (0.065-0.097)	**0.106** (0.088-0.130)	**0.144** (0.118-0.176)	**0.175** (0.143-0.216)	**0.220** (0.174-0.281)	**0.256** (0.198-0.334)	**0.294** (0.222-0.393)	**0.334** (0.245-0.460)	**0.391** (0.276-0.561)	**0.438** (0.298-0.650)
24-hr	**0.053** (0.047-0.061)	**0.074** (0.065-0.085)	**0.102** (0.090-0.118)	**0.125** (0.110-0.146)	**0.159** (0.134-0.191)	**0.185** (0.154-0.228)	**0.213** (0.173-0.269)	**0.243** (0.192-0.315)	**0.286** (0.216-0.386)	**0.320** (0.234-0.447)
2-day	**0.030** (0.027-0.035)	**0.042** (0.037-0.049)	**0.059** (0.052-0.068)	**0.073** (0.064-0.085)	**0.093** (0.079-0.112)	**0.109** (0.090-0.134)	**0.126** (0.102-0.159)	**0.145** (0.114-0.188)	**0.171** (0.129-0.231)	**0.193** (0.141-0.269)
3-day	**0.021** (0.019-0.025)	**0.030** (0.027-0.035)	**0.042** (0.037-0.049)	**0.053** (0.046-0.061)	**0.067** (0.057-0.081)	**0.079** (0.066-0.098)	**0.092** (0.074-0.116)	**0.106** (0.083-0.137)	**0.126** (0.095-0.170)	**0.142** (0.104-0.198)
4-day	**0.017** (0.015-0.020)	**0.024** (0.021-0.028)	**0.034** (0.030-0.039)	**0.042** (0.037-0.049)	**0.054** (0.046-0.066)	**0.064** (0.053-0.079)	**0.074** (0.060-0.094)	**0.086** (0.067-0.111)	**0.102** (0.077-0.138)	**0.115** (0.084-0.161)
7-day	**0.011** (0.009-0.012)	**0.015** (0.013-0.018)	**0.021** (0.019-0.025)	**0.026** (0.023-0.031)	**0.034** (0.029-0.041)	**0.040** (0.033-0.049)	**0.046** (0.037-0.059)	**0.053** (0.042-0.069)	**0.063** (0.048-0.086)	**0.071** (0.052-0.100)
10-day	**0.008** (0.007-0.009)	**0.011** (0.010-0.013)	**0.016** (0.014-0.018)	**0.020** (0.017-0.023)	**0.025** (0.021-0.030)	**0.030** (0.024-0.036)	**0.034** (0.028-0.043)	**0.039** (0.031-0.051)	**0.047** (0.035-0.063)	**0.053** (0.038-0.074)
20-day	**0.005** (0.004-0.005)	**0.006** (0.006-0.008)	**0.009** (0.008-0.011)	**0.012** (0.010-0.013)	**0.015** (0.012-0.018)	**0.018** (0.014-0.022)	**0.020** (0.016-0.026)	**0.023** (0.018-0.031)	**0.028** (0.021-0.038)	**0.031** (0.023-0.044)
30-day	**0.003** (0.003-0.004)	**0.005** (0.004-0.006)	**0.007** (0.006-0.008)	**0.009** (0.008-0.010)	**0.011** (0.010-0.014)	**0.013** (0.011-0.017)	**0.016** (0.013-0.020)	**0.018** (0.014-0.024)	**0.022** (0.016-0.029)	**0.024** (0.018-0.034)
45-day	**0.003** (0.002-0.003)	**0.004** (0.003-0.004)	**0.005** (0.005-0.006)	**0.007** (0.006-0.008)	**0.009** (0.007-0.011)	**0.010** (0.009-0.013)	**0.012** (0.010-0.015)	**0.014** (0.011-0.018)	**0.017** (0.013-0.023)	**0.019** (0.014-0.027)
60-day	**0.002** (0.002-0.003)	**0.003** (0.003-0.004)	**0.004** (0.004-0.005)	**0.006** (0.005-0.007)	**0.007** (0.006-0.009)	**0.009** (0.007-0.011)	**0.010** (0.008-0.013)	**0.012** (0.009-0.015)	**0.014** (0.010-0.019)	**0.016** (0.011-0.022)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

Back to Top

PF graphical

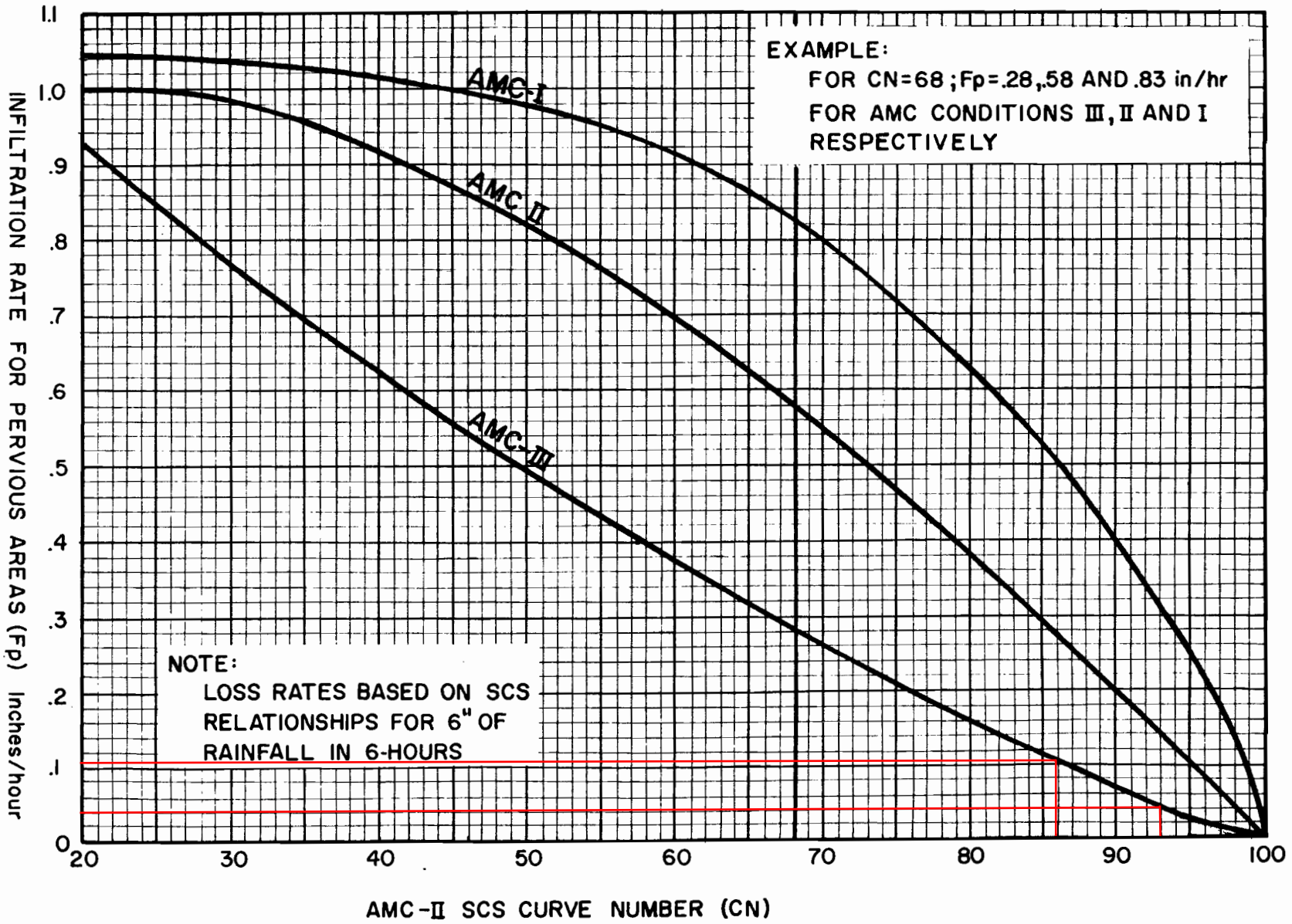
EXISTING CONDITION

CN= 56 (see Figure C-3)
AMC III for 100-year storm calculation
Infiltration rate= 0.04 in/hr

PROPOSED CONDITION

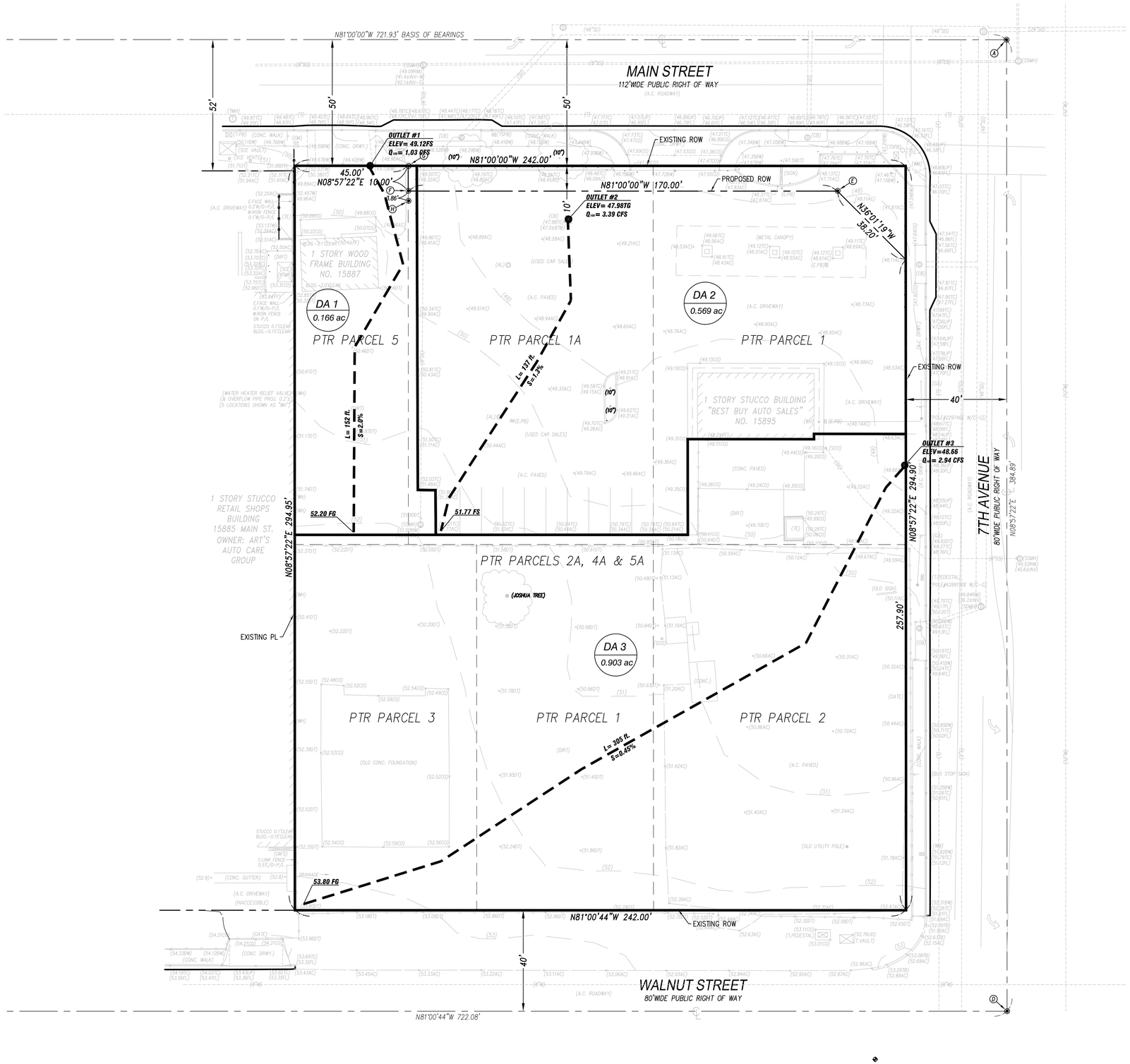
CN= 86 (HYDROCAD)
AMC III for 100-year storm calculation
Infiltration rate= 0.11 in/hr

SAN BERNARDINO COUNTY
HYDROLOGY MANUAL



INFILTRATION RATE FOR PERVIOUS AREAS VERSUS SCS CURVE NUMBERS

Figure C-6



LEGEND:

- DRAINAGE AREA
- FLOW LINE PATH
- AREA / ACRE — DRAINAGE CALLOUT
- XX — EXISTING CONTOUR

0 20 40
SCALE: 1:20

REVISION RECORD

#	DATE	DESCRIPTION

STARBUCKS AND MCDONALDS

SWC MAIN STREET & 7TH AVEUE
HESPERIA, CA

10870 W. FAIRVIEW DR
STE 102-11187
BOISE, ID 83713
(208) 918-0928
thomas@c3civileng.com
www.c3civileng.com

C3 CIVIL ENGINEERING

PROFESSIONAL SEAL

REGISTERED PROFESSIONAL ENGINEER
THOMAS M. HARDCASTLE
No. 25871
12/06/2024
CIVIL
STATE OF CALIFORNIA

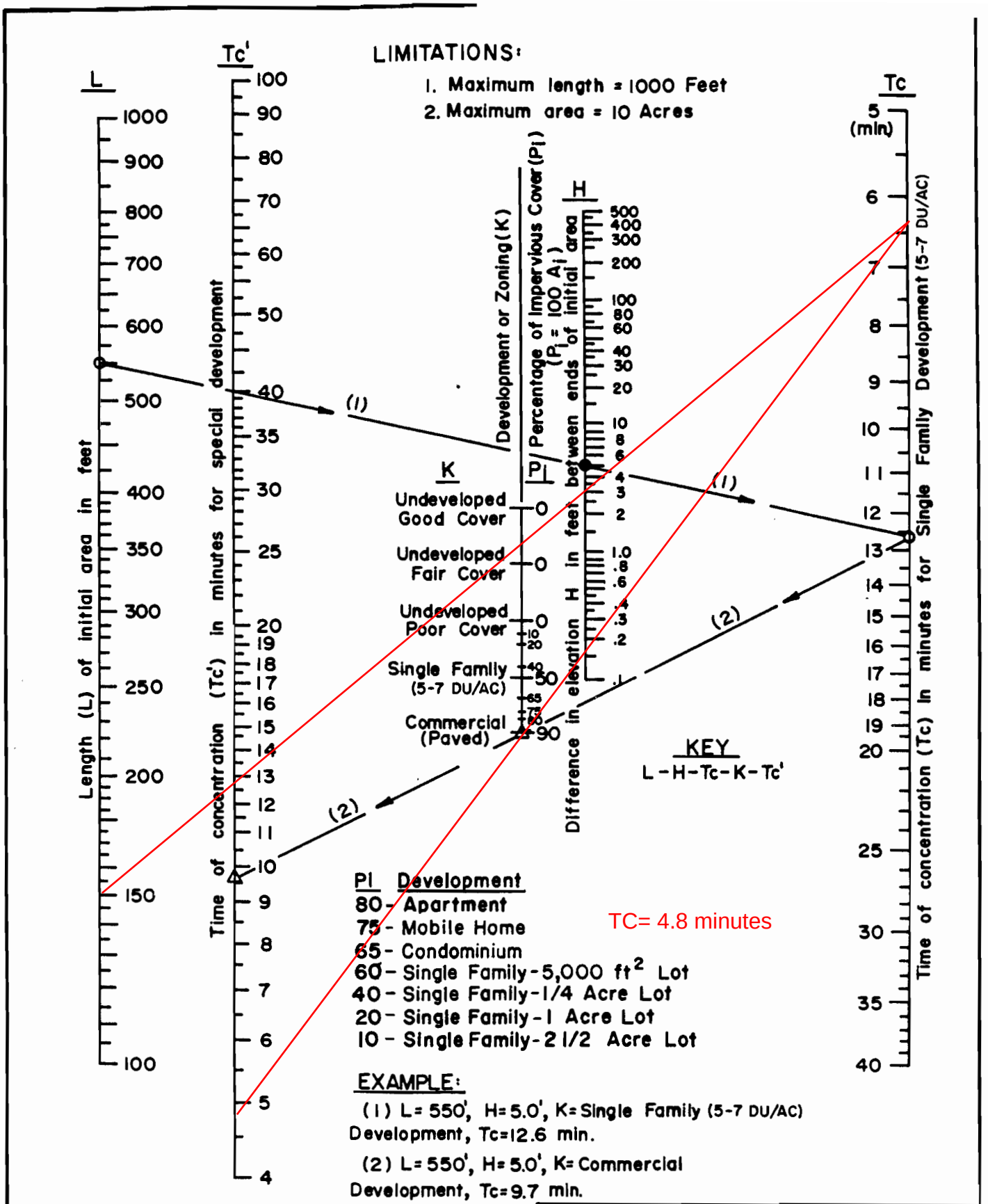
DATE: 12/06/2024
C3 JOB NO: 24-041
DRAWN BY: NM
CHECKED BY: TH

SHEET TITLE

EXISTING DRAINAGE MAP

SHEET NUMBER

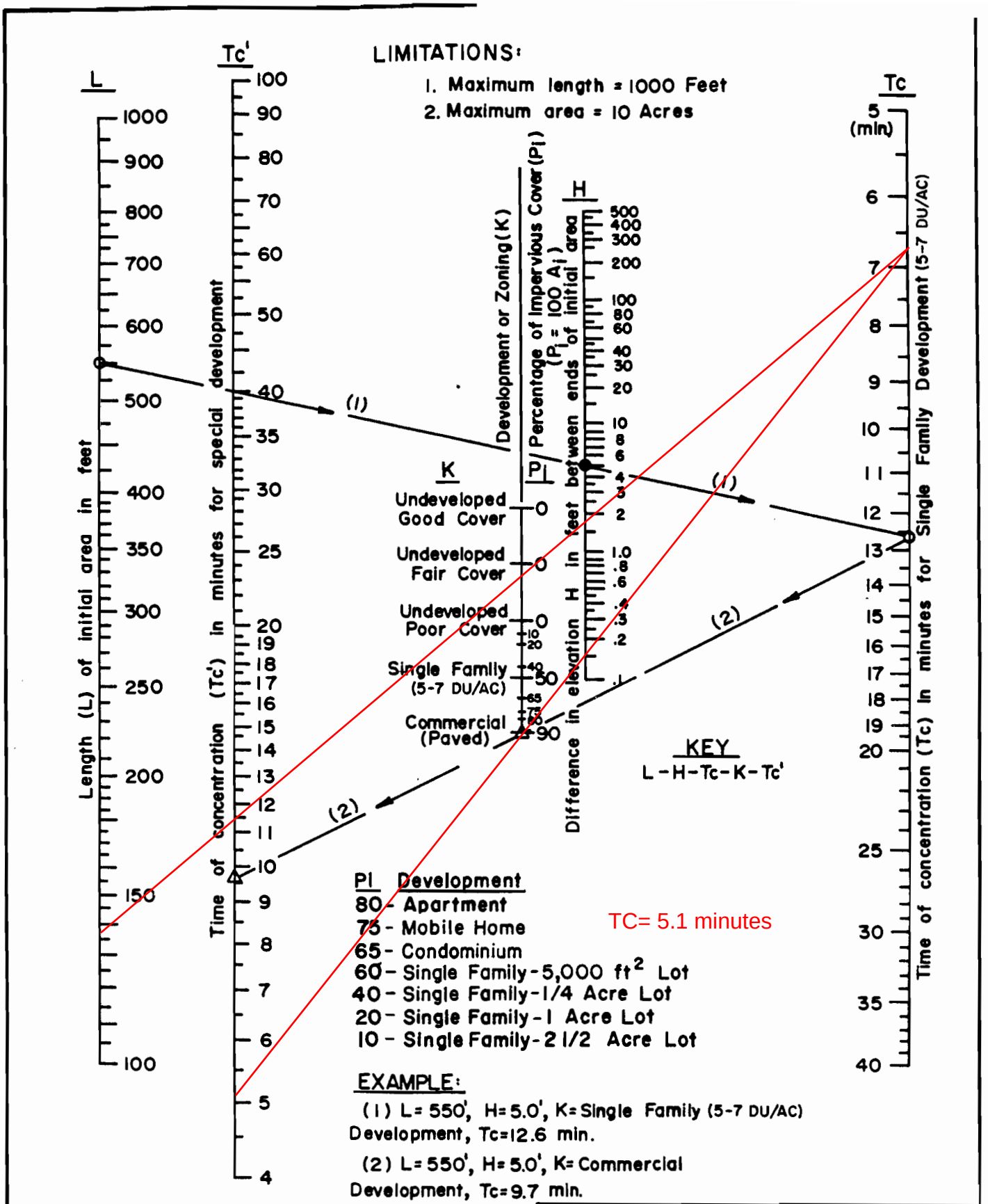
1 of 2



SAN BERNARDINO COUNTY
HYDROLOGY MANUAL

TIME OF CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA

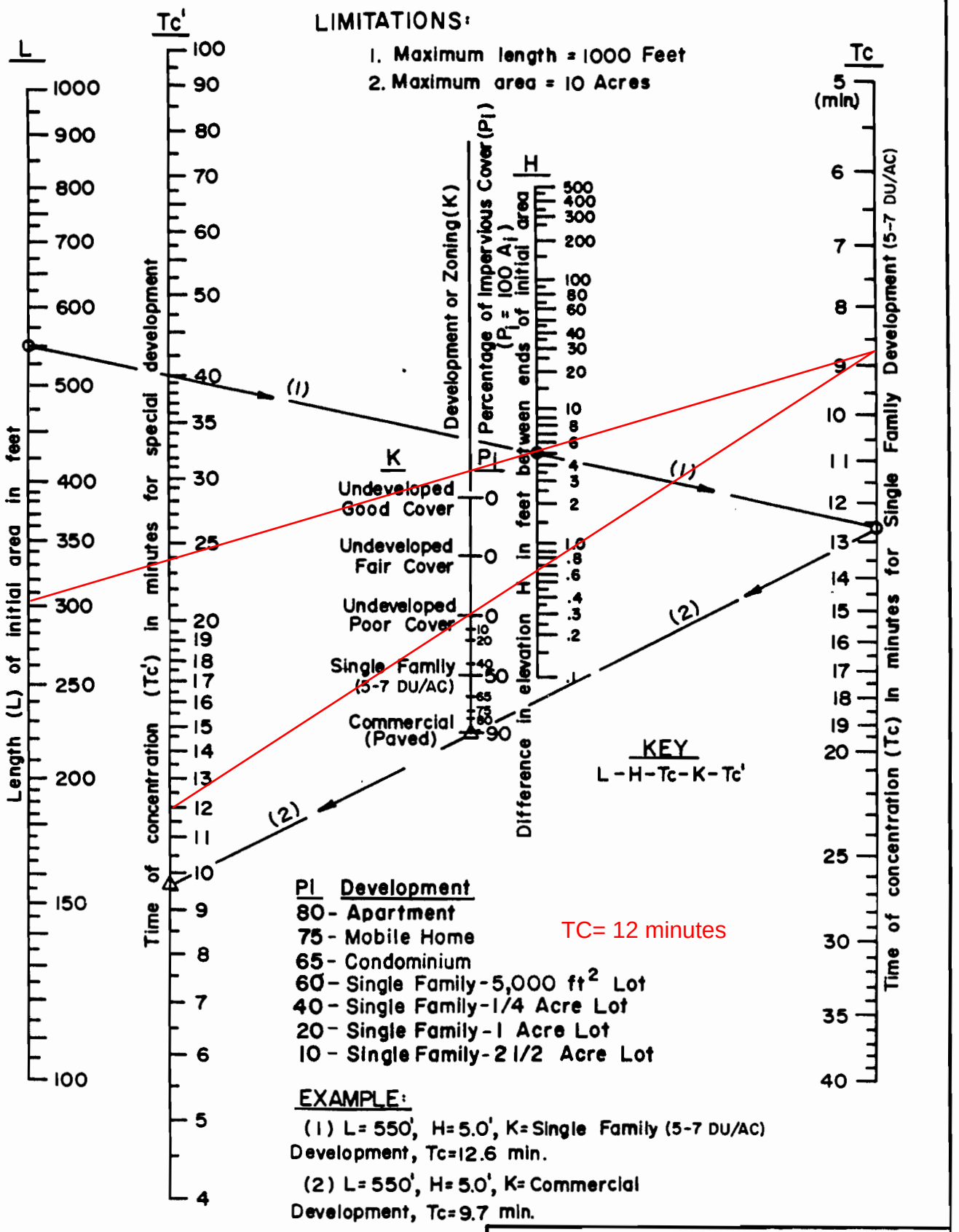
Figure D-1



SAN BERNARDINO COUNTY
HYDROLOGY MANUAL

TIME OF CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA

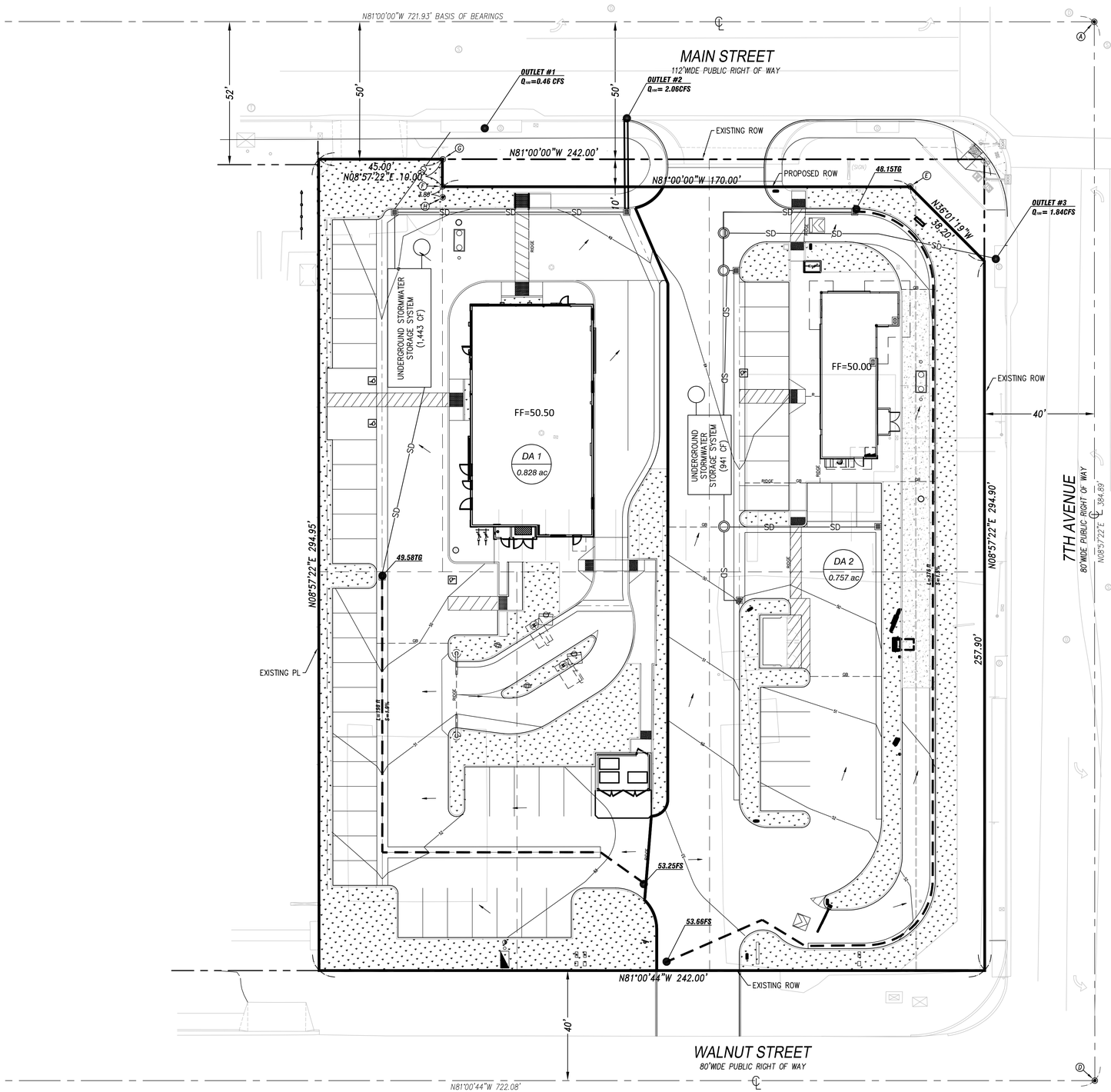
Figure D-1



SAN BERNARDINO COUNTY
HYDROLOGY MANUAL

TIME OF CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA

Figure D-1



LEGEND:

- DRAINAGE AREA
- FLOW LINE PATH
- AREA / ACRE — DRAINAGE CALLOUT
- XX — EXISTING CONTOUR

N

0 20 40

SCALE: 1:20

REVISION RECORD

#	DATE	DESCRIPTION

STARBUCKS AND MCDONALDS

SWC MAIN STREET & 7TH AVEUE
HESPERIA, CA

10870 W. FAIRVIEW DR
STE 102-1187
BOISE, ID 83713
(208) 918-0928
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C3 CIVIL ENGINEERING

PROFESSIONAL SEAL

REGISTERED PROFESSIONAL ENGINEER
THOMAS W. HAWKINS SMITH
No. 84872
CIVIL
STATE OF CALIFORNIA
12/10/2024

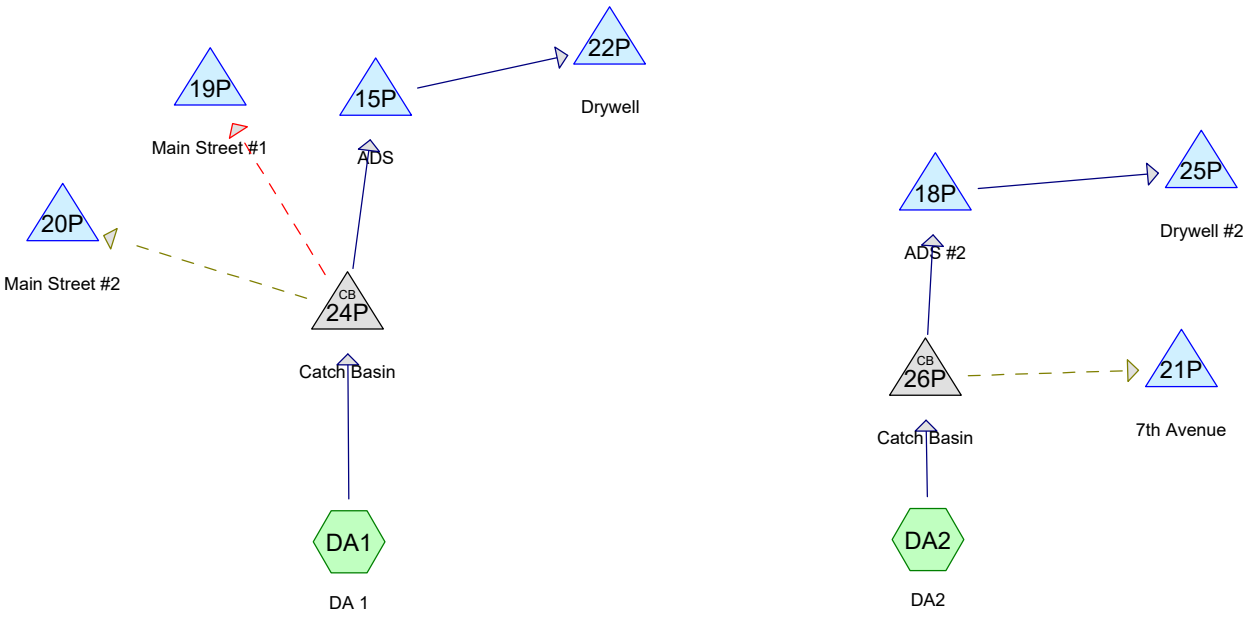
DATE: 12/10/2024
C3 JOB NO: 24-041
DRAWN BY: NM
CHECKED BY: TH

SHEET TITLE

PROPOSE DRAINAGE MAP

SHEET NUMBER

2 of 2



Subcat Reach Pond Link

Routing Diagram for 24041- HydroCAD Calculations
Prepared by C3 Civil Engineering, Printed 12/10/2024
HydroCAD® 10.10-5a s/n 11911 © 2020 HydroCAD Software Solutions LLC

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)
1	15P	39.59	39.50	5.0	0.0180	0.009	0.0	4.0	0.0
2	18P	41.70	41.68	4.5	0.0044	0.010	0.0	12.0	0.0
3	24P	47.50	44.40	34.5	0.0899	0.010	0.0	4.0	0.0
4	24P	47.61	47.22	32.3	0.0121	0.012	24.0	3.0	0.0
5	24P	45.60	45.50	19.3	0.0052	0.012	0.0	4.0	0.0
6	26P	45.50	44.29	120.6	0.0100	0.010	0.0	4.0	0.0
7	26P	44.91	42.96	97.4	0.0200	0.120	0.0	12.0	0.0

Time span=0.00-12.00 hrs, dt=0.01 hrs, 1201 points
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentDA1: DA 1 Runoff Area=36,055 sf 79.00% Impervious Runoff Depth=0.32"
Tc=5.0 min C=0.93 Runoff=3.11 cfs 0.022 af

SubcatchmentDA2: DA2 Runoff Area=33,068 sf 74.55% Impervious Runoff Depth=0.32"
Tc=5.0 min C=0.92 Runoff=2.82 cfs 0.020 af

Pond 15P: ADS Peak Elev=40.30' Storage=0.004 af Inflow=0.59 cfs 0.007 af
4.0" Round Culvert n=0.009 L=5.0' S=0.0180 '/' Outflow=0.31 cfs 0.007 af

Pond 18P: ADS #2 Peak Elev=42.24' Storage=0.001 af Inflow=0.98 cfs 0.007 af
12.0" Round Culvert n=0.010 L=4.5' S=0.0044 '/' Outflow=0.91 cfs 0.007 af

Pond 19P: Main Street #1 Inflow=0.46 cfs 0.003 af
Primary=0.46 cfs 0.003 af

Pond 20P: Main Street #2 Inflow=2.06 cfs 0.013 af
Primary=2.06 cfs 0.013 af

Pond 21P: 7th Avenue Inflow=1.84 cfs 0.013 af
Primary=1.84 cfs 0.013 af

Pond 22P: Drywell Peak Elev=38.97' Storage=0.006 af Inflow=0.31 cfs 0.007 af
Outflow=0.02 cfs 0.007 af

Pond 24P: Catch Basin Peak Elev=48.44' Inflow=3.11 cfs 0.022 af
Primary=0.59 cfs 0.007 af Secondary=0.46 cfs 0.003 af Tertiary=2.06 cfs 0.013 af Outflow=3.11 cfs 0.022 af

Pond 25P: Drywell #2 Peak Elev=50.50' Storage=0.007 af Inflow=0.91 cfs 0.007 af
Outflow=0.00 cfs 0.001 af

Pond 26P: Catch Basin Peak Elev=66.36' Inflow=2.82 cfs 0.020 af
Primary=0.98 cfs 0.007 af Tertiary=1.84 cfs 0.013 af Outflow=2.82 cfs 0.020 af

Total Runoff Area = 1.587 ac Runoff Volume = 0.042 af Average Runoff Depth = 0.32"
23.13% Pervious = 0.367 ac 76.87% Impervious = 1.220 ac

Summary for Subcatchment DA1: DA 1

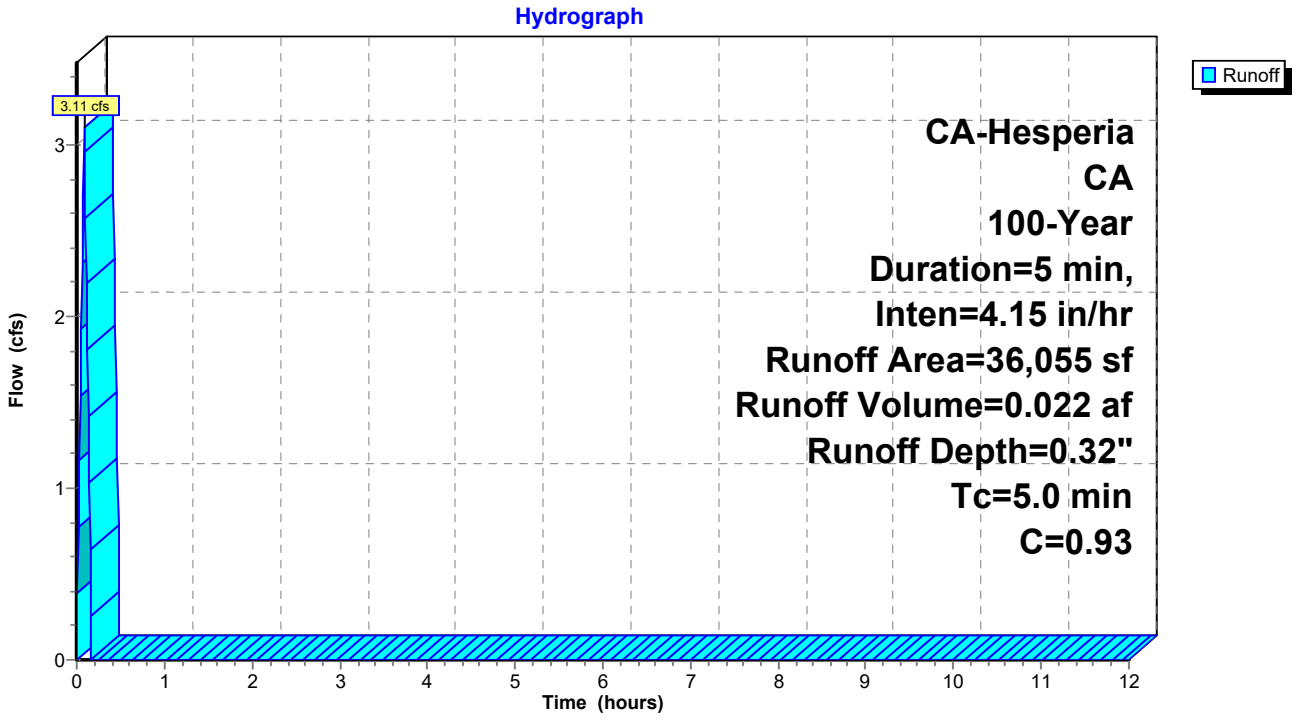
Runoff = 3.11 cfs @ 0.08 hrs, Volume= 0.022 af, Depth= 0.32"

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-12.00 hrs, dt= 0.01 hrs
CA-Hesperia, CA 100-Year Duration=5 min, Inten=4.15 in/hr

Area (sf)	C	Description
21,883	0.98	Ashphalt
3,525	0.98	McDonalds Building
3,075	0.98	Concrete
7,572	0.75	50-75% Grass cover, Fair, HSG B
36,055	0.93	Weighted Average
7,572		21.00% Pervious Area
28,483		79.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment DA1: DA 1



Hydrograph for Subcatchment DA1: DA 1

Time (hours)	Runoff (cfs)	Time (hours)	Runoff (cfs)	Time (hours)	Runoff (cfs)
0.00	**0.00**	5.10	0.00	10.20	0.00
0.10	**2.58**	5.20	0.00	10.30	0.00
0.20	0.00	5.30	0.00	10.40	0.00
0.30	0.00	5.40	0.00	10.50	0.00
0.40	0.00	5.50	0.00	10.60	0.00
0.50	0.00	5.60	0.00	10.70	0.00
0.60	0.00	5.70	0.00	10.80	0.00
0.70	0.00	5.80	0.00	10.90	0.00
0.80	0.00	5.90	0.00	11.00	0.00
0.90	0.00	6.00	0.00	11.10	0.00
1.00	0.00	6.10	0.00	11.20	0.00
1.10	0.00	6.20	0.00	11.30	0.00
1.20	0.00	6.30	0.00	11.40	0.00
1.30	0.00	6.40	0.00	11.50	0.00
1.40	0.00	6.50	0.00	11.60	0.00
1.50	0.00	6.60	0.00	11.70	0.00
1.60	0.00	6.70	0.00	11.80	0.00
1.70	0.00	6.80	0.00	11.90	0.00
1.80	0.00	6.90	0.00	12.00	0.00
1.90	0.00	7.00	0.00		
2.00	0.00	7.10	0.00		
2.10	0.00	7.20	0.00		
2.20	0.00	7.30	0.00		
2.30	0.00	7.40	0.00		
2.40	0.00	7.50	0.00		
2.50	0.00	7.60	0.00		
2.60	0.00	7.70	0.00		
2.70	0.00	7.80	0.00		
2.80	0.00	7.90	0.00		
2.90	0.00	8.00	0.00		
3.00	0.00	8.10	0.00		
3.10	0.00	8.20	0.00		
3.20	0.00	8.30	0.00		
3.30	0.00	8.40	0.00		
3.40	0.00	8.50	0.00		
3.50	0.00	8.60	0.00		
3.60	0.00	8.70	0.00		
3.70	0.00	8.80	0.00		
3.80	0.00	8.90	0.00		
3.90	0.00	9.00	0.00		
4.00	0.00	9.10	0.00		
4.10	0.00	9.20	0.00		
4.20	0.00	9.30	0.00		
4.30	0.00	9.40	0.00		
4.40	0.00	9.50	0.00		
4.50	0.00	9.60	0.00		
4.60	0.00	9.70	0.00		
4.70	0.00	9.80	0.00		
4.80	0.00	9.90	0.00		
4.90	0.00	10.00	0.00		
5.00	0.00	10.10	0.00		

Summary for Subcatchment DA2: DA2

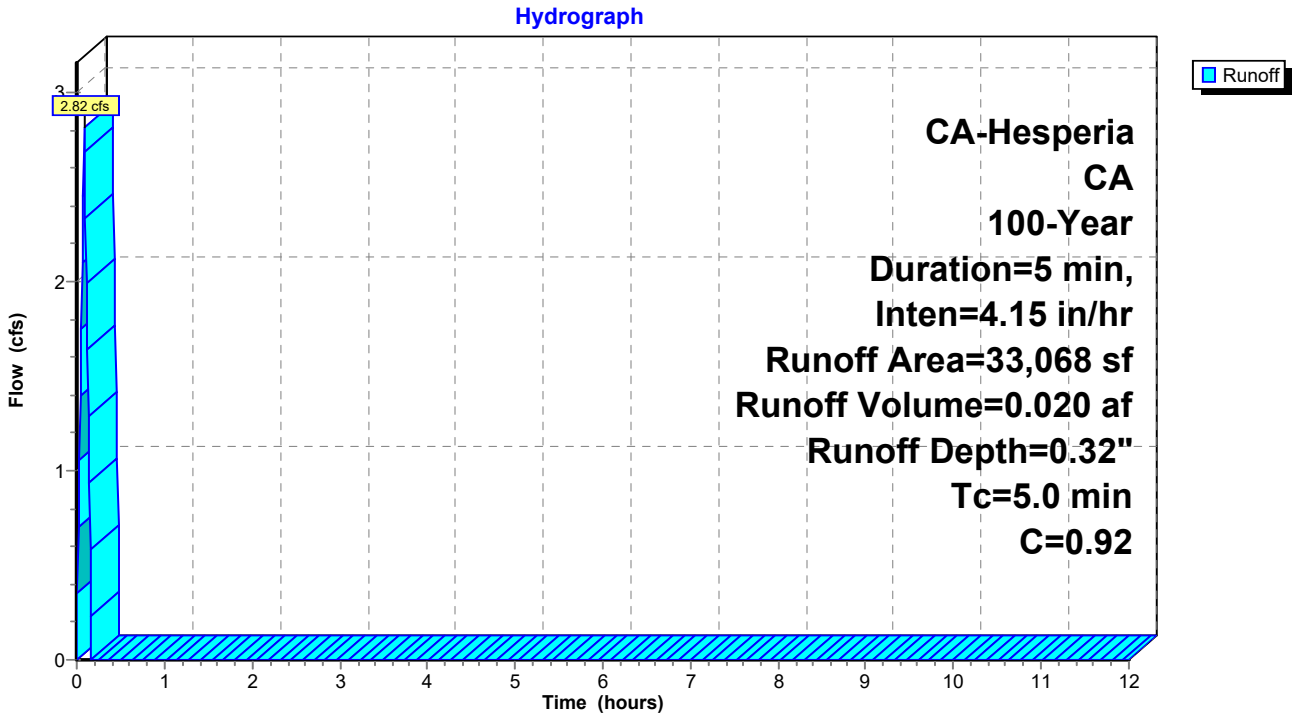
Runoff = 2.82 cfs @ 0.08 hrs, Volume= 0.020 af, Depth= 0.32"

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-12.00 hrs, dt= 0.01 hrs
CA-Hesperia, CA 100-Year Duration=5 min, Inten=4.15 in/hr

Area (sf)	C	Description
19,990	0.98	Ashaphalt
3,322	0.98	Concrete
1,339	0.98	Roof
8,417	0.75	>75% Grass cover, Good, HSG B
33,068	0.92	Weighted Average
8,417		25.45% Pervious Area
24,651		74.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment DA2: DA2



Hydrograph for Subcatchment DA2: DA2

Time (hours)	Runoff (cfs)	Time (hours)	Runoff (cfs)	Time (hours)	Runoff (cfs)
0.00	**0.00**	5.10	0.00	10.20	0.00
0.10	**2.34**	5.20	0.00	10.30	0.00
0.20	0.00	5.30	0.00	10.40	0.00
0.30	0.00	5.40	0.00	10.50	0.00
0.40	0.00	5.50	0.00	10.60	0.00
0.50	0.00	5.60	0.00	10.70	0.00
0.60	0.00	5.70	0.00	10.80	0.00
0.70	0.00	5.80	0.00	10.90	0.00
0.80	0.00	5.90	0.00	11.00	0.00
0.90	0.00	6.00	0.00	11.10	0.00
1.00	0.00	6.10	0.00	11.20	0.00
1.10	0.00	6.20	0.00	11.30	0.00
1.20	0.00	6.30	0.00	11.40	0.00
1.30	0.00	6.40	0.00	11.50	0.00
1.40	0.00	6.50	0.00	11.60	0.00
1.50	0.00	6.60	0.00	11.70	0.00
1.60	0.00	6.70	0.00	11.80	0.00
1.70	0.00	6.80	0.00	11.90	0.00
1.80	0.00	6.90	0.00	12.00	0.00
1.90	0.00	7.00	0.00		
2.00	0.00	7.10	0.00		
2.10	0.00	7.20	0.00		
2.20	0.00	7.30	0.00		
2.30	0.00	7.40	0.00		
2.40	0.00	7.50	0.00		
2.50	0.00	7.60	0.00		
2.60	0.00	7.70	0.00		
2.70	0.00	7.80	0.00		
2.80	0.00	7.90	0.00		
2.90	0.00	8.00	0.00		
3.00	0.00	8.10	0.00		
3.10	0.00	8.20	0.00		
3.20	0.00	8.30	0.00		
3.30	0.00	8.40	0.00		
3.40	0.00	8.50	0.00		
3.50	0.00	8.60	0.00		
3.60	0.00	8.70	0.00		
3.70	0.00	8.80	0.00		
3.80	0.00	8.90	0.00		
3.90	0.00	9.00	0.00		
4.00	0.00	9.10	0.00		
4.10	0.00	9.20	0.00		
4.20	0.00	9.30	0.00		
4.30	0.00	9.40	0.00		
4.40	0.00	9.50	0.00		
4.50	0.00	9.60	0.00		
4.60	0.00	9.70	0.00		
4.70	0.00	9.80	0.00		
4.80	0.00	9.90	0.00		
4.90	0.00	10.00	0.00		
5.00	0.00	10.10	0.00		

Summary for Pond 15P: ADS

Inflow Area = 0.828 ac, 79.00% Impervious, Inflow Depth = 0.10" for 100-Year event
Inflow = 0.59 cfs @ 0.08 hrs, Volume= 0.007 af
Outflow = 0.31 cfs @ 0.16 hrs, Volume= 0.007 af, Atten= 47%, Lag= 4.5 min
Primary = 0.31 cfs @ 0.16 hrs, Volume= 0.007 af

Routing by Stor-Ind method, Time Span= 0.00-12.00 hrs, dt= 0.01 hrs
Peak Elev= 40.30' @ 0.16 hrs Storage= 0.004 af

Plug-Flow detention time= 11.3 min calculated for 0.007 af (100% of inflow)
Center-of-Mass det. time= 11.1 min (16.1 - 5.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	39.59'	0.015 af	**15.75'W x 39.22'L x 3.75'H Field A** Impervious 0.053 af Overall - 0.016 af Embedded = 0.037 af x 40.0% Voids
#2A	40.34'	0.016 af	**ADS_StormTech DC-780 +Cap** x 15 Inside #1 Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 15 Chambers in 3 Rows
		0.031 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	39.59'	**4.0" Round Culvert** L= 5.0' Ke= 0.500 Inlet / Outlet Invert= 39.59' / 39.50' S= 0.0180 '/' Cc= 0.900 n= 0.009, Flow Area= 0.09 sf

Primary OutFlow Max=0.31 cfs @ 0.16 hrs HW=40.30' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 0.31 cfs @ 3.55 fps)

Pond 15P: ADS - Chamber Wizard Field A

Chamber Model = ADS_StormTechDC-780 +Cap (ADS StormTech®DC-780 with cap length)
Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

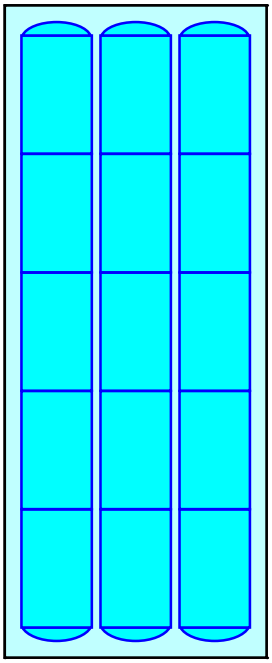
5 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 37.22' Row Length +12.0" End Stone x 2 = 39.22' Base Length
3 Rows x 51.0" Wide + 6.0" Spacing x 2 + 12.0" Side Stone x 2 = 15.75' Base Width
9.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.75' Field Height

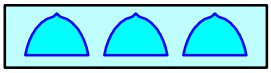
15 Chambers x 46.2 cf = 693.6 cf Chamber Storage

2,316.2 cf Field - 693.6 cf Chambers = 1,622.6 cf Stone x 40.0% Voids = 649.1 cf Stone Storage

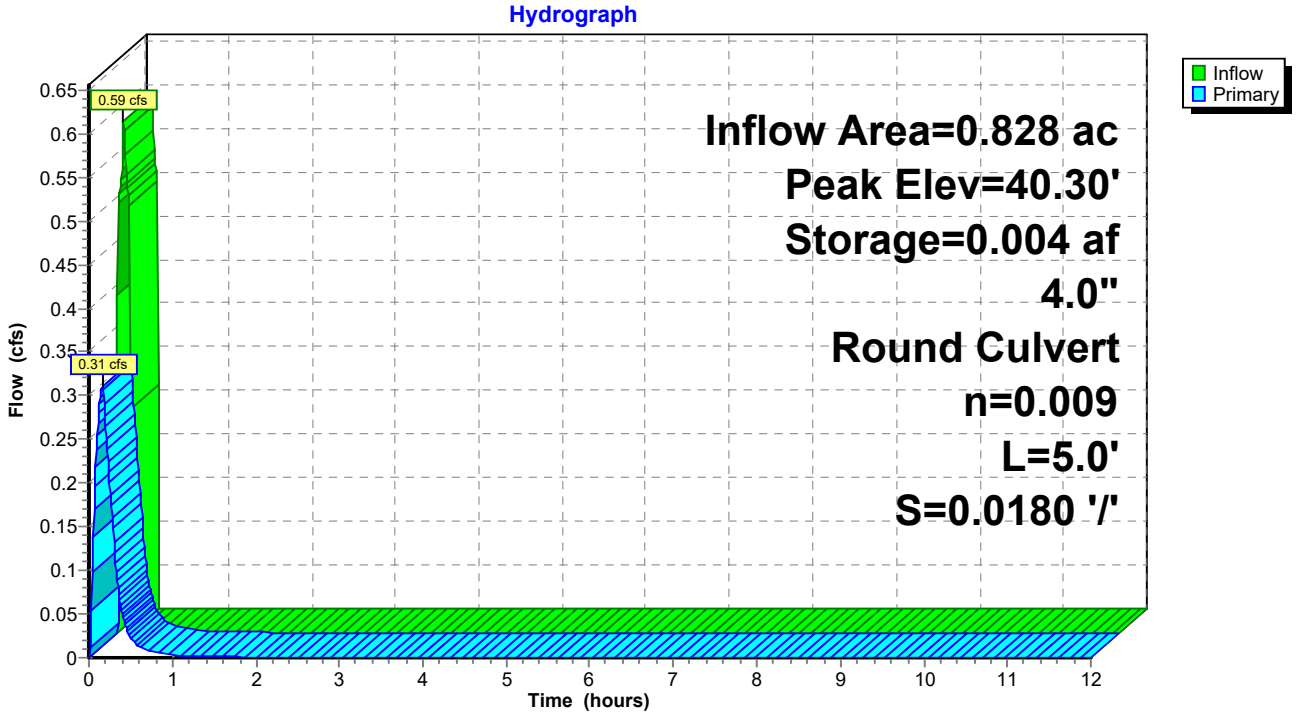
Chamber Storage + Stone Storage = 1,342.6 cf = 0.031 af
Overall Storage Efficiency = 58.0%
Overall System Size = 39.22' x 15.75' x 3.75'

15 Chambers
85.8 cy Field
60.1 cy Stone





Pond 15P: ADS


Hydrograph
Inflow
Primary
0.59 cfs
0.31 cfs
Inflow Area=0.828 ac
Peak Elev=40.30'
Storage=0.004 af
4.0"
Round Culvert
n=0.009
L=5.0'
S=0.0180 '/'
Flow (cfs)
Time (hours)
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
0.45
0.5
0.55
0.6
0.65
0
1
2
3
4
5
6
7
8
9
10
11
12

Hydrograph for Pond 15P: ADS

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	**0.00**	**0.000**	**39.59**	**0.00**
0.50	**0.00**	**0.001**	**39.69**	**0.02**
1.00	0.00	0.000	39.62	0.00
1.50	0.00	0.000	39.61	0.00
2.00	0.00	0.000	39.60	0.00
2.50	0.00	0.000	39.59	0.00
3.00	0.00	0.000	39.59	0.00
3.50	0.00	0.000	39.59	0.00
4.00	0.00	0.000	39.59	0.00
4.50	0.00	0.000	39.59	0.00
5.00	0.00	0.000	39.59	0.00
5.50	0.00	0.000	39.59	0.00
6.00	0.00	0.000	39.59	0.00
6.50	0.00	0.000	39.59	0.00
7.00	0.00	0.000	39.59	0.00
7.50	0.00	0.000	39.59	0.00
8.00	0.00	0.000	39.59	0.00
8.50	0.00	0.000	39.59	0.00
9.00	0.00	0.000	39.59	0.00
9.50	0.00	0.000	39.59	0.00
10.00	0.00	0.000	39.59	0.00
10.50	0.00	0.000	39.59	0.00
11.00	0.00	0.000	39.59	0.00
11.50	0.00	0.000	39.59	0.00
12.00	0.00	0.000	39.59	0.00

Summary for Pond 18P: ADS #2

Inflow Area = 0.759 ac, 74.55% Impervious, Inflow Depth = 0.10" for 100-Year event
Inflow = 0.98 cfs @ 0.08 hrs, Volume= 0.007 af
Outflow = 0.91 cfs @ 0.09 hrs, Volume= 0.007 af, Atten= 7%, Lag= 0.6 min
Primary = 0.91 cfs @ 0.09 hrs, Volume= 0.007 af

Routing by Stor-Ind method, Time Span= 0.00-12.00 hrs, dt= 0.01 hrs
Peak Elev= 42.24' @ 0.09 hrs Surf.Area= 0.006 ac Storage= 0.001 af

Plug-Flow detention time= 1.8 min calculated for 0.007 af (100% of inflow)
Center-of-Mass det. time= 1.9 min (6.9 - 5.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	41.70'	0.007 af	**15.75'W x 17.86'L x 3.75'H Field A** 0.024 af Overall - 0.006 af Embedded = 0.018 af x 40.0% Voids
#2A	42.45'	0.006 af	**ADS_StormTech DC-780 +Cap** x 6 Inside #1 Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 6 Chambers in 3 Rows
		0.014 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	41.70'	**12.0" Round Culvert** L= 4.5' Ke= 0.015 Inlet / Outlet Invert= 41.70' / 41.68' S= 0.0044 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.89 cfs @ 0.09 hrs HW=42.24' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 0.89 cfs @ 2.99 fps)

Pond 18P: ADS #2 - Chamber Wizard Field A

Chamber Model = ADS_StormTechDC-780 +Cap (ADS StormTech®DC-780 with cap length)
Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

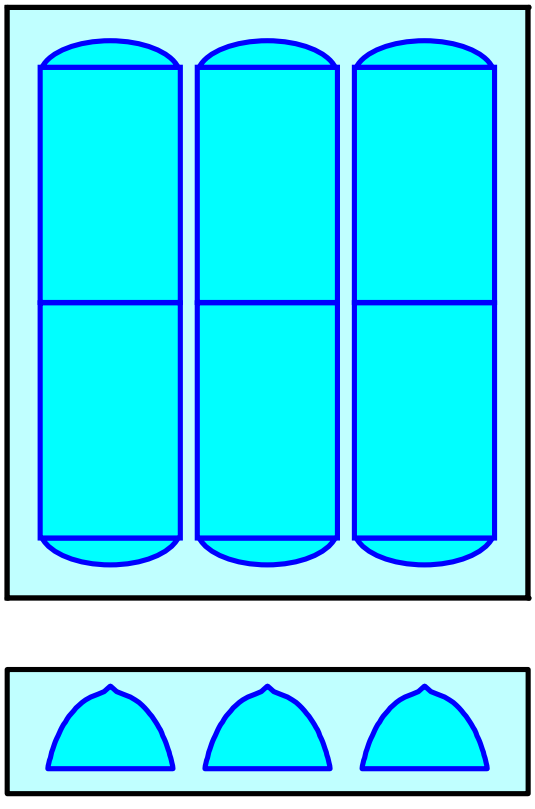
2 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 15.86' Row Length +12.0" End Stone x 2 = 17.86' Base Length
3 Rows x 51.0" Wide + 6.0" Spacing x 2 + 12.0" Side Stone x 2 = 15.75' Base Width
9.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.75' Field Height

6 Chambers x 46.2 cf = 277.4 cf Chamber Storage

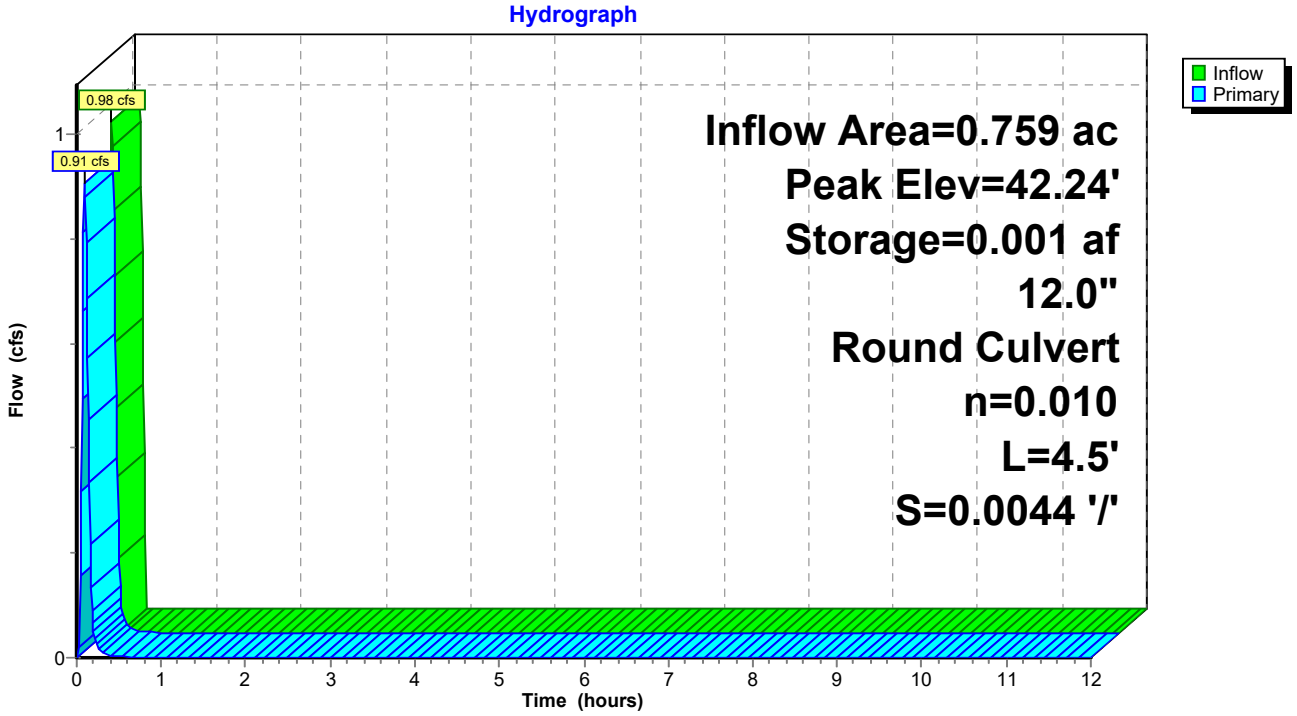
1,054.7 cf Field - 277.4 cf Chambers = 777.2 cf Stone x 40.0% Voids = 310.9 cf Stone Storage

Chamber Storage + Stone Storage = 588.3 cf = 0.014 af
Overall Storage Efficiency = 55.8%
Overall System Size = 17.86' x 15.75' x 3.75'

6 Chambers
39.1 cy Field
28.8 cy Stone



Pond 18P: ADS #2



Hydrograph for Pond 18P: ADS #2

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	**0.00**	**0.000**	**41.70**	**0.00**
0.50	**0.00**	**0.000**	**41.72**	**0.00**
1.00	0.00	0.000	41.70	0.00
1.50	0.00	0.000	41.70	0.00
2.00	0.00	0.000	41.70	0.00
2.50	0.00	0.000	41.70	0.00
3.00	0.00	0.000	41.70	0.00
3.50	0.00	0.000	41.70	0.00
4.00	0.00	0.000	41.70	0.00
4.50	0.00	0.000	41.70	0.00
5.00	0.00	0.000	41.70	0.00
5.50	0.00	0.000	41.70	0.00
6.00	0.00	0.000	41.70	0.00
6.50	0.00	0.000	41.70	0.00
7.00	0.00	0.000	41.70	0.00
7.50	0.00	0.000	41.70	0.00
8.00	0.00	0.000	41.70	0.00
8.50	0.00	0.000	41.70	0.00
9.00	0.00	0.000	41.70	0.00
9.50	0.00	0.000	41.70	0.00
10.00	0.00	0.000	41.70	0.00
10.50	0.00	0.000	41.70	0.00
11.00	0.00	0.000	41.70	0.00
11.50	0.00	0.000	41.70	0.00
12.00	0.00	0.000	41.70	0.00

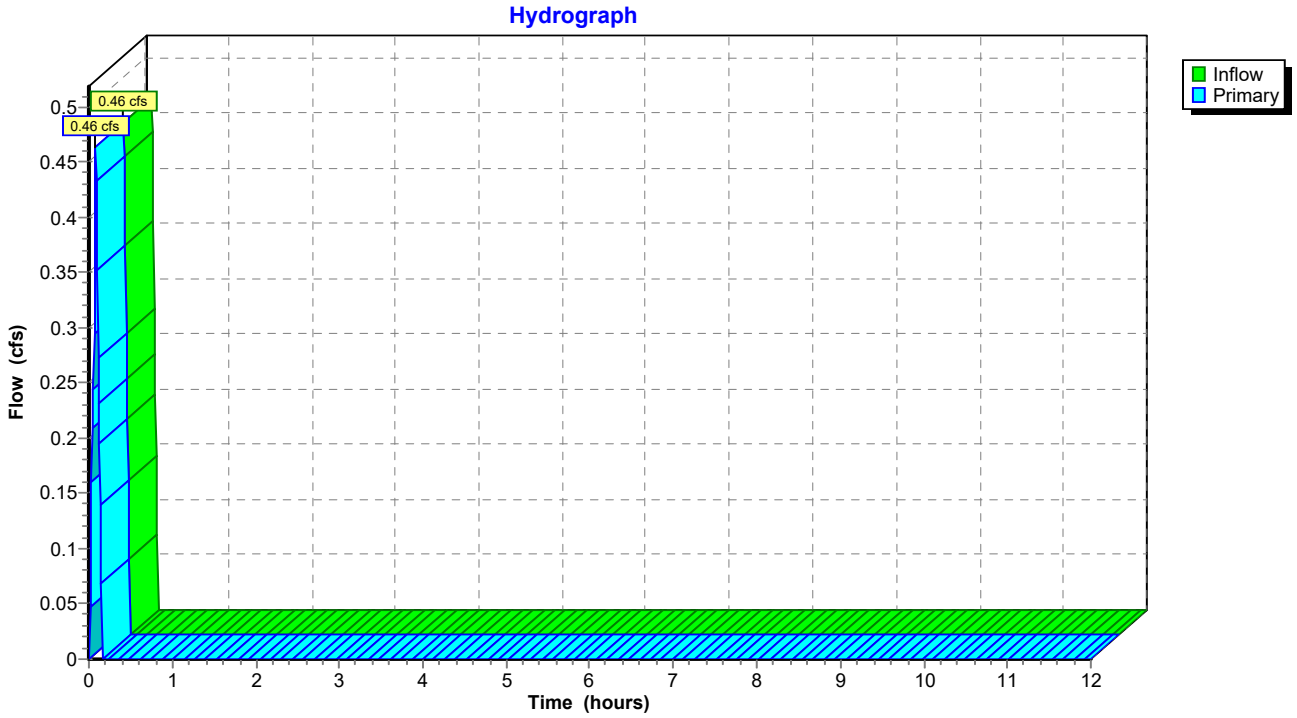
Summary for Pond 19P: Main Street #1

[40] Hint: Not Described (Outflow=Inflow)

Inflow	=	0.46 cfs @	0.08 hrs,	Volume=	0.003 af
Primary	=	0.46 cfs @	0.08 hrs,	Volume=	0.003 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-12.00 hrs, dt= 0.01 hrs

Pond 19P: Main Street #1



Hydrograph for Pond 19P: Main Street #1

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	**0.00**		**0.00**
0.20	**0.00**		**0.00**
0.40	0.00		0.00
0.60	0.00		0.00
0.80	0.00		0.00
1.00	0.00		0.00
1.20	0.00		0.00
1.40	0.00		0.00
1.60	0.00		0.00
1.80	0.00		0.00
2.00	0.00		0.00
2.20	0.00		0.00
2.40	0.00		0.00
2.60	0.00		0.00
2.80	0.00		0.00
3.00	0.00		0.00
3.20	0.00		0.00
3.40	0.00		0.00
3.60	0.00		0.00
3.80	0.00		0.00
4.00	0.00		0.00
4.20	0.00		0.00
4.40	0.00		0.00
4.60	0.00		0.00
4.80	0.00		0.00
5.00	0.00		0.00
5.20	0.00		0.00
5.40	0.00		0.00
5.60	0.00		0.00
5.80	0.00		0.00
6.00	0.00		0.00
6.20	0.00		0.00
6.40	0.00		0.00
6.60	0.00		0.00
6.80	0.00		0.00
7.00	0.00		0.00
7.20	0.00		0.00
7.40	0.00		0.00
7.60	0.00		0.00
7.80	0.00		0.00
8.00	0.00		0.00
8.20	0.00		0.00
8.40	0.00		0.00
8.60	0.00		0.00
8.80	0.00		0.00
9.00	0.00		0.00
9.20	0.00		0.00
9.40	0.00		0.00
9.60	0.00		0.00
9.80	0.00		0.00
10.00	0.00		0.00
10.20	0.00		0.00
10.40	0.00		0.00
10.60	0.00		0.00
10.80	0.00		0.00
11.00	0.00		0.00
11.20	0.00		0.00
11.40	0.00		0.00
11.60	0.00		0.00
11.80	0.00		0.00
12.00	0.00		0.00

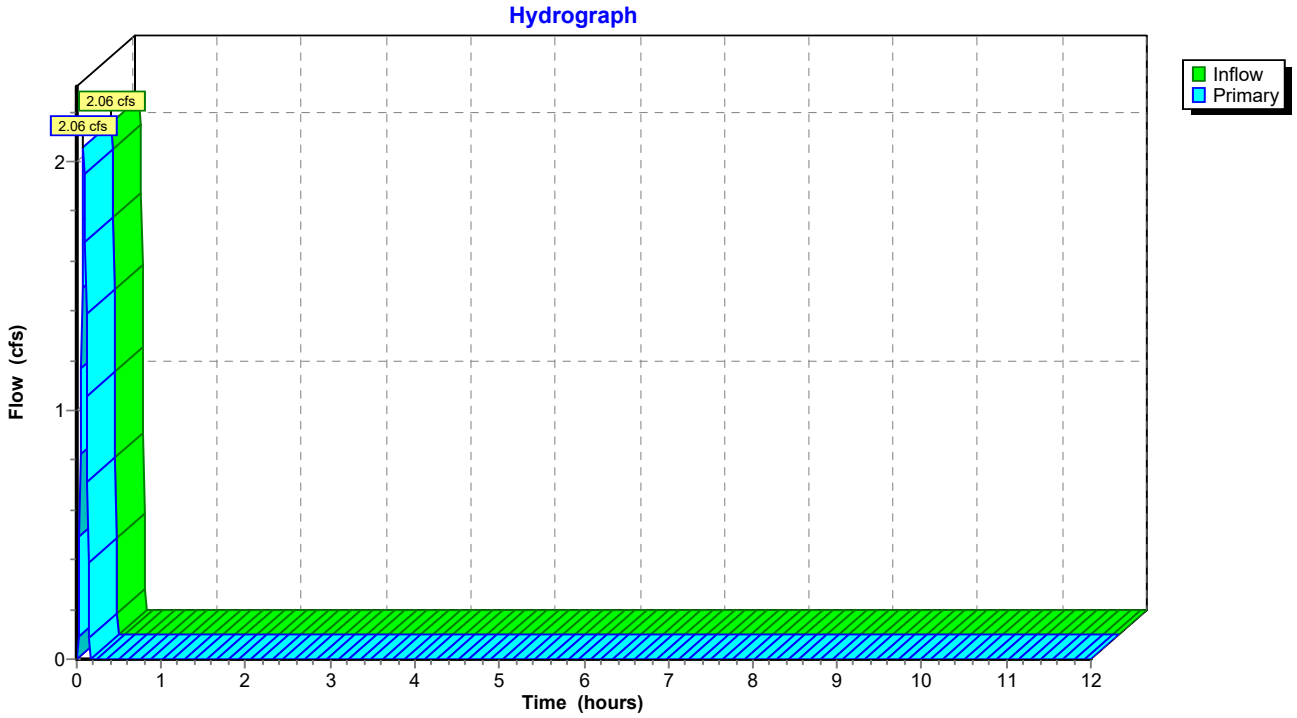
Summary for Pond 20P: Main Street #2

[40] Hint: Not Described (Outflow=Inflow)

Inflow	=	2.06 cfs @	0.08 hrs,	Volume=	0.013 af
Primary	=	2.06 cfs @	0.08 hrs,	Volume=	0.013 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-12.00 hrs, dt= 0.01 hrs

Pond 20P: Main Street #2



Hydrograph for Pond 20P: Main Street #2

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	**0.00**		**0.00**
0.20	**0.00**		**0.00**
0.40	0.00		0.00
0.60	0.00		0.00
0.80	0.00		0.00
1.00	0.00		0.00
1.20	0.00		0.00
1.40	0.00		0.00
1.60	0.00		0.00
1.80	0.00		0.00
2.00	0.00		0.00
2.20	0.00		0.00
2.40	0.00		0.00
2.60	0.00		0.00
2.80	0.00		0.00
3.00	0.00		0.00
3.20	0.00		0.00
3.40	0.00		0.00
3.60	0.00		0.00
3.80	0.00		0.00
4.00	0.00		0.00
4.20	0.00		0.00
4.40	0.00		0.00
4.60	0.00		0.00
4.80	0.00		0.00
5.00	0.00		0.00
5.20	0.00		0.00
5.40	0.00		0.00
5.60	0.00		0.00
5.80	0.00		0.00
6.00	0.00		0.00
6.20	0.00		0.00
6.40	0.00		0.00
6.60	0.00		0.00
6.80	0.00		0.00
7.00	0.00		0.00
7.20	0.00		0.00
7.40	0.00		0.00
7.60	0.00		0.00
7.80	0.00		0.00
8.00	0.00		0.00
8.20	0.00		0.00
8.40	0.00		0.00
8.60	0.00		0.00
8.80	0.00		0.00
9.00	0.00		0.00
9.20	0.00		0.00
9.40	0.00		0.00
9.60	0.00		0.00
9.80	0.00		0.00
10.00	0.00		0.00
10.20	0.00		0.00
10.40	0.00		0.00
10.60	0.00		0.00
10.80	0.00		0.00
11.00	0.00		0.00
11.20	0.00		0.00
11.40	0.00		0.00
11.60	0.00		0.00
11.80	0.00		0.00
12.00	0.00		0.00

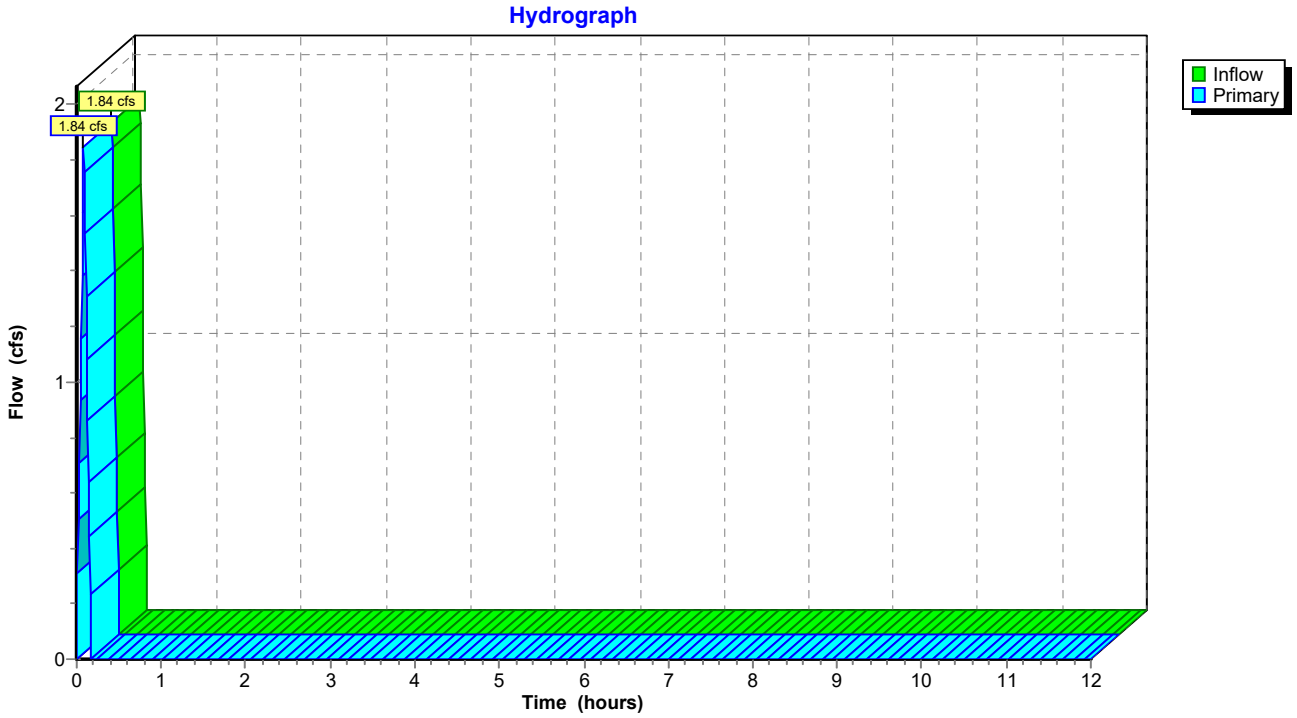
Summary for Pond 21P: 7th Avenue

[40] Hint: Not Described (Outflow=Inflow)

Inflow	=	1.84 cfs @	0.08 hrs,	Volume=	0.013 af
Primary	=	1.84 cfs @	0.08 hrs,	Volume=	0.013 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-12.00 hrs, dt= 0.01 hrs

Pond 21P: 7th Avenue



Hydrograph for Pond 21P: 7th Avenue

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	**0.00**		**0.00**
0.20	**0.00**		**0.00**
0.40	0.00		0.00
0.60	0.00		0.00
0.80	0.00		0.00
1.00	0.00		0.00
1.20	0.00		0.00
1.40	0.00		0.00
1.60	0.00		0.00
1.80	0.00		0.00
2.00	0.00		0.00
2.20	0.00		0.00
2.40	0.00		0.00
2.60	0.00		0.00
2.80	0.00		0.00
3.00	0.00		0.00
3.20	0.00		0.00
3.40	0.00		0.00
3.60	0.00		0.00
3.80	0.00		0.00
4.00	0.00		0.00
4.20	0.00		0.00
4.40	0.00		0.00
4.60	0.00		0.00
4.80	0.00		0.00
5.00	0.00		0.00
5.20	0.00		0.00
5.40	0.00		0.00
5.60	0.00		0.00
5.80	0.00		0.00
6.00	0.00		0.00
6.20	0.00		0.00
6.40	0.00		0.00
6.60	0.00		0.00
6.80	0.00		0.00
7.00	0.00		0.00
7.20	0.00		0.00
7.40	0.00		0.00
7.60	0.00		0.00
7.80	0.00		0.00
8.00	0.00		0.00
8.20	0.00		0.00
8.40	0.00		0.00
8.60	0.00		0.00
8.80	0.00		0.00
9.00	0.00		0.00
9.20	0.00		0.00
9.40	0.00		0.00
9.60	0.00		0.00
9.80	0.00		0.00
10.00	0.00		0.00
10.20	0.00		0.00
10.40	0.00		0.00
10.60	0.00		0.00
10.80	0.00		0.00
11.00	0.00		0.00
11.20	0.00		0.00
11.40	0.00		0.00
11.60	0.00		0.00
11.80	0.00		0.00
12.00	0.00		0.00

Summary for Pond 22P: Drywell

Inflow Area = 0.828 ac, 79.00% Impervious, Inflow Depth = 0.10" for 100-Year event
Inflow = 0.31 cfs @ 0.16 hrs, Volume= 0.007 af
Outflow = 0.02 cfs @ 0.54 hrs, Volume= 0.007 af, Atten= 94%, Lag= 22.8 min
Discarded = 0.02 cfs @ 0.54 hrs, Volume= 0.007 af

Routing by Stor-Ind method, Time Span= 0.00-12.00 hrs, dt= 0.01 hrs
Peak Elev= 38.97' @ 0.54 hrs Surf.Area= 0.001 ac Storage= 0.006 af

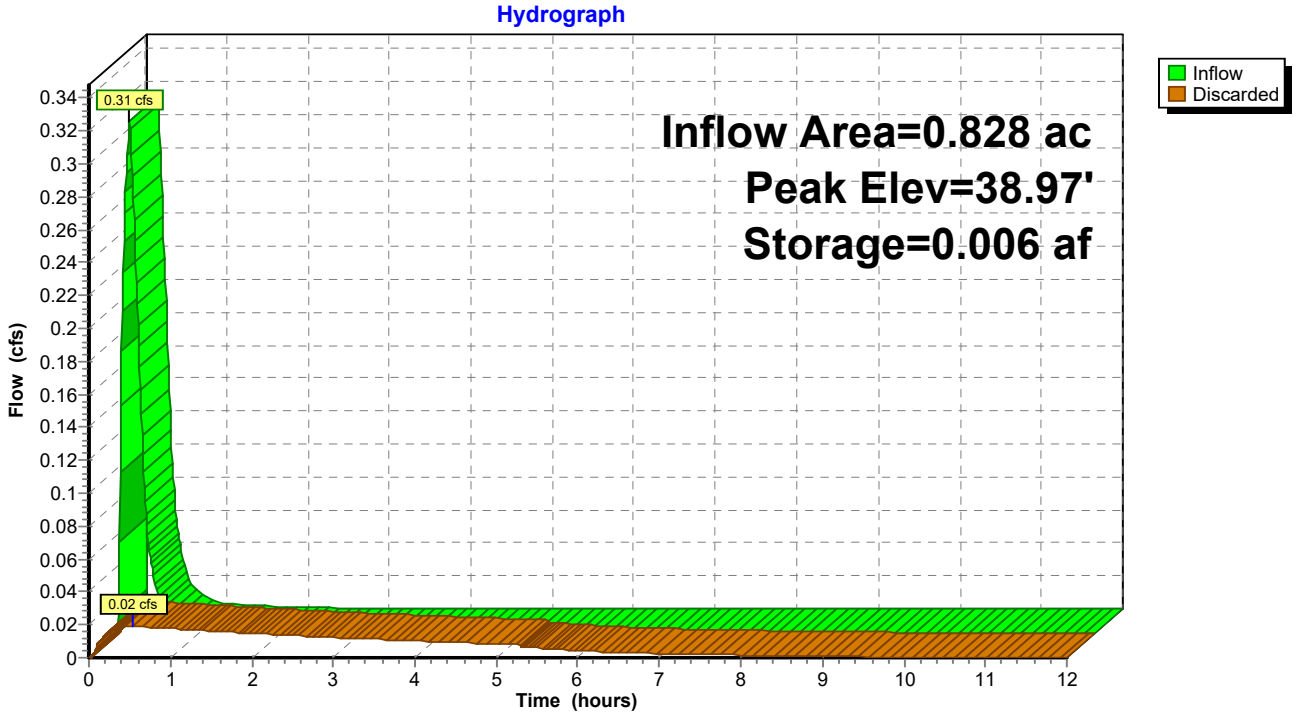
Plug-Flow detention time= 160.8 min calculated for 0.007 af (100% of inflow)
Center-of-Mass det. time= 160.8 min (176.9 - 16.1)

Volume	Invert	Avail.Storage	Storage Description
#1	23.27'	0.001 af	**4.00'D x 8.00'H Vertical Cone/Cylinder** 0.002 af Overall x 40.0% Voids
#2	31.27'	0.011 af	**6.00'D x 18.00'H Vertical Cone/Cylinder** 0.012 af Overall x 92.0% Voids
		0.012 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	23.27'	**2.150 in/hr Exfiltration over Wetted area from 23.00' - 41.27'** Conductivity to Groundwater Elevation = 5.00' Excluded Wetted area = 0.000 ac

Discarded OutFlow Max=0.02 cfs @ 0.54 hrs HW=38.97' (Free Discharge)
1=Exfiltration (Controls 0.02 cfs)

Pond 22P: Drywell



Hydrograph for Pond 22P: Drywell

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Discarded (cfs)
0.00	**0.00**	0.000	23.27	0.00
0.50	**0.02**	**0.006**	**38.96**	**0.02**
1.00	0.00	**0.005**	**38.30**	**0.02**
1.50	0.00	0.005	37.27	0.02
2.00	0.00	0.004	36.27	0.01
2.50	0.00	0.003	35.33	0.01
3.00	0.00	0.003	34.45	0.01
3.50	0.00	0.002	33.64	0.01
4.00	0.00	0.002	32.90	0.01
4.50	0.00	0.001	32.22	0.01
5.00	0.00	0.001	31.59	0.01
5.50	0.00	0.001	30.24	0.01
6.00	0.00	0.001	28.40	0.00
6.50	0.00	0.000	27.03	0.00
7.00	0.00	0.000	25.99	0.00
7.50	0.00	0.000	25.19	0.00
8.00	0.00	0.000	24.58	0.00
8.50	0.00	0.000	24.10	0.00
9.00	0.00	0.000	23.72	0.00
9.50	0.00	0.000	23.44	0.00
10.00	0.00	0.000	23.33	0.00
10.50	0.00	0.000	23.29	0.00
11.00	0.00	0.000	23.28	0.00
11.50	0.00	0.000	23.27	0.00
12.00	0.00	0.000	23.27	0.00

Summary for Pond 24P: Catch Basin

[57] Hint: Peaked at 48.44' (Flood elevation advised)

Inflow Area =	0.828 ac,	79.00% Impervious,	Inflow Depth =	0.32"	for 100-Year event
Inflow =	3.11 cfs @	0.08 hrs,	Volume=	0.022 af	
Outflow =	3.11 cfs @	0.08 hrs,	Volume=	0.022 af,	Atten= 0%, Lag= 0.0 min
Primary =	0.59 cfs @	0.08 hrs,	Volume=	0.007 af	
Secondary =	0.46 cfs @	0.08 hrs,	Volume=	0.003 af	
Tertiary =	2.06 cfs @	0.08 hrs,	Volume=	0.013 af	

Routing by Stor-Ind method, Time Span= 0.00-12.00 hrs, dt= 0.01 hrs
Peak Elev= 48.44' @ 0.08 hrs

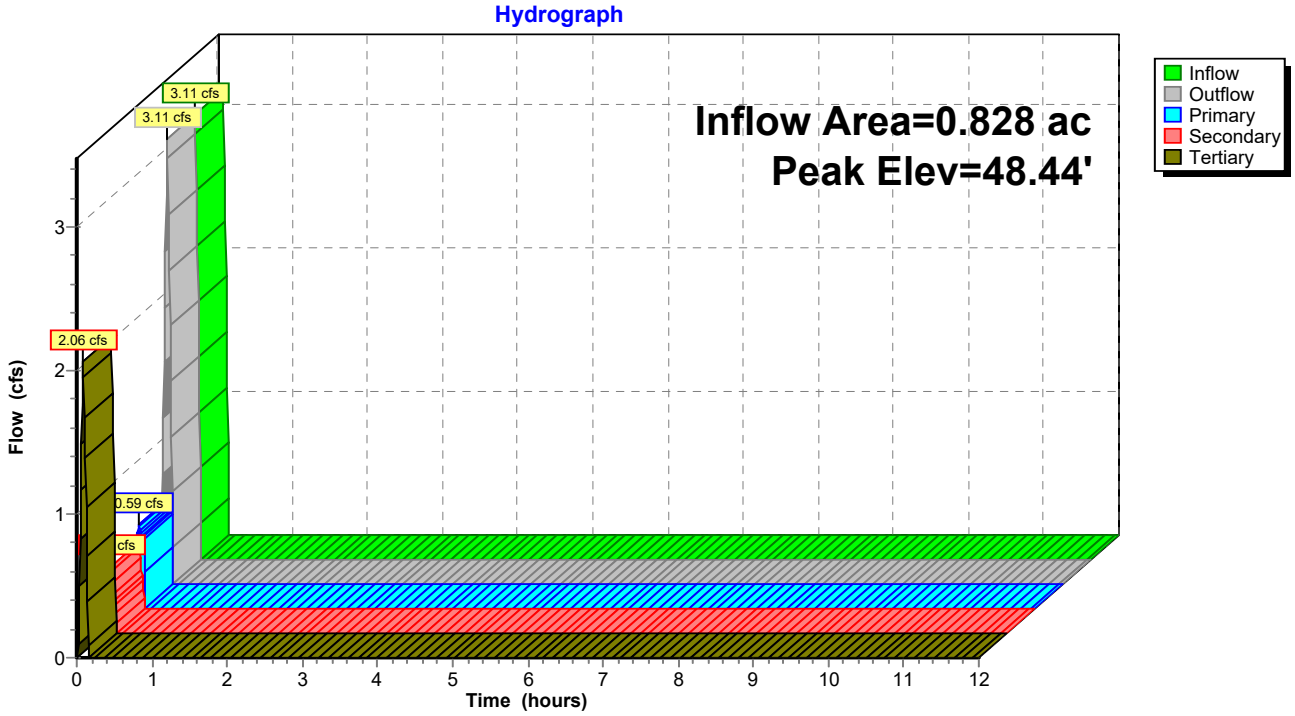
Device	Routing	Invert	Outlet Devices
#1	Secondary	47.50'	**4.0" Round Culvert** L= 34.5' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 47.50' / 44.40' S= 0.0899 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.09 sf
#2	Tertiary	47.61'	**24.0" W x 3.0" H Box Culvert** L= 32.3' Ke= 0.150 Inlet / Outlet Invert= 47.61' / 47.22' S= 0.0121 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.50 sf
#3	Primary	45.60'	**4.0" Round Culvert** L= 19.3' Ke= 0.500 Inlet / Outlet Invert= 45.60' / 45.50' S= 0.0052 '/' Cc= 0.900 n= 0.012, Flow Area= 0.09 sf

Primary OutFlow Max=0.58 cfs @ 0.08 hrs HW=48.41' (Free Discharge)
└**3=Culvert** (Barrel Controls 0.58 cfs @ 6.67 fps)

Secondary OutFlow Max=0.45 cfs @ 0.08 hrs HW=48.41' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.45 cfs @ 5.19 fps)

Tertiary OutFlow Max=2.03 cfs @ 0.08 hrs HW=48.41' (Free Discharge)
└**2=Culvert** (Barrel Controls 2.03 cfs @ 4.05 fps)

Pond 24P: Catch Basin



Hydrograph for Pond 24P: Catch Basin

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Tertiary (cfs)
0.00	**0.00**	**45.60**	**0.00**	**0.00**	**0.00**	**0.00**
0.50	**0.00**	**45.60**	**0.00**	**0.00**	**0.00**	**0.00**
1.00	0.00	45.60	0.00	0.00	0.00	0.00
1.50	0.00	45.60	0.00	0.00	0.00	0.00
2.00	0.00	45.60	0.00	0.00	0.00	0.00
2.50	0.00	45.60	0.00	0.00	0.00	0.00
3.00	0.00	45.60	0.00	0.00	0.00	0.00
3.50	0.00	45.60	0.00	0.00	0.00	0.00
4.00	0.00	45.60	0.00	0.00	0.00	0.00
4.50	0.00	45.60	0.00	0.00	0.00	0.00
5.00	0.00	45.60	0.00	0.00	0.00	0.00
5.50	0.00	45.60	0.00	0.00	0.00	0.00
6.00	0.00	45.60	0.00	0.00	0.00	0.00
6.50	0.00	45.60	0.00	0.00	0.00	0.00
7.00	0.00	45.60	0.00	0.00	0.00	0.00
7.50	0.00	45.60	0.00	0.00	0.00	0.00
8.00	0.00	45.60	0.00	0.00	0.00	0.00
8.50	0.00	45.60	0.00	0.00	0.00	0.00
9.00	0.00	45.60	0.00	0.00	0.00	0.00
9.50	0.00	45.60	0.00	0.00	0.00	0.00
10.00	0.00	45.60	0.00	0.00	0.00	0.00
10.50	0.00	45.60	0.00	0.00	0.00	0.00
11.00	0.00	45.60	0.00	0.00	0.00	0.00
11.50	0.00	45.60	0.00	0.00	0.00	0.00
12.00	0.00	45.60	0.00	0.00	0.00	0.00

Summary for Pond 25P: Drywell #2

[42] Hint: Gap in defined storage above volume #1 at 39.10'
[81] Warning: Exceeded Pond 18P by 8.79' @ 0.73 hrs

Inflow Area = 0.759 ac, 74.55% Impervious, Inflow Depth = 0.10" for 100-Year event
Inflow = 0.91 cfs @ 0.09 hrs, Volume= 0.007 af
Outflow = 0.00 cfs @ 0.68 hrs, Volume= 0.001 af, Atten= 100%, Lag= 35.0 min
Discarded = 0.00 cfs @ 0.68 hrs, Volume= 0.001 af

Routing by Stor-Ind method, Time Span= 0.00-12.00 hrs, dt= 0.01 hrs
Peak Elev= 50.50' @ 0.68 hrs Surf.Area= 0.001 ac Storage= 0.007 af

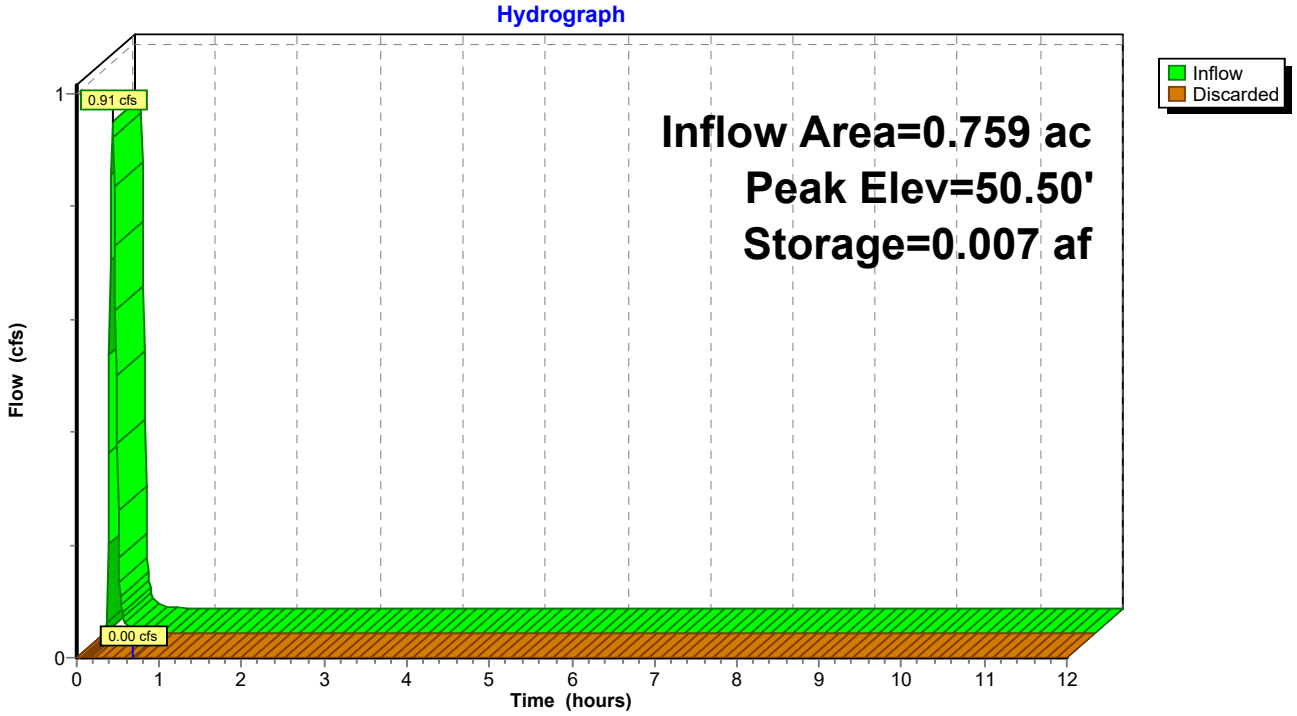
Plug-Flow detention time= 356.3 min calculated for 0.001 af (19% of inflow)
Center-of-Mass det. time= 352.9 min (359.8 - 6.9)

Volume	Invert	Avail.Storage	Storage Description
#1	31.10'	0.001 af	**4.00'D x 8.00'H Vertical Cone/Cylinder** 0.002 af Overall x 40.0% Voids
#2	41.10'	0.011 af	**6.00'D x 18.00'H Vertical Cone/Cylinder** 0.012 af Overall x 92.0% Voids
		0.012 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	31.10'	**1.650 in/hr Exfiltration over Surface area from 31.10' - 41.10'** Conductivity to Groundwater Elevation = 1.00' Excluded Surface area = 0.000 ac

Discarded OutFlow Max=0.00 cfs @ 0.68 hrs HW=50.50' (Free Discharge)
1=Exfiltration (Controls 0.00 cfs)

Pond 25P: Drywell #2



Hydrograph for Pond 25P: Drywell #2

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Discarded (cfs)
0.00	**0.00**	0.000	31.10	0.00
0.50	**0.00**	**0.007**	**50.49**	**0.00**
1.00	0.00	**0.007**	**50.48**	**0.00**
1.50	0.00	0.006	50.40	0.00
2.00	0.00	0.006	50.31	0.00
2.50	0.00	0.006	50.22	0.00
3.00	0.00	0.006	50.12	0.00
3.50	0.00	0.006	50.03	0.00
4.00	0.00	0.006	49.94	0.00
4.50	0.00	0.006	49.85	0.00
5.00	0.00	0.006	49.76	0.00
5.50	0.00	0.006	49.67	0.00
6.00	0.00	0.006	49.58	0.00
6.50	0.00	0.006	49.49	0.00
7.00	0.00	0.006	49.40	0.00
7.50	0.00	0.006	49.31	0.00
8.00	0.00	0.006	49.22	0.00
8.50	0.00	0.006	49.13	0.00
9.00	0.00	0.006	49.04	0.00
9.50	0.00	0.006	48.95	0.00
10.00	0.00	0.006	48.86	0.00
10.50	0.00	0.006	48.77	0.00
11.00	0.00	0.005	48.68	0.00
11.50	0.00	0.005	48.59	0.00
12.00	0.00	0.005	48.50	0.00

Summary for Pond 26P: Catch Basin

[57] Hint: Peaked at 66.36' (Flood elevation advised)

Inflow Area = 0.759 ac, 74.55% Impervious, Inflow Depth = 0.32" for 100-Year event
Inflow = 2.82 cfs @ 0.08 hrs, Volume= 0.020 af
Outflow = 2.82 cfs @ 0.08 hrs, Volume= 0.020 af, Atten= 0%, Lag= 0.0 min
Primary = 0.98 cfs @ 0.08 hrs, Volume= 0.007 af
Tertiary = 1.84 cfs @ 0.08 hrs, Volume= 0.013 af

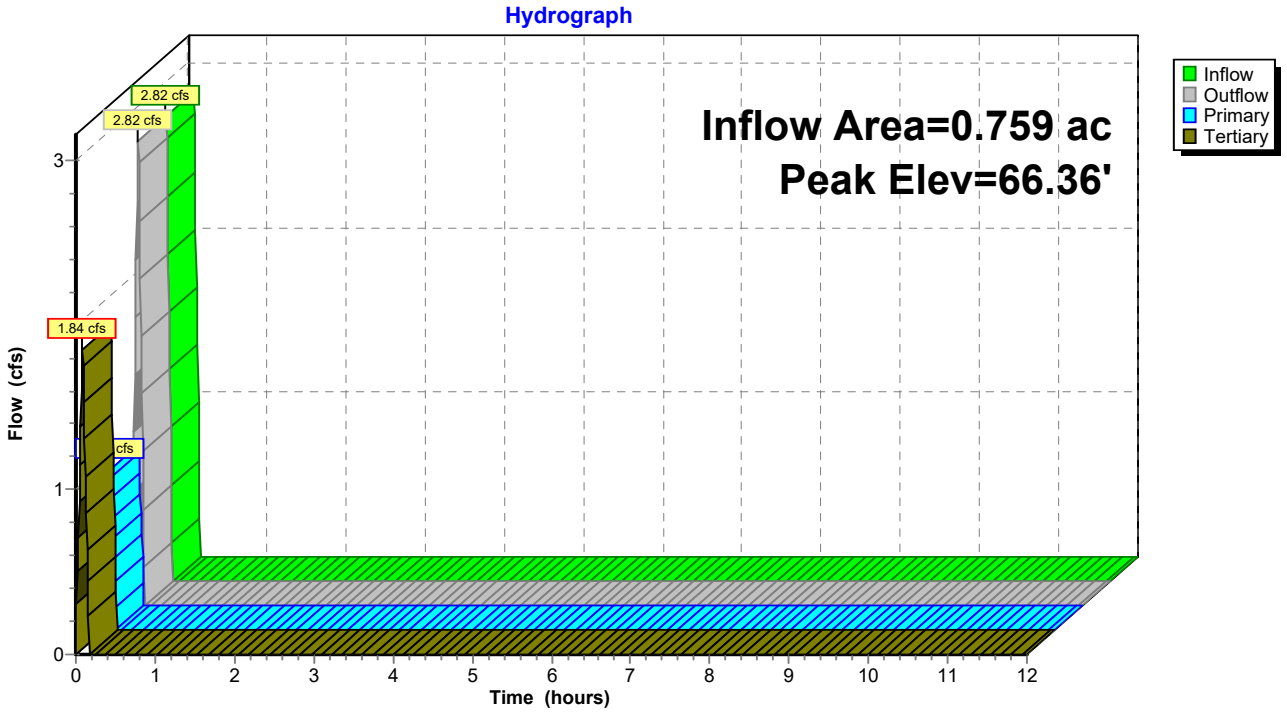
Routing by Stor-Ind method, Time Span= 0.00-12.00 hrs, dt= 0.01 hrs
Peak Elev= 66.36' @ 0.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	45.50'	**4.0" Round Culvert** L= 120.6' Ke= 0.500 Inlet / Outlet Invert= 45.50' / 44.29' S= 0.0100 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.09 sf
#2	Tertiary	44.91'	**12.0" Round Culvert** L= 97.4' Ke= 0.500 Inlet / Outlet Invert= 44.91' / 42.96' S= 0.0200 '/' Cc= 0.900 n= 0.120, Flow Area= 0.79 sf

Primary OutFlow Max=0.96 cfs @ 0.08 hrs HW=65.71' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.96 cfs @ 11.02 fps)

Tertiary OutFlow Max=1.82 cfs @ 0.08 hrs HW=65.71' (Free Discharge)
└**2=Culvert** (Barrel Controls 1.82 cfs @ 2.31 fps)

Pond 26P: Catch Basin



Hydrograph for Pond 26P: Catch Basin

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Tertiary (cfs)
0.00	**0.00**	**44.91**	**0.00**	**0.00**	**0.00**
0.50	**0.00**	**44.91**	**0.00**	**0.00**	**0.00**
1.00	0.00	44.91	0.00	0.00	0.00
1.50	0.00	44.91	0.00	0.00	0.00
2.00	0.00	44.91	0.00	0.00	0.00
2.50	0.00	44.91	0.00	0.00	0.00
3.00	0.00	44.91	0.00	0.00	0.00
3.50	0.00	44.91	0.00	0.00	0.00
4.00	0.00	44.91	0.00	0.00	0.00
4.50	0.00	44.91	0.00	0.00	0.00
5.00	0.00	44.91	0.00	0.00	0.00
5.50	0.00	44.91	0.00	0.00	0.00
6.00	0.00	44.91	0.00	0.00	0.00
6.50	0.00	44.91	0.00	0.00	0.00
7.00	0.00	44.91	0.00	0.00	0.00
7.50	0.00	44.91	0.00	0.00	0.00
8.00	0.00	44.91	0.00	0.00	0.00
8.50	0.00	44.91	0.00	0.00	0.00
9.00	0.00	44.91	0.00	0.00	0.00
9.50	0.00	44.91	0.00	0.00	0.00
10.00	0.00	44.91	0.00	0.00	0.00
10.50	0.00	44.91	0.00	0.00	0.00
11.00	0.00	44.91	0.00	0.00	0.00
11.50	0.00	44.91	0.00	0.00	0.00
12.00	0.00	44.91	0.00	0.00	0.00

User Inputs

Chamber Model:	DC-780
Outlet Control Structure:	No
Project Name:	Mcdonalds
Engineer:	Nadia Manzur n/a
Project Location:	California
Measurement Type:	Imperial
Required Storage Volume:	1413 cubic ft.
Stone Porosity:	40%
Stone Foundation Depth:	9 in.
Stone Above Chambers:	6 in.
Design Constraint Dimensions:	(20 ft. x 45 ft.)

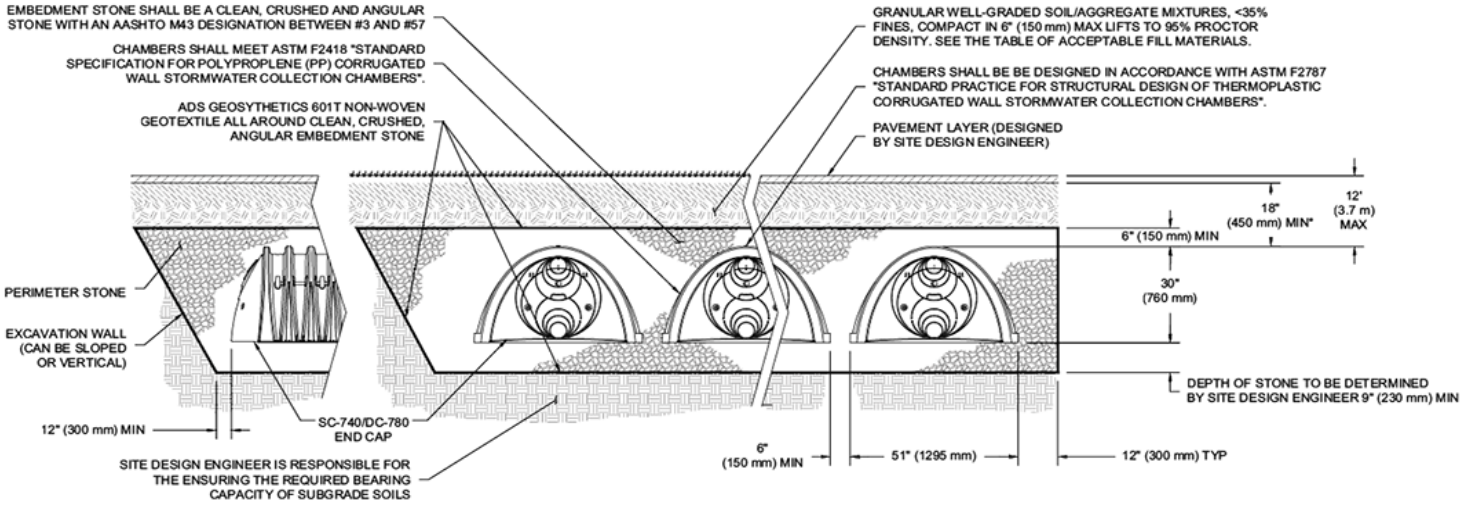
Results

System Volume and Bed Size

Installed Storage Volume:	1443.74 cubic ft.
Storage Volume Per Chamber:	46.20 cubic ft.
Number Of Chambers Required:	15
Number Of End Caps Required:	6
Chamber Rows:	3
Maximum Length:	43.11 ft.
Maximum Width:	15.75 ft.
Approx. Bed Size Required:	679.05 square ft.
Average Cover Over Chambers:	N/A .

System Components

Amount Of Stone Required:	69 cubic yards
Volume Of Excavation (Not Including Fill):	95 cubic yards
Total Non-woven Geotextile Required:	240 square yards
Woven Geotextile Required (excluding Isolator Row):	21 square yards
Woven Geotextile Required (Isolator Row):	25 square yards
Total Woven Geotextile Required:	46 square yards
Impervious Liner Required:	0 square yards



*MINIMUM COVER TO BOTTOM OF FLEXIBLE PAVEMENT. FOR UNPAVED INSTALLATIONS WHERE RUTTING FROM VEHICLES MAY OCCUR, INCREASE COVER TO 24" (600 mm).

User Inputs

Chamber Model:	DC-780
Outlet Control Structure:	No
Project Name:	Starbucks
Engineer:	Nadia Manzur n/a
Project Location:	California
Measurement Type:	Imperial
Required Storage Volume:	915 cubic ft.
Stone Porosity:	40%
Stone Foundation Depth:	9 in.
Stone Above Chambers:	6 in.
Design Constraint Dimensions:	(20 ft. x 30 ft.)

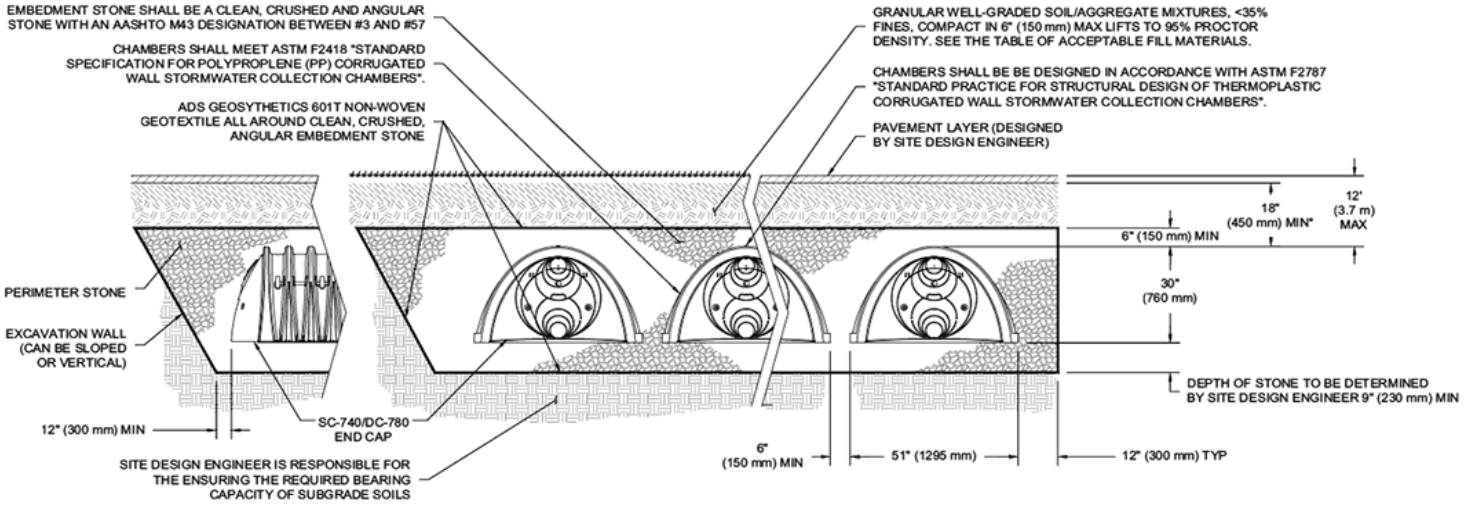
Results

System Volume and Bed Size

Installed Storage Volume:	941.16 cubic ft.
Storage Volume Per Chamber:	46.20 cubic ft.
Number Of Chambers Required:	9
Number Of End Caps Required:	6
Chamber Rows:	3
Maximum Length:	28.88 ft.
Maximum Width:	15.75 ft.
Approx. Bed Size Required:	454.88 square ft.
Average Cover Over Chambers:	N/A .

System Components

Amount Of Stone Required:	48 cubic yards
Volume Of Excavation (Not Including Fill):	64 cubic yards
Total Non-woven Geotextile Required:	166 square yards
Woven Geotextile Required (excluding Isolator Row):	21 square yards
Woven Geotextile Required (Isolator Row):	16 square yards
Total Woven Geotextile Required:	37 square yards
Impervious Liner Required:	0 square yards

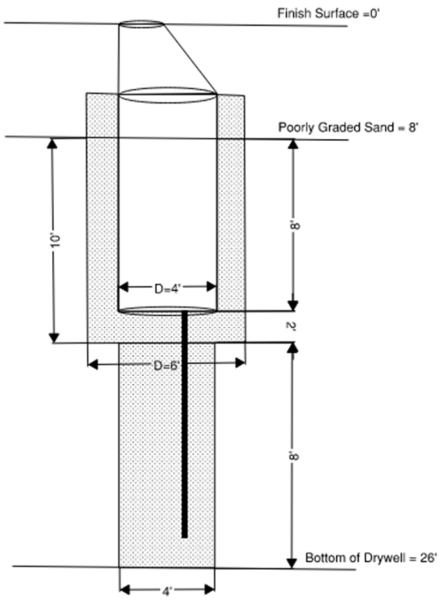


*MINIMUM COVER TO BOTTOM OF FLEXIBLE PAVEMENT. FOR UNPAVED INSTALLATIONS WHERE RUTTING FROM VEHICLES MAY OCCUR, INCREASE COVER TO 24" (600 mm).

Infiltration LID BMP – Dry wells

[1] $V_{ret} = (P_{design}/12*SA_{inf}*T_{fill}) + (SA_{reservoir}*d_{resevior}*n_{aggregate}) = X_1 + X_2$

BMP Type	DMA A	DMA B
[2] Design capture Volume, DCV (ft^3) See Form 4.21 Item 7	1,788	1,239
[3] Infiltration Rate of underlying soils (in/hr)	4.3	3.3
[4]Infiltration Safety Factor See TGD section 5.4.2 and Appendix D	2	2
[5] Design percolation rate (in/hr) P_{Design} = Item 2/ intem 3	2.15	1.65
[6]$SA_{inf, res}$= surface area (ft^2) for drywell	301.6	301.6
[7]Duration of storm when infiltration is occurring as basin is filling (hrs) ; T_{fill} (default is 3 hours)	3	3
[8]Drawdown time for stored runoff(hrs); $T_{drawdown}$ (default is 48 hours)	48	48
[9] X_1= total infiltrating volume after 3 hrs (cf)	162.10	124.40
[10] Depth (ft) of Drywell	16	16
[11] Porosity of Aggregate, if none then 1.0	0.4	0.4
[12]X_2 = Maximum volume of drywell (cf)	213	213
[13]Total Volume of Drywell, V_{ret} (cf) = item 9 + item 12	375	337.4
[14]Minimum Retention Volume = Item 2 – item 9	1,626	1,114
[15]Additional storage volume required= Item 14- item 12	1,413	902
[16] Underground Retention Volume (ft^3), ADS Stormtech System	1,444	941
[16] Design Drawdown Time for stored runoff (hrs), T_{design}= (Item 14)/ (Item 6 * (Item 5)/12)	30	27



Appendix F
Water Quality Management Plan

MOJAVE RIVER WATERSHED

Water Quality Management Plan

For:

McDonalds and Starbucks

APN: 0413-101-08-0-000, 0413-101-10-0-000, 0413-101-11-0-000, 0413-101-12-0-000, 0413-101-13-0-000, 0413-101-14-0-000

Prepared for:

Fountainhead Palace, LP

1401 Quail Street, Suite 100

Newport Beach, CA 92660

949-752-2515

Prepared by:

C3 Civil Engineering, LLC

10870 W Fairview Ave, Ste 102-1187

Boise, ID 83713

208-918-0998

Submittal Date: 12/06/2024

Revision No. and Date: Insert No and Current Revision Date

Revision No. and Date: Insert No and Current Revision Date

Revision No. and Date: Insert No and Current Revision Date

Revision No. and Date: Insert No and Current Revision Date

Revision No. and Date: Insert No and Current Revision Date

Final Approval Date:_____

Project Owner's Certification

This Mojave River Watershed Water Quality Management Plan (WQMP) has been prepared for Fountainhead Palace, LP by C3 Civil Engineering, LLC. The WQMP is intended to comply with the requirements of the San Bernardino County and the Phase II Small MS4 General Permit for the Mojave River Watershed. The undersigned, while it owns the subject property, is responsible for the implementation of the provisions of this plan and will ensure that this plan is amended as appropriate to reflect up-to-date conditions on the site consistent with the Phase II Small MS4 Permit and the intent of San Bernardino County (unincorporated areas of Phelan, Oak Hills, Spring Valley Lake and Victorville) and the incorporated cities of Hesperia and Victorville and the Town of Apple Valley. Once the undersigned transfers its interest in the property, its successors in interest and the city/county/town shall be notified of the transfer. The new owner will be informed of its responsibility under this WQMP. A copy of the approved WQMP shall be available on the subject site in perpetuity.

"I certify under a penalty of law that the provisions (implementation, operation, maintenance, and funding) of the WQMP have been accepted and that the plan will be transferred to future successors."

Project Data			
Permit/Application Number(s):	TBD	Grading Permit Number(s):	TBD
Tract/Parcel Map Number(s):	Block 275, Map No. 1, per map recorded in Book 12	Building Permit Number(s):	TBD
CUP, SUP, and/or APN (Specify Lot Numbers if Portions of Tract):			APN: 0413-101-08-0-000, 0413-101-10-0-000, 0413-101-11-0-000, 0413-101-12-0-000, 0413-101-13-0-000, 0413-101-14-0-000

Owner's Signature			
Owner Name: Fountainhead Palace, LP			
Title			
Company			
Address	1401 Quail Street, Suite 100, Newport Beach, CA 92660		
Email	vokuma@fountainheaddev.com		
Telephone #	949-752-2515		
Signature		Date	

Preparer's Certification

Project Data			
Permit/Application Number(s):	TBD	Grading Permit Number(s):	TBD
Tract/Parcel Map Number(s):	Block 275, Map No. 1, per map recorded in Book 12	Building Permit Number(s):	TBD
CUP, SUP, and/or APN (Specify Lot Numbers if Portions of Tract):			APN: 0413-101-08-0-000, 0413-101-10-0-000, 0413-101-11-0-000, 0413-101-12-0-000, 0413-101-13-0-000, 0413-101-14-0-000

"The selection, sizing and design of stormwater treatment and other stormwater quality and quantity control measures in this plan were prepared under my oversight and meet the requirements of the California State Water Resources Control Board Order No. 2013-0001-DWQ.

Engineer: Thomas Hawksworth		PE Stamp Below
Title	Principal	
Company	C3 Civil Engineering	
Address	10870 W Fairview Ave, Ste 102-1187, Boise, ID 83713	
Email	thomas@c3civileng.com	
Telephone #	208-918-0998	
Signature		
Date	12/06/2024	

Table of Contents

Section I Introduction

Section 1 Discretionary Permits 1-1

Section 2 Project Description 2-1

2.1 Project Information 2-1
2.2 Property Ownership / Management 2-2
2.3 Potential Stormwater Pollutants 2-3
2.4 Water Quality Credits 2-4

Section 3 Site and Watershed Description 3-1

Section 4 Best Management Practices 4-1

4.1 Source Control and Site Design BMPs 4-1
4.1.1 Source Control BMPs 4-1
4.1.2 Site Design BMPs 4-6
4.2 Treatment BMPs 4-7
4.3 Project Conformance Analysis 4-12
4.3.1 Site Design BMP 4-14
4.3.2 Infiltration BMP 4-16
4.3.4 Biotreatment BMP 4-19
4.3.5 Conformance Summary 4-23
4.3.6 Hydromodification Control BMP 4-24
4.4 Alternative Compliance Plan (if applicable) 4-25

Section 5 Inspection & Maintenance Responsibility Post Construction BMPs 5-1

Section 6 Site Plan and Drainage Plan 6-1

6.1. Site Plan and Drainage Plan 6-1
6.2 Electronic Data Submittal 6-1

Forms

Form 1-1 Project Information 1-1
Form 2.1-1 Description of Proposed Project 2-1
Form 2.2-1 Property Ownership/Management 2-2
Form 2.3-1 Pollutants of Concern 2-3
Form 2.4-1 Water Quality Credits 2-4
Form 3-1 Site Location and Hydrologic Features 3-1
Form 3-2 Hydrologic Characteristics 3-2
Form 3-3 Watershed Description 3-3
Form 4.1-1 Non-Structural Source Control BMP 4-2
Form 4.1-2 Structural Source Control BMP 4-4
Form 4.1-3 Site Design Practices Checklist 4-6
Form 4.2-1 LID BMP Performance Criteria for Design Capture Volume 4-7
Form 4.2-2 Summary of Hydromodification Assessment 4-8
Form 4.2-3 Hydromodification Assessment for Runoff Volume 4-9
Form 4.2-4 Hydromodification Assessment for Time of Concentration 4-10

Form 4.2-5 Hydromodification Assessment for Peak Runoff 4-11
Form 4.3-1 Infiltration BMP Feasibility..... 4-13
Form 4.3-2 Site Design BMP 4-14
Form 4.3-3 Infiltration LID BMP 4-17
Form 4.3-4 Selection and Evaluation of Biotreatment BMP 4-19
Form 4.3-5 Volume Based Biotreatment – Bioretention and Planter Boxes w/Underdrains .. 4-20
Form 4.3-6 Volume Based Biotreatment- Constructed Wetlands and Extended Detention ... 4-21
Form 4.3-7 Flow Based Biotreatment..... 4-22
Form 4.3-8 Conformance Summary and Alternative Compliance Volume Estimate 4-23
Form 4.3-9 Hydromodification Control BMP 4-24
Form 5-1 BMP Inspection and Maintenance..... 5-1

Appendix A: Geotechnical Engineering Investigation Report

Appendix B: Site Plan

Appendix C: Calculations and Design

Appendix D: Educational Materials

Section I – Introduction

This WQMP template has been prepared specifically for the Phase II Small MS4 General Permit in the Mojave River Watershed. This location is within the jurisdiction of the Lahontan Regional Water Quality Control Board (LRWQCB). This document should not be confused with the WQMP template for the Santa Ana Phase I area of San Bernardino County.

WQMP preparers must refer to the MS4 Permit for the Mojave Watershed WQMP template and Technical Guidance (TGD) document found at: http://cms.sbcounty.gov/dpw/Land/NPDES.aspx to find pertinent arid region and Mojave River Watershed specific references and requirements.

Section 1 Discretionary Permit(s)

Form 1-1 Project Information					
Project Name	Fountainhead - Hesperia				
Project Owner Contact Name:	Vasanthi Okuma				
Mailing Address:	1401 Quail Street, Suite 100 Newport Beach, CA 92660	E-mail Address:	vokuma@fountainheaddev.com	Telephone:	949-752-2515
Permit/Application Number(s):	TBD		Tract/Parcel Map Number(s):	1,1A,2,2A,3A,4,4A,5,5A	
Additional Information/ Comments:					
Description of Project:	Proposed improvements begin with demolition of current buildings and paving. The project improvements will include two drive-thru establishments, one coffee and one fast food. A drive aisle will traverse between Main Street and Walnut Street between the two drive-thru establishments and will provide adequate points of access for both. New paving and landscaping will accompany the project to fit zone requirements.				
Provide summary of Conceptual WQMP conditions (if previously submitted and approved). Attach complete copy.	This report is a conceptual WQMP so no conditions are available at the time of this report.				

Section 2 Project Description

2.1 Project Information

The WQMP shall provide the information listed below. The information provided for Conceptual/ Preliminary WQMP should give sufficient detail to identify the major proposed site design and LID BMPs and other anticipated water quality features that impact site planning. Final Project WQMP must specifically identify all BMP incorporated into the final site design and provide other detailed information as described herein.

The purpose of this information is to help determine the applicable development category, pollutants of concern, watershed description, and long term maintenance responsibilities for the project, and any applicable water quality credits. This information will be used in conjunction with the information in Section 3, Site Description, to establish the performance criteria and to select the LID BMP or other BMP for the project or other alternative programs that the project will participate in, which are described in Section 4.

2.1.1 Project Sizing Categorization

If the Project is greater than 5,000 square feet, and not on the excluded list as found on Section 1.4 of the TGD, the Project is a Regulated Development Project.

If the Project is creating and/or replacing greater than 2,500 square feet but less than 5,000 square feet of impervious surface area, then it is considered a Site Design Only project. This criterion is applicable to all development types including detached single family homes that create and/or replace greater than 2,500 square feet of impervious area and are not part of a larger plan of development.

Form 2.1-1 Description of Proposed Project

1 Regulated Development Project Category (Select all that apply):

☐ #1 New development involving the creation of 5,000 ft^2 or more of impervious surface collectively over entire site	☒ #2 Significant re-development involving the addition or replacement of 5,000 ft^2 or more of impervious surface on an already developed site	☐ #3 Road Project – any road, sidewalk, or bicycle lane project that creates greater than 5,000 square feet of contiguous impervious surface	☐ #4 LUPs – linear underground/overhead projects that has a discrete location with 5,000 sq. ft. or more new constructed impervious surface

☐ Site Design Only (Project Total Square Feet > 2,500 but < 5,000 sq.ft.) *Will require source control Site Design Measures. Use the "PCMP" Template. Do not use this WQMP Template.*

2 Project Area (ft2):	69,034	**3** Number of Dwelling Units:	N/A	**4** SIC Code:	5812-Eating Places

5 Is Project going to be phased? Yes ☐ No ☒ *If yes, ensure that the WQMP evaluates each phase as a distinct DA, requiring LID BMPs to address runoff at time of completion.*

2.2 Property Ownership/Management

Describe the ownership/management of all portions of the project and site. State whether any infrastructure will transfer to public agencies (City, County, Caltrans, etc.) after project completion. State if a homeowners or property owners association will be formed and be responsible for the long-term maintenance of project stormwater facilities. Describe any lot-level stormwater features that will be the responsibility of individual property owners.

Form 2.2-1 Property Ownership/Management

Describe property ownership/management responsible for long-term maintenance of WQMP stormwater facilities:

The Owner is responsible for ensuring that BMPs are maintained by the tenant.

Current Owner: Fountainhead Palace, LP

Attn: Vasanthi Okuma

1401 Quail Run Street, SUite 100, Newport Beach, Ca 92660

V okuma@fountainheaddev.com

(949) 752-2515

2.3 Potential Stormwater Pollutants

Best Management Practices (BMP) measures for pollutant generating activities and sources shall be designed consistent with recommendations from the CASQA Stormwater BMP Handbook for New Development and Redevelopment (or an equivalent manual). Pollutant generating activities must be considered when determining the overall pollutants of concern for the Project as presented in Form 2.3-1.

Determine and describe expected stormwater pollutants of concern based on land uses and site activities (refer to Table 3-2 in the TGD for WQMP).

Form 2.3-1 Pollutants of Concern

Pollutant	Please check: E=Expected, N=Not Expected		Additional Information and Comments
Pathogens (Bacterial / Virus)	E ☒	N ☐	
Nutrients - Phosphorous	E ☒	N ☐	
Nutrients - Nitrogen	E ☒	N ☐	
Noxious Aquatic Plants	E ☒	N ☐	
Sediment	E ☒	N ☐	
Metals	E ☒	N ☐	
Oil and Grease	E ☒	N ☐	
Trash/Debris	E ☒	N ☐	
Pesticides / Herbicides	E ☒	N ☐	
Organic Compounds	E ☒	N ☐	
Other:	E ☐	N ☐	
Other:	E ☐	N ☐	
Other:	E ☐	N ☐	

Section 3 Site and Watershed Description

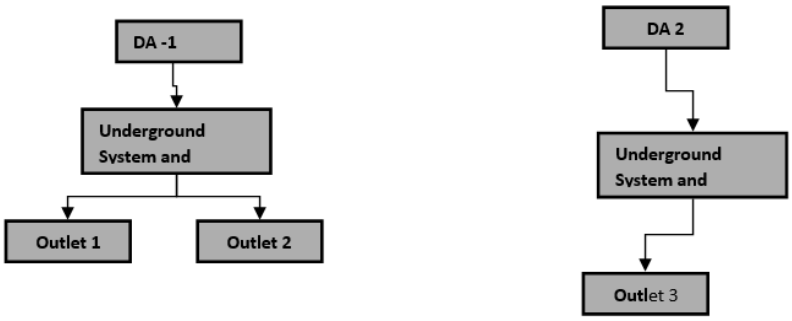
Describe the project site conditions that will facilitate the selection of BMPs through an analysis of the physical conditions and limitations of the site and its receiving waters. Identify distinct drainage areas (DA) that collect flow from a portion of the site and describe how runoff from each DA (and sub-watershed Drainage Management Areas (DMAs)) is conveyed to the site outlet(s). Refer to Section 3.2 in the TGD for WQMP. The form below is provided as an example. Then complete Forms 3.2 and 3.3 for each DA on the project site. ***If the project has more than one drainage area for stormwater management, then complete additional versions of these forms for each DA / outlet. A map presenting the DMAs must be included as an appendix to the WQMP document.***

Form 3-1 Site Location and Hydrologic Features

Site coordinates *take GPS measurement at approximate center of site*	Latitude 34.423163	Longitude -117.316317	Thomas Bros Map page

1 San Bernardino County climatic region: ☒ Desert

2 Does the site have more than one drainage area (DA): Yes☒ No☐ *If no, proceed to Form 3-2. If yes, then use this form to show a conceptual schematic describing DMAs and hydrologic feature connecting DMAs to the site outlet(s). An example is provided below that can be modified for proposed project or a drawing clearly showing DMA and flow routing may be attached*



Conveyance	Briefly describe on-site drainage features to convey runoff that is not retained within a DMA
DA1 to Outlet 1	Unfiltered flow from underground system and dry-well will discharge out of storm drain and daylight out of an existing catch basin on Main Street.
DA1 to Outlet 2	Unfiltered flow from underground system and dry-well will discharge out of storm drain and daylight out of an existing catch basin on Main Street.
DA2 to Outlet 3	Unfiltered flow from underground system and dry-well will discharge out of storm drain and daylight out of an existing catch basin on Seventh Avenue.

Form 3-2 Existing Hydrologic Characteristics for Drainage Area 1

For Drainage Area 1's sub-watershed DMA, provide the following characteristics	DMA A	DMA B	DMA C	DMA D
1 DMA drainage area (ft^2)	7229.64	24795	39340	
2 Existing site impervious area (ft^2)	2049	24725	20847	
3 Antecedent moisture condition *For desert areas, use http://www.sbcounty.gov/dpw/floodcontrol/pdf/20100412_map.pdf*	II	II	II	
4 Hydrologic soil group *Refer to County Hydrology Manual Addendum for Arid Regions – http://www.sbcounty.gov/dpw/floodcontrol/pdf/20100412_addendum.pdf*	B	B	B	
5 Longest flowpath length (ft)	152	137	305	
6 Longest flowpath slope (ft/ft)	0.02	0.013	0.017	
7 Current land cover type(s) *Select from Fig C-3 of Hydrology Manual*	Commercial landscaping	Commercial landscaping	Vacant/Barren	
8 Pre-developed pervious area condition: *Based on the extent of wet season vegetated cover good >75%; Fair 50-75%; Poor <50%* ***Attach photos of site to support rating***	Poor	Poor	Poor	

Form 3-2 Existing Hydrologic Characteristics for Drainage Area 1 (use only as needed for additional DMA w/in DA 1)				
For Drainage Area 1's sub-watershed DMA, provide the following characteristics	DMA E	DMA F	DMA G	DMA H
1 DMA drainage area (ft^2)				
2 Existing site impervious area (ft^2)				
3 Antecedent moisture condition *For desert areas, use http://www.sbcounty.gov/dpw/floodcontrol/pdf/20100412_map.pdf*				
4 Hydrologic soil group *County Hydrology Manual Addendum for Arid Regions – http://www.sbcounty.gov/dpw/floodcontrol/pdf/20100412_addendum.pdf*				
5 Longest flowpath length (ft)				
6 Longest flowpath slope (ft/ft)				
7 Current land cover type(s) *Select from Fig C-3 of Hydrology Manual*				
8 Pre-developed pervious area condition: *Based on the extent of wet season vegetated cover good >75%; Fair 50-75%; Poor <50% Attach photos of site to support rating*				

Form 3-3 Watershed Description for Drainage Area

Receiving waters Refer to SWRCB site: http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml	Mojave River (Mojave Forks Reservoir outlet to Upper Narrows)
Applicable TMDLs *http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml*	None.
303(d) listed impairments *http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml*	Fluoride (76107), Sodium (102499), Sulfates (71643)
Environmentally Sensitive Areas (ESA) *Refer to Watershed Mapping Tool –* *http://sbcounty.permitrack.com/WAP*	None.
Hydromodification Assessment	☐ Yes *Complete Hydromodification Assessment. Include Forms 4.2-2 through Form 4.2-5 and Hydromodification BMP Form 4.3-9 in submittal* ☒ No

Section 4 Best Management Practices (BMP)

4.1 Source Control BMPs and Site Design BMP Measures

The information and data in this section are required for both Regulated Development and Site Design Only Projects. Source Control BMPs and Site Design BMP Measures are the basis of site-specific pollution management.

4.1.1 Source Control BMPs

Non-structural and structural source control BMP are required to be incorporated into all new development and significant redevelopment projects. Form 4.1-1 and 4.1-2 are used to describe specific source control BMPs used in the WQMP or to explain why a certain BMP is not applicable. Table 7-3 of the TGD for WQMP provides a list of applicable source control BMP for projects with specific types of potential pollutant sources or activities. The source control BMP in this table must be implemented for projects with these specific types of potential pollutant sources or activities.

The preparers of this WQMP have reviewed the source control BMP requirements for new development and significant redevelopment projects. The preparers have also reviewed the specific BMP required for project as specified in Forms 4.1-1 and 4.1-2. All applicable non-structural and structural source control BMP shall be implemented in the project.

The identified list of source control BMPs correspond to the CASQA Stormwater BMP Handbook for New Development and Redevelopment.

Form 4.1-1 Non-Structural Source Control BMPs

Identifier	Name	Check One		Describe BMP Implementation OR, if not applicable, state reason
		Included	Not Applicable	
N1	Education of Property Owners, Tenants and Occupants on Stormwater BMPs	☒	☐	Property owner(s) are to familiarize themselves with the BMP's included in this document, and are to notify tenants of their responsibilities and requirements of this document.
N2	Activity Restrictions	☒	☐	Restrictions include: outdoor food preparation, vehicle maintenance, washing, and pesticide application by any other person than an applicator certified by the California Department of Pesticide Regulation.
N3	Landscape Management BMPs	☒	☐	A landscape maintenance company will be retained by the property owner(s) to service all site landscaping and irrigation. Site trees and shrubs are to be trimmed as necessary and all wastes disposed of offsite. Mulch that has been disturbed is to be replaced. Ongoing maintenance shall be consistent with local guidelines, and fertilizer and pesticide usage shall be consistent with the instructions contained on product labels and with the regulations administered by the State Department of Pesticide Regulation. Any breaks or leaks in piping must be repaired within 5 business days of report to the landscaper. Scrap pipe and extra materials shall be recycled if possible. All non-recycleable wastes shall be landfilled. The property owner(s) are responsible for the maintenance of the underground basins.
N4	BMP Maintenance	☒	☐	The isolator row of the underground basin shall be inspected at the beginning of the wet and dry seasons or more frequently as needed and shall be cleaned out when the average depth of sediment exceeds 3" throughout the length of the isolator row using the Jetvac process per manufacturer's recommendations.The drywells shall be inspected at the beginning of the wet and dry seasons or more frequently as needed and shall be cleaned out yearly. If inspection indicates the need for maintenance access is necessary, OSHA rules for contained space entries shall be followed.
N5	Title 22 CCR Compliance (How development will comply)	☐	☒	No hazardous materials onsite.

Form 4.1-1 Non-Structural Source Control BMPs				
N6	Local Water Quality Ordinances	☒	☐	The property owner(s) and tenants are responsible to comply with all City of Hesperia Water Quality Ordinances.
N7	Spill Contingency Plan	☐	☒	No hazardous materials onsite.
N8	Underground Storage Tank Compliance	☐	☒	No underground storage tanks as part of this project.
N9	Hazardous Materials Disclosure Compliance	☐	☒	No hazardous materials onsite.

Form 4.1-1 Non-Structural Source Control BMPs

Identifier	Name	Check One		Describe BMP Implementation OR, if not applicable, state reason
		Included	Not Applicable	
N10	Uniform Fire Code Implementation	☐	☒	No hazardous materials onsite.
N11	Litter/Debris Control Program	☒	☐	A landscape maintenance company will be retained by the property owner(s) to provide litter control services, and will ensure that the site is trash free, including the inside of the trash enclosure. This will occur on a monthly basis or more frequently as directed by volume of trash. They are to report to the owner(s) if lids to the trash bins are broken.
N12	Employee Training	☒	☐	The tenants are to schedule an annual seminar and refresher course to review Source Control BMPs based on this document which can be conducted by a designated representative.
N13	Housekeeping of Loading Docks	☐	☒	No loading docks are included in the project.
N14	Catch Basin Inspection Program	☒	☐	The property owner(s) will ensure that the drop inlets are inspected after the first storm event of the rainy season and two times per month thereafter until the end of the rainy season. They are to be cleaned out as necessary or when filled to 25% capacity
N15	Vacuum Sweeping of Private Streets and Parking Lots	☒	☐	The property owner(s) will contract with a sweeping company to to complete this BMP. Sweeping will occur annually, prior to the rainy season.
N16	Other Non-structural Measures for Public Agency Projects	☐	☒	This is not a Public Agency Project.
N17	Comply with all other applicable NPDES permits	☒	☐	The property owner(s) shall comply with all other applicable NPDES permits.

Form 4.1-2 Structural Source Control BMPs

Identifier	Name	Check One		Describe BMP Implementation OR, If not applicable, state reason
		Included	Not Applicable	
S1	Provide storm drain system stencilling and signage (CASQA New Development BMP Handbook SD-13)	☒	☐	The pavement adjacent to the drop inlets will be painted with a "No Dumping, Drains to River" sign or equivalent.
S2	Design and construct outdoor material storage areas to reduce pollution introduction (CASQA New Development BMP Handbook SD-34)	☐	☒	No outdoor material storage areas are included as part of the project.
S3	Design and construct trash and waste storage areas to reduce pollution introduction (CASQA New Development BMP Handbook SD-32)	☒	☐	The trash enclosures are per City standards.
S4	Use efficient irrigation systems & landscape design, water conservation, smart controllers, and source control (Statewide Model Landscape Ordinance; CASQA New Development BMP Handbook SD-12)	☒	☐	Project plan designs maximize natural water storage and infiltration opportunities, and protect slopes and channels. Plants have been grouped with similar water requirements in order to reduce excess irrigation runoff and promote surface filtration. Landscaping correlates to the climate, soil, related natural resources and existing vegetation of the site, as well as the type of development proposed. Irrigation methods have been utilized to minimize runoff of excess irrigation water across impervious surfaces and into the underground basin. Mulch has been used to minimize sediment run-off and maintain soil infiltration capacity. A programmable controller will be used that includes a weather sensor and flow sensor to eliminate irrigation during and immediately after rain events and in the event of a broken line. Scrap pipe and extra materials shall be recycled if possible. All non-recyclable wastes shall be landfilled. Hazardous wastes shall be disposed of per County hazardous material disposal regulations.
S5	Finish grade of landscaped areas at a minimum of 1-2 inches below top of curb, sidewalk, or pavement	☒	☐	The finished grade of landscape areas will be 1-2" below adjacent grades.
S6	Protect slopes and channels and provide energy dissipation (CASQA New Development BMP Handbook SD-10)	☐	☒	No significant slopes or channels are proposed. All areas that are not paved will be planted and irrigated.
S7	Covered dock areas (CASQA New Development BMP Handbook SD-31)	☐	☒	No loading docks are included in the project.

S8	Covered maintenance bays with spill containment plans (CASQA New Development BMP Handbook SD-31)	☐	☒	No maintenance bays are included in the project.
S9	Vehicle wash areas with spill containment plans (CASQA New Development BMP Handbook SD-33)	☐	☒	No wash areas are proposed.
S10	Covered outdoor processing areas (CASQA New Development BMP Handbook SD-36)	☐	☒	No outdoor processing areas are included in the project.

Form 4.1-2 Structural Source Control BMPs

Identifier	Name	Check One		Describe BMP Implementation OR, If not applicable, state reason
		Included	Not Applicable	
S11	Equipment wash areas with spill containment plans (CASQA New Development BMP Handbook SD-33)	☐	☒	No equipment wash areas are included in the project.
S12	Fueling areas (CASQA New Development BMP Handbook SD-30)	☐	☒	No fueling areas are included in the project.
S13	Hillside landscaping (CASQA New Development BMP Handbook SD-10)	☐	☒	No hillsides are proposed as part of the project.
S14	Wash water control for food preparation areas	☒	☐	There will be a contained area or sink with sanitary sewer connection for disposal of wash waters containing kitchen and food waste. No food preparation will take place outdoors. Adequate signs shall be provided and appropriately placed stating the prohibition of discharging wash water to the storm drain system.
S15	Community car wash racks (CASQA New Development BMP Handbook SD-33)	☐	☒	No community car wash racks are included in the project.

4.1.2 Site Design BMPs

As part of the planning phase of a project, the site design practices associated with new LID requirements in the Phase II Small MS4 Permit must be considered. Site design BMP measures can result in smaller Design Capture Volume (DCV) to be managed by both LID and hydromodification control BMPs by reducing runoff generation.

As is stated in the Permit, it is necessary to evaluate site conditions such as soil type(s), existing vegetation and flow paths will influence the overall site design.

Describe site design and drainage plan including:

- A narrative of site design practices utilized or rationale for not using practices
- A narrative of how site plan incorporates preventive site design practices
- Include an attached Site Plan layout which shows how preventative site design practices are included in WQMP

Refer to Section 5.2 of the TGD for WQMP for more details.

Form 4.1-3 Site Design Practices Checklist

Site Design Practices *If yes, explain how preventative site design practice is addressed in project site plan. If no, other LID BMPs must be selected to meet targets*
Minimize impervious areas: Yes ☒ No ☐ Explanation: Only 25% of the site is pervious as the site was designed to minimize impervious area by planning for hardscape for only areas required by city code.
Maximize natural infiltration capacity; Including improvement and maintenance of soil: Yes ☒ No ☐ Explanation: The drywells will promote infiltration of runoff.
Preserve existing drainage patterns and time of concentration: Yes ☒ No ☐ Explanation: Though time of concentration has been shortened due to the development, existing drainage patterns have been preserved to the maximum extent possible.
Disconnect impervious areas. Including rerouting of rooftop drainage pipes to drain stormwater to storage or infiltration BMPs instead of to storm drain : Yes ☐ No ☒ Explanation: All runoff is directed will sheetflow via curb and gutter, captured by proposed grated inlets.
Use of Porous Pavement.: Yes ☐ No ☒ Explanation: The project site will not be utilizing porous pavement.
Protect existing vegetation and sensitive areas: Yes ☐ No ☒ Explanation: The entire project area will be disturbed and graded to accommodate the development. Protecting vegetation is not feasible.
Re-vegetate disturbed areas. Including planting and preservation of drought tolerant vegetation. : Yes ☒ No ☐ Explanation: Pervious areas will be landcaped.

Minimize unnecessary compaction in stormwater retention/infiltration basin/trench areas: Yes ☒ No ☐ Explanation: The underground basins and drywells are proposed under proposed pavement. The contractor shall avoid unecessary compaction of the basin bottom during construction.
Utilize naturalized/rock-lined drainage swales in place of underground piping or imperviously lined swales: Yes ☐ No ☒ Explanation: Due to the nature of the site, all runoff is directed to the underground basin as sheet flow via curb and gutter, captured by proposed grated inlets. From the grated inlet, it is then piped via storm drain into the underground basin.
Stake off areas that will be used for landscaping to minimize compaction during construction : Yes ☒ No ☐ Explanation: Unnecessary compaction will be minimized in landscaped areas around the perimeter of the project.
Use of Rain Barrels and Cisterns, Including the use of on-site water collection systems.: Yes ☐ No ☒ Explanation: This project site wil not have on-site water collection systems, such as rain barrels.
Stream Setbacks. Includes a specified distance from an adjacent steam: : Yes ☐ No ☒ Explanation: There are no stream setbacks on this site.

It is noted that, in the Phase II Small MS4 Permit, site design elements for green roofs and vegetative swales are required. Due to the local climatology in the Mojave River Watershed, proactive measures are taken to maximize the amount of drought tolerant vegetation. It is not practical in this region to have green roofs or vegetative swales. As part of site design the project proponent should utilize locally recommended vegetation types for landscaping. Typical landscaping recommendations are found in following local references:

San Bernardino County Special Districts:

Guide to High Desert Landscaping -
http://www.specialdistricts.org/Modules/ShowDocument.aspx?documentid=795

Recommended High-Desert Plants -
http://www.specialdistricts.org/modules/showdocument.aspx?documentid=553

Mojave Water Agency:

Desert Ranch: http://www.mojavewater.org/files/desertranchgardenprototype.pdf

Summertree: http://www.mojavewater.org/files/Summertree-Native-Plant-Brochure.pdf

Thornless Garden: http://www.mojavewater.org/files/thornlessgardenprototype.pdf

Mediterranean Garden: http://www.mojavewater.org/files/mediterraneangardenprototype.pdf

Lush and Efficient Garden: http://www.mojavewater.org/files/lushandefficientgardenprototype.pdf

Alliance for Water Awareness and Conservation (AWAC) outdoor tips – http://hdawac.org/save-outdoors.html

4.2 Treatment BMPs

After implementation and design of both Source Control BMPs and Site Design BMP measures, any remaining runoff from impervious DMAs must be directed to one or more on-site, treatment BMPs (LID or biotreatment) designed to infiltrate, evaportranspire, and/or bioretain the amount of runoff specified in Permit Section E.12.e (ii)(c) Numeric Sizing Criteria for Storm Water Retention and Treatment.

4.2.1 Project Specific Hydrology Characterization

The purpose of this section of the Project WQMP is to establish targets for post-development hydrology based on performance criteria specified in Section E.12.e.ii.c and Section E.12.f of the Phase II Small MS4 Permit. These targets include runoff volume for water quality control (referred to as LID design capture volume), and runoff volume, time of concentration, and peak runoff for protection from hydromodification.

If the project has more than one outlet for stormwater runoff, then complete additional versions of these forms for each DA / outlet.

It is noted that in the Phase II Small MS4 Permit jurisdictions, the LID BMP Design Capture Volume criteria is based on the 2-year rain event. The hydromodification performance criterion is based on the 10-year rain event.

Methods applied in the following forms include:

- For LID BMP Design Capture Volume (DCV), San Bernardino County requires use of the P_6 method (Form 4.2-1) For pre- and post-development hydrologic calculation, San Bernardino County requires the use of the Rational Method (San Bernardino County Hydrology Manual Section D). Forms 4.2-2 through Form 4.2-5 calculate hydrologic variables including runoff volume, time of concentration, and peak runoff from the project site pre- and post-development using the Hydrology Manual Rational Method approach. For projects greater than 640 acres (1.0 mi^2), the Rational Method and these forms should not be used. For such projects, the Unit Hydrograph Method (San Bernardino County Hydrology Manual Section E) shall be applied for hydrologic calculations for hydromodification performance criteria.

Refer to Section 4 in the TGD for WQMP for detailed guidance and instructions.

Form 4.2-1 LID BMP Performance Criteria for Design Capture Volume (DA 1)

1 Project area DA 2 (ft^2):	2 Imperviousness after applying preventative site design practices (Imp%):	3 Runoff Coefficient (Rc):
36,055	79.0%	0.59 *$R_c = 0.858(Imp\%)^{\wedge 3}-0.78(Imp\%)^{\wedge 2}+0.774(Imp\%)+0.04$*

4 Determine 1-hour rainfall depth for a 2-year return period $P_{2yr\text{-}1hr}$ (in): 0.41 http://hdsc.nws.noaa.gov/hdsc/pfds/sa/sca_pfds.html

5 Compute P_6, Mean 6-hr Precipitation (inches): 0.516

*P_6 = Item 4 *C_1, where C_1 is a function of site climatic region specified in Form 3-1 Item 1 (Valley = 1.4807; Mountain = 1.909; Desert = 1.2371)*

6 Drawdown Rate

Use 48 hours as the default condition. Selection and use of the 24 hour drawdown time condition is subject to approval by the local jurisdiction. The necessary BMP footprint is a function of drawdown time. While shorter drawdown times reduce the performance criteria for LID BMP design capture volume, the depth of water that can be stored is also reduced.

24-hrs ☐
48-hrs ■

7 Compute design capture volume, DCV (ft^3): 1,788

*DCV = 1/12 * [Item 1* Item 3 *Item 5 * C_2], where C_2 is a function of drawdown rate (24-hr = 1.582; 48-hr = 1.963)*
Compute separate DCV for each outlet from the project site per schematic drawn in Form 3-1 Item 2

Form 4.2-1 LID BMP Performance Criteria for Design Capture Volume (DA 2)

1 Project area DA 2 (ft^2):	2 Imperviousness after applying preventative site design practices (Imp%):	3 Runoff Coefficient (Rc):
32,978	64.4	0.44 *$R_c = 0.858(Imp\%)^{\wedge 3}-0.78(Imp\%)^{\wedge 2}+0.774(Imp\%)+0.04$*

4 Determine 1-hour rainfall depth for a 2-year return period $P_{2yr\text{-}1hr}$ (in): 0.41 http://hdsc.nws.noaa.gov/hdsc/pfds/sa/sca_pfds.html

5 Compute P_6, Mean 6-hr Precipitation (inches): 0.516

*P_6 = Item 4 *C_1, where C_1 is a function of site climatic region specified in Form 3-1 Item 1 (Valley = 1.4807; Mountain = 1.909; Desert = 1.2371)*

6 Drawdown Rate

Use 48 hours as the default condition. Selection and use of the 24 hour drawdown time condition is subject to approval by the local jurisdiction. The necessary BMP footprint is a function of drawdown time. While shorter drawdown times reduce the performance criteria for LID BMP design capture volume, the depth of water that can be stored is also reduced.

24-hrs ☐
48-hrs ■

7 Compute design capture volume, DCV (ft^3): 1,236

*DCV = 1/12 * [Item 1* Item 3 *Item 5 * C_2], where C_2 is a function of drawdown rate (24-hr = 1.582; 48-hr = 1.963)*
Compute separate DCV for each outlet from the project site per schematic drawn in Form 3-1 Item 2

Form 4.2-3 Hydromodification Assessment for Runoff Volume (DA 1)

Weighted Curve Number Determination for: Pre-developed DA	DMA A	DMA B	DMA C	DMA D	DMA E	DMA F	DMA G	DMA H
1a Land Cover type								
2a Hydrologic Soil Group (HSG)								
3a DMA Area, ft^2 *sum of areas of DMA should equal area of DA*								
4a Curve Number (CN) *use Items 1 and 2 to select the appropriate CN from Appendix C-2 of the TGD for WQMP*								
Weighted Curve Number Determination for: Post-developed DA	DMA A	DMA B	DMA C	DMA D	DMA E	DMA F	DMA G	DMA H
1b Land Cover type								
2b Hydrologic Soil Group (HSG)								
3b DMA Area, ft^2 *sum of areas of DMA should equal area of DA*								
4b Curve Number (CN) *use Items 5 and 6 to select the appropriate CN from Appendix C-2 of the TGD for WQMP*								

5 Pre-Developed area-weighted CN:	**7** Pre-developed soil storage capacity, S (in): *S = (1000 / Item 5) - 10*	**9** Initial abstraction, I_a (in): *I_a = 0.2 * Item 7*
6 Post-Developed area-weighted CN:	**8** Post-developed soil storage capacity, S (in): *S = (1000 / Item 6) - 10*	**10** Initial abstraction, I_a (in): *I_a = 0.2 * Item 8*

11 Precipitation for 10 yr, 24 hr storm (in):
Go to: http://hdsc.nws.noaa.gov/hdsc/pfds/sa/sca_pfds.html

12 Pre-developed Volume (ft^3):
*V_{pre} =(1 / 12) * (Item sum of Item 3) * [(Item 11 – Item 9)^2 / ((Item 11 – Item 9 + Item 7)*

13 Post-developed Volume (ft^3):
*V_{pre} =(1 / 12) * (Item sum of Item 3) * [(Item 11 – Item 10)^2 / ((Item 11 – Item 10 + Item 8)*

14 Volume Reduction needed to meet hydromodification requirement, (ft^3):
*Vhydro = (Item 13 * 0.95) – Item 12*

Form 4.2-4 Hydromodification Assessment for Time of Concentration (DA 1)

Compute time of concentration for pre and post developed conditions for each DA *(For projects using the Hydrology Manual complete the form below)*

Variables	Pre-developed DA1 *Use additional forms if there are more than 4 DMA*				Post-developed DA1 *Use additional forms if there are more than 4 DMA*			
	DMA A	DMA B	DMA C	DMA D	DMA A	DMA B	DMA C	DMA D
1 Length of flowpath (ft) *Use Form 3-2 Item 5 for pre-developed condition*								
2 Change in elevation (ft)								
3 Slope (ft/ft), S_o *= Item 2 / Item 1*								
4 Land cover								
5 Initial DMA Time of Concentration (min) *Appendix C-1 of the TGD for WQMP*								
6 Length of conveyance from DMA outlet to project site outlet (ft) *May be zero if DMA outlet is at project site outlet*								
7 Cross-sectional area of channel (ft^2)								
8 Wetted perimeter of channel (ft)								
9 Manning's roughness of channel (n)								
10 Channel flow velocity (ft/sec) V_{fps} *= (1.49 / Item 9) * (Item 7/Item 8)^0.67 * (Item 3)^0.5*								
11 Travel time to outlet (min) T_t *= Item 6 / (Item 10 * 60)*								
12 Total time of concentration (min) T_c *= Item 5 + Item 11*								
13 Pre-developed time of concentration (min): *Minimum of Item 12 pre-developed DMA*								
14 Post-developed time of concentration (min): *Minimum of Item 12 post-developed DMA*								
15 Additional time of concentration needed to meet hydromodification requirement (min): $T_{C\text{-}Hydro}$ *= (Item 13 * 0.95) – Item 14*								

Form 4.2-5 Hydromodification Assessment for Peak Runoff (DA 1)

Compute peak runoff for pre- and post-developed conditions

Variables		Pre-developed DA to Project Outlet (*Use additional forms if more than 3 DMA)*			Post-developed DA to Project Outlet (*Use additional forms if more than 3 DMA)*		
		DMA A	DMA B	DMA C	DMA A	DMA B	DMA C
1 Rainfall Intensity for storm duration equal to time of concentration *I_{peak} = 10^(LOG Form 4.2-1 Item 4 - 0.7 LOG Form 4.2-4 Item 5 /60)*							
2 Drainage Area of each DMA (Acres) *For DMA with outlet at project site outlet, include upstream DMA (Using example schematic in Form 3-1, DMA A will include drainage from DMA C)*							
3 Ratio of pervious area to total area *For DMA with outlet at project site outlet, include upstream DMA (Using example schematic in Form 3-1, DMA A will include drainage from DMA C)*							
4 Pervious area infiltration rate (in/hr) *Use pervious area CN and antecedent moisture condition with Appendix C-3 of the TGD for WQMP*							
5 Maximum loss rate (in/hr) *F_m = Item 3 * Item 4* *Use area-weighted F_m from DMA with outlet at project site outlet, include upstream DMA (Using example schematic in Form 3-1, DMA A will include drainage from DMA C)*							
6 Peak Flow from DMA (cfs) *Q_p =Item 2 * 0.9 * (Item 1 - Item 5)*							
7 Time of concentration adjustment factor for other DMA to site discharge point *Form 4.2-4 Item 12 DMA / Other DMA upstream of site discharge point (If ratio is greater than 1.0, then use maximum value of 1.0)*	DMA A	*n/a*			*n/a*		
	DMA B		*n/a*			*n/a*	
	DMA C			*n/a*			*n/a*

8 Pre-developed Q_p at T_c for DMA A: *Q_p = Item 6_{DMAA} + [Item 6_{DMAB} * (Item 1_{DMAA} - Item 5_{DMAB})/(Item 1_{DMAB} - Item 5_{DMAB})* Item $7_{DMAA/2}$] + [Item 6_{DMAC} * (Item 1_{DMAA} - Item 5_{DMAC})/(Item 1_{DMAC} - Item 5_{DMAC})* Item $7_{DMAA/3}$]*	**9** Pre-developed Q_p at T_c for DMA B: *Q_p = Item 6_{DMAB} + [Item 6_{DMAA} * (Item 1_{DMAB} - Item 5_{DMAA})/(Item 1_{DMAA} - Item 5_{DMAA})* Item $7_{DMAB/1}$] + [Item 6_{DMAC} * (Item 1_{DMAB} - Item 5_{DMAC})/(Item 1_{DMAC} - Item 5_{DMAC})* Item $7_{DMAB/3}$]*	**10** Pre-developed Q_p at T_c for DMA C: *Q_p = Item 6_{DMAC} + [Item 6_{DMAA} * (Item 1_{DMAC} - Item 5_{DMAA})/(Item 1_{DMAA} - Item 5_{DMAA})* Item $7_{DMAC/1}$] + [Item 6_{DMAB} * (Item 1_{DMAC} - Item 5_{DMAB})/(Item 1_{DMAB} - Item 5_{DMAB})* Item $7_{DMAC/2}$]*
10 Peak runoff from pre-developed condition confluence analysis (cfs): *Maximum of Item 8, 9, and 10 (including additional forms as needed)*		
11 Post-developed Q_p at T_c for DMA A: *Same as Item 8 for post-developed values*	**12** Post-developed Q_p at T_c for DMA B: *Same as Item 9 for post-developed values*	**13** Post-developed Q_p at T_c for DMA C: *Same as Item 10 for post-developed values*
14 Peak runoff from post-developed condition confluence analysis (cfs): *Maximum of Item 11, 12, and 13 (including additional forms as needed)*		
15 Peak runoff reduction needed to meet Hydromodification Requirement (cfs): $Q_{p\text{-}hydro}$ *= (Item 14 * 0.95) – Item 10*		

4.3 BMP Selection and Sizing

Complete the following forms for each project site DA to document that the proposed treatment (LID/Bioretention) BMPs conform to the project DCV developed to meet performance criteria specified in the Phase II Small MS4 Permit (WQMP Template Section 4.2). For the LID DCV, the forms are ordered according to hierarchy of BMP selection as required by the Phase II Small MS4 Permit (see Section 5.3 in the TGD for WQMP). The forms compute the following for on-site LID BMP:

- Site Design Measures (Form 4.3-2)
- Retention and Infiltration BMPs (Form 4.3-3) or
- Biotreatment BMPs (Form 4.3-4).

> Please note that the selected BMPs may also be used as dual purpose for on-site, hydromodification mitigation and management.

At the end of each form, additional fields facilitate the determination of the extent of mitigation provided by the specific BMP category, allowing for use of the next category of BMP in the hierarchy, if necessary.

The first step in the analysis, using Section 5.3.2 of the TGD for WQMP, is to complete Forms 4.3-1 and 4.3-3) to determine if retention and infiltration BMPs are infeasible for the project. For each feasibility criterion in Form 4.3-1, if the answer is "Yes," provide all study findings that includes relevant calculations, maps, data sources, etc. used to make the determination of infeasibility.

Next, complete Form 4.3-2 to determine the feasibility of applicable Site Design BMPs, and, if their implementation is feasible, the extent of mitigation of the DCV.

If no site constraints exist that would limit the type of BMP to be implemented in a DA, evaluate the use of combinations of LID BMPs, including all applicable Site Design BMPs to maximize on-site retention of the DCV. If no combination of BMP can mitigate the entire DCV, implement the single BMP type, or combination of BMP types, that maximizes on-site retention of the DCV within the minimum effective area.

If the combination of site design, retention and/or infiltration BMPs is unable to mitigate the entire DCV, then the remainder of the volume-based performance criteria that cannot be achieved with site design, retention and/or infiltration BMPs must be managed through biotreatment BMPs. If biotreatment BMPs are used, then they must be sized to provide equivalent effectiveness based on Template Section 4.3.4.

4.3.1 Exceptions to Requirements for Bioretention Facilities

Contingent on a demonstration that use of bioretention or a facility of equivalent effectiveness is infeasible, other types of biotreatment or media filters (such as tree-box-type biofilters or in-vault media filters) may be used for the following categories of Regulated Projects:

1) Projects creating or replacing an acre or less of impervious area, and located in a designated pedestrian-oriented commercial district (i.e., smart growth projects), and having at least 85% of the entire project site covered by permanent structures;

2) Facilities receiving runoff solely from existing (pre-project) impervious areas; and

3) Historic sites, structures or landscapes that cannot alter their original configuration in order to maintain their historic integrity.

Form 4.3-1 Infiltration BMP Feasibility (DA 1 & DA 2)
Feasibility Criterion – Complete evaluation for each DA on the Project Site
[1] Would infiltration BMP pose significant risk for groundwater related concerns? Yes ☐ No ☒ *Refer to Section 5.3.2.1 of the TGD for WQMP*
If Yes, Provide basis: (attach)
[2] Would installation of infiltration BMP significantly increase the risk of geotechnical hazards? Yes ☐ No ☒ (Yes, if the answer to any of the following questions is yes, as established by a geotechnical expert): • The location is less than 50 feet away from slopes steeper than 15 percent • The location is less than ten feet from building foundations or an alternative setback. • A study certified by a geotechnical professional or an available watershed study determines that stormwater infiltration would result in significantly increased risks of geotechnical hazards.
If Yes, Provide basis: (attach)
[3] Would infiltration of runoff on a Project site violate downstream water rights? Yes ☐ No ☒
If Yes, Provide basis: (attach)
[4] Is proposed infiltration facility located on hydrologic soil group (HSG) D soils or does the site geotechnical investigation indicate presence of soil characteristics, which support categorization as D soils? Yes ☐ No ☒
If Yes, Provide basis: (attach)
[5] Is the design infiltration rate, after accounting for safety factor of 2.0, below proposed facility less than 0.3 in/hr (accounting for soil amendments)? Yes ☐ No ☒
If Yes, Provide basis: (attach)
[6] Would on-site infiltration or reduction of runoff over pre-developed conditions be partially or fully inconsistent with watershed management strategies as defined in the WAP, or impair beneficial uses? Yes ☐ No ☒ *See Section 3.5 of the TGD for WQMP and WAP*
If Yes, Provide basis: (attach)
[7] Any answer from Item 1 through Item 3 is "Yes": Yes ☐ No ☒ *If yes, infiltration of any volume is not feasible onsite. Proceed to Form 4.3-4, Selection and Evaluation of Biotreatment BMP.* *If no, then proceed to Item 8 below.* [8] Any answer from Item 4 through Item 6 is "Yes": Yes ☐ No ☒ *If yes, infiltration is permissible but is not required to be considered. Proceed to Form 4.3-2, Site Design BMP.* *If no, then proceed to Item 9, below.* [9] All answers to Item 1 through Item 6 are "No": *Infiltration of the full DCV is potentially feasible, LID infiltration BMP must be designed to infiltrate the full DCV to the MEP.* *Proceed to Form 4.3-2, Site Design BMPs.*

4.3.2 Site Design BMP

Section E.12.e. of the Small Phase II MS4 Permit emphasizes the use of LID preventative measures; and the use of Site Design Measures reduces the portion of the DCV that must be addressed in downstream BMPs. Therefore, all applicable Site Design Measures shall be provided except where they are mutually exclusive

with each other, or with other BMPs. Mutual exclusivity may result from overlapping BMP footprints such that either would be potentially feasible by itself, but both could not be implemented. Please note that while there are no numeric standards regarding the use of Site Design BMPs. If a project cannot feasibly meet BMP sizing requirements or cannot fully address hydromodification, feasibility of all applicable Site Design BMPs must be part of demonstrating that the BMP system has been designed to retain the maximum feasible portion of the DCV. Complete Form 4.3-2 to identify and calculate estimated retention volume from implementing site design BMP. Refer to Section 5.4 in the TGD for more detailed guidance.

Form 4.3-2 Site Design BMPs (DA 1 & DA 2)

1 Implementation of Impervious Area Dispersion BMP (i.e. routing runoff from impervious to pervious areas), excluding impervious areas planned for routing to on-lot infiltration BMP: Yes ☐ No ☒ *If yes, complete Items 2-5; If no, proceed to Item 6*	DA DMA BMP Type	DA DMA BMP Type	DA DMA BMP Type *(Use additional forms for more BMPs)*
2 Total impervious area draining to pervious area (ft^2)			
3 Ratio of pervious area receiving runoff to impervious area			
4 Retention volume achieved from impervious area dispersion (ft^3) *V = Item2 * Item 3 * (0.5/12), assuming retention of 0.5 inches of runoff*			
5 Sum of retention volume achieved from impervious area dispersion (ft^3):	$V_{retention}$ *=Sum of Item 4 for all BMPs*		
6 Implementation of Localized On-lot Infiltration BMPs (e.g. on-lot rain gardens): Yes ☐ No ☒ *If yes, complete Items 7-13 for aggregate of all on-lot infiltration BMP in each DA; If no, proceed to Item 14*	DA DMA A BMP Type Drywell	DA DMA B BMP Type Drywell	DA DMA BMP Type *(Use additional forms for more BMPs)*
7 Ponding surface area (ft^2)			
8 Ponding depth (ft) (min. 0.5 ft.)			
9 Surface area of amended soil/gravel (ft^2)			
10 Average depth of amended soil/gravel (ft) (min. 1 ft.)			
11 Average porosity of amended soil/gravel			
12 Retention volume achieved from on-lot infiltration (ft^3) $V_{retention}$ *= (Item 7 *Item 8) + (Item 9 * Item 10 * Item 11)*			
13 Runoff volume retention from on-lot infiltration (ft^3):	$V_{retention}$ *=Sum of Item 12 for all BMPs*		

Form 4.3-2 Site Design BMPs (DA 1 & DA 2)

Form 4.3-2 cont. Site Design BMPs (DA 1 & DA 2)

14 Implementation of Street Trees: Yes ☐ No ☒ *If yes, complete Items 14-18. If no, proceed to Item 19*	DA DMA BMP Type	DA DMA BMP Type	DA DMA BMP Type *(Use additional forms for more BMPs)*
15 Number of Street Trees			
16 Average canopy cover over impervious area (ft^2)			
17 Runoff volume retention from street trees (ft^3) $V_{retention}$ *= Item 15 * Item 16 * (0.05/12) assume runoff retention of 0.05 inches*			
18 Runoff volume retention from street tree BMPs (ft^3):	$V_{retention}$ *= Sum of Item 17 for all BMPs*		
19 Total Retention Volume from Site Design BMPs:	*Sum of Items 5, 13 and 18*		

4.3.3 Infiltration BMPs

Use Form 4.3-3 to compute on-site retention of runoff from proposed retention and infiltration BMPs. Volume retention estimates are sensitive to the percolation rate used, which determines the amount of runoff that can be infiltrated within the specified drawdown time. The infiltration safety factor reduces field measured percolation to account for potential inaccuracy associated with field measurements, declining BMP performance over time, and compaction during construction. Appendix C of the TGD for WQMP provides guidance on estimating an appropriate safety factor to use in Form 4.3-3.

If site constraints limit the use of BMPs to a single type and implementation of retention and infiltration BMPs mitigate no more than 40% of the DCV, then they are considered infeasible and the Project Proponent may evaluate the effectiveness of BMPs lower in the LID hierarchy of use (Section 5.5 of the TGD for WQMP)

If implementation of infiltrations BMPs is feasible as determined using Form 4.3-1, then LID infiltration BMPs shall be implemented to the MEP (section 4.1 of the TGD for WQMP).

4.3.3.1 Allowed Variations for Special Site Conditions

The bioretention system design parameters of this Section may be adjusted for the following special site conditions:

1) Facilities located within 10 feet of structures or other potential geotechnical hazards established by the geotechnical expert for the project may incorporate an impervious cutoff wall between the bioretention facility and the structure or other geotechnical hazard.

2) Facilities with documented high concentrations of pollutants in underlying soil or groundwater, facilities located where infiltration could contribute to a geotechnical hazard, and facilities located on elevated plazas or other structures may incorporate an impervious liner and may locate the underdrain discharge at the bottom of the subsurface drainage/storage layer (this configuration is commonly known as a “flow-through planter”).

3) Facilities located in areas of high groundwater, highly infiltrative soils or where connection of underdrain to a surface drain or to a subsurface storm drain are infeasible, may omit the underdrain.

4) Facilities serving high-risk areas such as fueling stations, truck stops, auto repairs, and heavy industrial sites may be required to provide adequate pretreatment to address pollutants of concern unless these high-risk areas are isolated from storm water runoff or bioretention areas with no chance of spill migration.

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Form 4.3-3 Infiltration LID BMP - including underground BMPs

1 Remaining LID DCV not met by site design BMP (ft^3): 1,788 (DMA A), 1,239 (DMA B) *V_{unmet} = Form 4.2-1 Item 7 - Form 4.3-2 Item19*			
BMP Type *Use columns to the right to compute runoff volume retention from proposed infiltration BMP (select BMP from Table 5-4 in TGD for WQMP) - Use additional forms for more BMPs*	DA 1 DMA BMP Type	DA 2 DMA BMP Type	DA DMA BMP Type *(Use additional forms for more BMPs)*
2 Infiltration rate of underlying soils (in/hr) *See Section 5.4.2 and Appendix C of the TGD for WQMP for minimum requirements for assessment methods*			
3 Infiltration safety factor *See TGD Section 5.4.2 and Appendix D*			
4 Design percolation rate (in/hr) *P_{design} = Item 2 / Item 3*			
5 Ponded water drawdown time (hr) *Copy Item 6 in Form 4.2-1*			
6 Maximum ponding depth (ft) *BMP specific, see Table 5-4 of the TGD for WQMP for BMP design details*			
7 Ponding Depth (ft) *d_{BMP} = Minimum of (1/12*Item 4*Item 5) or Item 6*			
8 Infiltrating surface area, *SA_{BMP}* (ft^2) *the lesser of the area needed for infiltration of full DCV or minimum space requirements from Table 5.7 of the TGD for WQMP*			
9 Amended soil depth, *d_{media}* (ft) *Only included in certain BMP types, see Table 5-4 in the TGD for WQMP for reference to BMP design details*			
10 Amended soil porosity			
11 Gravel depth, *d_{media}* (ft) *Only included in certain BMP types, see Table 5-4 of the TGD for WQMP for BMP design details*			
12 Gravel porosity			
13 Duration of storm as basin is filling (hrs) *Typical ~ 3hrs*			
14 Above Ground Retention Volume (ft^3) *$V_{retention}$ = Item 8 * [Item7 + (Item 9 * Item 10) + (Item 11 * Item 12) + (Item 13 * (Item 4 / 12))]*			
15 Underground Retention Volume (ft^3) *Volume determined using manufacturer's specifications and calculations*	1,657	1,154	
16 Total Retention Volume from LID Infiltration BMPs: 1,819cf (DA 1), 1,278cf (DA 2) *(Sum of Items 14 and 15 for all infiltration BMP*			
17 Fraction of DCV achieved with infiltration BMP: 102% (DA 1); 103% (DA 2) % *Retention% = Item 16 / Form 4.2-1 Item 7*			
18 Is full LID DCV retained onsite with combination of hydrologic source control and LID retention/infiltration BMPs? Yes ☒ No ☐ *If yes, demonstrate conformance using Form 4.3-10; If no, then reduce Item 3, Factor of Safety to 2.0 and increase Item 8, Infiltrating Surface Area, such that the portion of the site area used for retention and infiltration BMPs equals or exceeds the minimum effective area thresholds (Table 5-7 of the TGD for WQMP) for the applicable category of development and repeat all above calculations.*			

4.3.4 Biotreatment BMP

Biotreatment BMPs may be considered if the full LID DCV cannot be met by maximizing retention and infiltration. A key consideration when using biotreatment BMP is the effectiveness of the proposed BMP in addressing the pollutants of concern for the project (see Table 5-5 of the TGD for WQMP).

Use Form 4.3-4 to summarize the potential for volume based and/or flow based biotreatment options to biotreat the remaining unmet LID DCV. Biotreatment computations are included as follows:

- Use Form 4.3-5 to compute biotreatment in small volume based biotreatment BMP (e.g. bioretention w/underdrains);
- Use Form 4.3-6 to compute biotreatment in large volume based biotreatment BMP (e.g. constructed wetlands);
- Use Form 4.3-7 to compute sizing criteria for flow-based biotreatment BMP (e.g. bioswales)

Form 4.3-4 Selection and Evaluation of Biotreatment BMP

1 Remaining LID DCV not met by site design , or infiltration, BMP for potential biotreatment (ft^3): 0 *Form 4.2-1 Item 7 - Form 4.3-2 Item 19 – Form 4.3-3 Item 16*	List pollutants of concern *Copy from Form 2.3-1.*	
2 Biotreatment BMP Selected *(Select biotreatment BMP(s) necessary to ensure all pollutants of concern are addressed through Unit Operations and Processes, described in Table 5-5 of the TGD for WQMP)*	Volume-based biotreatment *Use Forms 4.3-5 and 4.3-6 to compute treated volume*	Flow-based biotreatment *Use Form 4.3-7 to compute treated flow*
	☐ Bioretention with underdrain ☐ Planter box with underdrain ☐ Constructed wetlands ☐ Wet extended detention ☐ Dry extended detention	☐ Vegetated swale ☐ Vegetated filter strip ☐ Proprietary biotreatment
3 Volume biotreated in volume based biotreatment BMP (ft^3): *Form 4.3-5 Item 15 + Form 4.3-6 Item 13*	**4** Compute remaining LID DCV with implementation of volume based biotreatment BMP (ft^3): *Item 1 – Item 3*	**5** Remaining fraction of LID DCV for sizing flow based biotreatment BMP: % *Item 4 / Item 1*
6 Flow-based biotreatment BMP capacity provided (cfs): *Use Figure 5-2 of the TGD for WQMP to determine flow capacity required to provide biotreatment of remaining percentage of unmet LID DCV (Item 5), for the project's precipitation zone (Form 3-1 Item 1)*		
7 Metrics for MEP determination: • Provided a WQMP with the portion of site area used for suite of LID BMP equal to minimum thresholds in Table 5-7 of the TGD for WQMP for the proposed category of development: ☐ *If maximized on-site retention BMPs is feasible for partial capture, then LID BMP implementation must be optimized to retain and infiltrate the maximum portion of the DCV possible within the prescribed minimum effective area. The remaining portion of the DCV shall then be mitigated using biotreatment BMP.*		

Form 4.3-5 Volume Based Biotreatment (DA 1) – Bioretention and Planter Boxes with Underdrains

Biotreatment BMP Type *(Bioretention w/underdrain, planter box w/underdrain, other comparable BMP)*	DA DMA BMP Type	DA DMA BMP Type	DA DMA BMP Type *(Use additional forms for more BMPs)*
1 Pollutants addressed with BMP *List all pollutant of concern that will be effectively reduced through specific Unit Operations and Processes described in Table 5-5 of the TGD for WQMP*			
2 Amended soil infiltration rate *Typical ~ 5.0*			
3 Amended soil infiltration safety factor *Typical ~ 2.0*			
4 Amended soil design percolation rate (in/hr) P_{design} *= Item 2 / Item 3*			
5 Ponded water drawdown time (hr) *Copy Item 6 from Form 4.2-1*			
6 Maximum ponding depth (ft) *see Table 5-6 of the TGD for WQMP for reference to BMP design details*			
7 Ponding Depth (ft) d_{BMP} *= Minimum of (1/12 * Item 4 * Item 5) or Item 6*			
8 Amended soil surface area (ft^2)			
9 Amended soil depth (ft) *see Table 5-6 of the TGD for WQMP for reference to BMP design details*			
10 Amended soil porosity, *n*			
11 Gravel depth (ft) *see Table 5-6 of the TGD for WQMP for reference to BMP design details*			
12 Gravel porosity, *n*			
13 Duration of storm as basin is filling (hrs) *Typical ~ 3hrs*			
14 Biotreated Volume (ft^3) $V_{biotreated}$ *= Item 8 * [(Item 7/2) + (Item 9 * Item 10) +(Item 11 * Item 12) + (Item 13 * (Item 4 / 12))]*			
15 Total biotreated volume from bioretention and/or planter box with underdrains BMP: *Sum of Item 14 for all volume-based BMPs included in this form*			

Form 4.3-6 Volume Based Biotreatment (DA 1) – Constructed Wetlands and Extended Detention

Biotreatment BMP Type *Constructed wetlands, extended wet detention, extended dry detention, or other comparable proprietary BMP. If BMP includes multiple modules (E.g. forebay and main basin), provide separate estimates for storage and pollutants treated in each module.*	DA DMA BMP Type		DA DMA BMP Type *(Use additional forms for more BMPs)*	
	Forebay	Basin	Forebay	Basin
1 Pollutants addressed with BMP forebay and basin *List all pollutant of concern that will be effectively reduced through specific Unit Operations and Processes described in Table 5-5 of the TGD for WQMP*				
2 Bottom width (ft)				
3 Bottom length (ft)				
4 Bottom area (ft^2) A_{bottom} = *Item 2 * Item 3*				
5 Side slope (ft/ft)				
6 Depth of storage (ft)				
7 Water surface area (ft^2) $A_{surface}$ =*(Item 2 + (2 * Item 5 * Item 6)) * (Item 3 + (2 * Item 5 * Item 6))*				
8 Storage volume (ft^3) *For BMP with a forebay, ensure fraction of total storage is within ranges specified in BMP specific fact sheets, see Table 5-6 of the TGD for WQMP for reference to BMP design details* V =*Item 6 / 3 * [Item 4 + Item 7 + (Item 4 * Item 7)^0.5]*				
9 Drawdown Time (hrs) *Copy Item 6 from Form 2.1*				
10 Outflow rate (cfs) Q_{BMP} = *(Item* $8_{forebay}$ *+ Item* 8_{basin}*) / (Item 9 * 3600)*				
11 Duration of design storm event (hrs)				
12 Biotreated Volume (ft^3) $V_{biotreated}$ = *(Item* $8_{forebay}$ *+ Item* 8_{basin}*) +(Item 10 * Item 11 * 3600)*				
13 Total biotreated volume from constructed wetlands, extended dry detention, or extended wet detention : *(Sum of Item 12 for all BMP included in plan)*				

Form 4.3-7 Flow Based Biotreatment (DA 1)

Biotreatment BMP Type *Vegetated swale, vegetated filter strip, or other comparable proprietary BMP*	DA DMA BMP Type	DA DMA BMP Type	DA DMA BMP Type *(Use additional forms for more BMPs)*
1 Pollutants addressed with BMP *List all pollutant of concern that will be effectively reduced through specific Unit Operations and Processes described in TGD Table 5-5*			
2 Flow depth for water quality treatment (ft) *BMP specific, see Table 5-6 of the TGD for WQMP for reference to BMP design details*			
3 Bed slope (ft/ft) *BMP specific, see Table 5-6 of the TGD for WQMP for reference to BMP design details*			
4 Manning's roughness coefficient			
5 Bottom width (ft) b_w *= (Form 4.3-5 Item 6 * Item 4) / (1.49 * Item 2^1.67 * Item 3^0.5)*			
6 Side Slope (ft/ft) *BMP specific, see Table 5-6 of the TGD for WQMP for reference to BMP design details*			
7 Cross sectional area (ft^2) *A = (Item 5 * Item 2) + (Item 6 * Item 2^2)*			
8 Water quality flow velocity (ft/sec) *V = Form 4.3-5 Item 6 / Item 7*			
9 Hydraulic residence time (min) *Pollutant specific, see Table 5-6 of the TGD for WQMP for reference to BMP design details*			
10 Length of flow based BMP (ft) *L = Item 8 * Item 9 * 60*			
11 Water surface area at water quality flow depth (ft^2) SA_{top} *= (Item 5 + (2 * Item 2 * Item 6)) * Item 10*			

4.3.5 Conformance Summary

Complete Form 4.3-8 to demonstrate how on-site LID DCV is met with proposed site design, infiltration, and/or biotreatment BMP. The bottom line of the form is used to describe the basis for infeasibility determination for on-site LID BMP to achieve full LID DCV, and provides methods for computing remaining volume to be addressed in an alternative compliance plan. If the project has more than one outlet, then complete additional versions of this form for each outlet.

Form 4.3-8 Conformance Summary and Alternative Compliance Volume Estimate (DA 1)

1 Total LID DCV for the Project DA-1 (ft^3): 1,788 *Copy Item 7 in Form 4.2-1*

2 On-site retention with site design BMP (ft^3): 0 *Copy Item18 in Form 4.3-2*

3 On-site retention with LID infiltration BMP (ft^3): *Copy Item 16 in Form 4.3-3*

4 On-site biotreatment with volume based biotreatment BMP (ft^3): 0 *Copy Item 3 in Form 4.3-4*

5 Flow capacity provided by flow based biotreatment BMP (cfs): 0 *Copy Item 6 in Form 4.3-4*

6 LID BMP performance criteria are achieved if answer to any of the following is "Yes":

- Full retention of LID DCV with site design or infiltration BMP: Yes ☒ No ☐
  If yes, sum of Items 2, 3, and 4 is greater than Item 1
- Combination of on-site retention BMPs for a portion of the LID DCV and volume-based biotreatment BMP that address all pollutants of concern for the remaining LID DCV: Yes ☐ No ☒
  If yes, a) sum of Items 2, 3, 4, and 5 is greater than Item 1, and Items 2, 3 and 4 are maximized; or b) Item 6 is greater than Form 4.3--5 Item 6 and Items 2, 3 and 4 are maximized
- On-site retention and infiltration is determined to be infeasible; therefore biotreatment BMP provides biotreatment for all pollutants of concern for full LID DCV: Yes ☐ No ☒
  If yes, Form 4.3-1 Items 7 and 8 were both checked yes

7 If the LID DCV is not achieved by any of these means, then the project may be allowed to develop an alternative compliance plan. Check box that describes the scenario which caused the need for alternative compliance:

- Combination of Site Design, retention and infiltration, , and biotreatment BMPs provide less than full LID DCV capture: ☐
  Checked yes if Form 4.3-4 Item 7is checked yes, Form 4.3-4 Item 6 is zero, and sum of Items 2, 3, 4, and 5 is less than Item 1. If so, apply water quality credits and calculate volume for alternative compliance, V_{alt} *= (Item 1 – Item 2 – Item 3 – Item 4 – Item 5) * (100 - Form 2.4-1 Item 2)%*

- Facilities, or a combination of facilities, of a different design than in Section E.12.e.(ii)(f) may be permitted if all of the following Phase II Small MS4 General Permit 2013-0001-DWQ 55 February 5, 2013 measures of equivalent effectiveness are demonstrated:
  1) Equal or greater amount of runoff infiltrated or evapotranspired; ☐
  2) Equal or lower pollutant concentrations in runoff that is discharged after biotreatment; ☐
  3) Equal or greater protection against shock loadings and spills; ☐
  4) Equal or greater accessibility and ease of inspection and maintenance. ☐

Form 4.3-8 Conformance Summary and Alternative Compliance Volume Estimate (DA 2)

1 Total LID DCV for the Project DA 2 (ft^3): 1,239 *Copy Item 7 in Form 4.2-1*

2 On-site retention with site design hydrologic source control LID BMP (ft^3): 0 *Copy Item 30 in Form 4.3-2*

3 On-site retention with LID infiltration BMP (ft^3): *Copy Item 16 in Form 4.3-3*

4 On-site retention with LID harvest and use BMP (ft^3): *Copy Item 9 in Form 4.3-4*

5 On-site biotreatment with volume based biotreatment BMP (ft^3): *Copy Item 3 in Form 4.3-5*

6 Flow capacity provided by flow based biotreatment BMP (cfs): *Copy Item 6 in Form 4.3-5*

7 LID BMP performance criteria are achieved if answer to any of the following is "Yes":

- Full retention of LID DCV with site design HSC, infiltration, or harvest and use BMP: Yes ☒ No ☐
  If yes, sum of Items 2, 3, and 4 is greater than Item 1
- Combination of on-site retention BMPs for a portion of the LID DCV and volume-based biotreatment BMP that address all pollutants of concern for the remaining LID DCV: Yes ☐ No ☒
  If yes, a) sum of Items 2, 3, 4, and 5 is greater than Item 1, and Items 2, 3 and 4 are maximized; or b) Item 6 is greater than Form 4.3--5 Item 6 and Items 2, 3 and 4 are maximized
- On-site retention and infiltration is determined to be infeasible and biotreatment BMP provide biotreatment for all pollutants of concern for full LID DCV: Yes ☐ No ☒
  If yes, Form 4.3-1 Items 7 and 8 were both checked yes

8 If the LID DCV is not achieved by any of these means, then the project may be allowed to develop an alternative compliance plan. Check box that describes the scenario which caused the need for alternative compliance:

- Combination of HSC, retention and infiltration, harvest and use, and biotreatment BMPs provide less than full LID DCV capture: ☐
  Checked yes for Form 4.3-5 Item 7, Item 6 is zero, and sum of Items 2, 3, 4, and 5 is less than Item 1. If so, apply water quality credits and calculate volume for alternative compliance, V_{alt} *= (Item 1 – Item 2 – Item 3 – Item 4 – Item 5) * (100 - Form 2.4-1 Item 2)%*
- An approved Watershed Action Plan (WAP) demonstrates that water quality and hydrologic impacts of urbanization are more effective when managed in at an off-site facility: ☐
  Attach appropriate WAP section, including technical documentation, showing effectiveness comparisons for the project site and regional watershed

4.3.6 Hydromodification Control BMP

Use Form 4.3-9 to compute the remaining runoff volume retention, after Site Design BMPs are implemented, needed to address hydromodification, and the increase in time of concentration and decrease in peak runoff necessary to meet targets for protection of waterbodies with a potential hydromodification. Describe the proposed hydromodification treatment control BMP. Section 5.6 of the TGD for WQMP provides additional details on selection and evaluation of hydromodification control BMP.

Form 4.3-9 Hydromodification Control BMPs

1 Volume reduction needed for hydromodification performance criteria (ft^3): *(Form 4.2-2 Item 4 * 0.95) – Form 4.2-2 Item 1*	**2** On-site retention with site design and infiltration, BMP (ft^3): *Sum of Form 4.3-8 Items 2, 3, and 4. Evaluate option to increase implementation of on-site retention in Forms 4.3-2, 4.3-3, and 4.3-4 in excess of LID DCV toward achieving hydromodification volume reduction*
3 Remaining volume for hydromodification volume capture (ft^3): *Item 1 – Item 2*	**4** Volume capture provided by incorporating additional on-site BMPs (ft^3):

5 Is Form 4.2-2 Item 11 less than or equal to 5%: Yes ☐ No ☐

If yes, hydromodification performance criteria is achieved. If no, select one or more mitigation options below:

- Demonstrate increase in time of concentration achieved by proposed LID site design, LID BMP, and additional on-site BMP ☐
- Increase time of concentration by preserving pre-developed flow path and/or increase travel time by reducing slope and increasing cross-sectional area and roughness for proposed on-site conveyance facilities ☐

6 Form 4.2-2 Item 12 less than or equal to 5%: Yes ☐ No ☐

If yes, hydromodification performance criteria is achieved. If no, select one or more mitigation options below:

- Demonstrate reduction in peak runoff achieved by proposed LID site design, LID BMPs, and additional on-site retention BMPs ☐

4.4 Alternative Compliance Plan (if applicable)

Describe an alternative compliance plan (if applicable) for projects not fully able to infiltrate, or biotreat the DCV via on-site LID practices. A project proponent must develop an alternative compliance plan to address the remainder of the LID DCV. Depending on project type some projects may qualify for water quality credits that can be applied to reduce the DCV that must be treated prior to development of an alternative compliance plan (see Form 2.4-1, Water Quality Credits). Form 4.3-9 Item 8 includes instructions on how to apply water quality credits when computing the DCV that must be met through alternative compliance.

Alternative Designs — Facilities, or a combination of facilities, of a different design than in Permit Section E.12.e.(ii)(f) may be permitted if all of the following measures of equivalent effectiveness are demonstrated:

1) Equal or greater amount of runoff infiltrated or evapotranspired;

2) Equal or lower pollutant concentrations in runoff that is discharged after biotreatment;

3) Equal or greater protection against shock loadings and spills;

4) Equal or greater accessibility and ease of inspection and maintenance.

The Project Proponent will need to obtain written approval for an alternative design from the Lahontan Regional Water Board Executive Officer (see Section 6 of the TGD for WQMP).

Section 5 Inspection and Maintenance Responsibility for Post Construction BMP

All BMPs included as part of the project WQMP are required to be maintained through regular scheduled inspection and maintenance (refer to Section 8, Post Construction BMP Requirements, in the TGD for WQMP). Fully complete Form 5-1 summarizing all BMP included in the WQMP. Attach additional forms as needed. The WQMP shall also include a detailed Operation and Maintenance Plan for all BMP and a Maintenance Agreement. The Maintenance Agreement must also be attached to the WQMP.

Note that at time of Project construction completion, the Maintenance Agreement must be completed, signed, notarized and submitted to the County Stormwater Department

Form 5-1 BMP Inspection and Maintenance (use additional forms as necessary)

BMP	Reponsible Party(s)	Inspection/ Maintenance Activities Required	Minimum Frequency of Activities
Education of Property Owners, Tenants and occupants on storm-water BMPs	Property Owner(s) / Tenants	This BMP will begin at building occupancy. Practical informational materials are provided in this document in Section 6. These include BMPs that eliminate or reduce pollution during property improvements. The property owners and tenants are encouraged to implement the use of alternative building materials, drought resistant and native plant species in landscaping and pervious pavement in all additions and modifications to the property. Reference educational material can be found at http://sbcountystormwater.org/government/outreach-materials/	Ongoing
Activity Restrictions	Property Owner(s) / Tenants	Restrictions include vehicle washing and maintenance, outdoor materials storage, outdoor work or processing areas, and pesticide application by any other person than an applicator certified by the California Department of Pesticide Regulation. The Owner is to notify tenants of violation and cite if violation persists (within 1 week of violation).	Ongoing

Sweeping of Parking Lots	Property Owner(s) / Tenants	This BMP will begin within 1 year of project completion and sweeping will occur annually thereafter, prior to the rainy season. The tenant will contract with a sweeping company to complete this BMP. All wastes shall be landfilled. The parking lots shall be swept. There will be no parking lot cleaning with water.	Annually
Infiltration Basin Maintenance	Property Owner(s)	The isolator row of the underground basins shall be inspected at the beginning of the wet and dry seasons or more frequently as needed and shall be cleaned out when the average depth of sediment exceeds 3" throughout the length of the isolator row using the Jetvac process per manufacturer's recommendations. If inspection indicates the need for maintenance access is necessary, OSHA rules for contained space entries shall be followed.	At the Beginning of the Wet and Dry Seasons
Litter Control	Property Owner(s)	This BMP will will occur on a monthly basis (or more frequently if dictated by volume of trash). A landscape maintenance company will be retained to provide litter control services. They are to ensure that overall site is trash free, including catch basin trash guards and the inside of the trash enclosure. Trash in these areas is to be removed and placed inside the trash bins. They are also to report to the Owner if the trash bins or lids have become damaged so that they can be replaced.	Monthly
Landscape Management BMPs	Property Owner(s)	This BMP will begin within 30 days of building occupancy and will occur on a monthly basis (or more frequently if desired). The property owner(s) will retain a landscape maintenance company or will have staff designated to service all site landscaping. Site trees and shrubs are to be trimmed as necessary and all wastes disposed of offsite. Mulch fiber that has been disturbed is to be replaced. They are also to ensure that all areas are trash free. Trash is to be disposed of offsite. Ongoing maintenance shall be consistent with local guidelines, and fertilizer and pesticide usage shall be consistent with the instructions	Monthly

		contained on product labels and with the regulations administered by the State Department of Pesticide Regulation. Clippings and yard waste shall be composted. A landscape maintenance company will be retained to service all site irrigation. Any breaks or leaks in piping must be repaired within 2 business days of report to the landscaper.	
Employee Training	Property Owner(s) / Tenants	This BMP will begin within 30 days of building occupancy and refresher course will occur annually thereafter. The tenants shall insure that all employees are familiar with the contents of this plan and appendix.	Annually
Catch Basin Inspection Program	Property Owner(s)	This BMP will begin within 30 days of project completion. Inspections will be done by a landscape maintenance company or other staff after the first storm of the rainy season and two times per month thereafter for the duration of the rainy season. The inspector is also required to clean the facilities as needed or when filled to 25% capacity. Cleaning can be by pump or shopvac or by hand. Debris and trash shall be landfilled.	After first storm and 2x/month in rainy season

Section 6 WQMP Attachments

6.1. Site Plan and Drainage Plan

Include a site plan and drainage plan sheet set containing the following minimum information:

- Project location
- Site boundary
- Land uses and land covers, as applicable
- Suitability/feasibility constraints
- Structural Source Control BMP locations
- Site Design Hydrologic Source Control BMP locations
- LID BMP details
- Drainage delineations and flow information
- Drainage connections

6.2 Electronic Data Submittal

Minimum requirements include submittal of PDF exhibits in addition to hard copies. Format must not require specialized software to open. If the local jurisdiction requires specialized electronic document formats (as described in their Local Implementation Plan), this section will describe the contents (e.g., layering, nomenclature, geo-referencing, etc.) of these documents so that they may be interpreted efficiently and accurately.

6.3 Post Construction

Final O&M Plan to be completed in final report.

6.4 Other Supporting Documentation

- BMP Educational Materials
- Activity Restriction – C,C&R's & Lease Agreements

Appendix A: Geotechnical Engineering Investigation Report

MOORE TWINING ASSOCIATES, INC.

GEOTECHNICAL ENGINEERING INVESTIGATION

PROPOSED STARBUCKS

SOUTHWEST CORNER OF 7th AVENUE AND MAIN STREET

HESPERIA, CALIFORNIA

Project Number: H33201.01

For:

Fountainhead Development
1401 Quail Street, Suite 100
Newport Beach, CA 92660

November 15, 2024

www.mooretwining.com

PH: 559.268.7021
FX: 559.268.7126
2527 Fresno Street
Fresno, CA 93721

MOORE TWINING ASSOCIATES, INC.

November 15, 2024 H33201.01

Fountainhead Development
1401 Quail Street, Suite 100
Newport Beach, CA 92660

Attention: Ms. Vasanthi Okuma

Subject: **Geotechnical Engineering Investigation**
Proposed Starbucks
SWC 7th Avenue and Main Street
Hesperia, California

Dear Ms. Okuma:

We are pleased to submit this geotechnical engineering investigation report prepared for a proposed Starbucks to be located on the southwest corner of 7th Avenue and Main Street in the City of Hesperia, California.

The contents of this report include the purpose of the investigation, scope of services, background information, investigative procedures, our findings, evaluation, conclusions, and recommendations.

It is recommended that Moore Twining Associates, Inc. (Moore Twining) be retained to review those portions of the plans and specifications that pertain to earthwork, pavements, and foundations to determine if they are consistent with our recommendations. This service is not a part of this current contractual agreement; however, the client should provide these documents for our review prior to their issuance for construction bidding purposes.

In addition, it is recommended that Moore Twining be retained to provide inspection and testing services for the excavation, earthwork, pavement, and foundation phases of construction. These services are necessary to determine if the subsurface conditions are consistent with those used in the analyses and formulation of recommendations for this investigation, and if the construction complies with our recommendations. These services are not, however, part of this current contractual agreement. A representative with our firm will contact you in the near future regarding these services.

PH: 559.268.7021
FX: 559.268.7126
2527 Fresno Street
Fresno, CA 93721

We appreciate the opportunity to be of service to Fountainhead Development. If you have any questions regarding this report, or if we can be of further assistance, please contact us at your convenience.

Sincerely,

MOORE TWINING ASSOCIATES, INC.

Allen H. Harker, CEG
Engineering Geologist
Geotechnical Engineering Division

EXECUTIVE SUMMARY

Moore Twining Associates, Inc. (Moore Twining) prepared this geotechnical engineering investigation report for the proposed Starbucks to be located in Hesperia, California.

The subject site is located on the southwest corner of 7th Avenue and Main Street in Hesperia, California. The area indicated for the proposed Starbucks is a 0.596-acre property which includes an auto sales business and auto repair shop in the north half of the site and pavements from a former auto sales businesses in the south half of the site.

The proposed Starbucks development is planned to include a 1,263 square foot single story building with a drive-thru pickup drive lane. Appurtenant construction is anticipated to include concrete walkways, asphaltic concrete and Portland cement concrete parking and drive areas, underground utilities, and landscape areas.

Moore Twining conducted a previous investigation at the subject site when the Starbucks parcel and adjacent McDonald's parcel (west of the Starbucks parcel) were being considered for development of a Circle K convenience store, car wash and gas station. Near surface infiltrations systems were not deemed to be feasible from Moore Twining's previous February 13, 2019 "Results of Percolation Testing" report. However, deeper poorly graded sand layers were previously encountered at the site and were targeted to conduct deeper percolation tests for consideration of infiltration systems such as dry wells to be used as part of the proposed construction.

On October 23, 2024, five (5) test borings were drilled at the site to depths ranging from 15 to 60 feet below site grades (BSG). The subsurface soils encountered generally consisted of very loose to medium dense silty sands extending to depths of about 1½ to 3½ feet across the site. Below the very loose to loose silty sands, the relative density of the silty sands soils improved to medium dense to dense and extended to depths of about 3½ to 13½ feet BSG. Below the silty sands, medium dense silty, clayey sands; medium dense clayey sands; medium dense to dense poorly graded sands with silt; and medium dense well graded sands with silt were encountered extending to a depth of about 33½ feet BSG which was generally underlain by dense poorly graded sands and dense well graded sands with silt extending to the maximum depth explored of 60 feet BSG.

The surface soils encountered are non-plastic and non-expansive. These soils exhibit low compressibility characteristics, slight collapse potential, and moderate to high shear strength properties. The near surface soils exhibit fair support characteristics for pavements when compacted as engineered fill.

Due to the depth to historical groundwater levels in the vicinity of this site (greater than 450 feet BSG), liquefaction is not considered a concern for the proposed development. However, there is potential for dry seismic settlement to occur during shaking from earthquakes. As part of the analysis, the (N1)60s values of 30 or greater (dense to very dense soils) were not considered to be subject to significant dry seismic settlement in the analyses. Based on the analysis, seismic settlement was estimated to be negligible.

EXECUTIVE SUMMARY

Foundations supported directly on the existing loose native silty sands would be subject to excessive static settlement. In order to reduce the potential for excessive settlement of foundations, over-excavation and compaction of the upper 4 feet of the near surface soils, or to a depth of 12 inches below the bottom of the foundations, or to the depth required to remove existing undocumented fill soils, or to at least 12 inches below subsurface improvements (structures, utilities, etc.) to be removed, whichever is greater, followed by scarification and compaction of an additional 8 inches is recommended in the building pad areas to reduce the total and differential static settlement to 1 inch total and ½ inch differential. An allowable bearing capacity of 2,500 pounds per square foot is recommended for foundation design, for dead-plus-live loads.

The closest active fault is the Ord Mountain Fault zone (part of the North Front Thrust System), which is located about 6½ miles southeast of the site. The project site is not located in an Alquist-Priolo Earthquake Fault Zone. Accordingly, the potential for ground rupture at the site is considered low.

Chemical testing of soil samples indicated the soils exhibit a “corrosive” corrosion potential.

Based on Table 19.3.1.1 - Exposure categories and classes from Chapter 19 of ACI 318, the sulfate concentration from chemical testing of soil samples falls in the S0 classification (less than 0.10 percent by weight) for concrete.

This executive summary should not be used for design or construction and should be reviewed in conjunction with the attached report.

TABLE OF CONTENTS

Page

1.0 INTRODUCTION 1

2.0 PURPOSE AND SCOPE OF INVESTIGATION 1
2.1 Purpose 1
2.2 Scope 2

3.0 BACKGROUND INFORMATION 3
3.1 Site Description 3
3.2 Site History and Previous Studies 3
3.3 Anticipated Construction 4

4.0 INVESTIGATIVE PROCEDURES 5
4.1 Field Exploration 5
4.1.1 Site Reconnaissance 5
4.1.2 Drilling Test Borings 5
4.1.3 Soil Sampling 6
4.1.4 Percolation Tests 6
4.2 Laboratory Testing 6

5.0 FINDINGS AND RESULTS 6
5.1 Subsurface Profile 6
5.2 Soil Engineering Properties 7
5.3 Groundwater Conditions 7
5.4 Results of Percolation Testing 7

6.0 EVALUATION 8
6.1 Existing Surface Conditions 8
6.2 Subsurface Conditions 9
6.3 Static Settlement and Bearing Capacity of Shallow Foundations 9
6.4 Seismic Ground Rupture and Design Parameters 10
6.5 Liquefaction and Seismic Settlement 10
6.6 Asphaltic Concrete (AC) Pavements 11
6.7 Portland Cement Concrete (PCC) Pavements 11
6.8 Soil Corrosion 11
6.9 Sulfate Attack of Concrete 12

TABLE OF CONTENTS

Page

7.0 CONCLUSIONS 13

8.0 RECOMMENDATIONS 13
8.1 General 14
8.2 Site Grading and Drainage 15
8.3 Site Preparation 16
8.4 Engineered Fill 20
8.5 Conventional Shallow Spread Foundations 22
8.6 Interior Slabs-on-Grade 27
8.7 Exterior Slabs-on-Grade 29
8.8 Asphaltic Concrete (AC) Pavements 30
8.9 Portland Cement Concrete (PCC) Pavements 32
8.10 Slopes, Shoring and Temporary Excavations 35
8.11 Utility Trenches 36
8.12 Corrosion Protection 39

9.0 DESIGN CONSULTATION 40

10.0 CONSTRUCTION MONITORING 40

11.0 NOTIFICATION AND LIMITATIONS 41

APPENDICES

APPENDIX A - Drawings A-1

Drawing No. 1 - Site Location Map
Drawing No. 2 - Test Boring Location Map

APPENDIX B - Logs of Borings B-1

APPENDIX C - Results of Laboratory Tests C-1

APPENDIX D - Results of Percolation Tests D-1

APPENDIX E - Compaction Test Report, Test Data and Test Locations for Backfill of the Area of Removed Underground Storage Tanks with Engineered Fill E-1

GEOTECHNICAL ENGINEERING INVESTIGATION

PROPOSED STARBUCKS

SOUTHWEST CORNER OF 7th AVENUE AND MAIN STREET

HESPERIA, CALIFORNIA

Project Number: H33201.01

1.0 INTRODUCTION

This report presents the results of a geotechnical engineering investigation for a proposed Starbucks to be located on the southwest corner of 7th Avenue and Main Street in Hesperia, California. Moore Twining Associates, Inc. (Moore Twining) was authorized by Fountainhead Development to perform this geotechnical engineering investigation.

The contents of this report include the purpose of the investigation and the scope of services provided. The site history, previous studies, site description, and anticipated construction are discussed. In addition, a description of the investigative procedures used and the subsequent findings obtained are presented. Finally, the report provides an evaluation of the findings, general conclusions, and related recommendations. The report appendices contain the drawings (Appendix A), the logs of borings and (Appendix B), the results of laboratory tests (Appendix C), the results of percolation tests (Appendix D) and the compaction report, test data and test locations for backfill of the area of removed underground storage tanks with engineered fill (Appendix E).

The Geotechnical Engineering Division of Moore Twining, headquartered in Fresno, California, performed the investigation.

2.0 PURPOSE AND SCOPE OF INVESTIGATION

2.1 Purpose: The purpose of the investigation was to conduct a field exploration and a laboratory testing program, evaluate the data collected during the field and laboratory portions of the investigation, and provide the following:

2.1.1 Evaluation of the near surface soils within the zone of influence of the proposed foundations and pavements with regard to the anticipated foundation and vehicle traffic loads;

2.1.2 Recommendations for 2022 California Building Code seismic coefficients and earthquake spectral response acceleration values;

2.1.3 Geotechnical parameters for use in design of foundations and slabs-on-grade, (e.g., soil bearing capacity and settlement);

2.1.4 Recommendations for site preparation including placement, moisture conditioning, and compaction of engineered fill soils;

2.1.5 Recommendations for the design and construction of new asphaltic concrete (AC) and Portland cement concrete (PCC) pavements;

2.1.6 Recommendations regarding infiltration of storm water;

2.1.7 Recommendations for temporary excavations and trench backfill, and

2.1.8 Conclusions regarding soil corrosion potential.

This report is provided specifically for the Starbucks referenced in the Anticipated Construction section of this report. This investigation did not include a geologic/seismic hazards evaluation, flood plain investigation, compaction tests, environmental investigation, or environmental audit.

2.1.9 **Scope:** Our revised proposal (MTP 24-0548R), dated October 2, 2024, outlined the scope of our services. The actions undertaken during the investigation are summarized as follows.

2.1.10 The conceptual site plan SP-8, dated June 12, 2024, prepared by Greenberg Farrow, was reviewed for project information.

2.1.11 A report entitled, "Geotechnical Engineering Investigation, Proposed Circle K Store, Southwest Corner of 7th Avenue and Main Street, Hesperia, California," prepared by Moore Twining, dated January 24, 2019, Moore Twining Project No. G28812.02, was reviewed. This investigation was previously conducted by Moore Twining for a previous Circle K development on the currently planned Starbucks parcel and the adjacent McDonald's parcel on the west side of the Starbucks parcel.

A report entitled, "Supplemental Report of Percolation Testing, Proposed Circle K Store, Southwest Corner of Main Street and 7th Avenue, Hesperia, California," prepared by Moore Twining, dated February 13, 2019, Moore Twining Project Number G28812.02, was reviewed. The percolation testing conducted by Moore Twining in 2019 included shallow percolation testing in the upper 5 feet below site grade on both the currently planned Starbucks and McDonald's parcels.

In addition, a draft report entitled, "Phase I Environmental Site Assessment, Proposed Circle K, 15901 Main Street, Hesperia, California 92345, prepared by Moore Twining's Environmental Division, dated February 13, 2019, Moore Twining Project Number G28812.01, was reviewed.

2.1.12 A visual site reconnaissance and subsurface exploration were conducted.

2.1.13 Satellite images of the site between the years 1994 and 2023 from online sources, were reviewed.

2.1.14 Laboratory tests were conducted to determine selected physical and engineering properties of the subsurface soils.

2.1.15 Ms. Vasanthi Okuma (Fountainhead Development and Mr. Thomas Hawksworth (C3 Civil Engineering) were consulted during the investigation.

2.1.16 The data obtained from the investigation were evaluated to develop an understanding of the subsurface soil conditions and the engineering properties of the subsurface soils.

2.1.17 This report was prepared to present the purpose and scope, background information, field exploration procedures, findings, evaluation, conclusions, and recommendations.

3.0 BACKGROUND INFORMATION

The existing site features, site history, previous studies, and the anticipated construction are summarized in the following subsections.

3.1.1 Site Description: The site is located at the southwest corner of 7th Avenue and Main Street in Hesperia, California. The north portion of the site was occupied by a Best Buy Auto Sales business, which has an address of 15901 Main Street. The area indicated for the proposed Starbucks development is a 0.596-acre property. The conceptual site plan SP-8, dated June 12, 2024, prepared by Greenberg Farrow, shows a proposed McDonald's fast-food restaurant on the west side of the Starbucks parcel; however, this report only includes a geotechnical engineering investigation for the proposed Starbucks. A site location map is presented on Drawing No. 1 in Appendix A. The site is located at 34.423305 degrees latitude and -117.316065 degrees longitude.

The streets that bound the site are not aligned to true north and are skewed slightly. For the purpose of this report, the assumed north direction is towards Main Street. So, the site is bound to the north by Main Street, to the east by 7th Avenue, to the south by Walnut Street and to the west by the proposed McDonald's parcel with retail shops and a parking lot beyond. The McDonald's parcel adjacent to the west side of the site includes an asphalt concrete paved parking lot in the northern half of the site, and an unpaved dirt lot with a concrete slab-on-grade (about 3,250 square feet) from a previous development in the southern half of the site.

The north half of the Starbucks site is occupied by a retail auto sales and repair business. Also, a canopy is present in the north portion of the site which covered former fuel islands. The existing sales/shop building is located within the building footprint for the proposed Starbucks building and occupies about 1,200 square feet. Equipment surrounded by a chain link fence was noted on the south side of the existing building. A trash enclosure was also noted on the south side of the existing building. Most of the remaining portions of the north half of the site were covered with asphalt concrete pavements in poor condition with large longitudinal and traverse cracking, some areas of raveling, and some patches. Also, underground utility scans identified numerous pipelines throughout the site.

The south half of the site did not include any above grade improvements. However, asphalt concrete pavements covered this area and two small concrete slabs-on-grade (about 160-square-feet and 120-square feet) were located in the western portion of the south half of the site. An exposed pipe was noted as extending vertically from the ground surface on the west side of the 120-square-foot slab-on-grade, and the outline of a trench was noted as extending northeast from the east side of the 120-square-foot slab-on-grade. The exposed pipe on the west side of the 120-square-foot slab-on-grade is believed to be a sewer or septic pipe. An apparent sewer cleanout valve also extended above the ground surface adjacent to the sewer pipe. Another pipe with a steel plate at the top of the pipe extended vertically from the ground surface within the 160-square-foot slab-on-grade. The pavements in the southern half of the Starbucks site were in poor condition with extensive weathering, severe block cracking and weeds growing out of the cracks. A chain link fence surrounded the northern, eastern and southern sides of the southern half of the site with an opening in the fence in the southern portion of the site that provides access to the site. A power pole was noted in the southeast portion of the site with an overhead power line extending southeast of the power pole. A tree was noted along the southern property line in the southwest corner of the site.

3.2 <u>Site History and Previous Studies</u>: As a part of this investigation, a Draft Phase I Environmental Site Assessment Report (Phase I ESA) and on-line aerial images were reviewed regarding the history of the site that are pertinent to this investigation.

The review of historical aerial photographs and city directories, conducted as a part of the Phase I ESA, indicated that the site was occupied by open, undeveloped land since before 1938 until the 1950's. In 1959, a building was present on the site in the north portion. During the 1980's, portions of the southern half of the site were paved, and by at least 1983 until 2004, the northeast portion of the site operated as a gas station. From 2005 to the time of our October 2024 field investigation, Best Buy Auto Sales has operated at the site. At the time of this investigation, the Phase I ESA had identified some records that the underground storage tanks associated with the past fuel facilities had been removed. Three (3) underground storage tanks in the western portion of the fuel canopy and southwest of the fuel canopy were reportedly removed in 1998. Moore Twining's Draft Phase I Environmental Site Assessment prepared for the previous Circle K development indicated that

Advanced Environmental Concepts observed and tested the backfill of two areas for the three (3) underground storage tanks that were removed and summarized their results in a December 1, 1998 report. The results of eleven tests presented in the report prepared by Hi Desert Testing & Inspection for Advanced Environmental Concepts show that the compacted fill met the minimum required 90 percent relative compaction. The initial tests in each area tested placement of fill at depths of about 10 and 11 feet below site grade. Thus, the areas of the excavations made to remove the underground storage tanks were at least about 10 to 11 feet in depth below adjacent site grades. The area of the three (3) removed Underground Storage Tanks appears to be northwest of the proposed Starbucks building (see Drawing No. 2 in Appendix A of this report). The compaction test report, test data and test locations for backfill of the area of the removed underground storage tanks with engineered fill is included in Appendix E of this report.

Aerial images of the site were also reviewed between May 1994 and December 2017. The 1994 and 1995 images of the site appear to show a service station in the northern portion of the site, and an open car sales lot in the southern portion of the site. By 2009, the southern portion of the site was vacant (no cars parked for sale). Between June and December 2017, a small building was removed in the southern half of the site, and two slabs-on-grade (about 160-square-feet and 120-square feet) remained. A sewer or septic pipe also remained adjacent to the west of the 120-square-foot slab-on-grade and an outline of a trench was noted as trending in a northeast direction from the east side of the 120-square-foot slab-on-grade. Another pipe with a steel plate at the top of the pipe extended vertically from the ground surface within the 160-square-foot slab-on-grade. The Draft Phase I ESA report indicated, "The pipes observed during the site reconnaissance indicate that a septic tank may have been associated with the site. As a result, the tank, piping and leach field(s) may be encountered and could impact future development. Additionally, it is unknown whether the historical building foundations located on the site maintained septic systems, and if so, whether they were removed. Costs would be incurred to handle the removal of the tank(s), lines and leach field(s) upon discovery. If the septic system(s) (tanks, piping, leach fields, etc.) is (are) discovered during development, especially in the area of any planned construction, the septic system(s) will need to be removed." The site appears to be consistent with the current site uses in images for various years after the 2017 aerial image of the site was taken.

Moore Twining's Geotechnical Engineering Division prepared a report for the site entitled, "Geotechnical Engineering Investigation, Proposed Circle K Store, Southwest Corner of 7th Avenue and Main Street, Hesperia, California," prepared by Moore Twining, dated January 24, 2019, Moore Twining Project No. G28812.02. The investigation was conducted on both the parcels for the proposed Starbucks and McDonald's development that was previously planned for development of a Circle K store, car wash and gas station. The investigation included drilling five (5) test borings at the site to depths ranging from 15 to 27 feet below site grades (BSG) in January 2019. The maximum depth proposed for the investigation of 50 feet BSG could not be achieved due to auger refusal on materials that were possibly cemented or cobbles at depths of 25 and 27 feet BSG in two attempts to reach the target maximum depth. The soils encountered consisted of silty sands extending to depths ranging from about 20 to 25 feet BSG. Below the silty sand, poorly graded

sands with silt soils were encountered to the maximum depth explored 27 feet BSG. Drilling refusal was encountered at depths of 25 and 27 feet BSG at boring locations B-1 and B-2 due to suspected cobbles. Laboratory testing on the near surface soils indicated the materials were non-plastic, non-expansive, and exhibited moderate compressibility, moderate collapse, and moderate to high shear strength properties. Laboratory testing on the near surface silty sand soils also indicated the near surface soils exhibited good support characteristics for pavements when compacted as engineered fill. Due to the soils exhibiting moderate collapse in the upper 5 feet, the report recommended over-excavation for the proposed Circle K store to a depth of 5 feet below preconstruction site grade, to the depth required to provide at least 2 feet of engineered fill below bottom of footings, to the depth required to remove existing undocumented fill soils and to at least 12 inches below subsurface improvements (structures, utilities, etc.) to be removed, whichever provided the deeper excavation. The Circle K store was recommended to be supported on shallow foundations and designed based on an allowable bearing pressure of 2,500 pounds per square foot for dead-plus-live loads which could be increased by one-third for short duration of seismic loads. Perimeter footings were recommended to extend to a depth of 18 inches below lowest adjacent finished exterior grade, and interior footings were recommended to extend to a minimum depth of at least 12 inches below the bottom of the slab-on-grade. The report recommended the following settlements to be anticipated for design: 1) a total static settlement of 1 inch, 2) a differential static settlement of ½-inch in 40 feet, 3) a total seismic settlement of ¼ inch, and 4) a differential seismic settlement of ¼ inch in 40 feet.

Moore Twining also issued a report for the previous Circle K development entitled, "Supplemental Report of Percolation Testing, Proposed Circle K Store, Southwest Corner of Main Street and 7th Avenue, Hesperia, California," dated February 13, 2019, Moore Twining Project Number G28812.02. An additional boring was drilled in the northeast corner of the site to a depth of 16½ feet BSG, and three (3) percolation test borings were drilled to depths of 3 feet, 4 feet and 5 feet BSG. The percolation tests were conducted within near surface silty sand soils, some of which exhibited cementation. The percolation tests indicated a negligible percolation rate in one of the percolation tests and unfactored infiltration rates of 1.7 inches and 3.0 inches per hour in the other two tests. However, Moore Twining concluded, "Since the borings indicate that the dense cemented soils occur below about 4 to 5 feet across the site and these materials did not have any significant measured infiltration during testing, it does not appear that on-site infiltration of significant stormwater in the near surface soils will be feasible."

No other previous geotechnical engineering, geological, compaction reports, or environmental studies conducted for this site were provided for review during this investigation. If available, these reports should be provided for review and consideration for this project.

3.3 **Anticipated Construction:** The latest conceptual site plan SP-8, dated June 12, 2024, prepared by Greenberg Farrow indicates the Starbucks development will include a 1,263 square foot single story Starbucks building and a drive-thru pick up drive lane. Appurtenant construction is indicated to include concrete walkways, asphaltic concrete and Portland cement concrete parking and drive areas, a trash enclosure, underground utilities, and landscaped areas.

It is anticipated that the proposed Starbucks structure will consist of a one-story building including concrete masonry unit wall or wood-framed construction with concrete slab-on-grade floors. It is anticipated that the proposed building will be supported on shallow spread foundation systems. Basements and loading docks are not anticipated as part of the proposed construction.

Based on our experience with past Starbucks projects, it is assumed the that the proposed Starbucks building will have maximum column loads of about 10 kips and maximum wall loads of about 1.5 kips per linear foot for dead-plus-live loads. In the event that the maximum foundation loads exceed those assumed for design, the recommendations of this report may not be applicable and may need to be revised.

Based on the lack of significant slope or grades differences noted across the site, cuts and fills on the order of 1 to 2 feet are anticipated to achieve level pad grades and provide site drainage.

Near surface infiltrations systems were not deemed to be feasible from Moore Twining's previous February 13, 2019 "Results of Percolation Testing" report. However, deeper poorly graded sand layers were previously encountered at the site and were targeted to conduct deeper percolation tests for consideration of infiltration systems such as dry wells to be used as part of the proposed construction.

4.0 INVESTIGATIVE PROCEDURES

The field exploration and laboratory testing programs conducted for this investigation are summarized in the following subsections.

4.1 Field Exploration: The field exploration consisted of a site reconnaissance, drilling test borings, conducting standard penetration tests, soil sampling and conducting percolation tests.

4.1.1 Site Reconnaissance: The site reconnaissance consisted of walking the site and noting visible surface features. The reconnaissance was conducted by a Moore Twining field engineer on October 23, 2024. The features noted are described in the background information section of this report.

4.1.2 Drilling Test Borings: Prior to drilling, the site was marked for Underground Service Alert for members to mark out the locations of existing public utilities. Also, an underground utility locating service was retained to scan the proposed boring locations to identify potential private on-site underground utilities that could be damaged during drilling. The borings were then offset from marked underground utilities.

The depths and locations of the test borings were selected based on the size of the structures, type of construction, estimated depths of influence of the anticipated foundation loads, and the subsurface soil conditions encountered.

On October 23, 2024, five (5) test borings were drilled at the site to depths ranging from 15 to 60 feet below site grades (BSG). Boring B-1 was intended to be drilled near the southeast corner of the proposed building footprint. However, due to the presence of an existing building and overhead power line trending southeast from the southeast corner of the existing building, boring B-1 had to be drilled on the east side of the existing building. Boring B-1 could not be drilled on the south side of the existing building as this area was occupied by an equipment storage area and surrounded by chain link fencing. Boring B-2 was drilled to 60 feet BSG within the northern portion of the proposed Starbucks building footprint (and north of the existing building) for evaluation of liquefaction. Boring B-3 was drilled to a depth of about 15 feet BSG within the entrance to the proposed drive-thru pickup drive lane area. Two (2) of the borings (P-1 and P-2) were drilled to depths of about 20 feet BSG to install percolation test pipe in the boreholes and conduct percolation tests. At the direction of Mr. Thomas Hawksworth (C3 Civil Engineering), the percolation tests were drilled in the northern portion of the Starbucks parcel and the northern portion of the adjacent McDonald's parcel. The boring locations are shown on Drawing No. 2 in Appendix A of this report. The borings were drilled with a conventional truck-mounted CME-75 drill rig equipped 8-inch outside diameter (O.D.) hollow-stem augers.

The test borings were drilled under the direction of a Moore Twining Geotechnical Engineer. The soils encountered in the test borings were logged during drilling by a representative of our firm. The field soil classification was in accordance with the Unified Soil Classification System and consisted of particle size, color, and other distinguishing features of the soil.

The presence and elevation of free water, if any, in the borings were noted and recorded during drilling and immediately following completion of the borings.

Test boring locations were determined with reference to existing property corners and site features shown on the site plan. The locations of the test borings are described on the boring logs in Appendix B of this report. The test borings were backfilled with material excavated during the drilling operations and patched with asphalt concrete cold patch materials.

4.1.3 Soil Sampling: Standard penetration tests were conducted in the test borings, and both disturbed and relatively undisturbed soil samples were obtained.

The standard penetration resistance, N-value, is defined as the number of blows required to drive a standard split barrel sampler into the soil. The standard split barrel sampler has a 2-inch O.D. and a 1⅜-inch inside diameter (I.D.). The sampler is driven by a 140-pound weight free falling 30 inches. The sampler is lowered to the bottom of the bore hole and set by driving it an initial 6 inches. It is then driven an additional 12 inches and the number of blows required to advance the sampler the additional 12 inches is recorded as the N-value.

Relatively undisturbed soil samples for laboratory tests were obtained by pushing or driving a California modified split barrel ring sampler into the soil. The soil was retained in brass rings, 2.5 inches O.D. and 1-inch in height. The lower 6-inch portion of the samples were placed in close-fitting, plastic, airtight containers which, in turn, were placed in cushioned boxes for transport to the laboratory.

During the drilling of the test borings, bulk samples of soil were also obtained for laboratory testing. Soil samples obtained were taken to Moore Twining's laboratory for classification and testing.

4.1.4 Percolation Tests: Two percolation tests was conducted on October 24, 2024. Percolation test borings P-1 and P-2 were drilled to depths of about 20 feet BSG on October 23, 2024. The locations of the percolation tests are shown on Drawing No. 2 in Appendix A of this report.

Percolation tests were conducted at locations P-1 and P-2 and infiltration rates were estimated from the percolation test data.

The percolation testing was conducted in general conformance with San Bernardino County's Section VII.3.8 in Appendix D of their "Technical Guidance Document for Water Quality Management Plans," effective date September 19, 2013, which utilizes the percolation test procedure per Riverside County Department of Environmental Health. The percolation tests included placement of about 2 inches of gravel at the bottom of the hole and installation of percolation test pipe with gravel in the annulus space to keep the pipe stabilized and reduce the potential for washout of the soils on the sides of the holes within the test zone. On the day prior to the testing, about 5 gallons of water was added to each hole. On the day of the percolation tests, per the procedure for deep percolation tests, the percolation tests included presoaking the percolation test holes with at least 40 to 50 gallons of water in P-1 and about 60 gallons of water in P-2 for a period of 2 hours so that the water flow into the hole held constant at a level of at least 5 times the hole's radius above the bottom of the hole. Testing commenced following the presoak. The sandy soil test method was used. This included making two (2) consecutive measurements to show that at least six (6) inches of water seeped away in less than 25 minutes, and the test method indicates to run the test for an additional hour with measurements taken every ten (10) minutes. During the tests, measurements were taken every 10 minutes for an hour at each percolation test location. Measurements were taken with a precision of 0.25 inches or better. The procedure indicates that the drop that occurs during the final reading is to be used to calculate the percolation rate. As required, the field data included the two (2) 25-minute readings and the readings for an additional hour. The head of the water in the test holes was generally about 27 to 28 inches when refilling the water level.

4.2 Laboratory Testing: The laboratory testing was programmed to determine selected physical and engineering properties of the soils sampled during drilling. The tests were conducted on disturbed and relatively undisturbed samples considered representative of the subsurface soils encountered.

The results of laboratory tests are summarized in Appendix C of this report. These data, along with the field observations, were used to prepare the final test boring logs in Appendix B of this report.

5.0 FINDINGS AND RESULTS

The findings and results of the research, field exploration and laboratory testing are summarized in the following subsections.

5.1 Subsurface Profile: The following paragraphs describe the subsurface conditions encountered at the boring locations drilled.

The borings were all drilled in existing asphalt concrete pavement areas. The five (5) borings drilled (borings B-1 through B-3 and P-1 and P-2) encountered approximately 2 to 3 inches of asphalt concrete. No aggregate base was encountered underlying any of the asphalt concrete pavements at the locations cored. The asphalt concrete pavement was underlain by silty sand soils that extended to depths ranging from about 1½ to 13½ feet BSG. The silty sands were underlain by interbedded layers of silty, clayey sands; clayey sands; poorly graded sands with silt and well graded sands with silt that extended to depths of about 8½ to 33½ feet BSG. These layers were generally underlain by poorly graded sands and well graded sands with silt extending to the maximum depth explored, about 60 feet BSG.

The foregoing is a general summary of the soil conditions encountered in the test borings drilled for this investigation. Detailed descriptions of the soils encountered at each test boring location are presented in the logs of borings in Appendix B of this report. The stratification lines in the logs represent the approximate boundary soil types; the actual in-situ transition may be gradual.

5.2 Soil Engineering Properties: The following is a description of the soil engineering properties as determined from our field exploration and laboratory testing.

Silty Sands: The silty sands encountered were described as very loose to dense, as determined by standard penetration resistance, N-values, ranging from 3 to 32 blows per foot. The moisture content of the silty sands ranged from 4 to 12 percent. Two (2) relatively undisturbed samples revealed dry densities of 113.6 and 116.0 pounds per cubic foot.

A consolidation test conducted on a silty sand sample collected at depths of about 1 to 2½ feet BSG from boring B-2 indicated low compressibility characteristics (about 2.4 percent consolidation under a load of 8 kips per square foot). Upon inundation, the sample exhibited slight swell potential (about 0.1 percent collapse) when wetted under a load of 0.25 kips per square foot. Another consolidation test conducted on a silty sand sample collected at depths of about 5 to 6½ feet BSG from boring B-2 indicated low compressibility characteristics (about 4.0 percent consolidation under a load of 8 kips per square foot). Upon inundation, the sample exhibited slight collapse potential (about 0.4 percent collapse) when wetted under a load of 0.5 kips per square foot. Direct shear tests conducted on silty sand samples collected from depths of about 1 to 2½ feet BSG and 5 to 6½ feet BSG from boring B-2 indicated internal angles of friction of 33 and 41 degrees with cohesion values of 130 and 220 pounds per square foot, respectively.

Silty, Clayey Sands: The silty, clayey sands encountered were described as medium dense, as determined by an SPT equivalent N-value (estimated by driving a California Modified split barrel sampler) of 28 blows per foot. The moisture content of a sample tested was 6.2 percent. One (1) relatively undisturbed sample revealed a dry density of 126.5 pounds per cubic foot. An Atterberg Limits conducted on a silty, clayey sand sample collected from depths of about 3½ to 5 feet BSG from boring B-1 indicated a liquid limit of 21 and a plasticity index of 6.

Clayey Sands: The clayey sands encountered were described as medium dense, as indicated by standard penetration resistance, N-values, ranging from 14 to 30 blows per foot. The moisture content of the samples tested ranged from about 6 to 11 percent. An Atterberg Limit test conducted on a clayey sand sample collected from depths of about 28½ to 30 feet BSG from boring B-2 indicated a liquid limit of 25 and a plasticity index of 8.

Poorly Graded Sands, Poorly Graded Sands with Silt and Well Graded Sands with Silt: The poorly graded sands, poorly graded sands with silt and well graded sands with silt encountered were described as loose to dense as determined by standard penetration resistance, N-values, ranging from 10 to 49 blows per foot. The moisture content of the samples tested ranged from about 4 to 8 percent. One (1) relatively undisturbed sample of poorly graded sand with silt revealed a dry density of 119.2 pounds per cubic foot.

Resistance-Value (R-value) Test: An R-value test conducted on a near surface sample containing a mixture of some silty sand and mostly clayey sand and collected from depths of about 1 to 5 feet BSG from boring B-3 indicated an R-value of 37.

Chemical Tests: Chemical tests performed on a near surface soil sample resulted in a pH value of 7.5; a minimum resistivity value of 3,100 ohms-centimeter; 0.0021 percent by weight concentration of chlorides; and 0.0026 percent by weight concentration of sulfates.

5.3 Groundwater Conditions: Groundwater was not encountered in the test borings drilled at the time of our October 2024 field exploration to the maximum depth explored, about 60 feet BSG.

Based on our review of groundwater data published by the Department of Water Resources, a well located about 1½ miles northwest of the site indicates that groundwater has ranged from an elevation of about 2,808 feet in 1981 to an elevation of about 2,767 feet BSG in 2005 for data collected between the years 1981 and 2017. The most recent measurement from this well in 2017 indicated groundwater at an elevation of about 2,778 feet. Considering the subject site has an average elevation of about 3,259 feet above mean sea level (USGS Topographic Data on Google Earth), groundwater at the site is considered to be greater than 450 feet below site grade.

It should be recognized, however, that groundwater elevations fluctuate with time, since they are dependent upon seasonal precipitation, irrigation, land use, and climatic conditions as well as other factors. Therefore, water level observations at the time of the field investigation may vary from those encountered both during the construction phase and the design life of the project. The evaluation of such factors was beyond the scope of this investigation and report.

5.4 Results of Percolation Testing: The infiltration rate estimated from the percolation test data is summarized in Table No. 1 below. The percolation test data is included in Appendix D of this report.

Table No. 1
Results of Percolation Testing

Location and Depth	Field (Unfactored) Infiltration Rate (Inches per Hour)[1]	Subgrade Soil Type
P-1 at 20.25 feet BSG	3.3	Dense Poorly Graded Sand with Silt
P-2 at 20.2 feet BSG	4.3	Medium Dense Well Graded Sand with Silt

Notes:
BSG - Below site grade
[1] - Includes no factor of safety

It should be noted that the field tests do not consider the long-term effects of subgrade saturation, silt accumulation, groundwater influence, nor vegetation. In general, the infiltration rate of the soils will decrease when the soils are saturated and the reduction in the infiltration rate increases the longer the soils are saturated. Published studies indicate field infiltration rates can significantly overestimate the saturated permeability. In addition, soil bed consolidation, sediment, suspended soils, etc. in the discharge water can result in clogging of the pore spaces in the soil. This clogging effect can also reduce the long-term infiltration rate. Numerous other factors, such as variations in soil type and soil density across the entire area of the system can influence the infiltration rate, both short and long term.

6.0 EVALUATION

The data and methodology used to develop conclusions and recommendations for project design and preparation of construction specifications are summarized in the following subsections. The evaluation was based upon the subsurface soil conditions encountered during this investigation and our understanding of the proposed construction. The conclusions obtained from the results of our evaluations are described in the Conclusions section of this report.

6.1 Existing Surface and Subsurface Conditions: At the time of our field exploration, the surface of the site was occupied by various pavements, a building, a canopy, and slabs-on-grade, which are to be demolished. It is possible some of the existing slabs on grade in the southern half of the site include buried foundations where a building was removed in 2017. In addition, the sewer or septic pipe extending vertically out of the ground in the area of the slabs-on-grade in the southern half of the site and an outline of a trench trending northeast away from one of these slabs-on-grade suggest that subsurface septic system(s) (tanks, piping, leach fields, etc.) may be present. A power pole exists in the southeastern portion of the site, and an overhead line was noted as trending to the southeast away from the power pole. Abundant weed growth was noted within the cracked pavements in the southern half of the site and also in some of the cracked pavements in the northern half of the site. A chain link fence surrounded an equipment storage area on the south side of the existing building in the northern half of the site. A chain link fence also surrounded the northern, eastern and southern sides of the southern half of the site. Also, a tree was also noted along the fence and southern boundary of the site in the southwest corner of the site.

It is our understanding that the existing improvements will be demolished and removed as part of the site preparation for the proposed Starbucks development. As a part of demolition, it is recommended to remove all existing surface and subsurface improvements. Further, all utilities not required for the new construction should be entirely removed, and not abandoned in-place. Numerous underground utilities were noted at the site, including site light (electric), water lines, sewer lines, etc, that should be identified and removed during demolition and site preparation. As previously noted, a subsurface septic system(s) (tanks, piping, leach fields, etc.) may be present in the southern portion of the site in the area of the concrete slabs-on-grade left in-place. These surface and subsurface features and undocumented fill soils should be entirely removed to expose native, undisturbed soils; and the resulting excavations backfilled as engineered fill to the finished grades. The power pole in the southeastern portion of the site will also need to be removed from the site.

Deep shaft foundations may support the existing canopy in the northern half of the site. If the existing canopy is supported by deep shaft foundations, the portion of foundations that extend below 5 feet below final grade, and that are not within 5 feet of any utility trench, may remain in place. The portion of the foundations above five feet below grade, or within 5 lateral feet of adjacent excavations, should be cutoff and removed. The resultant excavations should be backfilled as engineered fill to final grades.

6.2 Static Settlement and Bearing Capacity of Shallow Foundations: The potential for excessive total and differential static settlement of foundations and slabs-on-grade is a geotechnical concern that was evaluated for this project. The increases in effective stress to underlying soils which can occur from new foundations and structures, placement of fill, etc. can cause vertical deformation of the soils, which can result in damage to the overlying structures and improvements. The differential component of the settlement is often the most damaging. In addition, the allowable bearing pressures of the soils supporting the foundations were evaluated for shear and punching type failure of the soils resulting from the imposed foundation loads.

The near surface loose soils encountered in the borings drilled for the proposed Starbucks building are not considered suitable for direct support of proposed structure. In order to reduce the potential for excessive static settlement of foundations and to limit the total and differential static settlement of foundations to 1 inch total and ½ inch differential in 40 feet, it is recommended to support new foundations for the Starbucks structure on engineered fill soils that extend to either: 1) a depth of 4 feet below preconstruction site grade; or 2) to the depth required to provide at least 1 foot of engineered fill below proposed foundations, whichever is greater. In addition, the over-excavation recommended for the proposed Starbucks building will also need to be conducted to remove all surface and subsurface structure such as the existing building, foundations, underground utilities, etc. All undocumented fill soils and soils disturbed from removal of subsurface improvements will also need to be removed during site preparation for the proposed Starbucks building. Provided the building pad areas are prepared in accordance with the recommendations included in this report, a net allowable soil bearing pressure of 2,500 pounds per square foot, for dead-plus-live loads, may be used for design.

The net allowable soil bearing pressure is the additional contact pressure at the base of the foundations caused by the structure. The weight of the soil backfill and weight of the footing may be neglected. The net allowable soil bearing pressure presented was selected using the Terzaghi bearing capacity equations for foundations considering a minimum factor of safety of 3.0 and based on the anticipated static settlements noted in this report.

A structural engineer experienced in foundation and slab-on-grade design should determine the thickness, reinforcement, design details and concrete specifications for the proposed building foundations and slabs-on-grade based on the anticipated settlements estimated in this report.

6.3 Seismic Ground Rupture and Design Parameters: The closest active fault is the Ord Mountain Fault zone (part of the North Front Thrust System), which is located about 6½ miles southeast of the site. The project site is not located in an Alquist-Priolo Earthquake Fault Zone. Accordingly, the potential for ground rupture at the site is considered low.

It is our understanding that the 2022 CBC will be used for structural design, and that seismic site coefficients are needed for design.

Based on the 2022 CBC, a Site Class D represents the on-site soil conditions with standard penetration resistance, N-values averaging between 15 and 50 blows per foot in the upper 100 feet below site grade.

A table providing the recommended seismic coefficients and earthquake spectral response acceleration values for the project site is included in the Foundation Recommendations section of this report. A Maximum Considered Earthquake (geometric mean) peak ground acceleration adjusted for site effects (PGA_M) of 0.550g was determined for the site using the Seismic Design Maps tool provided by the Structural Engineers Association of California (https://seismicmaps.org/).

6.4 Liquefaction and Seismic Settlement: Liquefaction and seismic settlement are conditions that can occur under seismic shaking from earthquake events. Liquefaction describes a phenomenon in which a saturated, cohesionless soil loses strength during an earthquake as a result of induced shearing strains. Lateral and vertical movements of the soil mass, combined with loss of bearing usually results. Fine, well sorted, loose sand, shallow groundwater conditions, higher intensity earthquakes, and particularly long duration of ground shaking are the requisite conditions for liquefaction.

Seismic settlement analyses were conducted based on soil properties from the boring with the deepest advance (B-2) using the computer program LiquefyPro, developed by CivilTech Software. Also, the depth of engineered fill recommended for site preparation was considered in the analysis. A Maximum Considered Earthquake (geometric mean) peak ground acceleration adjusted for site effects (PGA_M) of 0.550g was determined for the site using the Ground Motion Parameter Calculator provided by the United States Geological Survey (http://earthquake.usgs.gov/designmaps/us/application.php). A Maximum Considered Earthquake magnitude of 8.2 was applied in the analysis based on the highest earthquake magnitude determined from probabilistic analysis (hazard deaggregation analysis fro the USGS Unified Hazard Tool (https://earthquake.usgs.gov/hazards/interactive/), and deterministic analysis using the Building Seismic Safety Council 2014 (BSSC2014) Scenario Catalog from the USGS website for the Earthquake Hazards Program (https://earthquake.usgs.gov/scenarios/catalog/bssc2014/). Soil parameters, such as wet unit weight, standard penetration test, N-values, and fines content were input from the boring data for the soil layers encountered throughout the depths explored.

Due to the depth to historical groundwater in the vicinity of this site (greater than 450 feet BSG), liquefaction is not considered a concern for the proposed development. However, there is potential for dry seismic settlement to occur during shaking from earthquakes. As part of the analysis, the (N1)60s values of 30 or greater (dense to very dense soils) were not considered to be subject to significant dry seismic settlement in the analyses. Based on the analysis, seismic settlement was estimated to be negligible.

6.5 Asphaltic Concrete (AC) Pavements: Recommendations for asphaltic concrete pavement structural sections are presented in the "Recommendations" section of this report for proposed asphaltic concrete (AC) pavements. The structural sections were designed using the gravel equivalent method in accordance with the California Department of Transportation Highway Design Manual. The analysis was based on traffic index values ranging from 5.0 to 7.0. The appropriate paving section should be determined by the project civil engineer or applicable design professional based on the actual vehicle loading (traffic index) values. If traffic loading is anticipated to be greater than assumed, the pavement sections should be re-evaluated.

It should be noted that if pavements are constructed prior to the construction of the structures, the additional construction truck traffic should be considered in the selection of the traffic index value. If more frequent or heavier traffic is anticipated and higher Traffic Index values are needed, Moore Twining should be contacted to provide additional pavement section designs.

A Resistance-Value (R-value) test was conducted on a near surface sample containing a mixture of some silty sand and mostly clayey sand that was collected from boring B-3 which was drilled in the entrance area for the proposed drive-thru pickup drive lane for the Starbucks. The test indicated an R-value result of 37. R-values of 45 and 51 were determined in the area of the bordering proposed McDonald's parcel during our previous January 2019 investigation at the subject site for the previously planned Circle K development. However, the previous samples tested contained all silty sand material and did not contain any clayey sand material, thus resulting in higher R-values. Based on the result of the current testing, and considering potential variation in the near surface soils, an R-value of 35 was used to provide the pavement section thickness recommendations.

6.6 Portland Cement Concrete (PCC) Pavements: Recommendations for Portland cement concrete (PCC) pavement structural sections are presented in the "Recommendations" section of this report. The PCC pavement sections are based upon the amount and type of traffic loads being considered and the characteristics of the subgrade soils which will support the pavement. The measure of the amount and type of traffic loads are based upon an index of equivalent axle loads (EAL) from the loading of heavy trucks called a traffic index (T.I).

The recommendations provided in this report for PCC pavements are based on a trash truck loading and the design procedures contained in the Portland Cement Association "Thickness Design of Highway and Street Pavements."

The pavement sections were prepared based on traffic indexes ranging from 6.0 to 8.0. The recommended structural sections were based primarily on the Portland Cement Association "Thickness Design of Highway and Street Pavements." A modulus of subgrade reaction, K-value, for the pavement section, considering a minimum 4-inch layer of aggregate base material (minimum R-value of 78), of 190 psi/in at the top of the aggregate base was used for pavement design.

6.7 Soil Corrosion: The risk of corrosion of construction materials relates to the potential for soil-induced chemical reaction. Corrosion is a naturally occurring process whereby the surface of a metallic structure is oxidized or reduced to a corrosion product such as iron oxide (i.e., rust). The metallic surface is attacked through the migration of ions and loses its original strength by the thinning of the member.

Soils make up a complex environment for potential metallic corrosion. The corrosion potential of a soil depends on numerous factors including soil resistivity, texture, acidity, field moisture and chemical concentrations. In order to evaluate the potential for corrosion of metallic objects in contact with the onsite soils, chemical testing of soil samples was performed by Moore Twining as part of this report. The test results are included in Appendix C of this report. Conclusions regarding the corrosion potential of the soils tested are included in the Conclusions section of this report based on the National Association of Corrosion Engineers (NACE) corrosion severity ratings listed in the Table No. 2 below.

Table No. 2
Soil Resistivity and Corrosion Potential Ratings

Soil Resistivity (ohm cm)	Corrosion Potential Rating
>20,000	Essentially non-corrosive
10,000 - 20,000	Mildly corrosive
5,000 - 10,000	Moderately corrosive
3,000 - 5,000	Corrosive
1,000 - 3,000	Highly corrosive
<1,000	Extremely corrosive

The results of soil sample analyses indicate that the near-surface soils exhibit a "corrosive" corrosion potential to buried metal objects. This is consistent with our previous 2019 test results at the site on the proposed McDonald's parcel during Moore Twining's investigation for the previously planned Circle K development. Appropriate corrosion protection should be provided for buried improvements based on the "corrosive" corrosion potential. If piping or concrete are placed in contact with imported soils, these soils should be analyzed to evaluate the corrosion potential of these soils.

If the manufacturers or suppliers cannot determine if materials are compatible with the soil corrosion conditions, a professional consultant, i.e., a corrosion engineer, with experience in corrosion protection should be consulted to provide design parameters. Moore Twining does not provide corrosion engineering services.

6.8 Sulfate Attack of Concrete: Degradation of concrete in contact with soils due to sulfate attack involves complex physical and chemical processes. When sulfate attack occurs, these processes can reduce the durability of concrete by altering the chemical and microstructural nature of the cement paste. Sulfate attack is dependent on a variety of conditions including concrete quality, exposure to sulfates in soil, groundwater and environmental factors. The standard practice for geotechnical engineers in evaluation of the soils anticipated to be in contact with structural concrete is to perform laboratory testing to determine the concentrations of sulfates present in the soils. The test results are then compared with the exposure classes in Table 19.3.1.1 of ACI 318 to provide guidelines for concrete exposed to soils containing sulfates. It should be noted that other exposure conditions such as the presence of: seawater, groundwater with elevated concentrations of dissolved sulfates, or materials other than soils can result in sulfate exposure categories to concrete that are higher than the concentrations of sulfate in soil. The design engineer will need to determine whether other potential sources of sulfate exposure need to be considered other than exposure to sulfates in soil. The sulfate exposure classes for soils from Table 19.3.1.1 are summarized in the below table.

Table No. 3
ACI Exposure Categories for Water Soluble Sulfate in Soils

Sulfate Exposure Class (per ACI 318)	Water Soluble Sulfate in Soil (Percent by Mass)
S0	Less than 0.10 Percent
S1	0.10 to Less than 0.20 Percent
S2	0.20 to Less than or Equal to 2.00 Percent
S3	Greater than 2.00 Percent

Common methods used to resist the potential for degradation of concrete due to sulfate attack from soils include, but are not limited to the use of sulfate-resisting cements, air-entrainment and reduced water to cement ratios. The laboratory test results for sulfates are included in Appendix C of this report. Conclusions regarding the sulfate test results are included in the Conclusions section of this report.

7.0 CONCLUSIONS

Based on the data collected during the field and laboratory investigations, our geotechnical experience in the vicinity of the project site, and our understanding of the anticipated construction, the following general conclusions are presented.

7.1 The site is considered suitable for the proposed construction with regard to support of the proposed improvements, provided the recommendations contained in this report are followed. It should be noted that the recommended design consultation and observation of clearing, and earthwork activities by Moore Twining are integral to this conclusion.

7.2 The subsurface soils encountered generally consisted of very loose to medium dense silty sands extending to depths of about 1½ to 3½ feet across the site. Below the very loose to loose silty sands, the relative density of the silty sands soils improved to medium dense to dense and extended to depths of about 3½ to 13½ feet BSG. Below the silty sands, medium dense silty, clayey sands; medium dense clayey sands; medium dense to dense poorly graded sands with silt; and medium dense well graded sands with silt were encountered extending to a depth of about 33½ feet BSG which were generally underlain by dense poorly graded sands and dense well graded sands with silt extending to the maximum depth explored of 60 feet BSG.

7.3 Laboratory testing on the near surface soils indicate the materials are non-plastic, non-expansive, and exhibit low compressibility characteristics, slight collapse potential, and moderate to high shear strength properties. The near surface soils exhibit fair support characteristics for pavements when compacted as engineered fill.

7.4 Groundwater was not encountered in the test borings drilled at the time of our October 2024 investigation to the maximum depth explored, about 60 feet BSG. Based on groundwater data published by the Department of Water Resources, the depth to groundwater at the site is considered to be greater than 450 feet below site grade.

7.5 Due to the depth to historical groundwater in the vicinity of this site (greater than 450 feet BSG), liquefaction is not considered a concern for the proposed development. However, there is potential for dry seismic settlement to occur during shaking from earthquakes. As part of the analysis, the (N1)60s values of 30 or greater (dense to very dense soils) were not considered to be subject to significant dry seismic settlement in the analyses. Based on the analysis, seismic settlement was estimated to be negligible.

7.6 The result at percolation test P-1 at 20.25 feet BSG indicated an unfactored infiltration rate of 3.3 inches per hour. The result at percolation test P-2 at 20 feet BSG indicated an unfactored infiltration rate of 4.3 inches per hour. The results indicate that storm water infiltration systems at a depth of 20 feet BSG appear feasible for this site. This report recommends that the lower unfactored infiltration rate of 3.3 inches per hour be considered for use in design for infiltration systems at a depth of 20 feet BSG when including an appropriate factor of safety. Appendix D, Section VII (Technical Guidance Document Appendices) of Technical Guidance Document for Water Quality Management Plans, dated June 7, 2013, prepared by CDM Smith Inc. for the County of San Bernardino Areawide Stormwater Program discusses the factor of safety to be used to be used for design of infiltration facilities. Appendix D, Section VII.4 'Considerations for Infiltration Rate Factor of Safety' indicates, "The factor of safety used to compute the *design infiltration rate* shall not be less than 2.0 but may be higher at the discretion of the design engineer and acceptance of the plan reviewer...."

7.7 Chemical testing of soil samples indicated the soils exhibit a "corrosive" corrosion potential.

7.8 Based on Table 19.3.1.1 - Exposure categories and classes from Chapter 19 of ACI 318, the sulfate concentration from chemical testing of soil samples falls in the S0 classification (less than 0.10 percent by weight) for concrete.

7.9 The potential for fault rupture on the site is low.

7.10 It is our understanding that the existing improvements will be demolished as part of the site preparation for the proposed Starbucks development. To provide adequate support for the planned building and pavement improvements, existing surface and subsurface improvements not required for the new construction should be entirely removed, and not abandoned in-place. Numerous underground utilities were noted at the site, including site light (electric), water lines, sewer lines, etc, that should be identified and removed during demolition and site preparation. A subsurface septic system(s) (tanks, piping, leach fields, etc.) may also be present in the southern portion of the site in the area of the concrete slabs-on-grade left in-place. These surface and subsurface features and undocumented fill soils should be entirely removed to expose native, undisturbed soils; and the resulting excavations backfilled as engineered fill to the finished grades.

In order to reduce the potential for excessive static settlement of foundations and to limit the total and differential static settlement of foundations to 1 inch total and ½ inch differential in 40 feet, it is recommended to support new foundations for the Starbucks structure on engineered fill soils that extend to either: 1) a depth of 4 feet below preconstruction site grade; or 2) to the depth required to provide at least 1 foot of engineered fill below proposed foundations, whichever is greater.

7.11 If the existing canopy is supported by deep shaft foundations, the portion of foundations that extend below 5 feet below final grade, and that are not within 5 feet of any utility trench, may remain in place. The portion of the foundations above five feet below grade, or within 5 lateral feet of adjacent excavations, should be cutoff and removed. The resultant excavations should be backfilled as engineered fill to final grades.

8.0 RECOMMENDATIONS

Based on the evaluation of the field and laboratory data and our geotechnical experience in the vicinity of the project, the following recommendations are presented for use in the project design and construction. However, this report should be considered in its entirety. When applying the recommendations for design, the background information, procedures used, findings, evaluation, and conclusions should be considered. The recommended design consultation and construction monitoring by Moore Twining are integral to the proper application of the recommendations. The Contractor is required to comply with the requirements and recommendations presented in this report.

Where the requirements of a governing agency, utility agency or pipe manufacturer differ from the recommendations of this report, the more stringent recommendations should be applied to the project.

8.1 General

8.1.1 Moore Twining should be retained to review the final grading plans and foundation plans before the plans are released for bidding purposes so that any relevant recommendations can be presented.

8.1.2 When the actual foundation loads are known, this information should be provided to Moore Twining for review to confirm the recommendations for site preparation are appropriate. In the event the foundation loads are different than assumed, the recommendations in this report may need to be revised.

8.1.3 A preconstruction meeting including, as a minimum, the owner, general contractor, earthwork contractor, foundation and paving subcontractors, and Moore Twining should be scheduled by the general contractor at least one week prior to the start of clearing and grubbing. The purpose of the meeting should be to discuss critical project requirements and scheduling.

8.1.4 The Contractor(s) bidding on this project should determine if the information included in the construction documents are sufficient for accurate bid purposes. If the data are not sufficient, the Contractor should notify the owner in writing prior to bidding the project that the data provided in this report is not sufficient to bid the project. This notification should be specific and explain in detail as to what data are not sufficient.

8.2 Site Grading and Drainage

8.2.1 It is critical to develop and maintain site grades which will drain surface and roof runoff away from foundations and floor slabs - both during and after construction. Adjacent exterior finished grades should be sloped a minimum of two percent for a distance of at least ten feet away from the structures, or as necessary to preclude ponding of water adjacent to foundations, whichever is more stringent. Adjacent exterior grades which are paved should be sloped at least 1 percent away from the foundations.

8.2.2 It is recommended that landscape planted areas, etc. not be placed adjacent to the building foundations and/or interior slabs-on-grade. Trees should be setback from the proposed structures at least 10 feet or a distance equal to the anticipated drip line radius of the mature tree. For example, if a tree has an anticipated drip-line diameter of 30 feet, the tree should be planted at least 15 feet away (radius) from proposed or existing buildings.

8.2.3 Landscaping after construction should direct rainfall and irrigation runoff away from the structures and should establish positive drainage of water away from the structures. Care should be taken to maintain a leak-free sprinkler system.

8.2.4 Landscape and planter areas should be irrigated using low flow irrigation (such as drip, bubblers or mist type emitters). The use of plants with low water requirements are recommended.

8.2.5 Rain gutters and roof drains should be provided, and connected directly to the site storm drain system. As an alternative, the roof drains should extend a minimum of 5 feet away from the structures and the resulting runoff directed away from the structures at a minimum of 2 percent.

8.2.6 Stormwater systems that allow wetting of the soils should not be placed directly adjacent to structures or foundations. On a preliminary basis, these types of features should be setback at least 20 feet from foundations. The result at percolation test P-1 at 20.25 feet BSG indicated an unfactored infiltration rate of 3.3 inches per hour. The result at percolation test P-2 at 20 feet BSG indicated an unfactored infiltration rate of 4.3 inches per hour. The results indicate that storm water infiltration systems at a depth of 20 feet BSG appear feasible for this site for infiltration systems such as deeper dry wells. This report recommends that the lower unfactored infiltration rate of 3.3 inches per hour be considered for use in design for infiltration systems at a depth of 20 feet BSG when including an appropriate factor of safety. Shallow infiltration systems should not be considered based on the results of previous percolation testing conducted by Moore Twining at the site in 2019 that identified cemented soils and unfavorable infiltration rates in the near surface soils. Appendix D, Section VII (Technical Guidance Document Appendices) of Technical Guidance Document for Water Quality Management Plans, dated June 7, 2013, prepared by CDM Smith Inc. for the County of San Bernardino Areawide Stormwater Program discusses the factor of safety to be used for design of infiltration facilities. Appendix D, Section VII.4 'Considerations for Infiltration Rate Factor of Safety' indicates, "The factor of safety used to compute the *design infiltration rate* shall not be less than 2.0 but may be higher at the discretion of the design engineer and acceptance of the plan reviewer...."

8.3 Site Preparation

8.3.1 Stripping should be conducted in all areas of existing landscaping to remove surface vegetation and root systems (if any). The general depth of stripping should be sufficiently deep to remove the root systems and organic topsoils. A tree occupied the southwest corner of the site. Tree roots that are encountered during site grading should be excavated to remove all roots larger than ¼-inch or accumulation of organics greater than 3 percent by dry weight.

8.3.2 As part of the site preparation, existing surface and subsurface improvements should be completely removed. Existing subsurface improvements and associated backfill soils should be excavated to at least 12 inches below the improvements removed, to the depth required to remove all disturbed soils, and all fill materials, whichever requires the deeper excavation. Underground utilities to be removed should not be capped and abandoned or crushed and buried in-place. Instead, underground utilities not scheduled to remain should be fully removed from the site along with the

associated trench backfill soils that should be assumed to extend at a 1 horizonal to 1 vertical gradient extending from the bottom of the utility to the ground surface. Excavated soils associated with removal of utilities and other subsurface improvements should be moisture conditioned and compacted as engineered fill as recommended in this report.

8.3.3 For the deep shaft foundations that may support the existing canopy, the portion of foundations that extend below 5 feet below final grade, and that are not within 5 feet of any utility trench, may remain in place. The portion of the foundations above five feet below grade, or within 5 lateral feet of adjacent excavations, should be cutoff and removed. The resultant excavations should be backfilled as engineered fill to final grades.

8.3.4 The fill soils used to backfill the USTs (removed in 1998 from the western portion and southwest side of the existing canopy) were documented to be compacted as engineered fill. When the area of this certified fill is exposed, Moore Twining should observe it and probe it to determine if any unsuitable or loose soils are exposed during the over-excavations for the proposed building and other site improvements. If any unsuitable or loose soils are exposed, these soils should be removed, moisture conditioned as necessary and compacted as engineered fill.

8.3.5 After stripping and removal of existing surface and subsurface improvements, the building pad areas for the proposed Starbucks and over-build zone should be over-excavated to the depths required to meet all of the following requirements, whichever requires the deeper excavation:

1) to at least 1 foot below the bottom of footings,
2) to at least 4 feet below preconstruction site grades,
3) to the depth required to remove existing undocumented fill soils, and
4) to at least 12 inches below the subsurface improvements (structures, utilities, etc.) to be removed.

The horizontal limits of over-excavation should include the footprint of the building, all foundations, all concrete walkways adjacent to the structures, and a minimum of 5 feet beyond these features, whichever is greater. Upon review of the Contractor's survey data (regarding the vertical and horizontal limits of the over-excavation) and approval of the over-excavation by Moore Twining, the bottom of the excavation should be scarified to a minimum depth of 8 inches, moisture conditioned, and compacted as engineered fill.

8.3.6 It is recommended that extra care be taken by the contractor to ensure that the horizontal and vertical extent of the over-excavation and compaction conform to the site preparation recommendations presented in this report. The horizontal limit of over-excavation for the building pad for the proposed Starbucks building and attached concrete walkways should be depicted on the project plans. Moore Twining is not responsible for measuring and verifying the horizontal and vertical extent of over-excavation and compaction. The contractor should verify in writing to the owner and Moore Twining that the horizontal and vertical over-excavation limits were completed in conformance with the recommendations of this report, the project plans, and the specifications (the most stringent applies). It is recommended that this verification be performed by a licensed surveyor. This verification should be provided prior to requesting pad certification from Moore Twining or excavating for foundations.

8.3.7 Following stripping and removal of surface and subsurface improvements, areas to receive miscellaneous lightly loaded foundations, such as site walls, retaining walls or screen walls for trash enclosures, should be over-excavated to a minimum of 1 foot below foundations, to a depth of at least 4 feet below preconstruction site grades, to the depth required to remove undocumented fills, or to at least 12 inches below subsurface improvements (utilities, etc.) to be removed, whichever is greater. The over-excavation for retaining walls/screen walls should extend to at least 3 feet beyond the edges of the foundations or up to improvements to remain, whichever occurs first. The bottom of the over-excavation should be scarified to a depth of at least 8 inches, moisture conditioned and compacted as engineered fill.

8.3.8 Following stripping and removal of surface and subsurface improvements, areas to receive new pavements, exterior slabs on grade outside the building pad preparation limits and areas to receive fill outside the building pad preparation limits should be over-excavated to a depth of 12 inches below pre-construction pavement grades, to the depth required to remove undocumented fill soils, to a depth of 12 inches below the bottom of the new aggregate base section, to at least 12 inches below subsurface improvements (utilities, etc.) to be removed, and to the depth required to remove all disturbed soils, whichever is greater. The exposed surface after over-excavation should be scarified to a minimum depth of 8 inches, moisture conditioned to between optimum and three (3) percent above optimum moisture content and compacted as engineered fill. The limits of

scarification for pavement areas and exterior slabs should extend at least 3 feet beyond the edge of these improvements or up to improvements to remain, whichever occurs first. The upper 12 inches of the subgrade soils beneath the pavement areas should be compacted to at least 95 percent of the maximum dry density as determined by ASTM Test Method D1557.

8.3.9 All fill required to bring the site to final grades should be placed as engineered fill. In addition, all native soils over-excavated should be compacted as engineered fill. Refer to Section 8.4.5 of this report for the moisture content range and minimum percent relative compaction recommendations for engineered fill.

8.3.10 The contractor should locate all on-site water wells (if any) and monitoring wells. All wells scheduled for demolition should be abandoned per state and local requirements. The contractor should obtain an abandonment permit from the local environmental health department, and issue certificates of destruction to the owner and Moore Twining upon completion. At a minimum, wells in building areas (and within 5 feet of building perimeters) should have their casings removed to a depth of at least 8 feet below preconstruction site grades or finished pad grades, whichever is deeper. In parking lot or landscape areas, the casings should be removed to a depth of at least 5 feet below site grades or finished grades. The wells should be capped with concrete and the resulting excavations should be backfilled as engineered fill.

8.3.11 The moisture content and density of the compacted soils should be maintained until the placement of concrete. If soft or unstable soils are encountered during excavation or compaction operations, our firm should be notified so the soils conditions can be examined and additional recommendations provided to address the pliant areas.

8.3.12 Final grading shall produce building pads ready to receive a slab-on-grade which is smooth, planar, and resistant to rutting. The finished pad (before aggregate base is placed) shall not depress more than one-half (½) inch under the wheels of a fully loaded water truck, or equivalent loading. If depressions more than one-half (½) inch occur, the contractor shall perform remedial grading to achieve this requirement at no cost to the owner.

8.3.13 The Contractor should be responsible for the disposal of concrete, asphaltic concrete, soil, spoils, etc. (if any) that must be exported from the site. Individuals, facilities, agencies, etc. may require analytical testing and other assessments of these materials to determine if these materials are acceptable. The Contractor should be responsible to perform the tests, assessments, etc. to determine the appropriate method of disposal.

8.4 Engineered Fill

8.4.1 The on-site near surface soils encountered are predominantly silty sands; silty, clayey sands; and clayey sands. The on-site soils will be suitable for use as engineered fill below the recommended aggregate base section, provided they are free of organics (less than 3 percent by weight and no roots larger than ¼ inch in diameter), irreducible material greater than 3 inches, have an expansion index of less than 20 and the moisture content of the soil is within optimum to three (3) percent above optimum moisture content at the time of placement. This report recommends that interior and exterior slabs-on-grade be underlain by at least 4 inches of aggregate base. If soils other than those considered in this report are encountered, Moore Twining should be notified to provide alternate recommendations.

8.4.2 If materials larger than 3 inches are encountered in the excavated material, the oversize rock should be removed prior to use as engineered fill (mar require hand picking).

8.4.3 The compactability of the native soils is dependent upon the moisture contents, subgrade conditions, degree of mixing, type of equipment, as well as other factors. The evaluation of such factors was beyond the scope of this report; therefore, it is recommended that they be evaluated by the contractor during preparation of bids and construction of the project.

8.4.4 Import fill soil (if any) should be non-recycled, non-expansive and granular in nature with the following acceptance criteria recommended.

Percent Passing 3-Inch Sieve	100
Percent Passing No. 4 Sieve	85 - 100
Percent Passing No. 200 Sieve	10 - 40
Expansion Index (ASTM D4829)	Less than 15
Organics	Less than 3 percent by weight
R-Value	Minimum 35*
Sulfates	< 0.05 percent by weight
Min. Resistivity	>5,000 ohms-cm

* for pavement areas only

Prior to importing fill, the import material shall be certified by the Contractor and the supplier (to the satisfaction of the Owner) that the soils do not contain any environmental contaminates regulated by local, state or federal agencies having jurisdiction. The Contractor shall pay for the environmental testing required to determine compliance with the requirements of this report. This certification shall consist of, as a minimum, recent analytical data specific to the source of the import material including proper chain-of-custody documentation. In lieu of sampling and testing aggregate base materials (or bedding sand) from virgin sand and gravel sources, a letter stating that the aggregate base (or bedding sand) comprises materials entirely from natural (virgin) sources and that the aggregate base (or bedding sand) is non-contaminated may be provided by the Contractor. Moore Twining will sample and test the material after the environmental certification submittal is approved to verify that the proposed material complies with the geotechnical engineering recommendations of this report. The Contractor shall allow a minimum of seven (7) working days for each import source to be tested for the geotechnical properties.

8.4.5 Native and imported engineered fill soil should be placed in loose lifts approximately 8 inches thick, moisture-conditioned to between optimum moisture content and three (3) percent above optimum moisture content, and compacted to a dry density of at least 92 percent of the maximum dry density as determined by ASTM Test Method D1557, with exception that the upper 12 inches of fill and subgrade compacted in pavement areas should be compacted to a minimum of 95 percent of the maximum dry density as determined by ASTM Test Method D1557. Additional lifts should not be placed if the previous lift did not meet the required dry density or if soil conditions are not stable.

8.4.6 In-place density testing should be conducted in accordance with ASTM D 6938 (nuclear methods) at a frequency of at least:

Table No. 4

Area	Minimum Test Frequency
Building Pad	1 test per 5,000 square feet per compacted lift, but not less than two tests per lift
Pavement Subgrade and Mass Grading Outside Building Pads	1 test per 5,000 square feet per compacted lift
Utility Lines	1 test per 150 feet per lift

8.4.7 Open graded gravel and rock material such as ¾-inch crushed rock or ½-inch crushed rock should not be used as backfill, including trench backfill. In the event gravel or rock is required by a regulatory agency for use as backfill (Contractor to obtain a letter from the agency stating the requirement for rock and/or gravel as backfill), all open graded materials shall be fully encased in a geotextile filter fabric, such as Mirafi 140N, to prevent migration of fine grained soils into the porous material. Gravel and rock cannot be used without the written approval of Moore Twining. If the contractor elects to use crushed rock (and if approved by Moore Twining), the contractor will be responsible for slurry cut off walls at the locations directed by Moore Twining. Crushed rock should be placed in thin (less than 8 inch) lifts and densified with a minimum of three (3) passes using a vibratory compactor.

8.4.8 Aggregate base below the interior building slab on grade shall be non-recycled and comply with Class 2 aggregate base (AB) per Caltrans Standard Specifications. Aggregate base used for pavement construction should comply with Class 2 aggregate base in accordance Caltrans Standard Specifications and may include recycled materials. Aggregate base shall be compacted to a minimum relative compaction of 95 percent in accordance with ASTM D1557 standards.

8.5 Shallow Spread Foundations

8.5.1 A structural engineer experienced in foundation design should recommend the thickness, design details and concrete specifications for the foundations based on the estimated settlements. The following static settlements should be anticipated for design: 1) a total static settlement of 1 inch; and 2) a differential static settlement of ½-inch in 40 feet.

8.5.2 Foundations supported on engineered fill prepared as recommended in the Site Preparation section of this report may be designed for a maximum net allowable soil bearing pressure of 2,500 pounds per square foot for dead-plus-live loads. This value may be increased by one-third for short duration wind or seismic loads.

8.5.3 Perimeter foundations should have a minimum depth of 18 inches below the lowest adjacent finished exterior ground surface. Interior footings should have a minimum depth of at least 12 inches below the bottom of the slab-on-grade. All footings should have a minimum width of 15 inches, regardless of load.

8.5.4 The foundations should be continuous around the perimeter of the proposed building to reduce moisture migration beneath the structures. Continuous perimeter foundations should be extended through doorways and/or openings that are not needed for support of loads.

8.5.5 The following seismic factors were developed using online data obtained from the Ground Motion Parameter Calculator provided by the Structural Engineers Association of California website (https://seismicmaps.org/) based upon a latitude of 34.423305 degrees and a longitude of -117.316065 degrees and a Site Class D. The data provided in Table No. 5 are based upon the procedures of the 2022 California Building Code and were not determined based upon a ground motion hazard analysis. The structural engineer should review the values in Table No. 5 and determine whether a ground motion hazard analysis is required for the project considering the seismic design category, structural details, and requirements of ASCE 7-16 (Section 11.4.8 and other applicable sections). If required, Moore Twining should be notified and requested to conduct the additional analysis, develop updated seismic factors for the project, and update the following values.

Table No. 5
Seismic Factors

Seismic Factor	2022 CBC Value*
Site Class	D
Maximum Considered Earthquake (geometric mean) peak ground acceleration adjusted for site effects (PGA_M)	0.550g
Mapped Maximum Considered Earthquake (geometric mean) peak ground acceleration ASCE 7-10 (PGA)	0.500g
Spectral Response At Short Period (0.2 Second), Ss	1.415
Spectral Response At 1-Second Period, S_1	0.547
Site Coefficient (based on Spectral Response At Short Period), Fa	1.0

Seismic Factor	2022 CBC Value*
Site Coefficient (based on spectral response at 1-second period) Fv	See Note
Maximum considered earthquake spectral response acceleration for short period, S_{MS}	1.415
Maximum considered earthquake spectral response acceleration at 1 second, S_{M1}	See Note
Five percent damped design spectral response accelerations for short period, S_{DS}	0.944
Five percent damped design spectral response accelerations at 1-second period, S_{D1}	See Note

Note: Requires ground motion hazard analysis per ASCE Section 21.2 (ASCE 7-16, Section 11.4.8), unless an Exception of Section 11.4.8 of ASCE 7-16 is applicable for the project design.

*The above data is subject to the disclaimers listed in the website https://seismicmaps.org/

8.5.6 All loose soils should be removed from foundation excavations and the excavations should be maintained at near optimum moisture content by periodic wetting. Foundation excavations should be observed by Moore Twining prior to the placement of steel reinforcement and concrete to verify conformance with the intent of the recommendations of this report. The Contractor is responsible for proper notification to Moore Twining and receipt of written confirmation of this observation prior to placement of steel reinforcement.

8.5.7 Structural loads for lightly loaded (less than 1.5 kips per lineal foot) miscellaneous foundations (such as screen walls for the proposed trash enclosures) may be supported engineered fills prepared in accordance with the recommendations included in the Site Preparation section of this report. The lightly loaded foundations should extend to a minimum depth of 12 inches below the lowest adjacent grade and a minimum width of 12 inches, regardless of load. Footings for miscellaneous lightly loaded foundations may be designed for a maximum net allowable soil bearing pressure of 1,500 pounds per square foot for dead-plus-live loads. These values may be increased by one-third for short duration wind or seismic loads.

8.5.8 The bottom surface area of concrete footings or concrete slabs in direct contact with engineered fill can be used to resist lateral loads. An allowable coefficient of friction of 0.40 can be used for design. In areas where slabs are underlain by a synthetic moisture barrier, an allowable coefficient of friction of 0.10 can be used for design.

8.5.9 The allowable passive resistance of the native soils and engineered fill may be assumed to be equal to the pressure developed by a fluid with a density of 350 pounds per cubic foot. The upper 6 inches of subgrade in landscaped areas should be neglected in determining the total passive resistance.

8.6 Interior Slabs-on-Grade

8.6.1 Interior slabs-on-grade should be supported over 4 inches of non-recycled aggregate base over engineered fill extending to the depth recommended below foundations in the Site Preparation section of this report.

8.6.2 The recommendations provided herein are intended only for the design of interior concrete slabs-on-grade and their proposed uses, which do not include construction traffic (i.e., cranes, cement mixers, and rock trucks, etc.). The building contractor should assess the slab section and determine its adequacy to support any proposed construction traffic.

8.6.3 The slabs and underlying subgrade should be constructed in accordance with current American Concrete Institute (ACI) standards.

8.6.4 A vapor retarder should be placed below interior building slabs where moisture could permeate into the interior and create problems. Refer to the American Concrete Institute's Guide to Concrete Floor and Slab Construction (ACI 302.1R) for selection and installation of moisture vapor retarders. It is recommended that a Stegowrap 15 vapor retarder be used where moisture could permeate into the interior and create problems, such as where flooring or floor slab applications will contain moisture sensitive materials (or other slab applications or uses). The vapor retarder should overlay the compacted 4 inch layer of aggregate base. It should be noted that placing the PCC slab directly on the vapor retarder may increase the potential for cracking and curling; however, ACI recommends the placement of the vapor retarding membrane directly below the slab unless a watertight roofing system is in place prior to slab construction to reduce the amount vapor emission through the slab-on-grade. It is recommended that the slab be moist cured for a minimum of 7 days to reduce the potential for excessive cracking.

The underslab membrane should have a high puncture resistance (minimum of approximately 2,400 grams of puncture resistance), high abrasion resistance, rot resistant, and mildew resistant. It is recommended that the membrane be selected in accordance with the current ASTM C 755, Standard Practice For Selection of Vapor Retarder For Thermal Insulation and conform to the current ASTM E 1745 Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs and ASTM E 154 Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Waters, or as Ground Cover. It is recommended that the vapor barrier installation conform to the current ACI Manual of Concrete Practice, Guide for Concrete Floor and Slab Construction (302.1R), Addendum, Vapor Retarder Location and current ASTM E 1643, Standard Practice for Installation of Water Vapor Retarders Used In Contact with Earth or Granular Fill Under Concrete Slabs. In addition, it is recommended that the manufacturer of floor covering, floor covering adhesive or other slab material applications be consulted to determine if the manufacturers have additional recommendations regarding the design and construction of the slab-on-grade, testing of the slab-on-grade, slab preparation, application of the adhesive, installation of the floor covering and maintenance requirements. It should be noted that the recommendations presented in this report are not intended to achieve a specific vapor emission rate.

8.6.5 The membrane should be installed so that there are no holes or uncovered areas. All seams should be overlapped and sealed with the manufacturer approved tape continuous at the laps so they are vapor tight. All perimeter edges of the membrane, such as pipe penetrations, interior and exterior footings, joints, etc., should be caulked per manufacturer's recommendations.

8.6.6 Tears or punctures that may occur in the membrane should be repaired prior to placement of concrete per manufacturer's recommendations. Once repaired, the membrane should be inspected by the contractor and the owner to verify adequate compliance with manufacture's recommendations.

8.6.7 The moisture retarding membrane is not required beneath exposed concrete floors, such as warehouses and garages, provided that moisture intrusion into the structures are permissible for the design life of the structures.

8.6.8 Additional measures to reduce moisture migration (for moisture sensitive floors) and out of plane drying shrinkage cracking for all slab areas should be implemented. These include: 1) constructing a less pervious concrete floor slab by maintaining a water-cement ratio of 0.52 or less in the concrete for slabs-on-grade, 2) ensuring that all seams and utility protrusions are

sealed with tape to create a "water tight" moisture barrier, 3) placing concrete walkways or pavements adjacent to the structures, 4) providing adequate drainage away from the structures, 5) moist cure the slabs for at least 7 days, and 6) locating lawns, irrigated landscape areas, and flower beds away from the structures.

8.6.9 The Contractor shall test the moisture vapor transmission through the slab, the pH, internal relative humidity, etc., at a frequency and method as specified by the flooring manufacturer or as required by the plans and specifications, whichever is most stringent. The results of vapor transmission tests, pH tests, internal relative humidity tests, ambient building conditions, etc. should be within floor manufacturer's and adhesive manufacturer's specifications at the time the floor is placed. It is recommended that the floor manufacturer and subcontractor review and approve the test data prior to floor covering installation.

8.6.10 To reduce the potential for damaging slabs during construction the following recommendations are presented: 1) design for a differential slab movement of ½ inch relative to interior columns; and 2) the construction equipment which will operate on slabs or pavements should be evaluated by the contractor prior to loading the slab.

8.6.11 Backfill the zone above the top of footings at interior column locations, building perimeters, and below the bottom of slabs with an approved backfill as recommended herein for the area below interior slabs-on-grade. This procedure should provide more uniform support for the slabs which may reduce the potential for cracking.

8.7 Exterior Slabs-On-Grade

The recommendations for exterior slabs provided below are not intended for use for slabs subjected to vehicular traffic. They are intended for pedestrian traffic areas.

8.7.1 Exterior improvements that subject the subgrade soils to a sustained load greater than 150 pounds per square foot should be prepared in accordance with recommendations presented in this report for interior slabs-on-grade. Moore Twining can provide alternative design recommendations for exterior slabs, if requested.

8.7.2 Exterior slabs within the building pad preparation limits and exterior slabs outside the building pad preparation limits should be supported on 4 inches of aggregate base overlying subgrade soils prepared in accordance with the recommendations provided in the "Site Preparation" section of this report.

8.7.3 The moisture content of the subgrade soils should be verified to be at least optimum moisture content within 48 hours of placement of the slab-on-grade. If necessary to achieve the recommended moisture content, the subgrade could be over-excavated, moisture conditioned as necessary and compacted as engineered fill.

8.7.4 The exterior slabs-on-grade adjacent to landscape areas should be designed with thickened edges which extend to the bottom of the aggregate base. This should reduce the potential for infiltration of water into the aggregate base below exterior slabs.

8.7.5 Since exterior sidewalks, curbs, etc. are typically constructed at the end of the construction process, the moisture conditioning conducted during earthwork can revert to natural dry conditions. Placing concrete walks and finish work over dry or slightly moist subgrade should be avoided. It is recommended that the general contractor notify Moore Twining to conduct in-place moisture and density tests prior to placing concrete flatwork. Written test results indicating passing density and moisture tests should be in the general contractor's possession prior to placing concrete for exterior flatwork.

8.8 Asphaltic Concrete (AC) Pavements

8.8.1 The subgrade soils for asphaltic concrete pavements should be over-excavated and compacted as recommended in the "Site Preparation" section of the recommendations in this report. As part of the final preparation, the upper 12 inches of the subgrade soils should be moisture conditioned and compacted to a minimum of 95 percent of the maximum dry density determined in accordance with ASTM D 1557.

8.8.2 The following pavement sections are based on an R-value of 35 and traffic index values ranging from 5.0 to 7.0. A minimum of 3 inches of asphalt concrete is recommended below for the pavement sections. It should be noted that if pavements are constructed prior to construction of the buildings, the traffic index value should account for construction traffic. The actual traffic index values applicable to the site should be determined by the project civil engineer.

Table No. 6
Two-Layer Asphalt Concrete Pavements

Traffic Index	AC thickness, inches	AB thickness, inches	Compacted Subgrade, inches
5.0	3.0	4.5	12
5.5	3.0	6.0	12
6.0	3.5	6.5	12
6.5	3.5	8.0	12
7.0	4.0	8.5	12
7.5	4.0	9.5	12
8.0	4.5	10.0	12

AC - Asphaltic Concrete compacted as recommended in this report
AB - Class II Aggregate Base with minimum R-value of 78 and compacted to at least 95 percent relative compaction (ASTM D1557)
Subgrade - Subgrade soils compacted to at least 95 percent relative compaction (ASTM D1557)

8.8.3 The curbs where pavements meet irrigated landscape areas or uncovered open areas should extend at least to the bottom of the aggregate base section. This should reduce subgrade moisture from irrigation and runoff from migrating into the base section and reducing the life of the pavements.

8.8.4 If actual pavement subgrade materials are significantly different from those tested for this study due to unanticipated grading or soil importing, the pavement sections should be re-evaluated for the changed subgrade conditions.

8.8.5 If the paved areas are to be used during construction, or if the type and frequency of traffic are greater than assumed in design, the pavement sections should be re-evaluated for the anticipated traffic.

8.8.6 Pavement section design assumes that proper maintenance, such as sealing and repair of localized distress, will be performed on an as needed basis for longevity and safety.

8.8.7 Pavement materials and construction method should conform to the State of California Standard Specifications.

8.8.8 It is recommended that the base 2 inch thick course of asphaltic concrete consist of a ¾ inch maximum medium gradation. The top course or wear course should consist of a ½ inch maximum medium gradation.

8.8.9 The asphaltic concrete, including the joint density, should be compacted to an average relative compaction of 93 percent, with no single test value being below a relative compaction of 91 percent and no single test value being above a relative compaction of 97 percent of the referenced laboratory density according to ASTM D2041.

8.8.10 The asphalt concrete should comply with the requirements for a Type A asphalt concrete in accordance with the current State of California Department of Transportation (Caltrans) Standard Specification, or the requirements of the governing agency, whichever is more stringent.

8.9 Portland Cement Concrete (PCC) Pavements

Recommendations for Portland Cement Concrete pavement structural sections are presented in the following subsections. The PCC pavement design assumes a minimum modulus of rupture of 500 psi. The design professional should specify where Portland cement concrete pavements are used based on the anticipated type and frequency of traffic.

8.9.1 The subgrade soils for Portland cement concrete pavements should be over-excavated and compacted as recommended in the "Site Preparation" section of the recommendations in this report. As part of the final preparation, the upper 12 inches of the subgrade soils should be moisture conditioned and compacted to a minimum of 95 percent of the maximum dry density determined in accordance with ASTM D 1557.

8.9.2 The following preliminary Portland cement concrete pavement sections have been prepared for Traffic Indices Ranging from 6.0 to 8.0. The design pavement sections should be selected by the civil engineer based on the anticipated traffic loading. If the paved areas are to be used during construction, or if the type and frequency of traffic are greater than assumed in design, the pavement section should be re-evaluated for the anticipated traffic.

Table No. 7
Portland Cement Concrete Pavements

Traffic Index	Average Daily Truck Traffic (ADTT)	PCC thickness (inches)	Aggregate Base (inches)	Compacted Subgrade (inches)
6.0	2.0	6.0	4.0	12.0
7.0	7.3	6.0	4.0	12.0
8.0	22.2	6.5	4.0	12.0

ADTT - Average Daily Truck Traffic based on a loaded garbage/dumpster truck
PCC - Portland Cement Concrete (minimum Modulus of Rupture=500 psi)
Subgrade - Subgrade soils compacted to at least 95 percent relative compaction (ASTM D-1557)

8.9.3 The PCC pavement should be constructed in accordance with American Concrete Institute requirements, the requirements of the project plans and specifications, whichever is the most stringent. The pavement design engineer should include appropriate construction details and specifications for construction joints, contraction joints, joint filler, concrete specifications, curing methods, etc.

8.9.4 Concrete used for PCC pavements shall possess a minimum flexural strength (modulus of rupture) of 500 pounds per square inch. A minimum compressive strength of 3,500 pounds per square inch, or greater as required by the pavement designer, is recommended. Specifications for the concrete to reduce the effects of excessive shrinkage, such as maximum water requirements for the concrete mix, allowable shrinkage limits, contraction joint construction requirements, etc. should be provided by the designer of the PCC slabs.

8.9.5 Jointing is one of the most critical aspects of the PCC pavement design and construction. Joint spacing, joint type and load transfer devices have significant impacts on the pavement design and performance. Thus, the detailing of joints needs to be considered carefully and applied with clear details on the project plans by the pavement designer/detailer. Positive load transfer devices such as dowels are commonly used at contraction joints whenever the designer cannot be assured aggregate interlock will be maintained.

8.9.6 Specifications for the concrete mixtures used in the PCC pavement to reduce the effects of excessive shrinkage (such as curling and excessive shrinkage at joints), including maximum water requirements for the concrete mix, allowable shrinkage limits, curing methods, etc. should be provided by the designer/detailer of the PCC slabs. In addition, as noted in Section 8.9.5, contraction joint requirements should be detailed by the designer/detailer of the PCC pavement to maintain stability. The minimum PCC thickness noted in this report assumes aggregate interlock occurs at contraction joints. However, curling and excessive shrinkage can disengage aggregate interlock and allow greater pavement deflection at free edges.

8.9.7 Contraction and construction joints should include a joint filler/sealer to prevent migration of water into the subgrade soils. The type of joint filler should be specified by the pavement designer. The joint sealer and filler material should be maintained throughout the life of the pavement.

8.9.8 Contraction joints should have a depth of at least one-fourth the slab thickness, e.g., 1.5-inch for a 6-inch slab. Specifications for contraction joint spacing, timing and depth of sawcuts should be included in the plans and specifications.

8.9.9 Stresses are anticipated to be greater at the edges and construction joints of the pavement section. A thickened edge is recommended on the outside of slabs subjected to wheel loads.

8.9.10 Joint spacing in feet should not exceed twice the slab thickness in inches, e.g., 12 feet by 12 feet for a 6-inch slab thickness. Regardless of slab thickness, joint spacing should not exceed 15 feet.

8.9.11 Lay out joints to form square panels. When this is not practical, rectangular panels can be used if the long dimension is no more than 1.5 times the short.

8.9.12 Isolation (expansion) joints should extend the full depth and should be used only to isolate fixed objects abutting or within paved areas.

8.9.13 Pavement section design assumes that proper maintenance such as sealing and repair of localized distress will be performed on a periodic basis.

8.10 Slopes, Shoring and Temporary Excavations

8.10.1 It is the responsibility of the contractor to provide safe working conditions with respect to excavation slope stability. The contractor is responsible for site slope safety, classification of materials for excavation purposes, and maintaining slopes in a safe manner during construction. The grades, classification and height recommendations presented for temporary slopes are for consideration in preparing budget estimates and evaluating construction procedures.

8.10.2 Due to the low cohesion of the onsite soils, temporary excavations should be constructed in accordance with CAL OSHA requirements. Temporary cut slopes should not be steeper than 2:1, horizontal to vertical, and flatter if possible. If excavations cannot meet these criteria, the temporary excavations should be shored.

8.10.3 In no case should excavations extend below a 2H to 1V zone below existing roadways, utilities, foundations and/or floor slabs which are to remain after construction. Excavations which are required to be advanced below the 2H to 1V envelope should be shored to support the soils, foundations, and slabs.

8.10.4 All soils disturbed as part of the shoring removal shall be over-excavated and compacted as engineered fill. In addition, all cavities and void space resulting from the shoring removal activity shall be backfilled with a cementitious grout under pressure to backfill the voids created by removal of the shoring. All voids resulting from removal of shoring shall be backfilled.

8.10.5 Excavation stability should be monitored by the contractor. Slope gradient estimates provided in this report do not relieve the contractor of the responsibility for excavation safety. In the event that tension cracks or distress to the structure occurs, during or after excavation, the owner should be notified immediately and the contractor should take appropriate actions to minimize further damage or injury.

8.11 Utility Trenches

8.11.1 The utility trench subgrade should be prepared by excavation of a neat trench without disturbance to the bottom of the trench. If sidewalls are unstable, the Contractor shall either slope the excavation to create a stable sidewall or shore the excavation. All trench subgrade soils disturbed during excavation, such as by accidental over-excavation of the trench bottom, or by excavation equipment with cutting teeth, should be compacted to a minimum of 92 percent relative compaction prior to placement of bedding material. The Contractor is responsible for notifying Moore Twining when these conditions occur and arrange for Moore Twining to observe and test these areas prior to placement of pipe bedding. The Contractor shall use such equipment as necessary to achieve a smooth undisturbed native soil surface at the bottom of the trench with no loose material at the bottom of the trench. The Contractor shall either remove all loose soils or compact the loose soils as engineered fill prior to placement of bedding, pipe and backfill of the trench.

8.11.2 The trench width, type of pipe bedding, the type of initial backfill, and the compaction requirements of bedding and initial backfill material for utility trenches (storm drainage, sewer, water, electrical, gas, cable, phone, irrigation, etc.) should be specified by the project Civil Engineer or applicable design professional in compliance with the manufacturer's requirements, governing agency requirements and this report, whichever is more stringent. The contractor is responsible for contacting the governing agency to determine the requirements for pipe bedding, pipe zone and final backfill. The contractor is responsible for notifying the Owner and Moore Twining if the requirements of the agency and this report conflict, the most stringent applies. For flexible polyvinylchloride (PVC) pipes, these requirements should be in accordance with the manufacturer's requirements or ASTM D-2321, whichever is more stringent, assuming a hydraulic gradient exists (gravel, rock, crushed gravel, etc. cannot be used as backfill on the project). The width of the trench should provide a minimum clearance of 8 inches between the sidewalls of the pipe and the trench, or as necessary to provide a trench width that is 12 inches greater than 1.25 times the outside diameter of the pipe, whichever is greater. As a minimum, the pipe bedding should consist of 4 inches of compacted (92 percent relative compaction) select sand with a minimum sand equivalent of 30 and meeting the following requirements: 100 percent passing the 1/4 inch sieve, a minimum of 90 percent passing the No. 4 sieve and not more than 10

percent passing the No. 200 sieve. The haunches and initial backfill (12 inches above the top of pipe) should consist of a select sand meeting these sand equivalent and gradation requirements that is placed in maximum 6-inch thick lifts and compacted to a minimum relative compaction of 92 percent using hand equipment. The final fill (12 inches above the pipe to the surface) should be on-site or imported, non-expansive materials moisture conditioned to between optimum and three (3) percent above optimum moisture content and compacted to a minimum of 92 percent relative compaction, except the upper 12 inches of trench backfill in pavement areas should be compacted to a minimum of 95 percent relative compaction. The project civil engineer should take measures to control migration of moisture in the trenches such as slurry collars, etc.

8.11.3 If ribbed or corrugated HDPE or metal pipes are used on the project, then the backfill should consist of select sand with a minimum sand equivalent of 30, 100 percent passing the 1/4 inch sieve, a minimum of 90 percent passing the No. 4 sieve and not more than 10 percent passing the No. 200 sieve. The sand shall be placed in maximum 6-inch thick lifts, extending to at least 1 foot above the top of pipe, and compacted to a minimum relative compaction of 92 percent using hand equipment. Prior to placement of the pipe, as a minimum, the pipe bedding should consist of 4 inches of compacted (92 percent relative compaction) sand meeting the above sand equivalent and gradation requirements for select sand bedding. The width of the trench should meet the requirements of ASTM D2321 listed in table below (minimum manufacturer requirements), or to a minimum of 24 inches, whichever is greater. As an alternative to the trench width recommended above and the use of the select sand bedding, a lesser trench width for HDPE pipes may be used if the trench is backfilled with a 2-sack sand-cement slurry from the bottom of the trench to 1 foot above the top of the pipe.

Table No. 8
Minimum Trench Widths for HDPE Pipe with Sand Bedding Initial Backfill

Inside Diameter of HDPE Pipe (inches)	Outside Diameter of HDPE Pipe (inches)	Minimum Trench Width (inches) per ASTM D2321
12	14.2	30
18	21.5	39
24	28.4	48
36	41.4	64
48	55	80

8.11.4 Open graded gravel and rock material such as ¾-inch crushed rock or ½-inch crushed rock should not be used as backfill including trench backfill. In the event gravel or rock is required by a regulatory agency for use as backfill (Contractor to obtain a letter from the agency stating the requirement for rock and/or gravel as backfill), all open graded materials shall be fully encased in a geotextile filter fabric, such as Mirafi 140N, to prevent migration of fine grained soils into the porous material. Gravel and rock cannot be used without the written approval of Moore Twining. If the contractor elects to use crushed rock (and if approved by Moore Twining), the contractor will be responsible for slurry cut off walls at the locations directed by Moore Twining. Crushed rock should be placed in thin (less than 8 inch) lifts and densified with a minimum of three (3) passes using a vibratory compactor.

8.11.5 Utility trench backfill placed in or adjacent to building areas, exterior slabs or pavements should be placed in 8 inch lifts, moisture conditioned to between optimum and three (3) percent above the optimum moisture content and compacted to at least 92 percent of the maximum dry density as determined by ASTM Test Method D1557, except the upper 12 inches of trench backfill in pavement areas should be compacted to a minimum of 95 percent relative compaction. Lift thickness can be increased if the contractor can demonstrate the minimum compaction requirements can be achieved. The contractor should use appropriate equipment and methods to avoid damage to utilities and/or structures during placement and compaction of the backfill materials.

8.11.6 On-site soils and approved imported engineered fill may be used as final backfill (12 inches above the pipe to the ground surface) in trenches.

8.11.7 Jetting of trench backfill is not allowed to compact the backfill soils.

8.11.8 Where utility trenches extend from the exterior to the interior limits of a building, lean concrete should be used as backfill material for a minimum distance of 2 feet laterally on each side of the exterior building line to prevent the trench from acting as a conduit to exterior surface water.

8.11.9 Storm drains and/or utility lines should be designed to be "watertight." If encountered, leaks should be immediately repaired. Leaking storm drain and/or utility lines could result in trench failure, sloughing and/or soil movement causing damage to surface and subsurface structures, pavements, flatwork, etc. In addition, landscaping irrigation systems should be monitored for leaks. The Contractor is required to video inspect or pressure test the wet utilities prior to placement of foundations, slabs-on-grade or pavements to verify that the pipelines are constructed properly and are "watertight." The Contractor shall provide the Owner a copy of the results of the testing. The Contractor is required to repair all noted deficiencies at no cost to the owner.

8.11.10 The plans should note that all utility trenches, including electrical lines, irrigation lines, etc. should be compacted to a minimum relative compaction of 92 percent per ASTM D-1557 except for the upper 12 inches below pavements which should be compacted to at least 95 percent relative compaction.

8.11.11 Utility trenches should not be constructed within a zone defined by a line that extends at an inclination of 2 horizontal to 1 vertical downward from the bottom of building foundations.

8.12 Corrosion Protection

8.12.1 Based on National Association of Corrosion Engineers (NACE) corrosion severity ratings listed in the Table No. 1 and the analytical results of sample analyses indicate the one sample tested had a resistivity value of 3,100 ohms-centimeter. This is consistent with data for two samples that had a resistivity values of 4,269 and 4,402 ohms-centimeter that were previously tested in 2019 on the proposed adjacent McDonald's parcel during Moore Twining's investigation for the previously planned Circle K development. Based on the resistivity values, the soils exhibit a "corrosive" corrosion potential. Therefore, buried metal objects should be protected in accordance with the manufacturer's recommendations based on a "corrosive" corrosion potential. The evaluation was limited to the effects of soils to metal objects; corrosion due to other potential sources, such as stray currents and groundwater, was not evaluated. If piping or concrete are placed in contact with deeper soils or engineered fill, these soils should be analyzed to evaluate the corrosion potential of these soils.

8.12.2 Corrosion of concrete due to sulfate attack is not anticipated based on the concentration of sulfates determined for the near-surface soils of 0.0026 percent by dry weight. According to provisions of ACI 318, section 4.3 , the sulfate concentration falls in the negligible classification (0.00 to 0.10 percent by weight) for concrete. Therefore, no restrictions are required regarding the type, water-to-cement ratio, or strength of the concrete used for foundation and slabs due to the sulfate content. However, a low water to cement ratio of 0.52 or less is recommended for slabs on grade as recommended in the "Interior Slab on Grade" section of this report.

8.12.3 These soil corrosion data should be provided to the manufacturers or suppliers of materials that will be in contact with soils (pipes or ferrous metal objects, etc.) to provide assistance in selecting the protection and materials for the proposed products or materials. If the manufacturers or suppliers cannot determine if materials are compatible with the soil corrosion conditions, a professional consultant, i.e., a corrosion engineer, with experience in corrosion protection should be consulted to design parameters. Moore Twining is not a corrosion engineer; thus, cannot provide recommendations for mitigation of corrosive soil conditions. It is recommended that a corrosion engineer be consulted for the site specific conditions.

9.0 DESIGN CONSULTATION

9.1 Moore Twining should be retained to review those portions of the contract drawings and specifications that pertain to earthwork operations, pavements and foundations prior to finalization to determine whether they are consistent with our recommendations. This service is not part of this current contractual agreement..

9.2 It is the client's responsibility to provide plans and specification documents for our review prior to their issuance for construction bidding purposes.

9.3 If Moore Twining is not retained for the plan review, we assume no liability for the misinterpretation of our conclusions and recommendations. This review is documented by a formal plan/specification review report provided by Moore Twining.

10.0 CONSTRUCTION MONITORING

10.1 It is recommended that Moore Twining be retained to observe the excavation, earthwork, and foundation phases of work to determine that the subsurface conditions are compatible with those used in the analysis and design.

10.2 Moore Twining can conduct the necessary observation and field testing to provide results so that action necessary to remedy indicated deficiencies can be taken in accordance with the plans and specifications. Upon completion of the work, a written summary of our observations, field testing and conclusions will be provided regarding the conformance of the completed work to the intent of the plans and specifications. This service is not, however, part of this current contractual agreement.

10.3 In the event that the earthwork operations for this project are conducted such that the construction sequence is not continuous, (or if construction operations disturb the surface soils) it is recommended that the exposed subgrade that will receive floor slabs be tested to verify adequate compaction and/or moisture conditioning. If adequate compaction or moisture contents are not verified, the fill soils should be over-excavated, scarified, moisture conditioned and compacted are recommended in the Recommendations of this report.

10.4 The construction monitoring is an integral part of this investigation. This phase of the work provides Moore Twining the opportunity to verify the subsurface conditions interpolated from the soil borings and make alternative recommendations if the conditions differ from those anticipated.

10.5 If Moore Twining is not afforded the opportunity to provide engineering observation and field-testing services during construction activities related to earthwork, foundations, pavements and trenches; then, Moore Twining will not be responsible for compliance of any aspect of the construction with our recommendations or performance of the structures or improvements if the recommendations of this report are not followed. It is recommended that if a firm other than Moore Twining is selected to conduct these services that they provide evidence of professional liability insurance of at least $3,000,000 and review this report. After their review, the firm should, in writing, state that they understand the conclusions and recommendations of this report and agree to conduct sufficient observations and testing to ensure the construction complies with this report's recommendations. Moore Twining should be notified, in writing, if another firm is selected to conduct observations and field-testing services prior to construction.

10.6 Upon the completion of work, a final report should be prepared by Moore Twining. This report is essential to ensure that the recommendations presented are incorporated into the project construction, and to note any deviations from the project plans and specifications. The client should notify Moore Twining upon the completion of work to prepare a final report summarizing the observations during site preparation activities relative to the recommendations of this report. This service is not, however, part of this current contractual agreement.

11.0 NOTIFICATION AND LIMITATIONS

11.1 The conclusions and recommendations presented in this report are based on the information provided regarding the proposed construction, and the results of the field and laboratory investigation, combined with interpolation of the subsurface conditions between boring locations. The nature and extent of subsurface variations between borings may not become evident until construction.

11.2 If variations or undesirable conditions are encountered during construction, Moore Twining should be notified promptly so that these conditions can be reviewed and our recommendations reconsidered where necessary. It should be noted that unexpected conditions frequently require additional expenditures for proper construction of the project.

11.3 If the proposed construction is relocated or redesigned, or if there is a substantial lapse of time between the submission of our report and the start of work (over 12 months) at the site, or if conditions have changed due to natural cause or construction operations at or adjacent to the site, the conclusions and recommendations contained in this report should be considered invalid unless the changes are reviewed and our conclusions and recommendations modified or approved in writing.

11.4 Changed site conditions, or relocation of proposed structures, may require additional field and laboratory investigations to determine if our conclusions and recommendations are applicable considering the changed conditions or time lapse.

11.5 The conclusions and recommendations contained in this report are valid only for the project discussed in Section 3.3, Anticipated Construction. The use of the information and recommendations contained in this report for structures on this site not discussed herein or for structures on other sites not discussed in this report is not recommended. The entity or entities that use or cause to use this report or any portion thereof for other structures or site not covered by this report shall hold Moore Twining, its officers and employees harmless from any and all claims and provide Moore Twining's defense in the event of a claim.

11.6 This report is issued with the understanding that it is the responsibility of the client to transmit the information and recommendations of this report to developers, owners, buyers, architects, engineers, designers, contractors, subcontractors, and other parties having interest in the project so that the steps necessary to carry out these recommendations in the design, construction and maintenance of the project are taken by the appropriate party.

11.7 This report presents the results of a geotechnical engineering investigation only and should not be construed as an environmental audit or study.

11.8 Our professional services were performed, our findings obtained, and our recommendations prepared in accordance with generally-accepted engineering principles and practices. This warranty is in lieu of all other warranties either expressed or implied.

11.9 Reliance on this report by a third party (i.e., that is not a party to our written agreement) is at the party's sole risk. If the project and/or site are purchased by another party, the purchaser must obtain written authorization and sign an agreement with Moore Twining in order to rely upon the information provided in this report for design or construction of the project.

We appreciate the opportunity to be of service to Fountainhead Development. If you have any questions regarding this report, or if we can be of further assistance, please contact us at your convenience.

Sincerely,
MOORE TWINING ASSOCIATES, INC.
Geotechnical Engineering Division

Allen H. Harker, CEG
Certified Engineering Geologist

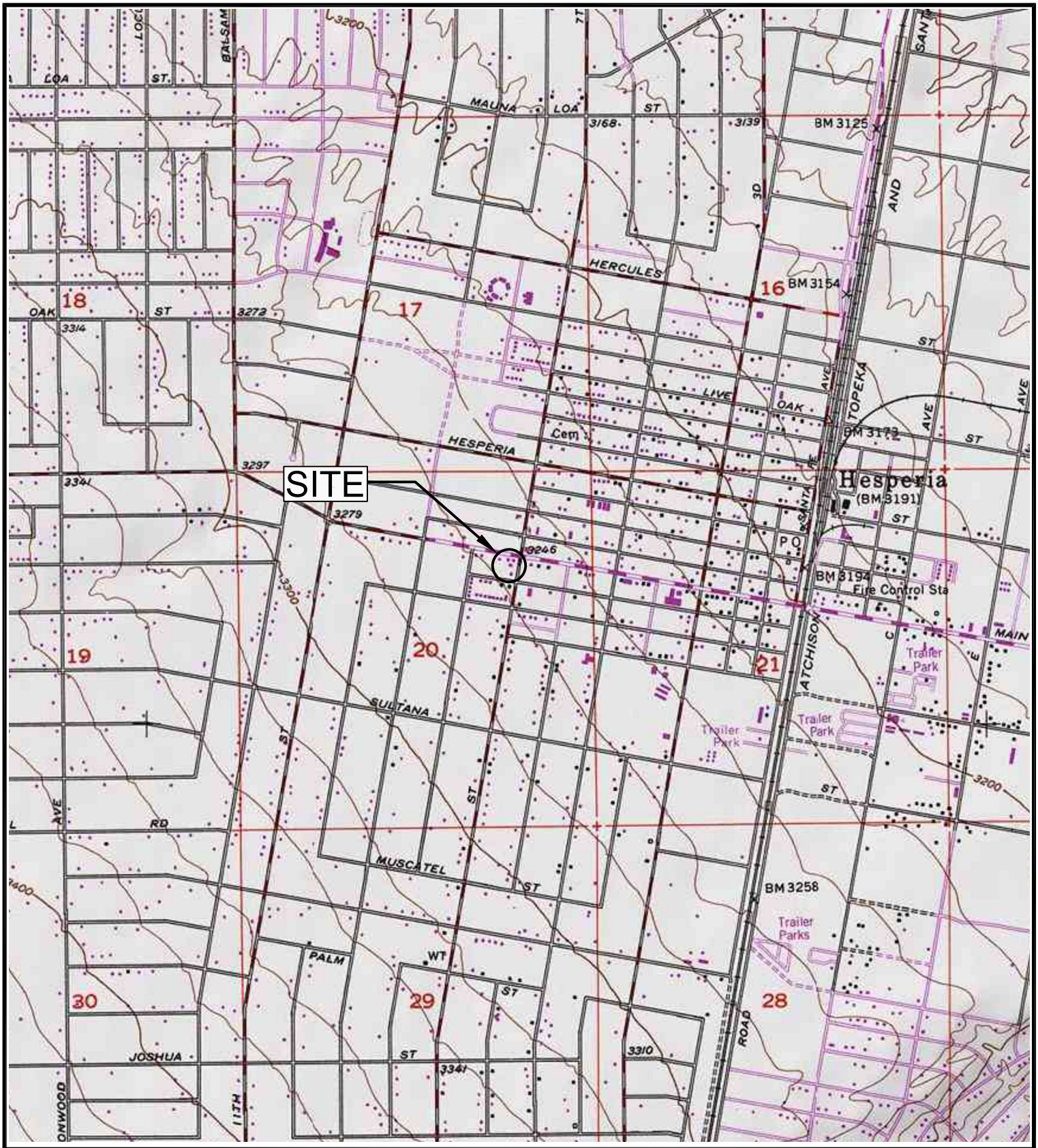
Harry D. Moore, RGE
President

APPENDIX A

DRAWINGS

Drawing No. 1 - Site Location Map

Drawing No. 2 - Test Boring Location Map



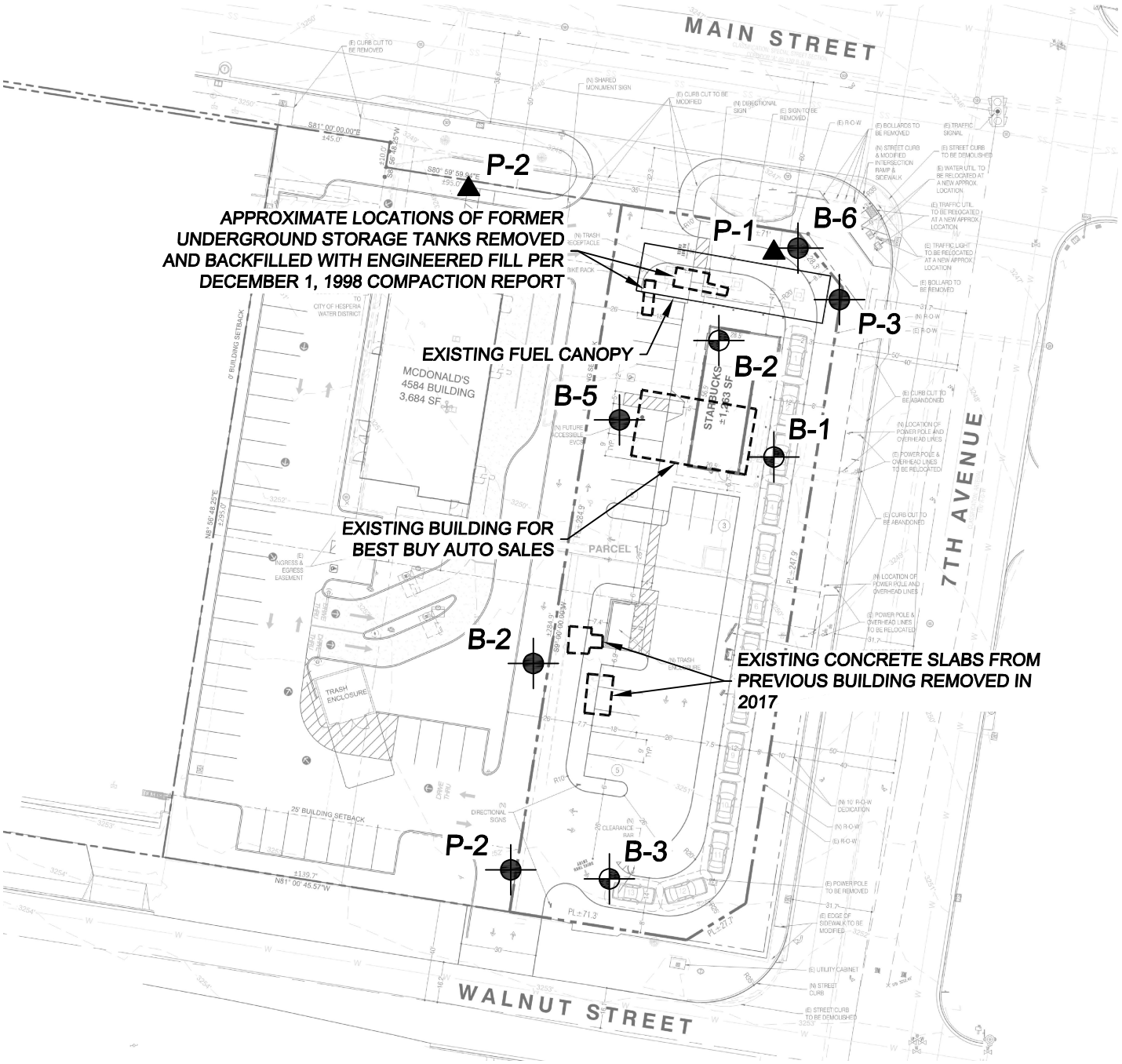
SOURCE: U.S.G.S. TOPOGRAPHIC MAP, 7 ½ MINUTE SERIES
HESPERIA, CALIFORNIA QUADRANGLE 1978, PHOTOREVISED 1980

0 2000
APPROXIMATE SCALE
IN FEET

SITE LOCATION MAP
PROPOSED STARBUCKS
SOUTHWEST CORNER OF MAIN STREET AND 7TH AVENUE
HESPERIA, CALIFORNIA

FILE NO.: 33201-01-01	DATE: 11/08/2024
DRAWN BY: RM	APPROVED BY:
PROJECT NO. H33201.01	DRAWING NO. 1

MOORE TWINING ASSOCIATES, INC.



APPROXIMATE TEST BORING LOCATION

APPROXIMATE PERCOLATION TEST LOCATION

APPROXIMATE LOCATIONS OF PREVIOUS BORINGS DRILLED BY MOORE TWINING IN 2018 WITHIN OR NEAR THE STARBUCKS PARCEL

N

0 60

APPROXIMATE SCALE IN FEET

TEST BORING AND PERCOLATION TEST BORING LOCATION MAP
PROPOSED STARBUCKS
SOUTHWEST CORNER OF MAIN STREET AND 7TH AVENUE
HESPERIA, CALIFORNIA

FILE NO. 33201-01-02	DATE DRAWN: 11/08/2024
DRAWN BY: RM	APPROVED BY:
PROJECT NO. H33201.01	DRAWING NO. 2

MOORE TWINING ASSOCIATES, INC.

APPENDIX B

LOGS OF BORINGS

This appendix contains the final logs of borings. These logs represent our interpretation of the contents of the field logs and the results of the field and laboratory tests.

The logs and related information depict subsurface conditions only at these locations and at the particular time designated on the logs. Soil conditions at other locations may differ from conditions occurring at these test boring locations. Also, the passage of time may result in changes in the soil conditions at these test boring locations.

In addition, an explanation of the abbreviations used in the preparation of the logs and a description of the Unified Soil Classification System are provided at the end of Appendix B.

MOORE TWINING ASSOCIATES, INC.

Test Boring: B-1

Project: Proposed Starbucks in Hesperia

Project Number: H33201.01

Drilled By: 2R Drilling

Drill Type: CME 75

Auger Type: 8" O.D. Hollow Stem Augers

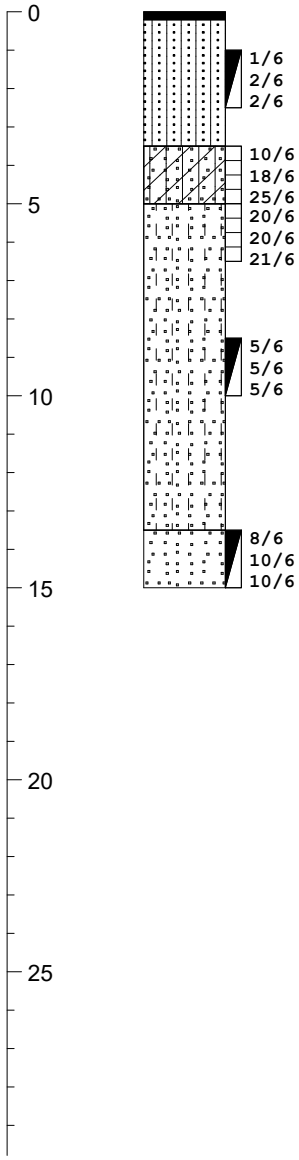
Hammer Type: 140 Pound Auto Trip

Logged By: A.V.

Date: October 23, 2024

Elevation: N/A

Depth to Groundwater First Encountered During Drilling: N/E



ELEVATION/ DEPTH (feet)	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
	AC	Asphalt Concrete = 2.5 inches			
	SM	SILTY SAND; loose, moist, fine to medium grained, brown, trace gravel		4	5.0
	SC-SM	SILTY, CLAYEY SAND; medium dense, moist, fine to coarse grained, brown, with a little fine gravel	From 3.5-5': DD = 126.5 pcf Gravel = 5.2% Sand = 74.4% -200 = 20.4% LL = 21 PI = 6	43	6.2
	SP-SM	POORLY GRADED SAND WITH SILT; medium dense, moist, fine to coarse grained, brown, with a little fine gravel		41	6.0
		At 8.5 feet - Loose, light brown	From 5-6.5': DD = 119.2 pcf	10	
			From 8.5-10': Gravel = 5.4% Sand = 84.1% -200 = 10.5% LL = Non-viscous PI = Non-plastic		
	SP	POORLY GRADED SAND; medium dense, moist, fine to coarse grained, light brown, trace fine gravel		20	
		Bottom of Boring B-1 at 15 feet			

Figure Number 1

MOORE TWINING ASSOCIATES, INC.

Test Boring: B-2

Project: Proposed Starbucks in Hesperia

Project Number: H33201.01

Drilled By: 2R Drilling

Drill Type: CME 75

Auger Type: 8" O.D. Hollow Stem Augers

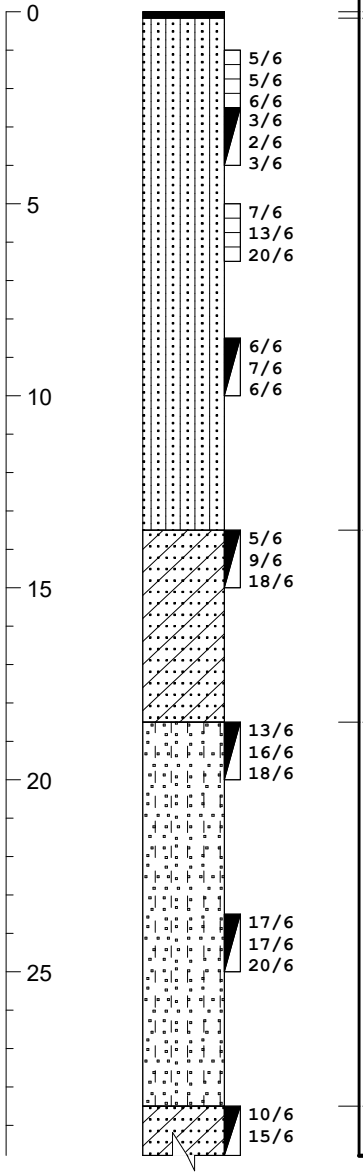
Hammer Type: 140 Pound Auto Trip

Logged By: A.V.

Date: October 23, 2024

Elevation: N/A

Depth to Groundwater First Encountered During Drilling: N/E



ELEVATION/ DEPTH (feet)	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
	AC	Asphalt Concrete = 2 inches			
	SM	SILTY SAND; loose, damp, fine to medium grained, brown, trace subangular gravel	From 0.2-5': pH = 7.5 SR = 3,100 ohm-cm Cl = 0.0021% SS = 0.0026%	11	3.6
				5	
		Medium dense, moist	From 1-2.5': DD = 113.6 pcf ø = 33° c = 130 psf	33	6.0
		Fine to coarse grained, with trace clay			7.1
			From 5-6.5': DD = 116.0 pcf ø = 41° c = 220 psf	13	
	SC	CLAYEY SAND; medium dense, moist, fine to medium grained, brown, trace coarse gravel		27	6.5
	SP-SM	POORLY GRADED SAND WITH SILT; dense, moist, fine to coarse grained, brown		34	
				37	7.8
	SC	CLAYEY SAND; medium dense,	From 28.5-30': Gravel = 5.1%	25	10.9

Figure Number 2

MOORE TWINING ASSOCIATES, INC.

Test Boring: B-2

Project: Proposed Starbucks in Hesperia

Project Number: H33201.01

Drilled By: 2R Drilling

Drill Type: CME 75

Auger Type: 8" O.D. Hollow Stem Augers

Hammer Type: 140 Pound Auto Trip

Logged By: A.V.

Date: October 23, 2024

Elevation: N/A

Depth to Groundwater First Encountered During Drilling: N/E

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
30	10/6		moist, fine to coarse grained, brown, with a little fine gravel	Sand = 65.2% -200 = 29.7% LL = 25 PI = 8		
35	11/6 15/6 17/6	SP	POORLY GRADED SAND; dense, moist, fine to coarse grained, light brown		32	6.8
40	12/6 16/6 22/6				38	
45	7/6 14/6 18/6	SM	SILTY SAND; dense, moist, fine grained, brown		32	12.1
		SW-SM	WELL GRADED SAND WITH SILT; dense, damp, fine to coarse grained, brown, with some fine gravel			4.4
50	11/6 19/6 20/6			From 48.5-50': Gravel = 11.6% Sand = 79.7% -200 = 8.7%	39	
55	15/6 19/6 30/6		Increase in coarse sand content		49	
	17/6 18/6				43	

Figure Number 2

MOORE TWINING ASSOCIATES, INC.

Test Boring: B-2

Project: Proposed Starbucks in Hesperia

Project Number: H33201.01

Drilled By: 2R Drilling

Drill Type: CME 75

Auger Type: 8" O.D. Hollow Stem Augers

Hammer Type: 140 Pound Auto Trip

Logged By: A.V.

Date: October 23, 2024

Elevation: N/A

Depth to Groundwater First Encountered During Drilling: N/E

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
60	25/6		Bottom of Boring B-2 at 60 feet			
65						
70						
75						
80						
85						

Figure Number 2

MOORE TWINING ASSOCIATES, INC.

Test Boring: B-3

Project: Proposed Starbucks in Hesperia

Project Number: H33201.01

Drilled By: 2R Drilling

Drill Type: CME 75

Auger Type: 8" O.D. Hollow Stem Augers

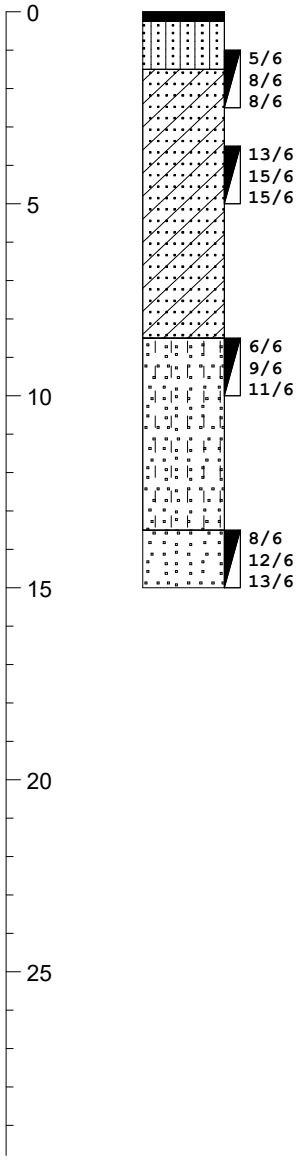
Hammer Type: 140 Pound Auto Trip

Logged By: A.V.

Date: October 23, 2024

Elevation: N/A

Depth to Groundwater First Encountered During Drilling: N/E



ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
		AC	Asphalt Concrete = 3 inches			
		SM	SILTY SAND; medium dense, moist, fine to medium grained, brown	From 1-5': R-value = 37	16	7.8
		SC	At 1.5 feet - CLAYEY SAND; medium dense, moist, fine to coarse grained, brown, trace fine gravel At 3.5 feet - Weakly cemented		30	
		SP-SM	POORLY GRADED SAND WITH SILT; medium dense, moist, fine to coarse grained, brown, trace fine gravel		20	
		SP	POORLY GRADED SAND; medium dense, moist, fine to coarse grained, light brown		25	
			Bottom of Boring B-3 at 15 feet			

Figure Number 3

MOORE TWINING ASSOCIATES, INC.

Test Boring: P-1

Project: Proposed Starbucks in Hesperia

Project Number: H33201.01

Drilled By: 2R Drilling

Drill Type: CME 75

Auger Type: 8" O.D. Hollow Stem Augers

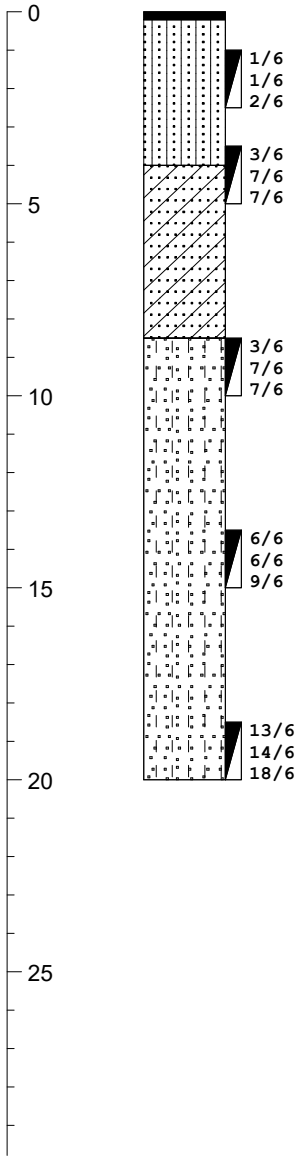
Hammer Type: 140 Pound Auto Trip

Logged By: A.V.

Date: October 23, 2024

Elevation: N/A

Depth to Groundwater First Encountered During Drilling: N/E



ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
		AC	Asphalt Concrete = 2.5 inches			
		SM	SILTY SAND; very loose, damp, fine to coarse grained, brown, trace gravel		3	4.2
			Medium dense		14	8.1
		SC	CLAYEY SAND; medium dense, moist, fine to coarse grained, brown, trace gravel			
		SP-SM	POORLY GRADED SAND WITH SILT; medium dense, moist, fine to coarse grained, brown, with trace fine gravel		14	5.5
					15	
			Dense, slight decrease in fines content	From 18.5-20': Gravel = 3.9% Sand = 84.9% -200 = 11.2% LL = Non-viscous PI = Non-plastic	32	5.3
			Bottom of Percolation Test Boring P-1 at 20 feet			

Figure Number 4

MOORE TWINING ASSOCIATES, INC.

Test Boring: P-2

Project: Proposed Starbucks in Hesperia

Project Number: H33201.01

Drilled By: 2R Drilling

Drill Type: CME 75

Auger Type: 8" O.D. Hollow Stem Augers

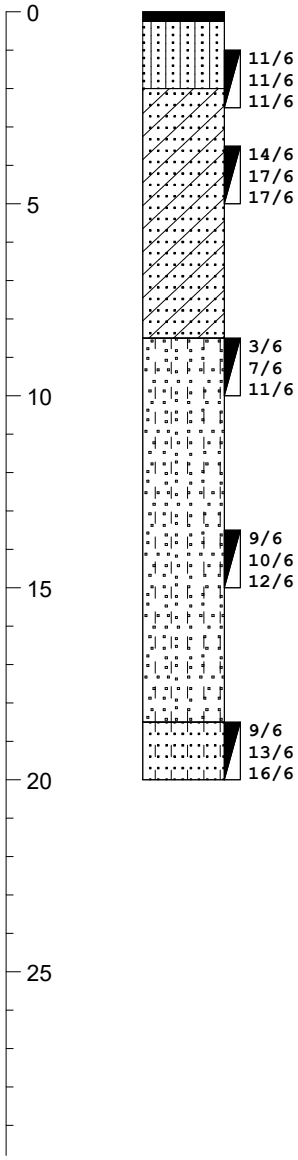
Hammer Type: 140 Pound Auto Trip

Logged By: A.V.

Date: October 23, 2024

Elevation: N/A

Depth to Groundwater First Encountered During Drilling: N/E



ELEVATION/ DEPTH (feet)	USCS	Soil Description	Remarks	N-Values blows/ft.	Moisture Content %
	AC	Asphalt Concrete = 3 inches			
	SM	SILTY SAND; medium dense, moist, fine to medium grained, brown		22	6.0
	SC	At 2 feet - CLAYEY SAND; medium dense, moist, fine to coarse grained, brown, trace fine gravel		34	6.1
		At 3.5 feet - Dense, with weak to moderate cementation			
	SP-SM	POORLY GRADED SAND WITH SILT; medium dense, damp, fine to coarse grained, brown, trace fine gravel and clay		18	3.5
				22	
	SW-SM	WELL GRADED SAND WITH SILT; medium dense, damp, fine to coarse grained, brown, with fine a little fine gravel	From 18.5-20': Gravel = 8.1% Sand = 82.0% -200 = 9.9%	29	4.1
		Bottom of Percolation Test Boring P-2 at 20 feet			

Figure Number 5

KEY TO SYMBOLS

Symbol	Description
Strata symbols	
	Asphalt Concrete
	SM: Silty sand
	SC-SM: Silty, Clayey Sand
	SP-SM: Poorly graded sand with silt
	SP: Poorly graded sand
	SC: Clayey sand
	SW-SM: Well graded sand with silt

Symbol	Description
Misc. Symbols	
	Boring continues
Soil Samplers	
	Standard penetration test
	California Modified split barrel ring sampler

Notes:

1. Exploratory borings were drilled on 10/23/24 using a CME 75 drill rig equpped with 8" outside diameter hollow stem augers.

2. Groundwater was not encountered during drilling of the borings.

3. Boring locations were measured or paced from existing site features.

4. These logs are subject to the limitations, conclusions, and recommendations in this report.

5. The "N-value" reported for the California Modified Split Barrel Sampler is the uncorrected field blow count. This value should not be interpreted as an SPT equivalent N-value.

6. Abbreviations used are:

DD = Natural dry density (pcf)	LL = Liquid Limit (%)
+4 = Percent retained on the No. 4 sieve (%)	PI = Plasticity Index (%)
-200 = Percent passing the No. 200 sieve (%)	EI = Expansion Index
Sand = Percent passing the No. 4 sieve and retained on No. 200 sieve (%)	Gravel = Percent passing 3-inch and retained on No. 4 sieve (%)
SR = Soil resistivity (ohm-cm)	
pH = Soil pH	SS = Soluble sulfates (%)
Cl = Soluble chlorides (%)	O.D. = Outside Diameter
ø = Internal Angle of Friction (degrrees)	c = Cohesion (psf)
pcf = pounds per cubic foot	psf = pounds per square foot
N/A = Not applicable	N/E = Not encountered

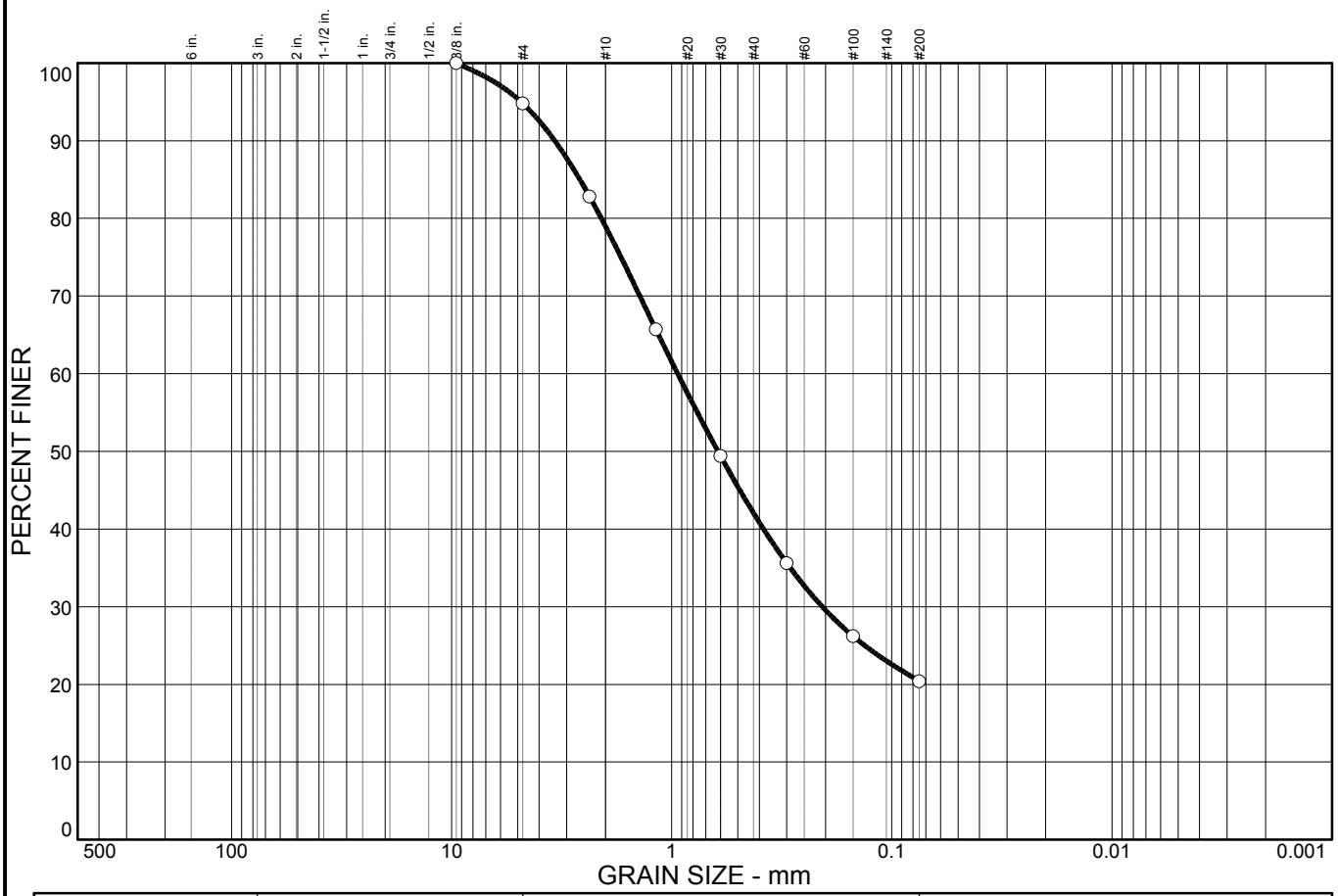
APPENDIX C

RESULTS OF LABORATORY TESTS

This appendix contains the individual results of the following tests. The results of the moisture content and dry density tests are included on the test boring logs in Appendix B. These data, along with the field observations, were used to prepare the final test boring logs in Appendix B.

These Included:	**To Determine:**
Moisture Content (ASTM D2216)	Moisture contents representative of field conditions at the time the sample was taken.
Dry Density (ASTM D2937)	Dry unit weight of sample representative of in-situ or in-place undisturbed condition.
Grain-Size Distribution (ASTM D422)	Size and distribution of soil particles, i.e., sand, gravel and fines (silt and clay).
Atterberg Limits (ASTM D4318)	Determines the moisture content where the soil behaves as a viscous material (liquid limit) and the moisture content at which the soil reaches a plastic state
Consolidation (ASTM 2435)	The amount and rate at which a soil sample compresses when loaded, and the influence of saturation on its behavior.
Direct Shear (ASTM D3080)	Soil shearing strength under varying loads and/or moisture conditions.
R-Value (ASTM D 2844)	The capacity of a subgrade or subbase to support a pavement section designed to carry a specified traffic load.
Sulfate Content (Cal Test 417)	Percentage of water-soluble sulfate as (SO4) in soil samples. Used as an indication of the relative degree of sulfate attack on concrete and for selecting the cement type.
Chloride Content (Cal Test 422)	Percentage of soluble chloride in soil. Used to evaluate the potential attack on encased reinforcing steel.
Resistivity (ASTM G187)	The potential of the soil to corrode metal.
pH (Cal Test 643)	The acidity or alkalinity of subgrade material.

Particle Size Distribution Report



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	5.2	15.8	36.9	21.7	20.4	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/8 in.	100.0		
#4	94.8		
#8	82.8		
#16	65.7		
#30	49.4		
#50	35.6		
#100	26.2		
#200	20.4		

* (no specification provided)

Material Description

Silty, clayey sand

Atterberg Limits

PL= 15 LL= 21 PI= 6

Coefficients

D_{85}= 2.61 D_{60}= 0.940 D_{50}= 0.616
D_{30}= 0.207 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= SC-SM AASHTO=

Remarks

Sample No.: B-1 **Source of Sample:** **Date:** 10/23/24
Location: **Elev./Depth:** 3.5-5'

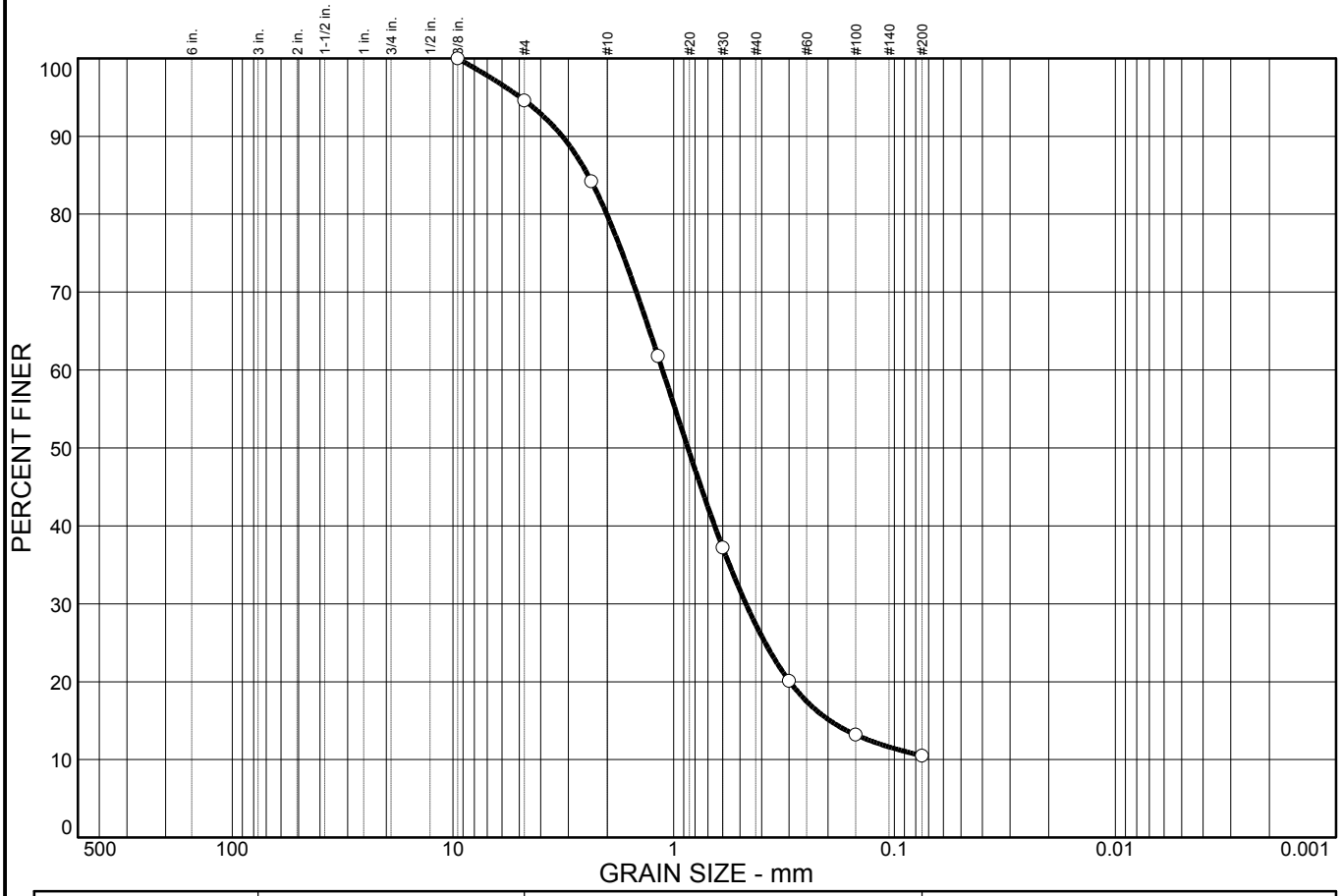
Moore Twining Associates, Inc.

Fresno, CA

Client: Fountainhead Development
Project: Proposed Starbucks

Project No: H33201.01 **Figure** 1

Particle Size Distribution Report



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	5.4	14.8	52.5	16.8	10.5	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/8 in.	100.0		
#4	94.6		
#8	84.2		
#16	61.8		
#30	37.2		
#50	20.1		
#100	13.2		
#200	10.5		

* (no specification provided)

Material Description

Poorly graded sand with silt

Atterberg Limits

PL= NP LL= NV PI= NP

Coefficients

D_{85}= 2.44 D_{60}= 1.12 D_{50}= 0.863
D_{30}= 0.471 D_{15}= 0.196 D_{10}=
C_u= C_c=

Classification

USCS= SP-SM AASHTO=

Remarks

Sample No.: B-1 **Source of Sample:** **Date:** 10/23/24
Location: **Elev./Depth:** 8.5-10'

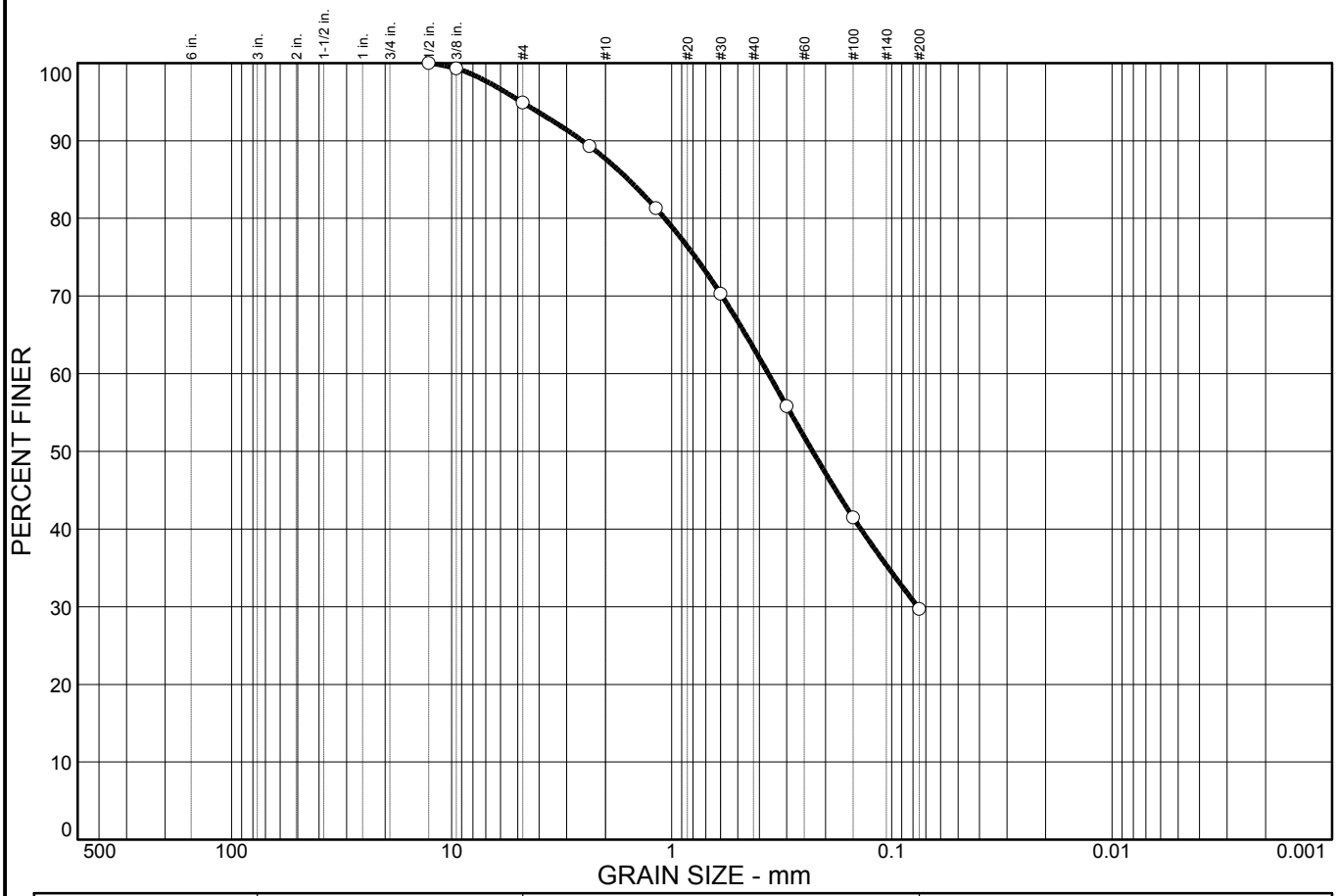
Moore Twining Associates, Inc.

Fresno, CA

Client: Fountainhead Development
Project: Proposed Starbucks

Project No: H33201.01 **Figure** 2

Particle Size Distribution Report



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	5.1	7.2	24.3	33.7	29.7	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1/2 in.	100.0		
3/8 in.	99.3		
#4	94.9		
#8	89.3		
#16	81.3		
#30	70.3		
#50	55.8		
#100	41.5		
#200	29.7		

* (no specification provided)

Material Description

Clayey sand

Atterberg Limits

PL= 17 LL= 25 PI= 8

Coefficients

D_{85}= 1.57 D_{60}= 0.364 D_{50}= 0.229
D_{30}= 0.0764 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= SC AASHTO=

Remarks

Sample No.: B-2 **Source of Sample:** **Date:** 10/23/24
Location: **Elev./Depth:** 28.5-30'

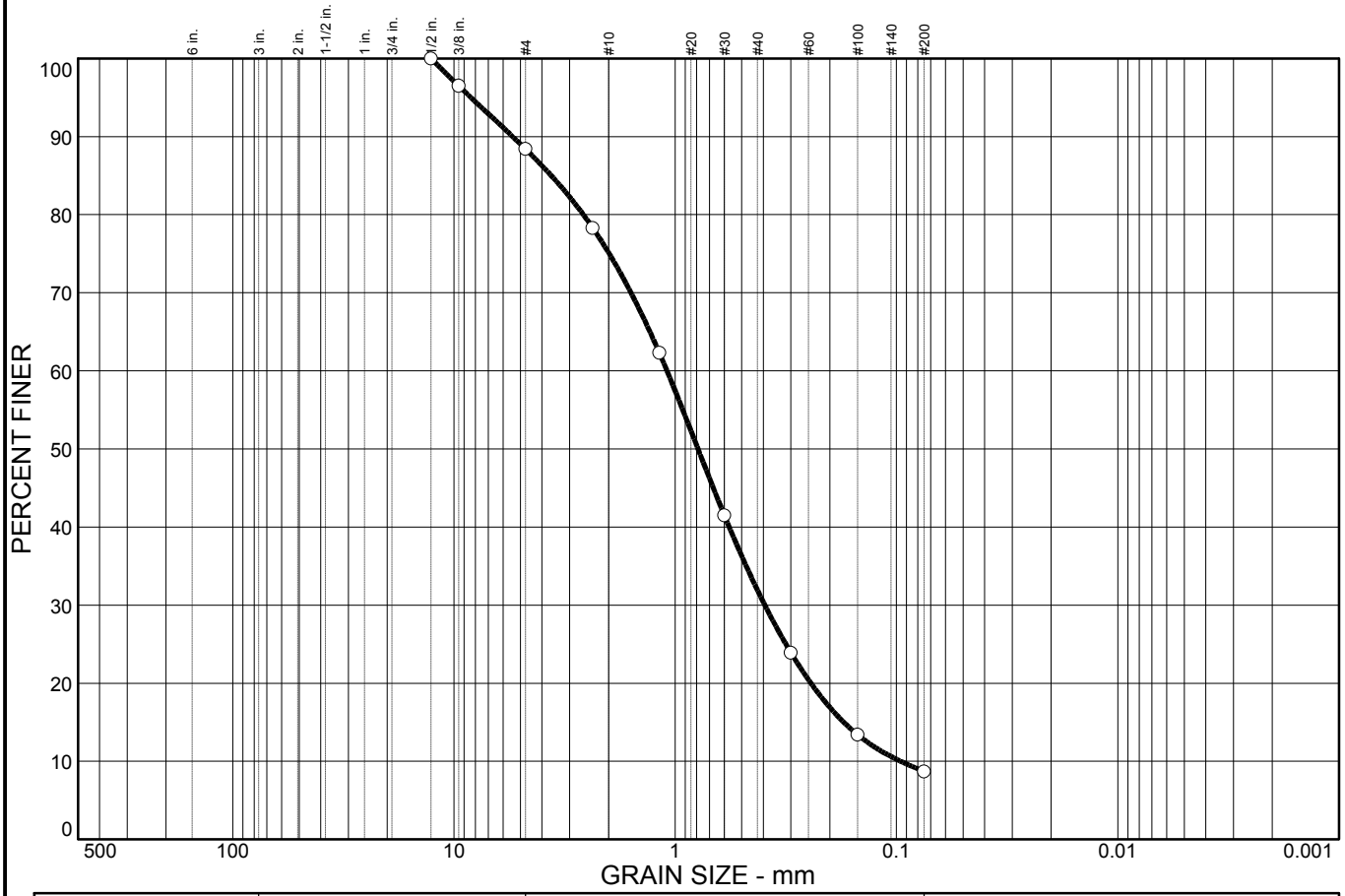
Moore Twining Associates, Inc.

Fresno, CA

Client: Fountainhead Development
Project: Proposed Starbucks

Project No: H33201.01 **Figure** 3

Particle Size Distribution Report



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	11.6	13.3	43.2	23.2	8.7	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1/2 in.	100.0		
3/8 in.	96.5		
#4	88.4		
#8	78.3		
#16	62.3		
#30	41.5		
#50	23.9		
#100	13.4		
#200	8.7		

* (no specification provided)

Material Description

Well-graded sand with silt

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 3.63 D_{60}= 1.09 D_{50}= 0.789
D_{30}= 0.394 D_{15}= 0.173 D_{10}= 0.0957
C_u= 11.40 C_c= 1.49

Classification

USCS= SW-SM AASHTO=

Remarks

Sample No.: B-2 **Source of Sample:** **Date:** 10/23/24
Location: **Elev./Depth:** 48.5-50'

Moore Twining Associates, Inc.

Fresno, CA

Client: Fountainhead Development
Project: Proposed Starbucks

Project No: H33201.01 **Figure** 4

Particle Size Distribution Report

% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	3.9	10.0	49.8	25.1	11.2	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/8 in.	100.0		
#4	96.1		
#8	88.8		
#16	73.7		
#30	49.3		
#50	25.6		
#100	15.0		
#200	11.2		

* (no specification provided)

Material Description

Poorly graded sand with silt

Atterberg Limits

PL= NP LL= NV PI= NP

Coefficients

D_{85}= 1.88 D_{60}= 0.792 D_{50}= 0.611
D_{30}= 0.351 D_{15}= 0.150 D_{10}=
C_u= C_c=

Classification

USCS= SP-SM AASHTO=

Remarks

Sample No.: P-1 **Source of Sample:** **Date:** 10/23/24
Location: **Elev./Depth:** 18.5-20'

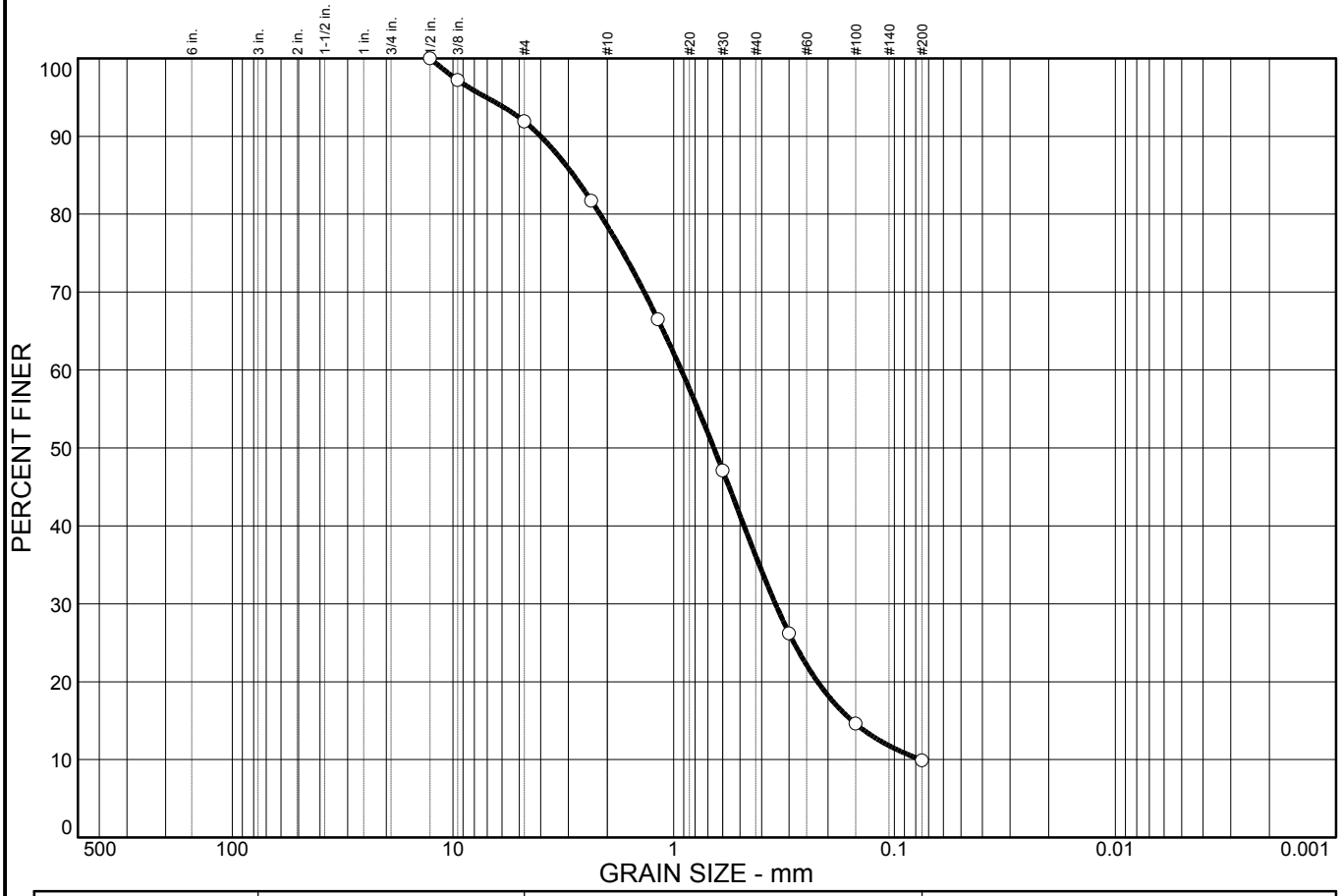
Moore Twining Associates, Inc.

Fresno, CA

Client: Fountainhead Development
Project: Proposed Starbucks

Project No: H33201.01 **Figure** 5

Particle Size Distribution Report



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	8.1	13.4	42.4	26.2	9.9	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1/2 in.	100.0		
3/8 in.	97.2		
#4	91.9		
#8	81.7		
#16	66.5		
#30	47.1		
#50	26.2		
#100	14.6		
#200	9.9		

* (no specification provided)

Material Description

Well-graded sand with silt

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 2.85 D_{60}= 0.925 D_{50}= 0.658
D_{30}= 0.346 D_{15}= 0.156 D_{10}= 0.0765
C_u= 12.09 C_c= 1.69

Classification

USCS= SW-SM AASHTO=

Remarks

Sample No.: P-2 **Source of Sample:** **Date:** 10/23/24
Location: **Elev./Depth:** 18.5-20'

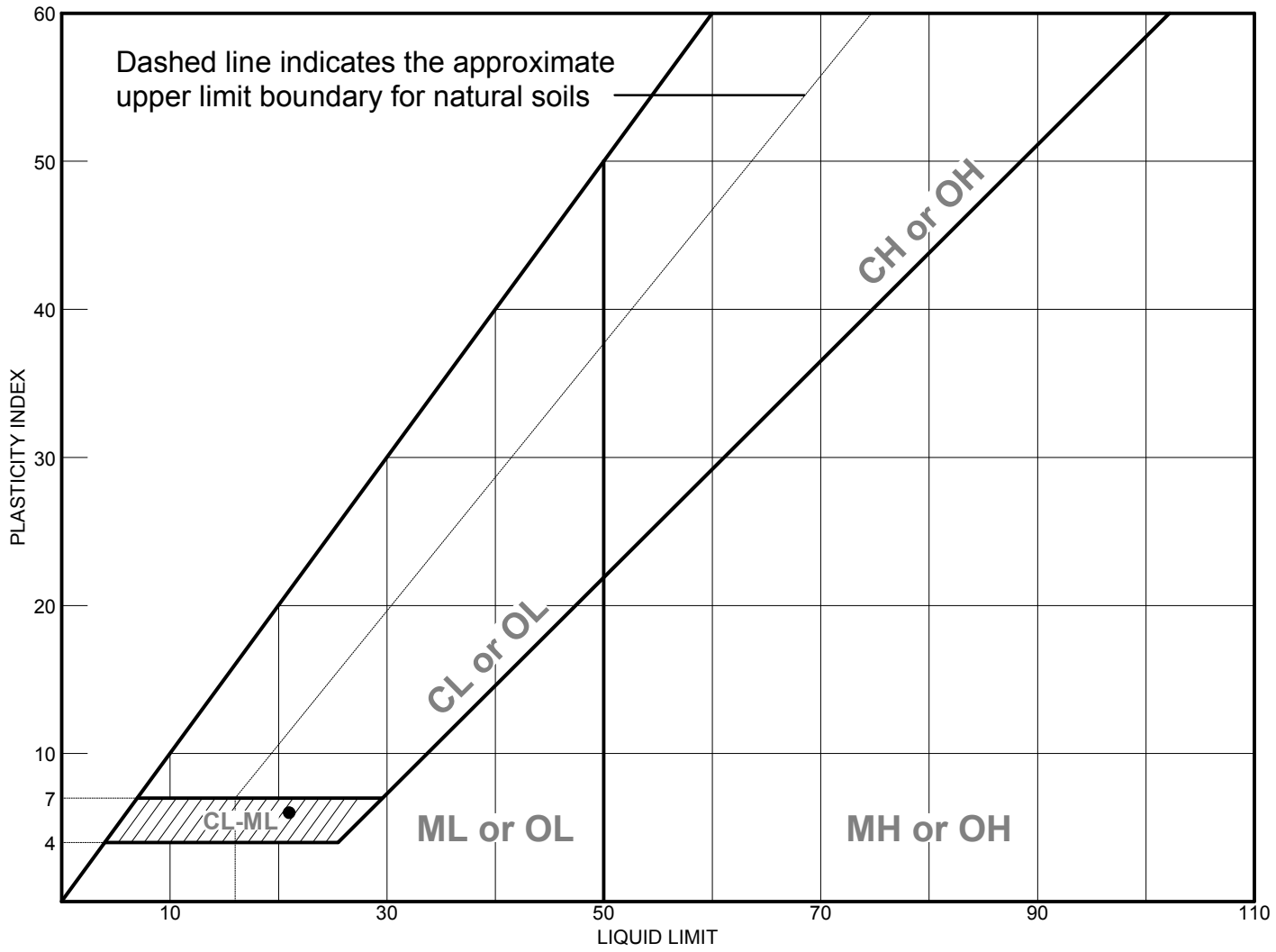
Moore Twining Associates, Inc.

Fresno, CA

Client: Fountainhead Development
Project: Proposed Starbucks

Project No: H33201.01 **Figure** 6

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Silty, clayey sand	21	15	6	42.1	20.4	SC-SM

Project No. H33201.01 **Client:** Fountainhead Development

Project: Proposed Starbucks

● **Source:** **Sample No.:** B-1 **Elev./Depth:** 3.5-5'

Remarks:

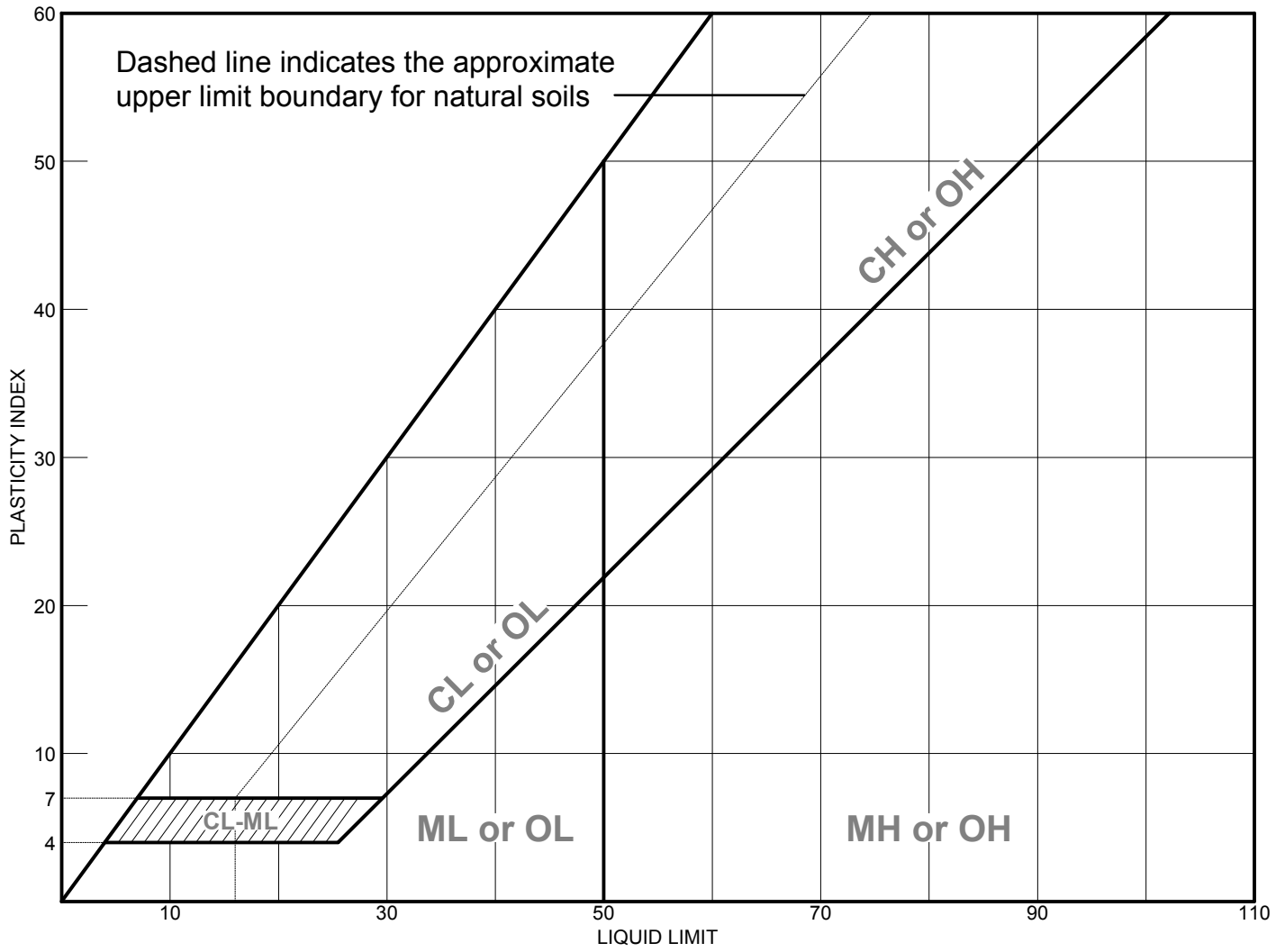
●

Moore Twining Associates, Inc.

Fresno, CA

Figure 7

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Poorly graded sand with silt	NV	NP	NP	27.3	10.5	SP-SM

Project No. H33201.01 **Client:** Fountainhead Development

Project: Proposed Starbucks

● **Source:** **Sample No.:** B-1 **Elev./Depth:** 8.5-10'

Remarks:

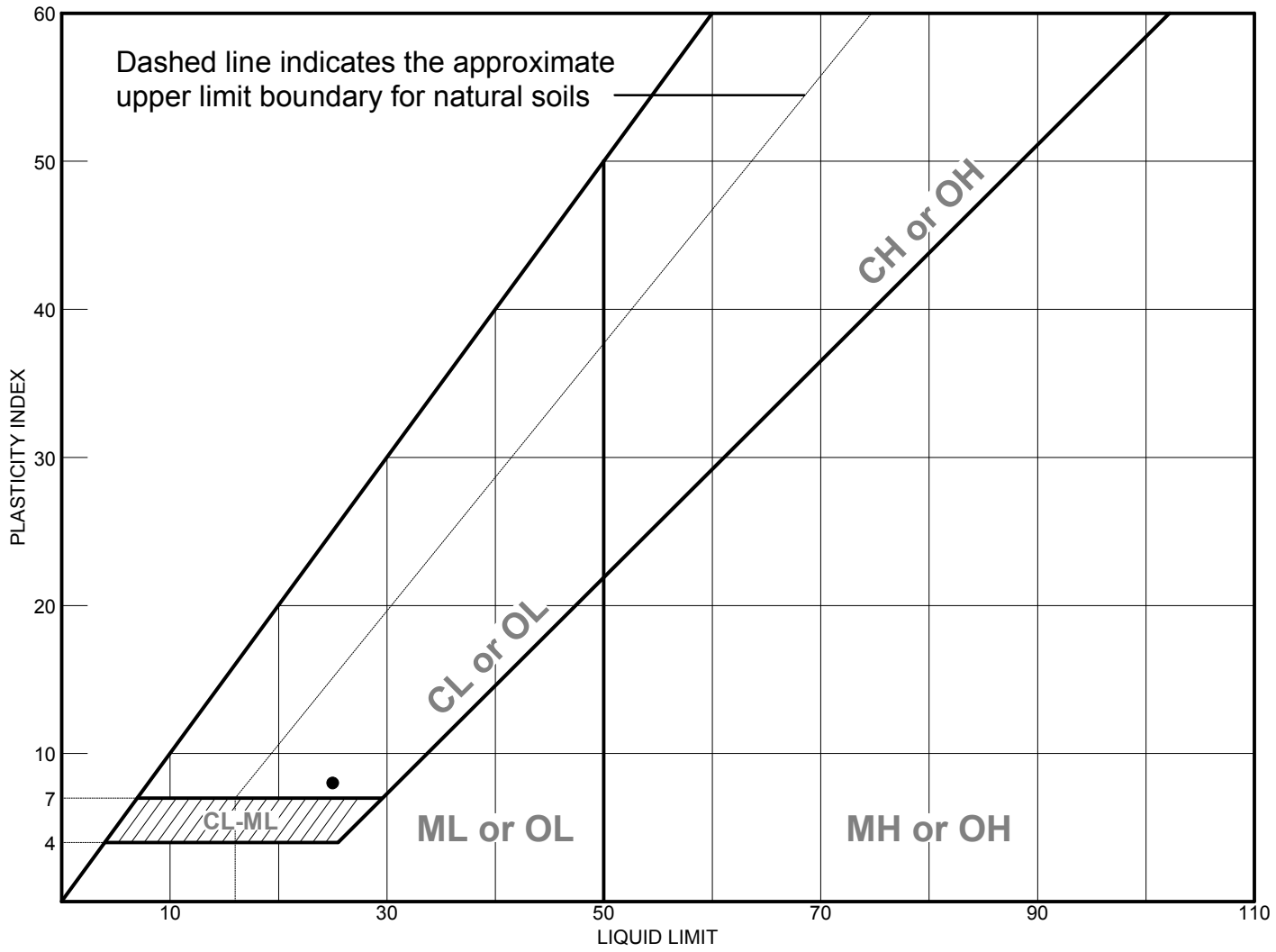
●

Moore Twining Associates, Inc.

Fresno, CA

Figure 8

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Clayey sand	25	17	8	63.3	29.7	SC

Project No. H33201.01 **Client:** Fountainhead Development

Project: Proposed Starbucks

● **Source:** **Sample No.:** B-2 **Elev./Depth:** 28.5-30'

Remarks:

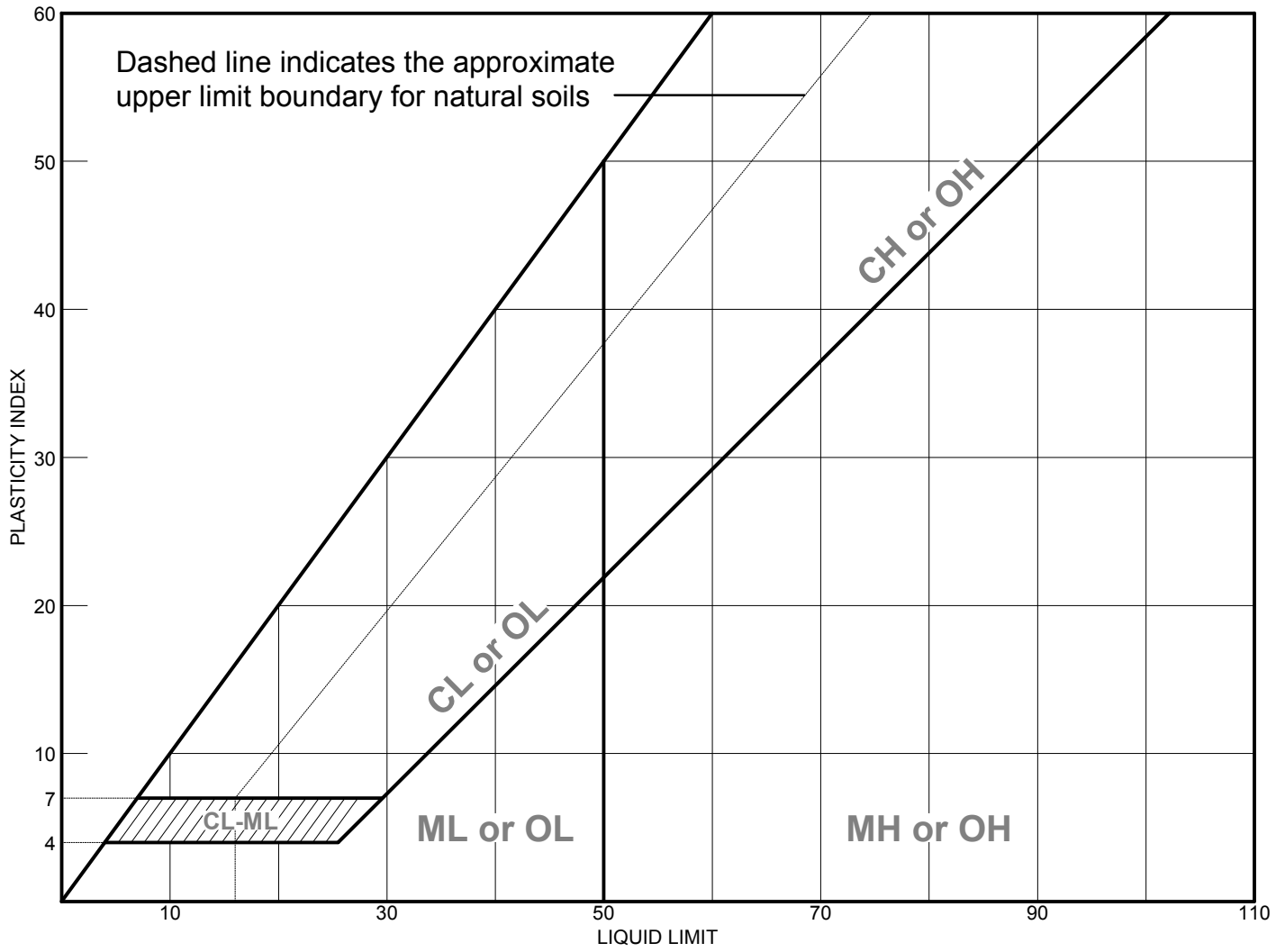
●

Moore Twining Associates, Inc.

Fresno, CA

Figure 9

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Poorly graded sand with silt	NV	NP	NP	36.3	11.2	SP-SM

Project No. H33201.01 **Client:** Fountainhead Development

Project: Proposed Starbucks

● **Source:** **Sample No.:** P-1 **Elev./Depth:** 18.5-20'

Remarks:

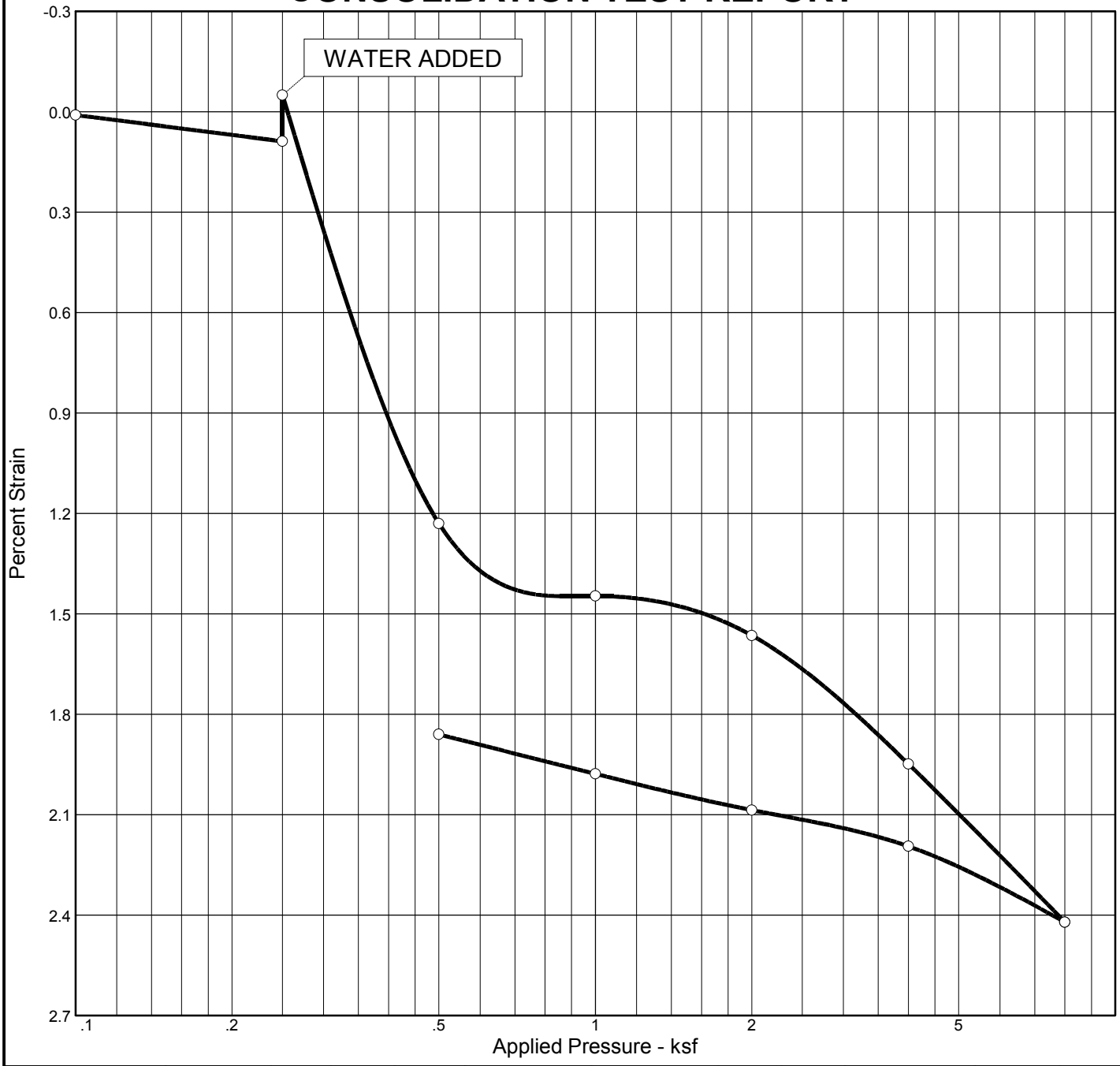
●

Moore Twining Associates, Inc.

Fresno, CA

Figure 10

CONSOLIDATION TEST REPORT



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (ksf)	P_c (ksf)	C_c	C_s	Swell Press. (ksf)	Swell %	e_o
Sat.	Moist.											
31.0 %	5.3 %	113.8			2.65		3.05	0.02	0.01	0.27	0.1	0.454

MATERIAL DESCRIPTION	USCS	AASHTO
Silty sand		

Project No. H33201.01 **Client:** Fountainhead Development

Project: Proposed Starbucks

Source: **Sample No.:** B-2 **Elev./Depth:** 1-2.5'

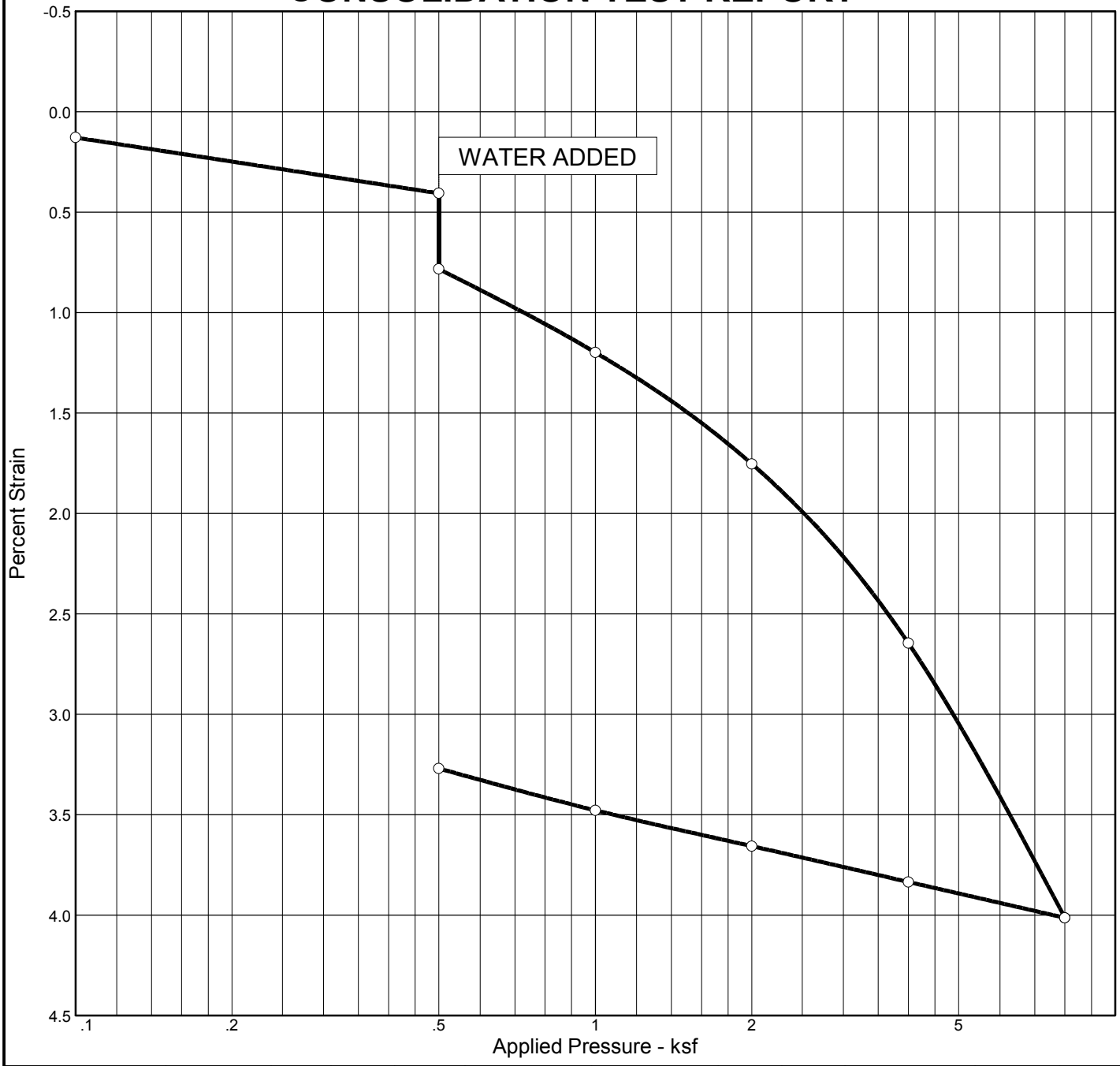
Remarks:

Moore Twining Associates, Inc.

Fresno, CA

Figure 11

CONSOLIDATION TEST REPORT



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (ksf)	P_c (ksf)	C_c	C_s	Swell Press. (ksf)	Clpse. %	e_o
Sat.	Moist.											
66.2 %	8.6 %	122.9			2.65		3.54	0.06	0.01		0.4	0.346

MATERIAL DESCRIPTION	USCS	AASHTO
Silty sand		

Project No. H33201.01 **Client:** Fountainhead Development

Project: Proposed Starbucks

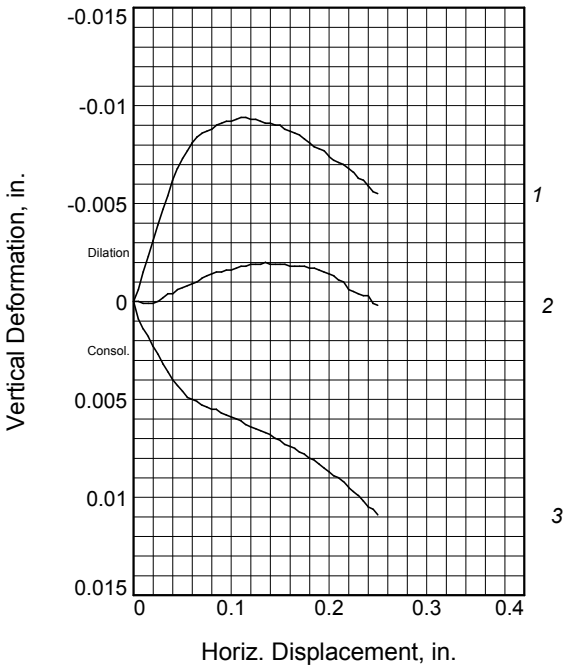
Source: **Sample No.:** B-2 **Elev./Depth:** 5-6.5'

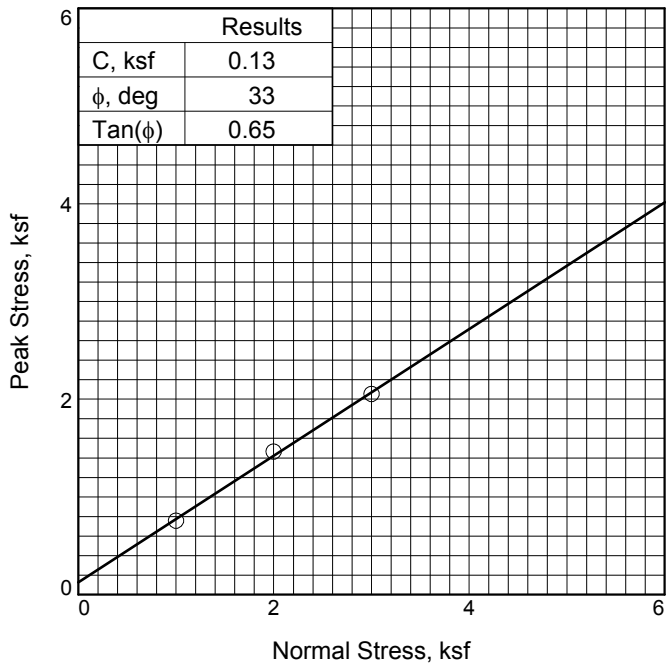
Remarks:

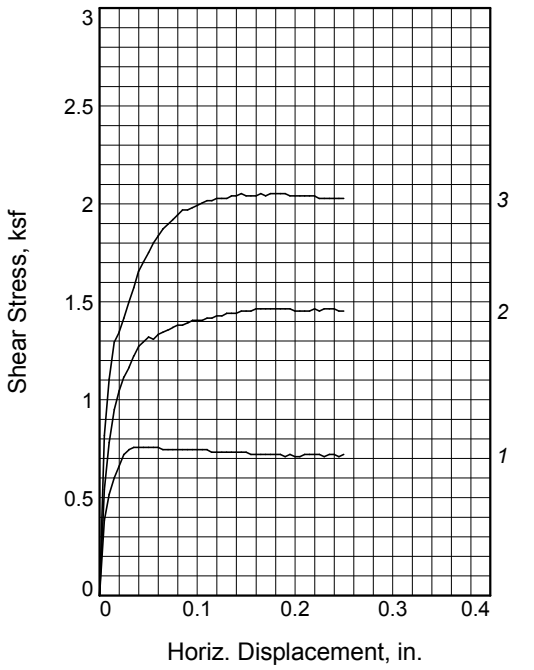
Moore Twining Associates, Inc.

Fresno, CA

Figure 12







Sample No.		1	2	3
Initial	Water Content, %	7.9	5.2	6.4
	Dry Density, pcf	115.4	117.6	115.8
	Saturation, %	48.4	33.7	39.5
	Void Ratio	0.4333	0.4072	0.4292
	Diameter, in.	2.42	2.42	2.42
	Height, in.	1.00	1.00	1.00
At Test	Water Content, %	15.6	14.7	15.4
	Dry Density, pcf	115.6	117.9	116.1
	Saturation, %	96.0	96.5	96.2
	Void Ratio	0.4311	0.4033	0.4250
	Diameter, in.	2.42	2.42	2.42
	Height, in.	1.00	1.00	1.00
Normal Stress, ksf		1.00	2.00	3.00
Peak Stress, ksf		0.76	1.46	2.05
Displacement, in.		0.04	0.16	0.14
Ultimate Stress, ksf				
Displacement, in.				
Strain at peak, %		1.4	6.6	6.0

Sample Type:
Description: Silty sand

Specific Gravity= 2.65
Remarks:

Figure 13

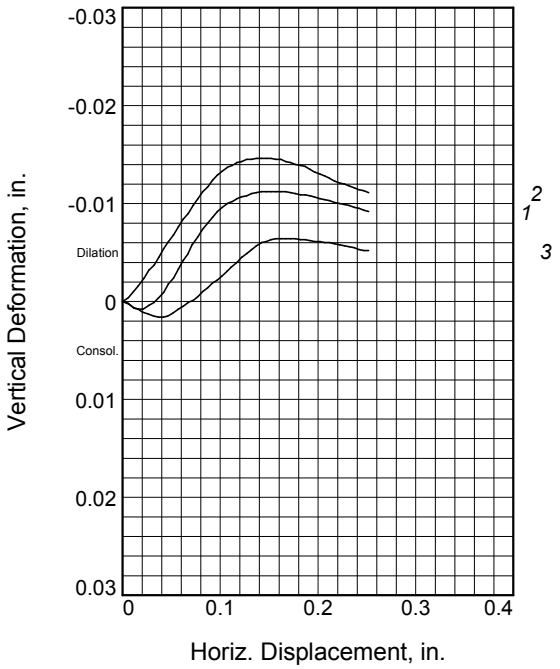
Client: Fountainhead Development

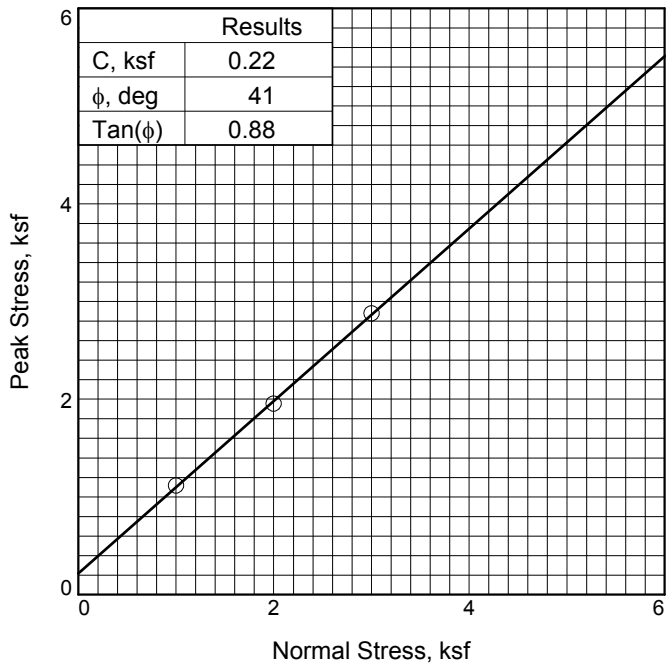
Project: Proposed Starbucks

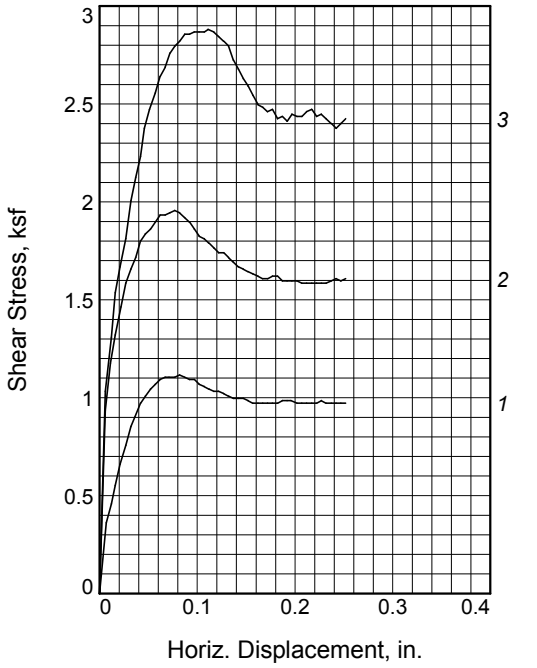
Sample Number: B-2 **Depth:** 1-2.5'

Proj. No.: H33201.01 **Date Sampled:** 10/23/24

DIRECT SHEAR TEST REPORT
Moore Twining Associates, Inc.
Fresno, CA







Sample No.		1	2	3
Initial	Water Content, %	10.3	9.3	8.3
	Dry Density, pcf	110.9	117.6	114.4
	Saturation, %	55.7	60.3	49.2
	Void Ratio	0.4924	0.4069	0.4458
	Diameter, in.	2.42	2.42	2.42
	Height, in.	1.00	1.00	1.00
At Test	Water Content, %	18.1	14.8	15.9
	Dry Density, pcf	111.0	117.8	114.7
	Saturation, %	98.0	96.9	95.4
	Void Ratio	0.4907	0.4038	0.4417
	Diameter, in.	2.42	2.42	2.42
	Height, in.	1.00	1.00	1.00
Normal Stress, ksf		1.00	2.00	3.00
Peak Stress, ksf		1.12	1.96	2.88
Displacement, in.		0.08	0.08	0.11
Ultimate Stress, ksf				
Displacement, in.				
Strain at peak, %		3.4	3.2	4.6

Sample Type:
Description: Silty sand

Specific Gravity= 2.65
Remarks:

Figure 14

Client: Fountainhead Development

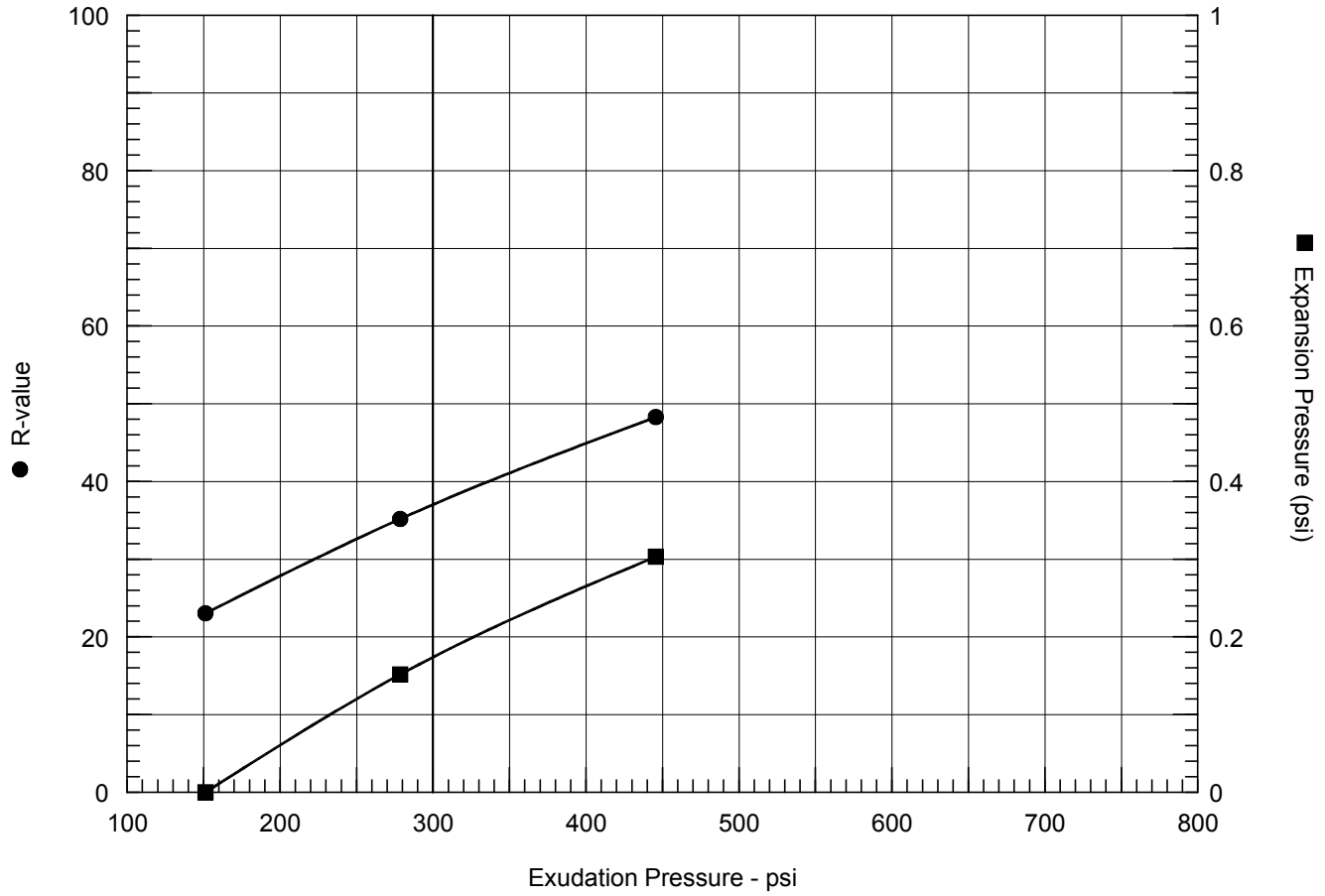
Project: Proposed Starbucks

Sample Number: B-2 **Depth:** 5-6.5'

Proj. No.: H33201.01 **Date Sampled:** 10/23/24

DIRECT SHEAR TEST REPORT
Moore Twining Associates, Inc.
Fresno, CA

R-VALUE TEST REPORT



Resistance R-Value and Expansion Pressure - ASTM D 2844

No.	Compact. Pressure psi	Density pcf	Moist. %	Expansion Pressure psi	Horizontal Press. psi @ 160 psi	Sample Height in.	Exud. Pressure psi	R Value	R Value Corr.
1	350	127.7	11.6	0.30	71	2.44	446	50	48
2	200	125.3	12.5	0.15	93	2.51	279	35	35
3	100	122.0	13.5	0.00	115	2.58	151	22	23

Test Results	Material Description
R-value at 300 psi exudation pressure = 37 **Exp. pressure at 300 psi exudation pressure =** 0.17 psi	Mix of silty sand and clayey sand

Project No.: H33201.01
Project: Proposed Starbucks
Sample Number: B-3 **Depth:** 1-5'
Date: 11/8/2024

Tested by: CG
Checked by: MS
Remarks:

R-VALUE TEST REPORT

Moore Twining Associates, Inc.

Figure 15

MOORE TWINING ASSOCIATES, INC.
California ELAP Certificate #1371

2527 Fresno Street
Fresno, CA 93721
(559) 268-7021 Phone
(559) 268-0740 Fax

November 07, 2024

Work Order #: **KJ29014**

Allen Harker
MTA Geotechnical Division
2527 Fresno Street
Fresno, CA 93721

RE: Proposed Starbucks

Enclosed are the analytical results for samples received by our laboratory on **10/29/24** . For your reference, these analyses have been assigned laboratory work order number **KJ29014**.

All analyses have been performed according to our laboratory's quality assurance program. All results are intended to be considered in their entirety, Moore Twining Associates, Inc. (MTA) is not responsible for use of less than complete reports. Results apply only to samples analyzed.

If you have any questions, please feel free to contact us at the number listed above.

Sincerely,

Moore Twining Associates, Inc.

Lauren Cox
Client Services Representative

Figure 16

MOORE TWINING ASSOCIATES, INC.
California ELAP Certificate #1371

2527 Fresno Street
Fresno, CA 93721
(559) 268-7021 Phone
(559) 268-0740 Fax

MTA Geotechnical Division	**Project:** Proposed Starbucks	**Reported:**
2527 Fresno Street	**Project Number:** H33201.01	11/07/2024
Fresno CA, 93721	**Project Manager:** Allen Harker	

Analytical Report for the Following Samples

Sample ID	Notes	Laboratory ID	Matrix	Date Sampled	Date Received
B-2 @ 0.2-5		KJ29014-01	Soil	10/23/24 00:00	10/29/24 11:00

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

MOORE TWINING ASSOCIATES, INC.
California ELAP Certificate #1371

2527 Fresno Street
Fresno, CA 93721
(559) 268-7021 Phone
(559) 268-0740 Fax

MTA Geotechnical Division	**Project:** Proposed Starbucks	**Reported:**
2527 Fresno Street	**Project Number:** H33201.01	11/07/2024
Fresno CA, 93721	**Project Manager:** Allen Harker	

B-2 @ 0.2-5

KJ29014-01 (Soil)

Analyte	Result	Reporting Limit	Units	Batch	Prepared	Analyzed	Method	Flag
Inorganics								
Chloride	**0.0021**	0.00060	% by Weight	[CALC]	11/02/24	11/02/24	[CALC]	
Chloride	**21**	6.0	mg/kg	B4J3113	10/31/24	11/02/24	Cal Test 422	
pH	**7.5**	0.10	pH Units	B4J3113	10/31/24	11/04/24	Cal Test 643 M	
Sulfate as SO4	**0.0026**	0.00060	% by Weight	[CALC]	11/02/24	11/02/24	[CALC]	
Sulfate as SO4	**26**	6.0	mg/kg	B4J3113	10/31/24	11/02/24	Cal Test 417	

Notes and Definitions

DUP1	A high RPD was observed between a sample and this sample's duplicate.
PREP	Modified preparation by pulverizing sample to pass #40 sieve and soaked for a minimum of 12 hours using a minimum dilution ratio of 1:10
ND	Analyte NOT DETECTED at or above the reporting limit
mg/kg	milligrams per kilogram (parts per million concentration units)

MOORE TWINING ASSOCIATES, INC.

Project Name:	Proposed Starbucks	Report Date:	11/7/2024
		Sample Date:	10/23/2024
Project Number:	H33201.01		
		Sampled By:	AV
Subject:	Minimum Resistivity, ASTM G187	Tested By:	RS
Material Description:	Silty sand	Test Date:	11/4/2024
Location:	B-2 @ 0.2-5'		

Laboratory Test Results, Minimum Resistivity - ASTM G187

Total Water Added, mls	Resistivity, Ohm-cm
25 mls	9,000
50 mls	6,000
75 mls	4,400
100 mls	3,400
125 mls	3,100
150 mls	3,200

Remarks: Min. Resistivity is 3,100 Ohm-cm

Figure 17

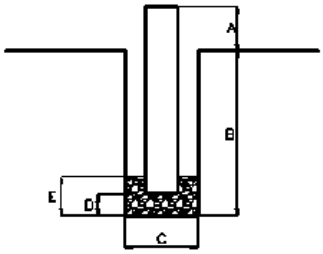
PH: 559.268.7021
FX: 559.268.7126
2527 Fresno Street
Fresno, CA 93721

APPENDIX D

RESULTS OF PERCOLATION TESTS

PERCOLATION TEST
No. P-1

Project:	Proposed Starbucks	**Project No.**	H33201.01
Location:	SWC of Main Street and 7th Avenue, Hesperia, CA	**Test Date:**	10/24/2024
Coordinates:			



A. Top of Pipe Above Ground	0 Inches
B. Depth of Hole	243 Inches
C. Diameter of Hole	8 Inches
D. Depth of Gravel Below Pipe	5 Inches
E. Total Gravel Layer Thickness	60 Inches
F. Pipe Length	238 Inches
G. Pipe Diameter	2 Inches

Pre-saturated: 40-50 gallons of water for required 2-hour presoak
Water was constantly filled up to about 2.45 feet from bottom of hole on 10/24/24

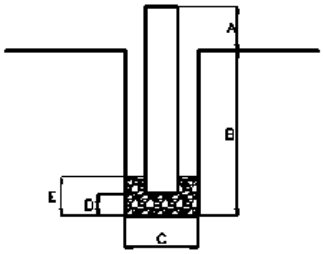
Gravel Correction Factor: 2.6

Trial	Date	Time	Depth To Water* (feet)	Time Interval (min)	Water Drop (inches)	Unfactored Percolation Rate, (minutes per inch)	Unfactored Infiltration Rate, (Inches per hour)
1	10/24/2024	8:40:00	17.9				
	10/24/2024	8:41:25	18.4	1.42	6	0.6	7.2
2	10/24/2024	8:41:25	18.4				
	10/24/2024	8:43:50	18.9	2.42	6	1.0	5.4
Refill 3	10/24/2024	8:45:30	17.9				
Begin Test	10/24/2024	8:55:30	19.28	10.00	16.56	1.5	3.5
Refill 4	10/24/2024	8:57:30	17.9				
	10/24/2024	9:07:30	19.27	10.00	16.44	1.6	3.5
Refill 5	10/24/2024	9:09:25	17.9				
	10/24/2024	9:19:25	19.27	10.00	16.44	1.6	3.5
Refill 6	10/24/2024	9:21:25	17.9				
	10/24/2024	9:31:25	19.25	10.00	16.2	1.6	3.4
Refill 7	10/24/2024	9:32:55	17.9				
	10/24/2024	9:42:55	19.23	10.00	15.96	1.6	3.3
Refill 8	10/24/2024	9:44:20	17.9				
	10/24/2024	9:54:20	19.22	10.00	15.84	1.6	3.3
Refill 9	10/24/2024	9:56:30	17.9				
	10/24/2024	10:06:30	19.22	10.00	15.84	1.6	3.3

* Depth to water measured from top of pipe

PERCOLATION TEST
No. P-2

Project:	Proposed Starbucks	**Project No.**	H33201.01
Location:	SWC of Main Street and 7th Avenue, Hesperia, CA	**Test Date:**	10/24/2024
Coordinates:			



A. Top of Pipe Above Ground	1 Inches
B. Depth of Hole	242 Inches
C. Diameter of Hole	8 Inches
D. Depth of Gravel Below Pipe	5 Inches
E. Total Gravel Layer Thickness	60 Inches
F. Pipe Length	238 Inches
G. Pipe Diameter	2 Inches

Pre-saturated: 60 gallons of water for required 2-hour presoak
Checked Water was constantly filled up to about 2.4 feet from bottom of hole on 10/24/24
Gravel Correction Factor: 2.6

Trial	Date	Time	Depth To Water* (feet)	Time Interval (min)	Water Drop (inches)	Unfactored Percolation Rate, (minutes per inch)	Unfactored Infiltration Rate, (Inches per hour)
1	10/24/2024	11:40:00	17.85				
	10/24/2024	11:41:45	18.35	1.75	6	0.7	5.7
2	10/24/2024	11:41:45	18.35				
	10/24/2024	11:44:05	18.85	2.33	6	1.0	5.4
Refill 3	10/24/2024	11:45:50	17.9				
Begin Test	10/24/2024	11:55:50	19.5	10.00	19.2	1.3	4.3
Refill 4	10/24/2024	11:57:30	17.8				
	10/24/2024	12:07:30	19.41	10.00	19.32	1.3	4.1
Refill 5	10/24/2024	12:09:30	17.9				
	10/24/2024	12:19:30	19.5	10.00	19.2	1.3	4.3
Refill 6	10/24/2024	12:21:15	17.9				
	10/24/2024	12:31:15	19.51	10.00	19.32	1.3	4.3
Refill 7	10/24/2024	12:33:00	17.9				
	10/24/2024	12:43:00	19.5	10.00	19.2	1.3	4.3
Refill 8	10/24/2024	12:44:30	17.9				
	10/24/2024	12:54:30	19.5	10.00	19.2	1.3	4.3

* Depth to water measured from top of pipe

APPENDIX E

COMPACTION TEST REPORT, TEST DATA AND TEST LOCATIONS FOR BACKFILL OF THE AREA OF REMOVED UNDERGROUND STORAGE TANKS WITH ENGINEERED FILL

This appendix contains the compaction test report, test data and test locations, prepared by Hi Desert Testing & Inspection, dated December 1, 1998, for backfill of the removed underground storage tanks with engineered fill in the vicinity of the former fuel canopy. The area of the removed Underground Storage Tanks are also shown on Drawing No. 2 in Appendix A of this report.

Dan Goodwin,
Hi Desert
Testing & Inspection

December 1, 1998
HDT&I P.N. 81041
Report No. 1

ADVANCED ENVIRONMENTAL CONCEPTS, INC.
4400 Ashe Road #206
Bakersfield, CA 93313
(805)831-1646

Attention: Mr. Jonathan L. Buck
Reference: 15901 Main Street, Hesperia, California.

Gentlemen:

In accordance with your request, a representative of this office observed backfilling of two gas tank excavations at the referrenced site, and performed random representative testing of compacted backfill. Samples of the soils were delivered to our laboratory where maximum density and optimum moisture were determined.

Results of our inspections and testing indicates backfill compaction complies with minimum requirements. Results are shown on the attached sheet.

Respectively submitted,
HI DESERT TESTING & INSPECTION

REGISTERED PROFESSIONAL ENGINEER
JERRY L. MILES
No. 42593
Exp 3/31/2000
CIVIL
STATE OF CALIFORNIA

Dan D. Goodwin

Jerry L. Miles, P.E.
RCE 42593

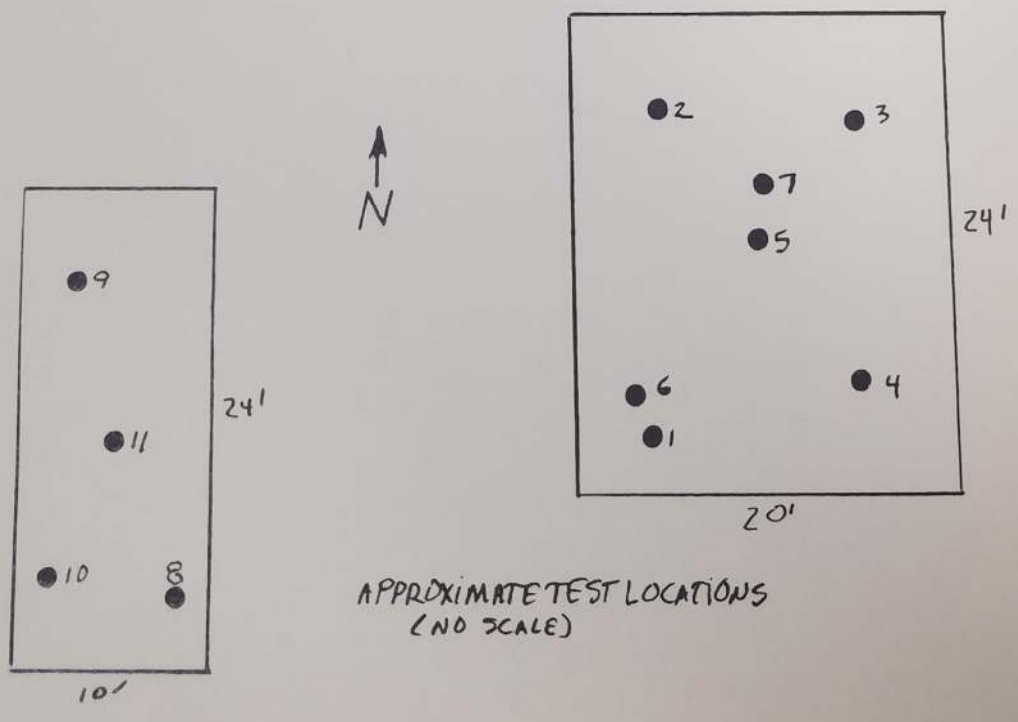
TEST RESULTS

ASTM D 1557-91 TEST METHODS FOR LABORATORY COMPACTION CHARACTERISTICS OF SOIL USING MODIFIED EFFORT

SAMPLE NO.	MAXIMUM DENSITY, P.C.F.	OPTIMUM MOISTURE CONTENT, %
1	126.5	11.0
2	124.0	9.5

ASTM D 2922-91 TEST METHOD FOR DENSITY AND UNIT WEIGHT OF SOIL IN PLACE BY NUCLEAR METHOD.

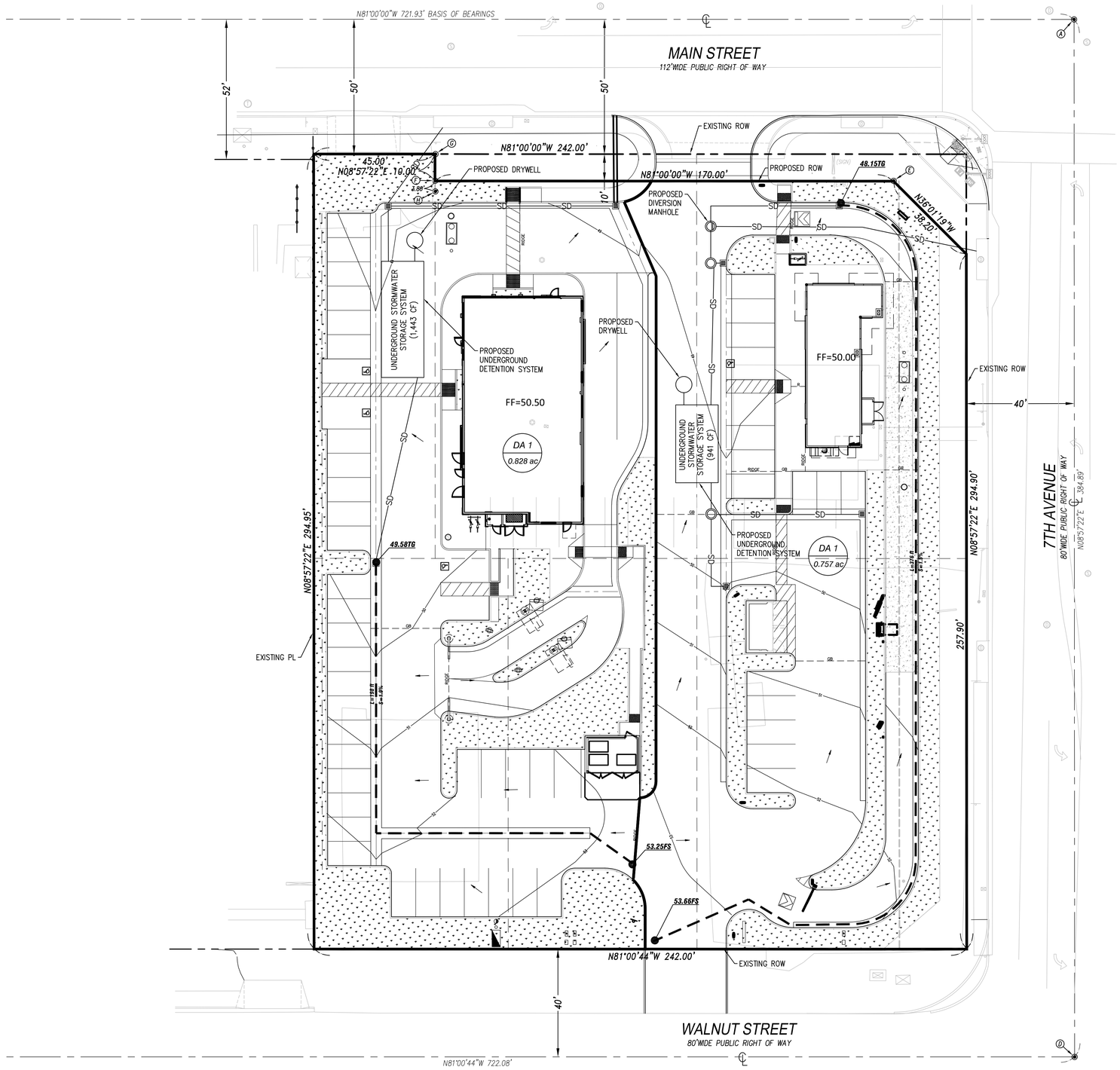
Test No.	Depth From Finished Grade Ft.	Dry Density, P.C.F.	Maximum Density, P.C.F.	Relative Density, %	Required R.D., %
1	11.0	119.6	126.5	94.5	90
2	9.0	119.8	126.5	94.7	90
3	7.0	125.4	126.5	99.1	90
4	6.0	120.4	126.5	95.2	90
5	4.0	112.8	124.0	91.0	90
6	2.0	121.0	124.0	97.6	90
7	0.5	122.7	124.0	99.0	90
8	10.0	119.9	124.0	96.7	90
9	8.0	121.4	124.0	97.9	90
10	6.0	120.7	124.0	97.3	90
11	0.5	117.1	124.0	94.4	90



APPROXIMATE TEST LOCATIONS (NO SCALE)

DG/cg

Appendix B: Site Plan



WQMP CALCULATIONS

AREA #	IMPERVIOUS AREA (sf)	PERVIOUS AREA (sf)	TOTAL AREA (ac)	IMPERVIOUS AREA (%)	LID DCV REQ'D (cf)	BMP VOLUME PROVIDED (cf)
DA 1	25,400	7,572	0.828	70	1,788	1,819
DA 2	21,240	8,417	0.757	64	1,239	1,278

LEGEND:

- DRAINAGE AREA
- FLOW LINE PATH
- AREA / ACRE — DRAINAGE CALLOUT
- XX — EXISTING CONTOUR

N

0 20 40

SCALE: 1:20

REVISION RECORD

#	DATE	DESCRIPTION

STARBUCKS AND MCDONALDS

SWC MAIN STREET & 7TH AVEUE
HESPERIA, CA

10870 W. FAIRVIEW DR
STE 102-1187
BOISE, ID 83713
(208) 918-0928
thomas@c3civileng.com
www.c3civileng.com

C3 CIVIL ENGINEERING

PROFESSIONAL SEAL

REGISTERED PROFESSIONAL ENGINEER
THOMAS T. HANSEN
No. 19857
CIVIL
STATE OF CALIFORNIA
12/06/2024

DATE: 12/06/2024
C3 JOB NO: 24-041
DRAWN BY: NM
CHECKED BY: TH

SHEET TITLE

WQMP PLAN

SHEET NUMBER

1 of 1

Appendix C: Calculations and Design

User Inputs

Chamber Model:	DC-780
Outlet Control Structure:	No
Project Name:	Mcdonalds
Engineer:	Nadia Manzur n/a
Project Location:	California
Measurement Type:	Imperial
Required Storage Volume:	1413 cubic ft.
Stone Porosity:	40%
Stone Foundation Depth:	9 in.
Stone Above Chambers:	6 in.
Design Constraint Dimensions:	(20 ft. x 45 ft.)

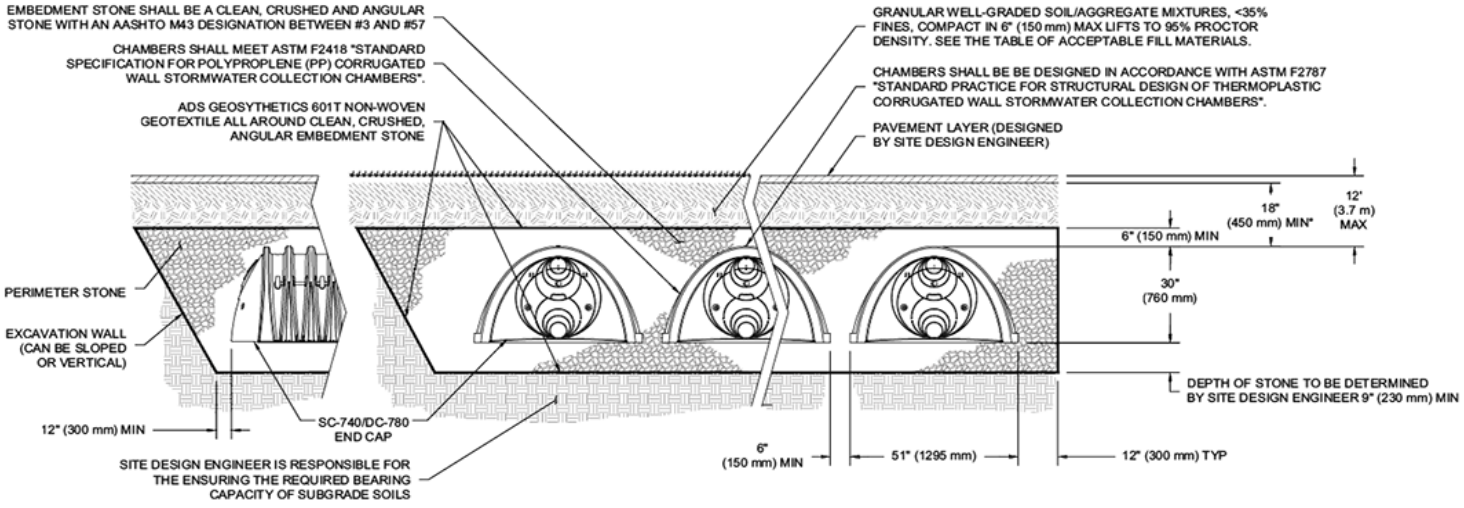
Results

System Volume and Bed Size

Installed Storage Volume:	1443.74 cubic ft.
Storage Volume Per Chamber:	46.20 cubic ft.
Number Of Chambers Required:	15
Number Of End Caps Required:	6
Chamber Rows:	3
Maximum Length:	43.11 ft.
Maximum Width:	15.75 ft.
Approx. Bed Size Required:	679.05 square ft.
Average Cover Over Chambers:	N/A .

System Components

Amount Of Stone Required:	69 cubic yards
Volume Of Excavation (Not Including Fill):	95 cubic yards
Total Non-woven Geotextile Required:	240 square yards
Woven Geotextile Required (excluding Isolator Row):	21 square yards
Woven Geotextile Required (Isolator Row):	25 square yards
Total Woven Geotextile Required:	46 square yards
Impervious Liner Required:	0 square yards



*MINIMUM COVER TO BOTTOM OF FLEXIBLE PAVEMENT. FOR UNPAVED INSTALLATIONS WHERE RUTTING FROM VEHICLES MAY OCCUR, INCREASE COVER TO 24" (600 mm).

User Inputs

Chamber Model:	DC-780
Outlet Control Structure:	No
Project Name:	Starbucks
Engineer:	Nadia Manzur n/a
Project Location:	California
Measurement Type:	Imperial
Required Storage Volume:	915 cubic ft.
Stone Porosity:	40%
Stone Foundation Depth:	9 in.
Stone Above Chambers:	6 in.
Design Constraint Dimensions:	(20 ft. x 30 ft.)

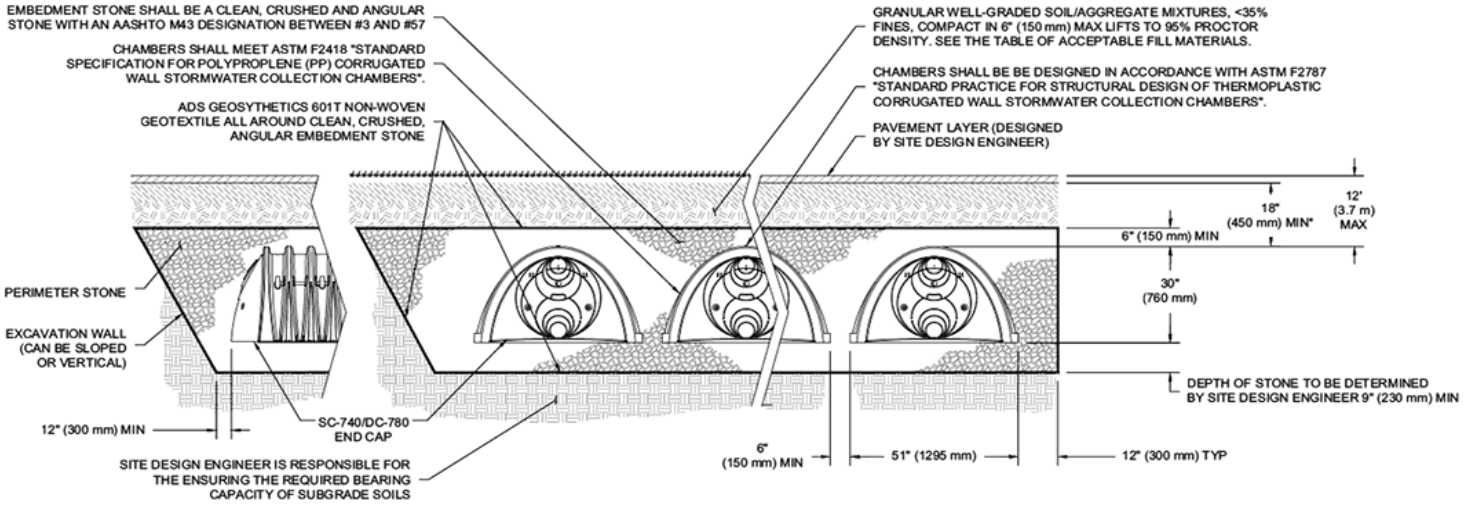
Results

System Volume and Bed Size

Installed Storage Volume:	941.16 cubic ft.
Storage Volume Per Chamber:	46.20 cubic ft.
Number Of Chambers Required:	9
Number Of End Caps Required:	6
Chamber Rows:	3
Maximum Length:	28.88 ft.
Maximum Width:	15.75 ft.
Approx. Bed Size Required:	454.88 square ft.
Average Cover Over Chambers:	N/A .

System Components

Amount Of Stone Required:	48 cubic yards
Volume Of Excavation (Not Including Fill):	64 cubic yards
Total Non-woven Geotextile Required:	166 square yards
Woven Geotextile Required (excluding Isolator Row):	21 square yards
Woven Geotextile Required (Isolator Row):	16 square yards
Total Woven Geotextile Required:	37 square yards
Impervious Liner Required:	0 square yards

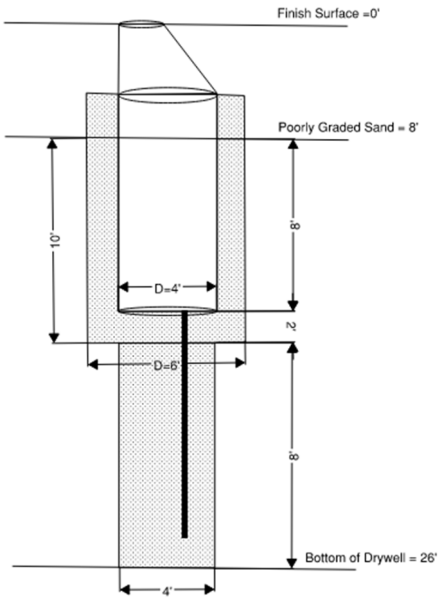


*MINIMUM COVER TO BOTTOM OF FLEXIBLE PAVEMENT. FOR UNPAVED INSTALLATIONS WHERE RUTTING FROM VEHICLES MAY OCCUR, INCREASE COVER TO 24" (600 mm).

Infiltration LID BMP – Dry wells

[1] $V_{ret} = (P_{design}/12*SA_{inf}*T_{fill}) + (SA_{reservoir}*d_{resevior}*n_{aggregate}) = X_1 + X_2$

BMP Type	DMA A	DMA B
[2] Design capture Volume, DCV (ft^3) See Form 4.21 Item 7	1,788	1,239
[3] Infiltration Rate of underlying soils (in/hr)	4.3	3.3
[4]Infiltration Safety Factor See TGD section 5.4.2 and Appendix D	2	2
[5] Design percolation rate (in/hr) P_{Design} = Item 2/ intem 3	2.15	1.65
[6]$SA_{inf, res}$= surface area (ft^2) for drywell	301.6	301.6
[7]Duration of storm when infiltration is occurring as basin is filling (hrs) ; T_{fill} (default is 3 hours)	3	3
[8]Drawdown time for stored runoff(hrs); $T_{drawdown}$ (default is 48 hours)	48	48
[9] X_1= total infiltrating volume after 3 hrs (cf)	162.10	124.40
[10] Depth (ft) of Drywell	16	16
[11] Porosity of Aggregate, if none then 1.0	0.4	0.4
[12]X_2 = Maximum volume of drywell (cf)	213	213
[13]Total Volume of Drywell, V_{ret} (cf) = item 9 + item 12	375	337.4
[14]Minimum Retention Volume = Item 2 – item 9	1,626	1,114
[15]Additional storage volume required= Item 14- item 12	1,413	902
[16] Underground Retention Volume (ft^3), ADS Stormtech System	1,444	941
[16] Design Drawdown Time for stored runoff (hrs), T_{design}= (Item 14)/ (Item 6 * (Item 5)/12)	30	27



Appendix D: Educational Materials

Building & Grounds Maintenance SC-41

Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Targeted Constituents

Sediment	✓
Nutrients	✓
Trash	
Metals	✓
Bacteria	✓
Oil and Grease	
Organics	

Description

Stormwater runoff from building and grounds maintenance activities can be contaminated with toxic hydrocarbons in solvents, fertilizers and pesticides, suspended solids, heavy metals, abnormal pH, and oils and greases. Utilizing the protocols in this fact sheet will prevent or reduce the discharge of pollutants to stormwater from building and grounds maintenance activities by washing and cleaning up with as little water as possible, following good landscape management practices, preventing and cleaning up spills immediately, keeping debris from entering the storm drains, and maintaining the stormwater collection system.

Approach

Reduce potential for pollutant discharge through source control pollution prevention and BMP implementation. Successful implementation depends on effective training of employees on applicable BMPs and general pollution prevention strategies and objectives.

Pollution Prevention

- Switch to non-toxic chemicals for maintenance when possible.
- Choose cleaning agents that can be recycled.
- Encourage proper lawn management and landscaping, including use of native vegetation.

CASQA California Stormwater Quality Association

- Encourage use of Integrated Pest Management techniques for pest control.
- Encourage proper onsite recycling of yard trimmings.
- Recycle residual paints, solvents, lumber, and other material as much as possible.

Suggested Protocols

Pressure Washing of Buildings, Rooftops, and Other Large Objects

- In situations where soaps or detergents are used and the surrounding area is paved, pressure washers must use a water collection device that enables collection of wash water and associated solids. A sump pump, wet vacuum or similarly effective device must be used to collect the runoff and loose materials. The collected runoff and solids must be disposed of properly.
- If soaps or detergents are not used, and the surrounding area is paved, wash runoff does not have to be collected but must be screened. Pressure washers must use filter fabric or some other type of screen on the ground and/or in the catch basin to trap the particles in wash water runoff.
- If you are pressure washing on a grassed area (with or without soap), runoff must be dispersed as sheet flow as much as possible, rather than as a concentrated stream. The wash runoff must remain on the grass and not drain to pavement.

Landscaping Activities

- Dispose of grass clippings, leaves, sticks, or other collected vegetation as garbage, or by composting. Do not dispose of collected vegetation into waterways or storm drainage systems.
- Use mulch or other erosion control measures on exposed soils.

Building Repair, Remodeling, and Construction

- Do not dump any toxic substance or liquid waste on the pavement, the ground, or toward a storm drain.
- Use ground or drop cloths underneath outdoor painting, scraping, and sandblasting work, and properly dispose of collected material daily.
- Use a ground cloth or oversized tub for activities such as paint mixing and tool cleaning.
- Clean paintbrushes and tools covered with water-based paints in sinks connected to sanitary sewers or in portable containers that can be dumped into a sanitary sewer drain. Brushes and tools covered with non-water-based paints, finishes, or other materials must be cleaned in a manner that enables collection of used solvents (e.g., paint thinner, turpentine, etc.) for recycling or proper disposal.
- Use a storm drain cover, filter fabric, or similarly effective runoff control mechanism if dust, grit, wash water, or other pollutants may escape the work area and enter a catch basin. This is particularly necessary on rainy days. The containment device(s) must be in place at the beginning of the work day, and accumulated dirty runoff and solids must be collected and disposed of before removing the containment device(s) at the end of the work day.

- If you need to de-water an excavation site, you may need to filter the water before discharging to a catch basin or off-site. If directed off-site, you should direct the water through hay bales and filter fabric or use other sediment filters or traps.
- Store toxic material under cover during precipitation events and when not in use. A cover would include tarps or other temporary cover material.

Mowing, Trimming, and Planting

- Dispose of leaves, sticks, or other collected vegetation as garbage, by composting or at a permitted landfill. Do not dispose of collected vegetation into waterways or storm drainage systems.
- Use mulch or other erosion control measures when soils are exposed.
- Place temporarily stockpiled material away from watercourses and drain inlets, and berm or cover stockpiles to prevent material releases to the storm drain system.
- Consider an alternative approach when bailing out muddy water: do not put it in the storm drain; pour over landscaped areas.
- Use hand weeding where practical.

Fertilizer and Pesticide Management

- Follow all federal, state, and local laws and regulations governing the use, storage, and disposal of fertilizers and pesticides and training of applicators and pest control advisors.
- Use less toxic pesticides that will do the job when applicable. Avoid use of copper-based pesticides if possible.
- Do not use pesticides if rain is expected.
- Do not mix or prepare pesticides for application near storm drains.
- Use the minimum amount needed for the job.
- Calibrate fertilizer distributors to avoid excessive application.
- Employ techniques to minimize off-target application (e.g., spray drift) of pesticides, including consideration of alternative application techniques.
- Apply pesticides only when wind speeds are low.
- Fertilizers should be worked into the soil rather than dumped or broadcast onto the surface.
- Irrigate slowly to prevent runoff and then only as much as is needed.
- Clean pavement and sidewalk if fertilizer is spilled on these surfaces before applying irrigation water.
- Dispose of empty pesticide containers according to the instructions on the container label.

- Use up the pesticides. Rinse containers, and use rinse water as product. Dispose of unused pesticide as hazardous waste.
- Implement storage requirements for pesticide products with guidance from the local fire department and County Agricultural Commissioner. Provide secondary containment for pesticides.

Inspection

- Inspect irrigation system periodically to ensure that the right amount of water is being applied and that excessive runoff is not occurring. Minimize excess watering and repair leaks in the irrigation system as soon as they are observed.

Training

- Educate and train employees on pesticide use and in pesticide application techniques to prevent pollution.
- Train employees and contractors in proper techniques for spill containment and cleanup.
- Be sure the frequency of training takes into account the complexity of the operations and the nature of the staff.

Spill Response and Prevention

- Keep your Spill Prevention Control and Countermeasure (SPCC) Plan up-to-date.
- Place a stockpile of spill cleanup materials, such as brooms, dustpans, and vacuum sweepers (if desired) near the storage area where it will be readily accessible.
- Have employees trained in spill containment and cleanup present during the loading/unloading of dangerous wastes, liquid chemicals, or other materials.
- Familiarize employees with the Spill Prevention Control and Countermeasure Plan.
- Clean up spills immediately.

Other Considerations

Alternative pest/weed controls may not be available, suitable, or effective in many cases.

Requirements

Costs

- Cost will vary depending on the type and size of facility.
- Overall costs should be low in comparison to other BMPs.

Maintenance

Sweep paved areas regularly to collect loose particles. Wipe up spills with rags and other absorbent material immediately, do not hose down the area to a storm drain.

Supplemental Information

Further Detail of the BMP

Fire Sprinkler Line Flushing

Building fire sprinkler line flushing may be a source of non-stormwater runoff pollution. The water entering the system is usually potable water, though in some areas it may be non-potable reclaimed wastewater. There are subsequent factors that may drastically reduce the quality of the water in such systems. Black iron pipe is usually used since it is cheaper than potable piping, but it is subject to rusting and results in lower quality water. Initially, the black iron pipe has an oil coating to protect it from rusting between manufacture and installation; this will contaminate the water from the first flush but not from subsequent flushes. Nitrates, poly-phosphates and other corrosion inhibitors, as well as fire suppressants and antifreeze may be added to the sprinkler water system. Water generally remains in the sprinkler system a long time (typically a year) and between flushes may accumulate iron, manganese, lead, copper, nickel, and zinc. The water generally becomes anoxic and contains living and dead bacteria and breakdown products from chlorination. This may result in a significant BOD problem and the water often smells. Consequently dispose fire sprinkler line flush water into the sanitary sewer. Do not allow discharge to storm drain or infiltration due to potential high levels of pollutants in fire sprinkler line water.

References and Resources

California's Nonpoint Source Program Plan http://www.swrcb.ca.gov/nps/index.html

Clark County Storm Water Pollution Control Manual
http://www.co.clark.wa.us/pubworks/bmpman.pdf

King County Storm Water Pollution Control Manual http://dnr.metrokc.gov/wlr/dss/spcm.htm

Mobile Cleaners Pilot Program: Final Report. 1997. Bay Area Stormwater Management Agencies Association (BASMAA). http://www.basmaa.org/

Pollution from Surface Cleaning Folder. 1996. Bay Area Stormwater Management Agencies Association (BASMAA). http://www.basmaa.org/

Santa Clara Valley Urban Runoff Pollution Prevention Program http://www.scvurppp.org

The Storm Water Managers Resource Center http://www.stormwatercenter.net/

Parking/Storage Area Maintenance SC-43

Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Targeted Constituents

Sediment	✓
Nutrients	
Trash	✓
Metals	✓
Bacteria	
Oil and Grease	✓
Organics	✓

Description

Parking lots and storage areas can contribute a number of substances, such as trash, suspended solids, hydrocarbons, oil and grease, and heavy metals that can enter receiving waters through stormwater runoff or non-stormwater discharges. The protocols in this fact sheet are intended to prevent or reduce the discharge of pollutants from parking/storage areas and include using good housekeeping practices, following appropriate cleaning BMPs, and training employees.

Approach

The goal of this program is to ensure stormwater pollution prevention practices are considered when conducting activities on or around parking areas and storage areas to reduce potential for pollutant discharge to receiving waters. Successful implementation depends on effective training of employees on applicable BMPs and general pollution prevention strategies and objectives.

Pollution Prevention

- Encourage alternative designs and maintenance strategies for impervious parking lots. (See New Development and Redevelopment BMP Handbook)
- Keep accurate maintenance logs to evaluate BMP implementation.

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SC-43 Parking/Storage Area Maintenance

Suggested Protocols

General

- Keep the parking and storage areas clean and orderly. Remove debris in a timely fashion.
- Allow sheet runoff to flow into biofilters (vegetated strip and swale) and/or infiltration devices.
- Utilize sand filters or oleophilic collectors for oily waste in low quantities.
- Arrange rooftop drains to prevent drainage directly onto paved surfaces.
- Design lot to include semi-permeable hardscape.
- Discharge soapy water remaining in mop or wash buckets to the sanitary sewer through a sink, toilet, clean-out, or wash area with drain.

Controlling Litter

- Post "No Littering" signs and enforce anti-litter laws.
- Provide an adequate number of litter receptacles.
- Clean out and cover litter receptacles frequently to prevent spillage.
- Provide trash receptacles in parking lots to discourage litter.
- Routinely sweep, shovel, and dispose of litter in the trash.

Surface Cleaning

- Use dry cleaning methods (e.g., sweeping, vacuuming) to prevent the discharge of pollutants into the stormwater conveyance system if possible.
- Establish frequency of public parking lot sweeping based on usage and field observations of waste accumulation.
- Sweep all parking lots at least once before the onset of the wet season.
- Follow the procedures below if water is used to clean surfaces:
  - Block the storm drain or contain runoff.
  - Collect and pump wash water to the sanitary sewer or discharge to a pervious surface. Do not allow wash water to enter storm drains.
  - Dispose of parking lot sweeping debris and dirt at a landfill.
- Follow the procedures below when cleaning heavy oily deposits:
  - Clean oily spots with absorbent materials.
  - Use a screen or filter fabric over inlet, then wash surfaces.

- Do not allow discharges to the storm drain.
- Vacuum/pump discharges to a tank or discharge to sanitary sewer.
- Appropriately dispose of spilled materials and absorbents.

Surface Repair

- Preheat, transfer or load hot bituminous material away from storm drain inlets.
- Apply concrete, asphalt, and seal coat during dry weather to prevent contamination from contacting stormwater runoff.
- Cover and seal nearby storm drain inlets where applicable (with waterproof material or mesh) and manholes before applying seal coat, slurry seal, etc. Leave covers in place until job is complete and all water from emulsified oil sealants has drained or evaporated. Clean any debris from these covered manholes and drains for proper disposal.
- Use only as much water as necessary for dust control, to avoid runoff.
- Catch drips from paving equipment that is not in use with pans or absorbent material placed under the machines. Dispose of collected material and absorbents properly.

Inspection

- Have designated personnel conduct inspections of parking facilities and stormwater conveyance systems associated with parking facilities on a regular basis.
- Inspect cleaning equipment/sweepers for leaks on a regular basis.

Training

- Provide regular training to field employees and/or contractors regarding cleaning of paved areas and proper operation of equipment.
- Train employees and contractors in proper techniques for spill containment and cleanup.

Spill Response and Prevention

- Keep your Spill Prevention Control and Countermeasure (SPCC) Plan up-to-date.
- Place a stockpile of spill cleanup materials where it will be readily accessible or at a central location.
- Clean up fluid spills immediately with absorbent rags or material.
- Dispose of spilled material and absorbents properly.

Other Considerations

Limitations related to sweeping activities at large parking facilities may include high equipment costs, the need for sweeper operator training, and the inability of current sweeper technology to remove oil and grease.

SC-43 Parking/Storage Area Maintenance

Requirements

Costs

Cleaning/sweeping costs can be quite large. Construction and maintenance of stormwater structural controls can be quite expensive as well.

Maintenance

- Sweep parking lot regularly to minimize cleaning with water.
- Clean out oil/water/sand separators regularly, especially after heavy storms.
- Clean parking facilities regularly to prevent accumulated wastes and pollutants from being discharged into conveyance systems during rainy conditions.

Supplemental Information

Further Detail of the BMP

Surface Repair

Apply concrete, asphalt, and seal coat during dry weather to prevent contamination from contacting stormwater runoff. Where applicable, cover and seal nearby storm drain inlets (with waterproof material or mesh) and manholes before applying seal coat, slurry seal, etc. Leave covers in place until job is complete and all water from emulsified oil sealants has drained or evaporated. Clean any debris from these covered manholes and drains for proper disposal. Only use only as much water as is necessary for dust control to avoid runoff.

References and Resources

California's Nonpoint Source Program Plan http://www.swrcb.ca.gov/nps/index.html

Clark County Storm Water Pollution Control Manual
http://www.co.clark.wa.us/pubworks/bmpman.pdf

King County Storm Water Pollution Control Manual http://dnr.metrokc.gov/wlr/dss/spcm.htm

Pollution from Surface Cleaning Folder. 1996. Bay Area Stormwater Management Agencies Association (BASMAA). http://www.basmaa.org/

Oregon Association of Clean Water Agencies. Oregon Municipal Stormwater Toolbox for Maintenance Practices. June 1998.

Santa Clara Valley Urban Runoff Pollution Prevention Program http://www.scvurppp.org

The Storm Water Managers Resource Center http://www.stormwatercenter.net/

Drainage System Maintenance SC-44

Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize

Description

As a consequence of its function, the stormwater conveyance system collects and transports urban runoff and stormwater that may contain certain pollutants. The protocols in this fact sheet are intended to reduce pollutants reaching receiving waters through proper conveyance system operation and maintenance.

Targeted Constituents

Sediment	✓
Nutrients	
Trash	✓
Metals	
Bacteria	✓
Oil and Grease	
Organics	

Approach

Pollution Prevention

Maintain catch basins, stormwater inlets, and other stormwater conveyance structures on a regular basis to remove pollutants, reduce high pollutant concentrations during the first flush of storms, prevent clogging of the downstream conveyance system, restore catch basins' sediment trapping capacity, and ensure the system functions properly hydraulically to avoid flooding.

Suggested Protocols

Catch Basins/Inlet Structures

- Staff should regularly inspect facilities to ensure compliance with the following:
  - Immediate repair of any deterioration threatening structural integrity.
  - Cleaning before the sump is 40% full. Catch basins should be cleaned as frequently as needed to meet this standard.
  - Stenciling of catch basins and inlets (see SC34 Waste Handling and Disposal).

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- Clean catch basins, storm drain inlets, and other conveyance structures before the wet season to remove sediments and debris accumulated during the summer.
- Conduct inspections more frequently during the wet season for problem areas where sediment or trash accumulates more often. Clean and repair as needed.
- Keep accurate logs of the number of catch basins cleaned.
- Store wastes collected from cleaning activities of the drainage system in appropriate containers or temporary storage sites in a manner that prevents discharge to the storm drain.
- Dewater the wastes if necessary with outflow into the sanitary sewer if permitted. Water should be treated with an appropriate filtering device prior to discharge to the sanitary sewer. If discharge to the sanitary sewer is not allowed, water should be pumped or vacuumed to a tank and properly disposed. Do not dewater near a storm drain or stream.

Storm Drain Conveyance System

- Locate reaches of storm drain with deposit problems and develop a flushing schedule that keeps the pipe clear of excessive buildup.
- Collect and pump flushed effluent to the sanitary sewer for treatment whenever possible.

Pump Stations

- Clean all storm drain pump stations prior to the wet season to remove silt and trash.
- Do not allow discharge to reach the storm drain system when cleaning a storm drain pump station or other facility.
- Conduct routine maintenance at each pump station.
- Inspect, clean, and repair as necessary all outlet structures prior to the wet season.

Open Channel

- Modify storm channel characteristics to improve channel hydraulics, increase pollutant removals, and enhance channel/creek aesthetic and habitat value.
- Conduct channel modification/improvement in accordance with existing laws. Any person, government agency, or public utility proposing an activity that will change the natural (emphasis added) state of any river, stream, or lake in California, must enter into a Steam or Lake Alteration Agreement with the Department of Fish and Game. The developer-applicant should also contact local governments (city, county, special districts), other state agencies (SWRCB, RWQCB, Department of Forestry, Department of Water Resources), and Federal Corps of Engineers and USFWS.

Illicit Connections and Discharges

- Look for evidence of illegal discharges or illicit connections during routine maintenance of conveyance system and drainage structures:
  - Is there evidence of spills such as paints, discoloring, etc?

- Are there any odors associated with the drainage system?
- Record locations of apparent illegal discharges/illicit connections?
- Track flows back to potential dischargers and conduct aboveground inspections. This can be done through visual inspection of upgradient manholes or alternate techniques including zinc chloride smoke testing, fluorometric dye testing, physical inspection testing, or television camera inspection.
- Eliminate the discharge once the origin of flow is established.

- Stencil or demarcate storm drains, where applicable, to prevent illegal disposal of pollutants. Storm drain inlets should have messages such as "Dump No Waste Drains to Stream" stenciled next to them to warn against ignorant or intentional dumping of pollutants into the storm drainage system.
- Refer to fact sheet SC-10 Non-Stormwater Discharges.

Illegal Dumping

- Inspect and clean up hot spots and other storm drainage areas regularly where illegal dumping and disposal occurs.
- Establish a system for tracking incidents. The system should be designed to identify the following:
  - Illegal dumping hot spots
  - Types and quantities (in some cases) of wastes
  - Patterns in time of occurrence (time of day/night, month, or year)
  - Mode of dumping (abandoned containers, "midnight dumping" from moving vehicles, direct dumping of materials, accidents/spills)
  - Responsible parties
- Post "No Dumping" signs in problem areas with a phone number for reporting dumping and disposal. Signs should also indicate fines and penalties for illegal dumping.
- Refer to fact sheet SC-10 Non-Stormwater Discharges.

Training

- Train crews in proper maintenance activities, including record keeping and disposal.
- Allow only properly trained individuals to handle hazardous materials/wastes.
- Have staff involved in detection and removal of illicit connections trained in the following:
  - OSHA-required Health and Safety Training (29 CFR 1910.120) plus annual refresher training (as needed).

- OSHA Confined Space Entry training (Cal-OSHA Confined Space, Title 8 and Federal OSHA 29 CFR 1910.146).

- Procedural training (field screening, sampling, smoke/dye testing, TV inspection).

Spill Response and Prevention

- Investigate all reports of spills, leaks, and/or illegal dumping promptly.
- Clean up all spills and leaks using "dry" methods (with absorbent materials and/or rags) or dig up, remove, and properly dispose of contaminated soil.
- Refer to fact sheet SC-11 Spill Prevention, Control, and Cleanup.

Other Considerations (Limitations and Regulations)

- Clean-up activities may create a slight disturbance for local aquatic species. Access to items and material on private property may be limited. Trade-offs may exist between channel hydraulics and water quality/riparian habitat. If storm channels or basins are recognized as wetlands, many activities, including maintenance, may be subject to regulation and permitting.
- Storm drain flushing is most effective in small diameter pipes (36-inch diameter pipe or less, depending on water supply and sediment collection capacity). Other considerations associated with storm drain flushing may include the availability of a water source, finding a downstream area to collect sediments, liquid/sediment disposal, and prohibition against disposal of flushed effluent to sanitary sewer in some areas.
- Regulations may include adoption of substantial penalties for illegal dumping and disposal.
- Local municipal codes may include sections prohibiting discharge of soil, debris, refuse, hazardous wastes, and other pollutants into the storm drain system.

Requirements

Costs

- An aggressive catch basin cleaning program could require a significant capital and O&M budget.
- The elimination of illegal dumping is dependent on the availability, convenience, and cost of alternative means of disposal. The primary cost is for staff time. Cost depends on how aggressively a program is implemented. Other cost considerations for an illegal dumping program include:

  - Purchase and installation of signs.

  - Rental of vehicle(s) to haul illegally-disposed items and material to landfills.

  - Rental of heavy equipment to remove larger items (e.g., car bodies) from channels.

  - Purchase of landfill space to dispose of illegally-dumped items and material.

- Methods used for illicit connection detection (smoke testing, dye testing, visual inspection, and flow monitoring) can be costly and time-consuming. Site-specific factors, such as the level of impervious area, the density and ages of buildings, and type of land use will determine the level of investigation necessary.

Maintenance

- Two-person teams may be required to clean catch basins with vactor trucks.
- Teams of at least two people plus administrative personnel are required to identify illicit discharges, depending on the complexity of the storm sewer system.
- Arrangements must be made for proper disposal of collected wastes.
- Technical staff are required to detect and investigate illegal dumping violations.

Supplemental Information

Further Detail of the BMP

Storm Drain Flushing

Flushing is a common maintenance activity used to improve pipe hydraulics and to remove pollutants in storm drainage systems. Flushing may be designed to hydraulically convey accumulated material to strategic locations, such as an open channel, another point where flushing will be initiated, or the sanitary sewer and the treatment facilities, thus preventing resuspension and overflow of a portion of the solids during storm events. Flushing prevents "plug flow" discharges of concentrated pollutant loadings and sediments. Deposits can hinder the designed conveyance capacity of the storm drain system and potentially cause backwater conditions in severe cases of clogging.

Storm drain flushing usually takes place along segments of pipe with grades that are too flat to maintain adequate velocity to keep particles in suspension. An upstream manhole is selected to place an inflatable device that temporarily plugs the pipe. Further upstream, water is pumped into the line to create a flushing wave. When the upstream reach of pipe is sufficiently full to cause a flushing wave, the inflated device is rapidly deflated with the assistance of a vacuum pump, thereby releasing the backed up water and resulting in the cleaning of the storm drain segment.

To further reduce impacts of stormwater pollution, a second inflatable device placed well downstream may be used to recollect the water after the force of the flushing wave has dissipated. A pump may then be used to transfer the water and accumulated material to the sanitary sewer for treatment. In some cases, an interceptor structure may be more practical or required to recollect the flushed waters.

It has been found that cleansing efficiency of periodic flush waves is dependent upon flush volume, flush discharge rate, sewer slope, sewer length, sewer flow rate, sewer diameter, and population density. As a rule of thumb, the length of line to be flushed should not exceed 700 feet. At this maximum recommended length, the percent removal efficiency ranges between 65-75% for organics and 55-65% for dry weather grit/inorganic material. The percent removal efficiency drops rapidly beyond that. Water is commonly supplied by a water truck, but fire hydrants can also supply water. To make the best use of water, it is recommended that reclaimed water be used or that fire hydrant line flushing coincide with storm sewer flushing.

References and Resources

California's Nonpoint Source Program Plan http://www.swrcb.ca.gov/nps/index.html

Clark County Storm Water Pollution Control Manual
http://www.co.clark.wa.us/pubworks/bmpman.pdf

Ferguson, B.K. 1991. Urban Stream Reclamation, p. 324-322, Journal of Soil and Water Conservation.

King County Storm Water Pollution Control Manual http://dnr.metrokc.gov/wlr/dss/spcm.htm

Oregon Association of Clean Water Agencies. Oregon Municipal Stormwater Toolbox for Maintenance Practices. June 1998.

Santa Clara Valley Urban Runoff Pollution Prevention Program http://www.scvurppp.org

The Storm Water Managers Resource Center http://www.stormwatercenter.net

United States Environmental Protection Agency (USEPA). 2002. Pollution Prevention/Good Housekeeping for Municipal Operations Storm Drain System Cleaning. On line:
http://www.epa.gov/npdes/menuofbmps/poll_16.htm

Site Design & Landscape Planning SD-10

Design Objectives

- ☑ Maximize Infiltration
- ☑ Provide Retention
- ☑ Slow Runoff
- ☑ Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- Contain Pollutants
- Collect and Convey

Description

Each project site possesses unique topographic, hydrologic, and vegetative features, some of which are more suitable for development than others. Integrating and incorporating appropriate landscape planning methodologies into the project design is the most effective action that can be done to minimize surface and groundwater contamination from stormwater.

Approach

Landscape planning should couple consideration of land suitability for urban uses with consideration of community goals and projected growth. Project plan designs should conserve natural areas to the extent possible, maximize natural water storage and infiltration opportunities, and protect slopes and channels.

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment.

Design Considerations

Design requirements for site design and landscapes planning should conform to applicable standards and specifications of agencies with jurisdiction and be consistent with applicable General Plan and Local Area Plan policies.

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Designing New Installations

Begin the development of a plan for the landscape unit with attention to the following general principles:

- Formulate the plan on the basis of clearly articulated community goals. Carefully identify conflicts and choices between retaining and protecting desired resources and community growth.

- Map and assess land suitability for urban uses. Include the following landscape features in the assessment: wooded land, open unwooded land, steep slopes, erosion-prone soils, foundation suitability, soil suitability for waste disposal, aquifers, aquifer recharge areas, wetlands, floodplains, surface waters, agricultural lands, and various categories of urban land use. When appropriate, the assessment can highlight outstanding local or regional resources that the community determines should be protected (e.g., a scenic area, recreational area, threatened species habitat, farmland, fish run). Mapping and assessment should recognize not only these resources but also additional areas needed for their sustenance.

Project plan designs should conserve natural areas to the extent possible, maximize natural water storage and infiltration opportunities, and protect slopes and channels.

Conserve Natural Areas during Landscape Planning

If applicable, the following items are required and must be implemented in the site layout during the subdivision design and approval process, consistent with applicable General Plan and Local Area Plan policies:

- Cluster development on least-sensitive portions of a site while leaving the remaining land in a natural undisturbed condition.

- Limit clearing and grading of native vegetation at a site to the minimum amount needed to build lots, allow access, and provide fire protection.

- Maximize trees and other vegetation at each site by planting additional vegetation, clustering tree areas, and promoting the use of native and/or drought tolerant plants.

- Promote natural vegetation by using parking lot islands and other landscaped areas.

- Preserve riparian areas and wetlands.

Maximize Natural Water Storage and Infiltration Opportunities Within the Landscape Unit

- Promote the conservation of forest cover. Building on land that is already deforested affects basin hydrology to a lesser extent than converting forested land. Loss of forest cover reduces interception storage, detention in the organic forest floor layer, and water losses by evapotranspiration, resulting in large peak runoff increases and either their negative effects or the expense of countering them with structural solutions.

- Maintain natural storage reservoirs and drainage corridors, including depressions, areas of permeable soils, swales, and intermittent streams. Develop and implement policies and

regulations to discourage the clearing, filling, and channelization of these features. Utilize them in drainage networks in preference to pipes, culverts, and engineered ditches.

- Evaluating infiltration opportunities by referring to the stormwater management manual for the jurisdiction and pay particular attention to the selection criteria for avoiding groundwater contamination, poor soils, and hydrogeological conditions that cause these facilities to fail. If necessary, locate developments with large amounts of impervious surfaces or a potential to produce relatively contaminated runoff away from groundwater recharge areas.

Protection of Slopes and Channels during Landscape Design

- Convey runoff safely from the tops of slopes.
- Avoid disturbing steep or unstable slopes.
- Avoid disturbing natural channels.
- Stabilize disturbed slopes as quickly as possible.
- Vegetate slopes with native or drought tolerant vegetation.
- Control and treat flows in landscaping and/or other controls prior to reaching existing natural drainage systems.
- Stabilize temporary and permanent channel crossings as quickly as possible, and ensure that increases in run-off velocity and frequency caused by the project do not erode the channel.
- Install energy dissipaters, such as riprap, at the outlets of new storm drains, culverts, conduits, or channels that enter unlined channels in accordance with applicable specifications to minimize erosion. Energy dissipaters shall be installed in such a way as to minimize impacts to receiving waters.
- Line on-site conveyance channels where appropriate, to reduce erosion caused by increased flow velocity due to increases in tributary impervious area. The first choice for linings should be grass or some other vegetative surface, since these materials not only reduce runoff velocities, but also provide water quality benefits from filtration and infiltration. If velocities in the channel are high enough to erode grass or other vegetative linings, riprap, concrete, soil cement, or geo-grid stabilization are other alternatives.
- Consider other design principles that are comparable and equally effective.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of " redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

Redevelopment may present significant opportunity to add features which had not previously been implemented. Examples include incorporation of depressions, areas of permeable soils, and swales in newly redeveloped areas. While some site constraints may exist due to the status of already existing infrastructure, opportunities should not be missed to maximize infiltration, slow runoff, reduce impervious areas, disconnect directly connected impervious areas.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Stormwater Management Manual for Western Washington, Washington State Department of Ecology, August 2001.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Efficient Irrigation SD-12

Design Objectives

- ☑ Maximize Infiltration
- ☑ Provide Retention
- ☑ Slow Runoff
- Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- Contain Pollutants
- Collect and Convey

Description

Irrigation water provided to landscaped areas may result in excess irrigation water being conveyed into stormwater drainage systems.

Approach

Project plan designs for development and redevelopment should include application methods of irrigation water that minimize runoff of excess irrigation water into the stormwater conveyance system.

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment. (Detached residential single-family homes are typically excluded from this requirement.)

Design Considerations

Designing New Installations

The following methods to reduce excessive irrigation runoff should be considered, and incorporated and implemented where determined applicable and feasible by the Permittee:

- Employ rain-triggered shutoff devices to prevent irrigation after precipitation.
- Design irrigation systems to each landscape area's specific water requirements.
- Include design featuring flow reducers or shutoff valves triggered by a pressure drop to control water loss in the event of broken sprinkler heads or lines.
- Implement landscape plans consistent with County or City water conservation resolutions, which may include provision of water sensors, programmable irrigation times (for short cycles), etc.

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- Design timing and application methods of irrigation water to minimize the runoff of excess irrigation water into the storm water drainage system.
- Group plants with similar water requirements in order to reduce excess irrigation runoff and promote surface filtration. Choose plants with low irrigation requirements (for example, native or drought tolerant species). Consider design features such as:
  - Using mulches (such as wood chips or bar) in planter areas without ground cover to minimize sediment in runoff
  - Installing appropriate plant materials for the location, in accordance with amount of sunlight and climate, and use native plant materials where possible and/or as recommended by the landscape architect
  - Leaving a vegetative barrier along the property boundary and interior watercourses, to act as a pollutant filter, where appropriate and feasible
  - Choosing plants that minimize or eliminate the use of fertilizer or pesticides to sustain growth
- Employ other comparable, equally effective methods to reduce irrigation water runoff.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of " redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Storm Drain Signage SD-13

Design Objectives

- Maximize Infiltration
- Provide Retention
- Slow Runoff
- Minimize Impervious Land Coverage
- ☑ Prohibit Dumping of Improper Materials
- Contain Pollutants
- Collect and Convey

Description

Waste materials dumped into storm drain inlets can have severe impacts on receiving and ground waters. Posting notices regarding discharge prohibitions at storm drain inlets can prevent waste dumping. Storm drain signs and stencils are highly visible source controls that are typically placed directly adjacent to storm drain inlets.

Approach

The stencil or affixed sign contains a brief statement that prohibits dumping of improper materials into the urban runoff conveyance system. Storm drain messages have become a popular method of alerting the public about the effects of and the prohibitions against waste disposal.

Suitable Applications

Stencils and signs alert the public to the destination of pollutants discharged to the storm drain. Signs are appropriate in residential, commercial, and industrial areas, as well as any other area where contributions or dumping to storm drains is likely.

Design Considerations

Storm drain message markers or placards are recommended at all storm drain inlets within the boundary of a development project. The marker should be placed in clear sight facing toward anyone approaching the inlet from either side. All storm drain inlet locations should be identified on the development site map.

Designing New Installations

The following methods should be considered for inclusion in the project design and show on project plans:

- Provide stenciling or labeling of all storm drain inlets and catch basins, constructed or modified, within the project area with prohibitive language. Examples include "NO DUMPING

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– DRAINS TO OCEAN" and/or other graphical icons to discourage illegal dumping.

- Post signs with prohibitive language and/or graphical icons, which prohibit illegal dumping at public access points along channels and creeks within the project area.

Note - Some local agencies have approved specific signage and/or storm drain message placards for use. Consult local agency stormwater staff to determine specific requirements for placard types and methods of application.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. If the project meets the definition of "redevelopment", then the requirements stated under " designing new installations" above should be included in all project design plans.

Additional Information

Maintenance Considerations

- Legibility of markers and signs should be maintained. If required by the agency with jurisdiction over the project, the owner/operator or homeowner's association should enter into a maintenance agreement with the agency or record a deed restriction upon the property title to maintain the legibility of placards or signs.

Placement

- Signage on top of curbs tends to weather and fade.

- Signage on face of curbs tends to be worn by contact with vehicle tires and sweeper brooms.

Supplemental Information

Examples

- Most MS4 programs have storm drain signage programs. Some MS4 programs will provide stencils, or arrange for volunteers to stencil storm drains as part of their outreach program.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Alternative Building Materials SD-21

Design Objectives

- ☑ Maximize Infiltration
- ☑ Provide Retention
- ☑ Source Control
- Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- Contain Pollutant
- Collect and Convey

Description

Alternative building materials are selected instead of conventional materials for new construction and renovation. These materials reduce potential sources of pollutants in stormwater runoff by eliminating compounds that can leach into runoff, reducing the need for pesticide application, reducing the need for painting and other maintenance, or by reducing the volume of runoff.

Approach

Alternative building materials are available for use as lumber for decking, roofing materials, home siding, and paving for driveways, decks, and sidewalks.

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment.

Design Considerations

Designing New Installations

Decking

One of the most common materials for construction of decks and other outdoor construction has traditionally been pressure treated wood, which is now being phased out. The standard treatment is called CCA, for chromated copper arsenate. The key ingredients are arsenic (which kills termites, carpenter ants and other insects), copper (which kills the fungi that cause wood to rot) and chromium (which reacts with the other ingredients to bind them to the wood). The amount of arsenic is far from trivial. A deck just 8 feet x 10 feet contains more than 1 1/3 pounds of this highly potent poison. Replacement materials include a new type of pressure treated wood, plastic and composite lumber.

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There are currently over 20 products in the market consisting of plastic or plastic-wood composites. Plastic lumber is made from 100% recycled plastic, # 2 HDPE and polyethylene plastic milk jugs and soap bottles. Plastic-wood composites are a combination of plastic and wood fibers or sawdust. These materials are a long lasting exterior weather, insect, and chemical resistant wood lumber replacement for non structural applications. Use it for decks, docks, raised garden beds and planter boxes, pallets, hand railings, outdoor furniture, animal pens, boat decks, etc.

New pressure treated wood uses a much safer recipe, ACQ, which stands for ammoniacal copper quartenary. It contains no arsenic and no chromium. Yet the American Wood Preservers Association has found it to be just as effective as the standard formula. ACQ is common in Japan and Europe.

Roofing

Several studies have indicated that metal used as roofing material, flashing, or gutters can leach metals into the environment. The leaching occurs because rainfall is slightly acidic and slowly dissolved the exposed metals. Common traditional applications include copper sheathing and galvanized (zinc) gutters.

Coated metal products are available for both roofing and gutter applications. These products eliminate contact of bare metal with rainfall, eliminating one source of metals in runoff. There are also roofing materials made of recycled rubber and plastic that resemble traditional materials.

A less traditional approach is the use of green roofs. These roofs are not just green, they're alive. Planted with grasses and succulents, low- profile green roofs reduce the urban heat island effect, stormwater runoff, and cooling costs, while providing wildlife habitat and a connection to nature for building occupants. These roofs are widely used on industrial facilities in Europe and have been established as experimental installations in several locations in the US, including Portland, Oregon. Their feasibility is questionable in areas of California with prolonged, dry, hot weather.

Paved Areas

Traditionally, concrete is used for construction of patios, sidewalks, and driveways. Although it is non-toxic, these paved areas reduce stormwater infiltration and increase the volume and rate of runoff. This increase in the amount of runoff is the leading cause of stream channel degradation in urban areas.

There are a number of alternative materials that can be used in these applications, including porous concrete and asphalt, modular blocks, and crushed granite. These materials, especially modular paving blocks, are widely available and a well established method to reduce stormwater runoff.

Building Siding

Wood siding is commonly used on the exterior of residential construction. This material weathers fairly rapidly and requires repeated painting to prevent rotting. Alternative “new” products for this application include cement-fiber and vinyl. Cement-fiber siding is a masonry product made from Portland cement, sand, and cellulose and will not burn, cup, swell, or shrink.

Pesticide Reduction
A common use of powerful pesticides is for the control of termites. Chlordane was used for many years for this purpose and is now found in urban streams and lakes nationwide. There are a number of physical barriers that can be installed during construction to help reduce the use of pesticides.

Sand barriers for subterranean termites are a physical deterrent because the termites cannot tunnel through it. Sand barriers can be applied in crawl spaces under pier and beam foundations, under slab foundations, and between the foundation and concrete porches, terraces, patios and steps. Other possible locations include under fence posts, underground electrical cables, water and gas lines, telephone and electrical poles, inside hollow tile cells and against retaining walls.

Metal termite shields are physical barriers to termites which prevent them from building invisible tunnels. In reality, metal shields function as a helpful termite detection device, forcing them to build tunnels on the outside of the shields which are easily seen. Metal termite shields also help prevent dampness from wicking to adjoining wood members which can result in rot, thus making the material more attractive to termites and other pests. Metal flashing and metal plates can also be used as a barrier between piers and beams of structures such as decks, which are particularly vulnerable to termite attack.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of "redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

Other Resources

There are no good, independent, comprehensive sources of information on alternative building materials for use in minimizing the impacts of stormwater runoff. Most websites or other references to "green" or "alternative" building materials focus on indoor applications, such as formaldehyde free plywood and low VOC paints, carpets, and pads. Some supplemental information on alternative materials is available from the manufacturers.

Fires are a source of concern in many areas of California. Information on the flammability of alternative decking materials is available from the University of California Forest Product Laboratory (UCFPL) website at: http://www.ucfpl.ucop.edu/WDDeckIntro.htm

Trash Storage Areas SD-32

Description

Trash storage areas are areas where a trash receptacle (s) are located for use as a repository for solid wastes. Stormwater runoff from areas where trash is stored or disposed of can be polluted. In addition, loose trash and debris can be easily transported by water or wind into nearby storm drain inlets, channels, and/or creeks. Waste handling operations that may be sources of stormwater pollution include dumpsters, litter control, and waste piles.

Approach

This fact sheet contains details on the specific measures required to prevent or reduce pollutants in stormwater runoff associated with trash storage and handling. Preventative measures including enclosures, containment structures, and impervious pavements to mitigate spills, should be used to reduce the likelihood of contamination.

Design Objectives

- Maximize Infiltration
- Provide Retention
- Slow Runoff
- Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- ☑ Contain Pollutants
- Collect and Convey

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment. (Detached residential single-family homes are typically excluded from this requirement.)

Design Considerations

Design requirements for waste handling areas are governed by Building and Fire Codes, and by current local agency ordinances and zoning requirements. The design criteria described in this fact sheet are meant to enhance and be consistent with these code and ordinance requirements. Hazardous waste should be handled in accordance with legal requirements established in Title 22, California Code of Regulation.

Wastes from commercial and industrial sites are typically hauled by either public or commercial carriers that may have design or access requirements for waste storage areas. The design criteria in this fact sheet are recommendations and are not intended to be in conflict with requirements established by the waste hauler. The waste hauler should be contacted prior to the design of your site trash collection areas. Conflicts or issues should be discussed with the local agency.

Designing New Installations

Trash storage areas should be designed to consider the following structural or treatment control BMPs:

- Design trash container areas so that drainage from adjoining roofs and pavement is diverted around the area(s) to avoid run-on. This might include berming or grading the waste handling area to prevent run-on of stormwater.
- Make sure trash container areas are screened or walled to prevent off-site transport of trash.

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- Use lined bins or dumpsters to reduce leaking of liquid waste.
- Provide roofs, awnings, or attached lids on all trash containers to minimize direct precipitation and prevent rainfall from entering containers.
- Pave trash storage areas with an impervious surface to mitigate spills.
- Do not locate storm drains in immediate vicinity of the trash storage area.
- Post signs on all dumpsters informing users that hazardous materials are not to be disposed of therein.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of " redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

Additional Information

Maintenance Considerations

The integrity of structural elements that are subject to damage (i.e., screens, covers, and signs) must be maintained by the owner/operator. Maintenance agreements between the local agency and the owner/operator may be required. Some agencies will require maintenance deed restrictions to be recorded of the property title. If required by the local agency, maintenance agreements or deed restrictions must be executed by the owner/operator before improvement plans are approved.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

SAN BERNARDINO COUNTY
STORMWATER POLLUTION PREVENTION

Commercial landscape maintenance:

Yard waste, sediments and toxic lawn and garden chemicals used in commercial landscape maintenance often make their way into the San Bernardino County storm drain system and do not get treated before reaching the Santa Ana River. This pollutes our drinking water and contaminates local waterways, making them unsafe for people and wildlife. Follow these best management practices to prevent pollution, protect public health and avoid fines or legal action.

- **Recycle Yard Waste:** Recycle leaves, grass clippings and other yard waste. Do not blow, sweep, rake or hose yard waste into the street. Let your customers know about grass cycling --the natural recycling of grass by leaving clippings on the lawn when mowing instead of using a grass catcher. Grass clippings will quickly decompose, returning valuable nutrients to the soil. You can get more information at www.ciwmb.ca.gov/Organics.
- **Use Fertilizers, Herbicides & Pesticides Safely:** Fertilizers, herbicides and pesticides are often carried into the storm drain system by sprinkler runoff. Use natural, non-toxic alternatives to traditional garden chemicals. If you must use chemical fertilizers, herbicides, or pesticides spot apply rather than blanketing entire areas, avoid applying near curbs and driveways and never apply before a rain.
- **Recycle Hazardous Waste:** Pesticides, fertilizers, herbicides and motor oil contaminate landfills and should be disposed of through a Hazardous Waste Facility. For information on proper disposal, call (909) 386-8401.
- **Use Water Wisely:** Conserve water and prevent runoff by controlling the amount of water and direction of sprinklers. Sprinklers should be on long enough to allow water to soak into the ground but not so long as to cause runoff. Periodically inspect, fix leaks and realign sprinkler heads.
- **Planting:** Plant native vegetation to reduce the need of water, fertilizers, herbicides and pesticides.

- **Prevent Erosion:** Erosion washes sediments, debris and toxic runoff into the storm drain system, polluting waterways. Prevent erosion and sediment runoff by using ground cover, berms and vegetation down-slope to capture runoff. Avoid excavation or grading during wet weather.
- **Store Materials Safely:** Keep landscaping materials and debris away from the street, gutter and storm drains. On-site stockpiles of materials should be covered with plastic sheeting to protect from rain, wind and runoff.

For more information about how you can prevent stormwater pollution:

www.sbcountystormwater.org

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STORMWATER POLLUTION PREVENTION

Food & Restaurants:

Food waste, grease, cleaning fluids, mop water and trash from restaurant operations often make their way into the San Bernardino County storm drain system, and do not get treated before reaching the Santa Ana River. This pollutes our drinking water and contaminates waterways, making them unsafe for people and wildlife. Follow these best management practices to prevent pollution, protect public health and avoid fines or legal action.

- **Cleaning & Maintenance:** Clean equipment, floor mats, filters and garbage cans in a mop sink, wash rack or floor drain connected to the sewer through a grease trap. Don't wash them or pour wash water in a parking lot, alley, sidewalk or street. Sweep outside areas and put the debris in the garbage, instead of sweeping or hosing it into the parking lot or street.
- **Recycle oil & grease:** Oil and grease wastes can be recycled. Look in the yellow pages for rendering companies, or call (909) 386-8401 for disposal information. Don't pour oil or grease into sinks, floor drains or onto a parking lot or street. Keep grease bins covered and contained.
- **Dumpster areas:** Keep dumpster lids closed and the areas around them clean. Do not fill with liquid waste or hose them out. Call your trash hauler to replace any dumpsters that are damaged or leak. Do not wash down or steam clean trash enclosure area or trash bin unless you collect the water and dispose of it into the sanitary sewer. Hire a mobile pressure wash business that is familiar with the storm water regulations to clean these areas and make sure they provide you with a record of proper wastewater disposal.

- **Managing spills:** Use dry methods for spill cleanup, sweeping and using cat litter instead of hosing. Have spill containment and cleanup kits available for possible spills on your property. To report serious toxic spills, call (800) 33-TOXIC.
- **Handling toxic chemicals:** Dispose of all unwanted toxics materials like cleaners, solvents and detergents through a hazardous waste hauler. These items are not trash. Use non-toxic cleaning products whenever possible. For information on hazardous waste pickup, call (909) 386-8401.

For more information about how you can prevent stormwater pollution:

www.sbcountystormwater.org

LANDSCAPE MAINTENANCE

DISCHARGE TO THE STORM DRAIN, **ACCIDENTAL OR NOT**, COULD LEAD TO ENFORCEMENT ACTIONS, WHICH COULD INCLUDE FINES.

Follow the best practices below to **prevent water pollution from landscaping activities.**

RECYCLE YARD WASTE

- Recycle leaves, grass clippings and other yard waste.
- Do not blow, sweep, rake or hose yard waste into the street or catch basin.
- **Try grasscycling:** the natural recycling of grass by leaving clippings on the lawn when mowing.

  For more information, please visit: **www.calrecycle.ca.gov/organics/grasscycling**

USE FERTILIZERS, HERBICIDES AND PESTICIDES SAFELY

- Fertilizers, herbicides and pesticides are often carried into the storm drain system by sprinkler runoff. Use natural and non-toxic alternatives as often as possible.
- If you must use chemical fertilizers, herbicides or pesticides:
  - Spot apply, rather than blanketing entire areas.
  - Avoid applying near curbs and driveways, and **never** before a rain.
  - Apply fertilizers as needed: when plants could best use it and when the potential runoff would be low.
  - Follow the manufacturer's instructions carefully—this will not only give the best results, but will save money.

USE WATER WISELY

- Control the amount of water and direction of sprinklers. Sprinklers should only be on long enough to allow water to soak into the ground, but not so long as to cause runoff.
- Periodically inspect, fix leaks and realign sprinkler heads.
- Plant native vegetation to reduce the need of water, fertilizers, herbicides and pesticides.

HOMEOWNERS

KEEP THESE TIPS IN MIND WHEN HIRING PROFESSIONAL LANDSCAPERS AND REMIND AS NECESSARY.

Leftover pesticides, fertilizers, and herbicides contaminate landfills and should be disposed of through a Hazardous Waste Facility.

For more information on proper disposal call,

(909) 382-5401 or 1-800-OILY CAT.

*FREE for San Bernardino County residents only. Businesses can call for cost inquiries and to schedule an appointment.

To report illegal dumping, call (877) WASTE18 or visit sbcountystormwater.org
To report toxic spills, call 1(800) 33 TOXIC
To dispose of hazardous waste, call 1(800) OILY CAT

sbcountystormwater.org

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COMMERCIAL TRASH ENCLOSURES

FOLLOW THESE **REQUIREMENTS** TO **KEEP OUR WATERWAYS CLEAN**

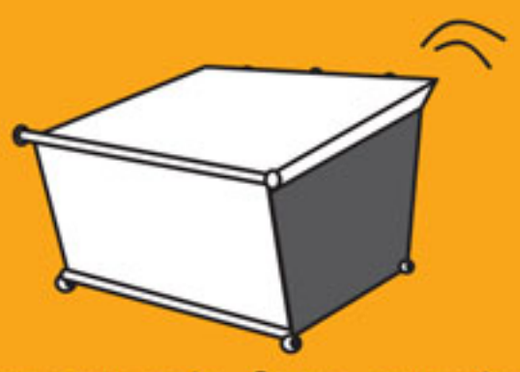
Trash enclosures, such as those found in commercial and apartment complexes, typically contain materials that are intended to find their way to a landfill or a recycling facility. **These materials are NOT meant to go into our local lakes and rivers.**

PROTECT WATER QUALITY BY FOLLOWING THESE SIMPLE STEPS

PUT TRASH INSIDE

Place trash inside the bin (preferably in sealed bags)

CLOSE THE LID



Prevent rain from entering the bin in order to avoid leakage of polluted water runoff

KEEP TOXICS OUT

- Paint
- Grease, fats and used oils
- Batteries, electronics and fluorescent lights

SOME ADDITIONAL GUIDELINES, INCLUDE

✓ **SWEEP FREQUENTLY**
Sweep trash enclosure areas frequently, instead of hosing them down, to prevent polluted water from flowing into the streets and storm drains.

✓ **FIX LEAKS**
Address trash bin leaks immediately by using dry clean up methods and report to your waste hauler to receive a replacement.

✓ **CONSTRUCT ROOF**
Construct a solid cover roof over the existing trash enclosure structure to prevent rainwater from coming into contact with trash and garbage. Check with your local City/County for Building Codes.

In San Bernardino County, stormwater pollution is caused by food waste, landscape waste, chemicals and other debris that are washed into storm drains and end up in our waterways - untreated! You can be part of the solution by maintaining a water-friendly trash enclosure.

THANK YOU FOR HELPING TO KEEP SAN BERNARDINO COUNTY CLEAN AND HEALTHY!

To report illegal dumping **(877-WASTE18)** or
to find a household hazardous waste facility (800-OILY CAT): **sbcountystormwater.org**
To dispose of hazardous waste call the San Bernardino County Fire Dept. - CUPA Program **(909) 386-8401**

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STORMWATER Pollution Prevention

FOOD AND RESTAURANT

Food waste, grease, cleaning fluids, mop water and trash from restaurant operations often make their way into the San Bernardino County storm drain system, and do not get treated before reaching the Santa Ana River. This pollutes our drinking water and contaminates waterways, making them unsafe for people and wildlife. Follow these best management practices to prevent pollution and protect public health.

Recycle Oil & Grease

Oil and grease wastes can be recycled. Look in the yellow pages for rendering companies, or call (909) 386-8401 for disposal information. Don't pour oil or grease into sinks, floor drains or onto a parking lot or street. Keep grease bins covered and contained. Keep your grease interceptor maintained to prevent sewer overflows or backups and keep records of grease waste hauling.

Dumpster Areas

Keep dumpster lids closed and the areas around them clean. Do not fill with liquid waste or hose them out. Call your trash hauler to replace any dumpsters that are damaged or leak.

Managing Spills

Clean food spills in loading and trash areas by using absorbent materials and sweeping then mopping, and discharge mop water into the sewer through a grease interceptor. Have spill containment and cleanup kits available. To report serious toxic spills, call 911.

Cleaning & Maintenance

Clean equipment, floor mats, filters and garbage cans in a mop sink, wash rack or floor drain connected to the sewer through a grease trap. Don't wash them or pour wash water in a parking lot, alley, sidewalk or street. Sweep outside areas and put the debris in the garbage, instead of sweeping or hosing it into the parking lot or street.

Handling Toxic Chemicals

Dispose of all unwanted toxics materials like cleaners, solvents and detergents through a hazardous waste hauler. These items are not trash. For information on hazardous waste pickup, call (909) 386-8401. Use non-toxic cleaning products whenever possible.

To report illegal dumping call

(877) WASTE18

sbcountystormwater.org

San Bernardino County STORMWATER PROGRAM

Appendix G
Traffic Report

9.3.24
Report accepted as submitted.

LLG

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August 27, 2024

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Newport Beach, CA 92660

LLG Reference: 2.23.4748.1

Subject: **Focused Traffic Impact Analysis for the Proposed Starbucks and McDonald's Project (Revision to March 14, 2024 Report)**
Hesperia, California

Dear Ms. Okuma:

Linscott, Law & Greenspan, Engineers (LLG) is pleased to submit this Focused Traffic Impact Analysis for the proposed Starbucks and McDonald's Project (herein referred to as "Project"), generally located on the southwest corner of Seventh Avenue and Main Street in the City of Hesperia, California. ***Figure 1*** presents a Vicinity Map, which illustrates the general location of the project site and depicts the surrounding street system and ***Figure 2*** presents an existing site aerial.

The Focused Traffic Impact Analysis for the proposed Project will satisfy the *City of Hesperia Traffic Impact Analysis Guidelines for Vehicle Miles Traveled (VMT) and Level of Service Assessment (LOS), July 2020.* The Scope of Work for this focused traffic impact analysis, which is included in ***Appendix A***, was developed in conjunction with City of Hesperia staff. Included in this focused traffic impact analysis are the following:

1) Existing traffic counts,
2) Estimated Project traffic generation/distribution/assignment,
3) AM and PM peak hour analyses for existing traffic conditions,
4) AM and PM peak hour analyses for Year 2025 traffic conditions without and with the proposed Project,
5) Recommended Improvements (if any),
6) Site access evaluation,
7) Intersection queuing evaluation, and
8) Vehicle Miles Traveled (VMT) screening assessment.

David S. Shender, PE
John A. Boarman, PE
Richard E. Barretto, PE
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KC Yellapu, PE
Dave Roseman, PE
Shankar Ramakrishnan, PE

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Our method of analysis, findings, and recommendations are detailed in the following sections of this letter report.

PROJECT DESCRIPTION

Per the *City of Hesperia General Plan Land Use,* dated August 15, 2017, the Project site is classified as Neighborhood Commercial (NC). The Project site is currently occupied with an approximately 1,100 square-foot (SF) used car dealership. ***Figure 3*** presents the proposed site plan for the proposed Project, prepared by Greenberg Farrow. As shown in *Figure 3,* the proposed Project will consist of the development of 1,263 SF Starbucks coffee shop with drive-through window and no indoor seating and a 3,684 SF McDonald's restaurant with drive-through window, to be completed and occupied by Year 2025.

Access to the Project site will be provided via one (1) existing right-in/right-out driveway along Main Street and one (1) full-movement unsignalized driveway along Walnut Street.

Project Specific Site Access Improvements

Figure 4 presents the proposed Project specific improvements to address queuing requirements along Seventh Avenue as a result of the traffic analyses upon completion of the proposed Project. The Project will restripe Seventh Avenue to extend the northbound left-turn pocket at the intersection with Main Street to provide a storage of 200 feet and a southbound left-turn pocket storage of 50 feet at the intersection with Walnut Street. The Project will also restripe to provide a Class II Bike Lane along the Project frontage on the west side of Seventh Avenue.

STUDY AREA

The following three (3) intersections represent the study intersections to be evaluated in the Focused Traffic Impact Analysis:

1. Seventh Avenue at Main Street
2. Seventh Avenue at Walnut Street
3. Seventh Avenue at Orange Street

EXISTING TRAFFIC CONDITIONS

Existing Lane Geometrics

Figure 5 presents an inventory of the existing roadway conditions for the three (3) key study intersections. This figure identifies the number of travel lanes for key arterials, as well as intersection configurations and controls for the key area study intersections.

Existing Public Transit

The Victor Valley Transit Authority (VVTA) operates Bus Route 68 within the vicinity of the Project site (i.e. along Seventh Avenue). There is an existing bus stop located on the eastern Project frontage along Seventh Avenue. Bus Route 68 operates on weekdays and weekends through Hesperia between the Post Office and Super Target. On both weekdays and weekends, Route 68 has approximate headways of 60 minutes in the inbound and outbound directions.

Existing Pedestrian and Bicycle Facilities

Pedestrian connection to the surrounding areas as well as nearby public transit stops is currently provided via existing sidewalks on the northern Project frontage on Main Street and partially along the eastern Project frontage on Seventh Avenue.

The Project will reconstruct and/or complete the sidewalk along the Project frontage on Seventh Avenue (i.e. the west side of Seventh Avenue). The Project will also construct the sidewalk along the Project frontage on Walnut Street (i.e. the north side of Walnut Street).

The following bicycle facilities are currently located within the vicinity of the Project site:

- A Class II Bicycle Lane currently exists along Seventh Avenue, north of Main Street (i.e. on both sides of the street).

Consistent with the *City of Hesperia Non-Motorized Transportation Plan,* the Project will construct:

- A Class II Bicycle Lane along the Project frontage on Seventh Avenue (i.e. the west side of Seventh Avenue).

Existing Traffic Volumes

AM peak hour and PM peak hour traffic counts were collected by Counts Unlimited, Inc. in November 2023 at the intersections of Seventh Avenue at Main Street and Seventh Avenue at Walnut Street and in January 2024 at the intersection of Seventh

Avenue at Orange Street in order to develop the baseline peak hour traffic volume data for the intersection analysis. ***Figures 6*** and *7* illustrate the existing AM and PM peak hour traffic volumes at the three (3) key study intersections, respectively.

Appendix B contains the detailed peak hour traffic count sheets for the three (3) key study intersections.

LEVEL OF SERVICE METHODOLOGY

In conformance with City of Hesperia requirements, AM and PM peak hour operating conditions for the unsignalized intersections were evaluated using the *Highway Capacity Manual 7th Edition* (HCM 7) methodology.

Highway Capacity Manual (HCM) Method of Analysis (Signalized Intersections)
Based on the HCM operations method of analysis, level of service for signalized intersections is defined in terms of control delay, which is a measure of driver discomfort, frustration, fuel consumption, and lost travel time. The delay experienced by a motorist is made up of a number of factors that relate to control, geometries, traffic, and incidents. Total delay is the difference between the travel time actually experienced and the reference travel time that would result during ideal conditions: in the absence of traffic control, in the absence of geometric delay, in the absence of any incidents, and when there are no other vehicles on the road.

In Chapter 19 of the HCM, only the portion of total delay attributed to the control facility is quantified. This delay is called *control delay.* Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. In contrast, in previous versions of the HCM (1994 and earlier), delay included only stopped delay. Specifically, LOS criteria for traffic signals are stated in terms of the average control delay per vehicle. The six qualitative categories of Level of Service have been defined along with the corresponding HCM control delay value range, as shown in ***Table 1***.

Highway Capacity Manual (HCM) Method of Analysis (Unsignalized Intersections)
The HCM 7 unsignalized methodology for stop-controlled intersections was utilized for the analysis of the unsignalized intersections. This methodology estimates the average control delay for each of the subject movements and determines the level of service for each movement. For one-way and two-way stop-controlled (minor street stop-controlled) intersections, this methodology estimates the worst side street delay, measured in seconds per vehicle and determines the level of service for that approach. The HCM control delay value translates to a LOS estimate, which is a relative measure of the intersection performance. The six qualitative categories of Level of

Service have been defined along with the corresponding HCM control delay value range, as shown in ***Table 2***.

LEVEL OF SERVICE STADARDS AND IMPACT CRITERIA

According to the *City of Hesperia Traffic Impact Analysis Guidelines for Vehicle Miles Traveled (VMT) and Level of Service Assessment (LOS), July 2020,* the City's Level of Service (LOS) standard is LOS D for all intersections.

PROJECT TRAFFIC CHARACTERISTICS

Project Trip Generation

Traffic generation is expressed in vehicle trip ends, defined as one-way vehicular movements, either entering or exiting the generating land use. Generation equations and/or rates used in the traffic forecasting procedure are typically found in the 11th Edition of *Trip Generation*, published by the Institute of Transportation Engineers (ITE) [Washington D.C., 2021].

Table 3 summarizes the trip generation rates used in forecasting the vehicular trips generated by the proposed Project and presents the forecast daily and peak hour project traffic volumes for a "typical" weekday. As shown in the upper portion of *Table 3*, the trip generation potential for the proposed Project was estimated using ITE Land Use Code 934: Fast Food Restaurant With Drive-Through Window and ITE Land Use 937: Coffee/Donut Shop With Drive-Through Window trip rates. It should be noted that the existing used car dealership is forecast to generate minimal traffic and therefore has not been included as a trip credit on the site to remain conservative.

As shown at the bottom of *Table 3*, the proposed Project is expected to generate 1,459 net daily trips, with 125 net trips (64 inbound, 61 outbound) produced in the AM peak hour and 85 net trips (44 inbound, 41 outbound) produced in the PM peak hour on a "typical" weekday. It should be noted that the aforementioned overall trip generation includes adjustments for pass-by to account for trips that are already in the everyday traffic stream on the adjoining streets (i.e. Main Street and Seventh Avenue) and will stop as they pass by the Project site as a matter of convenience on their path to another destination. The pass-by reduction factors utilized are summarized in the footnotes of *Table 3*.

Trip Distribution and Assignment

Figure 8 presents the traffic distribution pattern for the proposed Project. Project traffic volumes both entering and exiting the site have been distributed and assigned to the adjacent street system based on the following considerations:

- the site's proximity to major traffic carriers (i.e. Main Street, etc.)
- expected localized traffic flow patterns based on adjacent street channelization, and presence of traffic signals,
- ingress/egress availability at the Project site, and
- the location of existing Starbucks Coffee Shops and McDonald's restaurants in the area.

The anticipated AM and PM peak hour traffic volumes associated with proposed Project are presented in ***Figures 9*** and ***10***, respectively. The traffic volume assignments presented in *Figures 9* and *10* reflect the traffic distribution characteristics shown in *Figure 8* and the traffic generation forecast presented in *Table 3*.

FUTURE YEAR 2025 TRAFFIC CONDITIONS

Year 2025 Ambient Traffic Growth

Horizon year, background traffic growth estimates have been calculated using an ambient growth factor. The ambient traffic growth factor is intended to include unknown and future cumulative projects in the study area, as well as account for regular growth in traffic volumes due to the development of projects outside the study area. The future growth in traffic volumes has been calculated at two percenter (2.0%) per year. Applied to existing Year 2023 traffic volumes results in a four percent (4.0%) growth in existing volumes to horizon Year 2025. It should be noted that the City of Hesperia indicated that no cumulative projects currently existing within two miles of the Project site.

Cumulative Projects Traffic Characteristics

In order to make a realistic estimate of future on-street conditions prior to implementation of the proposed Project, the status of other known development projects (cumulative projects) has been researched at the City of Hesperia. With this information, the potential impact of the proposed Project can be evaluated within the context of the cumulative impact of all ongoing development. The City of Hesperia indicated that no current cumulative projects currently exist within two miles of the Project site.

Year 2025 Traffic Volumes

Figures 11 and ***12*** illustrate the Year 2025 Without Project AM peak hour and PM peak hour traffic volumes. ***Figures 13*** and ***14*** illustrate the Year 2025 With Project AM peak hour and PM peak hour traffic volumes.

YEAR 2025 WITH PROJECT CAPACITY ANALYSIS

Table 4 summarizes the peak hour level of service results at the three (3) key study intersections for Year 2025 With Project traffic conditions. Review of column (1) of *Table 4* indicates that the three (3) key study intersections currently operate at acceptable LOS C or better during the AM and PM peak hours. Review of column (2) of *Table 4* indicates that the three (3) key study intersections are forecast to continue to operate in the Year 2025 at acceptable LOS C or better during the AM and PM peak hours. Review of columns (3) and (4) of *Table 4* indicates that traffic associated with proposed Project ***will not*** cause an operational deficiency at any of the three (3) key study intersections when compared to the LOS standards specified in this letter report. The three (3) key study intersections currently operate and are forecast to continue to operate in the Year 2025 at an acceptable LOS during the AM and PM peak hours with the addition of Project generated traffic to existing traffic and ambient growth traffic.

Appendix C contains the existing, Year 2025 Without Project, and Year 2025 With Project AM peak hour and PM peak hour HCM/LOS calculation worksheets for the three (3) key study intersections.

RECOMMENDED IMPROVEMENTS

The results of the Year 2025 With Project intersection capacity analyses presented previously in *Table 4* indicates that the proposed Project *will not* cause an operational deficiency at any of the three (3) key study intersections. Given that there are no adverse levels of service, no improvements are required under Year 2025 With Project traffic conditions.

SITE ACCESS EVALUATION

Capacity Analysis for Project Access Locations

Table 5 summarizes the intersection operations at the two (2) proposed Project driveways under Year 2025 With Project traffic conditions. *Table 5* shows that the proposed two (2) Project Driveways are forecast to operate at LOS C or better during

the AM and PM peak hours for Year 2025 With Project traffic conditions. As such, Project access will be adequate.

Appendix D contains the Year 2025 With Project AM peak hour and PM peak hour HCM/LOS calculation worksheets for the two (2) proposed Project driveways.

Internal Circulation Evaluation

The on-site circulation layout of the proposed Project as illustrated in *Figure 3* on an overall basis is adequate. Curb return radii have been confirmed and are generally adequate for small service/delivery (FedEx, UPS) vehicles, trash trucks and emergency vehicles.

INTERSECTION QUEUING EVALUATION

To address stacking/storage lengths at the key study intersections of Seventh Avenue at Main Street and Seventh Avenue at Walnut Street, a queuing evaluation was prepared based on projected Year 2025 With Project traffic volumes. ***Table 6*** presents the peak hour queuing analysis results for Year 2025 With Project traffic conditions at the intersections of Seventh Avenue at Main Street and Walnut Street with the implementation of the proposed Project specific improvements, which consists of restriping Seventh Avenue between Main Street and Walnut Street to provide 200 feet of northbound left turn storage at Main Street and 40 feet of southbound left turn storage at Walnut Street. As shown in *Table 6*, adequate storage is provided to accommodate the forecast 95th percentile queues under Year 2025 With Project traffic conditions at the two (2) key study intersections adjacent to the Project site.

SB 743 VEHICLE MILES TRAVELED (VMT) ASSESSMENT

On December 28, 2018, the California Natural Resources Agency adopted revised CEQA Guidelines. Among the changes to the guidelines was the removal of vehicle delay and LOS from consideration for transportation impacts under CEQA. With the adopted guidelines, transportation impacts are to be evaluated based on a project's effect on vehicle miles traveled.

Under the VMT methodology, screening is used to determine if a project will be required to conduct a detailed VMT analysis. The following section discusses the various screening methods outlined in the *Traffic Impact Analysis Guidelines for Vehicle Miles Traveled (VMT) and Level of Service Assessment (LOS),* dated July 2020, hereinafter referred to "VMT Guidelines", and outlines whether the Project will screen-out, either in its entirety, or partially based on individual land uses. Based on

the VMT Guidelines, the first step in evaluating a land use project's VMT impact is to perform an initial screening assessment. A project is presumed to have a less than significant impact on VMT if the project satisfies at least one of the VMT screening criteria. The VMT screening criteria and their applicability to the Project are discussed below.

Step 1: Transit Priority Area (TPA) Screening

The VMT guidelines state:

> *"Projects located within a TPA may be presumed to have a less than significant impact absent substantial evidence to the contrary. This presumption may **NOT** be appropriate if the project:*
>
> 1. *Has a Floor Area Ratio (FAR) of less than 0.75;*
> 2. *Includes more parking for use by residents, customers, or employees of the project than required by the jurisdiction (if the jurisdiction requires the project to supply parking);*
> 3. *Is inconsistent with the applicable Sustainable Communities Strategy (as determined by the lead agency, with input from the Metropolitan Planning Organization); or*
> 4. *Replaces affordable residential units with a smaller number of moderate- or high-income residential units."*

- Based on the above, the proposed Project will not screen out under this criterion since it is not located within a Transit Priority Area per the San Bernardino County Transportation Authority (SBCTA) VMT screening tool.

Step 2: Low VMT Area Screening

The VMT Guidelines state:

> *"Residential and office projects located within a low VMT-generating area may be presumed to have a less than significant impact absent substantial evidence to the contrary. In addition, other employment-related and mixed-use land use projects may qualify for the use of screening if the project can reasonably be expected to generate VMT per resident, per worker, or per service population that is similar to the existing land uses in the low VMT area…*

To identify if the project is in a low VMT-generating area, the analyst may review the SBCTA screening tool and ***comparing the appropriate baseline TAZ VMT to current County of San Bernardino VMT threshold of 32.7% VMT/Service Population****. Additionally, as noted above the analyst must identify if the project is consistent with the existing land use within that TAZ and use professional judgment that there is nothing unique about the project that would otherwise be mis-represented utilizing the data from the travel demand model."*

- Based on the above, the proposed Project will not screen out under this criterion since it is not located within a Low VMT area per the SBCTA VMT screening tool.

Step 3: Project Type Screening

The VMT Guidelines state:

"*Projects generating less than 110 daily vehicle trips*

- *This generally corresponds to the following "typical" development potentials:*
  - *11 single family housing units*
  - *16 multi-family, condominiums, or townhouse housing units*
  - *10,000 sq. ft. of office*

Local serving retail projects less than 50,000 square feet may be presumed to have a less than significant impact absent substantial evidence to the contrary. Local serving retail generally improves the convenience of shopping close to home and has the effect of reducing vehicle travel.

In addition to local serving retail, the following uses can also be presumed to have a less than significant impact absent substantial evidence to the contrary as their uses are local serving in nature:

- *Local-serving K-12 schools*
- *Local parks*
- *Day care centers*
- *Local-serving gas stations*
- *Local-serving banks*
- *Local-serving hotels (e.g. non-destination hotels)*

- *Local-serving medical*
- *Student housing projects on or adjacent to college campuses*
- *Local-serving assembly uses (places of worship, community organizations)*
- *Community institutions (public libraries, fire stations, local government)*
- *Local serving community colleges that are consistent with the assumptions noted in the RTP/SCS*
- *Affordable or supportive housing*
- *Assisted living facilities*
- *Senior housing (as defined by HUD)*
    - *15,000 sq. ft. of light industrial*
    - *63,000 sq. ft. of warehousing*
    - *79,000 sq. ft. of high cube transload and short-term storage warehouse*

➢ Based on the above, the proposed Project will screen out under this criterion since it consists of 1,263 SF coffee shop with drive-through window and no indoor seating and 3,684 SF of fast food restaurant with drive-through window, both local-serving restaurant land uses under 50,000 SF.

Consistent with the City of Hesperia VMT Guidelines and based on the VMT screening methodology and findings outlined in this section, the proposed Project satisfies at least one of the VMT screening criteria (i.e. local serving retail projects less than 50,000 SF) and thus would screen out. Therefore, in accordance with the City of Hesperia VMT Guidelines, the proposed Project is exempt from the preparation of any further VMT analysis and may be presumed to have a less than significant CEQA-related transportation impact.

CONCLUSION

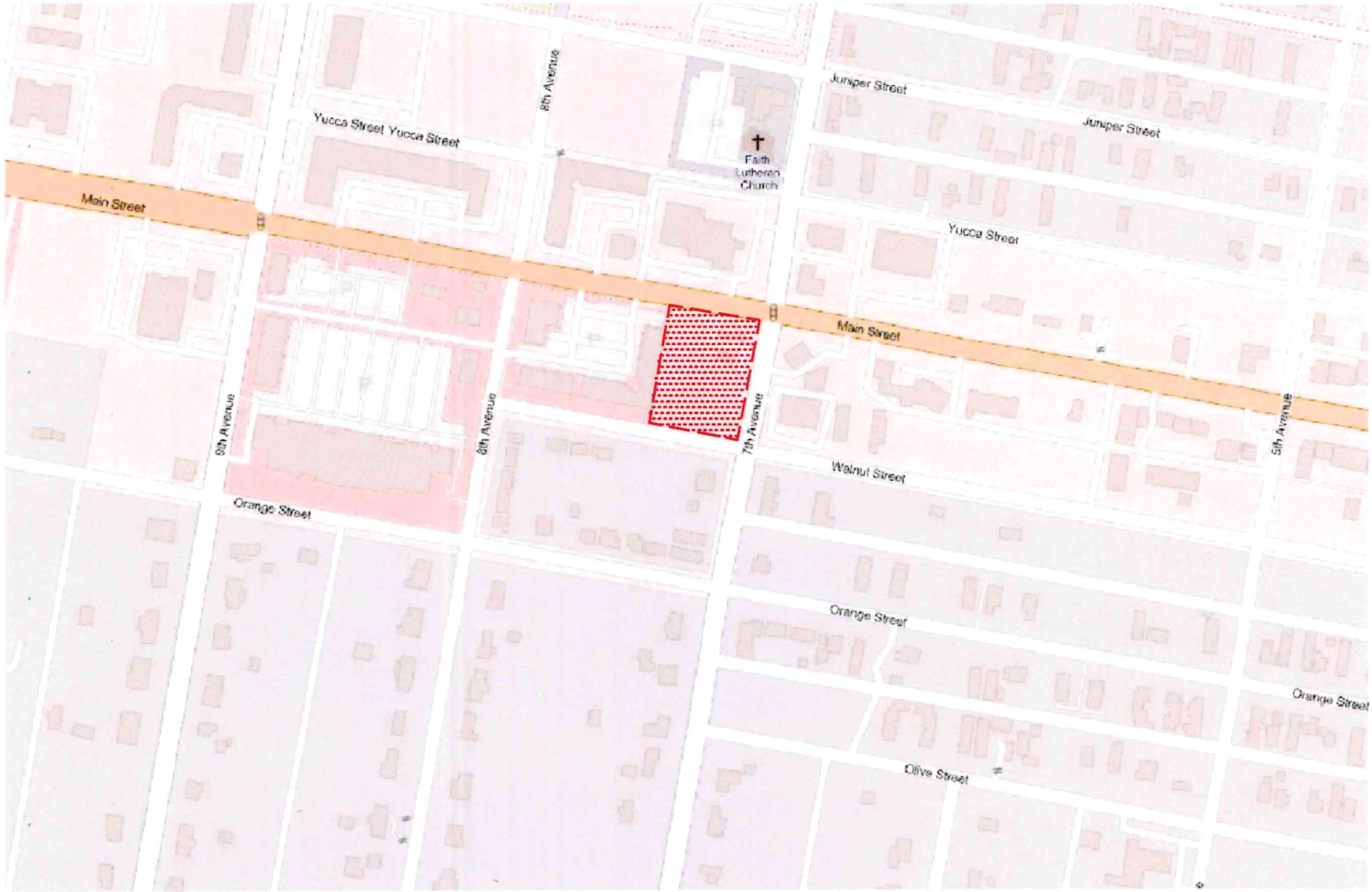
The results of the Focused Traffic Impact Analysis indicate that the proposed Starbucks and McDonald's Project will not impact the existing surrounding roadway network. The three (3) key study intersections are forecast to operate in the Year 2025 at acceptable levels of service during the AM peak hour and PM peak hour. In addition, the surrounding turn pockets are expected to provide adequate storage for the forecast queues with implementation of the proposed Project specific improvements, which consists of restriping Seventh Avenue between Main Street and Walnut Street to

provide 200 feet of northbound left turn storage at Main Street and 40 feet of southbound left turn storage at Walnut Street. Furthermore, the proposed two (2) Project Driveways are forecast to operate at LOS C or better during the AM and PM peak hours for Year 2025 With Project traffic conditions. As such, Project access will be adequate. Lastly, the Project can be screened from further VMT analysis and can be presumed to have a less than significant impact on VMT, per the City's guidelines.

We appreciate the opportunity to provide this Focused Traffic Impact Analysis. Should you have any questions, please call us at (949) 825-6175.

Sincerely,
Linscott, Law & Greenspan, Engineers

Keil D. Maberry, P.E.
Principal
California Registration: TR 1802



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NO SCALE

SOURCE: OPEN STREETS

KEY

= PROJECT SITE

FIGURE 1

VICINITY MAP

STARBUCKS AND MCDONALD'S, HESPERIA

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SOURCE: GOOGLE

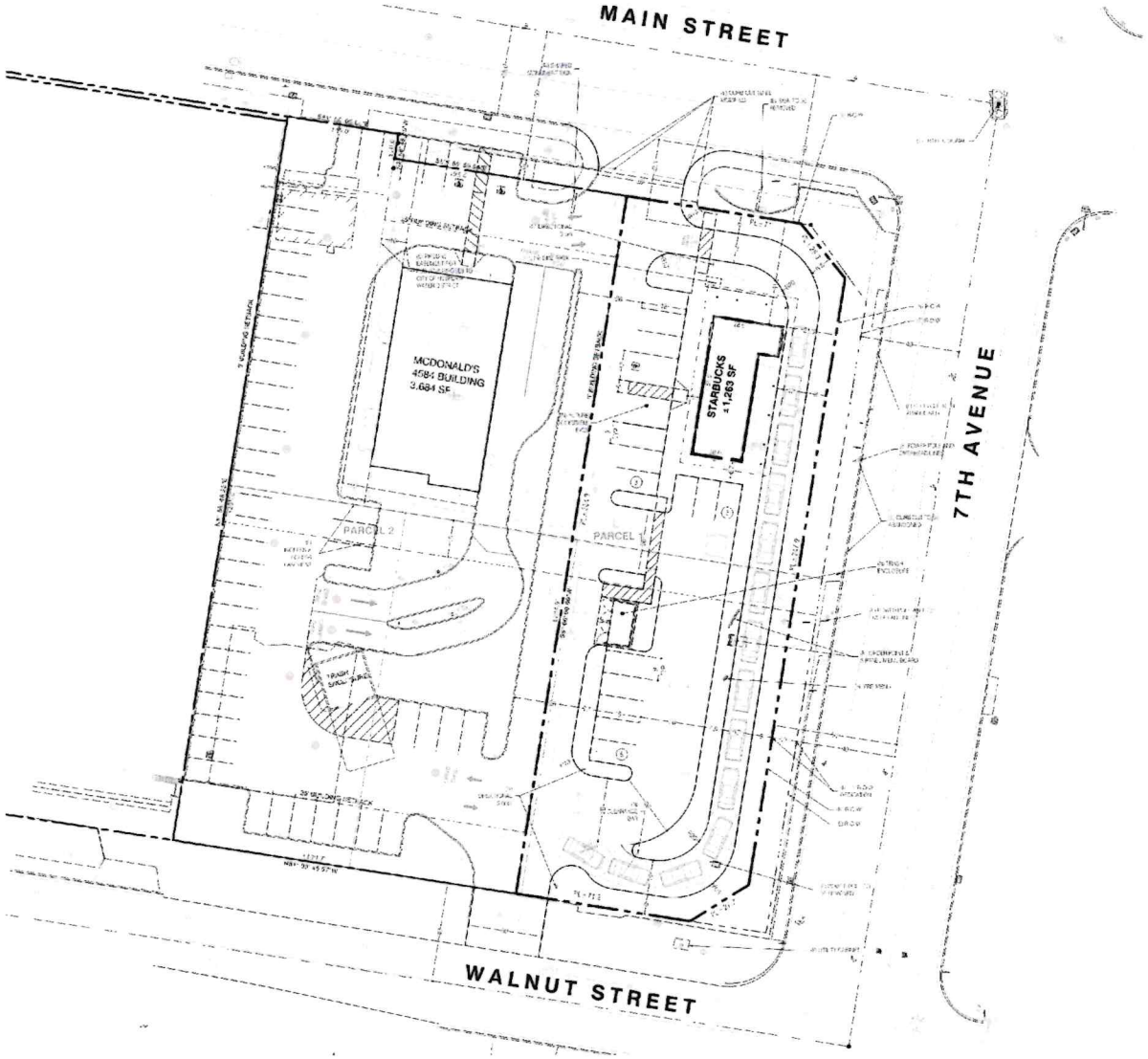
KEY

= PROJECT SITE

FIGURE 2

EXISTING SITE AERIAL

STARBUCKS AND MCDONALD'S, HESPERIA



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SOURCE: GREENBERG FARROW

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FIGURE 3

PROPOSED SITE PLAN

STARBUCKS AND MCDONALD'S, HESPERIA

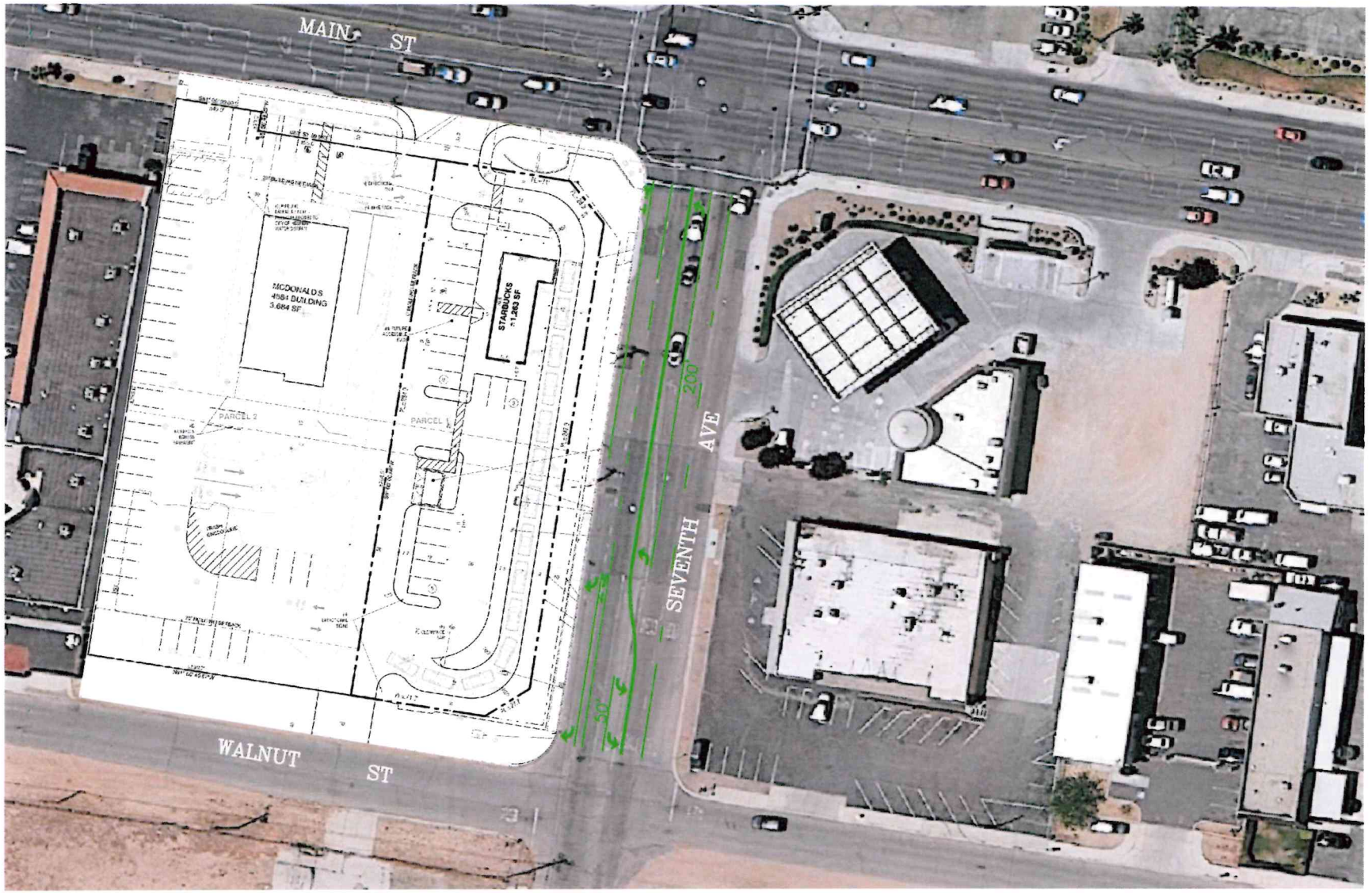

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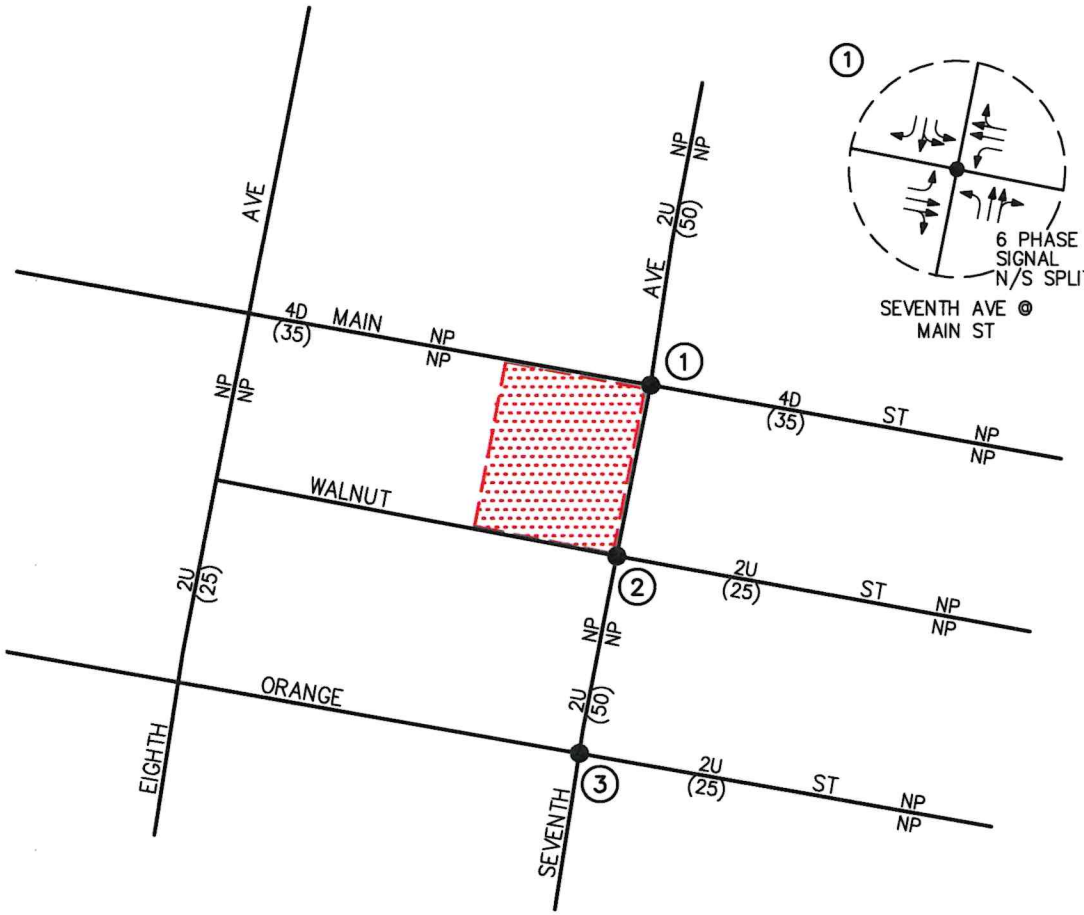
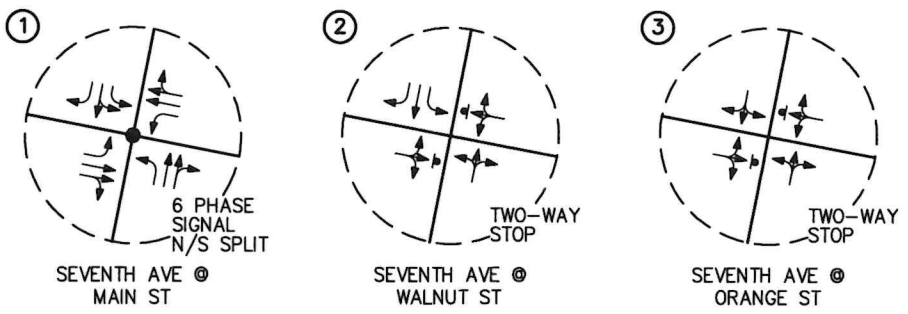
FIGURE 4

PROJECT SPECIFIC IMPROVEMENTS

STARBUCKS AND MCDONALD'S, HESPERIA





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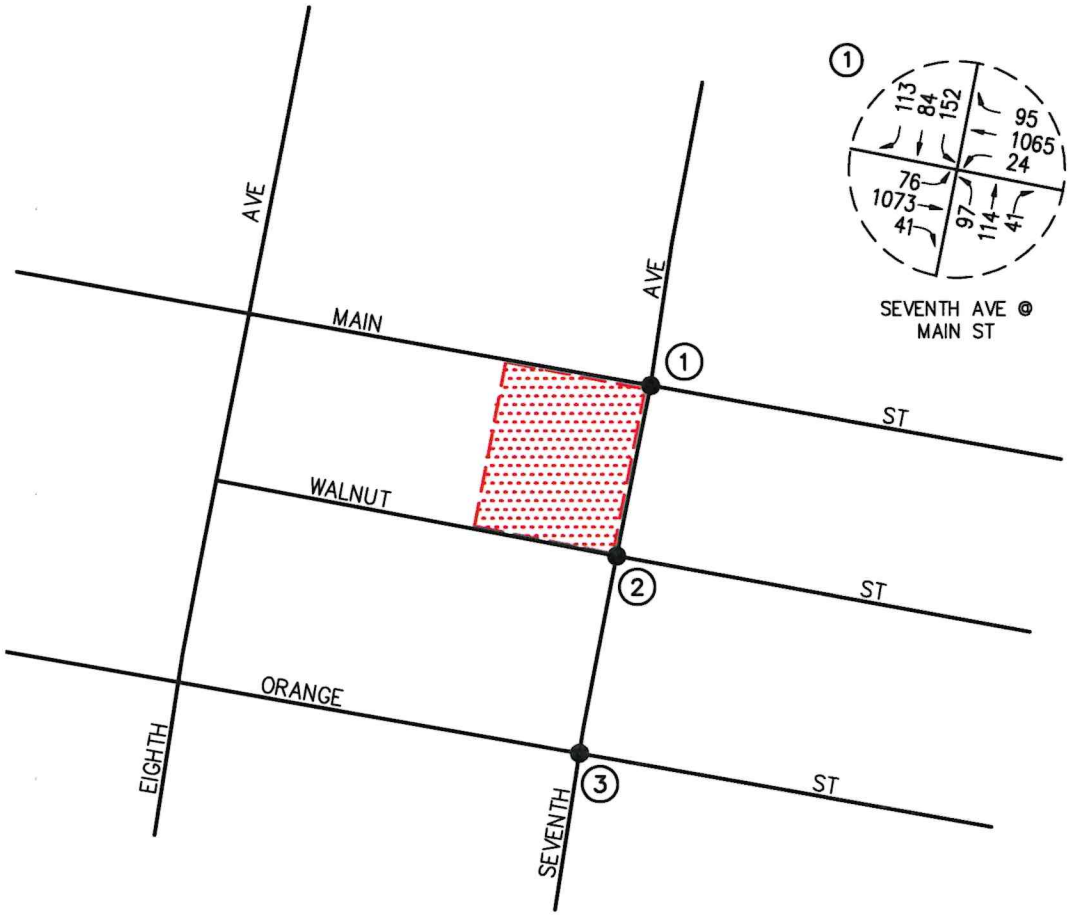
KEY

- ← = APPROACH LANE ASSIGNMENT
- ● = TRAFFIC SIGNAL, ▼ = STOP SIGN
- P = PARKING, NP = NO PARKING
- U = UNDIVIDED, D = DIVIDED
- 2 = NUMBER OF TRAVEL LANES
- (XX)= POSTED SPEED LIMIT (MPH)
- ▭ = PROJECT SITE

FIGURE 5

EXISTING ROADWAY CONDITIONS AND INTERSECTION CONTROLS

STARBUCKS AND MCDONALD'S, HESPERIA



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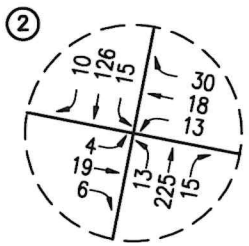

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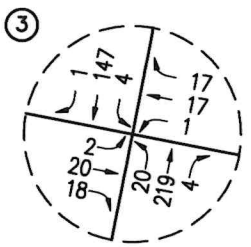

SEVENTH AVE @ ORANGE ST

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KEY

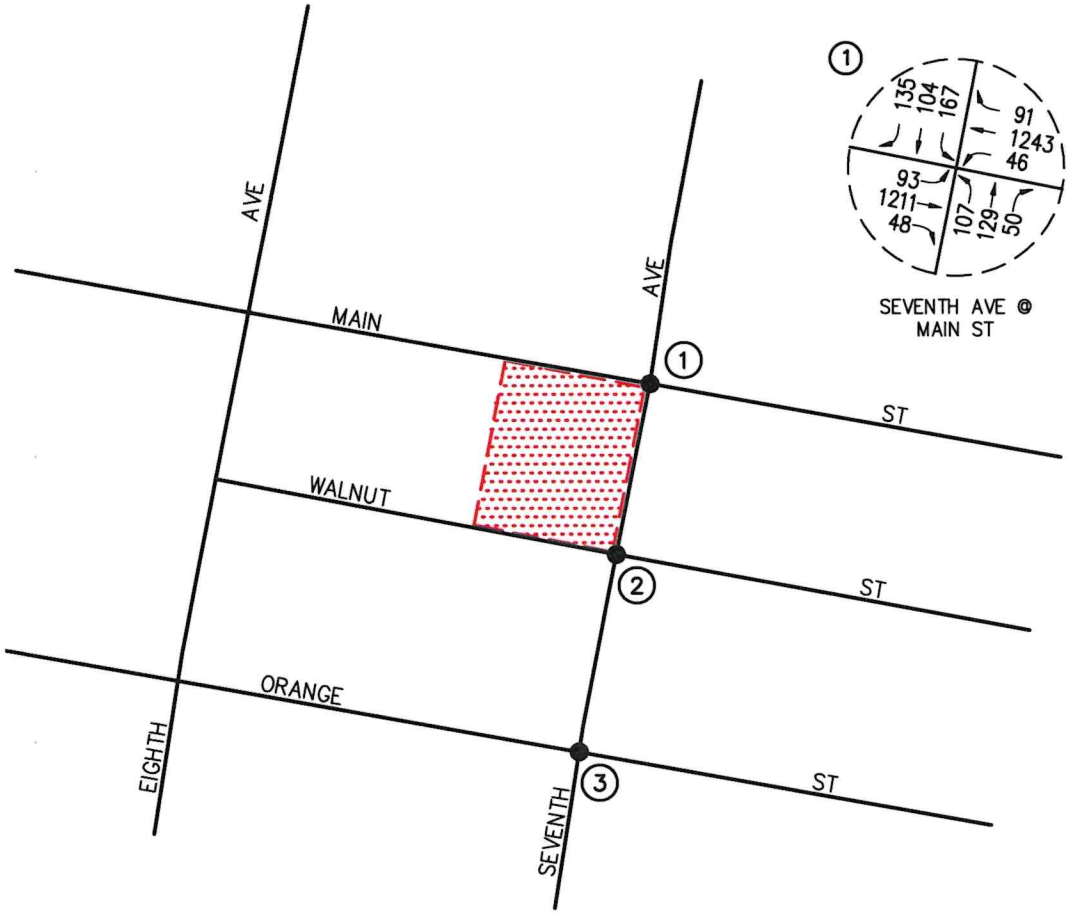
(#) = STUDY INTERSECTION

= PROJECT SITE

FIGURE 6

EXISTING AM PEAK HOUR TRAFFIC VOLUMES

STARBUCKS AND MCDONALD'S, HESPERIA



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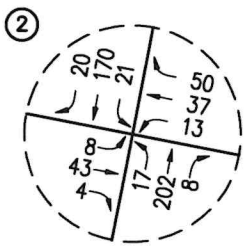
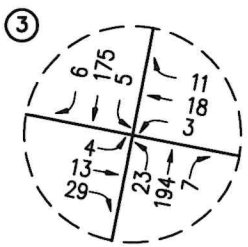


SEVENTH AVE @ WALNUT ST



SEVENTH AVE @ ORANGE ST

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KEY

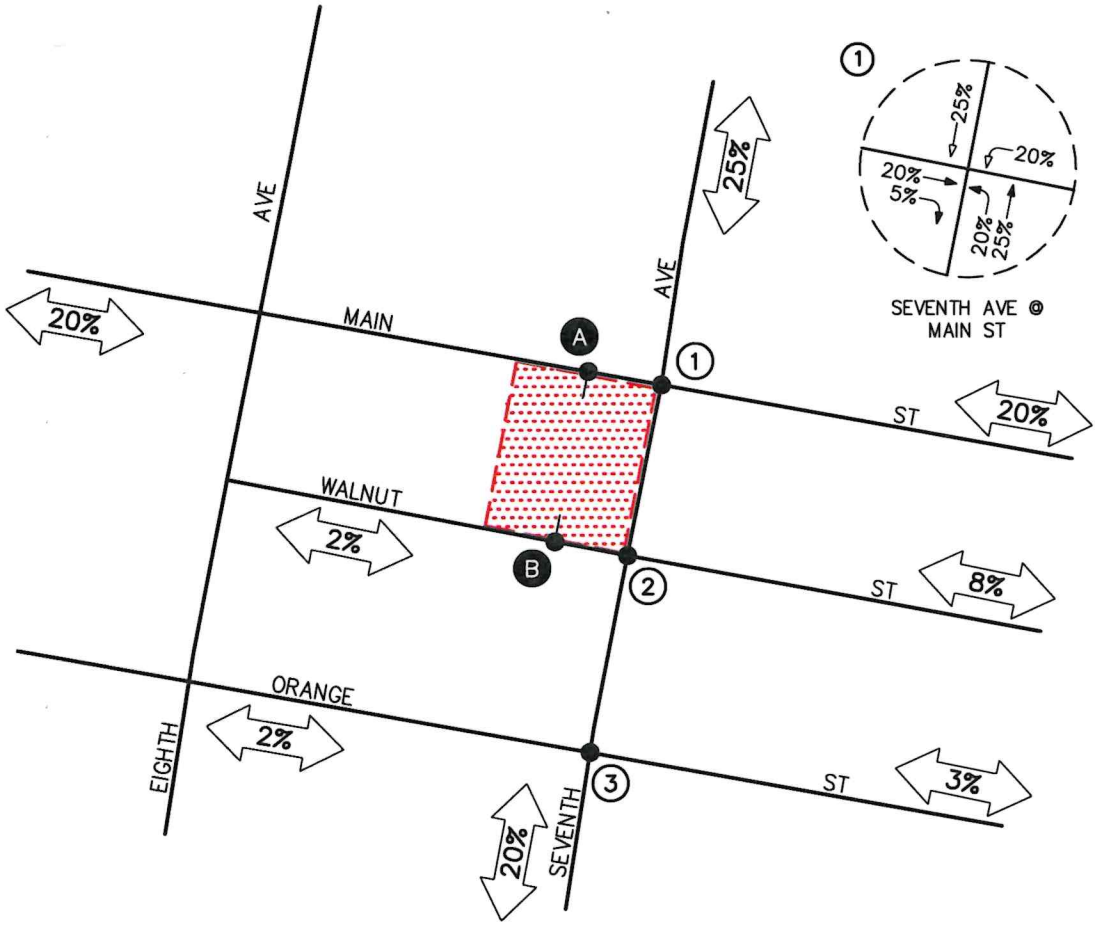
(#) = STUDY INTERSECTION

= PROJECT SITE

FIGURE 7

EXISTING PM PEAK HOUR TRAFFIC VOLUMES

STARBUCKS AND MCDONALD'S, HESPERIA



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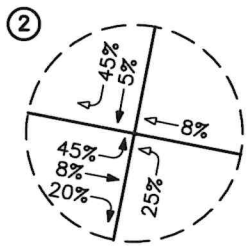
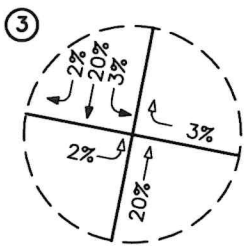


SEVENTH AVE @ WALNUT ST



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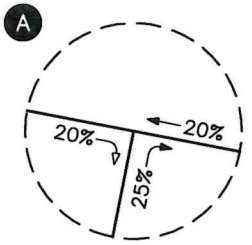
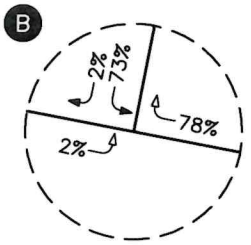


PROJECT DWY NO. 1 @ MAIN ST



PROJECT DWY NO. 2 @ WALNUT ST

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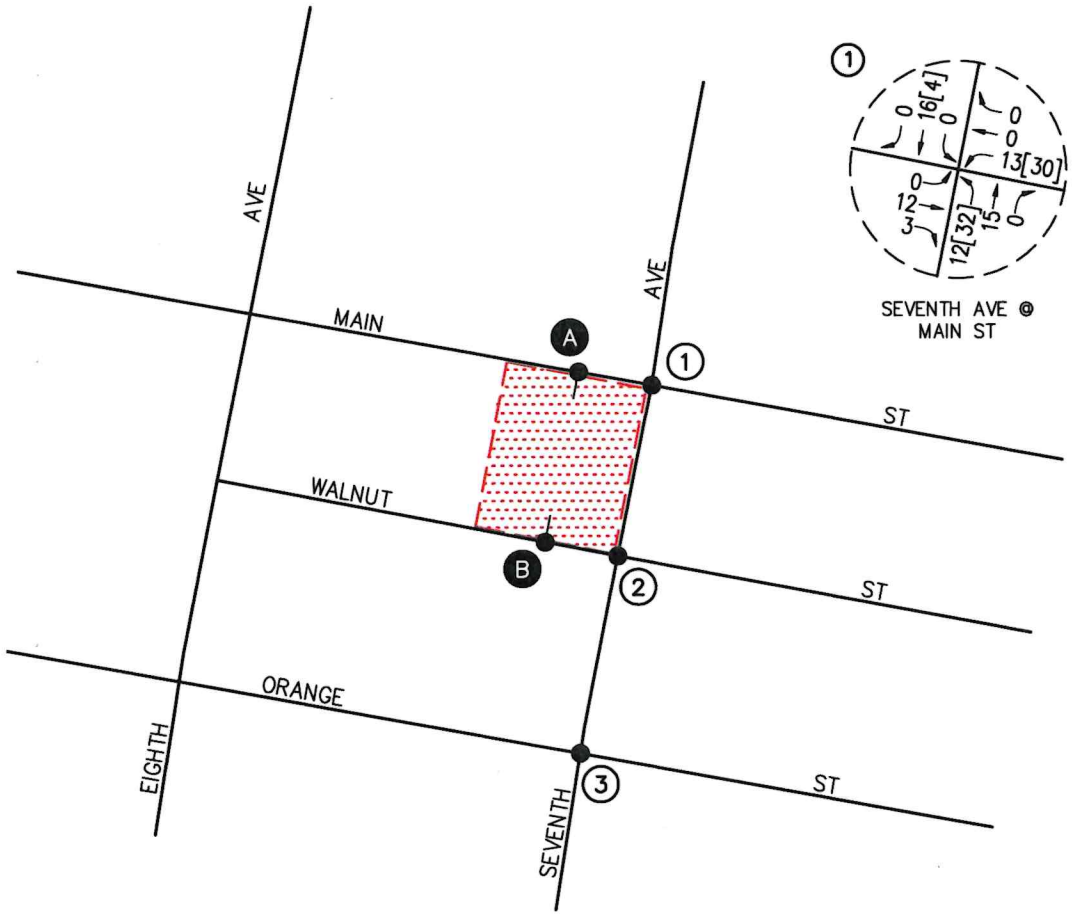
KEY

(#) = STUDY INTERSECTION
= INBOUND PERCENTAGE
= OUTBOUND PERCENTAGE
= PROJECT SITE

FIGURE 8

PROJECT DISTRIBUTION PATTERN

STARBUCKS AND MCDONALD'S, HESPERIA



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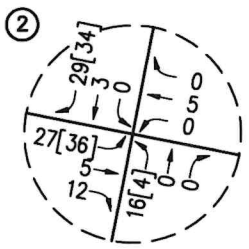

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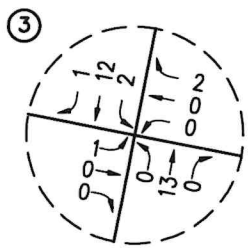

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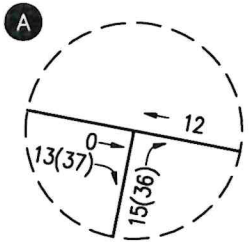
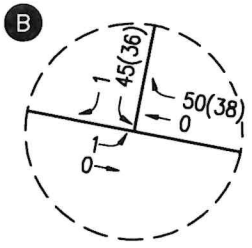


PROJECT DWY NO. 1 @ MAIN ST



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LLG

N NO SCALE

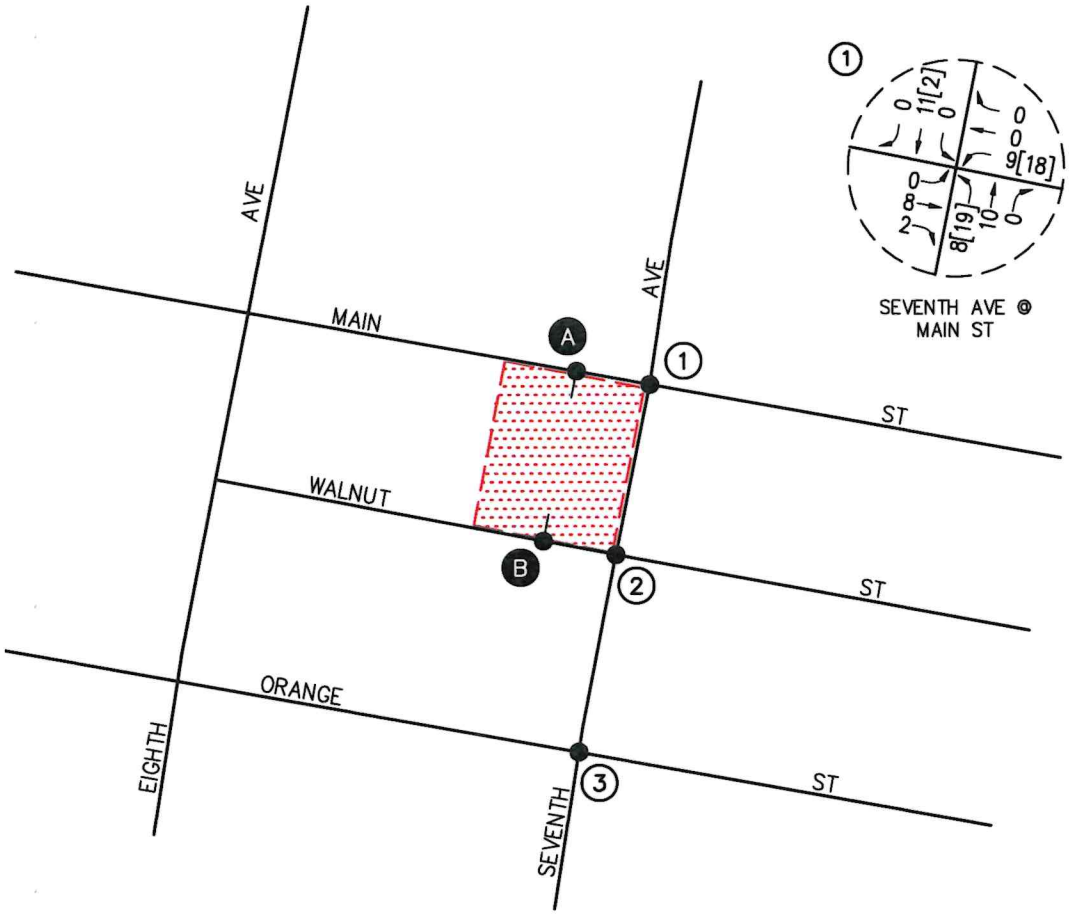
KEY

(#) = STUDY INTERSECTION
(XX) = PASS-BY TRIPS
[YY] = DIVERTED TRIPS
= PROJECT SITE

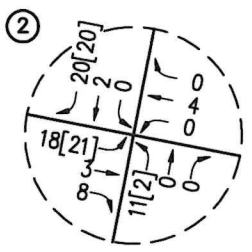
FIGURE 9

AM PEAK HOUR PROJECT TRAFFIC VOLUMES

STARBUCKS AND MCDONALD'S, HESPERIA



SEVENTH AVE @
MAIN ST



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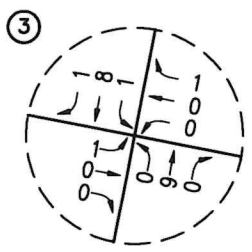
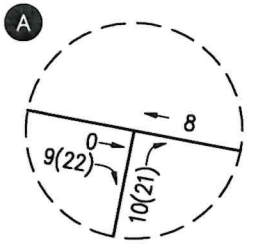
WALNUT ST



SEVENTH AVE @
ORANGE ST



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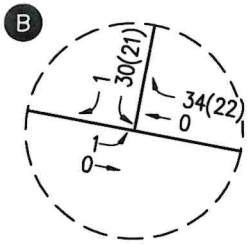


PROJECT DWY NO. 2 @
WALNUT ST

n:\4700\2234748 - starbucks, hesperio\dwg\4748 f-10.dwg LDP 13:58:34 08-27-2024 aguilar

LLG

N NO SCALE

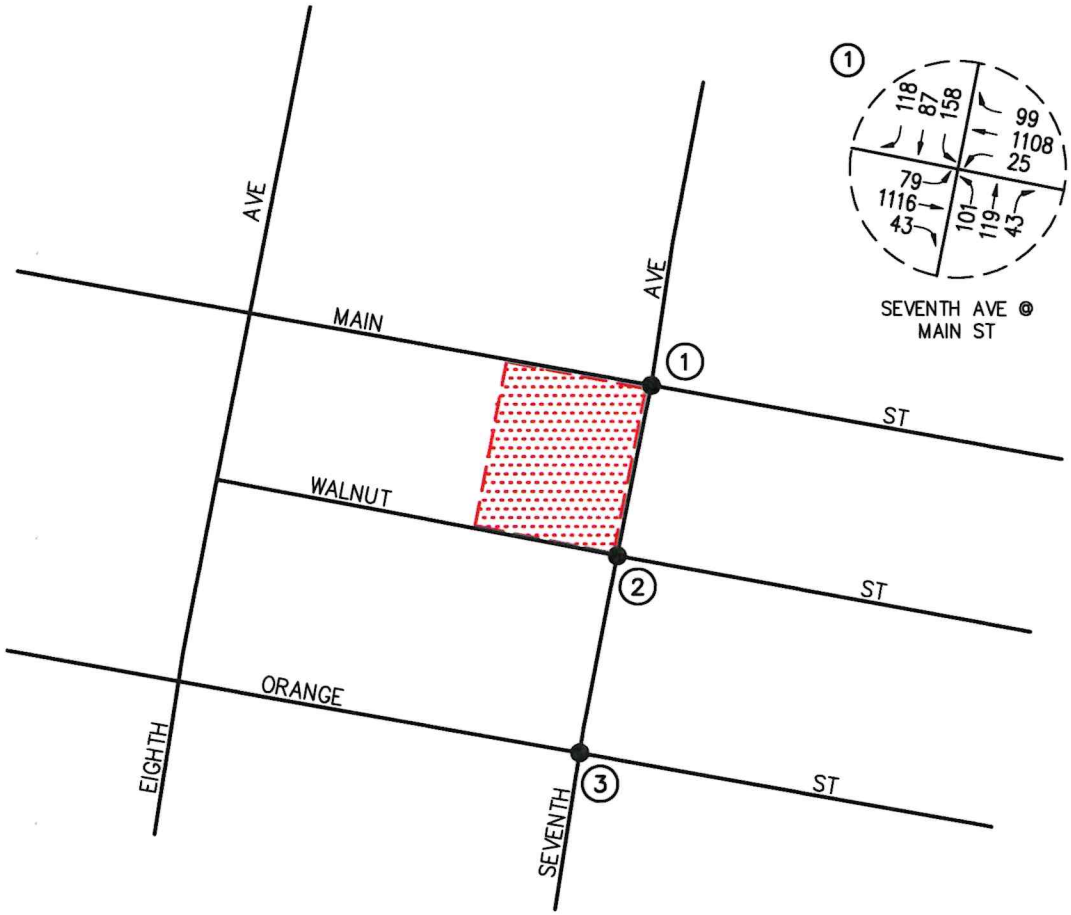
KEY

(#) = STUDY INTERSECTION
(XX) = PASS-BY TRIPS
[YY] = DIVERTED TRIPS
= PROJECT SITE

FIGURE 10

PM PEAK HOUR PROJECT TRAFFIC VOLUMES

STARBUCKS AND MCDONALD'S, HESPERIA



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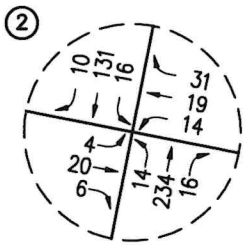

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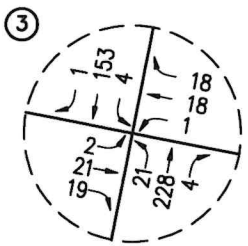

SEVENTH AVE @ ORANGE ST

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LLG

N NO SCALE

KEY

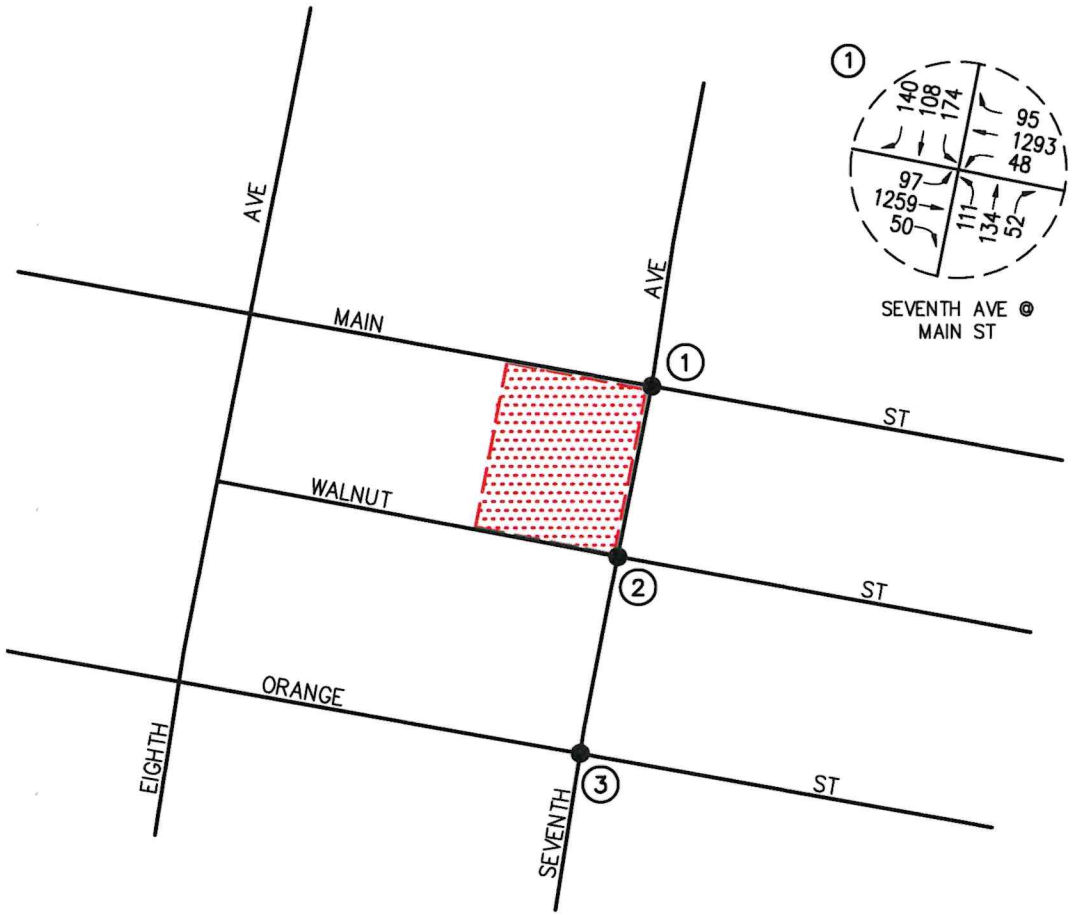
(#) = STUDY INTERSECTION

= PROJECT SITE

FIGURE 11

YEAR 2025 WITHOUT PROJECT AM PEAK HOUR TRAFFIC VOLUMES

STARBUCKS AND MCDONALD'S, HESPERIA



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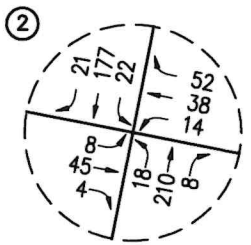
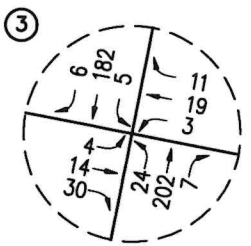


SEVENTH AVE @ WALNUT ST



SEVENTH AVE @ ORANGE ST

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LLG

N NO SCALE

KEY

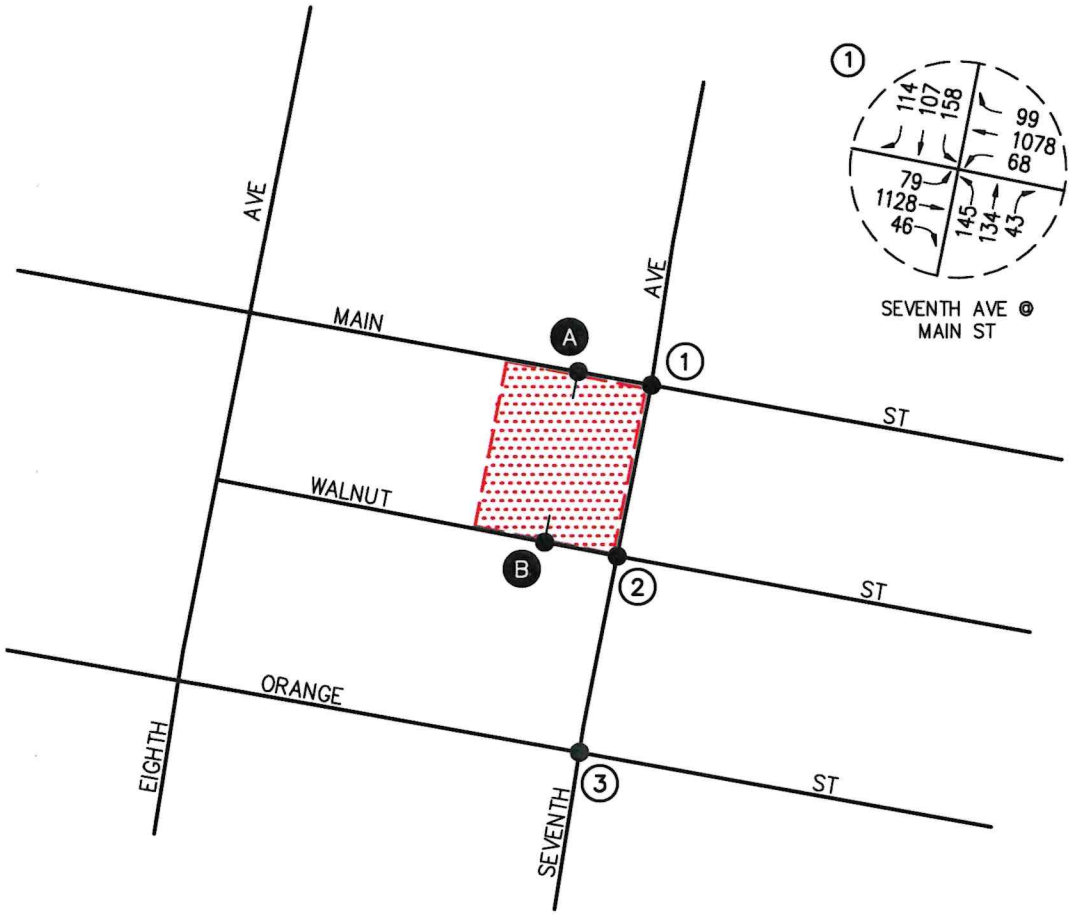
(#) = STUDY INTERSECTION

= PROJECT SITE

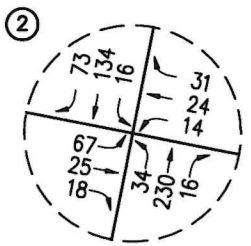
FIGURE 12

YEAR 2025 WITHOUT PROJECT PM PEAK HOUR TRAFFIC VOLUMES

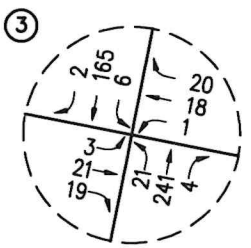
STARBUCKS AND MCDONALD'S, HESPERIA



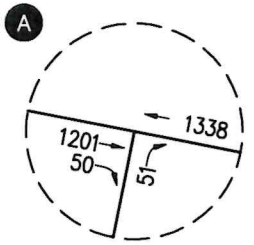
SEVENTH AVE @
MAIN ST



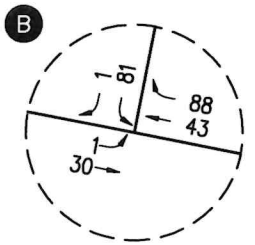
SEVENTH AVE @
WALNUT ST



SEVENTH AVE @
ORANGE ST



PROJECT DWY NO. 1 @
MAIN ST



PROJECT DWY NO. 2 @
WALNUT ST

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LLG

N NO SCALE

KEY

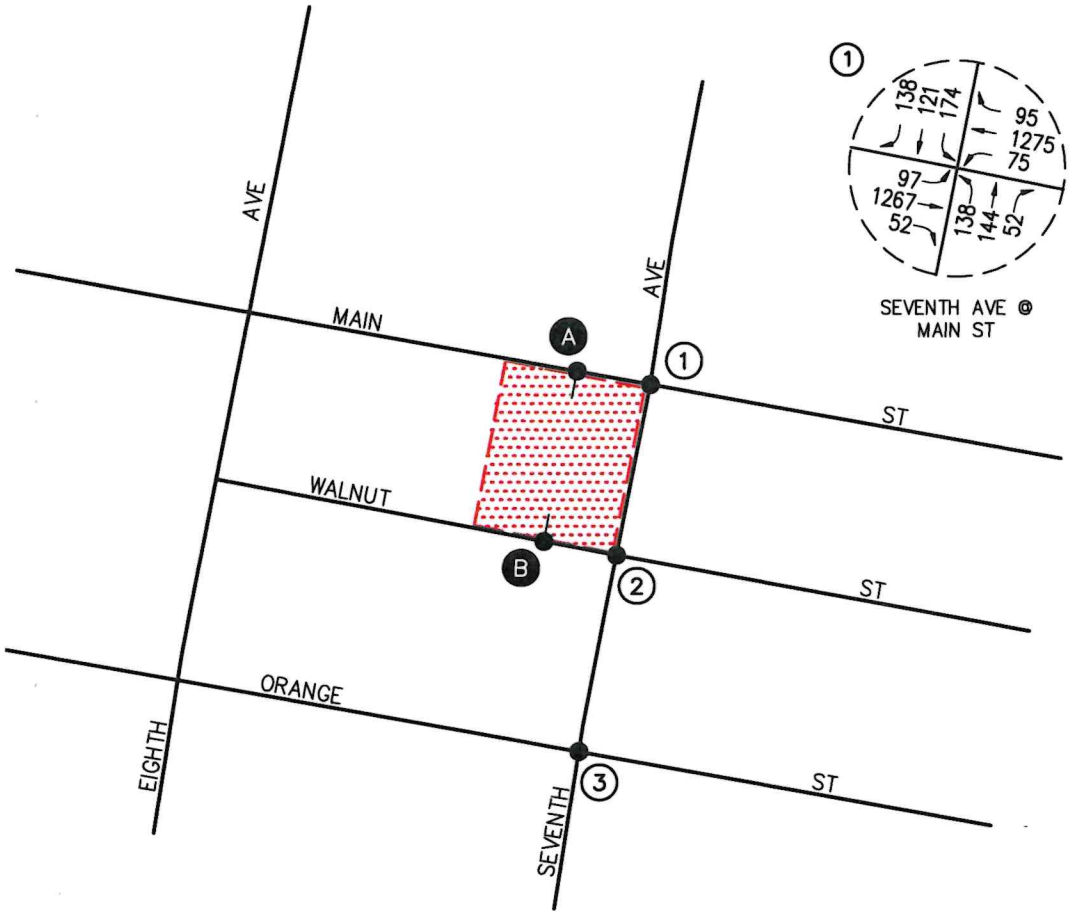
(#) = STUDY INTERSECTION

= PROJECT SITE

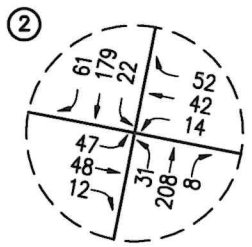
FIGURE 13

YEAR 2025 WITH PROJECT AM PEAK HOUR TRAFFIC VOLUMES

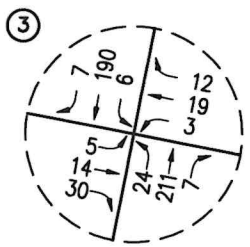
STARBUCKS AND MCDONALD'S, HESPERIA



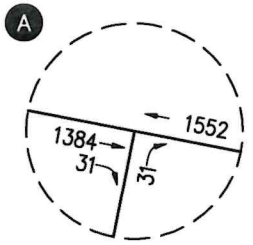
SEVENTH AVE @ MAIN ST



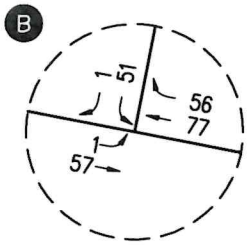
SEVENTH AVE @ WALNUT ST



SEVENTH AVE @ ORANGE ST



PROJECT DWY NO. 1 @ MAIN ST



PROJECT DWY NO. 2 @ WALNUT ST

n:\4700\2234748 - starbucks, hesperio\dwg\4748 f-14.dwg LDP 10:16:52 02-29-2024 aguilar

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N NO SCALE

KEY

(#) = STUDY INTERSECTION

= PROJECT SITE

FIGURE 14

YEAR 2025 WITH PROJECT PM PEAK HOUR TRAFFIC VOLUMES

STARBUCKS AND MCDONALD'S, HESPERIA

TABLE 1
LEVEL OF SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS (HCM 7 METHODOLOGY)[1]
STARBUCKS AND MCDONALD'S PROJECT, HESPERIA

Level of Service (LOS)	Control Delay Per Vehicle (seconds/vehicle)	Level of Service Description
A	≤ 10.0	This level of service occurs when progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.
B	> 10.0 and ≤ 20.0	This level generally occurs with good progression, short cycle lengths, or both. More vehicles stop than with LOS A, causing higher levels of average delay.
C	> 20.0 and ≤ 35.0	Average traffic delays. These higher delays may result from fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level, though many still pass through the intersection without stopping.
D	> 35.0 and ≤ 55.0	Long traffic delays At level D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high *v/c* ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
E	> 55.0 and ≤ 80.0	Very long traffic delays This level is considered by many agencies to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high *v/c* ratios. Individual cycle failures are frequent occurrences.
F	≥ 80.0	Severe congestion This level, considered to be unacceptable to most drivers, often occurs with over saturation, that is, when arrival flow rates exceed the capacity of the intersection. It may also occur at high *v/c* ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing factors to such delay levels.

[1] Source: *Highway Capacity Manual 7*, Chapter 19: Signalized Intersections.

TABLE 3
PROJECT TRAFFIC GENERATION RATES AND FORECAST[3]
STARBUCKS & MCDONALD'S, HESPERIA

ITE Land Use Code / Project Description	Daily 2-Way	AM Peak Hour			PM Peak Hour		
		Enter	Exit	Total	Enter	Exit	Total
Generation Factors:							
▪ 937: Coffee/Donut Shop With Drive-Through Window (TE/TSF)	533.57	51%	49%	85.88	50%	50%	38.99
▪ 934: Fast Food Restaurant with Drive-Through Window (TE/KSF)	467.48	51%	49%	44.61	52%	48%	33.03
Proposed Project Generation Forecast:							
▪ Starbucks (1,263 SF)	674	55	53	108	25	24	49
Pass-by Rates (Daily: 75%, AM: 75% PM: 75%)[4]	-506	-41	-40	-81	-19	-18	-37
Starbucks Net Trip Generation	***168***	***14***	***13***	***27***	***6***	***6***	***12***
▪ McDonald's (3,684 SF)	1,722	84	80	164	63	59	122
Pass-by Rates (Daily: 25%, AM: 40% PM: 40%)[5]	-431	-34	-32	-66	-25	-24	-49
McDonald's Net Trip Generation	***1,291***	***50***	***48***	***98***	***38***	***35***	***73***
Total Project Trip Generation	**1,459**	**64**	**61**	**125**	**44**	**41**	**85**

Notes:
- TE/TSF = Trip ends per thousand square feet

[3] Source: *Trip Generation, 11th Edition*, Institute of Transportation Engineers, (ITE) [Washington, D.C. (2021)].

[4] Source: Source: Daily, AM peak hour, and PM peak hour pass-by reductions conservatively assumed at 75%, respectively, based on *Trip Generation*, 11th Edition, Institute of Transportation Engineers (ITE), Washington, D.C. (2021) pass-by tables for Coffee/Donut Shop With Drive-Through Window, which indicates AM and PM pass-by rates of 90% and 98%, respectively.

[5] Source: Source: Daily, AM peak hour, and PM peak hour pass-by reductions conservatively assumed at 25%, 40%, and 40%, respectively, based on *Trip Generation*, 11th Edition, Institute of Transportation Engineers (ITE), Washington, D.C. (2021) pass-by tables for Fast Food Restaurant With Drive-Through Window and input from City Staff.

TABLE 4
YEAR 2025 WITH PROJECT PEAK HOUR INTERSECTION CAPACITY ANALYSIS SUMMARY
STARBUCKS AND MCDONALD'S PROJECT, HESPERIA

Key Intersection	Time Period	Minimum Acceptable LOS	(1) Existing Traffic Conditions		(2) Year 2025 Without Project Traffic Conditions		(3) Year 2025 With Project Traffic Conditions		(4) Operational Deficiency	
			Delay (s/v)	LOS	Delay (s/v)	LOS	Delay (s/v)	LOS	Increase (s/v)	Yes/No
1. Seventh Avenue at Main Street	AM	D	23.3	C	23.6	C	26.2	C	2.6	No
	PM		25.5	C	27.2	C	29.5	C	2.3	No
2. Seventh Avenue at Walnut Street	AM	D	12.1	B	12.3	B	13.1	B	0.8	No
	PM		14.1	B	14.0	B	16.7	C	2.7	No
3. Seventh Avenue at Orange Street	AM	D	11.9	B	11.4	B	11.7	B	0.3	No
	PM		12.1	B	12.0	B	12.1	B	0.1	No

Notes:

- s/v = seconds per vehicle (delay)
- LOS = Level of Service

TABLE 5
PROJECT DRIVEWAY PEAK HOURS LEVELS OF SERVICE SUMMARY
STARBUCKS AND MCDONALD'S PROJECT, HESPERIA

Key Intersection		Time Period	Minimum Acceptable LOS	(1) Year 2025 With Project Traffic Conditions	
				Delay (s/v)	LOS
A.	Project Driveway No. 1 at Main Street	AM	D	17.2	C
		PM		18.2	C
B.	Project Driveway No. 2 at Walnut Street	AM	D	9.6	A
		PM		9.7	A

Notes:

- s/v = seconds per vehicle (delay)
- LOS = Level of Service

TABLE 6
YEAR 2025 WITH PROJECT PEAK HOUR QUEUING ANALYSIS[6]
STARBUCKS AND MCDONALD'S PROJECT, HESPERIA

Key Intersection	Proposed/ Estimated Storage Provided	Year 2025 With Project Traffic Conditions			
		AM Peak Hour		PM Peak Hour	
		Max. Queue	Adequate Storage (Yes / No)	Max. Queue	Adequate Storage (Yes / No)
1. Seventh Avenue at Main Street					
Northbound Left-Turn	200'[7]	173'	Yes	174'	Yes
Southbound Left-Turn	110'	155'	Yes [a]	180'	Yes [a]
Southbound Left-Turn/Through	235'	162'	Yes	190'	Yes
Eastbound Left-Turn	160'	105'	Yes	133'	Yes
Westbound Left-Turn	145'	93'	Yes	106'	Yes
2. Seventh Avenue at Walnut Street					
Southbound Left-Turn	50'[8]	25'	Yes	25'	Yes
Eastbound Left-Turn/Through/Right-Turn	80'[9]	25'	Yes	27'	Yes

Notes:

- [a] = Spillover queue may be accommodated by transition and/or the adjacent Southbound Left-Turn/Through lane.

6 Queue is based on the *95th Percentile Queue* and is reported in total queue length (feet) per lane for signalized intersections.

7 Includes Project-specific improvement that consists of restriping the NBL pocket to 200' of storage.

8 Includes Project-specific improvement that consists of restriping the SBL pocket to 40' of storage.

9 Estimated storage provided before Project driveway.