Crestview Apartments Initial Study

June 30, 2020

Appendices A-D

Planning Cases: P19-0775, P19-0776, P19-0777, P19-0905,

P20-0307, P20-0308, P20-0309, P20-0310

Crestview Apartments Initial Study

Appendix A – Phase I Environmental Site Assessment (ESA)

Planning Cases: P19-0775, P19-0776, P19-0777, P19-0905,

P20-0307, P20-0308, P20-0309, P20-0310

Phase I Environmental Site Assessment and Subsurface Investigation

Northwest Corner of Central Avenue and
Sycamore Canyon Boulevard
Riverside, California

Prepared for:
KA Enterprises
5820 Oberlin Drive, Suite 201
San Diego, California 92121

Prepared by:
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1827 Capital Street, Suite 103
Corona, California 92880

April 27, 2020
Project No. 101150001

April 27, 2020
Project No. 101150001

Mr. Eugene Marini
KA Enterprises
5820 Oberlin Drive, Suite 201
San Diego, California 92121

Subject: **Phase I Environmental Site Assessment and Subsurface Investigation**
Northwest Corner of Central Avenue and Sycamore Canyon Boulevard
Riverside, California

Dear Mr. Marini:

Ardent Environmental Group, Inc. (Ardent) has performed a Phase I Environmental Site Assessment (ESA) and Subsurface Investigation of the property located on the northwest corner of the intersection of Central Avenue and Sycamore Canyon Boulevard in the city of Riverside, California (site). Work was conducted in general accordance with the proposal dated February 24, 2020 between Ardent and KA Enterprises. The attached report presents our methodology, findings, opinions, and conclusions regarding the environmental conditions at the site. We appreciate the opportunity to be of service to you on this project. If there are any questions, please feel free to call the undersigned at your convenience.

Sincerely,
Ardent Environmental Group, Inc.

Tyler Burt
Staff Geologist

Paul A. Roberts, P.G.
Principal Geologist

PAR/TPB/aw

Distribution: (1) Addressee (electronic copy)

TABLE OF CONTENTS

Page

EXECUTIVE SUMMARY 1

1 INTRODUCTION 3
1.1 Purpose of Phase I ESA and Subsurface Investigation 3
1.2 Involved Parties 4
1.3 Scope of Work 5
1.4 Limitations and Exceptions 6
1.5 Special Terms and Conditions 6
1.6 User Reliance 7
1.7 Physical Limitations 7
1.8 Data Gaps 7

2 GENERAL SITE CHARACTERISTICS 7
2.1 Location and Legal Description 7
2.2 Site Description and Current Site Uses/Operations 8
2.2.1 Site Description 8
2.2.2 Occupants 8
2.2.3 Heating and Cooling Systems 8
2.2.4 Sewage Disposal/Septic Systems 8
2.2.5 Potable Water 8
2.3 Adjacent Properties 8

3 User Provided Information 9
3.1 Current Title Information 9
3.2 Reason for Performing Phase I ESA 9
3.3 Other User Provided Information 9
3.3.1 Phase I ESA, dated November 15, 2013 9
3.3.2 Preliminary Geotechnical Evaluation, dated January 20, 2020 10

4 PHYSICAL SETTING 11
4.1 Site Topography 11
4.2 Geology 11
4.3 Oil and Gas Maps 12
4.4 Site Hydrology 12
4.4.1 Surface Waters 12
4.4.2 Groundwater 12

5 HISTORICAL LAND USE 13
5.1 Summary of Historical Land Use of the Property 13
5.2 Summary of Historical Land Use of Adjoining Properties 13
5.3 Fire Insurance Rate Maps 13
5.4 Historical Aerial Photographs 13
5.5 Building Department 14
5.6 City Directories 14
5.7 Historical Topographic Maps 14
5.8 Interviews 14
5.8.1 Interview with Owner 15

5.8.2 Interview with Site Manager 15
5.8.3 Interviews with Occupant....15
5.8.4 Interviews with Local Government Officials 15
5.8.5 Interviews with Others 15
5.9 Previous Reports and Documents....15

6 SITE RECONNAISSANCE 15
6.1 Use and Storage of Hazardous Substances and Petroleum Products....15
6.2 Storage and Disposal of Hazardous Wastes....16
6.3 Unidentified Substance Containers....16
6.4 ASTs and USTs....16
6.5 Evidence of Releases 16
6.6 PCBs 16
6.7 Suspect ACM....16
6.8 LBP....16
6.9 Indications of Water Damage or Mold Growth....16
6.10 Wastewater Systems 17
6.11 Stormwater Systems....17
6.12 Wells 17
6.13 Other Subsurface Structures....17
6.14 Other Issues 17

7 ENVIRONMENTAL DATABASE SEARCH 17
7.1 Federal National Priorities List (NPL): Distance Searched – 1 mile 17
7.2 Federal Delisted NPL: Distance Searched – 1 mile....18
7.3 Federal Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) List: Distance Searched – 0.5 mile....18
7.4 Federal Corrective Action Report (CORRACTS): Distance Searched – 1 mile....18
7.5 Federal Resource Conservation and Recovery Act (RCRA) Treatment, Storage, and Disposal (TSD) Facilities List: Distance Searched – 0.5 mile 18
7.6 Federal RCRA Generators List: Distance Searched – Site and Adjoining Properties 19
7.7 Federal Institutional Control/Engineering Control Registries: Distance Searched – Site 19
7.8 Federal Emergency Response Notification System (ERNS) List: Distance Searched – Site 19
7.9 Federal Brownfield List: Distance Searched – 0.5 mile 19
7.10 State Calsites Database (Calsites) or State-Equivalent CERCLIS: Distance Searched – 1 mile 20
7.11 State Solid Waste Landfill Sites (SWLF): Distance Searched – 0.5 mile 20
7.12 State Leaking Underground Storage Tank (LUST) Lists: Distance Searched – 0.5 mile 20
7.13 State Underground Storage Tank (UST) and Aboveground Storage Tank (AST) Registration List: Distance Searched – Site and Adjoining Properties....20
7.14 State Voluntary Cleanup Programs (VCPs): Distance Searched – 0.5 mile 20
7.15 Indian Reservations: Distance Searched – 1 mile 21
7.16 Other Non-ASTM and AAI Database: Distance Searched – Site....21

8 Regulatory Records review.... 21
8.1 Regional Water Quality Control Board, Santa Ana Region (RWQCB)....21
8.2 Department of Toxic Substances Control (DTSC)....21

9 Vapor Encroachment condition (vec) 21

10 Subsurface Investigation 22
10.1 Aerially Deposited Lead 22
10.2 Undocumented Fill 23

11 FINDINGS, OPINIONS AND CONCLUSIONS 24
11.1 Findings and Opinions 24
11.2 Conclusions 25

12 RECOMMENDATIONS 25

13 SELECTED REFERENCES 26

QUALIFICATIONS STATEMENT AND SIGNATURE OF ENVIRONMENTAL PROFESSIONAL 27

Tables

Table 1 – Laboratory Results of Soil Samples

Figures

Figure 1 – Site Location Map
Figure 2 – Planned Redevelopment
Figure 3 – Site Vicinity Map

Appendices

Appendix A – Photographic Documentation
Appendix B – Client Provided Information
Appendix C – Previous Reports
Appendix D – Environmental Database Report
Appendix E - Laboratory Reports
Appendix F - Resumes

EXECUTIVE SUMMARY

Ardent Environmental Group, Inc. (Ardent) was retained by KA Enterprises to perform a Phase I Environmental Site Assessment (ESA) and Subsurface Investigation of the property located on the northwest corner of the intersection of Central Avenue and Sycamore Canyon Boulevard in the city of Riverside, California (site). The site is currently vacant land. KA Enterprises currently owns the site and is preparing property for residential development. Site assessment activities for this report were conducted between February 24, 2020 and March 20, 2020.

In summary, the following findings and conclusions were noted:

- From at least 1931 through the time of this report, the site has been vacant land. In recent years, it was reported that portions of the site underwent various earthwork activities including the removal of shallow bedrock to ready the site for redevelopment.
- There was no readily available information regarding depth to groundwater for the site or on properties within the general site vicinity. Groundwater is expected to traverse through fractured bedrock at an unknown depth. Direction of flow is expected to follow surface topography away from the Box Springs Mountains in a southwesterly direction.
- The site is located immediately adjacent to the Moreno Valley Freeway. Due to the close proximity of the site to the freeway, aerially deposited lead from automobiles using leaded-gasoline may be present in shallow soil at the site. The possible presences of lead in shallow soil would be considered a possible recognized environmental condition (REC).
- Based on Ardent's review of a recently completed geotechnical report for the site, up to 35 feet of undocumented fill materials were reportedly located in a large portion of the site. Some of these materials were associated with the shallow bedrock removal, but the source of other fill materials is unknown. Although representatives familiar with the site indicated that no import soil was used for backfill, there was no documentation to support this statement. Therefore, the undocumented fill would be considered a possible REC.
- The Phase I ESA identified two possible RECs, aerially deposited lead and undocumented fill. To further assess these possible concerns, Ardent excavated seven test pits at target locations throughout the site. Laboratory results of shallow soil samples indicated no detectable to low concentrations of lead, below the state and federal screening levels for the protection of human health. Laboratory results of soil samples collected from the undocumented fill indicated no detectable concentrations of total petroleum hydrocarbons carbon chain C_6-C_{32} (TPHcc) and volatile organic compounds (VOCs), and no detectable to low concentrations of Title 22 metals, well below the state and federal screening levels for the protection of human health and background concentrations of arsenic. Based on this information, the aerially deposited lead and the undocumented fill would not be considered an REC.
- No other on- or off-site environmental concerns were noted.

CONCLUSIONS

Ardent has performed this Phase I ESA and Subsurface Investigation in general conformance with the scope and limitations of the American Society for Testing and Materials (ASTM) Practice E 1527-13, ASTM Practice E 2600-15, and the Environmental Protection Agency (EPA) Standards and Practices for All Appropriate Inquiry (AAI), Final Rule (40 CFR, Part 312), for the property located on the northwest corner of the intersection of Central Avenue and Sycamore Canyon Boulevard in the city of Riverside, California. Any limitations or exceptions encountered during completion of this report are stated in Section 1.4. Based on this Phase I ESA, no evidence or indication of RECs, historical-RECs (HRECs), controlled-RECs (CRECs), or conditions indicative of releases or threatened releases of hazardous substances on, at, in, or to the site has been revealed.

RECOMMENDATIONS

Based on the results of this assessment, Ardent has no recommendations for further investigations at this time.

1 INTRODUCTION

Ardent Environmental Group, Inc. (Ardent) was retained by KA Enterprises to perform a Phase I Environmental Site Assessment (ESA) of the property located on the northwest corner of the intersection of Central Avenue and Sycamore Canyon Boulevard in the city of Riverside, California (site; Figure 1). Work was competed in general accordance with the proposal dated February 24, 2020 between KA Enterprises and Ardent. The site is currently vacant land. KA Enterprises currently owns the site and is preparing the property for residential development (Figure 2). The following sections identify the purpose, the involved parties, the scope of work, and the limitations and exceptions associated with the Phase I ESA and Subsurface Investigation.

1.1 Purpose of Phase I ESA and Subsurface Investigation

In accordance with the American Society for Testing and Materials (ASTM) E 1527-13 Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process (ASTM Standard E 1527-13), the objective of the Phase I ESA was to identify, to the extent feasible pursuant to ASTM Standard E 1527-13, recognized environmental conditions (RECs), historical RECs (HRECs), controlled RECs (CRECs), or conditions indicative of releases or threatened releases of hazardous substances on, at, in, or to the subject property.

ASTM defines RECs as "…the presence or likely presence of any hazardous substance or petroleum products in, on, or at a property: (1) due to any release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment." ASTM defines HRECs as "…a past release of any hazardous substances or petroleum products that has occurred in connection with the property and has been addressed to the satisfaction of the applicable regulatory authority or meeting unrestricted use criteria established by a regulatory authority, without subjecting the property to any required controls (for example, property use restrictions, activity and use limitations, institutional controls, or engineering controls)." ASTM defines CRECs as a REC "…resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority (for example, as evidenced by the issuance of a no further action letter or equivalent, or meeting risk-based criteria established by regulatory authority), with hazardous substances or petroleum products allowed to remain in place subject to the

implementation of required controls (for example, property use restrictions, activity and use limitations, institutional controls, or engineering controls)."

Other environmental considerations include site features or conditions that may have an environmental component of interest but which do not meet the ASTM definition of a REC, CREC, or HREC. ASTM does not necessarily require any actions to address the presence or condition, but such conditions are identified for the sake of thoroughness and completeness.

The United States Environmental Protection Agency ("USEPA" or "EPA") has stated that ASTM Standard E 1527-13, is consistent with the Standards and Practices for All Appropriate Inquires (AAI), Final Rule (40 Code of Federal Regulations [CFR], Part 312) and is compliant with the statutory criteria for all appropriate inquires. All appropriate inquires, as defined in the AAI Final Rule, must be conducted by persons seeking the landowner liability protections under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) prior to acquiring a property or seeking or receiving federal Brownfields grants under the authorities of CERCLA. The purpose of AAI, as defined in the AAI Final Rule, was to identify releases and threatened releases of hazardous substances which cause or threaten to cause the incurrence of response costs.

As part of this Phase I ESA, Ardent also assessed whether a vapor encroachment condition (VEC) exists at the site. The VEC assessment was completed following the ASTM E 2600-15 Standard Guide for Vapor Encroachment Screening on Property Involved in Real Estate Transactions (ASTM Standard E 2600-15). The objective of this work was to evaluate the possibility that hazardous materials or other adverse environmental conditions are present due to past or present use of the site and/or properties in the site vicinity.

The objective of the subsurface investigation was to assess whether elevated concentrations of lead and other chemicals (e.g. volatile organic compounds [VOCs], petroleum hydrocarbons, and metals) were present in on-site soils.

1.2 Involved Parties

Mr. Tyler Burt of Ardent conducted the historical research, site reconnaissance, regulatory inquiries, and document review. Mr. Paul Roberts, who meets the definition of an

environmental professional as set forth in the AAI Final Rule, completed oversight and review.

1.3 Scope of Work

Ardent's scope of work for this Phase I ESA and Subsurface Investigation is consistent with ASTM Standard E1527-13 and E-2600-15 and included the activities listed below.

- **Review of User Provided Information** – Review of information regarding title and judicial records for environmental liens or activity and use limitations, recorded environmental liens, actual or specialized knowledge or commonly known information regarding environmental conditions at the site, the relationship of the purchase price of the property to the fair market value, readily available maps, environmental reports, and other environmental documents pertaining to the site, as available and obtained from the user/client.
- **Records Review** – Acquisition and review of records, including federal, state, tribal, and local regulatory agency databases, for the site and for properties located within a specified radius of the site; local regulatory agency files for the site and selected nearby properties of potential environmental concern; physical setting sources, including topographic maps, geologic maps, and geologic and hydrogeologic reference documents; and historic land use information including aerial photographs, historical fire insurance rate maps, building department records, and city directories, as necessary, that are reasonably ascertainable, publicly available, can be obtained within reasonable time and cost, and are practically reviewable.
- **Vapor Encroachment Condition (VEC)** – Review available regulatory and client provided data to assess Tier 1 non-numeric screening for the site. Ardent evaluated whether contaminants were present in soil and/or groundwater in the site vicinity which might pose a VEC at the site.
- **Site Reconnaissance** – Performance of a site reconnaissance is to visually observe the site and any structure(s) located on the site to the extent not obstructed by bodies of water, adjacent buildings, or other obstacles. The purpose of the site reconnaissance is to obtain information indicating the likelihood of identifying RECs in connection with the site, including the general site setting, site usage, use and storage of hazardous materials and petroleum products, disposal of waste products and materials, sources of polychlorinated biphenyls (PCBs), and evidence of releases and possible risks of contamination from activities at adjacent properties.
- **Interviews** – Interviews with site representatives, including owners, occupants, and site managers, regarding the environmental condition of the site to the extent necessary and such persons are available. Interviews with state and/or local government officials as necessary.
- **Subsurface Investigation** – Ardent retained a State-licensed contractor to excavate seven test pits to investigate the areas of concern discovered during completion of the Phase I ESA. The test pits were excavated to depths of up to 5 feet below the ground surface (bgs). Selected soil samples were analyzed for lead, total petroleum hydrocarbons carbon chain C_4-C_{35} (TPHcc), volatile organic compounds (VOCs), and

Title 22 metals in general accordance with EPA Method Nos. 6010, 8015 (modified), 8260B, and 6010B/7470A.

- **Report** – Evaluation of the information and data obtained by the Phase I ESA and Subsurface Investigation process outlined above and preparation of this report documenting findings and providing opinions and conclusions regarding possible environmental impacts and RECs at the site.

1.4 Limitations and Exceptions

The environmental services described in this report have been conducted in general accordance with current regulatory guidelines and the standard-of-care exercised by environmental consultants performing similar work in the project area. No warranty, expressed or implied, is made regarding the professional opinions presented in this report.

This document is intended to be used only in its entirety. No portion of the document, by itself, is designed to completely represent any aspect of the project described herein. Ardent should be contacted if the reader requires any additional information or has questions regarding the content, interpretations presented, or completeness of this document.

The findings, opinions, and conclusions are based on an analysis of the observed site conditions and the referenced literature. It should be understood that the conditions of a site could change with time as a result of natural processes or the activities of man at the site or nearby properties. In addition, changes to the applicable laws, regulations, codes, and standards of practice may occur due to government action or the broadening of knowledge. The findings of this report may, therefore, be invalidated over time, in part or in whole, by changes over which Ardent has no control. Ardent cannot warrant or guarantee that not finding indicators of any particular hazardous material means that this particular hazardous material or any other hazardous materials do not exist on the site. Additional research, can reduce the uncertainty, but no techniques now commonly employed can eliminate the uncertainty altogether.

1.5 Special Terms and Conditions

As indicated in Section 13.1.5 of ASTM Standard E 1527-13, the following, which is not intended to be all inclusive, represents out-of-scope items with respect to a Phase I ESA: asbestos-containing materials (ACMs), radon, lead-based paint (LBP), lead in drinking water, wetlands, regulatory compliance, cultural and historic risk, industrial hygiene, health and safety, ecological resources, endangered species, indoor air quality unrelated to

releases of hazardous substances or petroleum products into the environment, biological agents, and mold. As part of our agreement with the client, Ardent visually assessed site buildings (if present) for possible ACMs, LBP, and mold. In addition, ASTM Standard E 2600-15 supplements the ASTM Standard E 1527-13 to include evaluation of VEC using Tier 1 screening.

This study did not include an evaluation of geotechnical conditions or potential geologic hazards. In addition, Ardent did not address interpretations of zoning regulations, building code requirements, or property title issues.

1.6 User Reliance

This report may be relied upon and is intended exclusively for use by the client, its partners, members, investors, affiliates, successors and assigns, and lenders. Any use or reuse of the findings, opinions, and/or conclusions of this report by parties other than the foregoing parties is undertaken at said parties' sole risk.

1.7 Physical Limitations

No physical limitations were encountered during the completion of this Phase I ESA and Subsurface Investigation report.

1.8 Data Gaps

No significant data gaps were noted during the preparation of this Phase I ESA report.

2 GENERAL SITE CHARACTERISTICS

The following sections describe the location and the current uses of the site and adjacent properties. A site location map is presented as Figure 1, a site vicinity map is presented as Figure 2, and a proposed redevelopment map is presented as Figure 3. Selected photographs of the site and surrounding properties are provided in Appendix A.

2.1 Location and Legal Description

The site is located on the northwest corner of the intersection of Central Avenue and Sycamore Canyon Boulevard in the city of Riverside, California (Figure 3). No address has been assigned to the site. The Tax Assessor's Parcel Number (APN) assigned to the site is 256-05-0012.

The site is bounded to the west by vacant land; to the south by Central Avenue; and to the east and north by Sycamore Canyon Boulevard. A description of the site boundary was obtained during the site reconnaissance and information provided by the client.

2.2 Site Description and Current Site Uses/Operations

The following paragraphs present a description of the site, the activities being conducted on-site, the heating and cooling systems utilized in the site building (if present), the sewage disposal system, and the potable water provider for the site, if any.

2.2.1 Site Description

The site is an irregular-shaped property that comprises approximately 9.44-acres. The site is currently vacant land (Figure 3).

2.2.2 Occupants

The site is currently unoccupied.

2.2.3 Heating and Cooling Systems

No heating or cooling systems are present at the site. Future heating and cooling systems will likely be powered by natural gas and/or electricity provided by a public utility provider.

2.2.4 Sewage Disposal/Septic Systems

No sewage disposal or septic systems are present at the site. Future sewage disposal will likely be connected to the municipal sewer systems.

2.2.5 Potable Water

No groundwater wells or potable water are present on-site. Future potable water will likely be supplied by a municipal water provider.

2.3 Adjacent Properties

In general, the site vicinity is vacant land (Figure 3). Sycamore Canyon Boulevard is located immediately north of the site, beyond which is the Moreno Valley Freeway. The Moreno Valley Freeway is a section of highway where the State Route 60 (SR-60) and the Interstate 215 Freeway (I-215) conjoin. Vacant land is located immediately west of the site, beyond which are single-family residences. Central Avenue is located immediately south of the site,

beyond which are vacant land and single family residences. Sycamore Canyon Boulevard is located immediately east of the site, beyond which is vacant land.

No aboveground storage tanks (ASTs), evidence of underground storage tanks (USTs), or large quantities of possible hazardous materials or wastes were noted being stored by off-site facilities along the site property line. In general, these adjacent properties would not be considered an environmental concern to the site.

3 USER PROVIDED INFORMATION

The following sections summarize information provided by the user to assist the environmental professional in identifying the possibility of RECs in connection with the subject property.

3.1 Current Title Information

A Preliminary Title Report provided by the client was reviewed by Ardent. The Preliminary Title Report was prepared by Stewart Title of California, Inc., dated February 26, 2020. The current owner of the site is listed as “KA Real Estate, LLC, a California Limited Liability Company”. A copy of the Preliminary Title Report is provided in Appendix B.

3.2 Reason for Performing Phase I ESA

Ardent, by request of the City of Riverside, was retained by KA Enterprises to perform the Phase I ESA in preparation for on-site residential redevelopment.

3.3 Other User Provided Information

KA Enterprises provided Ardent with a Phase I ESA completed in 2013 by Hillmann Consulting, LLC (Hillmann; referred to herein as the 2013 “Phase I ESA”) and a Preliminary Geotechnical Evaluation completed by Nova in 2020. The following presents a summary of Ardent’s review.

3.3.1 Phase I ESA, dated November 15, 2013

The 2013 Phase I ESA was completed by Hillmann during a proposed acquisition of the site by Strata Equity. The proposed use of the site by Strata Equity was not documented. The following presents a summary of Hillmann’s findings, conclusions, and recommendations:

- From at least 1931 through 1938, the site appeared as vacant land. By 1953, the property was developed with several small structures in the northeastern portion

of the site. By 2005, the site is vacant and appears to be in the process of redevelopment.

- Groundwater information was not provided for the site.
- No other environmental concerns were noted.

Based on the results of the 2013 Phase I ESA, Hillmann concluded that no environmental concerns were noted. Based on the results of the investigation, no additional environmental investigations were recommended.

In general, Ardent agrees with Hillmann's findings and conclusions. As stated herein, the "small structures" noted by Hillmann as being located in the northeastern portion of the site appeared to Ardent as actually being located immediately east of the site in the general vicinity of Sycamore Canyon Boulevard. These structures appear to have been used for residential purposes and would not be considered an environmental concern.

3.3.2 Preliminary Geotechnical Evaluation, dated January 20, 2020

Nova completed this geotechnical evaluation for KA Enterprises during its real estate due diligence activities as part of its potential purchase. The geotechnical evaluation was completed based on the knowledge of the site being redeveloped for residential purposes (Figure 3). As noted on Figure 3, the site is planned to be developed with seven new apartment buildings with an outdoor swimming pool and spa, putting green, and paved driveways and parking stalls.

As part of the geotechnical evaluation, Nova completed a review of two previous geotechnical investigations in which a total of 29 test pits were excavated and 5 seismic refraction geophysical surveys were completed. There was no indication of stained or odorous soils during test pit excavations. These investigations were performed in order to assess the geologic conditions in the subsurface beneath the site. Nova concluded that a large portion of the site contained fill materials at depths of up to 35 feet bgs. Other areas of the site contained near-surface granitic bedrock and alluvium.

For geotechnical purposes, the materials beneath future building pads must be compacted prior to construction activities. In order to prepare the site for

redevelopment, Nova has recommended that, in areas where future building pads are to be constructed on fill materials, these areas are to undergo deep-dynamic compaction. Deep-dynamic compaction is a process in which a large tamper is repeatedly raised and dropped to compact materials to depths of up to 25 feet bgs. Following compaction, Nova has recommended that these areas be over excavated and re-compacted to a depth of five feet below the finished pad. Clean import soil will then be used to balance the site to proposed grade.

As noted in Section 5.8.5, Mr. Eugene Marini of KA Enterprises indicated that it was his understanding that shallow bedrock had been removed with explosives to ready the site for redevelopment. The pulverized materials were used as backfill and no import soil was brought to the site. Unfortunately, there was no documentation to support this statement. Based on this information, the undocumented fill was considered a possible environmental concern to the site. Since the origin of these materials is unknown and the site is planned to be used for residential purposes, Ardent recommends that the undocumented fill be chemically analyzed to verify that the materials are “clean.” Any future import soils used at the site should also be chemically analyzed to insure “clean” materials.

4 PHYSICAL SETTING

The following sections include discussions of topographic, geologic, and hydrogeologic conditions in the vicinity of the site, based upon our document review and our visual reconnaissance of the site and adjacent areas.

4.1 Site Topography

Based on the review of the United States Geological Survey (USGS) 7.5 Minute Series, Riverside, California, Topographic Quadrangle Map dated 2012, the site has an elevation of approximately 1,340 feet above mean sea level (msl) and slopes to the southwest.

4.2 Geology

The site is located in the eastern portion of the Peninsular Ranges geomorphic province of southern California. This geomorphic province varies in width from 30 to 100 miles and extends 125 miles, from the Transverse Ranges and the Los Angeles Basin south into Baja Mexico. In general, the province consists of rugged mountains underlain by Mesozoic-age

igneous and metamorphic rocks to the east and a dissected coastal plain underlain by Cretaceous- and Tertiary- age sediments to the west.

The site is located in the city of Riverside, which lies on granitic bedrock known as the Perris Block. Materials are characterized by Pliocene to Pleistocene alluvium ranging in thickness from 200 to 2,000 feet. The site is locally located in a hilly area at the base of the Box Springs Mountains where alluvial deposits overlie fractured bedrock.

4.3 Oil and Gas Maps

Based on a review of the California Geologic Energy Management Division (CalGEM) on-line well finder, the site does not lie within an activity oil field and no oil or natural gas wells have been drilled on-site or in the immediate site vicinity.

4.4 Site Hydrology

The following sections discuss the site hydrology in terms of both surface waters and groundwater.

4.4.1 Surface Waters

No natural water bodies are located on the site. An unlined stream channel is located approximately 400 feet south to southwest of the site and beyond Central Avenue. This unlined channel traverses away from the Box Springs Mountains in a westerly direction. This stream channel is shown on the topographical maps as a blue-line.

4.4.2 Groundwater

No groundwater information was provided for the site in regulatory records or files. Ardent researched information of close-by properties undergoing groundwater investigations on the State Water Resources Control Board (SWRCB) GeoTracker website. There was no readily available information regarding depth to groundwater for the site or on properties within the general site vicinity. Groundwater is expected to traverse through fractured bedrock at an unknown depth. Direction of flow is expected to follow surface topography away from the Box Springs Mountains in a southwesterly direction.

5 HISTORICAL LAND USE

Ardent conducted a historical land use record search for both the site and surrounding areas. This included a review of one or more of the following sources that were found to be both reasonably ascertainable and useful for the purposes of this Phase I ESA: historical aerial photographs, historical fire insurance maps, historical city directories, building permits and plans, topographic maps, property tax records, zoning/land use records, and a review of a prior environmental assessment report regarding the site. Historical documentation were obtained from the 2013 Phase I ESA. A copy of the 2013 Phase I ESA is provided in Appendix C of this report.

5.1 Summary of Historical Land Use of the Property

From at least 1931 through the time of this report, the site has been vacant land. In recent years, it was reported that portions of the site underwent various earthwork activities including the excavation of alluvial soils and removal of shallow bedrock to ready the site for redevelopment.

5.2 Summary of Historical Land Use of Adjoining Properties

From at least 1931 through 1938, the site vicinity was mainly vacant land with sporadic residences. A street was noted in the same located as the Moreno Valley Freeway. By 1953, tract homes were being constructed further south of the site. By 1967, the Moreno Valley Freeway had been constructed and Sycamore Canyon Road was present. During this time a small group of structures, possibly residences, were located immediately northeast of the site. By 1994, the structures had been demolished. In 2005, Sycamore Canyon Road was being realigned into its current configuration. It appears that the small group of historical residences may have been located immediately off-site in the location of the current orientation of Sycamore Canyon Road.

5.3 Fire Insurance Rate Maps

Historical Sanborn Fire Insurance Rate Maps (Sanborn maps) were requested from Environmental Database Resources (EDR). According to EDR, Sanborn maps are not available for the site vicinity.

5.4 Historical Aerial Photographs

Historical aerial photographs for selected years between 1931 and 2012 were reviewed from NETR's historic aerial database. The following presents a summary of our review.

- **1931 and 1938** – The site is vacant land. A road is depicted in the current orientation of the Moreno Valley Freeway. The site vicinity is generally vacant land with some sporadic residences.
- **1953, 1967, 1977, 1989, and 1994** – The site remained vacant. Four small structures, possibly residences, were noted immediately northeast of the site. The properties located immediately east, west, and south of the site were vacant land. Tract homes were being constructed further south of the site. By 1967, the Moreno Valley Freeway was present. By 1977, Central Avenue had been constructed in its current configuration. By 1994, the group of small structures had been demolished.
- **2005 and 2006 –** The site is vacant land. Sycamore Canyon Boulevard was being realigned into its current configuration. The site vicinity appeared little changed.
- **2009, 2010, and 2012 –** The site and immediate site vicinity appeared unchanged and in their current configuration. The general site vicinity continues to be developed for residential purposes.

5.5 Building Department

The City of Riverside Building and Safety Department (RBSD) maintains building permits for the site and surrounding properties. Since the site does not currently have an address and no historical addresses are known, Ardent completed a records search based on the site APN. No records were available for review.

5.6 City Directories

City directories were obtained from EDR using the site address. Selected city directories from 1921 through 2013 were reviewed. The site was not listed. Based on the listings of the surrounding properties, the site vicinity is primarily used for residential purposes. No listings of environmental concern were noted.

5.7 Historical Topographic Maps

Historical topographic maps were provided by EDR for review. The maps provided for the site were dated 1901, 1947, 1953, 1967, 1973, and 1980. From at least 1955 to 1980, the topographic maps depicted the Moreno Valley Freeway. The small group of structures noted immediately northeaster of the site were shown on the 1953 through 1980 maps.

5.8 Interviews

Interviews were not conducted with site personnel (e.g., past and present owners, operators, and/or occupants) by Ardent because the land is and has been historically unoccupied.

5.8.1 Interview with Owner

The owner was not available to be interviewed during this assessment.

5.8.2 Interview with Site Manager

No Site Manager was available to be interviewed.

5.8.3 Interviews with Occupant

The site contains no occupants, and therefore, no occupants could be interviewed.

5.8.4 Interviews with Local Government Officials

Local government officials were interviewed during completion of this Phase I ESA. Information obtained is presented throughout this report.

5.8.5 Interviews with Others

Ardent interviewed Mr. Marini of KA Enterprises, owner of the site. According to Mr. Marini, a portion of the on-site soils were reworked to ready the site for redevelopment. This included the use of explosives to remove bedrock. The pulverized materials were reportedly used on-site as backfill. According to Mr. Marini, no import materials were used for backfill. No written documentation was available to support this statement. Mr. Marini was unaware of any environmental concerns related to the site or properties in the site vicinity.

5.9 Previous Reports and Documents

A previous Phase I ESA and geotechnical report were provided for Ardent's review. A summary of these reports are provided in Section 3.7.

6 SITE RECONNAISSANCE

The site and site vicinity reconnaissance was performed by Ardent on March 6, 2020. The site reconnaissance involved a walking tour of the site and visual observations of adjoining properties. At the time of the site reconnaissance, the weather was cloudy and there were no weather related obstructions at the site. Selected photographs taken during these activities are included in Appendix A. At the time of the site reconnaissance, the site was vacant undeveloped land sporadically covered with dry vegetation.

6.1 Use and Storage of Hazardous Substances and Petroleum Products

No use or storage of hazardous substances or petroleum products were noted at the site.

6.2 Storage and Disposal of Hazardous Wastes

No storage or disposal of hazardous wastes were observed during the site reconnaissance.

6.3 Unidentified Substance Containers

No unidentified substance containers were observed during the site reconnaissance.

6.4 ASTs and USTs

No evidence of ASTs or USTs were observed during the site reconnaissance.

6.5 Evidence of Releases

No evidence of chemical releases on the site, such as odors, stressed vegetation, stains, leaks, pools of liquids, and spills, were observed during the site reconnaissance.

6.6 PCBs

Historically, PCBs (a group of hazardous substances and suspected human carcinogens) were widely used as an additive in cooling oils for electrical components. Typical sources of PCBs can include electrical transformers. Three pad-mounted transformers were noted in the northeastern portion of the site. No stains, odors, or evidence of a release were noted in the vicinity of these features. Based on this information, these features would not be considered as an environmental concern.

6.7 Suspect ACM

The manufacture of most ACM was phased out in the 1970s, ending in 1980. Previously manufactured ACM that were in stock continued to be used through approximately 1981. Some non-friable ACM are still manufactured. In general, buildings constructed after 1981 have a negligible potential to contain friable ACM and a low potential for most non-friable ACM. No structures exist at the site and, therefore, ACMs are not present.

6.8 LBP

The manufacture of LBP was phased out in approximately 1978. No structures or buildings currently exist at the site and, therefore, LBP are not present.

6.9 Indications of Water Damage or Mold Growth

There are no buildings on the site, therefore, no visual indications of water damage or visible mold growth were noted.

6.10 Wastewater Systems

No wastewater systems were observed during the site reconnaissance.

6.11 Stormwater Systems

No stormwater drains were noted at the site.

6.12 Wells

No groundwater wells (i.e. monitoring, production, etc.) were noted or reportedly used at the site.

6.13 Other Subsurface Structures

No other subsurface structures, such as clarifiers, sumps, or pit were observed.

6.14 Other Issues

No other on- or off-site issues of environmental concern were noted.

7 ENVIRONMENTAL DATABASE SEARCH

A computerized environmental information database search was performed by Environmental Data Resources Inc. (EDR), of Shelton, Connecticut, for this Phase I ESA on March 3, 2020. The database search included federal, state, local, and tribal databases. A summary of the environmental databases searched, their corresponding search radii, and number of noted facilities of environmental concern is presented in Appendix D. In addition, a description of the assumptions and approach to the database search is also provided in Appendix D. The review was conducted to evaluate whether the site or properties within the vicinity of the site have been reported as having experienced significant unauthorized releases of hazardous substances or other events with potentially adverse environmental effects.

No unmapped properties, due to poor or inadequate address information, were identified in the database report. The following paragraphs describe the databases that contain noted properties of environmental concern, and include a discussion of the regulatory status of the facilities and potential environmental impact to the subject site.

7.1 Federal National Priorities List (NPL): Distance Searched – 1 mile

The NPL is the USEPA's database of uncontrolled or abandoned hazardous waste properties identified for priority remedial actions under the Superfund program. This database includes proposed NPL listings.

Neither the site nor properties within a 1 mile radius were listed on this database.

7.2 Federal Delisted NPL: Distance Searched – 1 mile

This database contains delisted NPL properties under the Superfund program. The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the USEPA uses to delete properties from the NPL. In accordance with 40 Code of Federal Regulations (CFR) 300.425. (e), properties may be deleted from the NPL where no further response is appropriate.

Neither the site nor properties within a 1 mile radius were listed on this database.

7.3 Federal Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) List: Distance Searched – 0.5 mile

The CERCLIS database has been replaced by the Superfund Enterprise Management System (SEMS) database, which tracks hazardous waste sites and remedial activities performed in support of the EPA's Superfund Program. This database also includes properties listed on the SEMS-ARCHIVE database for facilities with statuses of No Further Remedial Action Planned (NFRAP).

Neither the site nor properties within a 0.5-mile radius were listed on these databases.

7.4 Federal Corrective Action Report (CORRACTS): Distance Searched – 1 mile

The USEPA maintains this database of Resource Conservation and Recovery Act (RCRA) facilities that are undergoing corrective action. A corrective action order is issued when there has been a release of hazardous waste or constituents into the environment from a RCRA facility.

Neither the site nor properties within a 1-mile radius were listed on this database.

7.5 Federal Resource Conservation and Recovery Act (RCRA) Treatment, Storage, and Disposal (TSD) Facilities List: Distance Searched – 0.5 mile

The RCRA TSD database (non-CORRACTS) is a compilation by the EPA of facilities that report generation, storage, transportation, treatment, or disposal of hazardous waste.

Neither the site nor properties within a 0.5-mile radius were listed on this database.

7.6 Federal RCRA Generators List: Distance Searched – Site and Adjoining Properties

This list identifies sites that generate hazardous waste as defined by RCRA. Inclusion on this list is for permitting purposes and is not indicative of a release.

Neither the site nor adjoining properties were listed on this database.

7.7 Federal Institutional Control/Engineering Control Registries: Distance Searched – Site

These lists identify properties with engineering and/or institutional controls. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or affect human health. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on the site. Deed restrictions are generally required as part of the institutional controls.

The site was not listed on this database.

7.8 Federal Emergency Response Notification System (ERNS) List: Distance Searched – Site

The ERNS database, maintained by the USEPA, contains information on reported releases of oil and hazardous substances.

The site was not listed on this database.

7.9 Federal Brownfield List: Distance Searched – 0.5 mile

The USEPA Brownfield database, entitled Targeted Brownfield's Assessments (TBA), lists properties for which the USEPA is providing funding and/or technical support for environmental assessments and investigations. The objective of the TBA is to promote cleanup and redevelopment of undesirable properties with environmental issues.

Neither the site nor properties within a 0.5-mile radius were listed on this database.

7.10 State Calsites Database (Calsites) or State-Equivalent CERCLIS: Distance Searched – 1 mile

The Calsites database, also known as the State-equivalent CERCLIS, is maintained by the Cal-EPA Department of Toxic Substance Control (DTSC). This database contains information on AWP and both known and potentially contaminated properties. These properties are presented by EDR on the EnviroStor databases.

Neither the site nor properties within a 1-mile radius were listed on this database.

7.11 State Solid Waste Landfill Sites (SWLF): Distance Searched – 0.5 mile

The SWLF database consists of open and closed solid waste disposal facilities and transfer stations. The data comes from the Integrated Waste Management Board's Solid Waste Information System (SWIS) and the SWRCB Waste Management Unit Database (WMUD) database.

Neither the site nor properties within a 0.5-mile radius were listed on this database.

7.12 State Leaking Underground Storage Tank (LUST) Lists: Distance Searched – 0.5 mile

The LUST information system is obtained from by the SWRCB and the RWQCB.

Neither the site nor properties within a 0.5-mile radius were listed on this database.

7.13 State Underground Storage Tank (UST) and Aboveground Storage Tank (AST) Registration List: Distance Searched – Site and Adjoining Properties

UST and AST databases are provided by the SWRCB. Inclusion on these lists is for permitting purposes and is not indicative of a release.

Neither the site nor adjoining properties were listed on this database.

7.14 State Voluntary Cleanup Programs (VCPs): Distance Searched – 0.5 mile

The State VCP database lists low threat level properties with either confirmed or unconfirmed releases. Project proponents have requested that the DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Neither the site nor properties within a 0.5-mile radius were listed on this database.

7.15 Indian Reservations: Distance Searched – 1 mile

This list depicts Indian administered lands of the United States that have an area equal to or greater than 640-acres. No Indian Reservations were listed within a 1-mile radius from the site. Due to the lack of Indian Reservations within 1-mile of the site, other tribal database listings required by ASTM and AAI were deemed not applicable. These listings would include tribal-equivalent NPL, CERCLIS, Landfill and/or Solid Waste Disposal, LUST, UST and AST Registrations, Institutional Control/Engineering Control Registries, VCPs, and Brownfields.

Neither the site nor properties within a 1-mile radius were listed on this database.

7.16 Other Non-ASTM and AAI Database: Distance Searched – Site

Other databases were included in the EDR report, but are not required by ASTM or AAI. Based on our review, the site is not was listed on these databases.

8 REGULATORY RECORDS REVIEW

The RWQCB, DTSC, South Coast Air Quality Management District (SCAQMD), and County of Riverside Department of Environmental Health (DEH) are lead regulatory agencies for permitting and regulating USTs, ASTs, LUST cases, and facilities that use, store, or generate hazardous waste or hazardous materials. Ardent was able to use the site location to research public records on the RWQCB and DTSC on-line databases because these agencies use property locations as noted on a map to file information. SCAQMD and DEH use addresses to file its information. Since the site has not been assigned an address, no records were obtained from these agencies.

8.1 Regional Water Quality Control Board, Santa Ana Region (RWQCB)

Ardent reviewed information on the SWRCB's GeoTracker website. The site was not listed.

8.2 Department of Toxic Substances Control (DTSC)

Ardent reviewed state and federal case file listings on the DTSC's EnviroStor website. The site was not listed.

9 VAPOR ENCROACHMENT CONDITION (VEC)

Ardent completed a VEC study for the site using Tier 1 criteria as recommended by ASTM E 2600-15. The Tier 1 screening identifies surrounding facilities that pose a possible vapor intrusion source to the site based on the results of the Phase I ESA investigations and certain

criteria outlined by ASTM. These criteria include a certain distance from the target site (referred to by ASTM as within the "area of concern"); the types of chemicals used (referred to by ASTM as the "chemicals of concern"); and a plume test to determine if the plume associated with a source of contamination is close enough to the site to impact indoor air quality. Based on our review of regulatory records, files, databases, client furnished data, site reconnaissance activities, and former remediation efforts, the site would be considered a "low risk" for vapor intrusion.

10 SUBSURFACE INVESTIGATION

Based on the results of the Phase I ESA, Ardent identified two possible RECs. These included the following:

- **Aerially Deposited Lead** - The site is located immediately adjacent to the Moreno Valley Freeway. Due to the close proximity of the site to the freeway, aerially deposited lead from automobiles using leaded-gasoline may be present in shallow soil at the site.
- **Undocumented Fill** - Based on Ardent's review of a recently completed geotechnical report for the site, up to 35 feet of undocumented fill materials were reportedly located in a large portion of the site. Some of these materials were associated with shallow bedrock removal, but the source of other fill materials is unknown. Although representatives familiar with the site indicated that no import soil was used for backfill, there was no documentation to support this statement.

To further assess these potential RECs, Ardent recommended completing a subsurface investigation and collecting shallow soil samples for the analyses of selected chemicals. Prior to start of work, Ardent superimposed the results of the undocumented fill geotechnical evaluation onto a site plan depicting the proposed locations of the future residential buildings (Figure 3). On March 12, 2020, seven test pits (designated TP1 through TP7) were excavated to depths of up to 5 feet bgs in selected areas of the site (Figure 3). Selected soil samples were analyzed for lead, TPHcc, VOCs, and/or Title 22 metals. The following presents the results of this investigation.

10.1 Aerially Deposited Lead

As noted on Figure 3, the seven test pits were located throughout the site to obtain a vast coverage of shallow soil. Soil samples collected at approximately 0.5-foot at each location were analyzed for total lead. Laboratory results indicated concentrations of lead from 1.01 to 28.4 milligrams per kilogram (mg/kg) throughout the site.

Detectable concentrations of lead were compared to the California Department of Toxic Substances Control (DTSC), Human and Ecological Risk Office (HERO), Human Health Risk Assessment Note 3, which provides screening levels for soil for residential properties based on a human health risk criteria (DTSC-SLr). The EPA also provides Regional Screening Levels for soil for residential properties (EPA-RSLr). These very conservative guidelines are based on the protection of human health through dermal contact, inhalation, and ingestion. The DTSC-SLr and EPA-RSLr values for lead are 80 and 400 mg/kg, respectively. Based on this information, the concentrations of lead detected at the site would be considered low and would not pose a human health risk through dermal contact, inhalation, or ingestion at a residential property.

10.2 Undocumented Fill

The four test pits in the southern portion of the site (TP1 through TP4) were also excavated to depths of up to 5 feet bgs for the collection of soil samples of the undocumented fill materials. These soil samples were analyzed for TPHcc, VOCs, and Title 22 metals. Laboratory results of TPHcc and VOCs indicated no detectable concentrations. The laboratory reporting limits were well below the DTSC-SLr and EPA-RSLr values.

Metals are naturally occurring. With the exception of arsenic, concentrations were compared to the human health risk criteria set forth in the DTSC-SLr and EPA-RSLr. Due to the granitic nature of California geology, concentrations of arsenic typically exceed the human health risk guideline prepared by the state and federal agencies and published background concentrations. DTSC completed a study of naturally occurring concentrations of arsenic for import soils at school properties for the Los Angeles Unified School District (LAUSD). Based on its study, the DTSC concluded that arsenic would be considered background at concentrations less than 12 mg/kg (DTSC, 2005). Based on these criteria, laboratory results of the soil samples analyzed indicated no detectable to low concentrations of Title 22 metals. The detectable concentrations of metals would not pose a human health risk through dermal contact, inhalation, or ingestion at a residential property.

Based on the results of the above sampling event, the two possible concerns identified during the Phase I ESA, aerially deposited lead and undocumented fill, would not be considered an

REC. Based on this assessment, Ardent is recommending no additional investigations at this time.

11 FINDINGS, OPINIONS AND CONCLUSIONS

Based upon the results of this Phase I ESA the following findings, opinions and conclusions are provided.

11.1 Findings and Opinions

The following presents a summary of the findings and opinions associated with this Phase I ESA performed for the site, including known or suspect RECs, HRECs, CRECs, and de minimis environmental conditions (i.e., conditions that generally do not present a material risk of harm to public health or the environment).

- From at least 1931 through the time of this report, the site has been vacant land. In recent years, it was reported that portions of the site underwent various earthwork activities including the removal of shallow bedrock to ready the site for redevelopment.
- There was no readily available information regarding depth to groundwater for the site or on properties within the general site vicinity. Groundwater is expected to traverse through fractured bedrock at an unknown depth. Direction of flow is expected to follow surface topography away from the Box Springs Mountains in a southwesterly direction.
- The site is located immediately adjacent to the Moreno Valley Freeway. Due to the close proximity of the site to the freeway, aerially deposited lead from automobiles using leaded-gasoline may be present in shallow soil at the site. The possible presences of lead in shallow soil would be considered a possible REC.
- Based on Ardent's review of a recently completed geotechnical report for the site, up to 35 feet of undocumented fill materials were reportedly located in a large portion of the site. Some of these materials were associated with the shallow bedrock removal, but the source of other fill materials is unknown. Although representatives familiar with the site indicated that no import soil was used for backfill, there was no documentation to support this statement. Therefore, the undocumented fill would be considered a possible REC.
- The Phase I ESA identified two possible RECs, aerially deposited lead and undocumented fill. To further assess these possible concerns, Ardent excavated seven test pits at target locations throughout the site. Laboratory results of shallow soil samples indicated no detectable to low concentrations of lead, below the state and federal screening levels for the protection of human health. Laboratory results of soil samples collected from the undocumented fill indicated no detectable concentrations of TPHcc and VOCs, and no detectable to low concentrations of Title 22 metals, well below the state and federal screening levels for the protection of human health and background concentrations of arsenic. Based on this information, the aerially deposited lead and the undocumented fill would not be considered an REC.
- No other on- or off-site environmental concerns were noted.

11.2 Conclusions

Ardent has performed this Phase I ESA and Subsurface Investigation in general conformance with the scope and limitations of the ASTM Practice E 1527-13, ASTM Practice E 2600-15, and the EPA Standards and Practices for AAI, Final Rule (40 CFR, Part 312), for the property located on the northwest corner of the intersection of Central Avenue and Sycamore Canyon Boulevard in the city of Riverside, California. Any limitations or exceptions encountered during completion of this report are stated in Section 1.4. Based on this Phase I ESA and Subsurface Investigation, no evidence or indication of RECs, HRECs, CRECs, or conditions indicative of releases or threatened releases of hazardous substances on, at, in, or to the site has been revealed.

12 RECOMMENDATIONS

Based on the results of this assessment, Ardent has no recommendations for further investigations at this time.

13 SELECTED REFERENCES

California Department of Toxic Substances Control (DTSC), 2005, Final Report Background Metals at Los Angeles Unified School Sites – Arsenic: Supplement to the DTSC Preliminary Endangerment Assessment (PEA) for evaluating background concentrations of arsenic at Los Angeles Unified School District (LAUSD) school sites, dated June 6.

California Department of Toxic Substances Control (DTSC), Human and Ecological Risk Office (HERO), 2019, Human Health Risk Assessment (HHRA) Note Number 3, DTSC-Modified Screening Levels (DTSC-SLs), dated April.

Environmental Database Resources (EDR), 2020, Radius Map, dated March 3.

Environmental Protection Agency (EPA) Region 9, 2019, Regional Screening Levels (RSLs) Summary Table, dated November.

Hillmann Consulting, Inc., (Hillmann), 2013, Phase I Environmental Site Assessment, “Canyon Crest”, Northwest Corner of Central Avenue and Sycamore Canyon Boulevard, Riverside, California; Report prepared for Strata Equity, San Diego, California, dated November 15.

Nova Engineering (Nova), 2020, Preliminary Geotechnical Evaluation, Proposed Crestview Apartment Complex, Sycamore Canyon Boulevard and Central Avenue, Riverside, California; Report prepared for KA Enterprises, San Diego, California, dated January 20.

Marini, Eugene, 2020, KA Enterprises: Oral communication.

QUALIFICATIONS STATEMENT AND SIGNATURE OF ENVIRONMENTAL PROFESSIONAL

Mr. Paul Roberts states that the Phase I ESA was performed under his direct supervision, and that he has reviewed and approved the report, and the methods and procedures employed in the development of the report conform to the minimum industry standards. Mr. Roberts certifies that Ardent project personnel and subcontractors are properly licensed and/or certified to do the work described herein.

Pursuant to Paragraph 12.13 of the ASTM Standard E1527-13:

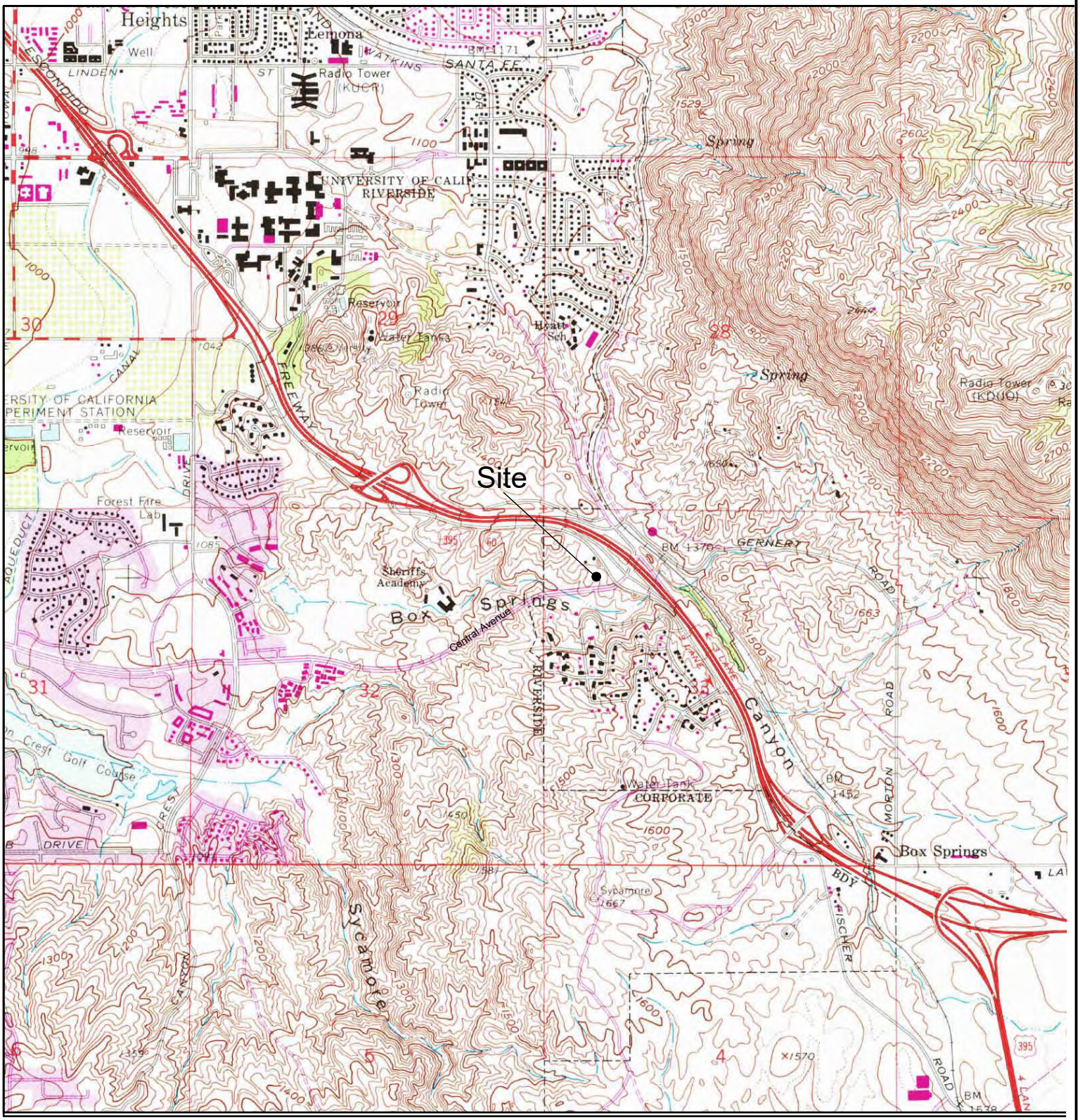
I declare that, to the best of my professional knowledge and belief, I meet the definition of *Environmental professional* as defined in §312.10 of 40 CFR 312. I have the specific qualifications based on education, training, and experience to assess a *property* of the nature, history, and setting of the site. I have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

Paul Roberts
Principal Geologist

TABLE 1 – LABORATORY RESULTS OF SOIL SAMPLES

Test Pit ID	Sample Rational	Sample Depth (feet bgs)	Date Sampled	TPHcc (mg/kg)			VOCs (mg/kg)	Title 22 Metals (mg/kg)	Total Lead (mg/kg)
				TPHg C_6-C_{12}	TPHd C_{13}-C_{22}	TPHg C_{23}-C_{32}			
TP1	Aerially Deposited Lead	0.5	3/12/2020	---	---	---	---	---	**2.35**
	Undocumented Fill	5	3/12/2020	ND<10	ND<10	ND<50	ND<0.005-0.020	Below state and federal screening levels for the protection of human health for residential land use and background for arsenic	**3.23**
TP2	Aerially Deposited Lead	0.5	3/12/2020	---	---	---	---	---	**1.01**
	Undocumented Fill	5	3/12/2020	ND<10	ND<10	ND<50	ND<0.005-0.020	Below state and federal screening levels for the protection of human health for residential land use and background for arsenic	**6.36**
TP3	Aerially Deposited Lead	0.5	3/12/2020	---	---	---	---	---	**28.4**
	Undocumented Fill	5	3/12/2020	ND<10	ND<10	ND<50	ND<0.005-0.020	Below state and federal screening levels for the protection of human health for residential land use and background for arsenic	**8.54**
TP4	Aerially Deposited Lead	0.5	3/12/2020	---	---	---	---	---	**3.79**
	Undocumented Fill	5	3/12/2020	ND<10	ND<10	ND<50	ND<0.005-0.020	Below state and federal screening levels for the protection of human health for residential land use and background for arsenic	**1.44**
TP5	Aerially Deposited Lead	0.5	3/12/2020	---	---	---	---	---	**2.05**
TP6	Aerially Deposited Lead	0.5	3/12/2020	---	---	---	---	---	**1.67**
TP7	Aerially Deposited Lead	0.5	3/12/2020	---	---	---	---	---	**3.46**
Regulatory Screening Levels									
DTSC-SLr				NA	NA	NA	Various	Various	80
EPA-RSLr				520	96	230,000	Various	Various	400

Notes:
Test Pit ID - test pit identification
feet bgs - feet below the ground surface
TPHcc - total petroleum hydrocarbons carbon chain C_6-C_{32} analyzed in general accordance with EPA Method No. 8015 (modified)
TPHg - total petroleum hydrocarbons as gasoline
TPHd - total petroleum hydrocarbons as diesel fuel
TPHo - total petroleum hydrocarbons as oil
VOCs - volatile organic compounds analyzed in general accordance with EPA Method No. 8260B
mg/kg - milligrams per kilogram
Title 22 Metals analyzed in general accordance with EPA Method No. 6010/7000 series
ND - no detectable concentrations above the laboratory reporting limit
NA - not available
--- - not analyzed
DTSC-SLr - California Department of Toxic Substances Control, Human and Ecological Risk Office (HERO), Human Health Risk Assessment (HHRA), Note 3, Screening Levels for residential land use, dated April 2019
EPA RSLr - Environmental Protection Agency (EPA), Regional Screening Levels for residential land use, dated November 2019



Source: United States Geological Survey (USGS) 7.5 minute series, Riverside, California, Topographic Quadrangle Map dated 1980

N

ARDENT ENVIRONMENTAL GROUP, INC.	PROJECT NO. 101150001	SITE LOCATION MAP	FIGURE 1
	DATE 04/20	NWC CENTRAL AVENUE AND SYCAMORE CANYON BOULEVARD RIVERSIDE, CALIFORNIA	

LEGEND

- Approximate Site Boundary
- ① Vacant Land
- ② Multi-Tenant Residences
- ③ Single Family Residences

N

NO SCALE

NOTE: ALL DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE.

ARDENT ENVIRONMENTAL GROUP, INC.

PROJECT NO. 101150001	SITE VICINITY MAP	FIGURE 2
DATE 04/20	NWC CENTRAL AVENUE AND SYCAMORE CANYON BOULEVARD RIVERSIDE, CALIFORNIA	

LEGEND

Geologic contact

Qaf Undocumented fill

TP1 Test pit location and designation

N

Approximate Scale, Feet

0 80 160

ARDENT ENVIRONMENTAL GROUP, INC.	PROJECT NO. 101150001	PLANNED REDEVELOPMENT WITH UNDOCUMENTED FILL	FIGURE 3
	DATE 04/20	NWC CENTRAL AVENUE AND SYCAMORE CANYON BOULEVARD RIVERSIDE, CALIFORNIA	

APPENDIX A

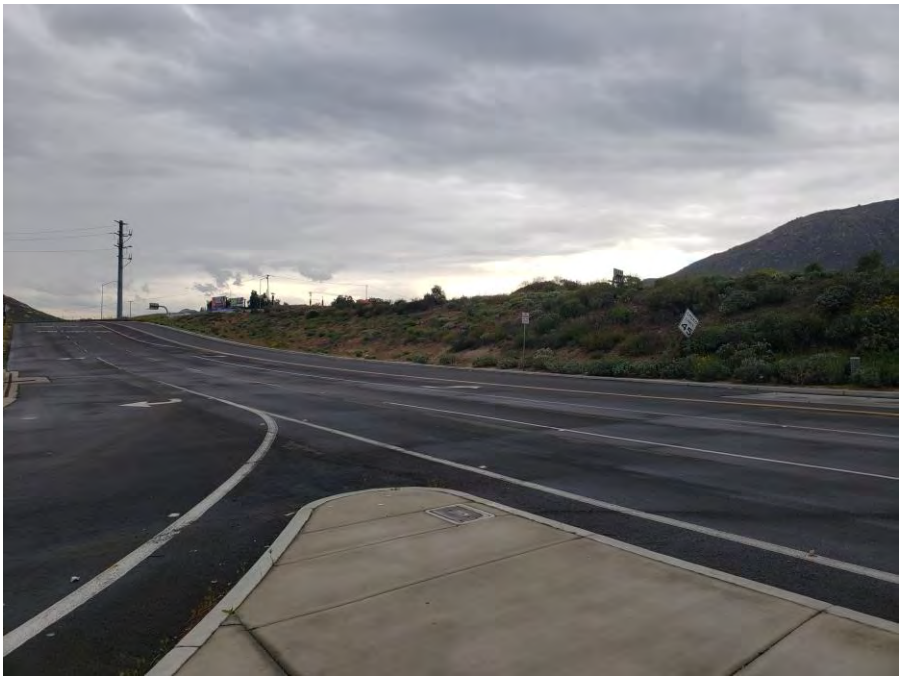
PHOTOGRAPHIC DOCUMENTATION

Photograph No. 1: Site, looking southeast.

Photograph No. 2: Pad-mounted transformer.

Photograph No. 3: Northern adjacent property, looking north.

Photograph No. 4: Western adjacent property, looking west.



Photograph No. 5: Eastern adjacent property, looking northeast.

Photograph No. 6: Southern adjacent property, looking southeast.

APPENDIX B

CLIENT PROVIDED INFORMATION

Jerry Digdigan/Matt Dishman
Title Officer

Stewart Title of California, Inc.
8880 Rio San Diego Dr. 11th Fl
San Diego, CA 92108
Phone: (619) 564-5600
Fax: (833) 839-7044
TeamJerry@Stewart.com

UPDATED PRELIMINARY REPORT

Order No.: 373629
Your File No.:
Buyer/Borrower Name: KA Real Estate LLC
Seller Name:

Property Address: VACANT LAND, XXXX , Riverside, CA 92508

In response to the above referenced application for a Policy of Title Insurance, Stewart Title of California, Inc. hereby reports that it is prepared to issue, or cause to be issued, as of the date hereof, a Stewart Title Guaranty Company Policy or Policies of Title Insurance describing the land and the estate or interest therein hereinafter set forth, insuring against loss which may be sustained by reason of any defect, lien or encumbrance not shown or referenced to as an Exception on Schedule B or not excluded from coverage pursuant to the printed Schedules, Conditions, and Stipulations of said Policy forms.

The printed Exceptions and Exclusions from the coverage and Limitations on covered Risks of said policy or policies are set forth in Exhibit A attached. The policy to be issued may contain an arbitration clause. When the Amount of Insurance is less than that set forth in the arbitration clause, all arbitrable matters shall be arbitrated at the option of either the Company or the Insured as the exclusive remedy of the parties. Limitations on Covered Risks applicable to the CLTA and ALTA Homeowner's Policies of Title Insurance which establish a Deductible Amount and a Maximum Dollar Limits of Liability for certain coverages are also set forth in Exhibit A. Copies of the policy forms should be read. They are available from the office which issued this report.

Please read the exceptions shown or referred to below and the exceptions and exclusions set forth in Exhibit A of this report carefully. The exceptions and exclusions are meant to provide you with notice of matters, which are not covered under the terms of the title insurance policy and should be carefully considered.

NOTE: Attached to this Preliminary Report for review and acceptance is Stewart Title's Affiliated Business Arrangement Disclosure Statement, Owner's Affidavit and Indemnity and the STG Privacy Notice for Stewart Title Companies, consumer must sign and return, prior to recording, Stewart Title's document entitled Acknowledgment of Receipt, Understanding and Approval of Preliminary Report, Affiliated Business Arrangement Disclosure Statement and STG Privacy Notice for Stewart Title Companies.

It is important to note that this preliminary report is not a written representation as to the condition of title and may not list all liens, defects, and encumbrances affecting title to the land.

This report, (and any supplements or amendments thereto) is issued solely for the purpose of facilitating the issuance of a policy of title insurance and no liability is assumed hereby. If it is desired that liability be assumed prior to the issuance of a policy of title insurance a binder or commitment should be requested.

Dated as of February 26, 2020 at 7:30PM	**Update No. One**

When replying, please contact: Jerry Digdigan/Matt Dishman, Title Officer

Stewart Title of California, Inc.
8880 Rio San Diego Dr. 11th Fl
San Diego, CA 92108
(619) 564-5600

PRELIMINARY REPORT

The form of Policy of Title Insurance contemplated by this report is:

☐ CLTA Standard Coverage Policy

☐ CLTA/ALTA Homeowners Policy

☐ 2006 ALTA Owner's Policy

☒ 2006 ALTA Loan Policy

☐ ALTA Short Form Residential Loan Policy

☐

SCHEDULE A

The estate or interest in the land hereinafter described or referred to covered by this report is:

FEE SIMPLE

Title to said estate or interest at the date hereof is vested in:

KA Real Estate, LLC, a California Limited Liability Company

LEGAL DESCRIPTION

The land referred to herein is situated in the State of California, County of Riverside, City of Riverside and described as follows:

That portion of the North Half of the Northwest quarter of Section 33, Township 2 South, Range 4 West, San Bernardino Base and Meridian, according to the Official Plat thereof, described as follows:

Beginning at a point in the West Line of said Northwest Quarter, South 00 degrees 33 minutes 10 seconds West, 185.17 feet from the Northwest Corner of said Section, said point also being the beginning of a non-tangent 1872.00 foot radius curve concave Southerly, to which a radial line bears North 06 degrees 48 minutes 11 seconds East; Thence Southeasterly along the arc of said curve through a central angle of 07 degrees 28 minutes 35 seconds, a distance of 244.27 feet to the beginning of a compound 1372.00 foot radius curve concave Southwesterly; Thence Southeasterly along the arc of said curve through a central angle of 19 degrees 38 minutes 00 seconds, a distance of 470.14 feet to the beginning of a compound 572.00 foot radius curve concave Southwesterly; Thence Southeasterly along the arc of said curve through a central angle of 08 degrees 09 minutes 40 seconds, a distance of 81.47 feet to the beginning of a non-tangent 920.00 foot radius curve concave Southwesterly, to which a radial bears North 48 degrees 44 minutes 02 seconds East; Thence Southeasterly along the arc of said curve through a central angle of 07 degrees 14 minutes 21 seconds, a distance of 116.24 feet; Thence South 34 degrees 01 minutes 37 seconds East, 394.94 feet to the beginning of a tangent 480.00 foot radius curve concave Northeasterly; Thence Southeasterly along the arc of said curve through a central angle of 14 degrees 09 minutes 14 seconds, a distance of 118.68 feet to the beginning of a non-tangent 420.00 foot radius curve concave Northwesterly, to which a radial bears South 33 degrees 35 minutes 12 seconds East; Thence Southwesterly along the arc of said curve through a central angle of 12 degrees 05 minutes 12 seconds, a distance of 88.60 feet; Thence North 34 degrees 10 minutes 09 seconds West, 56.59 feet to the beginning of a non-tangent 365.00 foot radius curve concave Northwesterly, to which a radial line bears South 19 degrees 33 minutes 05 seconds East; Thence Southwesterly along the arc of said curve through a central angel of 13 degrees 31 minutes 41 seconds, a distance of 86.18 feet; Thence South 83 degrees 58 minutes 36 seconds West, 796.06 feet to the beginning of a tangent 1255.00 foot radius curve concave Southerly; Thence Westerly along the arc of said curve through a central angle of 05 degrees 30 minutes 01 seconds, a distance of 120.48 feet; Thence North 00 degrees 14 minutes 25 seconds East, 909.20 feet to the point of beginning;

Except that portion within the 110.00 foot wide strip of land described in deed to the County of Riverside recorded April 20, 1973 in Book 1973 Page 50871 of Official Records of Riverside County, California;

Also except that portion lying Southerly of the Center Line and its Easterly Extension thereof of the 110.00 foot wide strip of land described in deed to the County of Riverside recorded April 20, 1973 in Book 1973 Page 50871 of Official Records of Riverside County, California;

Also except that portion condemned to the State of California by the document entitled Final Order of Condemnation recorded February 26, 2008 as Instrument No. 2008-0092111 of Official Records;

Also except half of any and all oil, gas and other minerals and mineral rights in and under said land as reserved to Harriet F. Smith and H. Russell Smith, Trustees for The Elden Smith Trust, Under Declaration of Trust dated August 27, 1964, as to an undivided 20 percent Interest, Sun Gold, Inc., a California Corporation, as to an undivided 20 percent interest and Virg and Co., a partnership, as to an undivided 60 percent interest, by Quitclaim Deeds recorded February 9, 1967 as Instrument Nos. 10976 And 10977 and February 14, 1967 as Instrument No. 12168 all of Official Records of Riverside County, California;

Also except therefrom any interest of the State of California as required by deed recorded May 21, 1959 as Instrument No. 43701 of Official Records of Riverside County, California.

APN: 256-050-012

(End of Legal Description)

MAP

THE MAP CONNECTED HEREWITH IS BEING PROVIDED AS A COURTESY AND FOR INFORMATIONAL PURPOSES ONLY; THIS MAP SHOULD NOT BE RELIED UPON. FURTHERMORE, THE PARCELS SET OUT ON THIS MAP MAY NOT COMPLY WITH LOCAL SUBDIVISION OR BUILDING ORDINANCES. STEWART ASSUMES NO LIABILITY, RESPONSIBILITY OR INDEMNIFICATION RELATED TO THE MAPS NOR ANY MATTERS CONCERNING THE CONTENTS OF OR ACCURACY OF THE MAP.

SCHEDULE B

At the date hereof, exceptions to coverage in addition to the printed exceptions and exclusions contained in said policy or policies would be as follows:

Taxes:

A. Property taxes, which are a lien not yet due and payable, including any assessments collected with taxes, to be levied for the fiscal year 2020 - 2021.

B. General and Special City and/or County taxes, including any personal property taxes and any assessments collected with taxes, for the fiscal year 2019 - 2020:
1st Installment : $14,567.48 Paid
2nd Installment : $14,567.48 Open
Parcel No. : 256-050-012-5
Code Area : 009-080

C. Assessments, if any, for Community Facilities Districts or a Mello-Roos District affecting said land which may exist by virtue of assessment maps or notices filed by said districts. Said assessments are collected with the County Taxes.

D. The lien of supplemental taxes, if any, assessed pursuant to the provisions of Chapter 3.5 (commencing with Section 75) of the Revenue and Taxation Code of the State of California.

Exceptions:

1. Water rights, claims or title to water in or under said land, whether or not shown by the public records.

2. Rights of the public in and to any portion of the property herein described lying within roads, streets or highways.

3. An easement for pole lines, conduits or underground facilities and rights incidental thereto in favor of California Electric Power Company as set forth in a document recorded February 3, 1942, in Book 526, Page 587 of Official Records, affects the land.

4. A waiver of any claims for damages by reason of the location, construction, landscaping or maintenance of a contiguous freeway, highway or roadway, as contained in the document recorded July 9, 1942 as Book 550 Page 316 of Official Records.

5. An easement for ingress, egress and rights incidental thereto in favor of Orange Lands Investment Company as set forth in a document recorded May 21, 1943, in Book 582, Page 232 of Official Records, affects the land.

6. An easement for ingress, egress and rights incidental thereto in favor of P.C. Gernert, Eleanor L. Gernet and Noren Eaton, as Trustees of for the Stockholders of the Orange Lands Investment Company as set forth in a document recorded June 7, 1944, in Book 629, Page 288 of Official Records, affects the land.

7. An easement to use and maintain the well located in the Northwest quarter of the Northwest quarter of Section 33, Township 2 South, Range 4 West, San Bernardino Base and Meridian, according to the official plat thereof, and a tank and pipe lines, either presently located or as located within a radius of 100.00 feet of its location, for the purpose of serving the properties served by said well, as reserved by Eleanor L. Gernert, et al, in Deed recorded December 30,

1955 in Book 1841 Page 71 of Official Records of Riverside County, California. This easement shall terminate when suitable domestic water supply is otherwise made available.

The exact location of the easement is not disclosed by the instrument.

8. The fact that ownership of said lands described below does not include any rights of ingress or egress to or from the freeway adjoining said land, provided, however, that said land shall abut upon and have access to the frontage mad which is connected to the freeway at such points as established, said rights having been relinquished by Deeds from the following: P.C. Gernert, et al, Trustees for the Stockholders of the Orange Lands Investment Company, a Dissolved Corporation, by Deed recorded May 21, 1959 as Instrument No. 43701 of Official Records of Riverside County, California. Except and reserving to said Southern Finance Service, a Corporation and Sun Gold Incorporated, the right of access to Fischer Road connected to said freeway as established.

9. A waiver of any claims for damages by reason of the location, construction, landscaping or maintenance of a contiguous freeway, highway or roadway, as contained in the Deeds above mentioned.

10. The effect of a document entitled "Quitclaim Deed", recorded May 21, 1959 as Instrument No. 43701 of Official Records.

11. An easement for pole lines, conduits or underground facilities and rights incidental thereto in favor of City of Riverside, a Municipal Corporation as set forth in a document recorded September 30, 1964 as Instrument No. 118692 and 118693 both of Official Records, affects the land.

12. An easement for storm drain facilities and rights incidental thereto in favor of County of Riverside as set forth in a document recorded October 6, 1972 as Instrument No. 134100 and re-recorded July 24, 1973 as Instrument No. 97186 both of Official Records, affects the land.

13. An easement for pole lines, conduits or underground facilities and rights incidental thereto in favor of Southern California Edison Company as set forth in a document recorded October 9, 1973 as Instrument No. 132007 of Official Records, affects the land.

    The exact location of the easement is not disclosed by the instrument.

14. Abutter's rights of ingress and egress to or from abutting lands have been relinquished in the document recorded February 26, 2008 as Instrument No. 2008-0092111 of Official Records.

15. The effect, if any, of record of survey map no. Not Stated which sets forth, or purports to set forth certain dimensions and bearings of the herein described property.

16. The terms and provisions contained in the document entitled Certificate of Completion Stop #1030
    Recorded: September 2, 2016 as Instrument Number 2016-0381899, of Official Records.

17. Matters which may be disclosed by an inspection or by a survey of said land satisfactory to this Company or by inquiry of the parties in possession thereof.

18. Any lien, or right to a lien, for services, labor, or material heretofore or hereafter furnished, imposed by law and not shown by the Public Records.

19. The following will appear in the policy to be issued:

    Pending disbursement of the full proceeds of the loan secured by the Insured Mortgage, the Policy to be issued will insure only to the extent of the amount actually disbursed, but will

increase as each disbursement is made in good faith and without knowledge of any defects, liens or encumbrances on the title, up to the face amount of the Policy. Nothing contained in this paragraph limits any exception or any printed provision of the policy to be issued.

20. If the policy to be issued requires priority insurance, over mechanic's liens and work has or is to be commenced prior to recording, this company will require a sufficient and approved indemnity agreement from the owner/trustor. To help avoid delays in your transaction, we should receive all pertinent information at least 5 working days prior to the close of escrow. Should you have any questions or need any additional information, please contact your title officer.

21. The requirement that a notice of completion be recorded in the office of the County Recorder.

22. Matters contained in an instrument entitled Use and Deed Restriction Agreement Gas Station and Convenience StoresN dated October 18, 2018, by and between nKA Central, LLC, a California limited liabilty company and KA Central, LLC, a California limited liabilty company upon the terms therein provided recorded March 19, 2019 as Instrument No. 2019-0092008 of Official Records.

23. Deed of Trust to secure an indebtedness in the amount shown below, and any other obligations secured thereby:
    Amount : $1,891,485.18
    Trustor : KA Real Estate, LLC,
    Trustee : Stewart Title
    Beneficiary : KA Real Estate II, LLC
    Recorded : March 19, 2019 as Instrument No. 2019-0092009 of Official Records

24. This Company will require the following documents in order to insure a conveyance or encumbrance by the limited liability company named below:

    Limited liability company: KA Real Estate, LLC

    a. A certified copy of the articles of organization (LLC-1), and any amendment (LLC-2) or restatement (LLC-10) to be recorded in the appropriate county.

    b. A copy of the operating agreement and any amendment.

    c. Evidence that the limited liability company remains in good standing with active status.

    d. Other requirements that the Company may set forth following its review of said documents.

(End of Exceptions)

NOTES AND REQUIREMENTS

For transactions where Stewart Title of California, Inc.. is not the settlement/closing agent, a signed and dated copy of the attached "Acknowledgment of Receipt, Understanding and Approval of Affiliated Business Arrangement Disclosure Statement and STG Privacy Notice for Stewart Title Companies", will be required prior to recording.

A. NOTE: For Information Purposes Only, Vesting on Schedule A per Document No. 2018-0360810.

B.

C. The ALTA Loan Policy to be issued after completion of improvements will include CLTA Endorsement Form 100, provided there then exists no violation of covenants, conditions or restrictions, and no encroachments of improvements onto easements or otherwise, but only insofar as such endorsement relates to matters shown in this report.

CALIFORNIA "GOOD FUNDS" LAW

California Insurance Code Section 12413.1 regulates the disbursement of escrow and sub-escrow funds by title companies. The law requires that funds be deposited in the title company escrow account and available for withdrawal prior to disbursement. Funds received by Stewart Title of California, Inc. via wire transfer may be disbursed upon receipt. Funds received via cashier's checks or teller checks drawn on a California Bank may be disbursed on the next business day after the day of deposit. If funds are received by any other means, recording and/or disbursement may be delayed, and you should contact your title or escrow officer. All escrow and sub-escrow funds received will be deposited with other escrow funds in one or more non-interest bearing escrow accounts in a financial institution selected by Stewart Title of California, Inc.. Stewart Title of California, Inc. may receive certain direct or indirect benefits from the financial institution by reason of the deposit of such funds or the maintenance of such accounts with the financial institution, and Stewart Title of California, Inc. shall have no obligation to account to the depositing party in any manner for the value of, or to pay to such party, any benefit received by Stewart Title of California, Inc.. Such benefits shall be deemed additional compensation to Stewart Title of California, Inc. for its services in connection with the escrow or sub-escrow.

If any check submitted is dishonored upon presentation for payment, you are authorized to notify all principals and/or their respective agents of such nonpayment.

APPENDIX C

PREVIOUS REPORTS

HILLMANN
CONSULTING

PHASE I ENVIRONMENTAL SITE ASSESSMENT

"Canyon Crest"
Northwest Corner of Central Avenue and Sycamore Canyon Boulevard
Riverside, California

Prepared For:

Strata Equity
4370 La Jolla Village Drive, Suite 960
San Diego, CA 92122

Hillmann Project Number C3-5841

November 15, 2013

Your Property. Our Priority.
1745 W. Orangewood Avenue, Suite 110, Orange, CA 92868
Telephone (714) 634-9500 Fax: (714) 634-9507 Toll free: (800) 232-4326
www.HillmannConsulting.com

HILLMANN
CONSULTING

November 15, 2013

Mr. Eric Flodine
Strata Equity
4370 La Jolla Village Drive, Suite 960
San Diego, CA 92122

RE: Phase I Environmental Site Assessment
"Canyon Crest"
Northwest Corner of Central Avenue and Sycamore Canyon Boulevard
Riverside, California 92507
Hillmann Project Number: C3-5841

Hillmann Consulting, LLC, is pleased to provide the results of our Phase I Environmental Site Assessment of the above referenced property. This assessment was performed in accordance with the scope and limitations of ASTM Practice E 1527-05.

This report is for the exclusive use of the entities named on the front cover, its affiliates, designates and assignees, rating agencies, prospective bond holders and bond holders, and no other party shall have any right to rely on any service provided by Hillmann Consulting, LLC, without prior written consent.

We appreciate the opportunity to provide environmental due diligence services. If you have any questions concerning this report, or if we can assist you in any other matter, please contact the Project Manager at 714-634-9500.

Very Truly Yours,
Hillmann Consulting, LLC

Ryan Terwilliger
Project Manager

David Rutherford
Director of Due Diligence

TABLE OF CONTENTS

1.0 EXECUTIVE SUMMARY 1
- 1.1 Property Summary Table 1
- 1.2 Summary of Findings 2
- 1.3 Conclusions 2
- 1.4 Recommendations 2

2.0 PURPOSE AND LIMITATIONS 3
- 2.1 Purpose and Scope 3
- 2.2 Inaccessible Locations 4
- 2.3 Limitations and Exceptions 4
- 2.4 Abbreviations/Acronyms 4
- 2.5 Special Terms and Conditions 4

3.0 PROPERTY DESCRIPTION 6
- 3.1 Property Location 6
- 3.2 Site and Vicinity Characteristics 6
- 3.3 Current Use of the Property 6
- 3.4 Description of Property Improvements 6
- 3.5 Utilities/Source of Heating 6
- 3.6 Current Uses of the Adjoining Properties 6
- 3.7 Surrounding Area 7
- 3.8 Physical Setting 7
  - *3.8.1 Topography* 7
  - *3.8.2 Soils* 7
  - *3.8.3 Geology* 7
  - *3.8.4 Hydrology* 7

4.0 USER PROVIDED INFORMATION 8
- 4.1 Title Records/Environmental Liens/Activity and Use Limitations 8
- 4.2 Specialized Knowledge or Experience 8
- 4.3 Commonly Known or Reasonably Ascertainable Information 8
- 4.4 Property Value Reduction due to Environmental Conditions 8
- 4.5 Reason for Performing Phase I ESA 8

5.0 HISTORICAL USE RESEARCH 9
- 5.1 Sanborn Fire Insurance Maps 9
- 5.2 Historic City Directories 9
- 5.3 Historical Topographic Map Review 9
- 5.4 Aerial Photograph Review 9
- 5.5 Prior Investigation Reports 10
- 5.6 Interviews 10
- 5.7 Summary and Conclusion of Historic Use Research 10
- 5.8 Data Gaps 10

6.0 SITE RECONNAISSANCE/INTERVIEWS 11
- 6.1 Interviews 11
- 6.2 Property Use 11
- 6.3 Hazardous Substance/Petroleum Products Storage/Handling 11
- 6.4 Waste Generation, Storage and Disposal 11
- 6.5 Waste Discharges 11
- 6.6 Underground/Above Ground Storage Tanks 11
- 6.7 Polychlorinated Biphenyls (PCBs) 11
- 6.8 Drains/Sumps 11
- 6.9 Exterior Pits/Ponds/Lagoons 11

6.10 Stained Soil, Pavement/Stressed Vegetation 12
6.11 Drinking Water/Wells/Septic Systems 12

7.0 NON-ASTM SCOPE CONCERNS 13
7.1 Asbestos-Containing Material (ACM) 13
7.2 Lead-Based Paint 13
7.3 Radon 13
7.4 Mold 13

8.0 REGULATORY RECORD REVIEWS 14
8.1 On-Site Database Listings 15
8.2 Adjoining Property Database Listings 15
8.3 Federal Agency Record Review 15
8.4 State Agency Record Review 16
8.5 Local Government Agencies 17

9.0 ENVIRONMENTAL PROFESSIONAL STATEMENT 20

10.0 REFERENCES 21

11.0 APPENDICES 22

Appendix A Site Photographs
Appendix B Maps/Diagrams
Appendix C Historical Land Use Documentation/Maps
Appendix D Reference Documents / Laboratory Results (if applicable)
Appendix E Regulatory Database Report

1.0 EXECUTIVE SUMMARY

At the request of Strata Equity, Hillmann Consulting, LLC (Hillmann) performed a Phase I Environmental Site Assessment (ESA) of the Property located at Central Avenue and Sycamore Canyon Boulevard, Riverside, California (the Property). This assessment has been conducted utilizing generally accepted Phase I ESA industry standards in accordance with the ASTM Standard Practice E 1527-05 for Phase I Environmental Site Assessments.

1.1 Property Summary Table

A summary of the pertinent details of the project is provided below:

PROJECT SUMMARY TABLE					
Name of Client	Strata Equity				
Client Project No.:	C3-5841				
Client Contact:	Mr. Eric Flodine				
Description of Project	Phase I Environmental Site Assessment				
Property Name:	Canyon Crest				
Property Address:	Central Ave. and Sycamore Canyon Blvd.				
City:	Riverside	**County:**	Riverside	**State:**	CA
Tax Map designation:	**APN**:	256-05-0012			
Property Area:	9.77 acres				
Building Area:	N/A				
Assessor Designated Site Use:	Commercial				
Year Built:	N/A				
Property Owner:	Unreported				
Assessment Personnel:	Mr. Gregory Shaffer				
Accompanied/Escorted By:	N/A				
Property Contact:	Mr. Eric Flodine				
Inspection Date:	November 8, 2013				
Weather Conditions:	Clear, 78 degrees F				

1.2 Summary of Findings

The following table summarizes the individual sections of this assessment. This table, alone, does not constitute the complete assessment. The report must be reviewed in its entirety.

FINDINGS SUMMARY					
ASSESSMENT SECTION	ACCEPTABLE	O&M RECOM'D	REC	FURTHER ACTION/ PHASE II RECOM'D	REF. SECTION
Historical Review	X				5.0
Regulatory Review	X				8.0
Site Use	X				3.3/6.2
Hazardous Materials	X				6.3
USTs	X				6.6
ASTs	X				6.6
PCBs	X				6.7
Waste / Discharges	X				6.4/6.5
ACM	X				7.1
Lead Paint	X				7.2
Drinking Water	X				6.11
Radon	X				7.3
Mold	X				7.4
Adjoining/Surrounding Area	X				3.6/3.7/8.2

1.3 Conclusions

Hillmann has performed a Phase I Environmental Site Assessment in accordance with the scope and limitations of ASTM Practice E 1527-05 of the Property as described in Section 2 of this report. Any additions to, exceptions to, or deletions from this practice are also described in Section 2 of this report. This assessment has revealed no evidence of *recognized environmental conditions* in connection with the Property.

Hillmann has also performed cursory evaluations for ASTM "Non-Scope" items, such as asbestos-containing materials (ACM), lead-based paint, radon and mold. Our observations and research did not identify any significant concerns.

1.4 Recommendations

Based on information collected from the site investigation, record review, interviews and site reconnaissance, no additional environmental investigation is recommended at this time.

2.0 PURPOSE AND LIMITATIONS

2.1 Purpose and Scope

This assessment was conducted utilizing generally accepted Phase I ESA industry standards in accordance with the ASTM Standard Practice E 1527-05. The ASTM describes these methodologies as representing good commercial and customary practice for conducting an Environmental Site Assessment of a property for the purpose of identifying recognized environmental conditions.

The term *recognized environmental conditions (RECs)* is defined by the ASTM as the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, ground water or surface water of the property. The term includes hazardous substances or petroleum products even under conditions in compliance with laws. The term is not intended to include *de minimis* conditions that generally do not present a material risk of harm to public health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies. Conditions determined to be *de minimis* are not *REC*s.

The chief components of this assessment are described as follows:

- Review and discussion of current Property conditions regarding the presence or absence of hazardous chemicals/petroleum products; generation, treatment, storage or disposal of hazardous, regulated or medical wastes; electrical equipment that utilizes oils which potentially contain PCBs; and bulk storage tanks (above or below ground).

- Review and discussion of the usage of adjacent and nearby properties to identify the potential for contamination (if present and/or suspected) to migrate onto the Property.

- Summary of physical characteristics of the Property through a review of available topographic, geologic and groundwater data.

- Research of the historic uses of the Property through a review of reasonably ascertainable standard sources, such as fire insurance maps, city directories, aerial photographs, prior reports and interviews.

- A regulatory review of federal and state environmental databases, and other local environmental records, within specific search distances defined by the ASTM.

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.

A cursory evaluation for the following "Non-ASTM" concerns, such as the following:

- ♦ Suspect Asbestos-containing Materials

- Lead-based Paint
- USEPA Designated Radon Potential
- Mold

2.2 Inaccessible Locations

No notable areas on the Property were excluded from our visual inspection.

2.3 Limitations and Exceptions

Historic research data gaps are detailed in Section 5, if applicable. No other exceptions or deletions from the ASTM Standard E 1527-05 are reported.

2.4 Abbreviations/Acronyms

Hillmann may use the following abbreviations and acronyms for common terminology described in our report. Not all abbreviations or acronyms may be applicable to this report:

ACM – Asbestos-containing Material
AST – Aboveground Storage Tank
ASTM – American Standard for Testing Materials
FOIA – Freedom of Information Act
HVAC – Heating Ventilation & Air Conditioning
HREC – Historic Recognized Environmental Condition
IAQ – Indoor Air Quality
LBP – Lead-based Paint
LUST – Leaking Underground Storage Tank
MSDS – Material Safety Data Sheet
REC – Recognized Environmental Condition
UST – Underground Storage Tank

2.5 Special Terms and Conditions

Hillmann has prepared this Phase I Environmental Site Assessment using reasonable efforts in each phase of its work to identify recognized environmental conditions associated with hazardous substances, wastes and petroleum products at the Property. The methodology of this Phase I Environmental Site Assessment was consistent with the ASTM Standard Practice for E 1527-05. Findings within this report are based on information collected from observations made on the day of the site investigation and from reasonably ascertainable information obtained from governing public agencies and private sources.

This report is not definitive and should not be assumed to be a complete or specific definition of the conditions above or below grade. Information in this report is not intended to be used as a construction document and should not be used for demolition, renovation or other construction purposes. Hillmann makes no representation or warranty that the past or current operations at the Property are, or have been, in compliance with all applicable federal, state and local laws, regulations and codes.

Findings, conclusions and recommendations presented in this report are based on our visual observations of the Property, the municipal research findings reasonably obtained, information provided by the Client, and/or a review of readily available and supplied drawings and documents. Hillmann relies completely on the information, whether written, graphic or verbal, provided by the subject Property contact(s) or as shown on any documents reviewed or received from the subject Property contact, owner or agent, or municipal source, and assumes that information to be true and correct. Although there may have been some degree of overlap in the information provided by these various sources, Hillmann did not attempt to independently verify the accuracy or completeness of all information reviewed or received during the course of this assessment.

Regardless of the findings stated in this report, Hillmann is not responsible for consequences or conditions arising from facts that were concealed, withheld or not fully disclosed at the time the assessment was conducted.

This report does not warrant against future operations or conditions, nor does it warrant against operations or conditions present of a type or at a location not investigated.

The regulatory database report provided is based on an evaluation of the data collected and compiled by a contracted data research company. The report focuses on the Property and neighboring properties that could impact the Property. Neighboring properties listed in governmental environmental records are identified within specific search distances. The search distance varies depending upon the particular government record being checked. The regulatory research is designed to meet the requirements of ASTM Standard E 1527-05. The information provided in the regulatory database report is assumed to be correct and complete.

Subsurface conditions may differ from the conditions implied by the surface observations and can only be reliably evaluated through intrusive techniques.

Reasonable efforts have been made during this assessment to identify aboveground and underground storage tanks and ancillary equipment. “Reasonable efforts” are limited to information gained from visual observation of largely unobstructed areas, recorded database information held in public record and available information gathered from interviews. Such methods may not identify subsurface equipment that may have been hidden from view due to parked automobiles and other vehicles, snow cover, vegetative growth, pavement, construction or debris pile storage or incorrect information from sources.

Hillmann is not a professional title insurance firm and makes no guarantee, explicit or implied, that the records which were reviewed represent a comprehensive or precise delineation of past Property ownership or tenancy for legal purposes.

3.0 PROPERTY DESCRIPTION

3.1 Property Location

The Property is located at the northwest corner of Central Avenue and Sycamore Canyon Boulevard, Riverside, California. The legal designation of the Property is APN 256-05-0012. The latitude and longitude of the Property is approximately north 33.9591 degrees, and west 117.3131 degrees.

3.2 Site and Vicinity Characteristics

The Property consists of one (1) parcel consisting of 9.77 acres of undeveloped land. The Property is in an area characterized by residential and park uses.

3.3 Current Use of the Property

The Property is currently undeveloped land.

3.4 Description of Property Improvements

The Property is not currently improved.

3.5 Utilities/Source of Heating

No heating systems were identified at the Property.

According to information provided by property management, utility providers that service the subject Property are summarized as follows:

Utility	Provider
Electric	So. Cal. Edison
Natural Gas	So. Cal. Gas Co.
Water	City of Riverside
Sewer	City of Riverside

3.6 Current Uses of the Adjoining Properties

The following describes adjacent and abutting properties to the Property:

DIRECTION	DESCRIPTION
North	(Sycamore Canyon Blvd., Interstate 215) Undeveloped land.
East	(Sycamore Canyon Blvd.) Undeveloped land.
South	(Central Ave.) Undeveloped land.
West	Quail Run Park

3.7 Surrounding Area

The vicinity of the Property in Riverside, California is characterized by a mix of residential, park, and undeveloped properties.

3.8 Physical Setting

3.8.1 Topography

According to the United States Geological Survey (USGS) 7.5-Minute Series Topographic Map, Riverside East, CA Quadrangle (1980) the Property is located at approximately 1,360 feet above mean sea level. The topographic gradient at the Property is slopes in a general northwest direction. Copies of the topographic maps are included in Appendix C.

3.8.2 Soils

Based on the United States Department of Agriculture - Soil Conservation Service data, soils at the Property are classified as "Terrace escarpments."

3.8.3 Geology

According to the EDR Geo-Check report, the bedrock geologic formation in the area within the vicinity of the Property is identified to be Plutonic and Intrusive Rocks of the Mesozoic Era.

3.8.4 Hydrology

Based on the drainage/topography, groundwater is estimated to flow to the northwest. Groundwater levels and/or flow direction(s) may vary due to seasonal fluctuations in precipitation, local usage demands, geology, underground structures or dewatering operations.

Based on the U.S. Fish & Wildlife Service's National Wetlands Inventory, wetlands are not suspected to be present on the Property.

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) covering the area of the Property, the Property is located outside of the 100 and 500 year flood zones.

4.0 USER PROVIDED INFORMATION

4.1 Title Records/Environmental Liens/Activity and Use Limitations

Review of title records is not included in the scope of work for this assessment project. No information regarding environmental liens or activity and use limitations was provided to Hillmann by the Client.

4.2 Specialized Knowledge or Experience

No indication of any specialized knowledge or experience regarding the Property was reported to Hillmann by the Client.

4.3 Commonly Known or Reasonably Ascertainable Information

No commonly known or specialized knowledge of the Property was reported to Hillmann by the Client.

4.4 Property Value Reduction due to Environmental Conditions

No information was provided by the Client to Hillmann regarding a reduction of the Property value due to environmental problems or conditions.

4.5 Reason for Performing Phase I ESA

It is Hillmann's understanding that the Phase I ESA was being performed in conjunction with a pending real estate or bank financing transaction involving the Property.

5.0 HISTORICAL USE RESEARCH

5.1 Sanborn Fire Insurance Maps

Fire insurance maps were created for insurance underwriters and often contain information regarding the uses of individual structures, and the locations of fuel and/or chemical storage tanks that may have been on a particular property. These maps were generally prepared for urban areas beginning in the middle to late 1880s and continuing generally into the 2000s.

A search of Sanborn Fire Insurance Maps for the Property and surrounding area was conducted by Environmental Data Resources, Inc. (EDR) of Milford, Connecticut. EDR provided a Sanborn report that stated fire insurance maps covering the target property were not found.

5.2 Historic City Directories

A search of City Directories for the Property and surrounding area was conducted by EDR. The City Directory Abstract report provided data from directories and yielded no pertinent information for the subject Property.

5.3 Historical Topographic Map Review

A search of historical topographic maps for the Property was conducted by EDR. Topographic maps of the Property and vicinity for the years 1901, 1947, 1953, 1967, 1973, and 1980 were provided for review. The following pertinent details were obtained from review of the topographic maps:

YEAR(S)	DESCRIPTION	
1901	**Property**	The Property is depicted as undeveloped land.
	Adjacent Properties	The adjacent properties are depicted as undeveloped land.
1947	**Property**	The Property is depicted as undeveloped land.
	Adjacent Properties	The adjacent properties are depicted as undeveloped land.
1953	**Property**	The Property is depicted as scrubland with a cluster of four small structures.
	Adjacent Properties	The adjacent properties are depicted as scrublands. Wetlands are depicted to the southwest. The adjacent property to the east is depicted with four structures.
1967, 1973, 1980	**Property**	The Property is depicted with two small structures.
	Adjacent Properties	The adjacent properties are depicted as undeveloped land.

5.4 Aerial Photograph Review

A search of Aerial Photographs for the Property and surrounding area was conducted by EDR. EDR provided an Aerial Photography report of several historic photographs of the Property area from the years 1931, 1938, 1953, 1967, 1977, 1989, 1994, 2005, 2006, 2009, 2010, and 2012. The following pertinent details were obtained from review of the report:

YEAR(S)	DESCRIPTION	
1931, 1938	**Property**	The Property appears to be undeveloped land.
	Adjacent Properties	The adjacent properties appear to be undeveloped land.
1953, 1967, 1977, 1989, 1994	**Property**	The Property appears to be developed with several small structures at the northeast portion of the parcel.
	Adjacent Properties	The adjacent properties to the north, south and west appear to be undeveloped land. The adjacent property to the east appears to contain several residential structures.
2005, 2006	**Property**	The Property appears to be undergoing site work in preparation for development.
	Adjacent Properties	The adjacent properties appear to be undeveloped land.
2009, 2010, 2012	**Property**	The Property appears to be undeveloped land.
	Adjacent Properties	The adjacent properties appear to be undeveloped land.

5.5 Prior Investigation Reports

No prior investigation reports for the Property were provided to Hillmann.

5.6 Interviews

An environmental questionnaire was provided to seller through Mr. Eric Flodine, the Property's contact. To date the questionnaire has not been returned by the seller.

5.7 Summary and Conclusion of Historic Use Research

A cluster of small structures appear at the northeast edge of the Property and at the adjacent property were developed prior to 1953. By 2005 these structures were demolished. Some initial site work in preparation for site development at the Property appears to have taken place in 2005/2006 when Sycamore Canyon Boulevard was being constructed.

5.8 Data Gaps

Historic land use data prior to 1901 was not readily available at the time of the assessment. It is Hillmann's opinion that further investigation would not result in any significant changes to the findings of this assessment.

6.0 SITE RECONNAISSANCE/INTERVIEWS

6.1 Interviews

Hillmann was unaccompanied during the site reconnaissance.

6.2 Property Use

The Property is currently undeveloped land.

6.3 Hazardous Substance/Petroleum Products Storage/Handling

No storage of hazardous substances or petroleum products was identified on the Property. No evidence of any spills or releases was observed during the site reconnaissance.

6.4 Waste Generation, Storage and Disposal

An isolated pile of construction debris, consisting primarily of scrap wood and demolition debris, was noted at the central portion of the Property. No evidence of hazardous waste generation or disposal was identified at the Property.

6.5 Waste Discharges

No industrial or process waste discharges were identified at the Property.

6.6 Underground/Above Ground Storage Tanks

No evidence of any active or inactive bulk petroleum storage tanks was noted at the Property. The Property was not listed on the regulatory databases of registered or leaking bulk petroleum storage tanks.

6.7 Polychlorinated Biphenyls (PCBs)

Three pad-mounted transformers are located on the northern edge of the Property near an electrical vault in Sycamore Canyon Boulevard. One of these transformers was labeled as non-PCB containing. Considering one of the transformers is labeled as non-PCB containing and the apparent age and condition of the transformers, the other two transformers are not likely to contain PCBs.

6.8 Drains/Sumps

No drains or sump pits were noted at the Property.

6.9 Exterior Pits/Ponds/Lagoons

No evidence of exterior pits, ponds or lagoons was identified on the Property in connection with waste treatment or disposal.

6.10 Stained Soil, Pavement/Stressed Vegetation

No evidence of stained soils or stressed vegetation was identified on the Property.

6.11 Drinking Water/Wells/Septic Systems

No evidence of wells or septic systems was identified at the Property.

6.12 Fill Material

A pile of asphalt, likely left over from the development of Sycamore Canyon Boulevard, was located on the northeastern portion of the Property. This asphalt pile should be removed and disposed of in accordance with all applicable rules and regulations. Several soil piles were observed throughout the Property; however, they appear to be native fill that originated from small excavations on the Property and do not appear to be illegally dumped soil.

7.0 NON-ASTM SCOPE CONCERNS

7.1 Asbestos-Containing Material (ACM)

There are no buildings on the Property. Therefore, a screening for ACM is not applicable to this assessment.

7.2 Lead-Based Paint

There are no buildings on the Property. Therefore, a screening for lead-based paint is not applicable to this assessment.

7.3 Radon

Radon is a naturally occurring, colorless, odorless gas that is a byproduct of the decay of radioactive materials potentially present in bedrock and soil. Radon gas may enter the lowest level of a building through floor cracks, structural joints or plumbing conduits. The United States Environmental Protection Agency (USEPA) guidance level for annual residential exposure to radon is 4.0 picocuries per liter of air (pCi/L). The guidance level is not a regulatory requirement for private owners of commercial real estate, but is commonly used for comparison purposes to suggest whether further action at a building may be prudent.

Based on information obtained from data obtained by the USEPA, the Property is located in an area with a moderate potential for radon concentrations that exceed current USEPA action guidelines. Riverside County is classified as Zone 2, or 'moderate risk' area for radon.

7.4 Mold

There are no buildings on the Property. Therefore, a screening for mold and/or microbial growth was not conducted.

8.0 REGULATORY RECORD REVIEWS

A search of environmental regulatory databases, by service from Environmental Data Resources of Milford, CT, was conducted in accordance with the requirements of the ASTM. Hillmann also reviewed the "unmappable" listings within the database report, cross-referencing available address information and facility names. Unmappable sites are listings that cannot be plotted with confidence, but are identified as being located within the general area of the Property based on the partial street address, city name or zip code. In general, a listing cannot be mapped due to inaccurate or incomplete address information in the database that was supplied by the corresponding regulatory agency. Any listings from the unmappable summary that were identified by Hillmann as a result of the area reconnaissance and/or cross-referencing to mapped listings are included in the corresponding database discussion within this section.

REGULATORY DATABASE	SEARCH DISTANCE	ON-SITE LISTINGS	ADJ. PROPERTY LISTINGS	TOTAL WITHIN SEARCH DISTANCE
Fed. NPL	1-mile	0	0	0
Fed. Delisted NPL	½-mile	0	0	0
Fed. CERCLIS	½-mile	0	0	0
Fed. CERCLIS-NFRAP	½-mile	0	0	0
Fed. RCRA CORRACTS	1-mile	0	0	0
Fed. RCRA TSD	½-mile	0	0	0
Fed. RCRA LQG & SQG (Generators)	Site & Adj.	0	0	
Fed. ERNS	Site	0		
State & Tribal SHWS equiv. NPL & CERCLIS	1-mile	0	0	0
State & Tribal SWF/LF	½-mile	0	0	0
State & Tribal LUST	½-mile	0	0	0
State & Tribal Registered Stor. Tank	Site & Adj.	0	0	
State & Tribal ENG. Control List	½-mile	0	0	0
State & Tribal INST. Control List (AUL)	½-mile	0	0	0
State & Tribal VCP	½-mile	0	0	0
State & Tribal Eng. Brownfields (BF)	½-mile	0	0	0
Spills	Site	0		

- *The results of the review for each database are discussed below. The locations for the facilities discussed in this section are shown on the figures in the EDR report, included as Appendix E.*

- *According to the EPA P olicy Toward Owners of Property Containing Contaminated Aquifers, dated July 3, 1995, the EPA will not take enforcement action against a property owner who owns property under which is an aquifer contaminated by subsurface migration from an off-site source or sources. Therefore, the Subject Property owner would not be liable for any contamination of the underlying aquifer that was attributed to an off-site source.*

8.1 On-Site Database Listings

The Property was not identified on any of the databases searched.

8.2 Adjoining Property Database Listings

The adjacent properties were not identified on any of the databases searched.

8.3 Federal Agency Record Review

EPA - The National Priorities List (NPL), also known as the Superfund list, is the United States Environmental Protection Agency (EPA) listing of uncontrolled or abandoned hazardous waste sites. These sites are targeted for possible long-term remedial action under the Superfund Act of 1980. The list is primarily based on the EPA's Hazardous Ranking System.

- No NPL listings were identified within a one-mile radius of the subject property.

EPA – Delisted NPL Site List (DNPL) provides a list of sites formerly listed on the NPL that have since been "de-listed" after the EPA has determined that no further response is appropriate.

- No DNPL listings were identified within a ½-mile radius of the Property.

EPA - The Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) is the EPA database of known or suspected uncontrolled or abandoned hazardous waste sites. These sites have either been investigated, or are currently under investigation by the EPA for the release or threatened release of hazardous substances.

- No CERCLIS listings were identified within a ½-mile radius of the Property.

EPA – CERCLIS-NFRAP (No Further Remedial Action Planned) is the EPA database of archived sites that have been removed and archived from the inventory of CERCLIS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that the EPA has determined no further steps will be taken to list this site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time.

- No CERCLIS-NFRAP listings were identified within a ½-mile radius of the Property.

EPA - The Resource Conservation and Recovery Information System (RCRIS) is a database of facilities, which generate or treat, store or dispose of EPA regulated hazardous waste, or meet other applicable requirements of the Resource Conservation and Recovery Act (RCRA). Inclusion on this database does not imply that mishandling or a release of hazardous waste has occurred at the facility. RCRIS categories are as follows:

Corrective Action (CORRACTS) list is a list of hazardous waste treatment, storage or disposal facilities and other RCRIS facilities (due to past interim status or storage of hazardous waste

beyond 90 days) that have been notified by the US EPA to undertake corrective action under RCRA.

- No CORRACTS listings were identified within a one-mile radius of the subject Property.

Treatment, Storage, and Disposal Facilities (TSD). Facilities listed under TSD are sites that treat, store and/or dispose of EPA regulated hazardous waste.

- No TSD listings were identified within a ½-mile radius of the Property.

Large Quantity Generators (LQG). Facilities listed under LQG either generate more than 1000 Kilograms (kg) of EPA regulated hazardous waste per month, or meet other applicable requirements of RCRA.

- No adjoining properties were identified on the LQG database.

Small Quantity Generators (SQG). Facilities listed under SQG either generate from 100 kilograms (kg) to 1000 kg of EPA regulated hazardous waste per month, or meet other applicable requirements of RCRA.

- No adjoining properties were identified on the SQG database.

EPA - The Emergency Response Notification System (ERNS) is a national database used to store information concerning the sudden and/or accidental release of hazardous substances, including petroleum in quantities greater than the reportable quantity, as maintained at the National Response Center. The database contains preliminary information from spill reports made to various federal departments including the EPA.

- No listings were identified for the Property.

8.4 State Agency Record Review

State Hazardous Waste Sites (SHWS) database contains potential or confirmed hazardous substance release properties.

- No SHWS listings were identified within a one-mile radius of the Property.

Solid Waste Facility/Landfill (SWF/LF) list provides information on the location of registered state landfills and associated transfer facilities.

- No SWF/LF listing was identified within a ½-mile radius of the subject Property.

Leaking Underground Storage Tanks (LUST) is a comprehensive listing of all reported active and inactive leaking storage tank sites.

- No LUST listings were identified within a ½-mile radius of the Property.

Registered Storage Tank Database is the listing of registered storage tank sites. This includes the UST database.

- No UST listings were identified to be adjacent to the Property.

Engineering Controls Site Listing (ENG Controls) list provides information on the location of remediation sites using engineering controls as part of the response action. Engineering controls include various forms of caps, building foundations, liners and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

- No ENG Controls listings were identified within a ½-mile radius of the subject Property.

Institutional Controls Site Listing (INST Controls) list provides information on the location of remediation sites using institutional controls as part of the response action. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions and post remediation care requirements intended to prevent exposure to contaminants remaining on-site. Deed restrictions are generally required as part of the institutional controls.

- No INST Controls listings were identified within a ½-mile radius of the Property.

Voluntary Cleanup Program (VCP) and **Independent Cleanup Report (ICR)** lists provide information on the location of sites involved in a Voluntary Cleanup or similar program. Under a Voluntary Cleanup Program, a property owner will voluntarily enter into an agreement with a state or local environmental regulatory agency to conduct an investigation and remediation for specific area(s) of concern.

- No VCP or ICR sites were identified within a ½-mile radius of the Property.

Brownfields (BF) list provides information on the location of sites involved in a state or local Brownfields program.

- No Brownfield listings were identified within a ½-mile radius of the Property.

Review of the remaining sites identified within the ASTM search parameters did not identify any site that is considered to be a REC in connection with the Property.

8.5 Local Government Agencies

<u>City of Riverside</u>

Fire Department

Hillmann contacted the City of Riverside Fire Department in order to determine if any UST or hazardous materials records were on file for the Property's APN. According to the City of Riverside Fire Department, no such records exist for the Property.

Riverside County

Tax Assessor's Office

Property information was researched on the Riverside County Tax Assessor's Office's online resources. The current Assessor's Parcel Number (APN) for the Property is 256-05-0012.

Riverside County Department of Environmental Health

Hillmann contacted the Riverside County Department of Environmental Health in order to determine if any UST or hazardous materials records were on file for the Property's APN. As of the date of this report, no response has been received by the Riverside County Department of Environmental Health.

Fire Department

Hillmann contacted the Riverside County Fire Department in order to determine if any UST or hazardous materials records were on file for the Property's APN. According to the Riverside County Fire Department, no such records exist for the Property.

State of California

South Coast Air Quality Management District

Hillmann contacted the South Coast Air Quality Management District (SCAQMD) in order to determine if there are any records of applications, permits to operate, equipment list reports, notices of violations, notices to comply, complaints, site inspection reports, emissions summaries, source test reports, air monitoring data, asbestos notifications, facility potential to emit, facility positive balance or toxic health risk assessments were on file for the Property's APN. The SCAQMD responded by indicating that they are unable to lookup records by parcel numbers.

Department of Toxic Substances Control – Cypress Regional Office

Hillmann contacted the State of California Department of Toxic Substances Control (DTSC) in order to determine if any records were on file for the Property's APN. As of the date of this report, no response has been received by the DTSC.

Regional Water Quality Control Board – Santa Ana Region (8)

Hillmann contacted the State of California Regional Water Quality Control Board (RWQCB) in order to determine if any records of underground storage tanks (USTs) or groundwater contamination were on file for the Property's APN. According to the agency no files exist for this Property. According to the online GeoTracker, no records exist for the Property.

United States

United States Environmental Protection Agency

Hillmann contacted the United States Environmental Protection Agency (EPA) in order to determine if any environmental records were on file for the Property. According to the EPA, no such records exist for the Property.

9.0 ENVIRONMENTAL PROFESSIONAL STATEMENT

I declare that, to the best of my professional knowledge and belief, I meet the definition of *Environmental Professional* as defined in §312.10 of 40 CFR 312. I have the specific qualifications based on education, training and experience to assess a *property* of the nature, history and setting of the subject Property. Hillmann has developed and performed all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

_____

David Rutherford
Environmental Professional

10.0 REFERENCES

EDR City Directory Abstract Report, Environmental Data Resources, 2013

EDR Radius Map Report with GeoCheck, Environmental Data Resources, 2013

EDR Sanborn Map Report, Environmental Data Resources, 2013

EDR Historical Topographic Map Report, Environmental Data Resources, 2013

EDR Aerial Photography Print Service, Environmental Data Resources, 2013

11.0 APPENDICES

Appendix A	Site Photographs
Appendix B	Maps/Diagrams
Appendix C	Historical Land Use Documentation/Maps
Appendix D	Reference Documents / Laboratory Results (if applicable)
Appendix E	Regulatory Database Report

APPENDIX A

SITE PHOTOGRAPHS

PHOTO LOG
Central Avenue and Sycamore Canyon Boulevard
Riverside, CA 92507
C3-5841

View of the Property

View of the adjacent property to the north

View of the adjacent property to the west

View of the adjacent property to the east

View of the adjacent property to the south

View of the asphalt pile at the northeast portion of the Property

PHOTO LOG
Central Avenue and Sycamore Canyon Boulevard
Riverside, CA 92507
C3-5841

View of construction debris pile at the central portion of the Property

View of the non-PCB containing pad-mounted transformer at the north portion of the Property

View of first pad-mounted transformer not marked as to PCB content

View of second pad-mounted transformer not marked as to PCB content

APPENDIX B

MAPS/DIAGRAMS

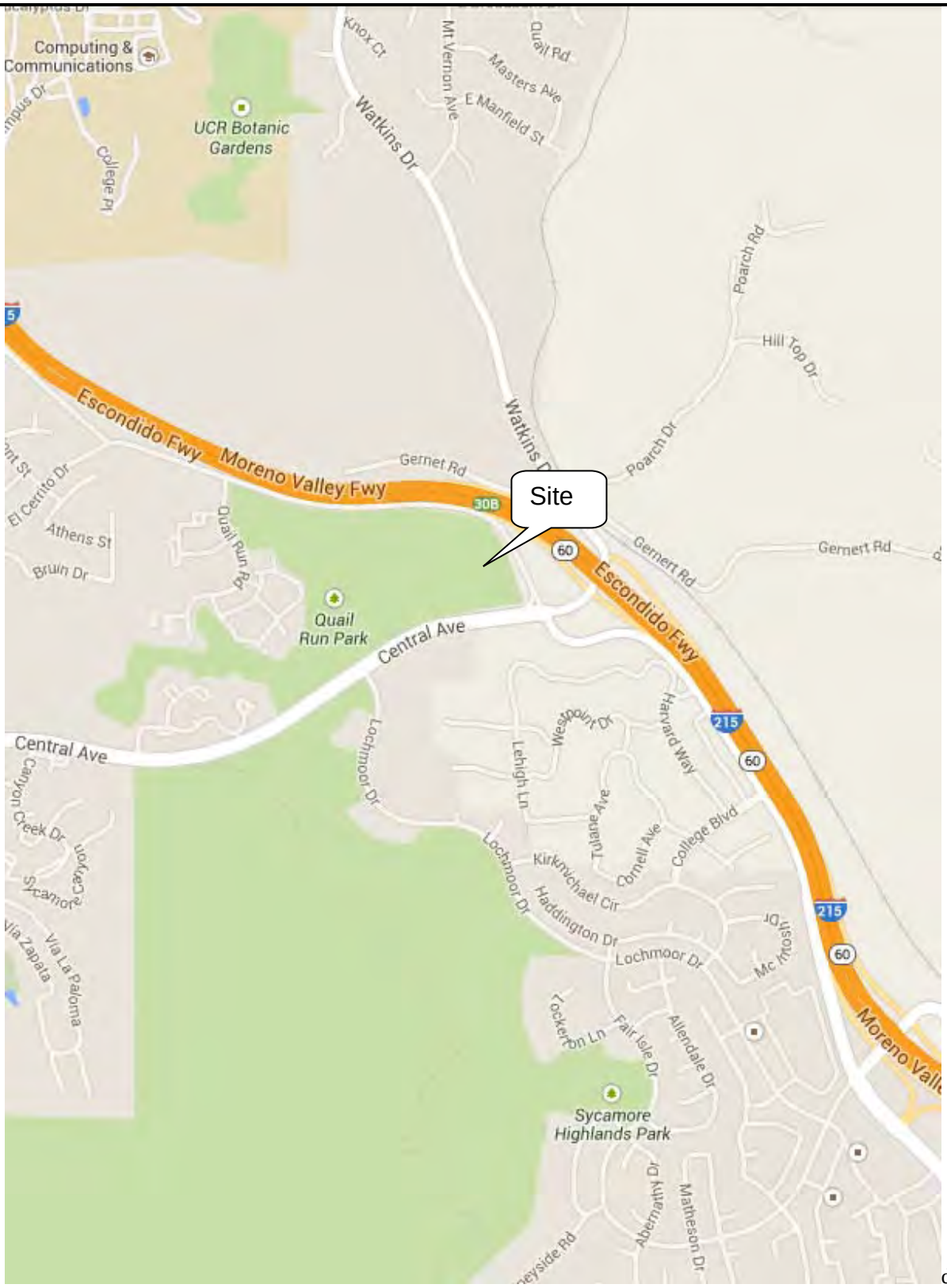


Figure 1: SITE VICINITY MAP	SCALE: (Not to Scale)	N
HILLMANN CONSULTING	**Project Location:** APN 256-05-0012 Riverside, CA **Project No.:** C3-5841	

Figure 2: SITE DIAGRAM	SCALE: (Not to Scale)	N
HILLMANN CONSULTING	**Project Location:** APN 256-05-0012 Riverside, CA **Project No.:** C3-5841	

APPENDIX C

HISTORICAL LAND USE DOCUMENTATION/MAPS

Central Avenue
Central Avenue
Riverside, CA 92507

Inquiry Number: 3767938.5
October 29, 2013

The EDR Aerial Photo Decade Package

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

EDR Aerial Photo Decade Package

Environmental Data Resources, Inc. (EDR) Aerial Photo Decade Package is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's professional researchers provide digitally reproduced historical aerial photographs, and when available, provide one photo per decade.

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Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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Date EDR Searched Historical Sources:

Aerial Photography October 29, 2013

Target Property:

Central Avenue

Riverside, CA 92507

Year	***Scale***	***Details***	***Source***
1931	Aerial Photograph. Scale: 1"=500'	Flight Year: 1931 Best Copy Available from original source	Fairchild
1938	Aerial Photograph. Scale: 1"=500'	Flight Year: 1938	Laval
1953	Aerial Photograph. Scale: 1"=500'	Flight Year: 1953	Pacific Air
1967	Aerial Photograph. Scale: 1"=500'	Flight Year: 1967	Western
1977	Aerial Photograph. Scale: 1"=500'	Flight Year: 1977	Teledyne
1989	Aerial Photograph. Scale: 1"=500'	Flight Year: 1989	USGS
1994	Aerial Photograph. Scale: 1"=500'	/DOQQ - acquisition dates: 1994	EDR
2005	Aerial Photograph. Scale: 1"=500'	Flight Year: 2005	EDR
2006	Aerial Photograph. Scale: 1"=500'	Flight Year: 2006	EDR
2009	Aerial Photograph. Scale: 1"=500'	Flight Year: 2009	EDR
2010	Aerial Photograph. Scale: 1"=500'	Flight Year: 2010	EDR
2012	Aerial Photograph. Scale: 1"=500'	Flight Year: 2012	EDR

INQUIRY #: 3767938.5
YEAR: 1931
= 500'
N

INQUIRY #: 3767938.5
YEAR: 1938
= 500'
N

INQUIRY #: 3767938.5
YEAR: 1953
= 500'
N

INQUIRY #: 3767938.5
YEAR: 1967
= 500'
N

INQUIRY #: 3767938.5
YEAR: 1977
= 500'
N

INQUIRY #: 3767938.5
YEAR: 1989
= 500'
N

INQUIRY #: 3767938.5
YEAR: 1994
= 500'
N

INQUIRY #: 3767938.5
YEAR: 2005
= 500'
N

INQUIRY #: 3767938.5
YEAR: 2006
= 500'
N

INQUIRY #: 3767938.5
YEAR: 2009
= 500'
N

INQUIRY #: 3767938.5
YEAR: 2010
= 500'
N

INQUIRY #: 3767938.5
YEAR: 2012
= 500'
N

Central Avenue
Central Avenue
Riverside, CA 92507

Inquiry Number: 3767938.4
October 25, 2013

EDR Historical Topographic Map Report

Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

EDR Historical Topographic Map Report

Environmental Data Resources, Inc.s (EDR) Historical Topographic Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDRs Historical Topographic Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the early 1900s.

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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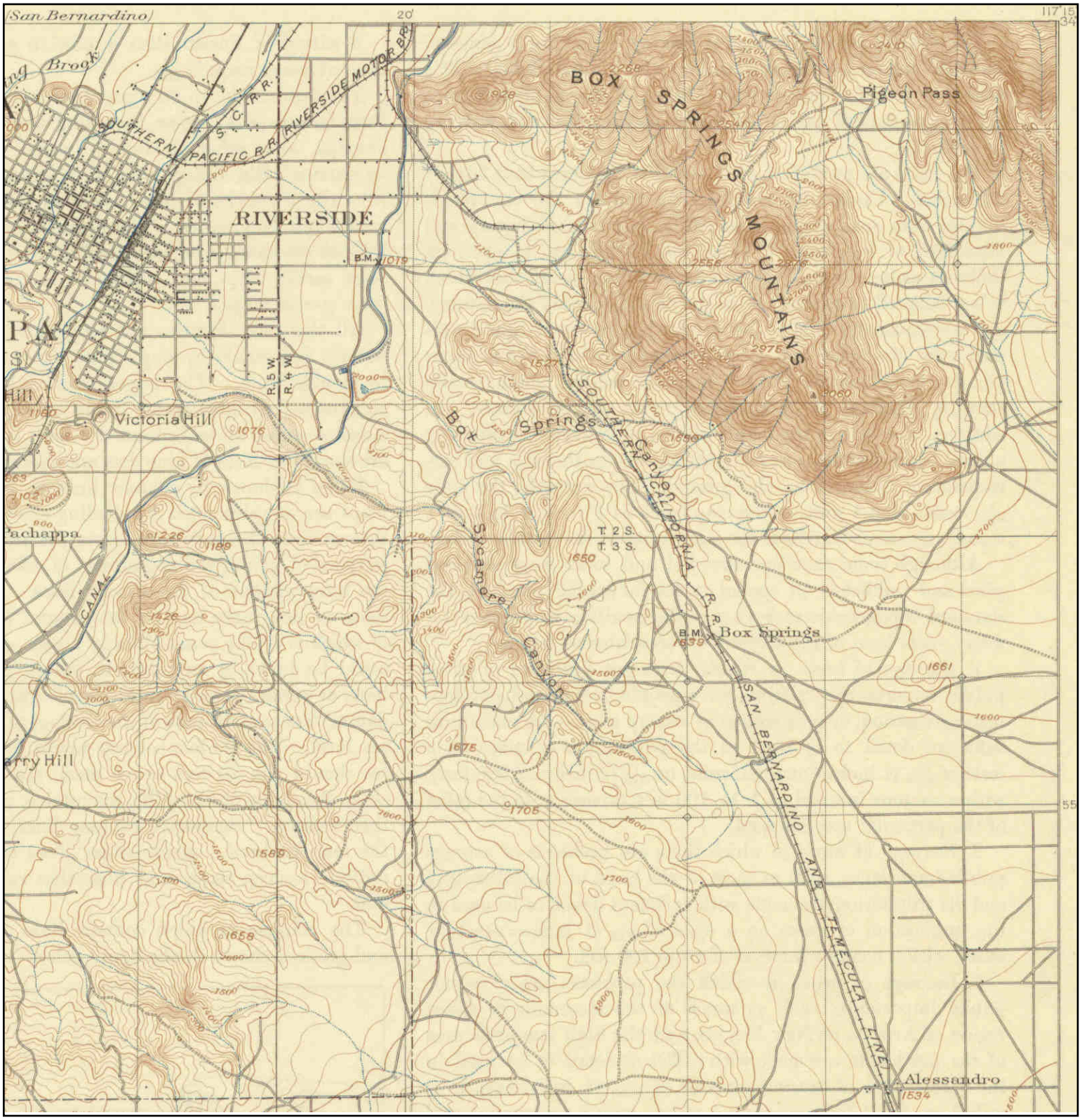
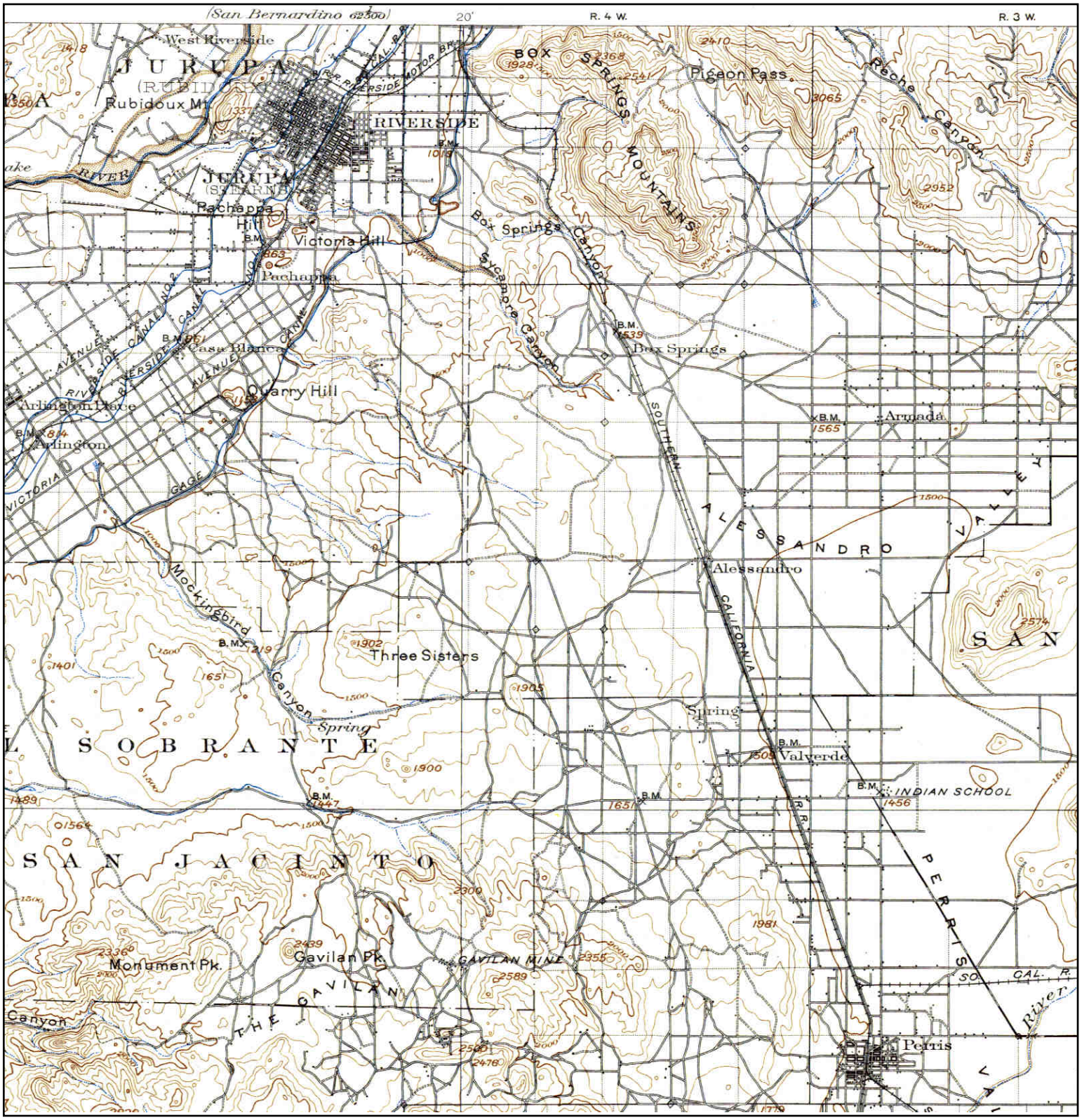
Historical Topographic Map



N	TARGET QUAD NAME: RIVERSIDE MAP YEAR: 1901 SERIES: 15 SCALE: 1:62500	SITE NAME: Central Avenue ADDRESS: Central Avenue Riverside, CA 92507 LAT/LONG: 33.9591 / -117.3131	CLIENT: Hillmann Environmental Co. CONTACT: Kristine Savona INQUIRY#: 3767938.4 RESEARCH DATE: 10/25/2013

Historical Topographic Map

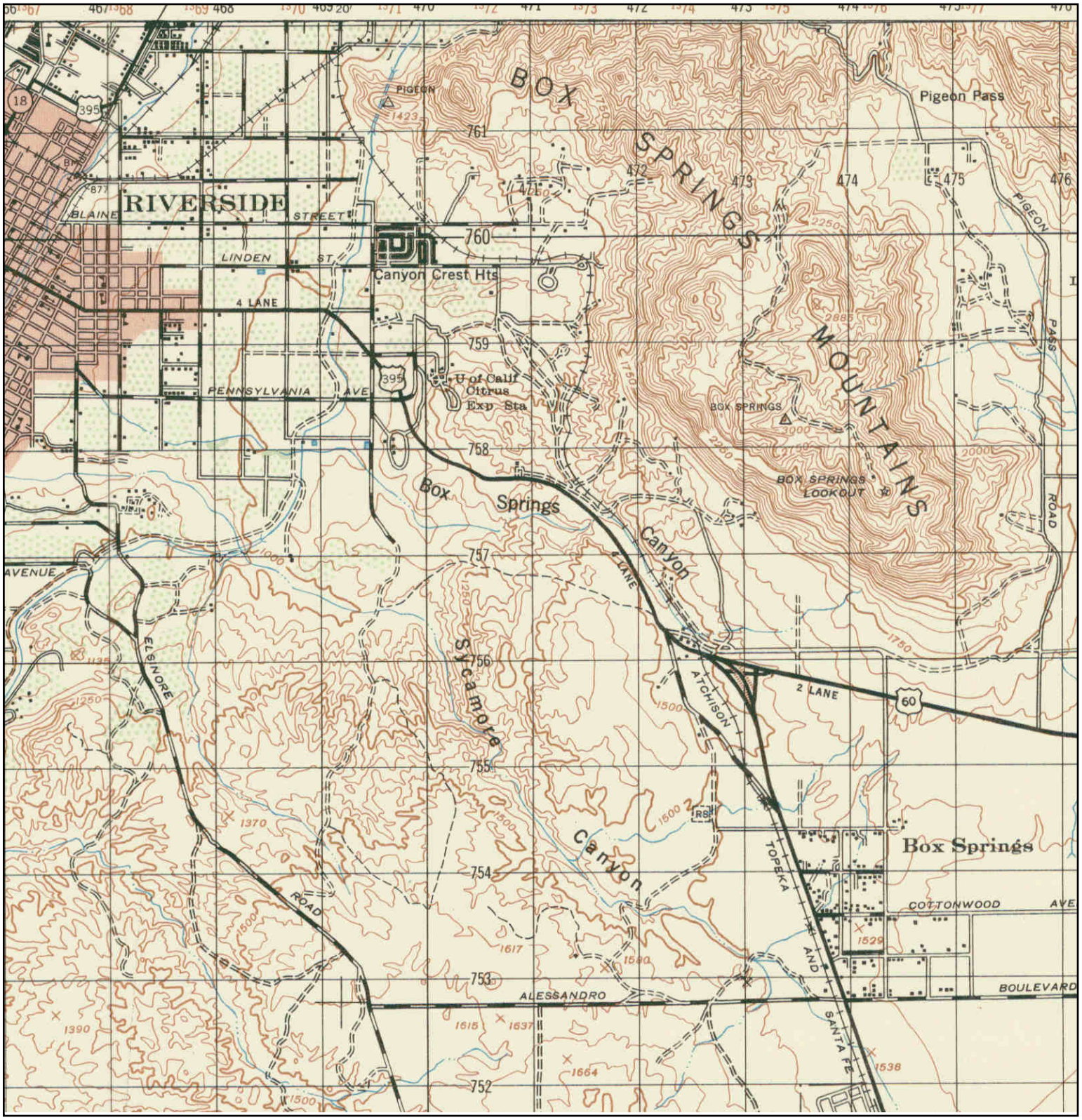


N	TARGET QUAD NAME: ELSINORE MAP YEAR: 1901 SERIES: 30 SCALE: 1:125000	SITE NAME: Central Avenue ADDRESS: Central Avenue Riverside, CA 92507 LAT/LONG: 33.9591 / -117.3131	CLIENT: Hillmann Environmental Co. CONTACT: Kristine Savona INQUIRY#: 3767938.4 RESEARCH DATE: 10/25/2013

Historical Topographic Map

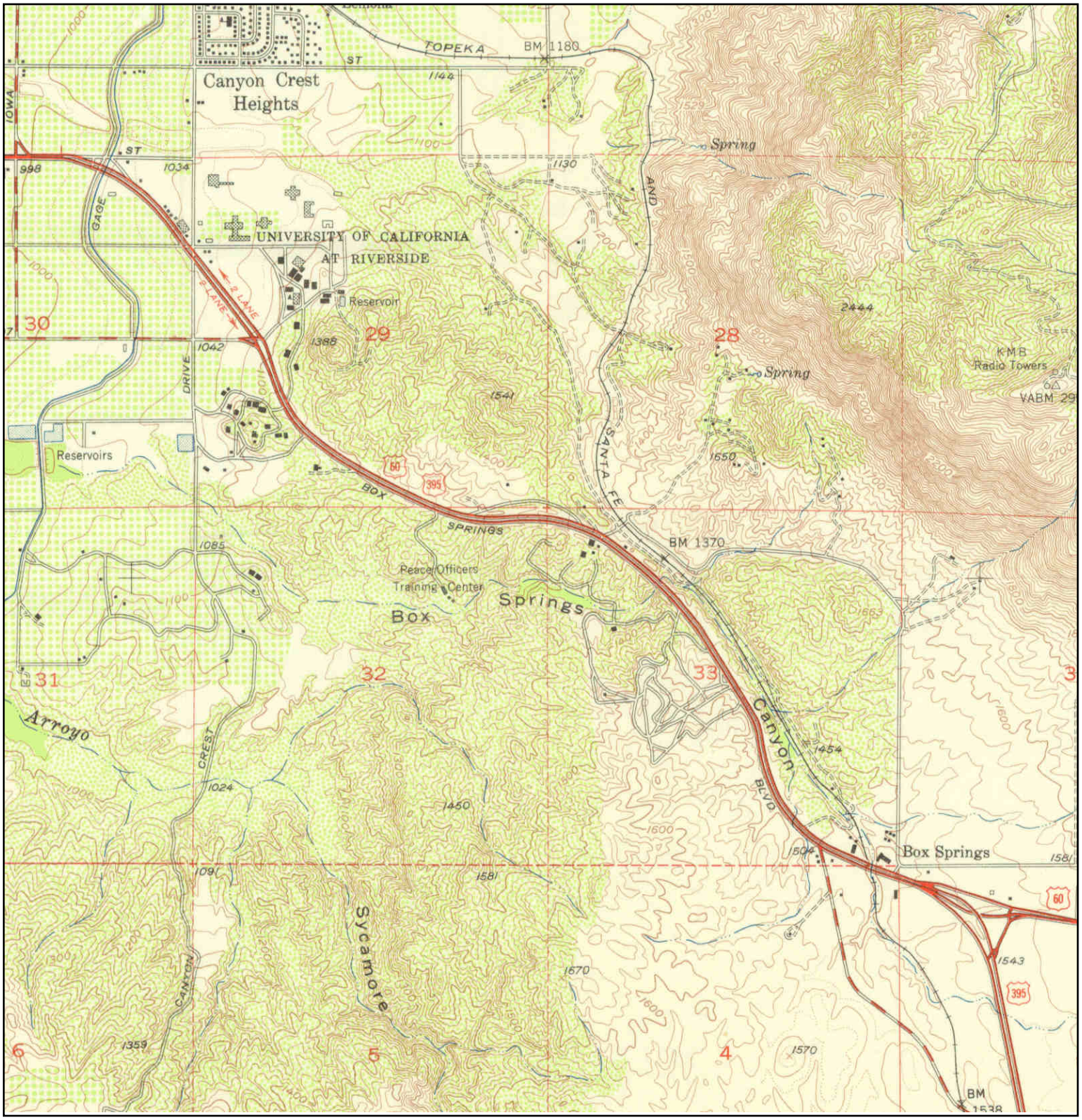
N	TARGET QUAD NAME: SOUTHERN CA SHEET 1 MAP YEAR: 1901 SERIES: 60 SCALE: 1:250000	SITE NAME: Central Avenue ADDRESS: Central Avenue Riverside, CA 92507 LAT/LONG: 33.9591 / -117.3131	CLIENT: Hillmann Environmental Co. CONTACT: Kristine Savona INQUIRY#: 3767938.4 RESEARCH DATE: 10/25/2013

Historical Topographic Map



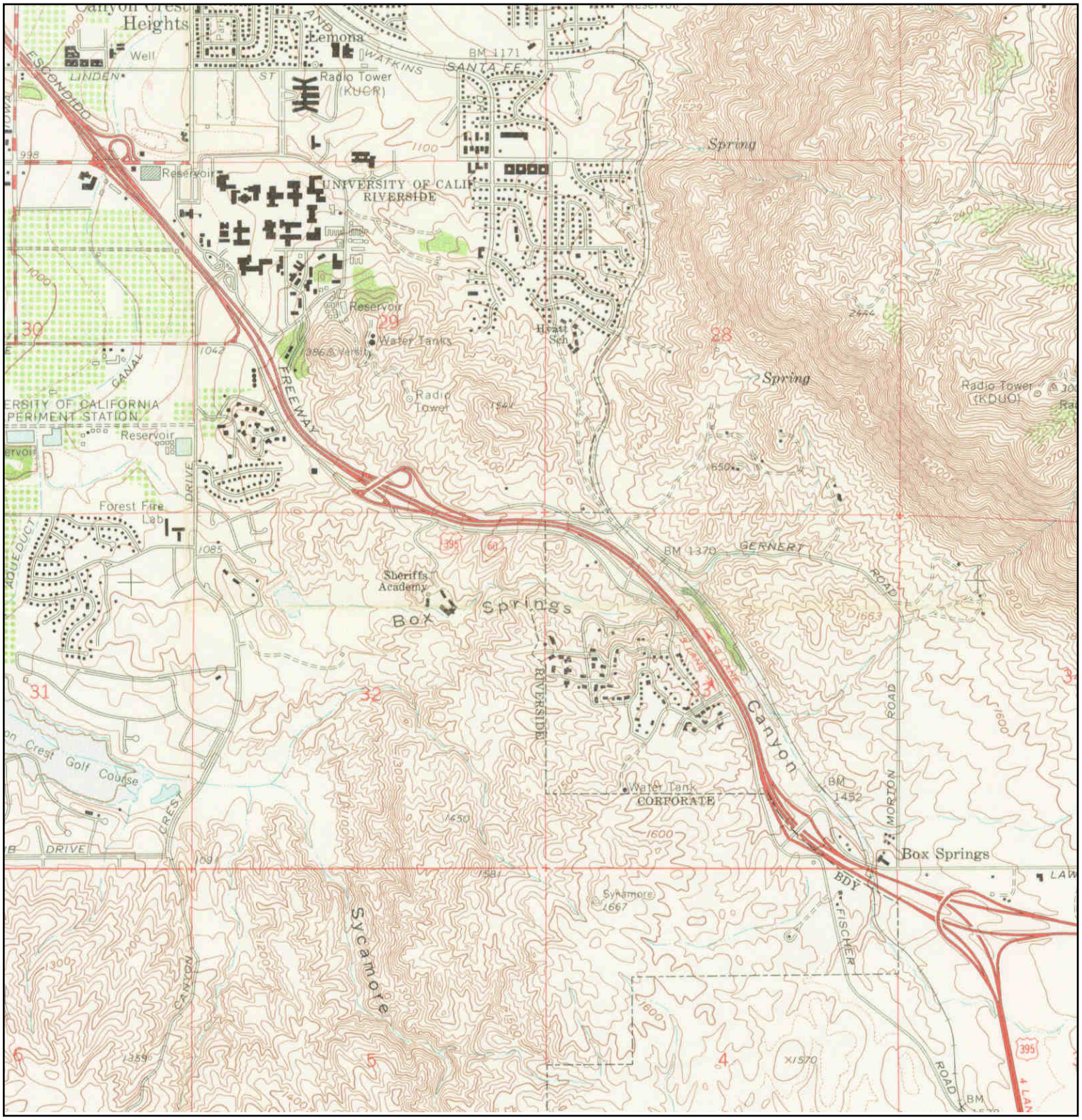
N	TARGET QUAD NAME: RIVERSIDE MAP YEAR: 1947 SERIES: 15 SCALE: 1:50000	SITE NAME: Central Avenue ADDRESS: Central Avenue Riverside, CA 92507 LAT/LONG: 33.9591 / -117.3131	CLIENT: Hillmann Environmental Co. CONTACT: Kristine Savona INQUIRY#: 3767938.4 RESEARCH DATE: 10/25/2013

Historical Topographic Map



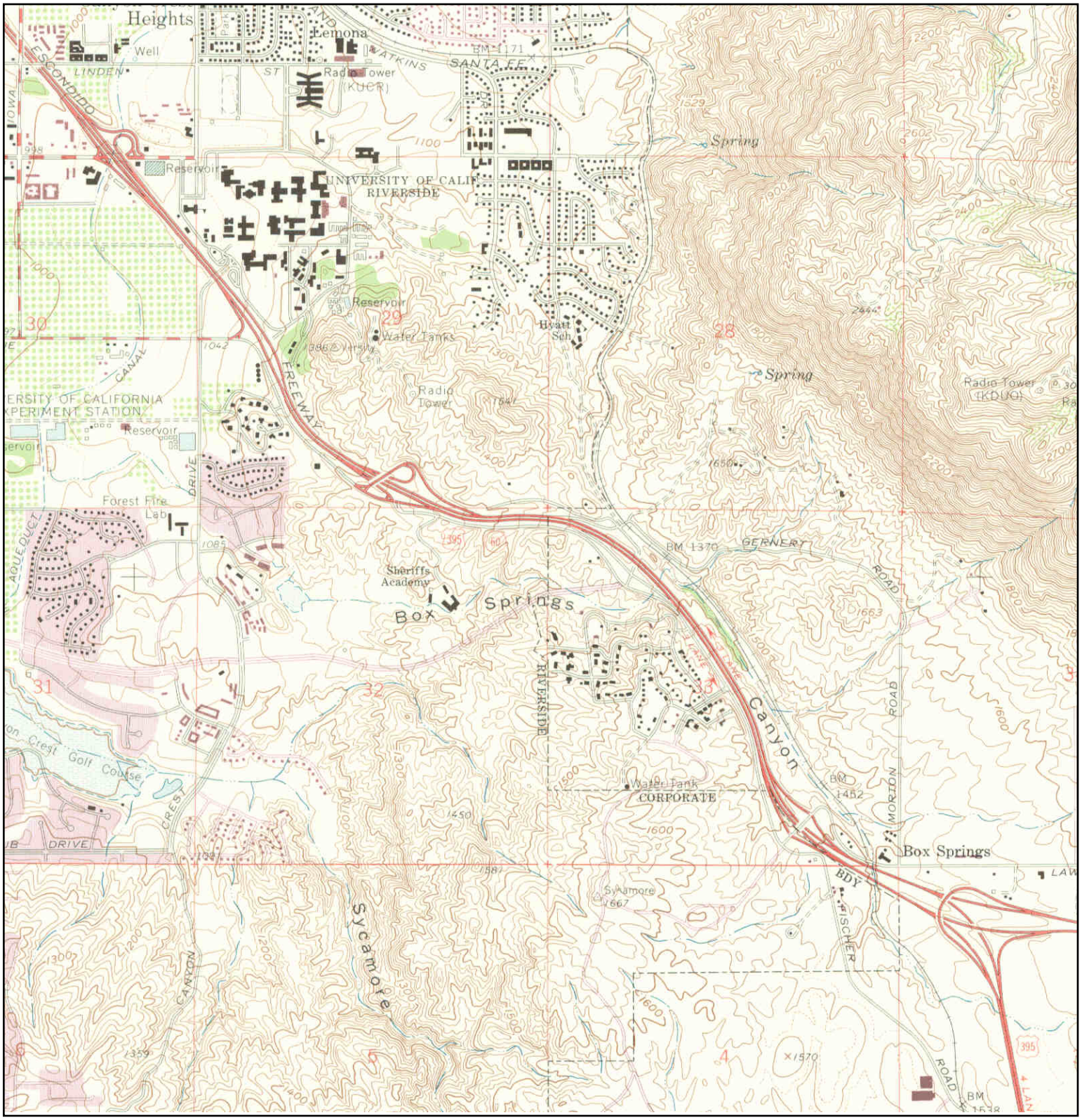
N	TARGET QUAD NAME: RIVERSIDE EAST MAP YEAR: 1953 SERIES: 7.5 SCALE: 1:24000	SITE NAME: Central Avenue ADDRESS: Central Avenue Riverside, CA 92507 LAT/LONG: 33.9591 / -117.3131	CLIENT: Hillmann Environmental Co. CONTACT: Kristine Savona INQUIRY#: 3767938.4 RESEARCH DATE: 10/25/2013

Historical Topographic Map



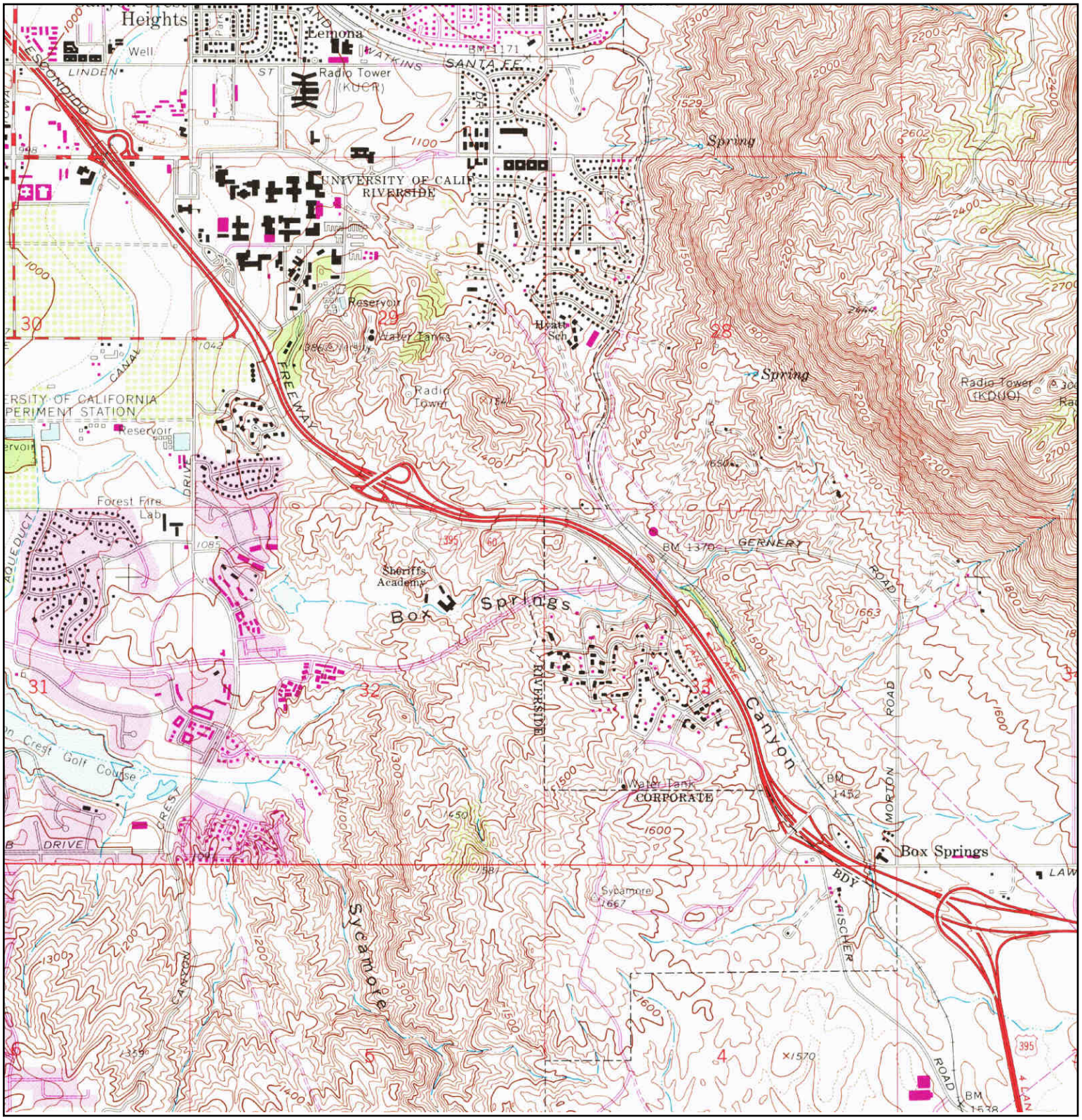
N	TARGET QUAD NAME: RIVERSIDE EAST MAP YEAR: 1967 SERIES: 7.5 SCALE: 1:24000	SITE NAME: Central Avenue ADDRESS: Central Avenue Riverside, CA 92507 LAT/LONG: 33.9591 / -117.3131	CLIENT: Hillmann Environmental Co. CONTACT: Kristine Savona INQUIRY#: 3767938.4 RESEARCH DATE: 10/25/2013

Historical Topographic Map



N	TARGET QUAD NAME: RIVERSIDE EAST MAP YEAR: 1973 PHOTOREVISED FROM :1967 SERIES: 7.5 SCALE: 1:24000	SITE NAME: Central Avenue ADDRESS: Central Avenue Riverside, CA 92507 LAT/LONG: 33.9591 / -117.3131	CLIENT: Hillmann Environmental Co. CONTACT: Kristine Savona INQUIRY#: 3767938.4 RESEARCH DATE: 10/25/2013

Historical Topographic Map



N	TARGET QUAD NAME: RIVERSIDE EAST MAP YEAR: 1980 PHOTOREVISED FROM :1967 SERIES: 7.5 SCALE: 1:24000	SITE NAME: Central Avenue ADDRESS: Central Avenue Riverside, CA 92507 LAT/LONG: 33.9591 / -117.3131	CLIENT: Hillmann Environmental Co. CONTACT: Kristine Savona INQUIRY#: 3767938.4 RESEARCH DATE: 10/25/2013

Central Avenue
Central Avenue
Riverside, CA 92507

Inquiry Number: 3767938.3
October 25, 2013

Certified Sanborn® Map Report

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

10/25/13

Site Name:
Central Avenue
Central Avenue
Riverside, CA 92507

EDR Inquiry # 3767938.3

Client Name:
Hillmann Environmental Co.
1745 W Orangewood Avenue
Orange, CA 92868-0000

Contact: Kristine Savona

EDR® Environmental Data Resources Inc

The complete Sanborn Library collection has been searched by EDR, and fire insurance maps covering the target property location provided by Hillmann Environmental Co. were identified for the years listed below. The certified Sanborn Library search results in this report can be authenticated by visiting www.edrnet.com/sanborn and entering the certification number. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by Sanborn Library LLC, the copyright holder for the collection.

Certified Sanborn Results:

Site Name: Central Avenue
Address: Central Avenue
City, State, Zip: Riverside, CA 92507
Cross Street:
P.O. # NA
Project: C3-5841
Certification # 37D4-4333-A917

Sanborn® Library search results
Certification # 37D4-4333-A917

UNMAPPED PROPERTY

This report certifies that the complete holdings of the Sanborn Library, LLC collection have been searched based on client supplied target property information, and fire insurance maps covering the target property were not found.

The Sanborn Library includes more than 1.2 million Sanborn fire insurance maps, which track historical property usage in approximately 12,000 American cities and towns. Collections searched:

- ✔ Library of Congress
- ✔ University Publications of America
- ✔ EDR Private Collection

The Sanborn Library LLC Since 1866™

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Central Avenue
Central Avenue
Riverside, CA 92507

Inquiry Number: 3767938.6
October 25, 2013

The EDR-City Directory Abstract

Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

TABLE OF CONTENTS

SECTION

Executive Summary

Findings

City Directory Images

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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This Report contains certain information obtained from a variety of public and other sources reasonably available to Environmental Data Resources, Inc. It cannot be concluded from this Report that coverage information for the target and surrounding properties does not exist from other sources. **NO WARRANTY EXPRESSED OR IMPLIED, IS MADE WHATSOEVER IN CONNECTION WITH THIS REPORT. ENVIRONMENTAL DATA RESOURCES, INC. SPECIFICALLY DISCLAIMS THE MAKING OF ANY SUCH WARRANTIES, INCLUDING WITHOUT LIMITATION, MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE OR PURPOSE. ALL RISK IS ASSUMED BY THE USER. IN NO EVENT SHALL ENVIRONMENTAL DATA RESOURCES, INC. BE LIABLE TO ANYONE, WHETHER ARISING OUT OF ERRORS OR OMISSIONS, NEGLIGENCE, ACCIDENT OR ANY OTHER CAUSE, FOR ANY LOSS OR DAMAGE, INCLUDING, WITHOUT LIMITATION, SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR EXEMPLARY DAMAGES. ANY LIABILITY ON THE PART OF ENVIRONMENTAL DATA RESOURCES, INC. IS STRICTLY LIMITED TO A REFUND OF THE AMOUNT PAID FOR THIS REPORT.** Purchaser accepts this Report "AS IS". Any analyses, estimates, ratings, environmental risk levels or risk codes provided in this Report are provided for illustrative purposes only, and are not intended to provide, nor should they be interpreted as providing any facts regarding, or prediction orforecast of, any environmental risk for any property. Only a Phase I Environmental Site Assessment performed by an environmental professional can provide information regarding the environmental risk for any property. Additionally, the information provided in this Report is not to be construed as legal advice.

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EXECUTIVE SUMMARY

DESCRIPTION

Environmental Data Resources, Inc.'s (EDR) City Directory Abstract is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's City Directory Abstract includes a search and abstract of available city directory data. For each address, the directory lists the name of the corresponding occupant at five year intervals.

Business directories including city, cross reference and telephone directories were reviewed, if available, at approximately five year intervals for the years spanning 1921 through 2013. This report compiles information gathered in this review by geocoding the latitude and longitude of properties identified and gathering information about properties within 660 feet of the target property.

A summary of the information obtained is provided in the text of this report.

RESEARCH SUMMARY

The following research sources were consulted in the preparation of this report. An "X" indicates where information was identified in the source and provided in this report.

Year	Source	TP	Adjoining	Text Abstract	Source Image
2013	Cole Information Services	-	-	-	-
2008	Cole Information Services	-	X	X	-
2003	Cole Information Services	-	-	-	-
2002	SBC PACIFIC BELL	-	-	-	-
2001	Haines & Company, Inc.	-	X	X	-
1996	Pacific Bell	-	-	-	-
1993	Pacific Bell	-	-	-	-
1990	Pacific Bell	-	-	-	-
1986	Pacific Bell Yellow Pages	-	X	X	-
1981	Pacific Telephone	-	-	-	-
1977	Pacific Telephone	-	-	-	-
1970	Pacific Telephone	-	-	-	-
1967	Luskey Brothers & Co.	-	-	-	-
1966	Luskey Brothers & Company Inc.	-	-	-	-
1961	Luskey Brothers & Co.	-	-	-	-
1960	Luskeys Brothers & Co., Publishers	-	-	-	-
1956	Luskey Brothers & Co.	-	-	-	-
1955	Luskeys Brothers & Co., Publishers	-	-	-	-
1951	Los Angeles Directory Co.	-	-	-	-
1946	Southern California Telephone Company	-	-	-	-
1945	Los Angeles Directory Co.	-	-	-	-
1941	Pacific Directory Co.	-	-	-	-
1939	Los Angeles Directory Co.	-	-	-	-
1936	Los Angeles Directory Co.	-	-	-	-
1931	Southern California Telephone Co.	-	-	-	-

EXECUTIVE SUMMARY

Year	Source	TP	Adjoining	Text Abstract	Source Image
1930	Los Angeles Directory Co.	-	-	-	-
1927	Los Angeles Directory Co.	-	-	-	-
1925	Los Angeles Directory Co.	-	-	-	-
1924	Kaasen Directory Co.	-	-	-	-
1921	Riverside Directory Co.	-	X	X	-

FINDINGS

TARGET PROPERTY INFORMATION

ADDRESS

Central Avenue
Riverside, CA 92507

FINDINGS DETAIL

Target Property research detail.

FINDINGS

ADJOINING PROPERTY DETAIL

The following Adjoining Property addresses were researched for this report. Detailed findings are provided for each address.

CENTRAL AVE

317 CENTRAL AVE

Year	Uses	Source
2001	DIARTE Francsco	Haines & Company, Inc.
	CENTRALAVW 92543 CONT	Haines & Company, Inc.

321 CENTRAL AVE

Year	Uses	Source
2001	REOUR Frank	Haines & Company, Inc.

322 CENTRAL AVE

Year	Uses	Source
2001	9 ENNETTGeo W	Haines & Company, Inc.

325 CENTRAL AVE

Year	Uses	Source
2001	JOHNSON Charlie	Haines & Company, Inc.
	CATRONJan	Haines & Company, Inc.
	BOYD Donald	Haines & Company, Inc.
1921	Stephenson G J	Riverside Directory Co.

328 CENTRAL AVE

Year	Uses	Source
2001	WADED	Haines & Company, Inc.

333 CENTRAL AVE

Year	Uses	Source
2008	J ZARAGOZA INSURANCE AGENCY	Cole Information Services
2001	FETTERS Donald E	Haines & Company, Inc.

337 CENTRAL AVE

Year	Uses	Source
1921	Mitchell Ross	Riverside Directory Co.

FINDINGS

342 CENTRAL AVE

Year	Uses	Source
2001	BIZZARO	Haines & Company, Inc.

403 CENTRAL AVE

Year	Uses	Source
2001	HATONEIlse	Haines & Company, Inc.

409 CENTRAL AVE

Year	Uses	Source
2001	OZER Daniel J	Haines & Company, Inc.

411 CENTRAL AVE

Year	Uses	Source
1921	Martin Otto	Riverside Directory Co.

451 CENTRAL AVE

Year	Uses	Source
2001	FEIMER RUDOLF DDS	Haines & Company, Inc.
	FORSTERNSOC	Haines & Company, Inc.
	WORKR GORDON KAT	Haines & Company, Inc.
	HOFMANNSIGMAR	Haines & Company, Inc.
	JACOBSMEYER	Haines & Company, Inc.
	GUZZEI TA KATHLEEN	Haines & Company, Inc.
	MACARTHURM	Haines & Company, Inc.
	ROUTONMISCHAMFC	Haines & Company, Inc.
	STANFIELDJANSOCL	Haines & Company, Inc.
	VIDANOCL	Haines & Company, Inc.
	MELLON MFCC	Haines & Company, Inc.
	WARRENLYNDAW	Haines & Company, Inc.
	WHITFORD DAVID BJR	Haines & Company, Inc.
	CLICK CARLOE D	Haines & Company, Inc.
	CHILDS JACQUE	Haines & Company, Inc.
	BROWN&HOFMANN	Haines & Company, Inc.
	ARCHITECT	Haines & Company, Inc.
	BROWN DEAN	Haines & Company, Inc.
	AKAMINESANDRAOD	Haines & Company, Inc.
	S BUILDING	Haines & Company, Inc.
	DECHENNELAURAM	Haines & Company, Inc.
	COMPTONAGMFCC	Haines & Company, Inc.
	COMPTONAN	Haines & Company, Inc.

FINDINGS

Year	Uses	Source
2001	GUZZETTA MFCC	Haines & Company, Inc.

S CENTRAL AVE

515 S CENTRAL AVE

Year	Uses	Source
1986	La Valencia Apartments	Pacific Bell Yellow Pages

FINDINGS

TARGET PROPERTY: ADDRESS NOT IDENTIFIED IN RESEARCH SOURCE

The following Target Property addresses were researched for this report, and the addresses were not identified in the research source.

Address Researched	Address Not Identified in Research Source
Central Avenue	2013, 2008, 2003, 2002, 2001, 1996, 1993, 1990, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921

ADJOINING PROPERTY: ADDRESSES NOT IDENTIFIED IN RESEARCH SOURCE

The following Adjoining Property addresses were researched for this report, and the addresses were not identified in research source.

Address Researched	Address Not Identified in Research Source
317 CENTRAL AVE	2013, 2008, 2003, 2002, 1996, 1993, 1990, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
321 CENTRAL AVE	2013, 2008, 2003, 2002, 1996, 1993, 1990, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
322 CENTRAL AVE	2013, 2008, 2003, 2002, 1996, 1993, 1990, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
325 CENTRAL AVE	2013, 2008, 2003, 2002, 1996, 1993, 1990, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924
328 CENTRAL AVE	2013, 2008, 2003, 2002, 1996, 1993, 1990, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
333 CENTRAL AVE	2013, 2008, 2003, 2002, 1996, 1993, 1990, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
333 CENTRAL AVE	2013, 2003, 2002, 2001, 1996, 1993, 1990, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
337 CENTRAL AVE	2013, 2008, 2003, 2002, 2001, 1996, 1993, 1990, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924
342 CENTRAL AVE	2013, 2008, 2003, 2002, 1996, 1993, 1990, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
403 CENTRAL AVE	2013, 2008, 2003, 2002, 1996, 1993, 1990, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
409 CENTRAL AVE	2013, 2008, 2003, 2002, 1996, 1993, 1990, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921

FINDINGS

Address Researched	Address Not Identified in Research Source
411 CENTRAL AVE	2013, 2008, 2003, 2002, 2001, 1996, 1993, 1990, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924
451 CENTRAL AVE	2013, 2008, 2003, 2002, 1996, 1993, 1990, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
515 S CENTRAL AVE	2013, 2008, 2003, 2002, 2001, 1996, 1993, 1990, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921

APPENDIX D

REFERENCE DOCUMENTATION / LABORATORY RESULTS (if applicable)

HILLMANN
CONSULTING

October 25, 2013

State of California
Regional Water Quality Control Board – Santa Ana Region (8)
3737 Main Street, Suite #500
Riverside, CA 92501-3339
Phone (951) 782-4130
Fax (951) 781-6288

RE: Environmental Files:

Vacant land - no address assigned:
Corner of Sycamore Canyon Blvd & Central Avenue, Riverside, CA
APN 256-05-0012

Dear Sir/Madam:

Hillmann Consulting, LLC is conducting an environmental investigation of the above referenced property. Under the Freedom of Information Act, we are requesting any information your office has regarding this property. If any records are located, we would like to obtain copies or schedule a file review. If no records are available, please contact me to confirm. Thank you.

Sincerely,

Kristine Savona
Office Manager
Hillmann Consulting, LLC
ksavona@hillmanngroup.com

South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178
(909) 396-2000 • www.aqmd.gov

Information Management
Public Records Unit

Direct Dial: (909) 396-3700
FAX: (909) 396-3330

PUBLIC RECORDS REQUEST FORM

PRU Office Use Only
CONTROL NUMBER

ATTENTION REQUESTOR: To expedite your request for District records, please fill out this form completely, and identify specifically the type of records you are requesting. Please limit your request to one facility or one site address for each request form filed, and three requested items per form. Additional forms or pages can be used if requesting information for more than one facility or for records not identified on this form. Requests should reasonably describe identifiable records prepared, owned, used, or retained by the District. Public Records Unit staff is available to assist you in identifying those records in the District's possession. The District is not required by law to create a new record or list from an existing record.

REQUESTOR INFORMATION

NAME: Kristine Savona		DATE: 10/25/13
COMPANY: Hillmann Consulting, LLC		
MAILING ADDRESS: 1745 W. Orangewood Avenue, Suite 110		
CITY: Orange	STATE: CA	ZIP CODE: 92868
PHONE NUMBER: 714-634-9500	FAX NUMBER: 714-634-9507	
EMAIL ADDRESS: ksavona@hillmanngroup.com		

REQUESTED RECORDS (*3 items per form*)

☐ Applications (APPLS)	X Complaints	X Asbestos Notifications/Records
☐ Permits to Operate (P/O)	X Site Inspection Reports (I/R)	X Facility Potential to Emit (PTE)
☐ Equipment List Report (EQL)	X Emissions Summary	X Facility Positive Balance (NSR)
X Notices of Violation (NOV)	X Source Test Reports (S/T RPTS)	X Toxic-Health Risk Assessment (HRA)
X Notices to Comply (N/C)	X Air Monitoring Data	☐ Other (describe below or on additional pages):

Vacant land - no address assigned:
Corner of Sycamore Canyon Blvd & Central Avenue, Riverside, CA
APN 256-05-0012

TIME PERIOD OF DOCUMENTS REQUESTED From: 1900 To: 2013

REQUESTED FACILITY INFORMATION (If Applicable)

FACILITY NAME:		
FACILITY ADDRESS:		
CITY:	STATE:	ZIP CODE:
FACILITY I.D. NO. (if known):	APPL. AND/OR PERMIT NO. (if known):	

***Direct cost of duplication**: $.15 per page for paper copies (first 10 pages free) and $5.00 per copied audio tape. No charge for copied Diskettes or CDs. Transfer of gathered electronic records onto CD or Diskette typically costs $10.00 each, but costs will vary (see Instructions for Requesting Records).*

X I wish to inspect the requested records, where applicable, or receive the requested records electronically at no charge. I do not want copies produced at this time.

X I request that the SCAQMD contact me prior to copying the requested records if the cost exceeds $20.00.

☐ I would like copies of the requested records and I hereby agree to reimburse the SCAQMD for the direct cost of duplication in accordance with Gov. Code Sec. 6253(b).

HILLMANN
CONSULTING

October 25, 2013

Attn: File Review
Riverside County Department of Environmental Health
4065 County Circle Drive
P. O. Box 7600
Riverside, CA 92513-7600
Phone (951) 358-5055
Fax (951) 358-5017

RE: Underground Storage Tank/Hazardous Materials Files:

Vacant land - no address assigned:
Corner of Sycamore Canyon Blvd & Central Avenue, Riverside, CA
APN 256-05-0012

Dear Sir/Madam:

Hillmann Environmental Group, LLC is conducting an environmental investigation of the above referenced property. Under the Freedom of Information Act, we are requesting any information your office has regarding this property. If any records are located, we would like to obtain copies or schedule a file review. If no records are available, please contact me to confirm. Thank you.

Sincerely,

Kristine Savona
Office Manger
Hillmann Consulting, LLC

Request Confirmation

Request Information

Tracking Number : *EPA-R9-2014-000563*

Requester Name : Ms. Kristine Savona

Date Submitted : 10/25/2013

Request Status : Submitted

Description :

We would like to request any information your office has regarding any environmental documents, underground storage tanks (USTs) or hazardous materials for the property listed below. If any records are located, we would like to obtain copies or schedule a file review. If no records are available, please contact me to confirm. Thank you for your assistance.

Vacant land - no address assigned:
Corner of Sycamore Canyon Blvd & Central Avenue, RIverside, CA
APN 256-05-0012

HILLMANN
CONSULTING

October 25, 2013

State of California
Department of Toxic Substances Control
Region 4 – Cypress Regional Office
5796 Corporate Avenue
Cypress, CA 90630-4732
Phone (714) 484-5337
Fax (714) 484-5318

RE: DTSC Files:

Vacant land - no address assigned:
Corner of Sycamore Canyon Blvd & Central Avenue, Riverside, CA
APN 256-05-0012

Dear Sir/Madam:

Hillmann Environmental Group, LLC is conducting an environmental investigation of the above referenced property. Under the Freedom of Information Act, we are requesting any information your office has regarding this property. If any records are located, we would like to obtain copies or schedule a file review. If no records are available, please contact me to confirm. Thank you.

Sincerely,

Kristine Savona
Office Manager
Hillmann Consulting, LLC

HILLMANN
CONSULTING

October 25, 2013

Riverside County Fire Department
210 West San Jacinto Avenue
Perris, CA 92570
Phone (951) 940-6900
Fax (951) 940-6910

RE: Underground Storage Tank/Hazardous Materials Files:

Vacant land - no address assigned:
Corner of Sycamore Canyon Blvd & Central Avenue, Riverside, CA
APN 256-05-0012

Dear Sir/Madam:

Hillmann Environmental Group, LLC is conducting an environmental investigation of the above referenced property. Under the Freedom of Information Act, we are requesting any information your office has regarding this property. If any records are located, we would like to obtain copies or schedule a file review. If no records are available, please contact me to confirm. Thank you.

Sincerely,

Kristine Savona
Office Manger
Hillmann Consulting, LLC

HILLMANN
CONSULTING

October 25, 2013

City of Riverside Fire Department
3085 St. Lawrence Street
Riverside, CA 92504
Phone (951) 826-5321
fire@riversideca.gov

RE: Underground Storage Tank/Hazardous Materials Files:

Vacant land - no address assigned:
Corner of Sycamore Canyon Blvd & Central Avenue, Riverside, CA
APN 256-05-0012

Dear Sir/Madam:

Hillmann Environmental Group, LLC is conducting an environmental investigation of the above referenced property. Under the Freedom of Information Act, we are requesting any information your office has regarding this property. If any records are located, we would like to obtain copies or schedule a file review. If no records are available, please contact me to confirm. Thank you.

Sincerely,

Kristine Savona
Office Manger
Hillmann Consulting, LLC

Kristine Savona

From: WB-RB8-FileReview8 [FileReview8@waterboards.ca.gov]
Sent: Monday, October 28, 2013 10:20 AM
To: Kristine Savona
Subject: File Review Request - 10/28/13

Hi Kristine,

I show no records for the Vacant land – no address assigned:
Corner of Sycamore Canyon Blvd & Central Avenue, Riverside, CA
APN 256-05-0012. If you have any questions you can call me at 951 782 4499.

Thanks,
Mary

Kristine Savona

From: Jacob Allen [jallen2@aqmd.gov]
Sent: Tuesday, October 29, 2013 9:46 AM
To: Kristine Savona
Subject: Request for Records from the South Coast Air Quality Management District

KRISTINE SAVONA
1745 W ORANGEWOOD AVE
ORANGE, CA 92868

Ref.: Control NO: 74498

This is in regard to your public record request dated 10/25/2013.The District is unable to process your request as submitted because the record you have requested:

CANNOT BE SEARCHED BY TRACT, LOT OR PARCEL NUMBERS. PLEASE SUBMIT WITH SPECIFICS (I.E. FACILITY I.D. NUMBER, FACILITY NAME, FACILITY ADDRESS, PERMIT OR APPLICATION NUMBER).

Should you have any questions or need additional information reguarding your request, please do not hesitate to contact me at (909) 396-3700, Tuesday through Friday, between the hours of 8:00 a.m. 4:30 p.m. Please reference your Control Number at the top of this letter in all communications and correspondences.

Sincerely,

JACOB ALLEN

For Colleen Paine
Public Records Coordinator

This rejection letter pertains to APN 256-05-0012

Department of Toxic Substances Control

Deborah O. Raphael, Director
5796 Corporate Avenue
Cypress, California 90630

Matthew Rodriquez
Secretary for
Environmental Protection

Edmund G. Brown Jr.
Governor

October 28, 2013

Kristine Savona
HILLMANN CONSULTING
1745 W. Orangewood Avenue, #110
Orange, CA 92868

CORNER OF SYCAMORE CANYON BLVD & CENTRAL AVENUE, RIVERSIDE, CA
PR#41025132

Dear Ms. Savona :

After a thorough review of our files we have found that no such records exist at this office pertaining to the sites/facility referenced above.

If you have any questions, or would like further information regarding your request, please contact our Regional Records Coordinator at: (714) 484-5337.

We would like to inform you about Envirostor, a database that provides information and documents on over 5,000 DTSC cleanup sites. EnviroStor can be accessed at: htt://www.envirostor.dtsc.ca.gov/public. Also, a computer is available in the Central Files of each DTSC Regional Office for use by community members to view EnviroStor.

Sincerely,

Julie Johnson
Regional Records Coordinator

Printed on Recycled Paper

Kristine Savona

From: Mitchell, Cathy [CMitchell@riversideca.gov]
Sent: Friday, October 25, 2013 10:53 AM
To: Kristine Savona
Cc: Prev; Mccoy, Karen
Subject: RE: Environmental Records Request

Good morning,

We don't have any records for this property. We don't start keeping files until there is an address assigned. You can try County Environmental Health for underground storage information. Their number is 951-358-5055.

Thank you and have a great day.

Caterina (Cathy) Mitchell
City of Riverside Fire Department
Prevention Division
cmitchell@riversideca.gov
(951) 826-5737
(951) 826-2539 fax

From: Kristine Savona [mailto:ksavona@hillmanngroup.com]
Sent: Friday, October 25, 2013 9:44 AM
To: Mccoy, Karen
Subject: Environmental Records Request

October 25, 2013

City of Riverside Fire Department
3085 St. Lawrence Street
Riverside, CA 92504
Phone (951) 826-5321
fire@riversideca.gov

RE: Underground Storage Tank/Hazardous Materials Files:

Vacant land - no address assigned:
Corner of Sycamore Canyon Blvd & Central Avenue, Riverside, CA
APN 256-05-0012

Dear Sir/Madam:

Hillmann Environmental Group, LLC is conducting an environmental investigation of the above referenced property. Under the Freedom of Information Act, we are requesting any information your office has regarding this property. If any records are located, we would like to obtain copies or schedule a file review. If no records are available, please contact me to confirm. Thank you.

Thank you,
Kristine Savona
Office Manager

Hillmann Consulting, LLC
1745 W. Orangewood Ave., Suite 110
Orange, CA 92868
Tel: (714) 634-9500
Fax: (714) 634-9507

ksavona@hillmanngroup.com
www.HillmannConsulting.com

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NO LABORATORY RESULTS

APPENDIX E

REGULATORY DATABASE REPORT

Central Avenue
Central Avenue
Riverside, CA 92507

Inquiry Number: 03767938.2r
October 25, 2013

The EDR Radius Map™ Report with GeoCheck®

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
Toll Free: 800.352.0050
www.edrnet.com

TABLE OF CONTENTS

SECTION	PAGE
Executive Summary	ES1
Overview Map	2
Detail Map	3
Map Findings Summary	4
Map Findings	8
Orphan Summary	9
Government Records Searched/Data Currency Tracking	GR-1

GEOCHECK ADDENDUM

Physical Setting Source Addendum	A-1
Physical Setting Source Summary	A-2
Physical Setting SSURGO Soil Map	A-5
Physical Setting Source Map	A-13
Physical Setting Source Map Findings	A-15
Physical Setting Source Records Searched	A-17

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-05) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

CENTRAL AVENUE
RIVERSIDE, CA 92507

COORDINATES

Latitude (North):	33.9591000 - 33˚ 57' 32.76''
Longitude (West):	117.3131000 - 117˚ 18' 47.16''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	471071.3
UTM Y (Meters):	3757471.0
Elevation:	1360 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	33117-H3 RIVERSIDE EAST, CA
Most Recent Revision:	1980

AERIAL PHOTOGRAPHY IN THIS REPORT

Photo Year:	2012
Source:	USDA

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL---------- National Priority List

EXECUTIVE SUMMARY

Proposed NPL ..... Proposed National Priority List Sites
NPL LIENS ..... Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL ..... National Priority List Deletions

Federal CERCLIS list

CERCLIS ..... Comprehensive Environmental Response, Compensation, and Liability Information System
FEDERAL FACILITY ..... Federal Facility Site Information listing

Federal CERCLIS NFRAP site List

CERC-NFRAP ..... CERCLIS No Further Remedial Action Planned

Federal RCRA CORRACTS facilities list

CORRACTS ..... Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF ..... RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-LQG ..... RCRA - Large Quantity Generators
RCRA-SQG ..... RCRA - Small Quantity Generators
RCRA-CESQG ..... RCRA - Conditionally Exempt Small Quantity Generator

Federal institutional controls / engineering controls registries

US ENG CONTROLS ..... Engineering Controls Sites List
US INST CONTROL ..... Sites with Institutional Controls
LUCIS ..... Land Use Control Information System

Federal ERNS list

ERNS ..... Emergency Response Notification System

State- and tribal - equivalent NPL

RESPONSE ..... State Response Sites

State- and tribal - equivalent CERCLIS

ENVIROSTOR ..... EnviroStor Database

State and tribal landfill and/or solid waste disposal site lists

SWF/LF ..... Solid Waste Information System

State and tribal leaking storage tank lists

LUST ..... Geotracker's Leaking Underground Fuel Tank Report

SLIC ..... Statewide SLIC Cases
INDIAN LUST ..... Leaking Underground Storage Tanks on Indian Land

State and tribal registered storage tank lists

UST ..... Active UST Facilities
AST ..... Aboveground Petroleum Storage Tank Facilities
INDIAN UST ..... Underground Storage Tanks on Indian Land
FEMA UST ..... Underground Storage Tank Listing

State and tribal voluntary cleanup sites

VCP ..... Voluntary Cleanup Program Properties
INDIAN VCP ..... Voluntary Cleanup Priority Listing

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS ..... A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

ODI ..... Open Dump Inventory
DEBRIS REGION 9 ..... Torres Martinez Reservation Illegal Dump Site Locations
WMUDS/SWAT ..... Waste Management Unit Database
SWRCY ..... Recycler Database
HAULERS ..... Registered Waste Tire Haulers Listing
INDIAN ODI ..... Report on the Status of Open Dumps on Indian Lands

Local Lists of Hazardous waste / Contaminated Sites

US CDL ..... Clandestine Drug Labs
HIST Cal-Sites ..... Historical Calsites Database
SCH ..... School Property Evaluation Program
Toxic Pits ..... Toxic Pits Cleanup Act Sites
CDL ..... Clandestine Drug Labs
US HIST CDL ..... National Clandestine Laboratory Register

Local Lists of Registered Storage Tanks

CA FID UST ..... Facility Inventory Database
HIST UST ..... Hazardous Substance Storage Container Database
SWEEPS UST ..... SWEEPS UST Listing

Local Land Records

LIENS 2 ..... CERCLA Lien Information
LIENS ..... Environmental Liens Listing
DEED ..... Deed Restriction Listing

Records of Emergency Release Reports

HMIRS ..... Hazardous Materials Information Reporting System

EXECUTIVE SUMMARY

CHMIRS	California Hazardous Material Incident Report System
LDS	Land Disposal Sites Listing
MCS	Military Cleanup Sites Listing
SPILLS 90	SPILLS 90 data from FirstSearch

Other Ascertainable Records

RCRA NonGen / NLR	RCRA - Non Generators
DOT OPS	Incident and Accident Data
DOD	Department of Defense Sites
FUDS	Formerly Used Defense Sites
CONSENT	Superfund (CERCLA) Consent Decrees
ROD	Records Of Decision
UMTRA	Uranium Mill Tailings Sites
US MINES	Mines Master Index File
TRIS	Toxic Chemical Release Inventory System
TSCA	Toxic Substances Control Act
FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing
SSTS	Section 7 Tracking Systems
ICIS	Integrated Compliance Information System
PADS	PCB Activity Database System
MLTS	Material Licensing Tracking System
RADINFO	Radiation Information Database
FINDS	Facility Index System/Facility Registry System
RAATS	RCRA Administrative Action Tracking System
RMP	Risk Management Plans
CA BOND EXP. PLAN	Bond Expenditure Plan
UIC	UIC Listing
NPDES	NPDES Permits Listing
Cortese	"Cortese" Hazardous Waste & Substances Sites List
HIST CORTESE	Hazardous Waste & Substance Site List
CUPA Listings	CUPA Resources List
Notify 65	Proposition 65 Records
DRYCLEANERS	Cleaner Facilities
WIP	Well Investigation Program Case List
ENF	Enforcement Action Listing
HAZNET	Facility and Manifest Data
EMI	Emissions Inventory Data
INDIAN RESERV	Indian Reservations
SCRD DRYCLEANERS	State Coalition for Remediation of Drycleaners Listing
COAL ASH DOE	Steam-Electric Plant Operation Data
COAL ASH EPA	Coal Combustion Residues Surface Impoundments List
HWT	Registered Hazardous Waste Transporter Database
HWP	EnviroStor Permitted Facilities Listing
Financial Assurance	Financial Assurance Information Listing
LEAD SMELTERS	Lead Smelter Sites
2020 COR ACTION	2020 Corrective Action Program List
US AIRS	Aerometric Information Retrieval System Facility Subsystem
PRP	Potentially Responsible Parties
WDS	Waste Discharge System
EPA WATCH LIST	EPA WATCH LIST
US FIN ASSUR	Financial Assurance Information
PCB TRANSFORMER	PCB Transformer Registration Database

EXECUTIVE SUMMARY

PROC..... Certified Processors Database
MWMP..... Medical Waste Management Program Listing

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP..... EDR Proprietary Manufactured Gas Plants
EDR US Hist Auto Stat..... EDR Exclusive Historic Gas Stations
EDR US Hist Cleaners..... EDR Exclusive Historic Dry Cleaners

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were not identified.

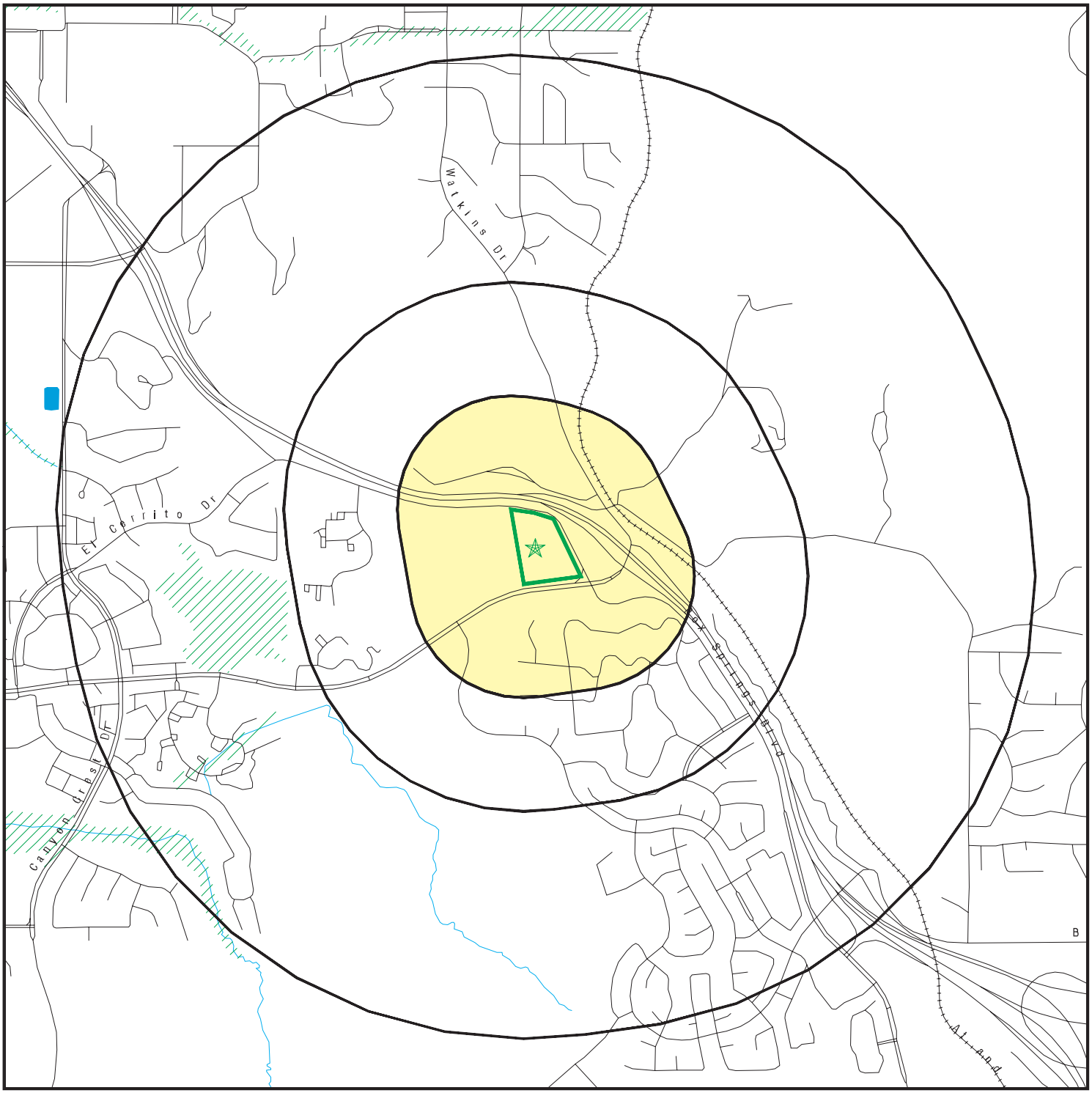
Unmappable (orphan) sites are not considered in the foregoing analysis.

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 8 records.

Site Name	Database(s)
RIVERSIDE CITY RADIO REPEATER	CA FID UST, SWEEPS UST
CHOCOLATE MOUNTAIN AERIAL GUNNERY	CERC-NFRAP
CITY OF RIVERSIDE GRANITE PIT MINE	SWF/LF
PEDLEY MAINTENANCE YARD	SWF/LF
RIVERSIDE CITY RADIO REPEAT	UST
CITY OF RIVERSIDE RADIO REPEAT	HIST UST
G.I. TRUCKING COMPANY	HIST UST
INDIANA AVENUE PROPERTIES	HAZNET

OVERVIEW MAP - 03767938.2r



Target Property

Sites at elevations higher than or equal to the target property

Sites at elevations lower than the target property

Manufactured Gas Plants

National Priority List Sites

Dept. Defense Sites

0 1/4 1/2 1 Miles

Indian Reservations BIA

Oil & Gas pipelines from USGS

100-year flood zone

500-year flood zone

Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Central Avenue ADDRESS: Central Avenue Riverside CA 92507 LAT/LONG: 33.9591 / 117.3131	CLIENT: Hillmann Environmental Co. CONTACT: Kristine Savona INQUIRY #: 03767938.2r DATE: October 25, 2013 1:48 pm

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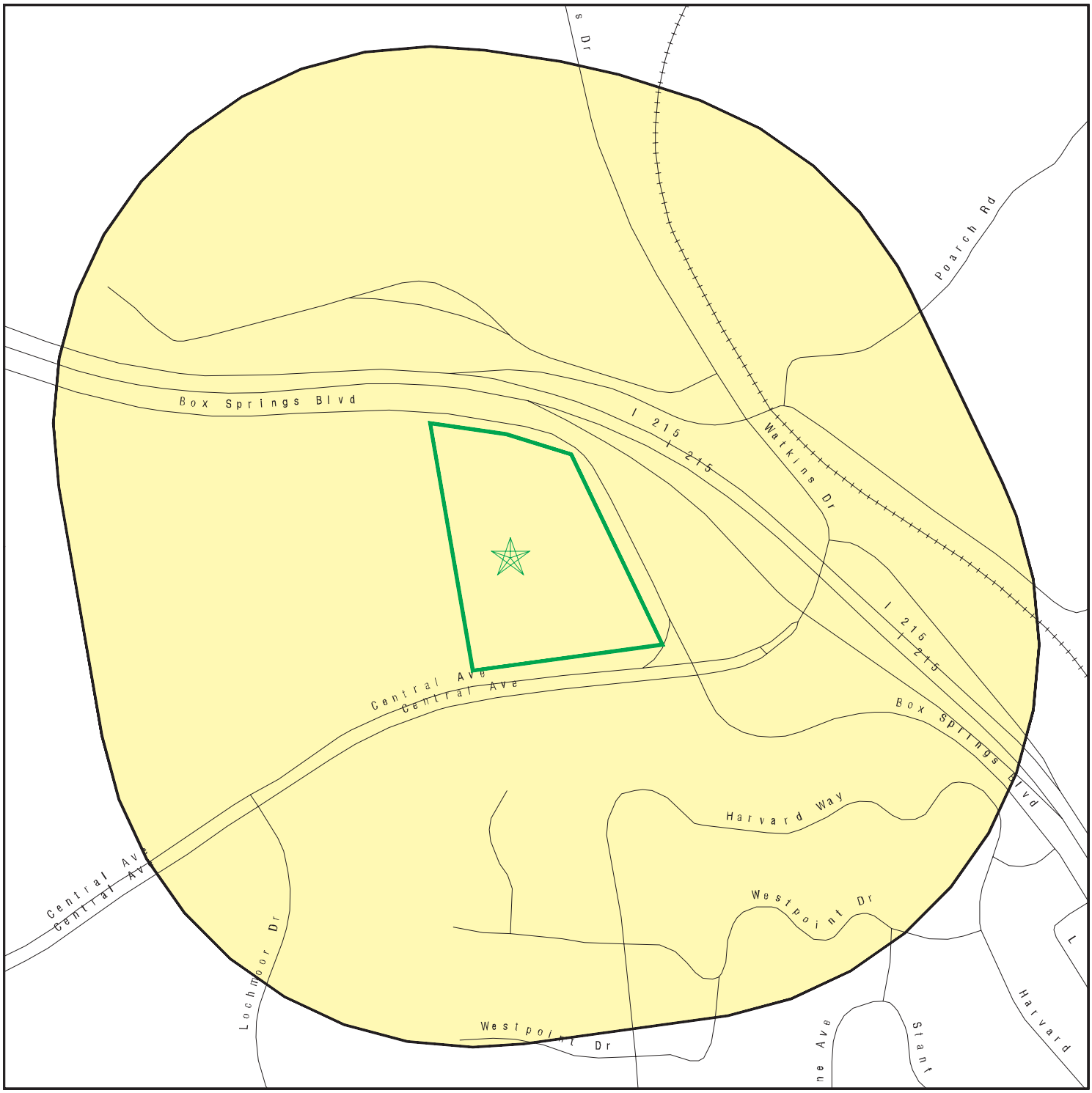
DETAIL MAP - 03767938.2r



Target Property

Sites at elevations higher than or equal to the target property

Sites at elevations lower than the target property

Manufactured Gas Plants

Sensitive Receptors

National Priority List Sites

Dept. Defense Sites

0 1/16 1/8 1/4 Miles

Indian Reservations BIA

Oil & Gas pipelines from USGS

100-year flood zone

500-year flood zone

Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Central Avenue	CLIENT: Hillmann Environmental Co.
ADDRESS: Central Avenue Riverside CA 92507	CONTACT: Kristine Savona INQUIRY #: 03767938.2r
LAT/LONG: 33.9591 / 117.3131	DATE: October 25, 2013 1:50 pm

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MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	TP		NR	NR	NR	NR	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
CERCLIS	0.500		0	0	0	NR	NR	0
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
Federal CERCLIS NFRAP site List								
CERC-NFRAP	0.500		0	0	0	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-CESQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROL	0.500		0	0	0	NR	NR	0
LUCIS	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	TP		NR	NR	NR	NR	NR	0
State- and tribal - equivalent NPL								
RESPONSE	1.000		0	0	0	0	NR	0
State- and tribal - equivalent CERCLIS								
ENVIROSTOR	1.000		0	0	0	0	NR	0
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF	0.500		0	0	0	NR	NR	0
State and tribal leaking storage tank lists								
LUST	0.500		0	0	0	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
SLIC	0.500		0	0	0	NR	NR	0
INDIAN LUST	0.500		0	0	0	NR	NR	0
State and tribal registered storage tank lists								
UST	0.250		0	0	NR	NR	NR	0
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
FEMA UST	0.250		0	0	NR	NR	NR	0
State and tribal voluntary cleanup sites								
VCP	0.500		0	0	0	NR	NR	0
INDIAN VCP	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
WMUDS/SWAT	0.500		0	0	0	NR	NR	0
SWRCY	0.500		0	0	0	NR	NR	0
HAULERS	TP		NR	NR	NR	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US CDL	TP		NR	NR	NR	NR	NR	0
HIST Cal-Sites	1.000		0	0	0	0	NR	0
SCH	0.250		0	0	NR	NR	NR	0
Toxic Pits	1.000		0	0	0	0	NR	0
CDL	TP		NR	NR	NR	NR	NR	0
US HIST CDL	TP		NR	NR	NR	NR	NR	0
Local Lists of Registered Storage Tanks								
CA FID UST	0.250		0	0	NR	NR	NR	0
HIST UST	0.250		0	0	NR	NR	NR	0
SWEEPS UST	0.250		0	0	NR	NR	NR	0
Local Land Records								
LIENS 2	TP		NR	NR	NR	NR	NR	0
LIENS	TP		NR	NR	NR	NR	NR	0
DEED	0.500		0	0	0	NR	NR	0
Records of Emergency Release Reports								
HMIRS	TP		NR	NR	NR	NR	NR	0
CHMIRS	TP		NR	NR	NR	NR	NR	0
LDS	TP		NR	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
MCS	TP		NR	NR	NR	NR	NR	0
SPILLS 90	TP		NR	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		0	0	NR	NR	NR	0
DOT OPS	TP		NR	NR	NR	NR	NR	0
DOD	1.000		0	0	0	0	NR	0
FUDS	1.000		0	0	0	0	NR	0
CONSENT	1.000		0	0	0	0	NR	0
ROD	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
TRIS	TP		NR	NR	NR	NR	NR	0
TSCA	TP		NR	NR	NR	NR	NR	0
FTTS	TP		NR	NR	NR	NR	NR	0
HIST FTTS	TP		NR	NR	NR	NR	NR	0
SSTS	TP		NR	NR	NR	NR	NR	0
ICIS	TP		NR	NR	NR	NR	NR	0
PADS	TP		NR	NR	NR	NR	NR	0
MLTS	TP		NR	NR	NR	NR	NR	0
RADINFO	TP		NR	NR	NR	NR	NR	0
FINDS	TP		NR	NR	NR	NR	NR	0
RAATS	TP		NR	NR	NR	NR	NR	0
RMP	TP		NR	NR	NR	NR	NR	0
CA BOND EXP. PLAN	1.000		0	0	0	0	NR	0
UIC	TP		NR	NR	NR	NR	NR	0
NPDES	TP		NR	NR	NR	NR	NR	0
Cortese	0.500		0	0	0	NR	NR	0
HIST CORTESE	0.500		0	0	0	NR	NR	0
CUPA Listings	0.250		0	0	NR	NR	NR	0
Notify 65	1.000		0	0	0	0	NR	0
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
WIP	0.250		0	0	NR	NR	NR	0
ENF	TP		NR	NR	NR	NR	NR	0
HAZNET	TP		NR	NR	NR	NR	NR	0
EMI	TP		NR	NR	NR	NR	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
COAL ASH DOE	TP		NR	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
HWT	0.250		0	0	NR	NR	NR	0
HWP	1.000		0	0	0	0	NR	0
Financial Assurance	TP		NR	NR	NR	NR	NR	0
LEAD SMELTERS	TP		NR	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
US AIRS	TP		NR	NR	NR	NR	NR	0
PRP	TP		NR	NR	NR	NR	NR	0
WDS	TP		NR	NR	NR	NR	NR	0
EPA WATCH LIST	TP		NR	NR	NR	NR	NR	0
US FIN ASSUR	TP		NR	NR	NR	NR	NR	0
PCB TRANSFORMER	TP		NR	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
PROC	0.500		0	0	0	NR	NR	0
MWMP	0.250		0	0	NR	NR	NR	0
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR US Hist Auto Stat	0.250		0	0	NR	NR	NR	0
EDR US Hist Cleaners	0.250		0	0	NR	NR	NR	0

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

MAP FINDINGS

Map ID Direction Distance Elevation	Site	Database(s)	EDR ID Number EPA ID Number

NO SITES FOUND

Count: 8 records.

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
NILAND	1002850076	CHOCOLATE MOUNTAIN AERIAL GUNNERY	3 MILES EAST OF THE TOWN OF NI	92557	CERC-NFRAP
RIVERSIDE	U001576446	CITY OF RIVERSIDE RADIO REPEAT	BOX SPRINGS MOUNTAIN	92506	HIST UST
RIVERSIDE	S101589940	RIVERSIDE CITY RADIO REPEATER	BOX SPRINGS MOUNTAIN	92506	CA FID UST, SWEEPS UST
RIVERSIDE	U001576507	G.I. TRUCKING COMPANY	12950 BOX SPRINGS BLVD.	92507	HIST UST
RIVERSIDE	U003783804	RIVERSIDE CITY RADIO REPEAT	BOX SPRINGS MOUNTAIN RD	92507	UST
RIVERSIDE	S112831928	CITY OF RIVERSIDE GRANITE PIT MINE	FREEMONT ST. & MOUNT VIEW AVE.		SWF/LF
RIVERSIDE	S112857153	INDIANA AVENUE PROPERTIES	7867 INDIANA AVENUE	92506	HAZNET
RIVERSIDE	S109444534	PEDLEY MAINTENANCE YARD	4725 TROY COURT		SWF/LF

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 04/26/2013
Date Data Arrived at EDR: 05/09/2013
Date Made Active in Reports: 07/10/2013
Number of Days to Update: 62

Source: EPA
Telephone: N/A
Last EDR Contact: 10/11/2013
Next Scheduled EDR Contact: 01/20/2014
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 04/26/2013
Date Data Arrived at EDR: 05/09/2013
Date Made Active in Reports: 07/10/2013
Number of Days to Update: 62

Source: EPA
Telephone: N/A
Last EDR Contact: 10/11/2013
Next Scheduled EDR Contact: 01/20/2014
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

Federal Delisted NPL site list

DELISTED NPL: National Priority List Deletions

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.

Date of Government Version: 04/26/2013	Source: EPA
Date Data Arrived at EDR: 05/09/2013	Telephone: N/A
Date Made Active in Reports: 07/10/2013	Last EDR Contact: 10/11/2013
Number of Days to Update: 62	Next Scheduled EDR Contact: 01/20/2014
	Data Release Frequency: Quarterly

Federal CERCLIS list

CERCLIS: Comprehensive Environmental Response, Compensation, and Liability Information System

CERCLIS contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 04/26/2013	Source: EPA
Date Data Arrived at EDR: 05/29/2013	Telephone: 703-412-9810
Date Made Active in Reports: 08/09/2013	Last EDR Contact: 10/18/2013
Number of Days to Update: 72	Next Scheduled EDR Contact: 12/09/2013
	Data Release Frequency: Quarterly

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 07/31/2012	Source: Environmental Protection Agency
Date Data Arrived at EDR: 10/09/2012	Telephone: 703-603-8704
Date Made Active in Reports: 12/20/2012	Last EDR Contact: 10/11/2013
Number of Days to Update: 72	Next Scheduled EDR Contact: 01/20/2014
	Data Release Frequency: Varies

Federal CERCLIS NFRAP site List

CERCLIS-NFRAP: CERCLIS No Further Remedial Action Planned

Archived sites are sites that have been removed and archived from the inventory of CERCLIS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list this site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. 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.

Date of Government Version: 04/26/2013	Source: EPA
Date Data Arrived at EDR: 05/29/2013	Telephone: 703-412-9810
Date Made Active in Reports: 08/09/2013	Last EDR Contact: 10/18/2013
Number of Days to Update: 72	Next Scheduled EDR Contact: 12/09/2013
	Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 07/11/2013
Date Data Arrived at EDR: 08/08/2013
Date Made Active in Reports: 09/13/2013
Number of Days to Update: 36

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 10/02/2013
Next Scheduled EDR Contact: 01/13/2014
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 07/11/2013
Date Data Arrived at EDR: 08/08/2013
Date Made Active in Reports: 09/13/2013
Number of Days to Update: 36

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 10/02/2013
Next Scheduled EDR Contact: 01/13/2014
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 07/11/2013
Date Data Arrived at EDR: 08/08/2013
Date Made Active in Reports: 09/13/2013
Number of Days to Update: 36

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 10/02/2013
Next Scheduled EDR Contact: 01/13/2014
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 07/11/2013
Date Data Arrived at EDR: 08/08/2013
Date Made Active in Reports: 09/13/2013
Number of Days to Update: 36

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 10/02/2013
Next Scheduled EDR Contact: 01/13/2014
Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 07/11/2013
Date Data Arrived at EDR: 08/08/2013
Date Made Active in Reports: 09/13/2013
Number of Days to Update: 36

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 10/02/2013
Next Scheduled EDR Contact: 01/13/2014
Data Release Frequency: Varies

Federal institutional controls / engineering controls registries

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 06/17/2013
Date Data Arrived at EDR: 06/21/2013
Date Made Active in Reports: 10/03/2013
Number of Days to Update: 104

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 09/10/2013
Next Scheduled EDR Contact: 12/23/2013
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 06/17/2013
Date Data Arrived at EDR: 06/21/2013
Date Made Active in Reports: 10/03/2013
Number of Days to Update: 104

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 09/10/2013
Next Scheduled EDR Contact: 12/23/2013
Data Release Frequency: Varies

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 12/09/2005
Date Data Arrived at EDR: 12/11/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 31

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 08/15/2013
Next Scheduled EDR Contact: 09/02/2013
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 12/31/2012
Date Data Arrived at EDR: 01/17/2013
Date Made Active in Reports: 02/15/2013
Number of Days to Update: 29

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 10/01/2013
Next Scheduled EDR Contact: 01/13/2014
Data Release Frequency: Annually

State- and tribal - equivalent NPL

RESPONSE: State Response Sites

Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

Date of Government Version: 09/05/2013
Date Data Arrived at EDR: 09/05/2013
Date Made Active in Reports: 10/10/2013
Number of Days to Update: 35

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 09/05/2013
Next Scheduled EDR Contact: 11/18/2013
Data Release Frequency: Quarterly

State- and tribal - equivalent CERCLIS

ENVIROSTOR: EnviroStor Database

The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

Date of Government Version: 09/05/2013
Date Data Arrived at EDR: 09/05/2013
Date Made Active in Reports: 10/10/2013
Number of Days to Update: 35

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 09/05/2013
Next Scheduled EDR Contact: 11/18/2013
Data Release Frequency: Quarterly

State and tribal landfill and/or solid waste disposal site lists

SWF/LF (SWIS): Solid Waste Information System

Active, Closed and Inactive Landfills. SWF/LF records typically contain an inve ntory of solid waste disposal facilities or landfills. These may be active or i nactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 08/19/2013
Date Data Arrived at EDR: 08/19/2013
Date Made Active in Reports: 10/08/2013
Number of Days to Update: 50

Source: Department of Resources Recycling and Recovery
Telephone: 916-341-6320
Last EDR Contact: 08/19/2013
Next Scheduled EDR Contact: 12/02/2013
Data Release Frequency: Quarterly

State and tribal leaking storage tank lists

LUST REG 8: Leaking Underground Storage Tanks

California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/2005
Date Data Arrived at EDR: 02/15/2005
Date Made Active in Reports: 03/28/2005
Number of Days to Update: 41

Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 909-782-4496
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: Varies

LUST REG 7: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Imperial, Riverside, San Diego, Santa Barbara counties.

Date of Government Version: 02/26/2004
Date Data Arrived at EDR: 02/26/2004
Date Made Active in Reports: 03/24/2004
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Colorado River Basin Region (7)
Telephone: 760-776-8943
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST REG 6V: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Inyo, Kern, Los Angeles, Mono, San Bernardino counties.

Date of Government Version: 06/07/2005
Date Data Arrived at EDR: 06/07/2005
Date Made Active in Reports: 06/29/2005
Number of Days to Update: 22

Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Telephone: 760-241-7365
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 6L: Leaking Underground Storage Tank Case Listing
For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/2003
Date Data Arrived at EDR: 09/10/2003
Date Made Active in Reports: 10/07/2003
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 530-542-5572
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 5: Leaking Underground Storage Tank Database
Leaking Underground Storage Tank locations. Alameda, Alpine, Amador, Butte, Colusa, Contra Costa, Calveras, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Lassen, Madera, Mariposa, Merced, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba counties.

Date of Government Version: 07/01/2008
Date Data Arrived at EDR: 07/22/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 9

Source: California Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-4834
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: No Update Planned

LUST REG 4: Underground Storage Tank Leak List
Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6710
Last EDR Contact: 09/06/2011
Next Scheduled EDR Contact: 12/19/2011
Data Release Frequency: No Update Planned

LUST REG 3: Leaking Underground Storage Tank Database
Leaking Underground Storage Tank locations. Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz counties.

Date of Government Version: 05/19/2003
Date Data Arrived at EDR: 05/19/2003
Date Made Active in Reports: 06/02/2003
Number of Days to Update: 14

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-542-4786
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: No Update Planned

LUST REG 2: Fuel Leak List
Leaking Underground Storage Tank locations. Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma counties.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-622-2433
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: Quarterly

LUST REG 1: Active Toxic Site Investigation
Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/01/2001
Date Data Arrived at EDR: 02/28/2001
Date Made Active in Reports: 03/29/2001
Number of Days to Update: 29

Source: California Regional Water Quality Control Board North Coast (1)
Telephone: 707-570-3769
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST: Geotracker's Leaking Underground Fuel Tank Report
Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state. For more information on a particular leaking underground storage tank sites, please contact the appropriate regulatory agency.

Date of Government Version: 09/16/2013
Date Data Arrived at EDR: 09/17/2013
Date Made Active in Reports: 10/16/2013
Number of Days to Update: 29

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 10/17/2013
Next Scheduled EDR Contact: 12/30/2013
Data Release Frequency: Quarterly

LUST REG 9: Leaking Underground Storage Tank Report
Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 03/01/2001
Date Data Arrived at EDR: 04/23/2001
Date Made Active in Reports: 05/21/2001
Number of Days to Update: 28

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-637-5595
Last EDR Contact: 09/26/2011
Next Scheduled EDR Contact: 01/09/2012
Data Release Frequency: No Update Planned

SLIC: Statewide SLIC Cases
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/16/2013
Date Data Arrived at EDR: 09/17/2013
Date Made Active in Reports: 10/17/2013
Number of Days to Update: 30

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 10/17/2013
Next Scheduled EDR Contact: 12/30/2013
Data Release Frequency: Varies

SLIC REG 1: Active Toxic Site Investigations
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2003
Date Data Arrived at EDR: 04/07/2003
Date Made Active in Reports: 04/25/2003
Number of Days to Update: 18

Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: Quarterly

SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/18/2006
Date Data Arrived at EDR: 05/18/2006
Date Made Active in Reports: 06/15/2006
Number of Days to Update: 28

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: Semi-Annually

SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/17/2004
Date Data Arrived at EDR: 11/18/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 47

Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: Varies

SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/01/2005
Date Data Arrived at EDR: 04/05/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 16

Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: Semi-Annually

SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/24/2005
Date Data Arrived at EDR: 05/25/2005
Date Made Active in Reports: 06/16/2005
Number of Days to Update: 22

Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: Semi-Annually

SLIC REG 6L: SLIC Sites
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board, Lahontan Region
Telephone: 530-542-5574
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

SLIC REG 7: SLIC List
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/24/2004
Date Data Arrived at EDR: 11/29/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 36

Source: California Regional Quality Control Board, Colorado River Basin Region
Telephone: 760-346-7491
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2008
Date Data Arrived at EDR: 04/03/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 11

Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-3298
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: Semi-Annually

SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/10/2007
Date Data Arrived at EDR: 09/11/2007
Date Made Active in Reports: 09/28/2007
Number of Days to Update: 17

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 08/08/2011
Next Scheduled EDR Contact: 11/21/2011
Data Release Frequency: Annually

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 02/05/2013
Date Data Arrived at EDR: 02/06/2013
Date Made Active in Reports: 04/12/2013
Number of Days to Update: 65

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 07/24/2013
Next Scheduled EDR Contact: 11/11/2013
Data Release Frequency: Quarterly

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 09/28/2012
Date Data Arrived at EDR: 11/01/2012
Date Made Active in Reports: 04/12/2013
Number of Days to Update: 162

Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 08/02/2013
Next Scheduled EDR Contact: 11/11/2013
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 08/27/2012
Date Data Arrived at EDR: 08/28/2012
Date Made Active in Reports: 10/16/2012
Number of Days to Update: 49

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 07/24/2013
Next Scheduled EDR Contact: 11/11/2013
Data Release Frequency: Quarterly

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 09/12/2011
Date Data Arrived at EDR: 09/13/2011
Date Made Active in Reports: 11/11/2011
Number of Days to Update: 59

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 07/24/2013
Next Scheduled EDR Contact: 11/11/2013
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 02/06/2013
Date Data Arrived at EDR: 02/08/2013
Date Made Active in Reports: 04/12/2013
Number of Days to Update: 63

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 07/24/2013
Next Scheduled EDR Contact: 11/11/2013
Data Release Frequency: Semi-Annually

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 12/31/2012
Date Data Arrived at EDR: 02/28/2013
Date Made Active in Reports: 04/12/2013
Number of Days to Update: 43

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 07/24/2013
Next Scheduled EDR Contact: 11/11/2013
Data Release Frequency: Varies

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 03/01/2013
Date Data Arrived at EDR: 03/01/2013
Date Made Active in Reports: 04/12/2013
Number of Days to Update: 42

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 07/24/2013
Next Scheduled EDR Contact: 11/11/2013
Data Release Frequency: Quarterly

State and tribal registered storage tank lists

UST: Active UST Facilities
Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 09/16/2013
Date Data Arrived at EDR: 09/17/2013
Date Made Active in Reports: 10/16/2013
Number of Days to Update: 29

Source: SWRCB
Telephone: 916-341-5851
Last EDR Contact: 10/17/2013
Next Scheduled EDR Contact: 12/30/2013
Data Release Frequency: Semi-Annually

AST: Aboveground Petroleum Storage Tank Facilities
A listing of aboveground storage tank petroleum storage tank locations.

Date of Government Version: 08/01/2009
Date Data Arrived at EDR: 09/10/2009
Date Made Active in Reports: 10/01/2009
Number of Days to Update: 21

Source: California Environmental Protection Agency
Telephone: 916-327-5092
Last EDR Contact: 10/07/2013
Next Scheduled EDR Contact: 01/20/2014
Data Release Frequency: Quarterly

INDIAN UST R10: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 02/05/2013
Date Data Arrived at EDR: 02/06/2013
Date Made Active in Reports: 04/12/2013
Number of Days to Update: 65

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 07/24/2013
Next Scheduled EDR Contact: 11/11/2013
Data Release Frequency: Quarterly

INDIAN UST R9: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 02/21/2013
Date Data Arrived at EDR: 02/26/2013
Date Made Active in Reports: 04/12/2013
Number of Days to Update: 45

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 07/24/2013
Next Scheduled EDR Contact: 11/11/2013
Data Release Frequency: Quarterly

INDIAN UST R8: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 08/27/2012
Date Data Arrived at EDR: 08/28/2012
Date Made Active in Reports: 10/16/2012
Number of Days to Update: 49

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 07/24/2013
Next Scheduled EDR Contact: 11/11/2013
Data Release Frequency: Quarterly

INDIAN UST R7: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 12/31/2012
Date Data Arrived at EDR: 02/28/2013
Date Made Active in Reports: 04/12/2013
Number of Days to Update: 43

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 07/24/2013
Next Scheduled EDR Contact: 11/11/2013
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 05/10/2011
Date Data Arrived at EDR: 05/11/2011
Date Made Active in Reports: 06/14/2011
Number of Days to Update: 34

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 07/24/2013
Next Scheduled EDR Contact: 11/11/2013
Data Release Frequency: Semi-Annually

INDIAN UST R5: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 08/02/2012
Date Data Arrived at EDR: 08/03/2012
Date Made Active in Reports: 11/05/2012
Number of Days to Update: 94

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 07/24/2013
Next Scheduled EDR Contact: 11/11/2013
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 02/06/2013
Date Data Arrived at EDR: 02/08/2013
Date Made Active in Reports: 04/12/2013
Number of Days to Update: 63

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 07/24/2013
Next Scheduled EDR Contact: 11/11/2013
Data Release Frequency: Semi-Annually

INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 09/28/2012
Date Data Arrived at EDR: 11/07/2012
Date Made Active in Reports: 04/12/2013
Number of Days to Update: 156

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 08/02/2013
Next Scheduled EDR Contact: 11/11/2013
Data Release Frequency: Varies

FEMA UST: Underground Storage Tank Listing

A listing of all FEMA owned underground storage tanks.

Date of Government Version: 01/01/2010
Date Data Arrived at EDR: 02/16/2010
Date Made Active in Reports: 04/12/2010
Number of Days to Update: 55

Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 10/17/2013
Next Scheduled EDR Contact: 01/27/2014
Data Release Frequency: Varies

State and tribal voluntary cleanup sites

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng
A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

VCP: Voluntary Cleanup Program Properties
Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Date of Government Version: 09/05/2013
Date Data Arrived at EDR: 09/05/2013
Date Made Active in Reports: 10/10/2013
Number of Days to Update: 35

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 09/05/2013
Next Scheduled EDR Contact: 11/18/2013
Data Release Frequency: Quarterly

INDIAN VCP R1: Voluntary Cleanup Priority Listing
A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 09/28/2012
Date Data Arrived at EDR: 10/02/2012
Date Made Active in Reports: 10/16/2012
Number of Days to Update: 14

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 10/01/2013
Next Scheduled EDR Contact: 01/13/2014
Data Release Frequency: Varies

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites
Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 06/24/2013
Date Data Arrived at EDR: 06/25/2013
Date Made Active in Reports: 08/09/2013
Number of Days to Update: 45

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 09/24/2013
Next Scheduled EDR Contact: 01/08/2014
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

ODI: Open Dump Inventory
An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations
A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 07/26/2013
Next Scheduled EDR Contact: 11/11/2013
Data Release Frequency: No Update Planned

WMUDS/SWAT: Waste Management Unit Database
Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 04/01/2000
Date Data Arrived at EDR: 04/10/2000
Date Made Active in Reports: 05/10/2000
Number of Days to Update: 30

Source: State Water Resources Control Board
Telephone: 916-227-4448
Last EDR Contact: 08/07/2013
Next Scheduled EDR Contact: 11/25/2013
Data Release Frequency: No Update Planned

SWRCY: Recycler Database
A listing of recycling facilities in California.

Date of Government Version: 09/16/2013
Date Data Arrived at EDR: 09/19/2013
Date Made Active in Reports: 10/17/2013
Number of Days to Update: 28

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 09/16/2013
Next Scheduled EDR Contact: 12/30/2013
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing
A listing of registered waste tire haulers.

Date of Government Version: 04/26/2013
Date Data Arrived at EDR: 04/26/2013
Date Made Active in Reports: 05/16/2013
Number of Days to Update: 20

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 10/01/2013
Next Scheduled EDR Contact: 12/02/2013
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands
Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 07/31/2013
Next Scheduled EDR Contact: 11/18/2013
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US CDL: Clandestine Drug Labs
A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains 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 Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 08/06/2013
Date Data Arrived at EDR: 09/11/2013
Date Made Active in Reports: 10/03/2013
Number of Days to Update: 22

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 09/04/2013
Next Scheduled EDR Contact: 12/16/2013
Data Release Frequency: Quarterly

HIST CAL-SITES: Calsites Database

The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

Date of Government Version: 08/08/2005
Date Data Arrived at EDR: 08/03/2006
Date Made Active in Reports: 08/24/2006
Number of Days to Update: 21

Source: Department of Toxic Substance Control
Telephone: 916-323-3400
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: No Update Planned

SCH: School Property Evaluation Program

This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.

Date of Government Version: 09/05/2013
Date Data Arrived at EDR: 09/05/2013
Date Made Active in Reports: 10/10/2013
Number of Days to Update: 35

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 09/05/2013
Next Scheduled EDR Contact: 11/18/2013
Data Release Frequency: Quarterly

TOXIC PITS: Toxic Pits Cleanup Act Sites

Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/1995
Date Data Arrived at EDR: 08/30/1995
Date Made Active in Reports: 09/26/1995
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 916-227-4364
Last EDR Contact: 01/26/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: No Update Planned

CDL: Clandestine Drug Labs

A listing of drug lab locations. Listing of a location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the location either requires or does not require additional cleanup work.

Date of Government Version: 06/30/2013
Date Data Arrived at EDR: 09/03/2013
Date Made Active in Reports: 10/10/2013
Number of Days to Update: 37

Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 09/03/2013
Next Scheduled EDR Contact: 01/13/2014
Data Release Frequency: Varies

US HIST CDL: National Clandestine Laboratory Register

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains 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 Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 09/01/2007
Date Data Arrived at EDR: 11/19/2008
Date Made Active in Reports: 03/30/2009
Number of Days to Update: 131

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

Local Lists of Registered Storage Tanks

CA FID UST: Facility Inventory Database
The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.

Date of Government Version: 10/31/1994
Date Data Arrived at EDR: 09/05/1995
Date Made Active in Reports: 09/29/1995
Number of Days to Update: 24

Source: California Environmental Protection Agency
Telephone: 916-341-5851
Last EDR Contact: 12/28/1998
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

UST MENDOCINO: Mendocino County UST Database
A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 09/23/2009
Date Data Arrived at EDR: 09/23/2009
Date Made Active in Reports: 10/01/2009
Number of Days to Update: 8

Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 09/03/2013
Next Scheduled EDR Contact: 12/16/2013
Data Release Frequency: Annually

HIST UST: Hazardous Substance Storage Container Database
The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/1990
Date Data Arrived at EDR: 01/25/1991
Date Made Active in Reports: 02/12/1991
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-341-5851
Last EDR Contact: 07/26/2001
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

SWEEPS UST: SWEEPS UST Listing
Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

Date of Government Version: 06/01/1994
Date Data Arrived at EDR: 07/07/2005
Date Made Active in Reports: 08/11/2005
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/03/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Local Land Records

LIENS 2: CERCLA Lien Information
A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 02/06/2013
Date Data Arrived at EDR: 04/25/2013
Date Made Active in Reports: 05/10/2013
Number of Days to Update: 15

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 07/24/2013
Next Scheduled EDR Contact: 11/11/2013
Data Release Frequency: Varies

LIENS: Environmental Liens Listing
A listing of property locations with environmental liens for California where DTSC is a lien holder.

Date of Government Version: 06/14/2013
Date Data Arrived at EDR: 06/17/2013
Date Made Active in Reports: 08/21/2013
Number of Days to Update: 65

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 09/23/2013
Next Scheduled EDR Contact: 12/23/2013
Data Release Frequency: Varies

DEED: Deed Restriction Listing

Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Date of Government Version: 09/11/2013
Date Data Arrived at EDR: 09/11/2013
Date Made Active in Reports: 10/14/2013
Number of Days to Update: 33

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 09/11/2013
Next Scheduled EDR Contact: 12/23/2013
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 12/31/2012
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 02/27/2013
Number of Days to Update: 55

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 10/01/2013
Next Scheduled EDR Contact: 01/13/2014
Data Release Frequency: Annually

CHMIRS: California Hazardous Material Incident Report System

California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 03/12/2013
Date Data Arrived at EDR: 05/01/2013
Date Made Active in Reports: 06/25/2013
Number of Days to Update: 55

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 08/02/2013
Next Scheduled EDR Contact: 11/11/2013
Data Release Frequency: Varies

LDS: Land Disposal Sites Listing

The Land Disposal program regulates of waste discharge to land for treatment, storage and disposal in waste management units.

Date of Government Version: 09/16/2013
Date Data Arrived at EDR: 09/17/2013
Date Made Active in Reports: 10/16/2013
Number of Days to Update: 29

Source: State Water Qualilty Control Board
Telephone: 866-480-1028
Last EDR Contact: 10/17/2013
Next Scheduled EDR Contact: 12/30/2013
Data Release Frequency: Quarterly

MCS: Military Cleanup Sites Listing

The State Water Resources Control Board and nine Regional Water Quality Control Boards partner with the Department of Defense (DoD) through the Defense and State Memorandum of Agreement (DSMOA) to oversee the investigation and remediation of water quality issues at military facilities.

Date of Government Version: 09/16/2013
Date Data Arrived at EDR: 09/17/2013
Date Made Active in Reports: 10/16/2013
Number of Days to Update: 29

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 10/17/2013
Next Scheduled EDR Contact: 12/30/2013
Data Release Frequency: Quarterly

SPILLS 90: SPILLS90 data from FirstSearch

Spills 90 includes those spill and release records available exclusively from FirstSearch databases. Typically, they may include chemical, oil and/or hazardous substance spills recorded after 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 90.

Date of Government Version: 06/06/2012
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 02/22/2013
Number of Days to Update: 50

Source: FirstSearch
Telephone: N/A
Last EDR Contact: 01/03/2013
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Other Ascertainable Records

RCRA NonGen / NLR: RCRA - Non Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 07/11/2013
Date Data Arrived at EDR: 08/08/2013
Date Made Active in Reports: 09/13/2013
Number of Days to Update: 36

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 10/02/2013
Next Scheduled EDR Contact: 01/13/2014
Data Release Frequency: Varies

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 07/31/2012
Date Data Arrived at EDR: 08/07/2012
Date Made Active in Reports: 09/18/2012
Number of Days to Update: 42

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 08/05/2013
Next Scheduled EDR Contact: 11/18/2013
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 10/18/2013
Next Scheduled EDR Contact: 01/27/2014
Data Release Frequency: Semi-Annually

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 12/31/2011
Date Data Arrived at EDR: 02/26/2013
Date Made Active in Reports: 03/13/2013
Number of Days to Update: 15

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 09/10/2013
Next Scheduled EDR Contact: 12/23/2013
Data Release Frequency: Varies

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 06/30/2013
Date Data Arrived at EDR: 08/07/2013
Date Made Active in Reports: 10/03/2013
Number of Days to Update: 57

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 09/30/2013
Next Scheduled EDR Contact: 01/13/2014
Data Release Frequency: Varies

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 12/18/2012
Date Data Arrived at EDR: 03/13/2013
Date Made Active in Reports: 04/12/2013
Number of Days to Update: 30

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 09/13/2013
Next Scheduled EDR Contact: 12/23/2013
Data Release Frequency: Annually

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 09/14/2010
Date Data Arrived at EDR: 10/07/2011
Date Made Active in Reports: 03/01/2012
Number of Days to Update: 146

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 05/28/2013
Next Scheduled EDR Contact: 09/09/2013
Data Release Frequency: Varies

US MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 08/01/2013
Date Data Arrived at EDR: 09/05/2013
Date Made Active in Reports: 10/03/2013
Number of Days to Update: 28

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 09/05/2013
Next Scheduled EDR Contact: 12/16/2013
Data Release Frequency: Semi-Annually

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2011
Date Data Arrived at EDR: 07/31/2013
Date Made Active in Reports: 09/13/2013
Number of Days to Update: 44

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 08/30/2013
Next Scheduled EDR Contact: 12/09/2013
Data Release Frequency: Annually

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2006
Date Data Arrived at EDR: 09/29/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 64

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 09/24/2013
Next Scheduled EDR Contact: 01/08/2014
Data Release Frequency: Every 4 Years

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 08/22/2013
Next Scheduled EDR Contact: 12/09/2013
Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 08/22/2013
Next Scheduled EDR Contact: 12/09/2013
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing
A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing
A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

SSTS: Section 7 Tracking Systems
Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 12/10/2010
Date Made Active in Reports: 02/25/2011
Number of Days to Update: 77

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 07/24/2013
Next Scheduled EDR Contact: 11/11/2013
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System

The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 07/20/2011
Date Data Arrived at EDR: 11/10/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 61

Source: Environmental Protection Agency
Telephone: 202-564-5088
Last EDR Contact: 10/09/2014
Next Scheduled EDR Contact: 01/27/2014
Data Release Frequency: Quarterly

PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 11/01/2012
Date Data Arrived at EDR: 01/16/2013
Date Made Active in Reports: 05/10/2013
Number of Days to Update: 114

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 10/18/2013
Next Scheduled EDR Contact: 01/27/2014
Data Release Frequency: Annually

MLTS: Material Licensing Tracking System

MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 03/14/2013
Date Data Arrived at EDR: 03/20/2013
Date Made Active in Reports: 07/10/2013
Number of Days to Update: 112

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 09/10/2013
Next Scheduled EDR Contact: 12/23/2013
Data Release Frequency: Quarterly

RADINFO: Radiation Information Database

The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 04/09/2013
Date Data Arrived at EDR: 04/11/2013
Date Made Active in Reports: 05/10/2013
Number of Days to Update: 29

Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 10/09/2013
Next Scheduled EDR Contact: 01/20/2014
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 03/08/2013
Date Data Arrived at EDR: 03/21/2013
Date Made Active in Reports: 07/10/2013
Number of Days to Update: 111

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 09/11/2013
Next Scheduled EDR Contact: 12/23/2013
Data Release Frequency: Quarterly

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

RMP: Risk Management Plans

When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: 05/08/2012
Date Data Arrived at EDR: 05/25/2012
Date Made Active in Reports: 07/10/2012
Number of Days to Update: 46

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 07/24/2013
Next Scheduled EDR Contact: 11/11/2013
Data Release Frequency: Varies

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2011
Date Data Arrived at EDR: 02/26/2013
Date Made Active in Reports: 04/19/2013
Number of Days to Update: 52

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 08/26/2013
Next Scheduled EDR Contact: 12/09/2013
Data Release Frequency: Biennially

CA BOND EXP. PLAN: Bond Expenditure Plan

Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/1989
Date Data Arrived at EDR: 07/27/1994
Date Made Active in Reports: 08/02/1994
Number of Days to Update: 6

Source: Department of Health Services
Telephone: 916-255-2118
Last EDR Contact: 05/31/1994
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

NPDES: NPDES Permits Listing

A listing of NPDES permits, including stormwater.

Date of Government Version: 08/19/2013
Date Data Arrived at EDR: 08/19/2013
Date Made Active in Reports: 10/08/2013
Number of Days to Update: 50

Source: State Water Resources Control Board
Telephone: 916-445-9379
Last EDR Contact: 08/19/2013
Next Scheduled EDR Contact: 12/02/2013
Data Release Frequency: Quarterly

UIC: UIC Listing

A listing of underground control injection wells.

Date of Government Version: 08/21/2013
Date Data Arrived at EDR: 09/17/2013
Date Made Active in Reports: 10/17/2013
Number of Days to Update: 30

Source: Deaprtment of Conservation
Telephone: 916-445-2408
Last EDR Contact: 09/17/2013
Next Scheduled EDR Contact: 12/30/2013
Data Release Frequency: Varies

CORTESE: "Cortese" Hazardous Waste & Substances Sites List
The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites).

Date of Government Version: 07/05/2013
Date Data Arrived at EDR: 07/05/2013
Date Made Active in Reports: 08/26/2013
Number of Days to Update: 52

Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 10/01/2013
Next Scheduled EDR Contact: 01/13/2014
Data Release Frequency: Quarterly

HIST CORTESE: Hazardous Waste & Substance Site List
The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

Date of Government Version: 04/01/2001
Date Data Arrived at EDR: 01/22/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/22/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

NOTIFY 65: Proposition 65 Records
Listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency.

Date of Government Version: 10/21/1993
Date Data Arrived at EDR: 11/01/1993
Date Made Active in Reports: 11/19/1993
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 09/23/2013
Next Scheduled EDR Contact: 01/08/2014
Data Release Frequency: No Update Planned

DRYCLEANERS: Cleaner Facilities
A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

Date of Government Version: 09/10/2013
Date Data Arrived at EDR: 09/11/2013
Date Made Active in Reports: 10/16/2013
Number of Days to Update: 35

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 09/10/2013
Next Scheduled EDR Contact: 12/24/2012
Data Release Frequency: Annually

WIP: Well Investigation Program Case List
Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 07/03/2009
Date Data Arrived at EDR: 07/21/2009
Date Made Active in Reports: 08/03/2009
Number of Days to Update: 13

Source: Los Angeles Water Quality Control Board
Telephone: 213-576-6726
Last EDR Contact: 09/30/2013
Next Scheduled EDR Contact: 01/13/2014
Data Release Frequency: Varies

ENF: Enforcement Action Listing
A listing of Water Board Enforcement Actions. Formal is everything except Oral/Verbal Communication, Notice of Violation, Expedited Payment Letter, and Staff Enforcement Letter.

Date of Government Version: 08/09/2013
Date Data Arrived at EDR: 08/13/2013
Date Made Active in Reports: 10/08/2013
Number of Days to Update: 56

Source: State Water Resoruces Control Board
Telephone: 916-445-9379
Last EDR Contact: 08/08/2013
Next Scheduled EDR Contact: 11/11/2013
Data Release Frequency: Varies

HAZNET: Facility and Manifest Data

Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method.

Date of Government Version: 12/31/2012
Date Data Arrived at EDR: 07/16/2013
Date Made Active in Reports: 08/26/2013
Number of Days to Update: 41

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 10/15/2013
Next Scheduled EDR Contact: 01/27/2014
Data Release Frequency: Annually

EMI: Emissions Inventory Data

Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 06/25/2013
Date Made Active in Reports: 08/22/2013
Number of Days to Update: 58

Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 09/27/2013
Next Scheduled EDR Contact: 01/08/2014
Data Release Frequency: Varies

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 12/08/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 34

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 10/18/2013
Next Scheduled EDR Contact: 01/27/2014
Data Release Frequency: Semi-Annually

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 03/07/2011
Date Data Arrived at EDR: 03/09/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 54

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 10/21/2013
Next Scheduled EDR Contact: 02/03/2014
Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 03/04/2013
Date Data Arrived at EDR: 03/15/2013
Date Made Active in Reports: 05/10/2013
Number of Days to Update: 56

Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 09/27/2013
Next Scheduled EDR Contact: 12/02/2013
Data Release Frequency: Quarterly

PCB TRANSFORMER: PCB Transformer Registration Database

The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 02/01/2011
Date Data Arrived at EDR: 10/19/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 83

Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 08/02/2013
Next Scheduled EDR Contact: 11/11/2013
Data Release Frequency: Varies

PROC: Certified Processors Database
A listing of certified processors.

Date of Government Version: 09/16/2013
Date Data Arrived at EDR: 09/19/2013
Date Made Active in Reports: 10/17/2013
Number of Days to Update: 28

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 09/16/2013
Next Scheduled EDR Contact: 12/30/2013
Data Release Frequency: Quarterly

MWMP: Medical Waste Management Program Listing
The Medical Waste Management Program (MWMP) ensures the proper handling and disposal of medical waste by permitting and inspecting medical waste Offsite Treatment Facilities (PDF) and Transfer Stations (PDF) throughout the state. MWMP also oversees all Medical Waste Transporters.

Date of Government Version: 08/29/2013
Date Data Arrived at EDR: 09/13/2013
Date Made Active in Reports: 10/14/2013
Number of Days to Update: 31

Source: Department of Public Health
Telephone: 916-558-1784
Last EDR Contact: 09/11/2013
Next Scheduled EDR Contact: 12/23/2013
Data Release Frequency: Varies

COAL ASH DOE: Sleam-Electric Plan Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 08/07/2009
Date Made Active in Reports: 10/22/2009
Number of Days to Update: 76

Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 10/15/2013
Next Scheduled EDR Contact: 01/27/2014
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List
A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 08/17/2010
Date Data Arrived at EDR: 01/03/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 77

Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 09/13/2013
Next Scheduled EDR Contact: 12/23/2013
Data Release Frequency: Varies

HWT: Registered Hazardous Waste Transporter Database
A listing of hazardous waste transporters. In California, unless specifically exempted, it is unlawful for any person to transport hazardous wastes unless the person holds a valid registration issued by DTSC. A hazardous waste transporter registration is valid for one year and is assigned a unique registration number.

Date of Government Version: 07/15/2013
Date Data Arrived at EDR: 07/16/2013
Date Made Active in Reports: 08/12/2013
Number of Days to Update: 27

Source: Department of Toxic Substances Control
Telephone: 916-440-7145
Last EDR Contact: 10/15/2013
Next Scheduled EDR Contact: 01/27/2014
Data Release Frequency: Quarterly

HWP: EnviroStor Permitted Facilities Listing
Detailed information on permitted hazardous waste facilities and corrective action ("cleanups") tracked in EnviroStor.

Date of Government Version: 08/28/2013
Date Data Arrived at EDR: 08/27/2013
Date Made Active in Reports: 10/10/2013
Number of Days to Update: 44

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/27/2013
Next Scheduled EDR Contact: 12/09/2013
Data Release Frequency: Quarterly

Financial Assurance 2: Financial Assurance Information Listing
A listing of financial assurance information for solid waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 08/12/2013
Date Data Arrived at EDR: 08/20/2013
Date Made Active in Reports: 10/08/2013
Number of Days to Update: 49

Source: California Integrated Waste Management Board
Telephone: 916-341-6066
Last EDR Contact: 08/15/2013
Next Scheduled EDR Contact: 12/02/2013
Data Release Frequency: Varies

Financial Assurance 1: Financial Assurance Information Listing
Financial Assurance information

Date of Government Version: 06/30/2013
Date Data Arrived at EDR: 08/08/2013
Date Made Active in Reports: 08/27/2013
Number of Days to Update: 19

Source: Department of Toxic Substances Control
Telephone: 916-255-3628
Last EDR Contact: 08/26/2013
Next Scheduled EDR Contact: 11/11/2013
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites
A listing of former lead smelter site locations.

Date of Government Version: 01/29/2013
Date Data Arrived at EDR: 02/14/2013
Date Made Active in Reports: 02/27/2013
Number of Days to Update: 13

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 09/24/2013
Next Scheduled EDR Contact: 01/20/2014
Data Release Frequency: Varies

LEAD SMELTER 2: Lead Smelter Sites
A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931and 1964. These sites may pose a threat to public health through ingestion or inhalation of contaminated soil or dust

Date of Government Version: 04/05/2001
Date Data Arrived at EDR: 10/27/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 36

Source: American Journal of Public Health
Telephone: 703-305-6451
Last EDR Contact: 12/02/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

2020 COR ACTION: 2020 Corrective Action Program List
The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 11/11/2011
Date Data Arrived at EDR: 05/18/2012
Date Made Active in Reports: 05/25/2012
Number of Days to Update: 7

Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 08/16/2013
Next Scheduled EDR Contact: 11/25/2013
Data Release Frequency: Varies

FEDLAND: Federal and Indian Lands
Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 02/06/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 339

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 10/18/2013
Next Scheduled EDR Contact: 01/27/2014
Data Release Frequency: N/A

PRP: Potentially Responsible Parties
A listing of verified Potentially Responsible Parties

Date of Government Version: 04/15/2013
Date Data Arrived at EDR: 07/03/2013
Date Made Active in Reports: 09/13/2013
Number of Days to Update: 72

Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 10/04/2013
Next Scheduled EDR Contact: 01/13/2014
Data Release Frequency: Quarterly

WDS: Waste Discharge System
Sites which have been issued waste discharge requirements.

Date of Government Version: 06/19/2007
Date Data Arrived at EDR: 06/20/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 9

Source: State Water Resources Control Board
Telephone: 916-341-5227
Last EDR Contact: 08/22/2013
Next Scheduled EDR Contact: 12/09/2013
Data Release Frequency: Quarterly

US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem (AFS)
The database is a sub-system of Aerometric Information Retrieval System (AIRS). AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. Action, air program, air program pollutant, and general level plant data. It is used to track emissions and compliance data from industrial plants.

Date of Government Version: 01/23/2013
Date Data Arrived at EDR: 01/30/2013
Date Made Active in Reports: 05/10/2013
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-5962
Last EDR Contact: 09/30/2013
Next Scheduled EDR Contact: 01/13/2014
Data Release Frequency: Annually

US AIRS MINOR: Air Facility System Data
A listing of minor source facilities.

Date of Government Version: 01/23/2013
Date Data Arrived at EDR: 01/30/2013
Date Made Active in Reports: 05/10/2013
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-5962
Last EDR Contact: 09/30/2013
Next Scheduled EDR Contact: 01/13/2014
Data Release Frequency: Annually

EPA WATCH LIST: EPA WATCH LIST
EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 06/30/2013
Date Data Arrived at EDR: 08/13/2013
Date Made Active in Reports: 09/13/2013
Number of Days to Update: 31

Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 08/07/2013
Next Scheduled EDR Contact: 11/25/2013
Data Release Frequency: Quarterly

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP: EDR Proprietary Manufactured Gas Plants

The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR US Hist Auto Stat: EDR Exclusive Historic Gas Stations

EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR US Hist Cleaners: EDR Exclusive Historic Dry Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR US Hist Cleaners: EDR Proprietary Historic Dry Cleaners - Cole

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: N/A
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR US Hist Auto Stat: EDR Proprietary Historic Gas Stations - Cole

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: N/A
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

COUNTY RECORDS

ALAMEDA COUNTY:

Contaminated Sites
A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 07/25/2013
Date Data Arrived at EDR: 07/26/2013
Date Made Active in Reports: 08/09/2013
Number of Days to Update: 14

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 09/30/2013
Next Scheduled EDR Contact: 01/13/2014
Data Release Frequency: Semi-Annually

Underground Tanks
Underground storage tank sites located in Alameda county.

Date of Government Version: 07/25/2013
Date Data Arrived at EDR: 07/26/2013
Date Made Active in Reports: 08/20/2013
Number of Days to Update: 25

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 09/30/2013
Next Scheduled EDR Contact: 01/13/2014
Data Release Frequency: Semi-Annually

AMADOR COUNTY:

CUPA Facility List
Cupa Facility List

Date of Government Version: 06/20/2013
Date Data Arrived at EDR: 06/21/2013
Date Made Active in Reports: 08/21/2013
Number of Days to Update: 61

Source: Amador County Environmental Health
Telephone: 209-223-6439
Last EDR Contact: 09/10/2013
Next Scheduled EDR Contact: 12/23/2013
Data Release Frequency: Varies

BUTTE COUNTY:

CUPA Facility Listing
Cupa facility list.

Date of Government Version: 08/01/2013
Date Data Arrived at EDR: 08/02/2013
Date Made Active in Reports: 08/22/2013
Number of Days to Update: 20

Source: Public Health Department
Telephone: 530-538-7149
Last EDR Contact: 10/09/2013
Next Scheduled EDR Contact: 01/27/2014
Data Release Frequency: No Update Planned

CALVERAS COUNTY:

CUPA Facility Listing
Cupa Facility Listing

Date of Government Version: 06/30/2013
Date Data Arrived at EDR: 07/24/2013
Date Made Active in Reports: 08/09/2013
Number of Days to Update: 16

Source: Calveras County Environmental Health
Telephone: 209-754-6399
Last EDR Contact: 09/30/2013
Next Scheduled EDR Contact: 01/13/2014
Data Release Frequency: Quarterly

COLUSA COUNTY:

CUPA Facility List
Cupa facility list.

Date of Government Version: 06/20/2013
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 08/09/2013
Number of Days to Update: 39

Source: Health & Human Services
Telephone: 530-458-0396
Last EDR Contact: 10/04/2013
Next Scheduled EDR Contact: 11/25/2013
Data Release Frequency: Varies

CONTRA COSTA COUNTY:

Site List
List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 08/20/2013
Date Data Arrived at EDR: 08/23/2013
Date Made Active in Reports: 10/08/2013
Number of Days to Update: 46

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 08/05/2013
Next Scheduled EDR Contact: 11/18/2013
Data Release Frequency: Semi-Annually

DEL NORTE COUNTY:

CUPA Facility List
Cupa Facility list

Date of Government Version: 01/09/2013
Date Data Arrived at EDR: 01/10/2013
Date Made Active in Reports: 02/25/2013
Number of Days to Update: 46

Source: Del Norte County Environmental Health Division
Telephone: 707-465-0426
Last EDR Contact: 09/20/2013
Next Scheduled EDR Contact: 08/19/2013
Data Release Frequency: Varies

EL DORADO COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 08/20/2013
Date Data Arrived at EDR: 08/23/2013
Date Made Active in Reports: 10/08/2013
Number of Days to Update: 46

Source: El Dorado County Environmental Management Department
Telephone: 530-621-6623
Last EDR Contact: 08/05/2013
Next Scheduled EDR Contact: 11/18/2013
Data Release Frequency: Varies

FRESNO COUNTY:

CUPA Resources List
Certified Unified Program Agency. CUPA's are responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

Date of Government Version: 06/30/2013
Date Data Arrived at EDR: 07/16/2013
Date Made Active in Reports: 07/24/2013
Number of Days to Update: 8

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 10/09/2013
Next Scheduled EDR Contact: 01/27/2014
Data Release Frequency: Semi-Annually

HUMBOLDT COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 08/09/2013
Date Data Arrived at EDR: 08/09/2013
Date Made Active in Reports: 08/22/2013
Number of Days to Update: 13

Source: Humboldt County Environmental Health
Telephone: N/A
Last EDR Contact: 08/09/2013
Next Scheduled EDR Contact: 12/09/2013
Data Release Frequency: Varies

IMPERIAL COUNTY:

CUPA Facility List
Cupa facility list.

Date of Government Version: 07/26/2013
Date Data Arrived at EDR: 08/09/2013
Date Made Active in Reports: 08/22/2013
Number of Days to Update: 13

Source: San Diego Border Field Office
Telephone: 760-339-2777
Last EDR Contact: 08/08/2013
Next Scheduled EDR Contact: 11/11/2013
Data Release Frequency: Varies

INYO COUNTY:

CUPA Facility List
Cupa facility list.

Date of Government Version: 09/10/2013
Date Data Arrived at EDR: 09/11/2013
Date Made Active in Reports: 10/14/2013
Number of Days to Update: 33

Source: Inyo County Environmental Health Services
Telephone: 760-878-0238
Last EDR Contact: 09/10/2013
Next Scheduled EDR Contact: 12/09/2013
Data Release Frequency: Varies

KERN COUNTY:

Underground Storage Tank Sites & Tank Listing
Kern County Sites and Tanks Listing.

Date of Government Version: 08/31/2010
Date Data Arrived at EDR: 09/01/2010
Date Made Active in Reports: 09/30/2010
Number of Days to Update: 29

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 08/07/2013
Next Scheduled EDR Contact: 11/25/2013
Data Release Frequency: Quarterly

KINGS COUNTY:

CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 08/22/2013
Date Data Arrived at EDR: 08/27/2013
Date Made Active in Reports: 10/08/2013
Number of Days to Update: 42

Source: Kings County Department of Public Health
Telephone: 559-584-1411
Last EDR Contact: 08/22/2013
Next Scheduled EDR Contact: 12/09/2013
Data Release Frequency: Varies

LAKE COUNTY:

CUPA Facility List
Cupa facility list

Date of Government Version: 01/23/2013
Date Data Arrived at EDR: 01/25/2013
Date Made Active in Reports: 02/27/2013
Number of Days to Update: 33

Source: Lake County Environmental Health
Telephone: 707-263-1164
Last EDR Contact: 10/21/2013
Next Scheduled EDR Contact: 02/03/2014
Data Release Frequency: Varies

LOS ANGELES COUNTY:

San Gabriel Valley Areas of Concern
San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office.

Date of Government Version: 03/30/2009
Date Data Arrived at EDR: 03/31/2009
Date Made Active in Reports: 10/23/2009
Number of Days to Update: 206

Source: EPA Region 9
Telephone: 415-972-3178
Last EDR Contact: 09/23/2013
Next Scheduled EDR Contact: 01/08/2014
Data Release Frequency: No Update Planned

HMS: Street Number List
Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 03/28/2013
Date Data Arrived at EDR: 06/17/2013
Date Made Active in Reports: 08/21/2013
Number of Days to Update: 65

Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 10/09/2013
Next Scheduled EDR Contact: 01/27/2014
Data Release Frequency: Semi-Annually

List of Solid Waste Facilities
Solid Waste Facilities in Los Angeles County.

Date of Government Version: 07/22/2013
Date Data Arrived at EDR: 07/22/2013
Date Made Active in Reports: 08/26/2013
Number of Days to Update: 35

Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 10/22/2013
Next Scheduled EDR Contact: 02/03/2014
Data Release Frequency: Varies

City of Los Angeles Landfills
Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 03/05/2009
Date Data Arrived at EDR: 03/10/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 29

Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 07/17/2013
Next Scheduled EDR Contact: 11/04/2013
Data Release Frequency: Varies

Site Mitigation List
Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 01/30/2013
Date Data Arrived at EDR: 02/21/2013
Date Made Active in Reports: 03/25/2013
Number of Days to Update: 32

Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 10/21/2013
Next Scheduled EDR Contact: 02/03/2014
Data Release Frequency: Annually

City of El Segundo Underground Storage Tank
Underground storage tank sites located in El Segundo city.

Date of Government Version: 07/31/2013
Date Data Arrived at EDR: 08/01/2013
Date Made Active in Reports: 08/27/2013
Number of Days to Update: 26

Source: City of El Segundo Fire Department
Telephone: 310-524-2236
Last EDR Contact: 10/21/2013
Next Scheduled EDR Contact: 02/03/2014
Data Release Frequency: Semi-Annually

City of Long Beach Underground Storage Tank
Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 03/28/2003
Date Data Arrived at EDR: 10/23/2003
Date Made Active in Reports: 11/26/2003
Number of Days to Update: 34

Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 07/26/2013
Next Scheduled EDR Contact: 11/11/2013
Data Release Frequency: Annually

City of Torrance Underground Storage Tank
Underground storage tank sites located in the city of Torrance.

Date of Government Version: 07/15/2013
Date Data Arrived at EDR: 07/18/2013
Date Made Active in Reports: 08/20/2013
Number of Days to Update: 33

Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 10/09/2013
Next Scheduled EDR Contact: 01/27/2014
Data Release Frequency: Semi-Annually

MADERA COUNTY:

CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 09/20/2013
Date Data Arrived at EDR: 09/24/2013
Date Made Active in Reports: 10/18/2013
Number of Days to Update: 24

Source: Madera County Environmental Health
Telephone: 559-675-7823
Last EDR Contact: 08/22/2013
Next Scheduled EDR Contact: 12/09/2013
Data Release Frequency: Varies

MARIN COUNTY:

Underground Storage Tank Sites
Currently permitted USTs in Marin County.

Date of Government Version: 11/26/2012
Date Data Arrived at EDR: 11/28/2012
Date Made Active in Reports: 01/21/2013
Number of Days to Update: 54

Source: Public Works Department Waste Management
Telephone: 415-499-6647
Last EDR Contact: 10/07/2013
Next Scheduled EDR Contact: 01/20/2014
Data Release Frequency: Semi-Annually

MERCED COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 08/23/2013
Date Data Arrived at EDR: 08/27/2013
Date Made Active in Reports: 10/08/2013
Number of Days to Update: 42

Source: Merced County Environmental Health
Telephone: 209-381-1094
Last EDR Contact: 08/22/2013
Next Scheduled EDR Contact: 12/09/2013
Data Release Frequency: Varies

MONO COUNTY:

CUPA Facility List
CUPA Facility List

Date of Government Version: 09/04/2013
Date Data Arrived at EDR: 09/05/2013
Date Made Active in Reports: 10/14/2013
Number of Days to Update: 39

Source: Mono County Health Department
Telephone: 760-932-5580
Last EDR Contact: 09/03/2013
Next Scheduled EDR Contact: 12/16/2013
Data Release Frequency: Varies

MONTEREY COUNTY:

CUPA Facility Listing
CUPA Program listing from the Environmental Health Division.

Date of Government Version: 09/11/2013
Date Data Arrived at EDR: 09/12/2013
Date Made Active in Reports: 10/14/2013
Number of Days to Update: 32

Source: Monterey County Health Department
Telephone: 831-796-1297
Last EDR Contact: 08/22/2013
Next Scheduled EDR Contact: 12/09/2013
Data Release Frequency: Varies

NAPA COUNTY:

Sites With Reported Contamination
A listing of leaking underground storage tank sites located in Napa county.

Date of Government Version: 12/05/2011
Date Data Arrived at EDR: 12/06/2011
Date Made Active in Reports: 02/07/2012
Number of Days to Update: 63

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 09/03/2013
Next Scheduled EDR Contact: 12/16/2013
Data Release Frequency: No Update Planned

Closed and Operating Underground Storage Tank Sites
Underground storage tank sites located in Napa county.

Date of Government Version: 01/15/2008
Date Data Arrived at EDR: 01/16/2008
Date Made Active in Reports: 02/08/2008
Number of Days to Update: 23

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 09/03/2013
Next Scheduled EDR Contact: 12/16/2013
Data Release Frequency: No Update Planned

NEVADA COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 05/29/2013
Date Data Arrived at EDR: 05/30/2013
Date Made Active in Reports: 07/15/2013
Number of Days to Update: 46

Source: Community Development Agency
Telephone: 530-265-1467
Last EDR Contact: 08/15/2013
Next Scheduled EDR Contact: 11/18/2013
Data Release Frequency: Varies

ORANGE COUNTY:

List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 08/01/2013
Date Data Arrived at EDR: 08/13/2013
Date Made Active in Reports: 10/08/2013
Number of Days to Update: 56

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 08/07/2013
Next Scheduled EDR Contact: 11/25/2013
Data Release Frequency: Annually

List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 08/01/2013
Date Data Arrived at EDR: 08/13/2013
Date Made Active in Reports: 10/08/2013
Number of Days to Update: 56

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 08/07/2013
Next Scheduled EDR Contact: 11/25/2013
Data Release Frequency: Quarterly

List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 08/01/2013
Date Data Arrived at EDR: 08/13/2013
Date Made Active in Reports: 10/08/2013
Number of Days to Update: 56

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 08/07/2013
Next Scheduled EDR Contact: 11/25/2013
Data Release Frequency: Quarterly

PLACER COUNTY:

Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 08/22/2013
Date Data Arrived at EDR: 08/22/2013
Date Made Active in Reports: 10/10/2013
Number of Days to Update: 49

Source: Placer County Health and Human Services
Telephone: 530-745-2363
Last EDR Contact: 08/20/2013
Next Scheduled EDR Contact: 12/23/2013
Data Release Frequency: Semi-Annually

RIVERSIDE COUNTY:

Listing of Underground Tank Cleanup Sites
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 07/18/2013
Date Data Arrived at EDR: 07/18/2013
Date Made Active in Reports: 07/24/2013
Number of Days to Update: 6

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 09/23/2013
Next Scheduled EDR Contact: 01/08/2014
Data Release Frequency: Quarterly

Underground Storage Tank Tank List
Underground storage tank sites located in Riverside county.

Date of Government Version: 07/18/2013
Date Data Arrived at EDR: 07/18/2013
Date Made Active in Reports: 08/20/2013
Number of Days to Update: 33

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 09/23/2013
Next Scheduled EDR Contact: 01/08/2014
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

Toxic Site Clean-Up List

List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 05/03/2013
Date Data Arrived at EDR: 07/08/2013
Date Made Active in Reports: 07/24/2013
Number of Days to Update: 16

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 10/07/2013
Next Scheduled EDR Contact: 01/20/2014
Data Release Frequency: Quarterly

Master Hazardous Materials Facility List

Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 05/03/2013
Date Data Arrived at EDR: 07/08/2013
Date Made Active in Reports: 08/23/2013
Number of Days to Update: 46

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 10/07/2013
Next Scheduled EDR Contact: 01/20/2014
Data Release Frequency: Quarterly

SAN BERNARDINO COUNTY:

Hazardous Material Permits

This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 09/03/2013
Date Data Arrived at EDR: 09/03/2013
Date Made Active in Reports: 10/10/2013
Number of Days to Update: 37

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 08/08/2013
Next Scheduled EDR Contact: 11/25/2013
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

Hazardous Materials Management Division Database

The database includes: HE58 - This report contains the business name, site address, business phone number, establishment 'H' permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 09/23/2013
Date Data Arrived at EDR: 09/24/2013
Date Made Active in Reports: 10/17/2013
Number of Days to Update: 23

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 09/23/2013
Next Scheduled EDR Contact: 12/23/2013
Data Release Frequency: Quarterly

Solid Waste Facilities

San Diego County Solid Waste Facilities.

Date of Government Version: 10/31/2012
Date Data Arrived at EDR: 11/06/2012
Date Made Active in Reports: 11/30/2012
Number of Days to Update: 24

Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 07/24/2013
Next Scheduled EDR Contact: 11/11/2013
Data Release Frequency: Varies

Environmental Case Listing

The listing contains all underground tank release cases and projects pertaining to properties contaminated with hazardous substances that are actively under review by the Site Assessment and Mitigation Program.

Date of Government Version: 03/23/2010
Date Data Arrived at EDR: 06/15/2010
Date Made Active in Reports: 07/09/2010
Number of Days to Update: 24

Source: San Diego County Department of Environmental Health
Telephone: 619-338-2371
Last EDR Contact: 09/10/2013
Next Scheduled EDR Contact: 12/23/2013
Data Release Frequency: No Update Planned

SAN FRANCISCO COUNTY:

Local Oversite Facilities

A listing of leaking underground storage tank sites located in San Francisco county.

Date of Government Version: 09/19/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 09/29/2008
Number of Days to Update: 10

Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920
Last EDR Contact: 08/07/2013
Next Scheduled EDR Contact: 11/25/2013
Data Release Frequency: Quarterly

Underground Storage Tank Information

Underground storage tank sites located in San Francisco county.

Date of Government Version: 11/29/2010
Date Data Arrived at EDR: 03/10/2011
Date Made Active in Reports: 03/15/2011
Number of Days to Update: 5

Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 08/07/2013
Next Scheduled EDR Contact: 11/25/2013
Data Release Frequency: Quarterly

SAN JOAQUIN COUNTY:

San Joaquin Co. UST

A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 09/25/2013
Date Data Arrived at EDR: 09/27/2013
Date Made Active in Reports: 10/18/2013
Number of Days to Update: 21

Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 09/23/2013
Next Scheduled EDR Contact: 01/08/2014
Data Release Frequency: Semi-Annually

SAN LUIS OBISPO COUNTY:

CUPA Facility List

Cupa Facility List.

Date of Government Version: 08/26/2013
Date Data Arrived at EDR: 08/27/2013
Date Made Active in Reports: 10/10/2013
Number of Days to Update: 44

Source: San Luis Obispo County Public Health Department
Telephone: 805-781-5596
Last EDR Contact: 08/22/2013
Next Scheduled EDR Contact: 12/09/2013
Data Release Frequency: Varies

SAN MATEO COUNTY:

Business Inventory

List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 07/02/2013
Date Data Arrived at EDR: 07/05/2013
Date Made Active in Reports: 08/23/2013
Number of Days to Update: 49

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 06/13/2013
Next Scheduled EDR Contact: 09/30/2013
Data Release Frequency: Annually

Fuel Leak List

A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 09/16/2013
Date Data Arrived at EDR: 09/17/2013
Date Made Active in Reports: 10/16/2013
Number of Days to Update: 29

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 09/16/2013
Next Scheduled EDR Contact: 12/30/2013
Data Release Frequency: Semi-Annually

SANTA BARBARA COUNTY:

CUPA Facility Listing

CUPA Program Listing from the Environmental Health Services division.

Date of Government Version: 09/08/2011
Date Data Arrived at EDR: 09/09/2011
Date Made Active in Reports: 10/07/2011
Number of Days to Update: 28

Source: Santa Barbara County Public Health Department
Telephone: 805-686-8167
Last EDR Contact: 09/23/2013
Next Scheduled EDR Contact: 12/09/2013
Data Release Frequency: Varies

SANTA CLARA COUNTY:

Cupa Facility List

Cupa facility list

Date of Government Version: 09/03/2013
Date Data Arrived at EDR: 09/04/2013
Date Made Active in Reports: 10/10/2013
Number of Days to Update: 36

Source: Department of Environmental Health
Telephone: 408-918-1973
Last EDR Contact: 09/03/2013
Next Scheduled EDR Contact: 12/16/2013
Data Release Frequency: Varies

HIST LUST - Fuel Leak Site Activity Report

A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

Date of Government Version: 03/29/2005
Date Data Arrived at EDR: 03/30/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 22

Source: Santa Clara Valley Water District
Telephone: 408-265-2600
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

LOP Listing

A listing of leaking underground storage tanks located in Santa Clara county.

Date of Government Version: 09/03/2013
Date Data Arrived at EDR: 09/06/2013
Date Made Active in Reports: 10/14/2013
Number of Days to Update: 38

Source: Department of Environmental Health
Telephone: 408-918-3417
Last EDR Contact: 09/03/2013
Next Scheduled EDR Contact: 12/16/2013
Data Release Frequency: Annually

Hazardous Material Facilities

Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 08/14/2013
Date Data Arrived at EDR: 08/16/2013
Date Made Active in Reports: 10/08/2013
Number of Days to Update: 53

Source: City of San Jose Fire Department
Telephone: 408-535-7694
Last EDR Contact: 08/08/2013
Next Scheduled EDR Contact: 11/25/2013
Data Release Frequency: Annually

SANTA CRUZ COUNTY:

CUPA Facility List
CUPA facility listing.

Date of Government Version: 08/22/2013
Date Data Arrived at EDR: 08/27/2013
Date Made Active in Reports: 10/10/2013
Number of Days to Update: 44

Source: Santa Cruz County Environmental Health
Telephone: 831-464-2761
Last EDR Contact: 08/22/2013
Next Scheduled EDR Contact: 12/09/2013
Data Release Frequency: Varies

SHASTA COUNTY:

CUPA Facility List
Cupa Facility List.

Date of Government Version: 09/09/2013
Date Data Arrived at EDR: 09/10/2013
Date Made Active in Reports: 10/14/2013
Number of Days to Update: 34

Source: Shasta County Department of Resource Management
Telephone: 530-225-5789
Last EDR Contact: 08/22/2013
Next Scheduled EDR Contact: 12/09/2013
Data Release Frequency: Varies

SOLANO COUNTY:

Leaking Underground Storage Tanks
A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 09/18/2013
Date Data Arrived at EDR: 09/20/2013
Date Made Active in Reports: 10/17/2013
Number of Days to Update: 27

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 09/16/2013
Next Scheduled EDR Contact: 12/30/2013
Data Release Frequency: Quarterly

Underground Storage Tanks
Underground storage tank sites located in Solano county.

Date of Government Version: 09/18/2013
Date Data Arrived at EDR: 09/24/2013
Date Made Active in Reports: 10/18/2013
Number of Days to Update: 24

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 09/16/2013
Next Scheduled EDR Contact: 12/30/2013
Data Release Frequency: Quarterly

SONOMA COUNTY:

Cupa Facility List
Cupa Facility list

Date of Government Version: 07/05/2013
Date Data Arrived at EDR: 07/05/2013
Date Made Active in Reports: 08/21/2013
Number of Days to Update: 47

Source: County of Sonoma Fire & Emergency Services Department
Telephone: 707-565-1174
Last EDR Contact: 09/30/2013
Next Scheduled EDR Contact: 01/13/2014
Data Release Frequency: Varies

Leaking Underground Storage Tank Sites
A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 07/02/2013
Date Data Arrived at EDR: 07/05/2013
Date Made Active in Reports: 08/12/2013
Number of Days to Update: 38

Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 09/30/2013
Next Scheduled EDR Contact: 01/13/2014
Data Release Frequency: Quarterly

SUTTER COUNTY:

Underground Storage Tanks
Underground storage tank sites located in Sutter county.

Date of Government Version: 09/10/2013
Date Data Arrived at EDR: 09/11/2013
Date Made Active in Reports: 10/14/2013
Number of Days to Update: 33

Source: Sutter County Department of Agriculture
Telephone: 530-822-7500
Last EDR Contact: 09/10/2013
Next Scheduled EDR Contact: 12/23/2013
Data Release Frequency: Semi-Annually

TUOLUMNE COUNTY:

CUPA Facility List
Cupa facility list

Date of Government Version: 01/14/2013
Date Data Arrived at EDR: 01/16/2013
Date Made Active in Reports: 02/27/2013
Number of Days to Update: 42

Source: Divison of Environmental Health
Telephone: 209-533-5633
Last EDR Contact: 07/26/2013
Next Scheduled EDR Contact: 11/11/2013
Data Release Frequency: Varies

VENTURA COUNTY:

Business Plan, Hazardous Waste Producers, and Operating Underground Tanks
The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 08/19/2013
Date Data Arrived at EDR: 08/27/2013
Date Made Active in Reports: 10/10/2013
Number of Days to Update: 44

Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 08/19/2013
Next Scheduled EDR Contact: 12/02/2013
Data Release Frequency: Quarterly

Inventory of Illegal Abandoned and Inactive Sites
Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 12/01/2011
Date Data Arrived at EDR: 12/01/2011
Date Made Active in Reports: 01/19/2012
Number of Days to Update: 49

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 10/07/2013
Next Scheduled EDR Contact: 01/20/2014
Data Release Frequency: Annually

Listing of Underground Tank Cleanup Sites
Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 05/29/2008
Date Data Arrived at EDR: 06/24/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 37

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 08/19/2013
Next Scheduled EDR Contact: 12/02/2013
Data Release Frequency: Quarterly

Medical Waste Program List
To protect public health and safety and the environment from potential exposure to disease causing agents, the Environmental Health Division Medical Waste Program regulates the generation, handling, storage, treatment and disposal of medical waste throughout the County.

Date of Government Version: 05/28/2013
Date Data Arrived at EDR: 06/24/2013
Date Made Active in Reports: 08/12/2013
Number of Days to Update: 49

Source: Ventura County Resource Management Agency
Telephone: 805-654-2813
Last EDR Contact: 07/30/2013
Next Scheduled EDR Contact: 11/11/2013
Data Release Frequency: Quarterly

Underground Tank Closed Sites List
Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 08/29/2013
Date Data Arrived at EDR: 09/18/2013
Date Made Active in Reports: 10/16/2013
Number of Days to Update: 28

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 09/16/2013
Next Scheduled EDR Contact: 12/30/2013
Data Release Frequency: Quarterly

YOLO COUNTY:

Underground Storage Tank Comprehensive Facility Report
Underground storage tank sites located in Yolo county.

Date of Government Version: 06/24/2013
Date Data Arrived at EDR: 06/26/2013
Date Made Active in Reports: 08/20/2013
Number of Days to Update: 55

Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 09/23/2013
Next Scheduled EDR Contact: 01/08/2014
Data Release Frequency: Annually

YUBA COUNTY:

CUPA Facility List
CUPA facility listing for Yuba County.

Date of Government Version: 08/01/2013
Date Data Arrived at EDR: 08/05/2013
Date Made Active in Reports: 08/22/2013
Number of Days to Update: 17

Source: Yuba County Environmental Health Department
Telephone: 530-749-7523
Last EDR Contact: 07/31/2013
Next Scheduled EDR Contact: 11/18/2013
Data Release Frequency: Varies

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data
Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 07/30/2013
Date Data Arrived at EDR: 08/19/2013
Date Made Active in Reports: 10/03/2013
Number of Days to Update: 45

Source: Department of Energy & Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 08/19/2013
Next Scheduled EDR Contact: 12/02/2013
Data Release Frequency: Annually

NJ MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2011
Date Data Arrived at EDR: 07/19/2012
Date Made Active in Reports: 08/28/2012
Number of Days to Update: 40

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 10/18/2013
Next Scheduled EDR Contact: 01/27/2014
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data
Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 08/01/2013
Date Data Arrived at EDR: 08/07/2013
Date Made Active in Reports: 09/10/2013
Number of Days to Update: 34

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 08/07/2013
Next Scheduled EDR Contact: 11/18/2013
Data Release Frequency: Annually

PA MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2012
Date Data Arrived at EDR: 07/24/2013
Date Made Active in Reports: 08/19/2013
Number of Days to Update: 26

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 10/21/2013
Next Scheduled EDR Contact: 02/03/2014
Data Release Frequency: Annually

RI MANIFEST: Manifest information
Hazardous waste manifest information

Date of Government Version: 12/31/2012
Date Data Arrived at EDR: 06/21/2013
Date Made Active in Reports: 08/05/2013
Number of Days to Update: 45

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 08/23/2013
Next Scheduled EDR Contact: 12/09/2013
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2012
Date Data Arrived at EDR: 08/09/2013
Date Made Active in Reports: 09/27/2013
Number of Days to Update: 49

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 09/16/2013
Next Scheduled EDR Contact: 12/30/2013
Data Release Frequency: Annually

Oil/Gas Pipelines: This data was obtained by EDR from the USGS in 1994. It is referred to by USGS as GeoData Digital Line Graphs from 1:100,000-Scale Maps. It was extracted from the transportation category including some oil, but primarily gas pipelines.

Electric Power Transmission Line Data
Source: Rextag Strategies Corp.
Telephone: (281) 769-2247
U.S. Electric Transmission and Power Plants Systems Digital GIS Data

Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 916-657-4041

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2011 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

Scanned Digital USGS 7.5' Topographic Map (DRG)
Source: United States Geologic Survey
A digital raster graphic (DRG) is a scanned image of a U.S. Geological Survey topographic map. The map images are made by scanning published paper maps on high-resolution scanners. The raster image is georeferenced and fit to the Universal Transverse Mercator (UTM) projection.

STREET AND ADDRESS INFORMATION

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GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

CENTRAL AVENUE
CENTRAL AVENUE
RIVERSIDE, CA 92507

TARGET PROPERTY COORDINATES

Latitude (North):	33.9591 - 33˚ 57' 32.76''
Longitude (West):	117.3131 - 117˚ 18' 47.16''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	471071.3
UTM Y (Meters):	3757471.0
Elevation:	1360 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	33117-H3 RIVERSIDE EAST, CA
Most Recent Revision:	1980

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principal investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

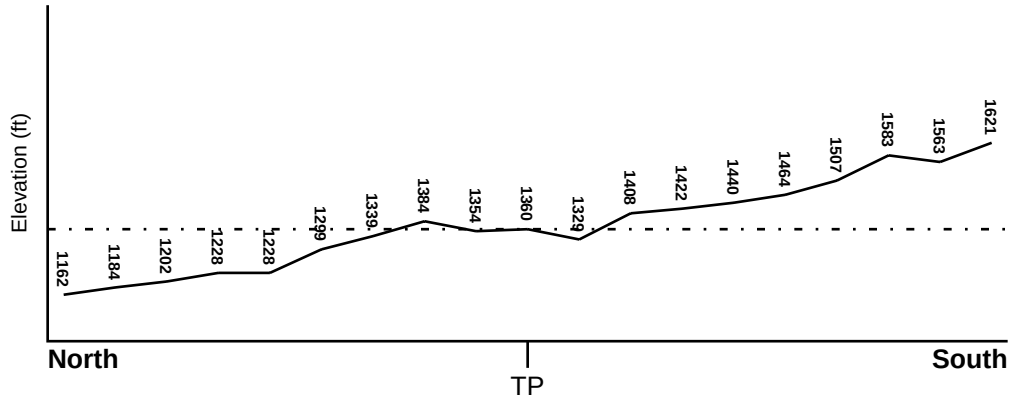
TOPOGRAPHIC INFORMATION

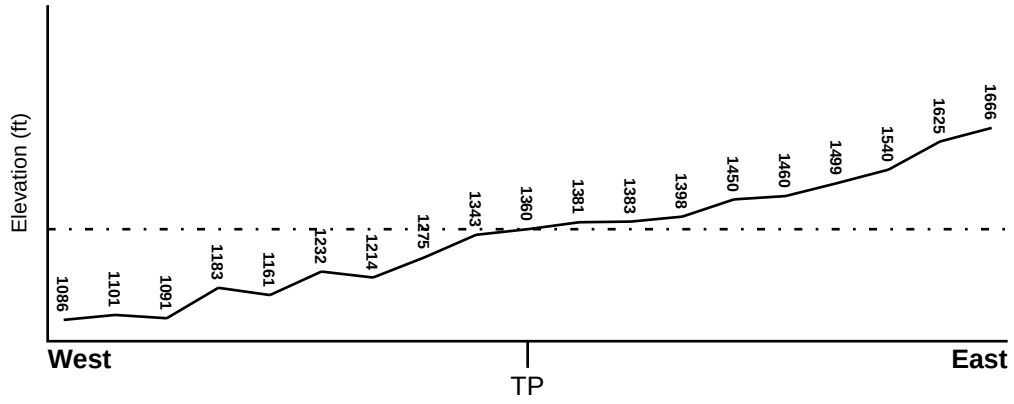
Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General WNW

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES





Target Property Elevation: 1360 ft.

0 1/2 1 Miles

Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Target Property County	FEMA Flood Electronic Data
RIVERSIDE, CA	YES - refer to the Overview Map and Detail Map

Flood Plain Panel at Target Property: 06065C - FEMA DFIRM Flood data

Additional Panels in search area: Not Reported

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
NOT AVAILABLE	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius: 1.25 miles
Status: Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
1	1/2 - 1 Mile SE	Not Reported

For additional site information, refer to Physical Setting Source Map Findings.

* ©1996 Site−specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

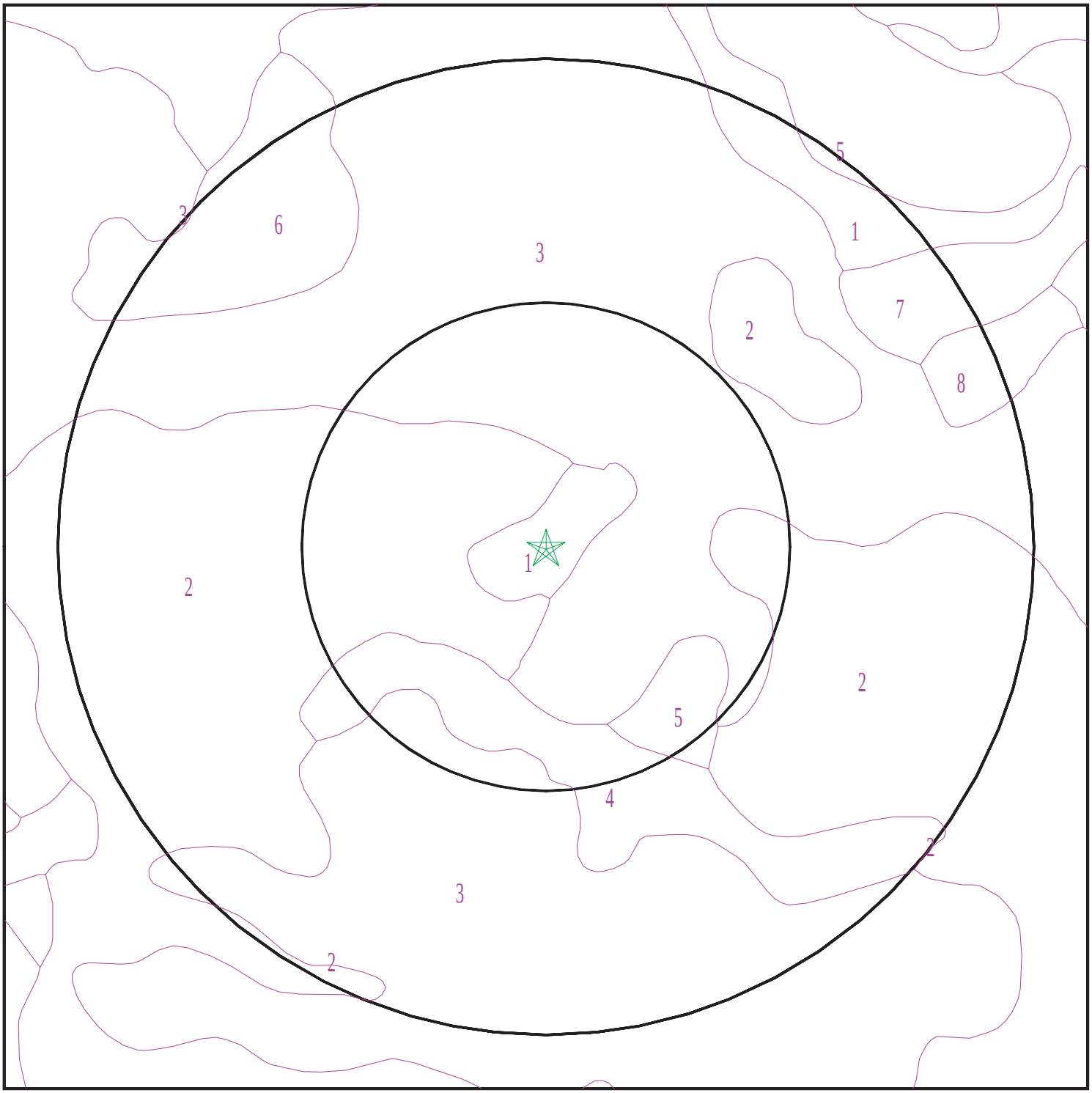
Era:	Mesozoic
System:	Cretaceous
Series:	Cretaceous granitic rocks
Code:	Kg *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Plutonic and Intrusive Rocks

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 03767938.2r



Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

SITE NAME: Central Avenue ADDRESS: Central Avenue Riverside CA 92507 LAT/LONG: 33.9591 / 117.3131	CLIENT: Hillmann Environmental Co. CONTACT: Kristine Savona INQUIRY #: 03767938.2r DATE: October 25, 2013 1:50 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: Terrace escarpments

Soil Surface Texture:
Hydrologic Group: Not reported

Soil Drainage Class:
Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Not Reported

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

No Layer Information available.

Soil Map ID: 2

Soil Component Name: Cieneba

Soil Surface Texture: sandy loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Somewhat excessively drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	14 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 5.1
2	14 inches	22 inches	weathered bedrock	Not reported	Not reported	Max: 0.42 Min: 0	Max: Min:

Soil Map ID: 3

Soil Component Name: CIENEBA

Soil Surface Texture: sandy loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Somewhat excessively drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	14 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 5.1

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
2	14 inches	22 inches	weathered bedrock	Not reported	Not reported	Max: 0.42 Min: 0	Max: Min:

Soil Map ID: 4

Soil Component Name: HANFORD

Soil Surface Texture: coarse sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	7 inches	coarse sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.8 Min: 5.6
2	7 inches	40 inches	fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.8 Min: 5.6
3	40 inches	59 inches	stratified loamy sand to coarse sandy loam	Granular materials (35 pct. or less passing No. 200), Stone Fragments, Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 7.8 Min: 5.6

Soil Map ID: 5

Soil Component Name: MONSERATE

Soil Surface Texture: sandy loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information

	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	**Upper**	**Lower**	**Soil Texture Class**	**AASHTO Group**	**Unified Soil**		
1	0 inches	9 inches	sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 14 Min: 4	Max: 7.3 Min: 6.1
2	9 inches	27 inches	sandy clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 4 Min: 1.4	Max: 7.3 Min: 6.1
3	27 inches	44 inches	indurated	Not reported	Not reported	Max: 0.01 Min: 0	Max: Min:
4	44 inches	57 inches	cemented	Not reported	Not reported	Max: 0.01 Min: 0	Max: Min:
5	57 inches	70 inches	loamy coarse sand	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 14 Min: 4	Max: 8.4 Min: 6.6

Soil Map ID: 6

Soil Component Name: VISTA

Soil Surface Texture: coarse sandy loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	14 inches	coarse sandy loam	Granular materials (35 pct. or less passing No. 200), Stone Fragments, Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 5.6
2	14 inches	24 inches	coarse sandy loam	Granular materials (35 pct. or less passing No. 200), Stone Fragments, Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 5.6
3	24 inches	27 inches	weathered bedrock	Not reported	Not reported	Max: 0.42 Min: 0	Max: Min:

Soil Map ID: 7

Soil Component Name: HANFORD

Soil Surface Texture: coarse sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Somewhat excessively drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	7 inches	coarse sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.8 Min: 5.6
2	7 inches	40 inches	fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.8 Min: 5.6
3	40 inches	59 inches	stratified loamy sand to coarse sandy loam	Granular materials (35 pct. or less passing No. 200), Stone Fragments, Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 7.8 Min: 5.6

Soil Map ID: 8

Soil Component Name: MONSERATE

Soil Surface Texture: sandy loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	9 inches	sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 14 Min: 4	Max: 7.3 Min: 6.1
2	9 inches	27 inches	sandy clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 4 Min: 1.4	Max: 7.3 Min: 6.1
3	27 inches	44 inches	indurated	Not reported	Not reported	Max: 0.01 Min: 0	Max: Min:
4	44 inches	57 inches	cemented	Not reported	Not reported	Max: 0.01 Min: 0	Max: Min:
5	57 inches	70 inches	loamy coarse sand	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 14 Min: 4	Max: 8.4 Min: 6.6

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No Wells Found		

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

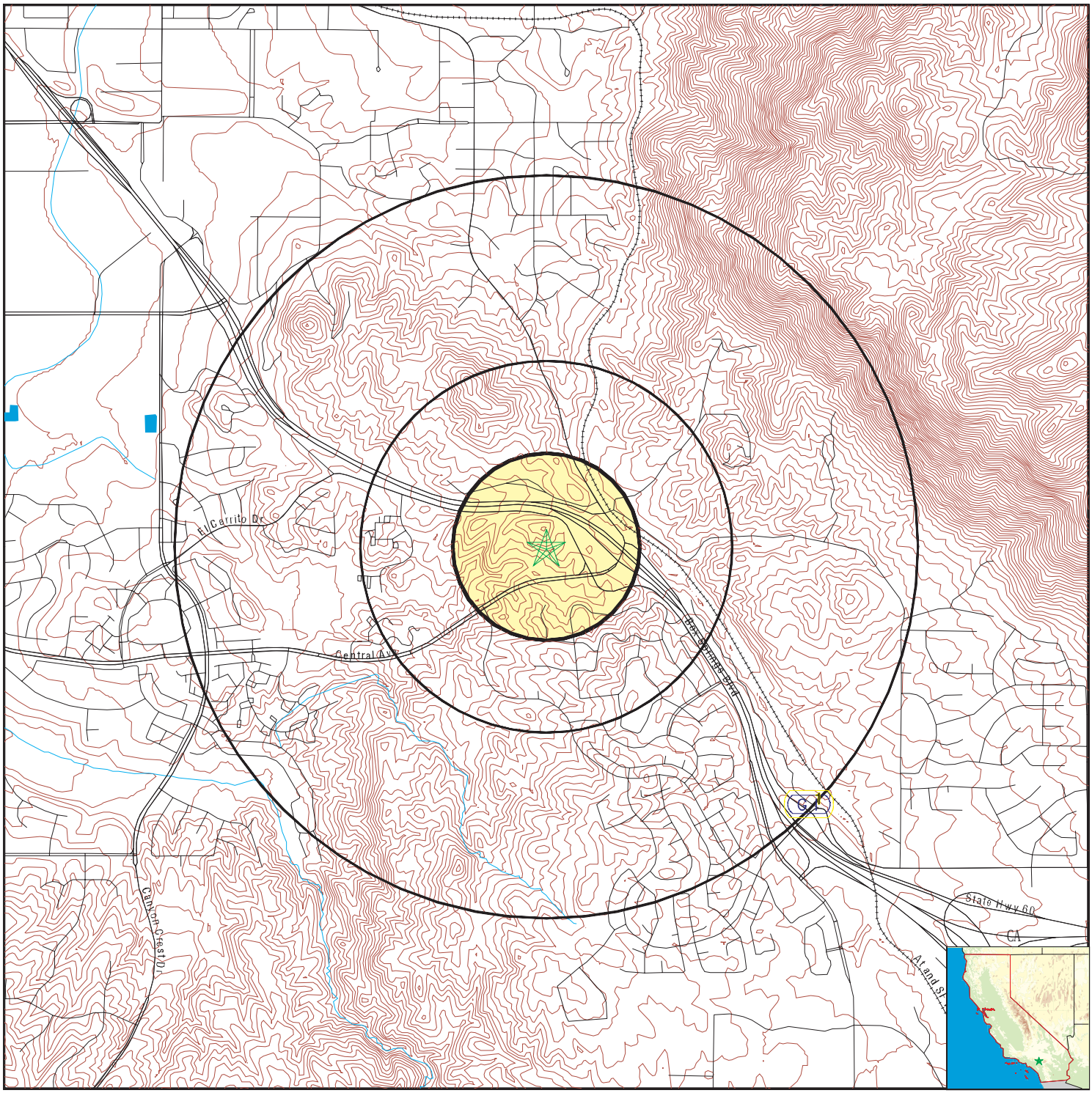
MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No Wells Found		

PHYSICAL SETTING SOURCE MAP - 03767938.2r



County Boundary
Major Roads
Contour Lines
Earthquake Fault Lines
Earthquake epicenter, Richter 5 or greater
Water Wells
Public Water Supply Wells
Cluster of Multiple Icons

0 1/4 1/2 1 Miles

Groundwater Flow Direction
GI Indeterminate Groundwater Flow at Location
GV Groundwater Flow Varies at Location
HD Closest Hydrogeological Data
Oil, gas or related wells

N

SITE NAME:	Central Avenue	CLIENT:	Hillmann Environmental Co.
ADDRESS:	Central Avenue Riverside CA 92507	CONTACT:	Kristine Savona
		INQUIRY #:	03767938.2r
LAT/LONG:	33.9591 / 117.3131	DATE:	October 25, 2013 1:50 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID Direction Distance Elevation			Database	EDR ID Number
1 **SE** **1/2 - 1 Mile** **Higher**	Site ID:	083302855T	**AQUIFLOW**	**50782**
	Groundwater Flow:	Not Reported		
	Shallow Water Depth:	Not Reported		
	Deep Water Depth:	Not Reported		
	Average Water Depth:	40		
	Date:	04/1997		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: CA Radon

Radon Test Results

Zipcode	Num Tests	> 4 pCi/L
92507	33	0

Federal EPA Radon Zone for RIVERSIDE County: 2

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for RIVERSIDE COUNTY, CA

Number of sites tested: 12

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.117 pCi/L	100%	0%	0%
Living Area - 2nd Floor	0.450 pCi/L	100%	0%	0%
Basement	1.700 pCi/L	100%	0%	0%

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Scanned Digital USGS 7.5' Topographic Map (DRG)
Source: United States Geologic Survey
A digital raster graphic (DRG) is a scanned image of a U.S. Geological Survey topographic map. The map images are made by scanning published paper maps on high-resolution scanners. The raster image is georeferenced and fit to the Universal Transverse Mercator (UTM) projection.

HYDROLOGIC INFORMATION

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2011 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

HYDROGEOLOGIC INFORMATION

AQUIFLOW[R] Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Services, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

Water Well Database
Source: Department of Water Resources
Telephone: 916-651-9648

California Drinking Water Quality Database
Source: Department of Health Services
Telephone: 916-324-2319
The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

OTHER STATE DATABASE INFORMATION

California Oil and Gas Well Locations
Source: Department of Conservation
Telephone: 916-323-1779
Oil and Gas well locations in the state.

RADON

State Database: CA Radon
Source: Department of Health Services
Telephone: 916-324-2208
Radon Database for California

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

California Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

STREET AND ADDRESS INFORMATION

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Report
Preliminary Geotechnical Evaluation

Proposed Crestview Apartment Complex

Sycamore Canyon Boulevard and Central Avenue, Riverside, California

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NOVA Project 3020003
January 20, 2020

KA Enterprises
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5820 Oberlin Drive, Suite 201
San Diego, Ca 92121

January 20, 2020
NOVA Project 3020003

Subject: Report
Preliminary Geotechnical Evaluation
Proposed Crestview Apartment Complex
Sycamore Canyon and Central Avenue, Riverside, California

Dear Mr. Assi:

NOVA Services, Inc. (NOVA) is pleased to present herewith its geotechnical evaluation report for the development of the Crestview Apartment Complex. The report identifies alternatives for ground improvement, as well as preliminary recommendations for design of foundations and earthwork. The work reported was completed by NOVA for KA Enterprises in accordance with NOVA's proposal dated January 13, 2020, as authorized on that date.

NOVA appreciates the opportunity to be of service to KA Enterprises. Should you have any questions regarding this report or other matters, please do not hesitate to call.

Sincerely,
NOVA Services, Inc.

Jesse D. Bearfield, P.E.
Senior Engineer

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STATE OF CALIFORNIA

PROFESSIONAL GEOLOGIST
BRYAN MILLER-HICKS
No. 1323
CERTIFIED ENGINEERING GEOLOGIST
Exp. _____
STATE OF CALIFORNIA

REPORT
PRELIMINARY GEOTECHNICAL EVALUATION

Proposed Crestview Apartment Complex
Sycamore Canyon Boulevard and Central Avenue, Riverside, California

TABLE OF CONTENTS

1.0 INTRODUCTION 1
1.1 Overview 1
1.2 Objectives, Scope, and Limitations of This Work 2
1.3 Understood Use of This Report 3
1.4 Report Organization 3
2.0 PROJECT INFORMATION 4
2.1 Location 4
2.2 Site Use 4
2.3 Planned Apartment Complex 6
3.0 SITE CHARACTERIZATION BY OTHERS 9
3.1 Overview 9
3.2 Test Trenches 10
3.3 Seismic Traverses 11
3.4 Laboratory Testing 12
4.0 SITE CONDITIONS 14
4.1 Geologic Setting 14
4.2 Faulting and Seismicity 15
4.3 Surface, Subsurface and Groundwater 15
5.0 REVIEW OF GEOLOGIC, SOIL AND SITING HAZARDS 17
5.1 Overview 17
5.2 Geologic Hazards 17
5.3 Soil Hazards 19
5.4 Siting Hazards 21
6.0 GROUND IMPROVEMENT 23

6.1 Overview 23
6.2 The Need for Ground Improvement 23
6.3 Alternatives for Ground Improvement 24
6.4 Review of Potentially Applicable Approaches to Ground Improvement 25
6.5 Recommended Ground Improvement by DDC 29
6.6 Estimated Cost of DDC 29
6.7 Implementing DDC 32
6.8 Recommended Approach to Contracting 34
6.9 Control of DDC 35
7.0 EARTHWORK AND FOUNDATIONS 36
7.1 Overview 36
7.2 Seismic Design Parameters 36
7.3 Corrosivity and Sulfates 37
7.4 Earthwork 39
7.5 Foundations 42
7.6 Permanent Below Grade Walls 43
7.7 Flatwork 45
7.8 Temporary Slopes 46
8.0 PAVEMENTS 47
8.1 Design Basis 47
8.2 Drainage and Moisture Control 47
8.3 Preventative Maintenance 47
8.4 Subgrade Preparation 48
8.5 Flexible Pavements 48
8.6 Rigid Pavements 49
9.0 CONSTRUCTION REVIEW, OBSERVATION, AND TESTING 50
9.1 Overview 50
9.2 Design Phase Review 50
9.3 Construction Observation and Testing 50

List of Plates

Plate 1- Locations of Subsurface Exploration by Others

List of Appendices

Appendix A 2007 Geotechnical Investigation by Albus Keefe & Associates, Inc.
Appendix B 2018 Geotechnical Investigation by Geocon West, Inc.

List of Tables

Table 3-1. Abstract of the Test Trenches (AKA 2007)
Table 3-2. Abstract of the Test Trenches (Geocon 2018)
Table 3-3. Abstract of the Direct Shear Testing
Table 3-4. Abstract of Chemical Testing
Table 6-1. Overview of Alternatives for Larger-Scale Ground Improvement
Table 6-2. Quantity Takeoff for DDC
Table 6-3. Unit Rates for DDC
Table 6-4. Cost for Densification at Each of the Structures
Table 6-5. Estimated Total Cost for DDC
Table 7-1. Site Class B, Risk Category II, ASCE 7-16 and 2019 CBC
Table 7-2. Summary of Corrosivity Testing
Table 7-3. Soil Resistivity and Corrosion Potential
Table 7-4. Exposure Categories and Requirements for Water-Soluble Sulfates
Table 7-5. Lateral Earth Pressures to Retaining Walls
Table 8-1. Preliminary Recommendations for Flexible Pavements, R = 65
Table 8-2. Recommended Concrete Requirements

List of Figures

Figure 1-1. Vicinity Map
Figure 2-1. Site Limits and Location
Figure 2-2. Site Area, May 1994
Figure 2-3. Site Area, October 2005
Figure 2-4. Conceptual Site Development

List of Figures (continued)

Figure 3-1. Locations of the Previous Site Exploration

Figure 4-1. Geologic Mapping of the Site Vicinity

Figure 4-2. Surface Conditions, Looking SW From Sycamore Canyon Boulevard

Figure 5-1. Faulting in the Site Vicinity

Figure 5-2. Landslide Susceptibility Mapping of the Site Area

Figure 5-3. Flood Mapping of the Site Area

Figure 6-1. Crane Lifting the Tamper

Figure 6-2. Large-Scale Application of Rapid Impact Compaction

Figure 6-3. Overlapping Influence of Points of Rapid Impact Compaction

Figure 6-4. Building Reference Numbers for Cost Estimating

Figure 7-1. Sawed Contraction Joint

Figure 7-2. Conceptual Design for Permanent Wall Drainage

1.0 INTRODUCTION

1.1 Overview

1.1.1 Terms of Reference

The work reported herein was completed by NOVA Services, Inc. (NOVA) for KA Enterprises in accordance with the scope of work detailed in NOVA's proposal dated January 13, 2020, as authorized on that date. The report provides a geotechnical evaluation of requirements for development of an apartment complex proposed to be sited on a vacant 9.8-acre property in Riverside, California. The property is located at the northwest corner of Sycamore Canyon Boulevard and Central Avenue, Riverside, California (hereinafter, 'the site').

1.1.2 Proposed Development

The proposed apartment complex development will include seven (7) new apartment structures consisting of (5) Type I, 2-3 split story, (1) Type II, 2-4 split story, and (1) Type III 4-story buildings accommodating 237 dwelling units. Additional improvements include an outdoor swimming pool and spa, putting green, paved driveways and parking stalls, and typical hardscapes. The project is known to NOVA as "Crestview Apartments."

This report relies upon the findings of previous subsurface explorations as a basis for evaluation of requirements for development by large-scale ground improvement.

Figure 1-1 depicts the site vicinity.

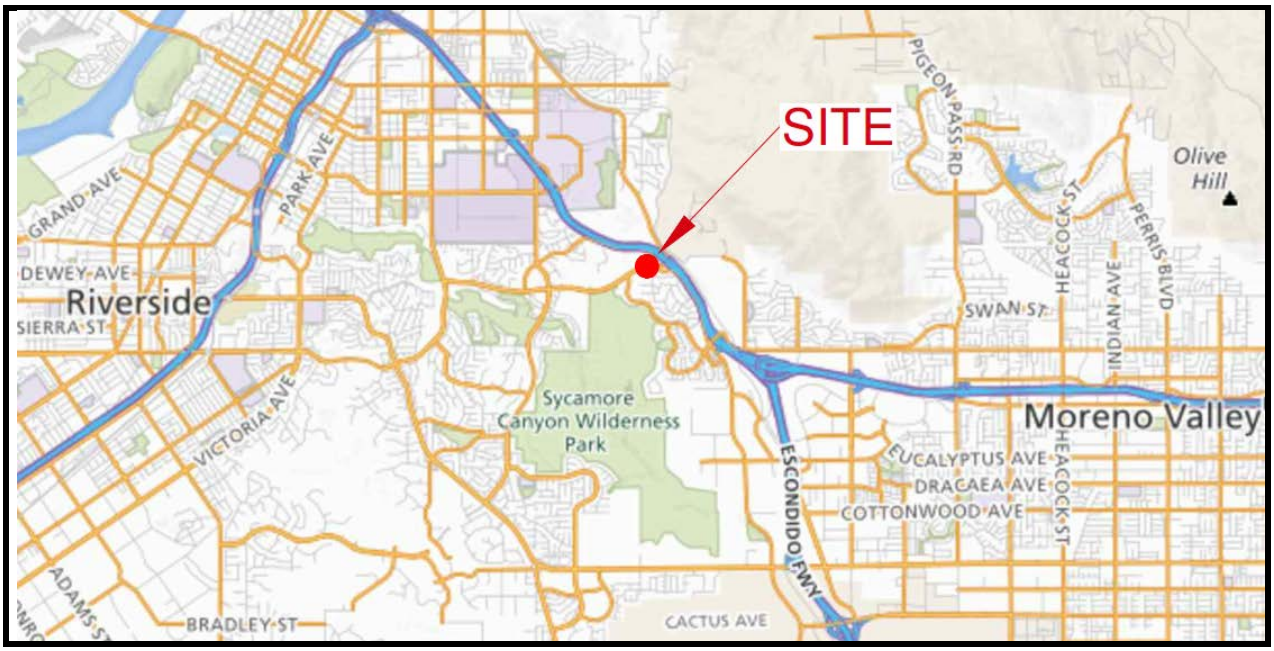

Figure 1-1. Vicinity Map

1.2 Objectives, Scope, and Limitations of This Work

1.2.1 Objectives

The objectives of the work reported herein are twofold, as described below.

1. Objective 1, Ground Improvement. Utilize existing site information that characterizes the subsurface conditions, identify the proximate scope and cost of alternatives for ground improvement, determining an alternative that is preferred on the basis of expected performance and cost.
2. Objective 2, Site Development. Anticipating successful implementation of ground improvement, provide preliminary recommendations for geotechnical-related development, including foundations and post-improvement earthwork.

1.2.2 Scope

In order to accomplish the above objectives, NOVA undertook the task-based scope of work described below.

1. Task 1, Background Review. Reviewed background and site-specific data, including published geotechnical reports, topographic maps, geologic data, and fault maps. Conceptual planning for development of the property was reviewed.

2. Task 2, Engineering Evaluations. Reporting by others was utilized to estimate subsurface conditions for engineering evaluations. Engineering evaluations addressed the geotechnical requirements for developing the site for the proposed apartment structures. Evaluations include the relative cost and performance of a range of alternatives for ground improvement.

3. Task 3, Reporting. Preparation of this report completes NOVA's scope of work.

1.2.3 Limitations

Assessment of the subsurface in geological and geotechnical engineering is characterized by uncertainty. Opinions relating to environmental, geologic, and geotechnical conditions are based on limited data, such that actual conditions may vary from those encountered at the times and locations where the data are obtained, despite the use of due professional care. The judgments provided in this report are based upon NOVA's understanding of the planned construction, its experience with similar work, and its judgments regarding subsurface conditions indicated by the evaluations of subsurface explorations by others that are described in the report.

Conditions exposed by construction may vary from those disclosed. NOVA should be retained for design review and for surveillance to observe subsurface conditions revealed during construction. NOVA cannot assume responsibility for the recommendations of this report if NOVA does not perform construction observation. Section 9 of this report addresses this consideration in more detail

Deep dynamic compaction ('DDC') evaluation by NOVA indicates that this is the preferred ground improvement method on the basis of expected cost and performance. This evaluation and related discussion do not constitute a design. The evaluation is suitable only for comparison

of the relative cost and performance of this technology with alternative approaches for ground improvement.

This report addresses preliminary geotechnical considerations only. The report does not provide any environmental assessment or investigation of the presence or absence of hazardous or toxic materials in the soil, soil gas, groundwater, or surface water within or beyond the site.

1.3 Understood Use of This Report

NOVA expects that the findings and recommendations provided herein will be utilized by KA Enterprises and its Design Team in decision-making regarding site development, including geotechnical-related design and construction.

As is discussed in the text, NOVA's recommendations are based upon its current understanding and assumptions regarding planning for project development. In particular, recommendations for foundations are preliminary, based upon assumptions regarding the effectiveness of large-scale ground improvement.

Effective use of this report by the Design Team should include review by NOVA of the final design. Such review is important for both (i) conformance with the recommendations provided herein, and (ii) consistency with NOVA's understanding of the planned development.

1.4 Report Organization

The remainder of this report is organized as abstracted below.

- Section 2 reviews available project information.
- Section 3 describes the field exploration and laboratory testing by others.
- Section 4 describes the site physical setting, including the geologic setting and subsurface conditions.
- Section 5 reviews geologic and soil hazards common to the Riverside region, considering each for its potential to affect the site.
- Section 6 describes and reviews alternatives for large-scale ground improvement, concluding with recommendations for ground improvement by 'deep dynamic compaction' (DDC).
- Section 7 provides preliminary recommendations for earthwork and foundation design.
- Section 8 provides preliminary recommendations for pavement design.
- Section 9 provides recommendations for construction observation and testing.

Figures and tables intended to amplify the discussions in the text are embedded therein. Plate 1 provided immediately following the text of the report, provides a larger-scale view of Figure 3-1, depicting the locations of subsurface exploration by others.

The report is supported by two appendices that provide site reporting completed by others.

- Appendix A provides a 2007 geotechnical report by Albus-Keefe & Associates.
- Appendix B provides a 2018 geotechnical report by Geocon West, Inc.

2.0 PROJECT INFORMATION

2.1 Location

The Crestview Apartments project is on the northwest corner of Sycamore Canyon Boulevard and Central Avenue, Riverside, California. Figure 2-1 depicts the location and approximate limits of the site on a recent aerial photograph.

Figure 2-1. Site Limits and Location

2.2 Site Use

2.2.1 Documentation

NOVA's understanding of site use and conditions is based upon the documentation listed below.

1. Survey. *Alta Survey,* Rick Engineering, November 2006 (hereafter, 'Rick 2006').
2. Site Conditions.
   (i) *"Revised" Preliminary Geotechnical Investigation, Proposed Apartment Complex, Tract 34946 (Alexan Cityscape Project), City of Riverside, California,* Albus-Keefe & Associates, Inc., Project Number 1566.00, December 11, 2007 (hereinafter, 'AKA 2007').

(ii) *Supplemental Geotechnical Investigation, Crest View, Northwest Corner of Central & Sycamore Canyon, Riverside, California,* Geocon West, Inc., Project Number T2820-22-01, September 11, 2018 (hereinafter, 'Geocon 2018').

2.2.2 Current Site Use

The review of previous site documentation, as well as observation of the current surface topography, indicates that the site has been extensively graded.

The ground surface descends in elevation from northeast to southwest, from about El +1,375 feet msl to El +1,315 feet msl. This grade occurs over a distance of about 750 feet, at a surface gradient averaging about 7%.

The site is lightly vegetated, with areas of bare soil and windrows of rocks and boulders. An approximately 38-foot high cut slope exposing granitic bedrock is located in the northwest corner of the property.

2.2.3 Historic Site Use

Review of aerial photography indicates that the site was utilized for construction staging operations and grading in 2005-2006, accommodating the realignment of Sycamore Canyon Boulevard. Previous to this time, the site was a hilltop cut by two southwest-trending drainage features. Figure 2-2 depicts the site area in 1994 prior to this realignment. Figure 2-3 (following page) shows the site area in 2005, during realignment of Sycamore Canyon Boulevard.

Figure 2-2. Site Area, May 1994

Figure 2-3. Site Area, October 2005

2.3 Planned Apartment Complex

2.3.1 Reference Documentation

NOVA's understanding of the planning to date for the apartment complex property is based upon review of conceptual architectural drawings developed by Architects Orange (reference, *Crestview Apartments,* Architects Orange, December 5, 2019, hereinafter 'AO 2019').

Figure 2-4 (following page) provides a graphic depicting the planned development.

2.3.2 Architectural

The new apartment complex will consist of seven (7) new apartment structures consisting of (5) Type I, 2-3 split story, (1) Type II, 2-4 split story, and (1) Type III, 4-story buildings accommodating 237 dwelling units and providing 426 parking spaces.

Development plans also include an outdoor swimming pool and spa, a putting green, paved driveways and parking stalls, and typical hardscapes.

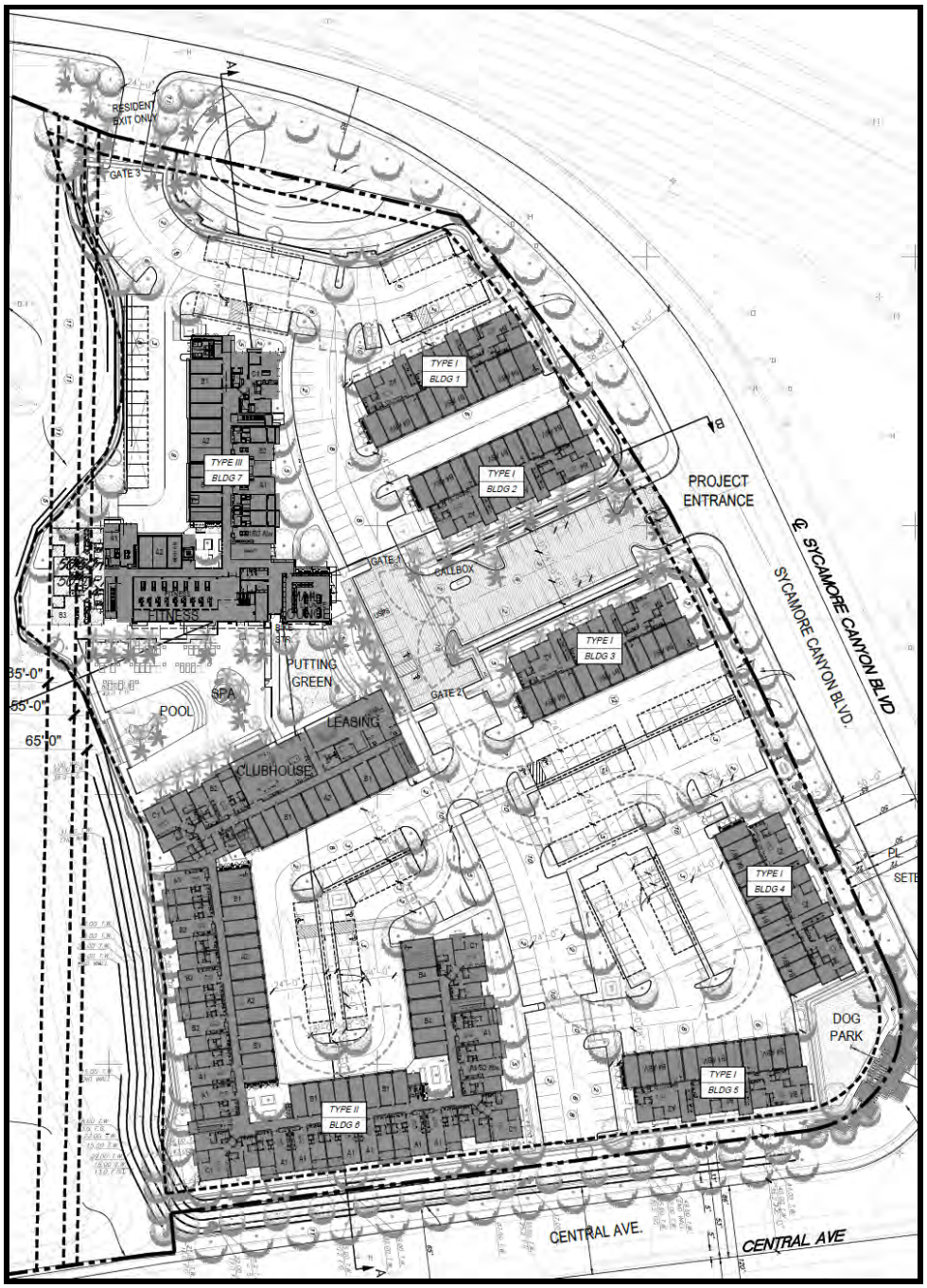

Figure 2-4. Conceptual Development Plan
(source: CJC 2019)

2.3.3 Structural

Structural design for the apartment complex development has not yet begun.

As is noted above, the seven residential apartment buildings will rise two to four levels (to perhaps 45 feet) above surrounding ground level.

It is expected that the three level and four level structures will be developed with Type III-A wood framed construction atop a single level Type IA podium. In some instances, the podium may be used for tuck-under parking.

Foundation loads will be relatively light, with interior column loads less than about 100 kips and wall loads less than about 4 kips/lineal foot.

2.3.4 Civil

Earthwork

No grading plans are currently available. Based upon review of the planning described in AO 2019, it is expected that significant earthwork will be required to create level pads for the structures.

Stormwater

Planning for permanent stormwater infiltration Best Management Practices ('stormwater BMPs') has not been developed at this point. Based upon experience with analogous developments, it is expected that permanent stormwater BMPs will include a variety of biofiltration solutions set about the periphery of the development.

Previous subsurface exploration (AKA 2007 and Geocon 2018) indicates that the existing fill locally extends to as much as ±34 feet in depth, and includes nested boulders as great as 11 feet in diameter with some debris. Permanent stormwater BMP's located in fill will be required to be designed with a 'no infiltration' condition.

3.0 SITE CHARACTERIZATION BY OTHERS

3.1 Overview

AKA 2007 and Geocon 2018 report the findings of subsurface explorations conducted in November 2006 and June 2018, respectively. The scope of this work is abstracted below.

- Test Pits. AKA 2007 reports eleven (11) test pits excavated to a maximum depth of 33 feet bgs.

- Test Pits. Geocon 2018 reports eighteen (18) test pits excavated to a maximum depth of 34 feet bgs.

- Geophysical. AKA 2007 performed five seismic refraction wave traverses throughout the site.

Figure 3-1 locates the test trenches on a plan view of the proposed development. This graphic is provided in larger scale as Plate 1 following the text of this report.

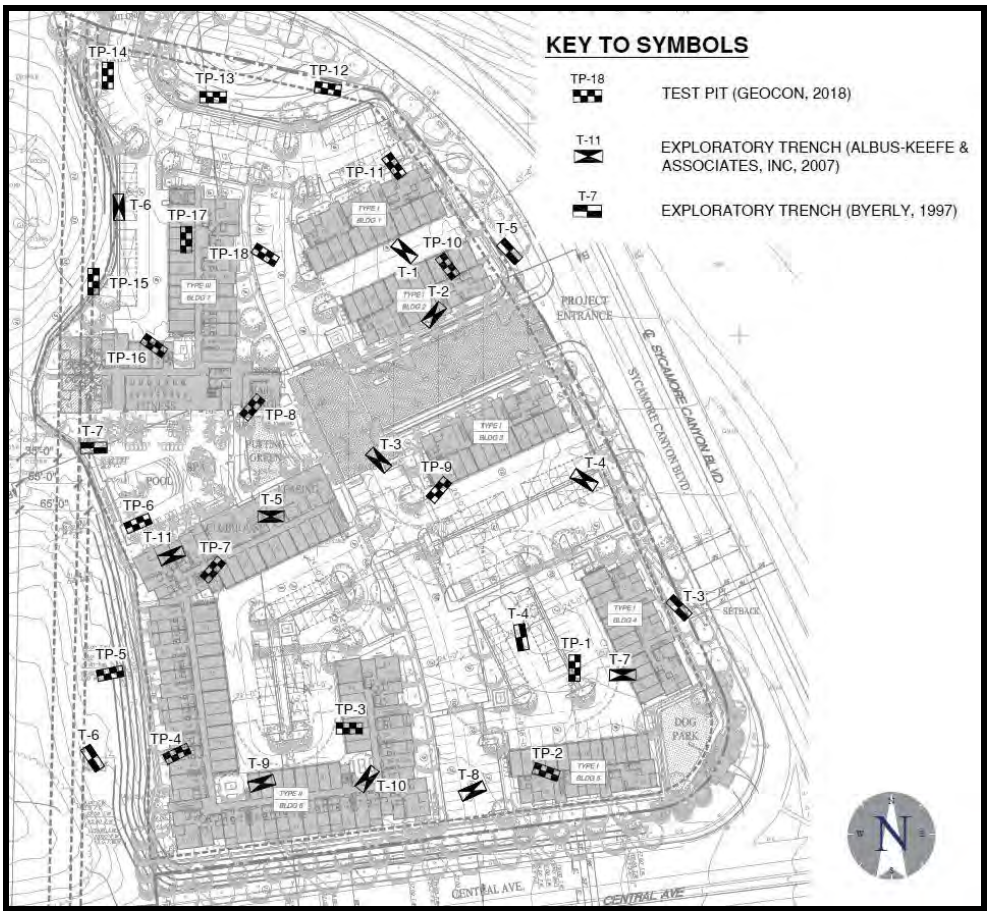

Figure 3-1. Locations of the Previous Site Exploration

3.2 Test Trenches

3.2.1 AKA 2007

Eleven (11) test trenches reported in AKA 2007 were excavated utilizing a track-mounted long stick backhoe and logged by an AKA geologist. Table 3-1 abstracts the indications of the test trenches. Elevations of the ground surface at the trench locations are not provided in AKA 2007. Elevations are estimated by NOVA.

Table 3-1. Abstract of the Test Trenches (AKA 2007)

Trench Ref	Approximate Ground Surface Elevation (feet, msl)	Total Depth Below Ground Surface (feet)	Terminal Elevation (feet, msl)	Terminated in Rock ?	Thickness of Fill and Alluvium (feet)
T-1	1,355	16	1,339	Yes	16
T-2	1,352	21	1,331	Yes	19
T-3	1,350	26	1,352	Yes	24
T-4	1,351	4	1,351	Yes	0
T-5	1,350	33	> 1,317	No	> 33
T-6	1,349	10	1,339	Yes	0
T-7	1,352	28	> 1,324	No	> 28
T-8	1,340	19	1,321	Yes	18
T-9	1,340	18	> 1,322	No	> 18
T-10	1,345	21	1,324	Yes	20
T-11	1,340	20	> 1,320	No	> 20

Notes:
1. '>' indicates 'deeper than'
2. Table developed by review of AKA 2007

3.2.2 Geocon 2018

Eighteen (18) test trenches reported in Geocon 2018 were excavated utilizing a track-mounted excavator and logged by a geologist. Table 3-2 (following page) abstracts the indications of these test trenches.

Table 3-2. Abstract of the Test Trenches (Geocon 2018)

Trench Ref	Approximate Ground Surface Elevation (feet, msl)	Total Depth Below Ground Surface (feet)	Terminal Elevation (feet, msl)	Terminated in Rock ?	Thickness of Fill and Alluvium (feet)
T-1	1,347	31.5	1,315.5	Yes	26
T-2	1,341	34	1,307	Yes	34
T-3	1,344	27	1,317	Yes	27
T-4	1,339	31	1,308	Yes	31
T-5	1,315	24	1,291	Yes	22
T-6	1,350	34	1,316	Yes	34
T-7	1,350	25	1,325	No	> 25
T-8	1,352	22	1,330	Yes	20
T-9	1,351	12	1,339	Yes	3
T-10	1,352	23	1,329	Yes	21.5
T-11	1,356	7	1,349	Yes	3
T-12	1,364	5	1,359	Yes	< 1
T-13	1,369	3	1,366	Yes	0
T-14	1,366	6.5	1,359.5	Yes	0
T-15	1,359	1	1,358	Yes	0
T-16	1,356	22	1,334	Yes	18
T-17	1,358	4.5	1,353.5	Yes	1
T-18	1,356	2.5	1,353.5	Yes	1.5

Notes:
1. ‘’>’ indicates ‘deeper than’
2. Table developed by review of Geocon 2018

3.3 Seismic Traverses

AKA 2007 reports the findings of five (5) seismic refraction traverses that were completed by a specialty subcontractor as a part of the field exploration.

The refraction data provided in AKA 2007 show the variation of subsurface ‘P-waves’ (i.e., compressional waves) with horizontal distance and depth. P-waves travel through rock in a manner analogous to sound waves traveling through air. The speed by which a P-wave propagates through the subsurface depends on the physical properties (i.e. rigidity, density, saturation) and degree of homogeneity. Higher P-wave velocities, P ≥ 5,000 feet/sec, are indicative of rock.

Seismic refraction traverses provide some indication of the occurrence of the rock surface along the traverses investigated. Though difficult to interpret (and provided in the report without interpretation), the traverses appear to support the findings of the test trenches, broadly indicating depths to rock.

3.4 Laboratory Testing

3.4.1 General

AKA 2007 reports limited scope laboratory testing of soil samples recovered from the exploratory test pits. Records of this testing are provided in Appendix A.

3.4.2 Moisture-Density

Moisture-density testing after ASTM D1557 Method A (the 'Modified Proctor') was undertaken to project the behavior of the soil when used in earthwork. Testing of a composite bulk sample of sandy soil recovered from near surface indicated an optimum dry density (γ_{dmax}) of γ_{dmax} = 131 lb/ft^3 at an optimum moisture content (w_{opt}) of w_{opt} = 7 %.

3.4.3 Direct Shear

A representative sample from the surface soils was tested in direct shear after ASTM D3080. Table 3-3 abstracts the indications of this testing.

Table 3-3. Abstract of the Direct Shear Testing

Sample Reference		Apparent Cohesion (c, psf)	Angle of Internal Friction (ϕ, degrees)
Sample	Depth (feet)		
S-2	0' – 1'	300	31

3.4.4 Chemical Testing

Resistivity, sulfate content and chloride content testing of a representative sample of the near-surface soils was used to address the potential for the soils to corrode unprotected metals and the potential for sulfate attack to embedded concrete. Table 3-4 abstracts the chemical testing. Indications of this testing are discussed in more detail in Section 7.3.

Table 3-4. Abstract of Chemical Testing

Sample Ref		pH	Resistivity (Ω-cm)	Sulfates		Chlorides	
Sample	Depth (feet)			ppm	%	ppm	%
S-2	0 - 1	7.6	2,400	10	0.001	42.5	0.004

3.4.5 Expansion Index

The expansion index (EI) of selected materials was evaluated in general accordance with ASTM D4829. Specimens were molded under a specified compactive energy at approximately 50 percent saturation (±1 percent). The prepared 1-inch thick by 4-inch diameter specimens were loaded with a surcharge of 144 pounds per square foot and were inundated with tap water. Readings of volumetric swell were made for a period of 24 hours.

Sample S-2 from the upper 1 foot of the surface soils was tested and found to have EI = 1. This low EI is expected from the sandy soils at this site.

4.0 SITE CONDITIONS

4.1 Geologic Setting

The project area is located within in the southern part of the Los Angeles Basin in the Peninsular Ranges Geomorphic Province. The Peninsular Ranges Geomorphic Province is a series of mountain ranges separated by northwest-trending valleys, which characterizes the southwest portion of California. This geomorphic province encompasses an area that extends about 900 miles from the Transverse Ranges and the Los Angeles Basin south to the southern tip of Baja California. The province varies in width from approximately 30 to 100 miles. The surface topography is characterized geomorphically by eroded and dissected mesa terrain.

The site itself is set in an area of widely varying topography that includes a variety of granitic rock types that occur at the near surface. Alluvial soils locally infill some scattered lower lying areas.

Figure 4-1 reproduces geologic mapping of the site vicinity.

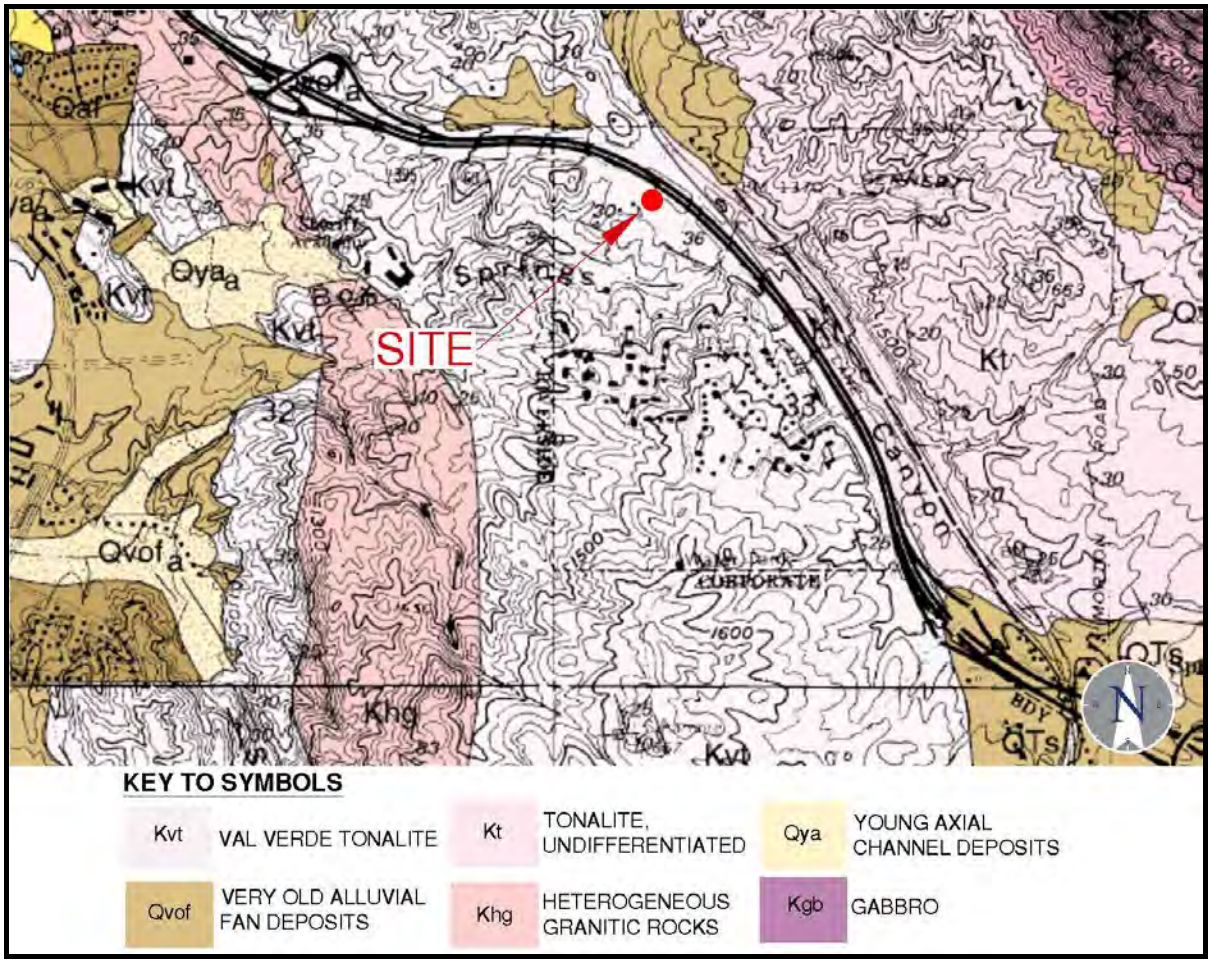

Figure 4-1. Geologic Mapping of the Site Vicinity

4.2 Faulting and Seismicity

4.2.1 Faulting

There are no known faults underlying or adjacent to the property, although the site is reasonably proximate to the Inglewood, Palos Verdes and San Andreas fault zones.

4.2.2 Strong Ground Motion

The site will be subject to relatively intensive ground shaking resulting from earthquakes sourced from any of several major faults in the area. Faults in the site vicinity are capable of generating large magnitude seismic events.

The peak ground acceleration adjusted for site effects (PGA_M) for the risk-targeted Maximum Considered Earthquake (MCE_R) is PGA_M ~ 0.6 g.

4.3 Surface, Subsurface and Groundwater

4.3.1 Surface

The ground surface descends in elevation from northeast to southwest, from about El +1,375 feet msl to El +1,315 feet msl. This grade occurs over a distance of about 750 feet, at a surface gradient averaging about 7%.

As may be seen by review of Figure 2-1, the site is lightly vegetated, with areas of bare soil and windrows of rocks and boulders. An approximately 38-foot high cut slope exposing granitic bedrock is located in the northwest corner of the property.

Figure 4-2 depicts current surface conditions.

Figure 4-2. Surface Conditions, Looking SW From Sycamore Canyon Boulevard

4.3.2 Subsurface

For the purposes of this report, the subsurface may be generalized to occur as the sequence of soils described below.

1. Unit 1, Undocumented Fill. Much of the site is covered with uncontrolled sand/cobble/ boulder fill that ranges in thickness from a few feet to greater than 35 feet. The fill is characteristically loose/compressible and extremely heterogeneous (i.e., widely varying in quality and consistency over short horizontal and vertical distance). Some wood was encountered in test pits, though it appears that the amounts of wood or other organics is not of a scale that would affect the mechanical behavior of the fill.
2. Unit 2, Alluvium. The previous geotechnical reporting describes the occurrence of some loose, sandy alluvium in the west and northwest areas of the fill.
3. Unit 3, Granitic Rock (Tonalite). The entire site is underlain by Val Verde Tonalite, a type of granitic rock. Tonalite was encountered across the site from near the surface at the northwestern portion of the site, and at depths greater than 15 feet below ground surface for the remaining portions of the site.

   The upper few feet of this unit is often weathered, able to be excavated by larger scale construction equipment. Below the upper few feet of this unit, this rock is sound and unweathered, with unconfined compressive strengths similar to a low grade concrete. The rock will be able to be excavated by conventional equipment. The rock will need to be loosened by ripping and/or blasting prior to excavation.

4.3.3 Groundwater

Groundwater was not encountered to the maximum depths explored of about 34 feet below ground surface in the test trenches by others.

5.0 REVIEW OF GEOLOGIC, SOIL AND SITING HAZARDS

5.1 Overview

This section provides a review of geologic, soil and siting-related hazards common to this region of California, considering each for its potential to affect the planned apartment buildings and other structures. The primary hazards identified by this review are abstracted below.

1. Seismic. The site is at risk for moderate-to-severe ground shaking in response to large-magnitude earthquakes during the lifetime of the planned development.

2. Undocumented Fill. As is discussed in Section 3 and Section 4, much of the site is mantled by undocumented fill that ranges to about 34 feet in thickness. The fill is predominately sandy, but includes gravel, cobble and boulder-sized rock. The boulder-sized rock ranges to 11 feet in size. Unmanaged by design, this fill has the potential to effect damaging total and differential settlements to structures and infrastructure.

   As is discussed in this section and in Section 6 and Sections 7, this risk will be managed by large-scale ground improvement.

The following subsections describe NOVA's review of geologic, soil and siting hazards.

5.2 Geologic Hazards

5.2.1 Strong Ground Motion

As is discussed in Section 4, the site is located in a seismically active area. The peak ground acceleration adjusted for site effects (PGA_M) for the risk-targeted Maximum Considered Earthquake (MCE_R) is PGA_M ~ 0.6 g.

5.2.2 Fault Rupture

Neither AKA 2007 nor Geocon 2018 report evidence of active faulting within or near the site. Review of publicly available data regarding faulting in the area discloses no evidence of faulting within or near the site limits.

Figure 5-1 (following page) maps faulting in the site region.

Figure 5-1. Faulting in the Site Vicinity

5.2.3 Landslide

As used herein, 'landslide' describes downslope displacement of a mass of rock, soil, and/or debris by sliding, flowing, or falling. Such mass earth movements may be greater than about 10 feet thick and larger than 300 feet across. Landslides typically may include cohesive block glides and disrupted slumps that are formed by translation or rotation of the slope materials along one or more slip surfaces. These mass displacements can also include more narrowly confined modes such as rock topples, 'mud flows,' and 'debris flows.'

The causes of classic landslides start with a preexisting condition - characteristically, a plane of weak soil or rock - inherent within the rock or soil mass. Thereafter, movement may be precipitated by earthquakes, wet weather, and changes to the structure or loading conditions on a slope (e.g., by erosion, cutting, filling, release of water from broken pipes, etc.).

Clues to the landslide hazard for an area can also be obtained by review of mapping that depicts both historic landslides and landslide prone geology/topography. Figure 5-2 (following page) reproduces such mapping for the site area. The mapping indicates that the site is in an area judged to be at lower relative risk for landsliding.

Neither AKA 2007 nor Geocon 2018 report evidence of active landsliding at this site.

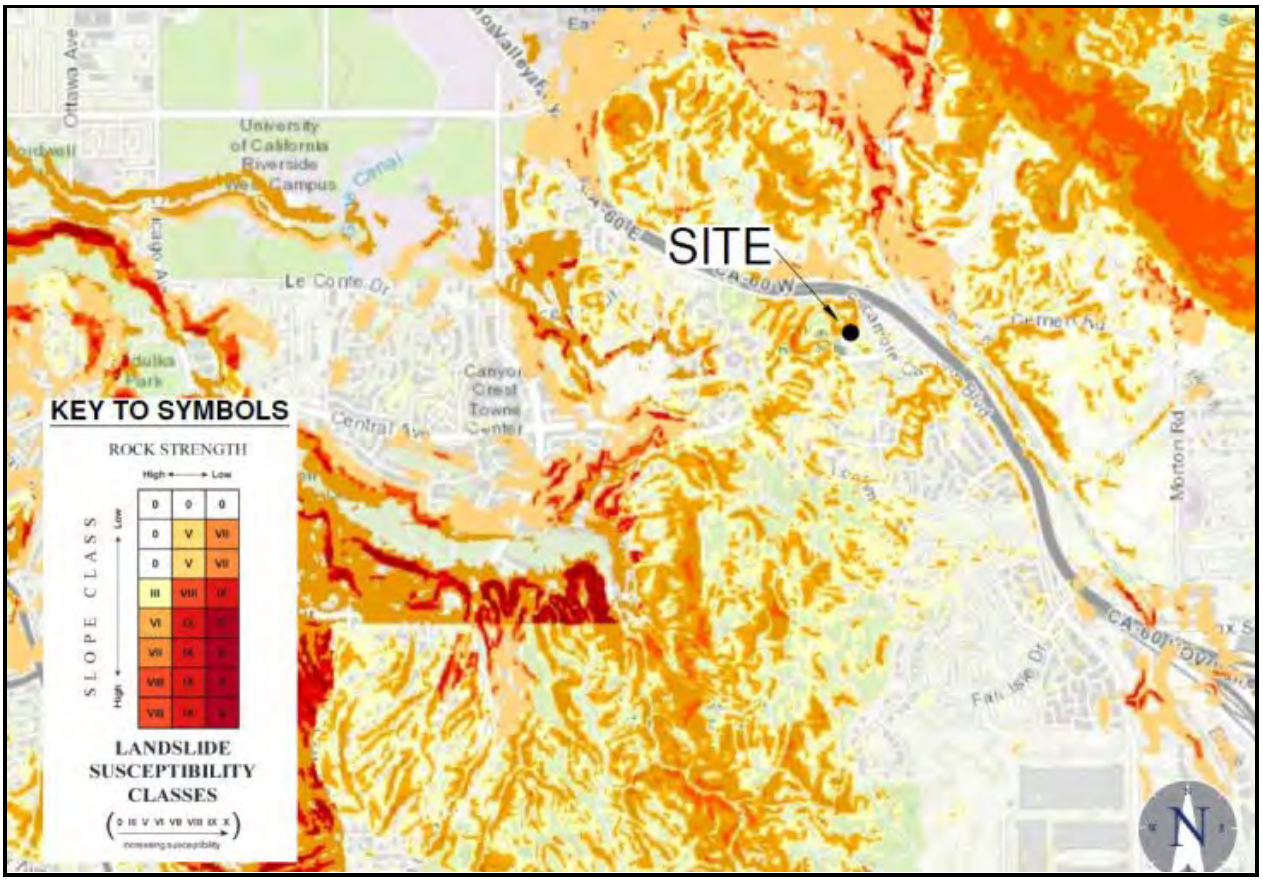

Figure 5-2. Landslide Susceptibility Mapping of the Site Area

In consideration of the indications of the geologic reconnaissance by others, review of published mapping, and review of aerial photography, NOVA considers the landslide hazard at the site to be 'low' for the site and the surrounding area in their current condition.

5.3 Soil Hazards

5.3.1 Embankment Stability

As used herein, 'embankment stability' is intended to mean the safety of smaller natural or man-made embankments. Unlike landslides as described above, embankment stability can include smaller-scale failures such as erosion-related washouts and more subtle, less evident processes such as soil creep.

As is discussed in more detail in Section 2, the site includes some relatively steep cuts in rock. However, by virtue of the strength of the granitic rock exposed in these cuts, the embankments do not appear at risk for collapse.

Development of the site will include development of numerous smaller embankments across the limits of the site. The stability of these various embankments should be reviewed on the basis of development design and evaluated during grading.

5.3.2 Seismic

Liquefaction

'Liquefaction' refers to the loss of soil strength during a seismic event. Seismic ground motions increase soil pore water pressures, decreasing grain-to-grain contact among the soil particles, causing the soils to 'liquefy' and lose strength. The phenomenon is observed in areas that include geologically 'younger' soils (i.e., soils of Holocene age), shallow water table (less than about 60 feet depth), and cohesionless (i.e., sandy and silty) soils of looser consistency. Resistance of a soil mass to liquefaction increases with increasing density, plasticity (associated with clay-sized particles), geologic age, cementation, and stress history.

In consideration of the lack of groundwater and related lack of the potential for saturated soils to occur in the near surface, the site is not at risk for liquefaction and related soil phenomena (i.e., lateral spreading, ground lurching, etc.).

Seismically Induced Settlement

Apart from liquefaction, a strong seismic event can induce settlement within loose to moderately dense, unsaturated granular soils. The unsaturated sandy soils of Unit 1 are presently of sufficiently loose consistency so that these soils will be prone to measurable seismic settlement. However, as is discussed in the subsequent text of this report, it is intended that this ground be improved by densification such that this risk is removed.

5.3.3 Expansive Soil

Expansive soils are clayey soils characterized by their ability to undergo significant volume changes (shrinking or swelling) due to variations in moisture content, the magnitude of which is related to both clay content and plasticity index. These volume changes can be damaging to structures. Nationally, the annual value of real estate damage caused by expansive soils is exceeded only by that caused by termites.

The dominantly sandy soils that comprise Unit 1 and Unit 2 are not at risk for volume change on wetting and drying.

5.3.4 Hydro-Collapsible Soils

Hydro-collapsible soils are common in the arid climates of the western United States in specific depositional environments - principally, in areas of young alluvial fans, debris flow sediments, and loess (wind-blown sediment) deposits. These soils are characterized by low *in-situ* density, low moisture contents, and relatively high unwetted strength.

The soil grains of hydro-collapsible soils were initially deposited in a loose state (i.e., high initial 'void ratio') and thereafter lightly bonded by water sensitive binding agents (e.g., clay particles, low-grade cementation, etc.). While relatively strong in a dry state, the introduction of water into these soils causes the binding agents to fail. Destruction of the bonds/binding causes relatively rapid densification and volume loss (collapse) of the soil. This change is manifested at the ground surface as subsidence or settlement. Ground settlements from the wetting can be damaging to structures and civil works. Human activities that can facilitate soil collapse include irrigation, water impoundment, changes to the natural drainage, disposal of wastewater, etc.

The loosely placed sands of Unit 1 are at some risk of soil collapse upon wetting. However, as is discussed in the subsequent text of this report, it is intended that this soil unit be improved by densification such that this risk is removed.

5.3.5 Undocumented Fill

The site is covered by undocumented fill- predominantly sandy soils of loose consistency that range to more than 30 feet in thickness. Records regarding placement of the Unit 1 fill are not available for review, such that the fill is considered 'undocumented,' subject to wide variations in quality and consistency.

A common concern in this regard is the occurrence of unanticipated highly compressible soils. As is discussed in the preceding sections, the soils are also at risk for both hydro-collapse and settlement during a seismic event.

As is discussed in the subsequent text of this report, the risks to related to the undocumented fill will be removed by large-scale ground improvement.

5.3.6 Corrosivity

The near-surface soils were tested to determine levels of sulfates and chlorides. The testing indicates that (i) the potential for sulfate attack to embedded concrete is negligible; and (ii) the potential for corrosion of embedded metals is relatively low. The indications of this testing are discussed in more detail in Section 7.

5.4 Siting Hazards

5.4.1 Effect on Adjacent Properties

The proposed project will not affect the structural integrity of adjacent properties or existing public improvements and street right-of-ways located adjacent to the site if the recommendations of this report are incorporated into project design.

5.4.2 Flood

The site is not located within a FEMA-designated flood zone. Flood Map No. 06065C0731G, (effective 8/28/2008) designates the area as "Zone X," an area of minimal annual flood hazard. Figure 5-3 (following page) reproduces flood mapping by FEMA of the site area.

5.4.3 Inundation

The site is not located near a surface body of water which could lead to inundation of the project site if overtopping or an impoundment breach were to occur.

5.4.4 Tsunami and Seiche

The altitude of the site and distance from the ocean preclude potential for being affected by a tsunami.

Seiches are standing waves that develop in enclosed or partially enclosed bodies of water such as lakes or reservoirs. Harbors or inlets can also develop seiches. Most commonly caused by strong winds and rapid atmospheric pressure changes, seiches can be affected by seismic

events and tsunamis. The altitude of the site and distance from enclosed bodies of water preclude the potential for seiche effects.

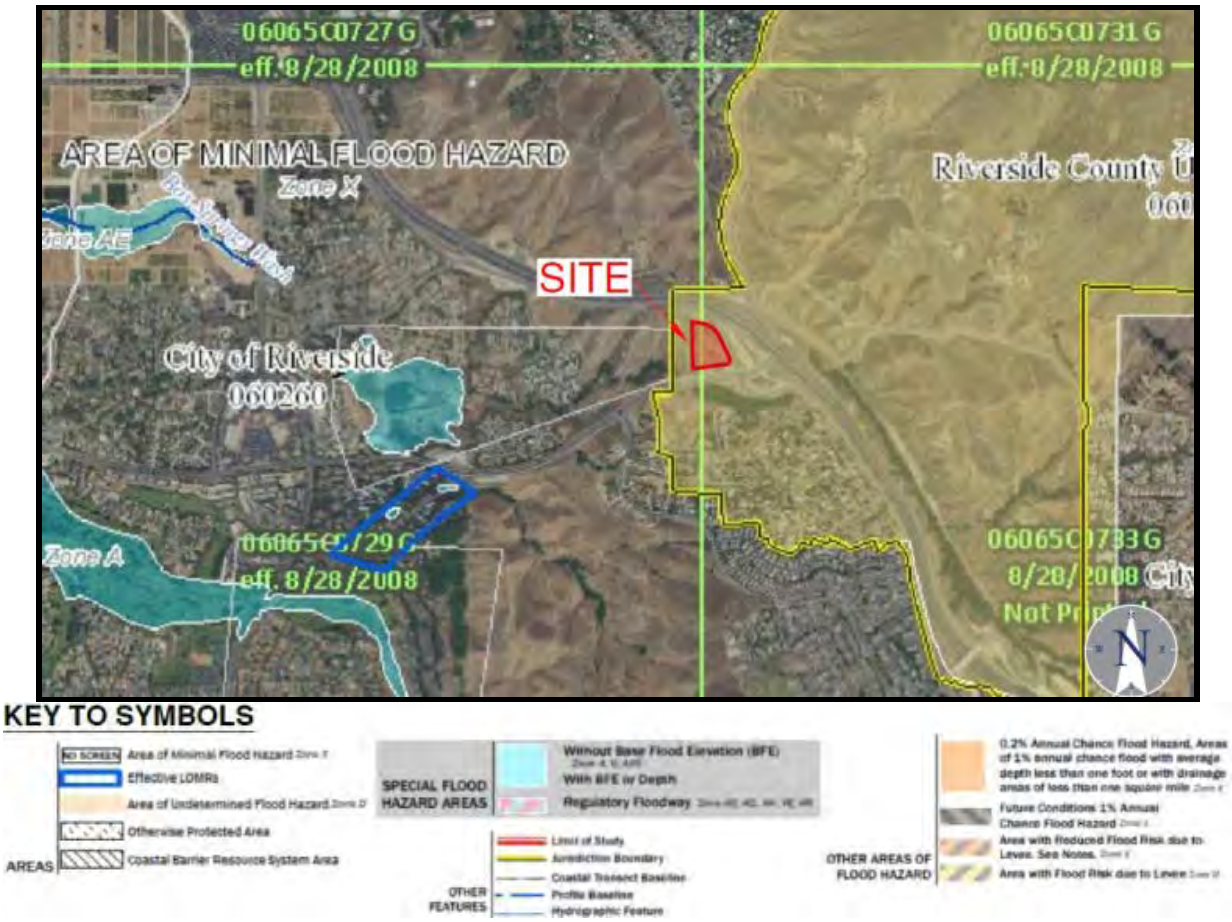

Figure 5-3. Flood Mapping of the Site Area
(source: adapted from FEMA Panel 06065C0731G, effective 8/28/2008)

6.0 GROUND IMPROVEMENT

6.1 Overview

This section provides review of the nature of the Unit 1 uncontrolled fill that covers much of the site, identifying the need for ground improvement to mitigate (i) longer-term settlement potential and (ii) the potential for differential settlement of heterogeneous soils.

As is previously discussed, the uncontrolled sand/cobble /boulder fill at this site ranges to greater than 35 feet in thickness. To this end, alternatives that may be considered for ground improvement must be adaptable to both the nature of the fill and its thickness.

This section reviews ground improvement technologies that meet these criteria, identifying deep dynamic compaction ('DDC') as preferred on a basis of expected performance and cost.

6.2 The Need for Ground Improvement

6.2.1 General

The structures proposed for development at this site are relatively light. As is well developed by AKA 2007, subsurface conditions pose two concerns for development, as abstracted below.

1. Concern 1, Undocumented Fill. Much of the site is covered with uncontrolled sand/cobble/ boulder fill. This fill ranges in thickness from a few feet to greater than 35 feet. The fill is characteristically loose/compressible and extremely heterogeneous (i.e., widely varying in quality and consistency over short horizontal and vertical distances).
2. Concern 2, Near Surface Rock. Sound granitic bedrock occurs in the near surface in several areas of the site. This rock will be difficult to excavate, posing a challenge to site development and related foundation design.

Concern 1 drives this assessment - the need for large-scale ground improvement. As is discussed in Section 1, this report is intended to address only planning for improvement of the undocumented fill. Planning for loosening and removal of near-surface rock is outside the scope of this report.

6.2.2 Near Surface Rock

Foundations for structures will be at risk for differential movement if founded partially on rock and partially on fill. Development of foundations for the separate apartment units will require undercutting/removal of near-surface rock to create stable foundations. Absent planning to manage the near surface rock, grading to develop site pads can become costly.

An earthwork contractor experienced in work of this nature can readily identify the requirements and related cost for loosening and removal of near-surface rock.

6.2.3 Undocumented Fill

While the fill is of an age that most settlement has already occurred, the performance of foundations for the separate apartment buildings can be affected by (i) the differential thickness

(ranging to about 35 feet) of fill beneath structures and (ii) longer-term collapse of zones of loosely placed fill.

Though the fill extends to depths greater than 30 feet, NOVA does not believe that the entire fill thickness needs to be densified. The new structures will not materially change the state of stress for soils below a depth of about 25 feet. Site improvements outside the limits of structures - roadways, utility lines, common areas, landscaped areas, etc. will not require improvement. As is discussed in AKA 2007, longer-term settlements of unimproved fill will be relatively small. A relatively homogenous, well-densified cap of soils above this level will be suitable for excellent long-term performance of structures.

With the foregoing perspective, the objectives of any ground improvement at the separate apartment building structures should be as described below.

1. Objective 1, Depth of Improvement. Densify the undocumented fill as it may occur beneath the finished pad levels of structures to depths of up to 25 feet.
2. Objective 2, Foundation Bearing. Densify the near-surface soils sufficient to develop an allowable bearing pressure (i.e., contact stress) as great as about 6,000 psf for shallow foundations.

6.3 Alternatives for Ground Improvement

A variety of alternatives is available for improvement of the fill. Table 6-1 abstracts ground improvement alternatives that are potentially applicable at this site.

Table 6-1. Overview of Alternatives for Larger-Scale Ground Improvement

Description	Applicable To Site? [1]	Relative Cost[2]	Notes
Excavate & Replace	Yes	High	Cost estimate by others exceeds $2MM
Deep Dynamic Compaction ('DDC')	Yes	Low	Strong track record of success at similar sites. Numerous competitors
Rapid Impact Compaction ('RIC')	Yes	Moderate	Strong track record with fills less than 20 feet thickness
Rolling Dynamic Compaction	Partial	Low	Limited U.S. experience. Applicable to roadways, but cannot reach 15 feet depth
Compaction by Explosives	No	Low	Great track record in the literature, poor track record in practice
Compaction Grouting	No	High	Boulder fill will limit effectiveness
Vibrocompaction	No	High	Boulder fill will limit effectiveness

Notes:

1. "Applicable to Site" means applicable to reliable densification of the range of soil/cobbles/boulders at the site to a depth of about 25 feet.
2. "Relative Cost" is intended to mean "cost relative to potentially available alternatives in this application".

Alternatives considered by Table 6-1 are those that improve largely "cohesionless" (i.e., sandy) soils, to which the terms "densification" or "compaction" are conventionally applied.

Alternatives not considered by Table 6-1 are those that improve largely "cohesive" (i.e., clayey) soils, to which the terms "consolidation" or "compression" are conventionally applied. For example, ground improvement that involves preloads (i.e., "pre-compression") or analogous efforts are not considered.

6.4 Review of Potentially Applicable Approaches to Ground Improvement

6.4.1 General

As may be seen by review of Table 6-1, 'deep dynamic compaction' and 'rapid impact compaction' are technologies that, on the basis of expected performance and cost, appear most applicable to this site. The following subsections provide more detailed review of each of these ground improvement technologies.

6.4.2 Deep Dynamic Compaction ('DDC')

General

DDC utilizes a heavy tamper (or 'pounder') that is repeatedly raised and dropped with a single cable from varying heights to impact the ground. The mass of the tampers generally ranges from 5 to 20 tons, while drop heights range from 30 feet to 80 feet. While specialty equipment can be developed for larger sites in order to effect higher drops of greater weights, the usual project employs a tracked crane to lift and drop the tamper. Figure 6-1 shows a typical operation.

Figure 6-1. Crane Lifting the Tamper

The pounding energy from DDC is generally applied in 'phases' (or 'passes') on a grid pattern over the entire area using either single or multiple passes. Following each pass,

the impact craters formed by the tampers are either leveled with a dozer or filled with granular fill material before the next pass of energy is applied. A final pass - intended to densify the upper several feet of soil loosened by previous work and sometimes called an 'ironing pass - consists of overlapping short drops of the tamper. DDC has been successfully used to improve a great variety of loose/weak ground deposits including those listed below.

- Loose naturally occurring soils such as alluvial, flood plain, or hydraulic fill deposits.
- Municipal solid waste (MSW) landfills.
- Building rubble and construction debris deposits.
- Strip mine spoil.
- Collapsible soils (i.e., soils that may settle as they become wetted).
- Loose sands and silts with high liquefaction potential.

At least 900 DDC projects have been completed in the U.S., mostly for commercial purposes. Dynamic compaction is practiced by a number of specialty contractors across the U.S., such that it should be expected that this project will draw several qualified competitors for the work.

Depth of Improvement

Estimates of the depth of improvement by dynamic compaction are empirical. Both the degree of improvement and the depth of improvement is a function of the energy applied: i.e., the mass of the tamper, the drop height, the grid spacing, and the number of drops at each grid point location.

Lighter tampers and smaller drop heights result in lesser depths of improvement, while heavier tampers and greater drop heights result in improvements to a significant depth.

The depth of improvement is generally estimated by the following expression:

$D = n\,(WH)^{1/2}$, where D = Depth of improvement, in meters

W = Weight of the Tamper, in metric tons

n = reduction coefficient based on soil type

= 0.5 to 0.6 for unsaturated granular soils

Utilizing the above equation, NOVA estimates that a 14-ton tamper dropped from about 26 feet can effect improvement to about 15-feet depth of improvement. This same pounder dropped from about 50 feet can effect improvement to 25 feet depth.

Applicability at This Site

DDC can meet all of the densification at this site, including the need to effect densification of the uncontrolled fill to depths ranging from about 10 feet to 25 feet. DDC

has a well-established track record in densification of uncontrolled and heterogeneous fills of this genre to these depths.

Loss of Ground, Vibrations, and Noise

DDC to 20 feet will effect a volume change on the order of 8% to 12% over the interval treated, resulting in a loss of about 2 to 2.5 feet of ground. This ground loss must be accounted for in planning for earthwork.

At 100 feet, peak particle velocities at the ground surface will be on the order of 2 to 3 5mm/second. Vibrations will vary with material type and will increase as the degree of compaction achieved increases. Results to date indicate that without site-specific testing, a safe working distance to structures on the order of 20 feet may be appropriate. Planning to implement DDC must consider its effects on any nearby construction, particularly effects on concrete that is curing. A variety of effective methods have been employed to limit potential damage from surface waves.

The technique is not particularly loud. Noise levels will be about 90 decibels at 20 feet.

Cost

The cost for mobilization of a single DDC crane and tamper will be on the order of $110,000.

The cost of DDC to achieve densification will vary with the depth of treatment. This cost variation is estimated below.

Depth Interval (feet)	Cost Per Square Foot of Area Treated
5 – 10	$1.25
11-20	$3.50
> 20	$4.00

Exclusive of mobilization, the cost for treatment of ground to a depth of 20 feet at the typical apartment structure (i.e., the plan area of about 10,000 SF of treated ground would be on the order of $40,000. The cost for treatment to a depth of about 10 feet could be as low as about $12,500.

6.4.3 Rapid Impact Compaction

General

Developed in the early 1990's by the British Military, "rapid impact compaction" (RIC) is a form of dynamic compaction, utilizing a hydraulic hammer to lift and drop a 7.5-ton weight from a controlled height of about 1 m (3 feet). The pounding rate is high, typically 40 to 60 blows per minute. Designed for use in granular deposits, benefits have also been noted in random fills and mine wastes. Figure 6-2 (following page) depicts a larger scale application of this procedure.

Figure 6-2. Large-Scale Application of Rapid Impact Compaction

NOVA has recent, successful experience utilizing RIC with a similar fill (i.e., a deep, sandy fill with rubble and boulders). The hammer utilized at that site was mounted on a Cat 345 mobile carrier. The densification process is completed with a high degree of control, allowing the machine to be used in difficult locations, and for a variety of applications. The drop height, number of blows, and penetration per blow are monitored and/or controlled by a data acquisition system. The high energy impacts densify cohesionless soils by a combination of displacement and vibration.

Figure 6-3 depicts the mechanics of the RIC process.

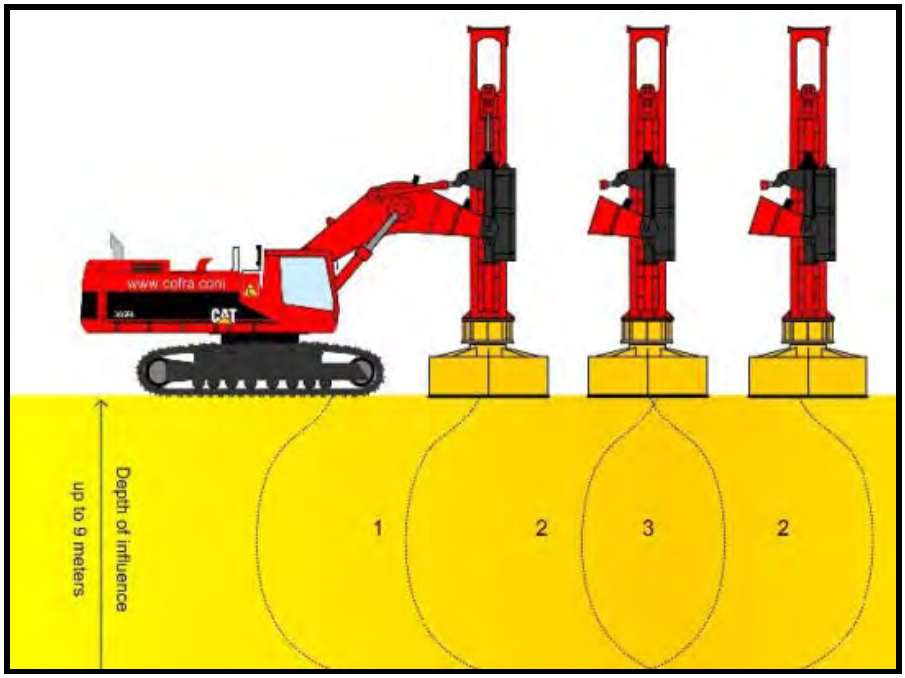

Figure 6-3. Overlapping Influence of Points of Rapid Impact Compaction
(source: Cofra Ltd, found at http://cofra.com/activities/rapid-impact-compaction/)

Limited Applicability at This Site

The potential that significant obstructions (e.g., nested boulders and rock) may occur below a depth of about 20 feet is of concern. Though RIC is relatively fast and potentially cost-effective, as applied to this site, the technology could not be relied upon to achieve densification beyond a depth of about 15 feet. However, much of the work at the site will be conducted at this depth and shallower.

Loss of Ground, Vibrations, and Noise

RIC to 15 feet will effect a volume change (enforced ground settlement) on the order of 7% to 10% over the interval treated, resulting in ground loss of about 1 to 1.5 feet.

At 100 feet, peak particle velocities may vary from about 1 to 2.3 mm/second. Vibrations will vary with material density, increasing as compaction increases.

The technique is relatively loud. Noise levels will be about 140 decibels at 20 feet.

Cost

A single RIC unit mobilizes on two trucks and assembles in about an hour. The cost for mobilization of a single unit to this site would be on the order of $25,000.

The cost of RIC to achieve densification to about 15 feet depth would be on the order of $3.50 per plan square foot of structure treated. With this perspective, exclusive of mobilization, the cost for treatment of ground to a depth of 15 feet at the typical apartment structure (i.e., a plan area of about 9,400 SF of treated ground) would be on the order of $35,000.

6.5 Recommended Ground Improvement by DDC

In consideration of the expected performance and cost, deep dynamic compaction ('DDC') is recommended as the ground improvement technique at this site.

Rapid impact compaction ('RIC') does not have the potential to achieve the depths of densification that does DDC. However, the technology can be cost competitive with DDC in areas where densification is required to depths of 15 feet or less. Additional site characterization and evaluation may identify a basis for limiting the depth of ground improvement. Alternatively, development of the site in separate construction phases may raise instances where multiple mobilizations for ground improvement are necessary and lesser depths of densification are required. In these or analogous instances, RIC would compete well with DDC.

6.6 Estimated Cost of DDC

6.6.1 Quantities

As is discussed in Section 2, current planning for site development indicates that it may be used to support a system of multiple apartment buildings. Figure 6-4 (following page) depicts planning for these structures.

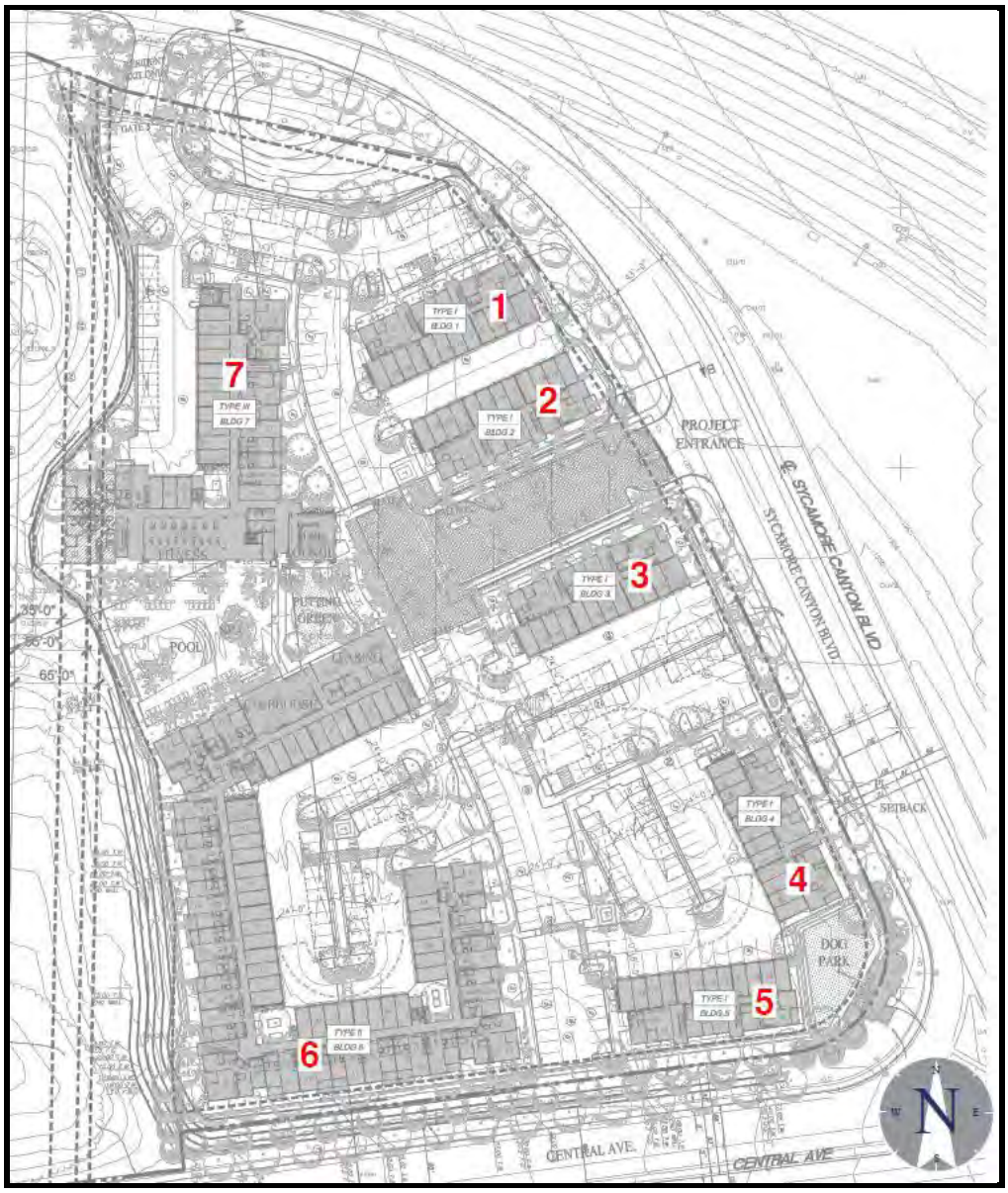

Figure 6-4. Building Reference Numbers for Cost Estimating
(reference building numbers noted in **red**)

As is discussed in the preceding sections, DDC would be applied by densifying the fill below the building pad of each apartment structure. Table 6-2 provides a quantity takeoff for this work that is the basis for cost estimating provided subsequently in this section.

Table 6-2. Quantity Takeoff for DDC

Bldg Ref[1]	Building Description	Bldg. Dimensions		Treatment Area (sf)[2]	Approx. Thickness (feet) of Fill Below Est. Building Pad Elev.
		Length	Width		
1	Apartment	135	50	9,750	8
2	Apartment	135	50	9,750	17
3	Apartment	135	50	9,750	4
4	Apartment	135	50	9,750	20
5	Apartment	135	50	9,750	> 30
6	Apt/Office/Comm	760	67	63,550	> 20
7	Apt/Gym	310	70	26,975	> 20
N/A	Pool, Driveways, Parking Areas	N/A	N/A	164,500	±15

Note 1: Figure 6-1 locates the buildings by reference building number
Note 2: 'Treatment Area' allows for ground treatment outside the plan building limits

6.6.2 Estimated Cost of DDC

NOVA has completed a cost estimate for utilization of DDC stabilize ground beneath each of the structures identified in Table 6-2. Table 6-3 provides unit rates applicable to that work.

Table 6-3. Unit Rates for DDC

Depth Interval (feet)	Cost Per Square Foot of Area Treated
5 – 10	$1.25
11 - 20	$ 3.50
> 20	$ 4.00

Utilizing the unit rates identified in Table 6-3, the cost for densification at each of the structures is estimated in Table 6-4.

Table 6-4. Cost for Densification at Each of the Structures

Bldg Ref[1]	Building Description	Treatment Area (sf)	Thickness (feet) of Fill Below Building Pad	DDC Unit Rate ($/sf)	DDC Cost ($)
1	Apartment	9,750	8	1.25	12,188
2	Apartment	9,750	17	1.25	12,188
3	Apartment	9,750	4	0.00	0
4	Apartment	9,750	20	3.5	34,125
5	Apartment	9,750	> 30	4.00	39,000
6	Apt/Office/Comm	63,550	> 20	4.00	254,200
7	Apt/Gym	26,975	> 20	4.00	107,900
-	Pool, Driveways, Parking Areas	164,500	±15	1.25	205,625
	Subtotal, DDC	**303,775**			**665,225**

Table 6-5 provides an estimated total cost for implementation of DDC as described in the preceding sections. As may be seen by review of this table, including allowances for mobilization, quality assurance (QA) on behalf of the Owner and an allowance for uncertainty, NOVA estimates the cost of DDC as described herein will be on the order of $860,000.

Table 6-5. Estimated Total Cost for DDC

Item	Estimated Cost ($)	Est. Cost/Unit[1]
DDC at the Structures and Other Areas	459,600	1,939
DDC at Driveways, Parking Areas, Pool and Misc.	205,625	868
Add: Mobilization	110,000	464
Add: QA/QC at 5% of DDC	33,261	140
Add: Allowance for Uncertainty @ 8% of DDC	53,218	225
Total Estimated DDC	**$861,700**	**$3,635**

Note 1: This column normalizes costing to the unit rate, assuming 237 apartment units.

6.7 Implementing DDC

6.7.1 Expected Response of the Fill to Pounding

Areas of Boulders

Densification could locally be affected by zones of heavy boulders within the interval to be densified. Subsurface materials in such areas could densify less readily. The energy from the impact of the pounder coupled with the nested boulders may distribute more of the pounder impact in the upper portion, transmitting less energy to deeper soils.

Though this circumstance could occur, and merits planning and additional site characterization, NOVA does not believe this circumstance would materially affect the overall DDC product.

Loose Surficial Soils

Loose to very loose surficial soils could present a problem that is the converse of the above. Loose/soft soils near the ground surface may initially limit the energy that is transmitted to greater depths. The tamper will tend to bury itself as it is dropped; i.e., the initial drops may result in crater depths greater than the height of the tamper. Allowing this to occur is undesirable for a number of reasons including:

- Operational Effects. Extracting the tamper from a deep crater is difficult and can result in cable breakage as loose debris falls in on top of the tamper, increasing the extraction loads.
- Efficiency Effects. After the tamper is extracted from a deep crater, the sides may cave into the crater, providing a cushioning effect for the next impact. Similarly, the caving that occurs can cause the tamper to strike the base irregularly with some of the energy being absorbed as the tamper strikes the side walls of the crater.

The specialty contractor who performs the work will have several alternatives to manage this circumstance. For example, the Layer 1 soils can be stabilized by adding granular soil that is driven into the loose soil during impact.

6.7.2 Test Sections

NOVA recommends that the specialty contractor employed for this work execute test sections in the representative areas to evaluate the depth and degree of improvement that can be attained.

6.7.3 Estimated Enforced Settlement

As is discussed in Section 5, planning for implementation of DDC should anticipate a loss of ground on the order of 2 feet in areas of deeper densification. This loss of ground will be less in shallower areas. NOVA expects that the volumetric loss of ground will be on the order of 10% of the thickness of the column of fill being densified.

6.7.4 Placement of Site Fill

NOVA's preliminary evaluation of earthwork indicates that some portions of the site will be receiving several feet of fill at the building pad location. A common question from earthwork contractors regards the wisdom of placing fill required for the site within the areas to be densified, allowing this fill to be in part densified by dynamic compaction.

NOVA expects that such an approach would work well, as it is expected that most of the surficial soils are relatively looser. These looser soils may benefit by the stabilizing effect of a new fill, enhancing the stability of the ground surface and improving the efficiency of dynamic compaction operations.

Placing fill will abet development of a working 'mat' that will stabilize equipment. The most favorable type of material to use for a working mat is a coarse-grained granular deposit such as gravel or crushed rock.

6.8 Recommended Approach to Contracting

6.8.1 General

Two basic types of specifications are used for dynamic compaction projects:

- Method Specifications. The Owner provides the Contractor a proscriptive approach to the work needed to obtain the desired improvement, specifying the size of tamper; drop height; energy that needs to be applied; area that is needed to be densified; number of passes to be made plus the delay time, if any, between passes; plus consideration of off-site vibration or displacement as a result of dynamic compaction.
- Performance Specifications. The Owner provides performance criteria expressed as improvement in the strength and compressibility of the material that is treated. Performance criteria are often associated with requirements for a minimum energy that needs to be applied.

The decision as to which type of specification to use will depend on a variety of factors, including the complexity of the job, the proximity of specialty and non-specialty contractors to the site, the time available for test sections, etc.

The following subsections provide brief review of each approach.

6.8.2 Method Specification

In this type of contract, the contractor assumes very little, if any, risk related to the improvement that occurs as a result of dynamic compaction. The contractor's primary duties under this type of contract are:

- to provide a tamper of the prescribed size and with the proper contact pressure at the base and
- to provide the proper equipment to raise and drop the tamper

The advantage of a method specification is that different types of contractors can bid the work. DDC has sometimes been completed by earth moving contractors, wrecking contractors, or specialty contractors. The local contractors would have the advantage of lower mobilization and general knowledge of the area and can be very competitive. This advantage accrues in smaller jobs for which execution of the work is relatively simple and the potential for changes are limited.

6.8.3 Performance Specification

More complex projects that resource the expertise of specialty contractors with broad-based expertise in dynamic compaction are amenable to performance contracts. In this method, the Owner's Engineer specifies the required degree and depth of improvement and the contractor selects the proper equipment to achieve this goal.

The responsibilities of the Owner's Geotechnical Engineer of Record (GEOR) will include:

- providing subsurface information including the geotechnical report to the bidders,
- defining the extent of the area to be improved, and
- specifying the end product to be achieved.

The Contractor assumes a greater risk with this type of a contract. If the equipment selected to do the work does not achieve the desired end product, the contractor must alter his field procedures; for example, use a heavier tamper or a larger drop height to achieve the goals. Normally, this work is undertaken on a lump sum basis and the contractor absorbs the additional costs.

6.9 Control of DDC

6.9.1 Pre-Densification Data

It is important that the GEOR develop a sound base of developed pre-densification data using the Standard Penetration Test (SPT), pressure meter test (PMT) and geophysical testing, as appropriate.

Of concern in this regard is that at sites such as this (i.e., heterogeneous, with boulders and debris), the SPT values after dynamic compaction are frequently the same order of magnitude as SPT values before dynamic compaction. At these same sites, PMT has frequently shown significant improvements. The PMT measures increase in the stiffness of the soil deposit, which is one of the primary reasons for dynamic compaction. The increase in stiffness results in the reduction in compressibility of the soil mass. The SPT is insensitive to the stiffness because of the remolding of the soil as the sampler is being driven.

6.9.2 Control During Densification

SPT and PMT, and monitoring of ground subsidence should be undertaken during densification. Ground subsidence will typically reach a threshold value (for example, settlement of 5 to 10% of the original thickness of the formation), after which added pounding has little settlement effect, indicating that densification has taken place.

Measurements of the velocity of the tamper (using a radar gun) should also be undertaken to assure that near free fall is achieved (i.e., fall relative to the theoretical velocity for a tamper falling in a vacuum). The results are fairly consistent for different size tampers and different geographic locations.

Geophysical testing completed prior to densification can be reproduced following densification, showing an increase in seismic wave velocity as an indicator of increased soil stiffness.

7.0 EARTHWORK AND FOUNDATIONS

7.1 Overview

7.1.1 Review of Site Hazards

As is discussed in Section 5, the site is affected by two principal soil/geologic hazards, as abstracted below.

1. Seismic. The site is at risk for moderate-to-severe ground shaking in response to large-magnitude earthquakes during the lifetime of the planned development. Section 7.2 provides seismic design parameters

2. Undocumented Fill. The site is mantled by undocumented fill that ranges to about 34 feet in thickness. The fill is predominately sandy, but includes gravel, cobble and boulder-sized rock. As is discussed in Section 6, the Unit 1 undocumented fill will be improved by large scale densification, removing this hazard prior to developing structures.

7.1.2 Review and Surveillance

NOVA should review the grading plan, foundation plan, and geotechnical-related specifications as they become available to confirm that the recommendations presented in this report have been incorporated into the plans prepared for the project. All work related to site and foundation development should be completed under the observation of NOVA as Geotechnical Engineer-of-Record (GEOR). Section 9 addresses this consideration in more detail.

7.1.3 Preliminary Recommendations

The remainder of this section provides preliminary recommendations for earthwork and foundations. These recommendations are provided well in advance of design and, very significantly, well in advance of any detailed planning for ground improvement and final grading for development of the structures and infrastructure across the site. In consideration of these factors, the recommendation should be understood to be preliminary, subject to change.

7.2 Seismic Design Parameters

7.2.1 Site Class

The site-specific data used to determine the Site Class typically includes borings drilled to refusal on materials to determine Standard Penetration resistances (N-values) or a geophysical survey to determine shear wave (V_{S30}) velocities for the upper 100 feet of the site geology.

Seismic Lines S-1 through S-5 were analyzed to determine the shear wave velocities of the soil profile. Generally, the velocities underlying the site exceeded 5,000 ft/sec at maximum depths of about 20 feet to 30 feet bgs, classifying the site as Site Class B.

7.2.2 Seismic Design Parameters

Table 7-1 (following page) provides seismic design parameters after ASCE 7-16 utilizing the on line resource provided by the USGS and SEAOC for this determination.

Table 7-1. Site Class B, Risk Category II, ASCE 7-16 and 2019 CBC

Parameter	Value
Site Soil Class	B
Site Latitude (decimal degrees)	33.959 °N
Site Longitude (decimal degrees)	- 117.313 °W
Site Coefficient, F_a	1.0
Site Coefficient, F_v	1.0
Mapped Short Period Spectral Acceleration, S_S	1.5 g
Mapped One-Second Period Spectral Acceleration, S_1	0.6 g
Short Period Spectral Acceleration Adjusted for Site Class, S_{MS}	1.5 g
One-Second Period Spectral Acceleration Adjusted for Site Class, S_{M1}	0.6 g
Design Short Period Spectral Acceleration, S_{DS}	1.0 g
Design One-Second Period Spectral Acceleration, S_{D1}	0.4 g
Modified Peak Ground Acceleration, PGA_M	0.613 g

Source: Site Class parameters obtained from *SEAOC Hazard Tool* (found at: https://seismicmaps.org/)

7.3 Corrosivity and Sulfates

7.3.1 General

Electrical resistivity, chloride content, and pH level are all indicators of the soil's tendency to corrode ferrous metals. Levels of water-soluble sulfates are correlated with the potential for sulfate attack to concrete. AKA 2007 reports this testing on a representative sample of the near-surface soils. The results of the testing are tabulated in Table 7-2.

Table 7-2. Summary of Corrosivity Testing

Parameter	Units	Value
pH	standard unit	7.6
Resistivity	Ω-cm	2,400
Water-Soluble Chloride	ppm	42.5
Water-Soluble Sulfate	%	0.001

7.3.2 Metals

Caltrans considers a soil to be corrosive if one or more of the following conditions exist for representative soil and/or water samples taken at the site:

- chloride concentration is 500 parts per million (ppm) or greater,
- sulfate concentration is 2,000 ppm (0.2%) or greater, or
- the pH is 5.5 or less.

Based on the Caltrans criteria, the on-site soils would not be considered 'corrosive' to buried metals. Appendix E provides records of the chemical testing that include estimates of the life expectancy of buried metal culverts of varying gauge.

In addition to the above parameters, the risk of soil corrosivity affecting buried metals is considered by determination of electrical resistivity (ρ). Soil resistivity may be used to express the corrosivity of soil only in unsaturated soils. Corrosion of buried metal is an electrochemical process in which the amount of metal loss due to corrosion is directly proportional to the flow of DC electrical current from the metal into the soil. As the resistivity of the soil decreases, the corrosivity generally increases. A common qualitative correlation (cited in Romanoff 1989, NACE 2007) between soil resistivity and corrosivity to ferrous metals is tabulated below.

Table 7-3. Soil Resistivity and Corrosion Potential

Minimum Soil Resistivity (Ω-cm)	**Qualitative Corrosion Potential**
0 to 2,000	Severe
2,000 to 10,000	Moderate
10,000 to 30,000	Mild
Over 30,000	Not Likely

The resistivity testing summarized on Table 6-2 suggests that design should consider that the soils may be corrosive to embedded metals. Typical recommendations for mitigation of such corrosion potential in embedded ferrous metals include:

- a high quality protective coating such as an 18 mil plastic tape, extruded polyethylene, coal tar enamel, or Portland cement mortar;
- electrical isolation from above grade ferrous metals and other dissimilar metals by means of dielectric fittings in utilities and exposed metal structures breaking grade; and,
- steel and wire reinforcement within concrete having contact with the site soils should have at least 2 inches of concrete cover.

If extremely sensitive ferrous metals are expected be placed in contact with the site soils, it may be desirable to consult a corrosion specialist regarding choosing the construction materials and/or protection design for the objects of concern.

7.3.3 Sulfate Attack

As shown in Table 7-2, the soil sample tested indicated water-soluble sulfate (SO_4) content of 0.001% by weight. With SO4 < 0.10 percent by weight, the American Concrete Institute (ACI) 318-08 considers the soil to have negligible potential (S0) potential for sulfate attack to embedded concrete.

Table 7-4 reproduces the Exposure Categories considered by ACI.

Table 7-4. Exposure Categories and Requirements for Water-Soluble Sulfates

Exposure Category	Class	Water-Soluble Sulfate (SO_4) In Soil	Cement Type (ASTM C150)	Max Water-Cement Ratio	Min. f'_c (psi)
Not Applicable	S0	$SO_4 < 0.10$	-	-	-
Moderate	S1	$0.10 \leq SO_4 < 0.20$	II	0.50	4,000
Severe	S2	$0.20 \leq SO_4 \leq 2.00$	V	0.45	4,500
Very severe	S3	$SO_4 > 2.0$	V + pozzolan	0.45	4,500

Adapted from: ACI 318-08, Building Code Requirements for Structural Concrete

7.3.4 Limitations

Testing to determine several of the chemical parameters that indicate a potential for soils to be corrosive to construction materials are traditionally completed by the Geotechnical Engineer, comparing testing results with a variety of indices regarding corrosion potential.

Like most geotechnical consultants, NOVA does not practice in the field of corrosion protection, since this is not specifically a geotechnical issue. Should you require more information, a specialty corrosion consultant should be retained to address these issues.

7.4 Earthwork

7.4.1 General

Following the large-scale ground improvement described in Section 6, NOVA expects that earthwork will include (i) finish grading to create the new ground form for the separate structures, and (ii) excavations for foundations and utilities.

Earthwork should be performed in accordance with Section 300 of the most recent approved edition of the "*Standard Specifications for Public Works Construction*" and "*Regional Supplement Amendments*."

7.4.2 Select Fill

Materials

All fill and backfill should be Select Fill, a mineral soil free of organics or regulated constituents, with the characteristics listed below:

- at least 60% finer than ¼-inches in size, maximum particle size of 4-inches; and,
- classified as GM, GC, SC, SM or SP-SM after ASTM D 2487; and,
- expansion index (EI) of less than 10 (i.e., EI < 10, after ASTM D 4829).

Most of the Unit 1 fill that is now in place will conform to the above criteria.

Placement

All fill and backfill should be compacted to a minimum of 90% relative compaction after ASTM D1557 (the 'modified Proctor') following moisture conditioning to at least 2% above the optimum moisture content.

The fill must be densified using vibratory compaction methods. Fill should be placed in loose lifts no thicker than the ability of the vibratory compaction equipment to thoroughly densify the lift. For most self-propelled construction equipment, this will limit loose lifts to on the order of 10-inches or less. Lift thickness for hand-operated equipment used in constrained spaces (e.g., walk behind compactors) will be limited to about 4-inches or less.

7.4.3 Site Preparation

Prior to the start of any land-disturbing activities, the Contractor should establish construction Best Management Practices ('BMPs') to control erosion of graded/excavated areas. BMPs must be maintained until permanent stormwater infiltration BMPs are operable.

At the outset of work, the site should be cleared of vegetation and related root systems, and existing pavement. The deleterious materials should be disposed of in approved off-site locations.

As is discussed in Section 2, the site has not been used other than for car parking. It is unlikely that site preparation will expose relic foundations, utilities, etc.

7.4.4 Excavation Characteristics

The Unit 1 fill will be readily excavated by earthwork equipment usual for developments of this nature. No heavy ripping or special excavation techniques will be required. Unbraced slopes less than 4 feet in height will stand for short periods (less than 2 weeks) at slopes as steep as 0.5H:1V. The handling of rock and boulders should be planned for, as Geocon 2018 indicated boulders as great as 11 feet in diameter were encountered during site exploration.

The Unit 3 granitic rock occurs in the near surface in areas of the site. This rock unit will be difficult to excavate potentially requiring mid-size to heavy size equipment to excavate this material. Planning for loosening and removal of near-surface rock is outside the scope of this report. An earthwork contractor experienced in work of this nature can readily identify the requirements and related cost for loosening and removal of near-surface rock.

7.4.5 Trenching and Backfilling for Utilities

Excavation for utility trenches must be performed in conformance with OSHA regulations contained in 29 CFR Part 1926.

Utility trench excavations have the potential to degrade the properties of the adjacent soils. Utility trench walls that are allowed to move laterally will reduce the bearing capacity and increase settlement of adjacent footings and overlying slabs.

Backfill for utility trenches is as important as the original subgrade preparation or engineered fill placed to support either a foundation or slab. Backfill for utility trenches must be placed to meet the project specifications for the engineered fill of this project.

Unless otherwise specified, the backfill for the utility trenches should be placed in 4 to 6-inch loose lifts and compacted to a minimum of 90% relative compaction after ASTM D 1557 (the 'modified Proctor') at soil moisture +2% of the optimum moisture content. Up to 4-inches of bedding material placed directly under the pipes or conduits placed in the utility trench can be compacted to 90% relative compaction with respect to the Modified Proctor.

Compaction testing should be performed for every 20 cubic yards of backfill placed or each lift within 30 linear feet of trench, whichever is less.

Backfill of utility trenches should not be placed with water standing in the trench. If granular material is used for the backfill, the material should have a gradation that will filter protect the backfill material from the adjacent soils. If this gradation is not available, a geosynthetic non-woven filter fabric should be used to reduce the potential for the migration of fines into the backfill material.

7.4.6 Building Pad Undercuts

Building pads that expose weathered Unit 3 granitic rock and/or shallow fill should be over excavated to a depth of 5 feet below the final pad grade, or to at least 3 feet below the bottom of footing, whichever is deeper, and this excavation backfilled with Select Fill.

This removal and replacement should extend at least 5 feet beyond the perimeter building footings.

7.4.7 Street Undercuts

Like the building pads described above, granitic bedrock that is within a few feet of the finish grades of streets should be undercut at least 3 feet or 1 foot below the lowest utility whichever is deeper, and backfilled with Select Fill. The intent of this recommendation is to allow placement of utility lines within the streets.

Planning for street development should consider future utility hookups and the potential problems created by the near surface occurrence of rock.

7.4.8 Placement of New Fills

All new fills should be placed in a manner that conforms with the requirements for Select Fill that are described in Section 7.4.2. Placement of such fill will require management of boulder-sized rocks that are now present within the Unit 1 soil mass.

No grading plan is yet been developed for the site. Once such documentation is developed, the GEOR should work with the Contractor to develop planning for control in placement of oversized rock. At a minimum, such control would involve the actions listed below.

1. No 'Nesting.' The mass of fill soils should contain sufficient finer grained granular soils such that the 'nesting' (i.e., close accumulation or close spacing) of rocks larger than 8 inches is avoided.
2. Boulders. No rock larger than 3 feet in diameter may be placed in a new fill. However, rocks larger than 12 inches and less than 3 feet in diameter may be placed within engineered fill if the rock is placed greater than 10 feet below proposed finish grades. Placement of rock of this dimension range will require specialty seating and placement, and will require the surrounding fill soils to consist of granular soils compacted to at least

90 percent relative compaction. No rock greater than 3 feet in diameter may be used in any fill.

3. Keyways and Benching. Fill slopes equal to or greater than 5 feet in height should be constructed with a keyway having a minimum width of at least 5 feet and a minimum embedment of at least 2 feet into competent bedrock. New fill placed against ground sloping more steeply than 5H :1V (horizontal : vertical) should include vertical benches excavated into the adjacent slope.

7.5 Foundations

7.5.1 General

The structures can be supported on shallow foundations following ground improvement as described in Section 6 and/or site preparation as described in Section 7.4. The following subsections provide recommendations for shallow foundations.

7.5.2 Ground Supported Slabs

The ground level slabs may employ conventional on-grade (ground-supported) slabs, designed using a modulus of subgrade reaction (k) of 140 pounds per cubic inch (i.e., k = 140 pci).

The actual slab thickness and reinforcement should be designed by the Structural Engineer. NOVA recommends the slab be a minimum 5 inches thick, reinforced by at least #3 bars placed at 16 inches on center each way within the middle third of the slabs by supporting the steel on chairs or concrete blocks ("dobies").

Minor cracking of concrete after curing due to drying and shrinkage is normal. Cracking is aggravated by a variety of factors, including high water/cement ratio, high concrete temperature at the time of placement, small nominal aggregate size, and rapid moisture loss due during curing. The use of low-slump concrete or low water/cement ratios can reduce the potential for shrinkage cracking.

To reduce the potential for excessive cracking, concrete slabs-on-grade should be provided with construction or ‘weakened plane’ joints at frequent intervals. Joints should be laid out to form approximately square panels and never exceeding a length to width ratio of 1.5 to 1.

Proper joint spacing and depth are essential to effective control of random cracking. Joints are commonly spaced at distances equal to 24 to 30 times the slab thickness. Joint spacing that is greater than 15 feet should include the use of load transfer devices (dowels or diamond plates). Contraction/control joints should be established to a depth of ¼ the slab thickness, as depicted in Figure 7-1.

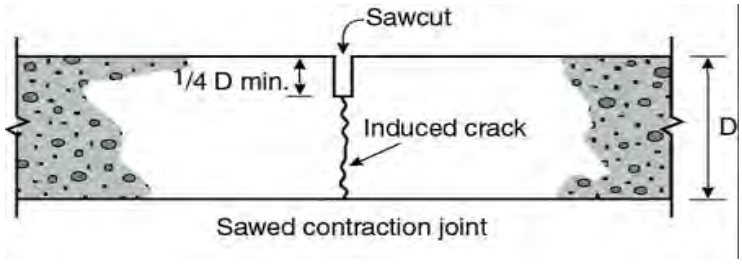

Figure 7-1. Sawed Contraction Joint

7.5.3 Isolated and Continuous Foundations

The densified Unit 1 fill will provide high-capacity foundation support for shallow foundations.

Shallow spread footings established in densified Unit 1 soil may be used to support the new buildings where designed to the parameters listed below.

1. *Minimum Dimensions*. Isolated footings should be at least 30 inches wide. Continuous footings should be at least 18 inches wide.
2. *Embedment*. Shallow foundations should be embedded a minimum of 24 inches below lowest adjacent grade. Foundations located near slopes should be embedded such that the horizontal distance to 'daylight' at the face of the slope is at least 7 feet from the face of the footing.
3. *Contact Stress*. An allowable bearing capacity (q_{allow}) of q_{allow} = 4,500 psf can be used for footings supported on densified Unit 1 soil or on new fill placed in conformance with the requirements of this report. These values apply to combined dead and sustained live loads (DL + LL). The allowable contact stress may be increased by one-third when considering transient loads, such as seismic and wind.
4. *Lateral Resistance*. Resistance to lateral loads will be provided by a combination of friction between the soil and foundation interface and passive pressure acting against the vertical portion of the footings. For calculating allowable lateral resistance, a passive pressure of 250 psf per foot of depth and a frictional coefficient of 0.35 may be used. No reduction is necessary when combining frictional and passive resistance.

7.5.4 Building Settlement

Structures supported on spread footings as recommended above will settle on the order of ½ inch or less, with about 80 percent of this settlement occurring during the construction period. The differential settlement between adjacent, unevenly columns will be on the order of ½ inch or less over a horizontal distance of 40 feet.

7.6 Permanent Below Grade Walls

7.6.1 Lateral Pressures

Lateral earth pressures on retaining walls are related to the type of backfill, drainage conditions, slope of the backfill surface, and the allowable rotation of the wall. Table 7-5 provides soil loading on retaining walls with level and sloping backfill for varying conditions of wall yield.

Table 7-5. Lateral Earth Pressures to Retaining Walls

Condition	Equivalent Fluid Pressure (psf/foot), Approved Backfill Notes A, B	
	Level Backfill	2:1 Backfill Sloping Upwards
Active	35	60
At Rest	55	90
Passive	350	300

Note A: site-sourced Select Fill or similar imported soil.
Note B: assumes wall includes appropriate drainage and no hydrostatic pressure.

If footings or other surcharge loads are located a short distance outside the wall, these influences should be added to the lateral stress considered in the design of the wall.

7.6.2 Seismic Increment

Walls taller than 6 feet should include a seismic load increment, should be calculated as a uniform 16H psf (with H the height of the wall in feet).

7.6.3 Drainage

Design for permanent walls should include drainage to limit accumulation of water behind the wall. Figure 7-2 provides guidance for such design. Note that the guidance provided on Figure 7-2 is conceptual. A variety of options are available to drain permanent below grade walls.

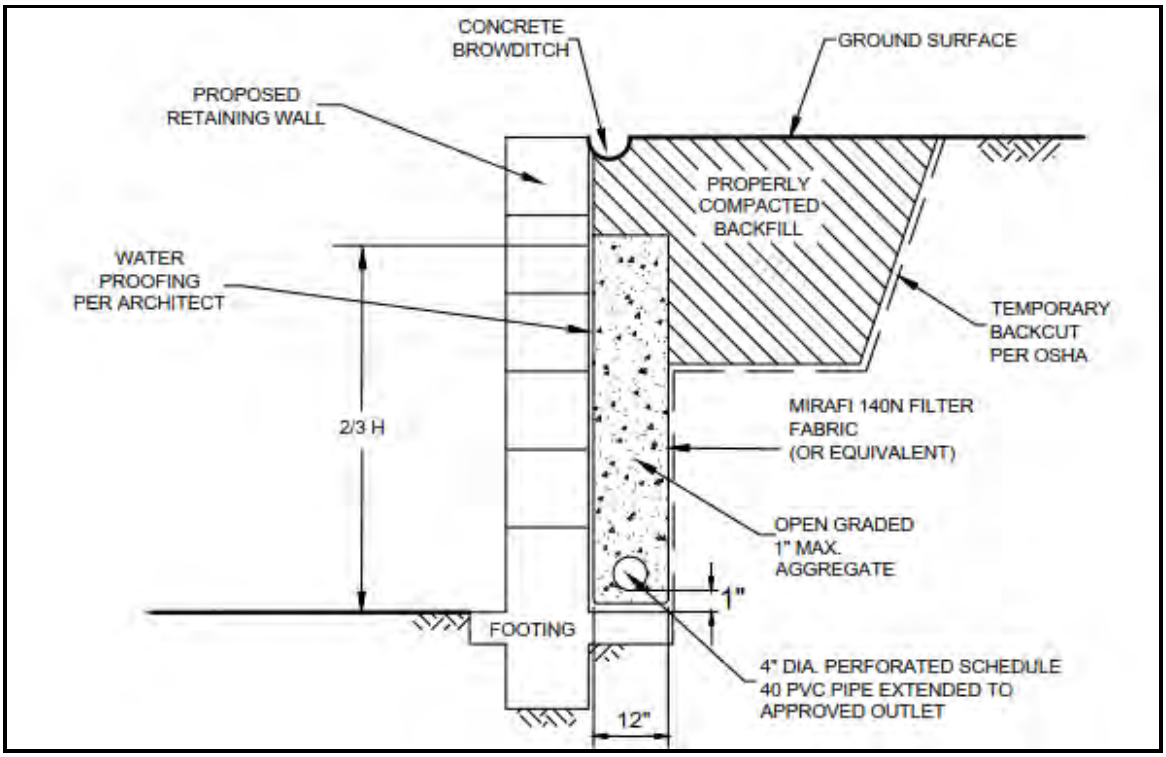

Figure 7-2. Conceptual Design for Permanent Wall Drainage

7.6.4 Elevator Pits

Elevator(s) may be used for the three and four level structures. Design for the elevator pit walls should consider the circumstances and conditions described below.

1. Wall Yield. NOVA expects that proper function of the elevator pit should not allow yielding of the elevator pit walls. As such, walls should be designed to resist 'at rest' lateral soil pressures and seismic pressures provided above, also allowing for any structural surcharge.
2. Construction. Design of the elevator pit walls should include consideration for surcharge conditions that will occur during and after construction.

7.7 Flatwork

Prior to casting exterior flatwork, the upper 12 inches of subgrade soils should be moisture conditioned and recompacted. The subgrade soils should be kept moist prior to casting exterior flatwork. Exterior concrete slabs for pedestrian traffic or landscaping should be at least four (4) inches thick. Weakened plane joints should be located at intervals of about 6 feet. Control of the water/cement ratio can limit shrinkage cracking due to excess water or poor concrete finishing or curing.

7.8 Temporary Slopes

7.8.1 Conformance with OSHA and Cal/OSHA

Temporary slopes may be required for excavations during grading. All temporary excavations should comply with federal, state and local safety ordinances. The safety of all excavations is the responsibility of the contractor and should be evaluated during construction as the excavation progresses.

Based on the data interpreted from the borings, the design of temporary slopes in the Unit 1 fill and Unit 2 alluvium may assume California Occupational Safety and Health Administration (Cal/OSHA) Soil Type C for planning purposes.

7.8.2 Excavation Planning and Control

The face of temporary excavations 5 feet deep or less in the Unit 1 fill or Unit 2 alluvium should not be steeper than 1:1 (horizontal : vertical).

Surcharge loads to temporary slopes should not be permitted within a distance equal to the height of the excavation measured from the top of the excavation. Excavations (i) steeper than those recommended; or, (ii) closer than 15 feet from an existing service improvement, should be shored in accordance with applicable OSHA regulations and codes.

The faces of temporary slopes should be inspected daily by the Contractor's Competent Person before personnel are allowed to enter the excavation. Any zones of potential instability, sloughing or raveling should be brought to the attention of the Engineer and corrective action implemented before personnel begin working in the excavation. Excavated materials should not be stockpiled behind temporary excavations within a distance equal to the depth of the excavation.

8.0 PAVEMENTS

8.1 Design Basis

The structural design of pavement sections depends primarily on anticipated traffic conditions, subgrade soils, and construction materials. NOVA has assumed a Traffic Index (TI) of 5.0 for passenger car parking, and 6.0 for the driveways. These traffic indices should be confirmed by the Civil Engineer prior to final design.

8.2 Drainage and Moisture Control

Similar to the requirements for control of moisture beneath floor slabs and flatwork, control of surface drainage is important to the design and construction of pavements for this site.

Moisture must be controlled around and beneath pavements. Moreover, where standing water develops either on the pavement surface or within the base course, softening of the subgrade and other problems related to the deterioration of the pavement can be expected. Furthermore, good drainage should minimize the risk of the subgrade materials becoming saturated and weakened over a long period of time.

The following should be considered to limit the amount of excess moisture which can reach the subgrade soils:

- maintain surface gradients at a minimum 2% grade away from the pavements;
- seal all landscaped areas in or adjacent to pavements to minimize or prevent moisture migration to subgrade soils;
- planters should not be located next to pavements (otherwise, subdrains should be used to drain the planter to appropriate outlets);
- place compacted backfill against the exterior side of curb and gutter; and
- concrete curbs bordering landscaped areas should have a deepened edge to provide a cutoff for moisture flow beneath pavements (generally, the edge of the curb can be extended an additional twelve inches below the base of the curb).

8.3 Preventative Maintenance

Preventative maintenance should be planned and provided for. Preventative maintenance activities are intended to slow the rate of pavement deterioration and to preserve the pavement investment.

A plan for preventative maintenance should be comprised of both localized maintenance (e.g., crack sealing and patching) and global maintenance (e.g., surface sealing).

8.4 Subgrade Preparation

8.4.1 Grading

Preparation of subgrades for paved areas should include: (i) moisture conditioning the upper 12-inches of subgrade to about 2% above the optimum moisture content, and (ii) densification of the upper 1 foot of subgrade to at least 95% relative compaction after ASTM D 1557.

8.4.2 Proof-Rolling

After the completion of compaction/densification, areas to receive pavements should be proof-rolled. A loaded dump truck or similar should be used to aid in identifying localized soft or unsuitable material.

Any soft or unsuitable materials encountered during this proof-rolling should be removed, replaced with an approved backfill, and compacted.

8.4.3 Timely Base Course Construction

Construction should be managed such that preparation of the subgrade immediately precedes placement of the base course. Proper drainage of the paved areas should be provided to reduce moisture infiltration to the subgrade.

8.5 Flexible Pavements

The structural design of flexible pavement depends primarily on anticipated traffic conditions, subgrade soils, and construction materials. Table 8-1 provides preliminary flexible pavement sections assuming an R-value of 65. Additional R-value testing should be performed on actual soils at the design subgrade levels to confirm the pavement design.

Table 8-1. Preliminary Recommendations for Flexible Pavements, R = 65

Area	Subgrade R-Value	Traffic Index	Asphalt Thickness (in)	Base Course Thickness (in)
Auto Parking	65	5	3.0	6.0
Roadways/Fire Lane	65	6	4.0	6.0

The above sections assume properly prepared subgrade consisting of at least 12-inches of subgrade densified to a minimum of 95% relative compaction at about 2% above the optimum moisture content.

The aggregate base course should also be placed at a minimum of 95% relative compaction. Construction materials (asphalt and aggregate base) should conform to the current Standard Specifications for Public Works Construction (‘Green Book’).

8.6 Rigid Pavements

8.6.1 General

Concrete pavement sections should be developed in the same manner as undertaken for all other slabs and pavements: removal of the upper 12-inches of the Unit 1 fill and replacement of that material in an engineered manner as described in Section 9.2.

Concrete pavement sections consisting of 7-inches of Portland cement concrete over a base course of 6-inches and a properly prepared subgrade support a wide range of traffic indices.

Where rigid pavements are used, the concrete should be obtained from an approved mix design with the minimum properties of Table 8-2.

Table 8-2. Recommended Concrete Requirements

Property	Recommended Requirement
Compressive Strength @ 28 days	3,250 psi minimum
Strength Requirements	ASTM C94
Minimum Cement Content	5.5 sacks/cu. yd.
Cement Type	Type I Portland
Concrete Aggregate	ASTM C33 and Caltrans Section 703
Aggregate Size	1-inch maximum
Maximum Water Content	0.50 lb/lb of cement
Maximum Allowable Slump	4-inches

8.6.2 Jointing and Reinforcement

Longitudinal and transverse joints should be provided as needed in concrete pavements for expansion/contraction and isolation. Sawed joints should be cut within 24-hours of concrete placement and should be a minimum of 25% of slab thickness plus ¼-inch. All joints should be sealed to prevent entry of foreign material and doweled where necessary for load transfer.

Load transfer devices, such as dowels or keys are recommended at joints in the paving to reduce possible offsets. Where dowels cannot be used at joints accessible to wheel loads, pavement thickness should be increased by 25% at the joints and tapered to regular thickness in 5 feet.

9.0 CONSTRUCTION REVIEW, OBSERVATION, AND TESTING

9.1 Overview

As is discussed in Section 1, the recommendations contained in this report are based upon an evaluation of the previous subsurface explorations and an assumption of general continuity of subsurface conditions between test pits.

The recommendations provided in both NOVA's proposal for this work and this report assume that NOVA will be retained to provide consultation and review during the design phase, to interpret this report during construction, and to provide construction monitoring in the form of testing and observation.

9.2 Design Phase Review

NOVA should be retained to provide review of final grading and foundation plans. This review is provided for in NOVA's proposal for this work.

9.3 Construction Observation and Testing

9.3.1 General

Special inspections should be provided per Section 1705 of the California Building Code. The soils special inspector should be a representative of NOVA as the Geotechnical Engineer-of-Record (GEOR).

NOVA should be retained to provide construction-related services abstracted below.

- Surveillance during site preparation, grading, and foundation excavation.
- Surveillance of the ground improvement described in Section 6.
- Soil special inspection during grading and ground densification by deep dynamic compaction.

A program of quality control should be developed prior to the beginning of earthwork. It is the responsibility of the Owner, the Contractor and/or the Construction Manager to determine any additional inspection items required by the Architect/Engineer or the governing jurisdiction.

9.3.2 Continuous Soils Special Inspection

The earthwork operations listed below should be the object of continuous soils special inspection.

- Site grading, including scarification and re-compaction an fill placement.
- Ground improvement as described in Section 6.
- Pavement subgrade preparation and base course compaction.

9.3.3 Periodic Soils Special Inspection

The earthwork operations listed below should be the object of periodic soils special inspection, subject to approval by the Building Official.

- Site preparation and removal of existing development features.
- Placement and compaction of utility trench backfill.
- Observation of foundation excavations.

9.3.4 Testing During Inspections

A preconstruction conference among representatives of the Owner, Contractor and/or Construction Manager and Geotechnical Engineer is recommended to discuss the planned construction procedures and quality control requirements.

The locations and frequencies of compaction testing should be determined by the geotechnical engineer at the time of construction. Test locations and frequencies may be subject to modification by the geotechnical engineer based upon soil and moisture conditions encountered, the size and type of compaction equipment used by the Contractor, the general trend of compaction test results, and other factors.

Of particular concern to NOVA during earthwork operations will be good practices in moisture conditioning, loose soil placement, and soil compaction. In particular, NOVA will be vigilant with regard to the use of compaction equipment appropriate to the full lift thickness of the type of soil being compacted. Reliance on construction traffic (for example, loaders or dump trucks) to achieve compaction will not be approved.

PLATES

KEY TO SYMBOLS

Qaf	FILL
Qal	ALLUVIUM
Kvt	VAL VERDE TONALITE
	GEOLOGIC CONTACT
TP-18	TEST PIT (GEOCON, 2018)
T-11	EXPLORATORY TRENCH (ALBUS-KEEFE & ASSOCIATES, INC, 2007)
T-7	EXPLORATORY TRENCH (BYERLY, 1997)
75	JOINT ATTITUDE (ALBUS-KEEFE & ASSOCIATES, INC, 2007)
S-5	SEISMIC LINE (ALBUS-KEEFE & ASSOCIATES, INC, 2007)
31	DEPTH TO BEDROCK, IN FEET (GEOCON, 2018)

*NOTE: BYERLY'S T-1 & T-2 ARE NOT SHOWN ON MAP.

N

0 100' 200'

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(714) 639-9860

CONCEPTUAL SITE PLAN | A-2

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CRESTVIEW APARTMENTS

SYCAMORE CANYON BLVD. & CENTRAL AVE.
RIVERSIDE, CALIFORNIA

PROJECT NO.:	3020003
DATE:	JANUARY 2020
DRAWN BY:	DTW
REVIEWED BY:	JDB
SCALE:	1"=100'

DRAWING TITLE:

SUBSURFACE EXPLORATION MAP FROM PREVIOUS INVESTIGATIONS

PLATE NO. 1

APPENDIX A

2007 Geotechnical Investigation by Albus Keefe & Associates, Inc.

ALBUS-KEEFE & ASSOCIATES, INC.
GEOTECHNICAL CONSULTANTS

December 11, 2007
J.N.: 1566.00

Mr. Alex Gill
TCRSC Development LP
949 South Coast Drive, Suite 400
Costa Mesa, California 92626

Subject: **"Revised" Preliminary Geotechnical Investigation, Proposed Apartment Complex, Tract 34946 (Alexan Cityscape Project), City of Riverside, California.**

Dear Mr. Gill:

Albus-Keefe & Associates, Inc. is pleased to present to you our "revised" preliminary geotechnical investigation report for the subject site. This report presents the results of our review of available aerial photographs, geologic literature, previous geotechnical reports for the site and nearby vicinity, subsurface exploration, laboratory testing, engineering and geologic analyses, and conclusions and recommendations pertaining to the proposed site development. The report was revised from our originally dated report of June 15, 2007 due to some minor modifications in the proposed site development plans.

We appreciate this opportunity to be of service to you. If you should have any questions regarding the contents of this report, please do not hesitate to call our office.

Sincerely yours,

ALBUS-KEEFE & ASSOCIATES, INC.

Michael Putt
Project Engineering Geologist

Distribution: (6) Addressee

1011 North Armando Street, Anaheim CA 92806-2606 (714) 630-1626 FAX (714) 630-1916

TABLE OF CONTENTS

REPORT

1.0 INTRODUCTION **1**
1.1 PURPOSE AND SCOPE 1
1.2 PROPOSED DEVELOPMENT 1
1.3 SITE LOCATION AND DESCRIPTION 2
2.0 INVESTIGATION **4**
2.1 RESEARCH 4
2.1.1 General 4
2.1.2 Previous Site Use and History 4
2.1.3 Previous Geotechnical Studies 4
2.2 GEOLOGIC MAPPING 5
2.3 SUBSURFACE EXPLORATION 5
2.4 SEISMIC REFRACTION SURVEY 5
2.5 LABORATORY TESTING 5
3.0 SUBSURFACE CONDITIONS **5**
3.1 GEOLOGIC UNITS 5
3.2 GEOLOGIC UNITS 6
3.2.1 Artificial Fill (Qaf) 6
3.2.2 Topsoil (no map symbol) 6
3.2.3 Alluvium (Qal) 6
3.2.4 Bedrock; Granitic Rock (Kgr) 6
3.3 JOINTING 6
3.4 FAULTING 7
3.5 LANDSLIDES 7
3.6 GROUNDWATER 7
4.0 ANALYSES **7**
4.1 SEISMICITY 7
4.2 SETTLEMENT 8
5.0 CONCLUSIONS **9**
5.1 FEASIBILITY OF PROPOSED DEVELOPMENT 9
5.2 SEISMIC HAZARDS 9
5.2.1 Ground Rupture 9
5.2.2 Ground Shaking 9
5.2.3 Liquefaction 9
5.2.4 Seiche and Tsunami 10
5.3 SLOPE STABILITY 10
5.4 SETTLEMENT 10
5.5 GROUNDWATER 10
5.6 SHRINKAGE AND SUBSIDENCE 10
5.7 EXCAVATION AND MATERIAL CHARACTERISTICS 11
6.0 RECOMMENDATIONS **11**
6.1 EARTHWORK 11
6.1.1 General Earthwork and Grading Specifications 11
6.1.2 Pre-Grade Meeting and Geotechnical Observation 12
6.1.3 Site Clearing 12

TABLE OF CONTENTS

REPORT

6.1.4 Ground Preparation 12
6.1.5 Geometry of Bedrock/Fill Contact 12
6.1.6 Building Pad Capping 12
6.1.7 Street Capping 13
6.1.8 Temporary Excavations 13
6.1.9 Scarification 13
6.1.10 Canyon Subdrains 13
6.1.11 Fill Materials and Placement 14
6.1.12 Over-sized Materials 14
6.1.13 Fill Slopes 14
6.1.14 Cut Slopes 15
6.1.15 Stabilization Fills 15
6.1.16 Slope Backdrain 15
6.1.17 Rock Fall Protection During Rough Grading 15
6.1.18 Import Material 15
6.1.19 Settlement Monitoring 16
6.2 SEISMIC DESIGN PARAMETERS 16
6.3 PRELIMINARY CONVENTIONAL FOUNDATION RECOMMENDATIONS 16
6.3.1 General 16
6.3.2 Soil Expansion 17
6.3.3 Settlement Considerations 17
6.3.4 Allowable Bearing Value 17
6.3.5 Lateral Resistance 17
6.3.6 Footings Dimensions and Reinforcement 17
6.3.7 Slabs on Grade 18
6.3.8 Footing Observations 18
6.4 RETAINING WALLS 18
6.4.1 General 18
6.4.2 Bearing Capacity, Lateral Bearing, and Reinforcement 19
6.4.3 Earth Pressures 19
6.4.4 Drainage and Moisture-Proofing 19
6.4.5 Retaining Wall Backfill 20
6.5 SEGMENTAL RETAINING WALL 20
6.6 SETBACK FROM SLOPES 20
6.7 EXTERIOR FLATWORK 20
6.8 CORROSION POTENTIAL 21
6.9 POST GRADING CONSIDERATIONS 21
6.9.1 Site Drainage 21
6.9.2 Utility Trenches 21
6.9.3 Irrigation Considerations 22
6.10 SLOPE MAINTENANCE 22
6.11 PRELIMINARY PAVEMENT RECOMMENDATIONS 22
6.12 PLAN REVIEW AND ADDITIONAL GEOTECHNICAL SERVICES 23
7.0 LIMITATIONS 24

TABLE OF CONTENTS

REPORT

REFERENCES **25**

FIGURES AND PLATES

Figure 1 - Site Location Map
Plate 1 - Geologic Map (pocket enclosure)

APPENDICES

APPENDIX A - Exploratory Trench Logs

APPENDIX B - Seismic Refraction Survey

APPENDIX C - Laboratory Test Program

APPENDIX D - Exploratory Trench Logs & Laboratory Test Results By John R. Byerly, Inc.

APPENDIX E - Standard Grading Details
Plates E-1 through E-10

1.0 INTRODUCTION

1.1 PURPOSE AND SCOPE

The purposes of this investigation were to identify and evaluate the geotechnical conditions within the project area, to evaluate engineering characteristics of site earth materials, and to provide conclusions and geotechnical recommendations relevant to general site development as indicated on the referenced preliminary grading plans.

The scope of this investigation included the following:

- Review of published geologic and seismic data for the site
- Review of the referenced geotechnical reports for the site and vicinity
- Review of the referenced Preliminary Grading Plan
- Review of available aerial photographs for the site and surrounding areas
- Geologic mapping
- Exploratory trenching and sampling
- Seismic refraction survey
- Laboratory testing
- Engineering and geologic analyses of data
- Preparation of this report.

1.2 PROPOSED DEVELOPMENT

Based on our discussions with the project civil engineer and our review of the referenced preliminary grading plans, the site will be developed to accommodate 9 apartment buildings, a recreation building with swimming pool, detached garages, covered parking bays, and associated interior driveways and parking lots. The proposed development will also include concrete walkways and open space/landscaped areas. Underground storm water recharge chambers are proposed beneath the center of the site under the park area "Village Green" and in the southwest corner of the site under the other amenity.

Rough grading of the site will consist of cuts and fills up to approximately 25 feet and 20 feet, respectively. Cut slopes are proposed at a maximum gradient of 1 to 1 (H:V) to a maximum height of approximately 45 feet. Fill slopes are proposed at a maximum gradient of 2 to 1 (H:V) to a maximum height of approximately 46 feet. Grading will also require the construction of retaining

walls up to a maximum height of approximately 18 feet to achieve proposed design grades. Some of the walls, based on discussion with the project civil engineer, may be deigned as segmental walls.

Details of the proposed apartment structures are not known at this time. We anticipate that the proposed structures will consist of two- to three-story, wood-framed structures with tuck under garages yielding relatively light to moderate structural loads. We have assumed that maximum column loads (D.L. + L.L.) will not exceed 100 kips and wall loads (D.L. + L.L.) will not exceed 8 kips per linear foot. The opinions and geotechnical recommendations presented herein are preliminary and subject to revision when actual design structural loads become available.

1.3 SITE LOCATION AND DESCRIPTION

The site is located at the northwest corner of Central Avenue and the proposed realigned Sycamore Canyon Boulevard, within the city of Riverside, California. The location of the site and its relationship to the surrounding areas are shown on Figure 1, Site Location Map.

The site is roughly triangular in shape and encompasses roughly 9.45 acres of vacant land that had been previously graded to a large super pad. The site is bounded by Central Avenue to the south, by undeveloped land to the west and by the proposed realigned Sycamore Canyon Boulevard to the north and east.

Topography within the majority of the site is gently inclined toward the southwest. Graded 2:1 (H:V) fill slopes up to a maximum height of approximately 45 feet are present along the southerly and southwesterly margins of the site. A manufactured 1.5:1 (H:V) cut slope up to a maximum height of approximately 35 feet is present along the northwesterly margin of the site . Numerous boulder-size rocks are scattered over most of the site, particularly in the westerly half of the property. Prior to site development, the site topography was dominated by two small hills, one in the northwest corner of the site and one in the center. Two southwest draining canyons extended between the two hills and along the southerly margin of the site, adjacent Central Avenue. The two canyons merged into a major southeast draining canyon at the southwest corner of the site.

Existing site improvement consists of a 30-inch diameter storm drain extending diagonally (southwest-northeast) beneath the property. The storm drain discharges into the canyon at the southwest corner of the site. We understand that the existing storm drain will be abandoned and removed during future site development.

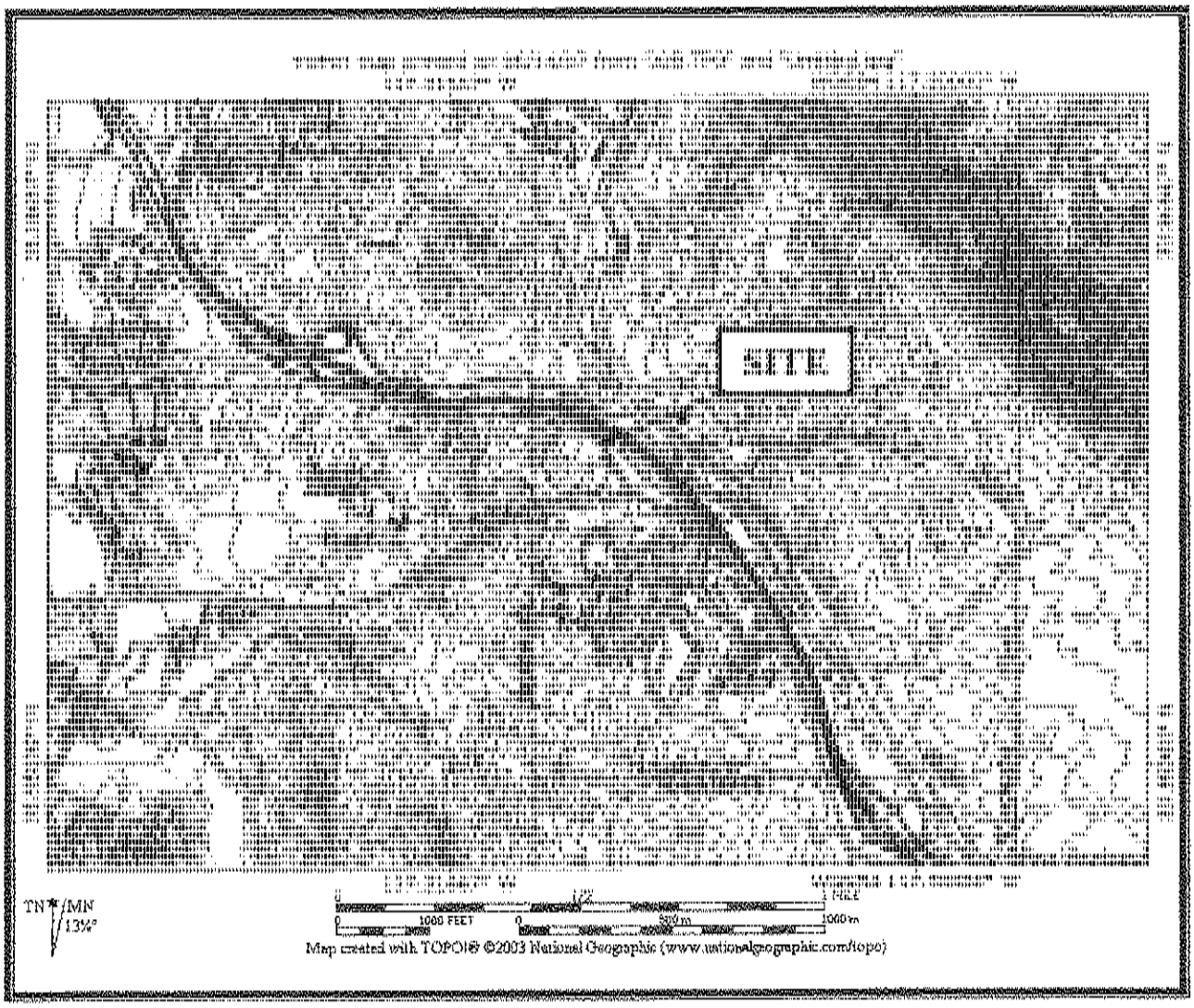

FIGURE 1 – SITE LOCATION MAP

TCRSC Development LP
Northwest Corner of Sycamore Canyon Boulevard and Central Avenue
Riverside, California

From USGS 7.5 Minute Riverside East Quadrangle
1967 (photo revised 1980)

2.0 INVESTIGATION

2.1 RESEARCH

2.1.1 General

We have reviewed available geologic publications, aerial photographs, and maps for the site and nearby vicinity (see references). We have also reviewed the referenced geotechnical reports provided to us. Pertinent data from these sources were utilized in developing some of the findings and conclusions presented herein.

2.1.2 Previous Site Use and History

Based on our review, the site was initially utilized for rural residential use as far back as 1949. Several structures, presumably residential structures, were present on the hillside in the central northeasterly margin of the site. Between April 1995 and April 1996, the residential structures were removed and the site was graded to its current configuration. The subject grading generally involved the placement of up to approximately 45 feet of fills with very high percentage of rocks in the canyon areas and cuts of up to approximately 45 feet on the hilltops. The grading also involved cut and fill slope construction. Hi Desert Testing & Inspection (HDTI) was reportedly the Soils Engineer of record during the subject grading. In a letter dated August 29, 1997, HDTI reports that the grading was not completed per the approved plans and they have not certified any portion of the work due to circumstances beyond their control.

2.1.3 Previous Geotechnical Studies

John R. Byerly Incorporated (JBI) completed a geotechnical investigation for a proposed retail center at the subject property on November 10, 1997, following the site grading. Their investigation consisted of excavating 7 exploratory test pits using a tractor mounted backhoe to a maximum depth of 16.5 feet below the existing ground surface (bgs), laboratory testing of selected soil samples obtained from subsurface exploration, and engineering analyses. JBI reported that artificial fills beneath the site posses variable densities with relative compaction ranging from 71% to 99% of the laboratory determined maximum dry density and the fills contain unsuitable debris, oversized materials and large voids between rock fragments. The underlying alluvial and residual soils were also found to be loose, porous and compressible. JBI concluded in their report that the fill materials and underlying alluvial and residual soils on the site were unsuitable to support structural improvements and recommended removal of these materials. Logs of the exploratory trenches and results of laboratory testing by JBI are presented in Appendix D of this report.

As presented in the JBI report, Leighton and Associates completed two geotechnical reports for the site prior to the site being graded. These reports include a Geotechnical Evaluation report completed on December 28, 1987, and a Geotechnical Review of Grading Plan and Slope Stability Analysis report completed on July 16, 1990. These reports, however, were not available for our review and data from these reports were not provided in the JBI report.

2.2 GEOLOGIC MAPPING

Geologic mapping of the site and adjacent areas was performed by our engineering geologist in November 2006. The purpose of our geologic mapping was to field check the referenced geologic data, identify the surficial distribution of geologic units, map geologic structures (jointing) and identify site improvements. The data from the mapping was used to aid our subsurface exploration program. Information derived from our mapping is shown on the Geologic Map, Plate 1.

2.3 SUBSURFACE EXPLORATION

Subsurface exploration within the site was conducted on November 17, 2006, and consisted of excavating 11 exploratory trenches up to 33 feet in depth utilizing a track mounted excavator (Cat 245). The primary purpose of this work was to assist in evaluating the distribution and engineering characteristics of the earth materials near the surface of the site. The exploratory trench excavations were logged by our engineering geologists. Visual and tactile identifications were made of the materials encountered. The exploratory trench logs are presented in Appendix A. The approximate locations of the exploratory trench excavations are shown on the enclosed Geologic Map, Plate 1. The exploratory trench excavations were loosely backfilled with spoils upon completion.

2.4 SEISMIC REFRACTION SURVEY

In conjunction with our subsurface exploration, a seismic refraction survey was conducted within selected cut portions of the site. The seismic refraction survey, which consisted of five seismic traverses (S-1 through S-5), was performed at our direction by Terra Geosciences. The approximate locations of the survey lines are shown on the enclosed Geologic Map, Plate 1. The seismic refraction profiles are presented in Appendix B.

2.5 LABORATORY TESTING

Selected samples of representative earth materials within the site were returned to the laboratory for testing. Tests consisted of maximum dry density and optimum moisture content, expansion index, direct shear strength, soluble sulfate, and corrosion (pH, minimum resistivity and chloride content). A description of laboratory test criteria and a summary of the test data are presented in Appendix C.

3.0 SUBSURFACE CONDITIONS

3.1 GEOLOGIC UNITS

Based on our subsurface exploration and review of the referenced geotechnical report by JBI, the subject site is underlain by artificial fill materials, topsoil, alluvium, and granitic bedrock. The approximate surficial distributions of the geologic units are illustrated on the enclosed Geologic Map, Plate 1. Detailed descriptions of each of the units are provided in the following section.

3.2 GEOLOGIC UNITS

3.2.1 Artificial Fill (Qaf)

Artificial fill materials associated with previous site grading are present beneath most the site. These fills are generally comprised of locally derived brown to reddish brown fine to coarse grained silty sands and sands that were observed to be dry to damp and loose. Significant quantities of boulders up to 11 feet in diameters, concrete debris up to 5 feet in diameters, and other assorted construction debris were also observed in the fills. The boulders and concrete debris were typically nested and contained large voids. The thickness of the artificial fills observed in our exploratory trenches generally varied from 1 foot to 33 feet. However, the fills may reach depths of as much as 45 feet within the southerly portions of the site. Only those fills of significant thickness and/or extent are indicated on the enclosed Geologic Map, Plate 1. Local stockpiles and boulders on the surface of the site may not be included.

3.2.2 Topsoil (no map symbol)

Topsoil materials locally mantle the bedrock on the natural slopes within and adjacent the site. Topsoil materials were also encountered beneath the fills in two of the exploratory trenches. The topsoil materials generally consist of brown to reddish brown, fine- to coarse-grained silty sands with trace amounts of gravel. These materials are generally dry to moist, loose, and porous. The thickness of the topsoil varies from as little as 6 inches to as much as 4 feet.

3.2.3 Alluvium (Qal)

Alluvial soils were mapped in the bottom of the canyon in the far southwesterly corner of the site as well as mapped in the northeast central margin of the site. They were also encountered beneath the fills in some of the exploratory trenches in the vicinity of the old drainages. The alluvial soils generally consist of brown to reddish brown fine- to coarse-grained silty sands that were observed to be damp to moist, loose to medium dense and porous. The thickness of the alluvial soils encountered generally varied from 4 feet to 13 feet.

3.2.4 Bedrock; Granitic Rock (Kgr)

Cretaceous-age, granitic bedrock underlies the entire site and is exposed on the natural hillsides and cut areas within and adjacent the site. The granitic bedrock is generally gray brown in color, very coarse grained, dry to damp, moderately hard to very hard, and moderately weathered.

3.3 JOINTING

Joints were mapped in the granitic bedrock along the base of the existing cut slope in the northwest corner of the site. The joint attitudes generally strike northeast and east-west and dip at high angles. The joint orientations are indicated on the enclosed Geologic Map, Plate 1

3.4 FAULTING

Evidence of active faulting within and adjacent the site was not observed during this investigation. Based on our review of the referenced publications and seismic data, no active faults are known to project through the site and the site does not lie within an "Earthquake Fault Zone" as defined by the State of California in the Alquist-Priolo Earthquake Fault Zoning Act.

3.5 LANDSLIDES

No evidence of landslides was observed during our investigation.

3.6 GROUNDWATER

Groundwater was not encountered in our exploratory excavations to the depths explored.

4.0 ANALYSES

4.1 SEISMICITY

We have performed integrated historical and deterministic seismic analyses utilizing computer programs *EQSEARCH* (Blake, 1989, updated 2004), *EQFAULT* (Blake, 1989, updated 2002), and UBCSEIS (Blake, 1989, updated 2000). A brief description of the programs and their functions are discussed below:

EQSEARCH performs historical seismic analyses that computes estimated ground motions at the site using a catalog of historical earthquake data within a 62-mile (100-km) radius of the site and a selected attenuation relation to model subsurface earth materials similar to the site. The results of analyses can be utilized to estimate how historical earthquakes may have shaken the site.

EQFAULT performs a deterministic seismic analysis that computes estimated ground motion of the site using a selected attenuation relation to model earth materials similar to the site and a catalog of up to 222 digitized, 3-D California faults as earthquake sources within a 62-mile (100-km) radius of the site. The results of analyses can deterministically estimate how future earthquakes may shake the site.

UBCSEIS performs an analysis to compute the distance to California faults. The program indicates the type of fault as classified in the 1997 UBC and develops the UBC seismic design parameters based on the selected soil profile type.

Pertinent results from the historical and deterministic seismic hazard analyses are provided below:

Historical Event: Based on the computer program EQSEARCH, the earthquake that occurred on July 23, 1923, appears to have affected the site the most during the past 205 years. This earthquake was located approximately 4.5 miles (7.3 km) from the site and was estimated to have a magnitude of 6.3. Peak horizontal ground accelerations (PHGA) were estimated for the historical earthquake

using the Bozorgnia, Campbell and Niazi attenuation equation (1999) for alluvium sites. The largest estimated mean PHGA experienced at the site since 1800 was 0.34g (fraction of gravity) with a standard deviation of 0.23g.

Deterministic Event: Based on the computer program EQFAULT and using Bozorgnia, Campbell and Niazi attenuation equation (1999) for alluvium sites, the largest estimated mean PHGA is 0.37g with a standard deviation of 0.25g, associated with a moment magnitude 6.9 earthquake along the San Jacinto Valley segment of the San Jacinto Fault.

UBC Faults: Based on the computer program UBCSEIS, the closest Type A fault is the southern segment of the San Andreas Fault located approximately 15.2 miles (24.5 km) from the site and the closest Type B fault is the San Jacinto – San Bernardino Fault located approximately 5.3 miles (8.6 km) from the site.

4.2 SETTLEMENT

Based on our subsurface exploration, laboratory testing and previous experience with similar projects, the existing artificial fill, topsoil and alluvium would undergo significant settlement due to the weight of new fills and introduction of water. If these materials are left in place, we estimate total settlement will beyond the tolerable limits of the proposed structures.

Engineering analyses were performed to evaluate settlement potential of compacted fills. The fill is assumed to only undergo secondary compression shortly after finish grades are achieved. Since the fill soils are placed in a partially saturated state, they would not follow the classic consolidation theory whereby excess pore water pressure is expelled to cause consolidation. Instead, primary settlement is primarily dictated by the compression and/or expulsion of air from the pore space, which can be assumed to happen instantaneously as subsequent layers of fill are placed above. By the time the entire fill is placed to grade, only secondary compression remains. The rate of secondary compression, $C\alpha$, was estimated using the correlations of natural water content to coefficient of secondary consolidation presented in NAVFAC 7.1-237. Using "natural" water content of the fill equal to 8% to 10%, we obtain a $C\alpha$ equals to 0.0016. Using this coefficient, the maximum magnitude of secondary settlement for 55 feet of fill (the anticipated maximum fill thickness plus remedial grading) is estimated to be a total of 1.3 inches.

The underlying fill contact is not anticipated to exceed a slope ratio of approximately 1.5 to 1 (H:V) within the areas underlain by bedrock. Ignoring the three dimensional effects of canyon fills, differential settlement was estimated using the same approach as above to calculate the total settlement at a point located at the top of the canyon flank and comparing that value to the center of the canyon. On this basis, we calculated a differential secondary settlement of 0.48 inches over a horizontal distance of 30 feet. Both total and secondary settlement estimates are based on a 50-year life span.

5.0 CONCLUSIONS

5.1 FEASIBILITY OF PROPOSED DEVELOPMENT

From a geotechnical point of view, the proposed site development is considered feasible provided the recommendations presented in this report are incorporated into the design and construction of the project.

5.2 SEISMIC HAZARDS

5.2.1 Ground Rupture

No active faults are known to project through the site nor does the site lie within the bounds of an "Earthquake Fault Zone" as defined by the State of California in the Alquist-Priolo Earthquake Fault Zoning Act. The potential for ground rupture due to an earthquake beneath the site is considered very small.

5.2.2 Ground Shaking

The site is situated in a seismically active area that has historically been affected by generally moderate to occasionally high levels of ground motion. Due to the site's close proximity to several active faults, the proposed development will probably experience similar moderate to occasionally high ground shaking from these faults as well as some background shaking from other seismically active areas of the southern California region. Design in accordance with current CBC requirements is considered suitable to mitigate the effects of ground shaking.

5.2.3 Liquefaction

Generally three basic factors must exist concurrently in order for liquefaction to occur. These factors include:

- A source of ground shaking, such as an earthquake, capable of generating soil mass distortions.
- A relatively loose silty and/or sandy soil.
- A relative shallow groundwater table (within approximately 50 feet below ground surface) or completely saturated soil conditions that will allow positive pore pressure generation.

The liquefaction susceptibility of the onsite subsurface soils was evaluated by analyzing the potential concurrent occurrence of the above-mentioned three basic factors. The liquefaction evaluation for this site was completed under the guidance of Special Publication 117: Guidelines for Evaluating and Mitigating Seismic Hazards in California (CDMG, 1997).

Provided rough grading is performed in accordance with the recommendations presented herein, the site will be underlain by compacted artificial fill and granitic bedrock. Therefore, the potential for liquefaction at the site is considered very small.

5.2.4 Seiche and Tsunami

The site is located a substantial distance from significant body of water and is elevated more than 1300 feet above mean sea level. As such, the potential for hazards related to seiche and tsunami is nil.

5.3 SLOPE STABILITY

A cut slope is proposed at a maximum slope ratio of 1:1 (H:V) to a maximum height of approximately 45 feet within the northwesterly corner of the site. The cut slope is expected to expose granitic bedrock and is generally not anticipated to expose adversely-oriented geologic structure. Considering the typical strength values of in-place granitic bedrock and the anticipated favorable orientations of geologic structure in the bedrock, the proposed cut slope is anticipated to be grossly stable under static and pseudo-static conditions. However, during construction, local portions of the bedrock in the slope may become disturbed and may require stabilization by means of rock anchors or other acceptable alternatives as discussed in Section 6.1.15.

Fill slopes are proposed at a maximum gradient of 2 to 1 (H:V) and at a maximum height of 46 feet. Based on our experience with similar sites, proposed fill slopes are anticipated to be grossly stable under static and pseudo-static conditions. However, significant portions of site materials are relatively cohesionless. As such, fill slopes may be prone to erosion during periods of rain. This condition can be mitigated by the use of surface stabilizing methods. Specific recommendations are provided in Section 6.9.

5.4 SETTLEMENT

Based on the anticipated foundation loads and provided rough grading will be performed in accordance with the recommendations presented herein, differential settlement of proposed structures is not anticipated to exceed ½-inch over 30 feet. The estimated magnitude of differential settlement is considered within tolerable limits for the proposed structures.

5.5 GROUNDWATER

Adverse effects from groundwater or seepage are not anticipated at the subject site provided that future surface water is controlled to limit excessive subsurface infiltration from irrigation or concentrated runoff.

5.6 SHRINKAGE AND SUBSIDENCE

Volumetric changes in earth quantities will occur when excavated onsite soil materials are replaced as properly compacted fill. We estimate that the artificial fills, topsoil, and alluvium will shrink approximately 5% to 25%, whereas the granitic bedrock is estimated to bulk approximately 10% to 20%. Subsidence from scarification and recompaction of exposed surfaces is estimated to be negligible.

The estimates of shrinkage and subsidence are intended as an aid for project engineers in determining earthwork quantities. However, these estimates should be used with some caution since they are not absolute values and that these values can be significantly impacted by the grading contractors method of operations. Contingencies should be made for balancing earthwork quantities based on actual shrinkage and subsidence that occurs during the grading process.

5.7 EXCAVATION AND MATERIAL CHARACTERISTICS

The artificial fills, topsoil, alluvium are anticipated to be relatively easy to excavate with conventional heavy earthmoving equipment. However, the artificial fill materials contain a significant amount of boulder size rocks and construction debris. As such, rock trucks and excavators will likely be required to excavate these materials.

Based on the results of our rippability study, cuts that will encounter intact granitic bedrock materials should generally be rippable with heavy earth moving equipment to depths varying from 5 to 15 feet below the current ground surface. Excavations in the lower undisturbed portions of the granitic bedrock, however, will likely be more difficult to excavate and may require heavy ripping with a single-shank Caterpillar D-9 or D-10 dozer (or equivalent). Very hard core stones (boulder-like inclusions) are common in granitic bedrock and will likely be encountered locally. Heavy ripping with a D-11 dozer (or equivalent) and/or the use of high-impact pneumatic rock breaking equipment should be anticipated where hard core stones are encountered. Future trenching in the granitic bedrock materials for underground improvements may also require an excavator with a hydraulic ram (or equivalent). As an alternative, very hard bedrock materials could be blasted to facilitate excavation. Blasting options should be thoroughly assessed by a licensed blasting and demolition contractor.

Oversize rocks (>12") are currently present on the ground surface and excavations in the artificial fill materials and granitic bedrock are also expected to generate significant amount oversize rocks as well as some concrete debris. Special handling of oversize materials will be required during future site development. In general, materials between 12 inches and 36 inches in diameter should be reduced in size or placed within engineered fills at least 10 feet below proposed pad grades or at least 18 inches below deepest utilities within streets. Materials greater than 3 feet in diameter that cannot be reduced in size should be removed from the site.

6.0 RECOMMENDATIONS

6.1 EARTHWORK

6.1.1 General Earthwork and Grading Specifications

All earthwork and grading should be performed in accordance with all applicable requirements of CAL OSHA and the Grading Code of the City of Riverside, California, in addition to recommendations presented herein.

6.1.2 Pre-Grade Meeting and Geotechnical Observation

Prior to commencement of grading, we recommend a meeting be held between the owner, City Inspector, grading contractor, civil engineer, and geotechnical consultant to discuss proposed work and logistics. We also recommend that a geotechnical consultant be retained to provide soil engineering and engineering geologic services during site grading. This is to observe compliance with the design specifications or recommendations, and to allow design changes in the event that subsurface conditions differ from those anticipated prior to the start of construction. If conditions are encountered during construction that appears to be different than those indicated in this report, the project geotechnical consultant should be notified immediately. Design and construction revisions may be required.

6.1.3 Site Clearing

All vegetation and deleterious materials including the existing storm drain should be removed from the site. The project geotechnical consultant should be notified at the appropriate times to provide observation services during clearing operations to verify compliance with the above recommendations. Voids created by clearing should be left open for observation by the geotechnical consultant. Should any unusual soil conditions or subsurface structures be encountered during site clearing and/or grading that are not described or anticipated herein, these conditions should be brought to the immediate attention of the project geotechnical consultant for corrective recommendations.

6.1.4 Ground Preparation

All existing exploratory trench backfill, artificial fill, topsoil, and alluvium are considered unsuitable for support of proposed structural fills and site development. These materials should be removed through excavation or benching to expose competent granitic bedrock. *Where removals are limited due to property line constraints, temporary shoring, pre-designed slot cuts or other acceptable measures may be required.* Estimated depths of unsuitable materials, based on subsurface exploration and our review, are indicated on the Geologic Map, Plate 1.

All removal excavations should be evaluated by the geotechnical consultant during grading to confirm the exposed conditions are as anticipated and to provide supplemental recommendations if required.

6.1.5 Geometry of Bedrock/Fill Contact

To mitigate excessive differential settlement, the overall geometry of the bedrock/fill contact should be no steeper than 1.5 to 1 (H:V). Locally steeper gradients can be allowed provided the local over-steepened condition is no more than 15 feet vertically and the overall gradient of 1.5 to 1 is not exceeded. If steeper overall gradients are created, the area may require a waiting period to obtain a tolerable long-term differential settlement.

6.1.6 Building Pad Capping

Building pads exposing granitic bedrock cut and/or shallow fill conditions should be overexcavated to a depth of 5 feet below final pad grade or at least 3 feet below bottom of footing, whichever is deeper, and replaced with a fill blanket. The overexcavation should extend at least 5 feet beyond the

perimeter building footings and the overexcavation bottom should slope at a minimum 2% toward the deeper fill portion of the building pad or to the direction recommended by the geotechnical consultant. Typical lot capping details are provided on Plates E-1 and E-2 in Appendix E.

6.1.7 Street Capping

Granitic bedrock materials exposed within the streets could be very difficult to impossible to trench with conventional backhoe equipment for the installation of future underground improvements. Therefore, we recommend the cut and shallow fill portions of the future streets be overexcavated at least 18 inches below the invert of the deepest utility line where hard rock is encountered. The overexcavation should also consider future utility hook-ups to residences and any utilities behind curb. A typical street capping detail is provided on Plate E-3 in Appendix E.

6.1.8 Temporary Excavations

Temporary excavations in soil materials, including trench excavations and retaining wall backcuts, may be cut vertically up to a height of 4 feet provided that no adverse geologic conditions or surcharging of the excavations are present. Temporary excavations in soil materials that are greater than 4 feet but less than 15 feet in height should be laid back at a maximum gradient of 1:1 (H: V). If temporary excavations greater than 15 feet in depth are required in soil materials, the project geotechnical consultant should provide specific recommendations based on proposed work and site conditions.

Temporary excavations in bedrock materials may be cut vertically up to a height of 10 feet provided that no adverse geologic conditions or surcharging of the excavations are present. Temporary excavations in bedrock materials that are greater than 10 feet in height should be laid back at a maximum gradient of 1/2:1 (H:V). If cuts in bedrock create a rock fall hazard for workers, the excavation should be laid back as recommended by the project engineering geologist or soil engineer.

The project geologist or soil engineer should observe all temporary cuts to confirm that conditions are as anticipated herein and to provide specific recommendations in the event conditions differ. All temporary excavations should conform to the requirements of CAL OSHA.

6.1.9 Scarification

Prior to placement of compacted fill, the prepared ground should be scarified where practical to a depth of 6 inches, brought to a uniform moisture content of 100 to 125 percent of optimum, then compacted to at least 90 percent of the laboratory standard. If the ground surface exposes rock that has been disturbed and contains voids, a 6-inch layer of granular soil should be placed over the ground surface and flooded until the voids are filled.

6.1.10 Canyon Subdrains

Subdrains should be installed within all significant drainage courses following removals. The subdrains should consist of a 6-inch-diameter PVC schedule 40 perforated pipe or 8-inch-diameter PVC schedule 40 perforated pipe when over 500 feet in length. The pipe should be embedded in 9 cubic feet per linear foot of 3/4-inch gravel wrapped in Mirafi 140N, or equivalent. The subdrain, where possible, should be placed on the bottom of the cleanout area. Within the lower portions of

the drainage course, the subdrain may be placed on a bench in the sidewall of the canyon, above the cleanout bottom, to permit the subdrain to daylight. The subdrain should be set to drain generally at a minimum gradient of 1 percent. The outlets should consist of similar solid pipe and should daylight approximately 2 feet above the toe of slope or into a storm drain device. Tentative canyon subdrain locations are indicated on the enclosed Geologic Map, Plate 1. The actual locations of the canyons subdrains will be determined in the field by the geotechnical consultant during rough grading. A typical canyon subdrain detail is provided on Plate E-4 in Appendix E.

6.1.11 Fill Materials and Placement

In general, materials excavated from the site may be used as fill provided they are free of deleterious materials and rocks greater than 12 inches in maximum dimension. *Within the* upper *5 feet of building pads, the fill material should not contain rocks greater than 6 inches in maximum dimension.* Rock size criteria for fill materials to be placed within street undercut sections or within influence of future underground utilities should also be evaluated to avoid costly screening and/or importing of future trench backfill materials.

Fill materials should be placed in lifts no greater than approximately 8 inches in thickness. The fills should contain sufficient finer granular materials to eliminate nesting of rock fragments as recommended by the geotechnical consultant during grading. Each lift should be watered or air dried as necessary to achieve a uniform moisture content of 100 to 125 percent of optimum, and then compacted in place to at least 90 percent of the laboratory standard. *Where fills are placed below a depth of 50 feet from finish grade, fills should be compacted to at least 95 percent of the laboratory standard.* Each lift should be treated in a similar manner. Each lift should be treated in a similar manner. Subsequent lifts should not be placed until the project geotechnical consultant has approved the preceding lift. Lifts should be maintained relatively level and should not exceed a gradient of 20 to 1 (H:V). When placing fill on ground sloping steeper than 5:1 (H:V), vertical benches should be excavated into the adjacent slope. Typical benching details are provided on Plates E-5 and E-6, in Appendix E.

The laboratory standard for maximum dry density and optimum moisture content for each soil type should be determined in accordance with ASTM D 1557-02.

6.1.12 Over-sized Materials

Rocks over 12 inches in diameter should be reduced in size, where practical, and incorporated within the fill materials provided they are mixed with granular materials and spread throughout the fill to eliminate nesting. Rocks greater than 12 inches but less than 3 feet in diameter may be placed within engineered fills at least 10 feet below proposed grades as well as at least 18 inches below deepest utilities within streets, as presented on Plate E-7 in Appendix E. Rocks greater than 3 feet in diameter that cannot be reduced in size should be removed from the site.

6.1.13 Fill Slopes

Fill slopes (fill over natural slopes, fill over cut slopes) should be constructed with a keyway having a minimum width of 15 feet and a minimum embedment of 2 feet into competent bedrock. Details for fill slope construction are presented on Plate E-5 in Appendix E.

Where practical, fill slopes should be constructed by over filling and trimming to a compacted core. The face of slopes that are not over-built should be backrolled with a sheepsfoot roller at least every 4 vertical feet of slope construction. The process should provide compacted fill to within 12 inches of the slope face. Finished slopes should be track-walked with a small dozer in order to compact the slope face. The slope face materials will tend to dry out prior to final face compaction. As such, the addition of water to the slope face will likely be required prior to compaction to achieve the required degree of compaction at the time of slope face compaction.

6.1.14 Cut Slopes

Cut slopes should be cleared of loose rock fragments and inspected at intervals not exceeding 10 feet during grading by an engineering geologist, to evaluate the competency of the slope. Heavy ripping should be designed in a manner as to minimize disturbing the bedrock below proposed slope grades. Disturbed bedrock or core stones exposed in the cut slope that pose a rock fall hazard will require stabilization by means of rock anchors and /or flexible high tensile steel wire netting or other acceptable alternatives. Containment fencing and/or debris wall will also likely be required along the toe of the proposed cut slope to contain debris. Specific recommendations to mitigate slope instabilities and catchment structures should be provided by the geotechnical consultant based on conditions exposed during rough grading.

6.1.15 Stabilization Fills

Cut slopes exposing rock that pose a rock fall hazard and cannot be locally mitigated as discussed in Section 6.1.14 may require replacement with stabilization fill slopes. Cut slopes exposing bedrock will also be very difficult to landscape. If desired, such slopes could also be replaced with stabilization fills. General details for stabilization fill slope construction are presented on Plate E-6 in Appendix E. However, specific recommendations should be provided by the geotechnical consultant during grading depending on the actual conditions exposed.

6.1.16 Slope Backdrain

Slope backdrain is generally recommended in all fill key excavations and stabilization fill slopes. The locations and necessity of the slope backdrain should be determined by the project geotechnical consultant in the field during rough grading. General details for slope backdrain are presented on Plate E-8 in Appendix E.

6.1.17 Rock Fall Protection During Rough Grading

Rough grading along the hilltops may result in potential rock fall hazards. Special precautions such as fencing or other acceptable measures should be taken to mitigate rock falls during rough grading.

6.1.18 Import Material

If earth materials are imported to the site in order to balance the cut and fill rough grading operations or is needed to provide necessary soil for mixing with rock fragments, the proposed import soil should have an Expansion Index less than 20 (UBC Standard 18-2). Import sources should be indicated to the geotechnical consultant prior to hauling the materials to the site so that appropriate testing and evaluation of the fill material can be performed in advance.

6.1.19 Settlement Monitoring

The site may have fills that are greater than 50 feet in depth depending on actual removal depths. Fills over 50 feet in depth will generally require settlement monitoring. Specific recommendations for settlement monitoring should be provided by the geotechnical consultant during grading depending on the actual conditions exposed. A settlement monument detail is provided in Appendix E, Plate E-10.

In general, the monuments should be installed as soon as practically possible following completion of grading in this area. The monuments should be surveyed for elevation once each week for the first month then every other week for at least two additional months. The data should be provided to the soils engineer for review to confirm that actual post construction differential settlement is within tolerable limits of proposed structures. Once monitoring confirms post construction differential settlement is less than ½-inch in 20 feet, the lots may be released for building construction. The benchmark used for the survey should be coordinated with the soils engineer to confirm its suitability.

6.2 SEISMIC DESIGN PARAMETERS

For design of the project in accordance with the 2001 C.B.C., seismic design factors as defined by Chapter 16 are presented in Table 6.1.

TABLE 6.1
C.B.C. Seismic Design Parameters

Parameter	Value
Seismic Zone Factor, Z	0.4
Soil Profile Type, S	S_D
Fault Distance	5.3 km
Seismic Source Type	B
Near Source Factor, Na	1.0
Near Source Factor , Nv	1.1
Seismic Coefficient, Ca	0.44
Seismic Coefficient, Cv	0.68

6.3 PRELIMINARY CONVENTIONAL FOUNDATION RECOMMENDATIONS

6.3.1 General

The following recommendations are presented for preliminary design and estimating purposes. These recommendations have been based on typical site materials encountered and tested during this investigation as well as our experience with similar projects. Final recommendations should be

provided by the project geotechnical consultant following observation and testing of site materials during grading. Depending upon actual site conditions, the recommendations contained herein may require modification.

6.3.2 Soil Expansion

The recommendations presented herein for foundations and slabs on grade are based on soils with Very Low expansion potential. Following site grading, additional testing of site soils should be performed by the project geotechnical consultant to confirm the basis of these recommendations. If site soils with a higher expansion potential are encountered, the recommendations contained herein may require modification.

6.3.3 Settlement Considerations

Foundations should be designed to tolerate a maximum differential settlement of ½-inch over 30 feet.

6.3.4 Allowable Bearing Value

Provided site grading is performed as recommended herein, a bearing value of 2,000 pounds per square foot (psf) may be used for spread and continuous footings having a minimum width of 24 and 12 inches, respectively, and founded at a minimum depth of 12 inches below the lowest adjacent grade. The bearing value may be increased by 250 psf and 500 psf for each additional foot in width and depth, respectively, up to a maximum value of 4000 psf. Recommended allowable bearing values include both dead and live loads, and may be increased by one-third for wind and seismic forces.

6.3.5 Lateral Resistance

A passive earth pressure of 250 pounds per square foot per foot of depth up to a maximum value of 1500 pounds per square foot may be used to determine lateral bearing for footings. A coefficient of friction of 0.35 times the dead load forces may also be used between concrete and the supporting soils to determine lateral sliding resistance. An increase of one-third of the above values may also be used when designing for short duration wind and seismic forces.

The above values are based on footings placed directly against competent soils or compacted fill. In the case where footing sides are formed, all backfill against the footings should be compacted to at least 90 percent of the laboratory standard.

6.3.6 Footings Dimensions and Reinforcement

Exterior building footings may be founded at the minimum depths indicated in C.B.C. Table 18-I-D. Interior bearing wall footings for both one-story and two-story construction may be founded at a minimum depth of 12 inches below the lowest adjacent finish grade. Interior bearing wall footings for three-story construction may be founded at a minimum depth of 18 inches below the lowest adjacent finish grade. All continuous footings should be reinforced with a minimum of two No. 4 bars, one top and one bottom. The structural engineer may require different reinforcement and should dictate if greater than the recommendations presented herein.

6.3.7 Slabs on Grade

Interior concrete slabs constructed on grade should be a minimum of 4 inches thick. No minimum reinforcement is required from a geotechnical perspective for expansive soils. The project structural engineer should determine reinforcement of interior concrete slabs on grade.

Slabs that may be subjected to heavy point loads, such as storage rack systems or forklifts, may be designed using a modulus of subgrade reaction equal to 200 pci.

Concrete floor slabs in areas to receive carpet, tile, or other moisture sensitive coverings should be underlain with a moisture vapor barrier consisting of a poly-vinyl chloride membrane such as 10-mil Visqueen, or equal. The moisture vapor barrier should be lapped at least 12 inches at joints and protected with at least 2 inches of sand placed over the barrier. This vapor barrier system is anticipated to be suitable for most flooring finishes that can accommodate some vapor emissions. However, this system may emit more than 4 pounds of water per 1000 sq. ft. and therefore, may not be suitable for all flooring finishes. Additional steps should be taken if such vapor emission levels are too high for anticipated flooring finishes.

The structural engineer should provide recommendations appropriate for crack control of the slab including consideration of areas to receive ceramic tile or other rigid, crack-sensitive floor coverings.

Block-outs should be provided around interior columns to permit relative movement and mitigate distress to the floor slabs due to differential settlement that will occur between column footings and adjacent floor subgrade soils as loads are applied.

Prior to placing concrete, subgrade soils below slab-on-grade areas should be thoroughly moistened to provide a moisture content that is equal to or greater than 100% of the optimum moisture content.

Based on the very low expansion potential (expansion index less than 21), special design for expansive soils in accordance with Section 1815 of the 2001 CBC is not required.

6.3.8 Footing Observations

All footing trenches should be observed by the project geotechnical consultant to verify that they have been excavated into competent bearing soils and to the minimum embedment recommended herein. These observations should be performed prior to placement of forms or reinforcement. The excavations should be trimmed neat, level and square. All loose, sloughed or moisture softened materials and debris should be removed prior to placing concrete.

6.4 RETAINING WALLS

6.4.1 General

The following design and construction recommendations are provided for general masonry retaining walls. Retaining wall footing should be supported by engineered fill or competent older alluvium.

The structural engineer and architect should provide appropriate recommendations for sealing at all joints and waterproofing material on the back of the walls.

6.4.2 Bearing Capacity, Lateral Bearing, and Reinforcement

Retaining walls may utilize the bearing capacities and lateral resistance values provided for conventional foundations as discussed above. The passive pressure used for lateral bearing should be reduced by 50% for walls that have a descending slope below the face of wall.

All continuous footings should be reinforced with a minimum of two No. 4 bars, one top and one bottom.

6.4.3 Earth Pressures

Conventional retaining walls should be designed for the active earth pressures as indicated in the table below. These values are based on typical onsite materials on drained backfill conditions and do not consider hydrostatic pressures. Thee values in the following table should be increased by 50% for restrained wall conditions. All walls should be designed to support any adjacent structural surcharge loads imposed by other nearby walls or footings and traffic loads in addition to the earth pressures provided below.

TABLE 6.2
Active Earth Pressures

Backfill Condition	Wall Height up to 6 feet (pcf)
Level	35
2 to 1 slope	50

6.4.4 Drainage and Moisture-Proofing

Retaining walls should be constructed with a perforated pipe and gravel subdrain to prevent entrapment of water in the backfill. The perforated pipe should consist of 4-inch-diameter, ABS SDR-35 or PVC Schedule 40 with the perforations laid down. The pipe should be embedded in ¾- to 1½-inch open-graded gravel wrapped in filter fabric. The gravel should be at least one foot wide and extend at least one foot up the wall above the footing. Filter fabric should consist of Mirafi 140N, or equal. Non-perforated drain outlets should be provided at a minimum of every 100 lineal feet. Outlet pipes should be directed to positive drainage devices, such as graded swales, and/or area drains.

The use of weepholes may be considered in locations where aesthetic issues from potential nuisance water are not a concern. Weepholes should be 2 inches in diameter and provided at least every 6 feet on center. Where weepholes are used, perforated pipe may be omitted from the gravel subdrain.

Retaining walls supporting backfill should also be coated with a waterproofing compound or covered with such material to inhibit infiltration of moisture through the walls. The waterproofing

should cover all portions of the wall that may come in contact with soil and should overlap down over the top of footing. The top of footing should be finished smooth with a trowel to inhibit the infiltration of water into the footing and through the wall. The project structural engineer should provide specific recommendations for waterproofing, water stops, and joint details

6.4.5 Retaining Wall Backfill

Onsite soils may generally be used for backfill of retaining walls. The project geotechnical consultant should approve all backfill used for retaining walls. All wall backfill should be brought to a uniform moisture slightly over optimum, placed in lifts no greater than 12 inches in thickness, and then mechanically compacted with appropriate equipment to at least 90 percent of the laboratory standard. Flooding or jetting of backfill material is not recommended

6.5 SEGMENTAL RETAINING WALL

We understand that the retaining wall along the southwesterly portion of the site may be a segmental retaining wall and that the wall will be constructed during site grading operations. Prior to construction, this office can prepare plans and specifications for this wall. Engineering analyses addressing the internal and external stability of these walls would be provided under a separate submittal. If the segmental retaining wall plans are prepared by another consulting firm, they should be forwarded to this office for review.

6.6 SETBACK FROM SLOPES

The bottom outside edge of foundations for structures and walls, etc., adjacent a top of slope should be setback from the slope face a horizontal distance of one-third the slope height under consideration. The horizontal distance should not be less than 7 feet but need not exceed 40 feet.

Building adjacent the toe of a slope should be set back a horizontal distance equal to one-half the vertical height of the slope. The minimum and maximum clearances are 5 feet and 15 feet, respectively.

6.7 EXTERIOR FLATWORK

Exterior flatwork should be a nominal 4 inches thick. Cold joints or saw cuts should be provided at least every 10 feet in each direction. Special jointing detail should be provided in areas of block-outs, notches, or other irregularities to avoid cracking at points of high stress. Subgrade soils below flatwork should be thoroughly moistened to a moisture content of at least 100% of optimum. Moistening should be accomplished by lightly spraying the area over a period of a few days just prior to pouring concrete.

Drainage from flatwork areas should be directed to local area drains and/or other appropriate collection devices designed to carry runoff water to the street or other approved drainage structures. The concrete flatwork should also be sloped at a minimum gradient of 1% away from building foundations and masonry walls.

The geotechnical consultant should observe and verify the density and moisture content of subgrade soils prior to pouring concrete to ensure that the required compaction and pre-moistening recommendations have been met.

6.8 CORROSION POTENTIAL

Laboratory testing of near-surface soils for soluble sulfate content indicates soluble sulfate concentration less than 0.10%. Based on the laboratory test result, the procedures provided in C.B.C. Section 1904.3.1 and Table 19A-A-4, 2001 Edition, for concrete exposed to sulfate-containing solutions may be followed for **Negligible** sulfate exposure. Additional testing for soluble sulfate content will be required subsequent to rough grading and prior to construction of foundations and other concrete work to confirm these conditions.

Laboratory testing of site soils indicates a minimum resistivity of approximately 24700 ohm-cm and a soluble chloride content of 42 ppm. As such, site soils are moderately corrosive to ferrous metals. Structures fabricated from steel or other ferrous metals should have appropriate corrosion protection if they will be in contact with site soils. Under such conditions, a corrosion specialist should provide specific recommendations.

6.9 POST GRADING CONSIDERATIONS

6.9.1 Site Drainage

Positive drainage devices, such as sloping concrete flatwork, graded swales, and/or area drains, should be provided around the new construction to collect and direct all water to a suitable discharge area. No rain or excess water should be allowed to pond against building walls or foundations.

6.9.2 Utility Trenches

Trench excavations should be constructed in accordance with the recommendations contained in Section 6.1.5 of this report. All trench excavations should conform to the requirements of CAL OSHA.

All utility trench backfill should be compacted to at least 90 percent of the laboratory standard. Trench backfill should be brought to a uniform moisture content of 100 to 125 percent of optimum, placed in lifts no greater than 12 inches in thickness, and then mechanically compacted with appropriate equipment to at least 90 percent of the laboratory standard. The project geotechnical consultant should perform density testing, along with probing, to verify adequate compaction.

Within shallow trenches (less than 18 inches deep) where pipes may be damaged by heavy compaction equipment, imported clean sand having a Sand Equivalent (SE) of 30 or greater may be utilized. The sand should be placed in the trench, thoroughly watered, and then compacted with a vibratory compactor.

Where utility trenches are proposed parallel to any building footing (interior and/or exterior trenches), the bottom of the trench should not be located below a 1:1 (H:V) plane projecting downward from the outside edge of the adjacent footing base. For utility trenches located below a

1:1 (H:V) plane projecting downward from the outside edge of the adjacent footing base or crossing footing trenches, concrete or slurry should be used as trench backfill.

6.9.3 Irrigation Considerations

Excessive irrigation water can be detrimental to the performance of proposed site development. Water applied in excess of the needs of vegetation will tend to percolate into the ground. Such percolation can lead to nuisance seepage and shallow perched groundwater. Seepage can form on slope faces, on the faces of retaining walls, in streets, or other low-lying areas. These conditions could lead to adverse effects such as the formation of stagnant water that breeds insects, distress or damage of trees, surface erosion, slope instability, discoloration and salt buildup on wall faces, and premature failure of pavement. Excessive watering can also lead to elevated vapor emissions within homes that can damage flooring finishes or lead to mold growth inside the home.

Key factors that can help mitigate the potential for adverse effects of over watering include the judicious use of water for irrigation, use of irrigation systems that are appropriate for the type of vegetation and geometric configuration of the planted area, the use of soil amendments to enhance moisture retention, use of low-water demand vegetation, regular use of appropriate fertilizers, and seasonal adjustments of irrigation systems to match vegetation needs for water. A landscape architect or other knowledgeable professional should provide specific recommendations. Future homebuyers should be made aware of these issues and consequences.

6.10 SLOPE MAINTENANCE

The long-term performance and stability of slopes can be greatly affected by maintenance. Initially, slopes should be provided with erosion resistance in the form of an herbaceous plant material, jute matting, polymer coating, or other suitable method as recommended by the landscape architect. Slopes should also be planted with deep-rooting, drought-tolerant, woody vegetation material as recommended by the landscape architect. The initial protection should be maintained until the woody material has become fully mature. Areas of slopes where vegetation becomes particularly distressed or dies should be replaced promptly. Watering of slopes should make judicious use of water by providing only that amount required to support the vegetation and adjusting the watering seasonally. Over watering must be avoided. Excessive drying of the soils is also detrimental to long-term slope performance and stability. The moisture content of soils should be maintained at a relatively uniform level. Rodent activity should be monitored and kept to a minimum. Excessive rodent burrowing can be detrimental to long-term slope performance and stability and should be repaired promptly. Drainage devices, such as V-ditches and backdrain outlet pipes installed on the slope face, should be periodically inspected to confirm they are clear and functional. Any accumulated debris should be removed promptly.

6.11 PRELIMINARY PAVEMENT RECOMMENDATIONS

Based on the soil conditions present at the site and estimated traffic index, pavement sections are recommended in the table below. An "R-value" of 50 was used in this pavement design. The sections provided below are for planning purposes only and should be re-evaluated subsequent to

site grading. Final pavement sections should be based on actual R-value testing of in-place soils and analysis of anticipated traffic.

TABLE 6.3
Pavement Design

Location	Traffic Index	Asphalt Concrete (inches)	Aggregate Base (inches)
Drive Aisles	6.0	4	4
Car Parking Areas	-	3	4

Prior to placement of aggregate base, pavement subgrade should be scarified to a depth of 6 inches, brought to uniform moisture content slightly over optimum, then compacted to at least 90 percent of the laboratory standard. The laboratory standard should be ASTM D1557-02.

Aggregate base should be placed in lifts no greater than 6 inches in thickness, brought to a uniform moisture content slightly over optimum, then compacted to at least 95 percent of the laboratory standard. The laboratory standard should be ASTM D1557-02. Aggregate base materials should be either Crushed Aggregate Base or Crushed Miscellaneous Base conforming to Section 200-2 of the Standard Specification for Public Works Construction (Greenbook).

Paving asphalt should be either AR 4000 of viscosity grade or performance graded PG 64-10 conforming to the requirements of Section 203-1 of the Greenbook. Asphalt concrete materials should conform to Section 203-6 and construction should conform to Section 302 of the Greenbook.

6.12 PLAN REVIEW AND ADDITIONAL GEOTECHNICAL SERVICES

We recommend ***Albus-Keefe & Associates, Inc.*** be engaged to review any future development and foundation plans prior to construction. Design plans for the proposed percolation basins should also be forwarded to this office for review. This is to verify that the recommendations contained in this report have been properly interpreted and are incorporated into the project specifications. If we are not provided the opportunity to review these documents, we take no responsibility for misinterpretation of our recommendations.

We recommend that a geotechnical consultant be retained to provide soil engineering services during construction of the project. These services are to observe compliance with the design, specifications or recommendations, and to allow design changes in the event that subsurface conditions differ from those anticipated prior to the start of construction.

If the project plans change significantly, the project geotechnical consultant should review past design recommendations and their applicability to the revised construction. If conditions are encountered during construction that appears to be different than those indicated in final geotechnical report for the site, the project geotechnical consultant should be notified immediately. Design and construction revisions may be required.

7.0 LIMITATIONS

This report is based on the proposed development and geotechnical data as described herein. The materials encountered on the project site, described in other literature, and utilized in our laboratory testing for this investigation are believed representative of the total project area, and the conclusions and recommendations contained in this report are presented on that basis. However, soil and bedrock materials can vary in characteristics between points of exploration, both laterally and vertically, and those variations could affect the conclusions and recommendations contained herein. As such, observation and testing by a geotechnical consultant during the grading and construction phases of the project are essential to confirming the basis of this report.

This report has been prepared consistent with that level of care being provided by other professionals providing similar services at the same locale and time period. The contents of this report are professional opinions and as such, are not to be considered a guaranty or warranty.

This report should be reviewed and updated after a period of one year or if the site ownership or project concept changes from that described herein.

This report has been prepared for the exclusive use of **TCRSC Development LP** to assist the project consultants in the design of the proposed development. This report has not been prepared for use by parties or projects other than those named or described herein. This report may not contain sufficient information for other parties or other purposes.

This report is subject to review by the controlling governmental agency.

Respectfully submitted,

ALBUS-KEEFE & ASSOCIATES, INC

Michael Putt
Project Geologist
C.E.G. 2341

James J.M. Chang
Associate Engineer
G.E. 2180

REGISTERED PROFESSIONAL ENGINEER
JAMES J.M. CHANG
No. GE 2180
Exp. 03/31/08
GEOTECHNICAL
STATE OF CALIFORNIA

REFERENCES

Publications

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Riverside County Flood Control and Water Conservation District Contour Map, Section 33, T. 2S., R. 4W, SBB & M, Scale 1:2400.

Riverside County Flood Control and Water Conservation District Photo Map, Section 33, T. 2S., R. 4W, SBB & M, Scale 1:2400.

U.S.G.S. Topographic Map, 7.5 Minute Series, Riverside East Quadrangle, 1967, photorevised 1980.

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Reports

Albus-Keefe & Associates, Inc., 2007, Preliminary Geotechnical Investigation, Proposed Apartment Complex, Tract 34946 (Cityscape Terrace Project), City of Riverside, California, dated June 15, 2007 (J.N. 1566.00).

John R. Byerly, Inc., 1997, Geotechnical Investigation, Proposed Canyon Crest Courtyard, Box Springs Boulevard and Central Avenue, Riverside, California, dated November 10, 1997 (Rpt. No. 5065).

Hi Desert Testing & Inspection, 1997, Incomplete Grading, Canyon Crest Courtyard, APN 256-050-002 & APN 256-050-003, 20200 Central Avenue, Riverside, California, dated August 29, 1997 (P.N. 41032).

Plans

Alexan Cityscape, Preliminary Grading and Striping Plan, undated, prepared by Rick Engineering Company.

Aerial Photographs

Photo Source	Date Flown	Flight No.	Photo No.
Continental Aerial Photo, Inc.	2-23-99	C133-31	84, 85
Continental Aerial Photo, Inc.	10-16-97	C119-30	159, 160
Continental Aerial Photo, Inc.	7-11-95	C114-30	85, 86
Continental Aerial Photo, Inc.	5-19-93	C92-18	147, 148
Continental Aerial Photo, Inc.	6-12-90	C83-12	18, 19
Continental Aerial Photo, Inc.	2-11-88	C80-63	12, 13
Continental Aerial Photo, Inc.	1-9-87	F	192, 193
Continental Aerial Photo, Inc.	2-15-77	RIV-2	8, 9
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Continental Aerial Photo, Inc.	10-2-71	PCCF 43	13
Continental Aerial Photo, Inc.	9-30-69	35-1	2, 3
Continental Aerial Photo, Inc.	5-15-67	3HH	139, 140
Continental Aerial Photo, Inc.	10-15-59	16W	11, 12
Continental Aerial Photo, Inc.	5-6-49	5F	38, 39

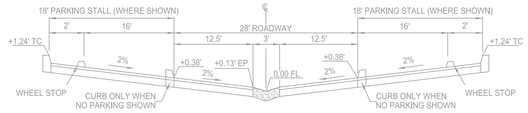
IN THE CITY OF RIVERSIDE

ALEXAN CITYSCAPE

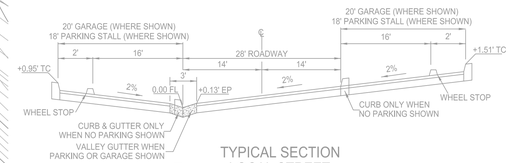
EXPLANATION

(LOCATIONS APPROXIMATE)

- **Qaf** - Artificial Fill
- **Qal** - Alluvium
- **Kgr** - Granitic Bedrock
- Geologic Contact
- T-11 - Exploratory Trench (AKA, This Report)
- T-7 - Exploratory Trench (Byerly, 1997)
- 75 - Joint Attitude
- 45-50 - Estimated Depth of Unsuitable Materials Below Existing Grade (in feet)
- S-5 - Seismic Line (AKA, This Report)
- 6 - Proposed Subdrain, indicating pipe size, ends & outlets



TYPICAL SECTION
LOCAL STREET
A
N.T.S.



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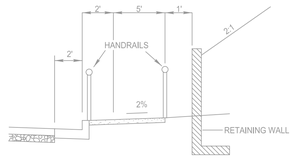
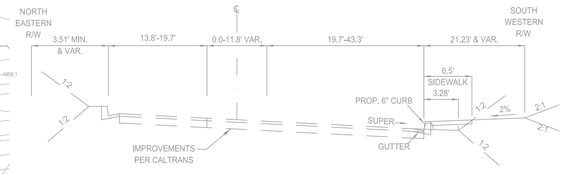
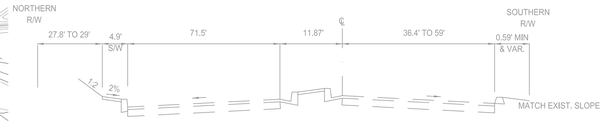
LOCAL STREET
B
N.T.S.



DETAIL A
D
N.T.S.



SYCAMORE CANYON BLVD.
(EXISTING)
NTS



CENTRAL AVE.
(EXISTING)
NTS

SCALE: 1" = 50'

50 0 50 100

OWNER/DEVELOPER

TCRSC DEVELOPMENT LIMITED PARTNERSHIP
949 SOUTH COAST DRIVE, SUITE 400
COSTA MESA, CA 92626
(714) 966-9355

ENGINEER/CONTACT PERSON

RICK ENGINEERING COMPANY
1223 UNIVERSITY AVENUE, SUITE 240
RIVERSIDE, CA 92507
HECTOR PANDURO
(951) 782-0707

BENCHMARK

U.S.C & G.S. BM Q 298. RIVERSIDE COUNTY B, 600-50-68
4.4 MILES NORTHWEST ALONG THE ATCHISON, TOPEKA AND SANTA FE RAIL FORM THE STATION AT MARCH FIELD, 6.5 POLES EAST-SOUTHEAST OF MILE POST 5, IN THE TOP OF THE EAST END OF THE NORTH CONCRETE HEADWALL OF CONCRETE BOX CULVERT 52, 7.5 FEET NORTH OF THE NORTH RAIL, AND ABOUT 0.5 FOOT LOWER THAN THE TRACK.

PRELIMINARY EARTHWORK

TOTAL FILL=25,000 CY

TOTAL CUT=45,000 CY

NET=20,000 CY (EXPORT)

NOTE: RAW UNADJUSTED QUANTITIES

LEGEND

X--35.6	DENOTES FINISHED SURFACE
	RETAINING WALL
	VALLEY GUTTER
	CDFG JURISDICTIONAL AREA
	3' MAX STEM WALL
	CURB
	CURB + GUTTER
	WALKWAY
PI	POINT OF VERTICAL INTERSECTION
FS	FINISHED SURFACE
VC	VERTICAL CURVE
TC	TOP OF CURB
FG	FINISHED GRADE
FF	FINISHED FLOOR
PE	PAD ELEVATION
PL	PROPERTY LINE
S/W	SIDEWALK
T	TRASH ENCLOSURES

ALBUS-KEEFE & ASSOCIATES, INC.
GEOTECHNICAL CONSULTANTS

GEOLOGIC MAP

Job No.: 1566.00 | Date: 12/11/07 | Plate: 1

DATE	BY	MARK	REVISIONS	APPR.	DATE

ENGINEER | CITY

DESIGNED BY: HP DRAWN BY: HP, FR CHECKED BY: EMR

RICK ENGINEERING COMPANY
1223 UNIVERSITY AVENUE - SUITE 240
RIVERSIDE, CA 92507
951.782.0707
FAX 951.782.0723
rickengineering.com
Riverside San Diego Orange Sacramento Phoenix Tucson

PREPARED UNDER THE DIRECTION OF:

EDWARD MICHEL RATICAN R.C.E. 46804
REGISTRATION EXPIRES 6-30-09

DATE: _____

CITY OF RIVERSIDE

ALEXAN CITYSCAPE
PRELIMINARY GRADING
&
STRIPING

SHEET C1

c. 2006, Rick Engineering Company

APPENDIX A

EXPLORATORY TRENCH LOGS

DESCRIPTIVE LOG OF TRENCH EXCAVATION

Trench Number	Depth (Feet)	U.S.C.S. Symbol	Field Description
T-1			ARTIFICIAL FILL (Qaf):
	0.0-1.0	SM	Silty SAND: Fine- to coarse-grained, brown to reddish-brown, dry, loose, desiccated.
			ALLUVIUM (Qal):
	1.0-14.0	SM	Silty SAND: Fine- to coarse-grained, brown to reddish-brown, dry to damp, loose to medium dense, porous, desiccated to 3 feet.
			BEDROCK (Kgr):
	14.0-16.0		Granitic Rock: Gray-brown, dry to damp, moderately hard, very coarse-grained, moderately weathered.
			Total Depth: 16.0 feet No Caving No Groundwater Backfill not compacted
T-2			ARTIFICIAL FILL (Qaf):
	0.0-13.0	SM	Silty SAND: Fine- to coarse-grained with gravel to boulder-size rocks to 5' in diameter, brown, damp, loose; large pocket of debris (tire fragments, wood, organic material, concrete, asphalt), concrete to 5' in diameter.
			ALLUVIUM (Qal):
	13.0-19.0	SM	Silty SAND: Fine- to coarse-grained, brown, damp to moist, loose, porous.
			BEDROCK (Kgr):
	19.0-21.0		Granitic Rock: Gray-brown, dry to damp, moderately hard, very coarse-grained.
			Total Depth: 21.0 feet Slight Caving of Fill No Groundwater Backfill not compacted

DESCRIPTIVE LOG OF TRENCH EXCAVATION

Trench Number	Depth (Feet)	U.S.C.S. Symbol	Field Description
T-3			ARTIFICIAL FILL (Qaf):
	0.0-20.0	SM	Silty SAND: Fine- to coarse-grained with gravel to boulder-size rocks to 3' in diameter, brown, dry, loose, minor debris. @ 5.0-20.0: portion of trench exposes slurry or concrete truck wash out materials. @ 12 feet: roll of chain-link fence.
			ALLUVIUM (Qal):
	20.0-24.0	SM	Silty SAND: Fine- to coarse-grained, brown, damp to moist, loose, porous.
			BEDROCK (Kgr):
	24.0-26.0		Granitic Rock: Gray-brown, dry to damp, moderately hard, very coarse-grained. Total Depth: 26.0 feet Moderate Caving of fill No Groundwater Backfill not compacted
T-4			BEDROCK (Kgr):
	0.0-4.0		Granitic Rock: Gray-brown, dry, moderately hard to hard, very coarse-grained. Total Depth: 4.0 feet No Caving No Groundwater Backfill not compacted

DESCRIPTIVE LOG OF TRENCH EXCAVATION

Trench Number	Depth (Feet)	U.S.C.S. Symbol	Field Description
T-5			ARTIFICIAL FILL (Qaf):
	0.0-33.0	SM	Silty SAND: Fine- to coarse-grained with gravel to boulder-size rocks up to 11' in diameter, brown, damp, loose; extensive debris including wood, tires, metal pipe, etc.
			Total Depth: 33.0 feet Slight Caving No Groundwater Backfill not compacted
T-6	0.0-10.0		BEDROCK (Kgr):
			Granitic Rock: Mottled black, white and gray, dry to damp, hard to very hard, very coarse-grained.
			@ 3.0 feet: Becomes locally very hard.
			@ 10 feet: Refusal.
			Total Depth: 10.0 feet No Caving No Groundwater Backfill not compacted

DESCRIPTIVE LOG OF TRENCH EXCAVATION

Trench Number	Depth (Feet)	U.S.C.S. Symbol	Field Description
T-7			ARTIFICIAL FILL (Qaf):
	0.0-21.0	SM	Silty SAND: Fine- to coarse-grained, reddish-brown, dry, medium dense. @ 5.0 feet: Becomes brown, damp, gravel to boulder-size rocks. @ 6.0 feet: Concrete and brick debris. @ 12 feet: Increase in boulders up to 5' in diameter, concrete debris continues. @ 15 feet: Misc. debris (plastic bottles, pipe, etc.).
			ALLUVIUM (Qal):
	21.0-28.0	SM	Silty SAND: Fine- to coarse-grained, reddish-brown, moist, medium dense.
			Total Depth: 28.0 feet Slight Caving of Fill No Groundwater Backfill not compacted
T-8			ARTIFICIAL FILL (Qaf):
	0.0-15.0	SM	Silty SAND: Fine- to coarse-grained with gravel and boulder-size rocks up to 2' in diameter, brown, dry, loose; minor debris.
			TOPSOIL (No Map Symbol):
	15.0-18.0	SM	Silty SAND: Fine- to coarse-grained, brown, damp to moist, loose, porous.
			BEDROCK (Kgr):
	18.0-19.0		Granitic Rock: Gray-brown, dry to damp, hard, very coarse-grained.
			Total Depth: 19.0 feet Slight Caving of fill No Groundwater Backfill not compacted

DESCRIPTIVE LOG OF TRENCH EXCAVATION

Trench Number	Depth (Feet)	U.S.C.S. Symbol	Field Description
T-9			ARTIFICIAL FILL (Qaf):
	0.0-18.0	SM	Silty SAND: Fine- to coarse-grained with gravel to boulder-size rocks, brown, damp, loose. @ 2.0 feet: Numerous boulders up to 5' in diameter. @ 10.0 feet: Slight decrease in boulder concentration. Total Depth: 18.0 feet Slight Caving No Groundwater Backfill not compacted
T-10			ARTIFICIAL FILL (Qaf):
	0.0-16.0	SM	Silty SAND: Fine- to coarse-grained with gravel to boulder-size rocks, brown, damp, loose, minor debris. @ 2 feet: 5' diameter boulder, caving around boulder. @ 5 feet: Scattered 3' diameter boulders, moderate caving, very loose down to 10 feet.
			TOPSOIL (No Map Symbol):
	16.0-20.0	SM	Silty SAND: Fine- to coarse-grained, reddish-brown, moist, loose to medium dense, slightly porous.
			BEDROCK (Kgr):
	20.0-21.0		Granitic Rock: Gray-brown, dry to damp, hard, very coarse-grained. Total Depth: 21.0 feet Slight to Moderate Caving of fill No Groundwater Backfill not compacted

DESCRIPTIVE LOG OF TRENCH EXCAVATION

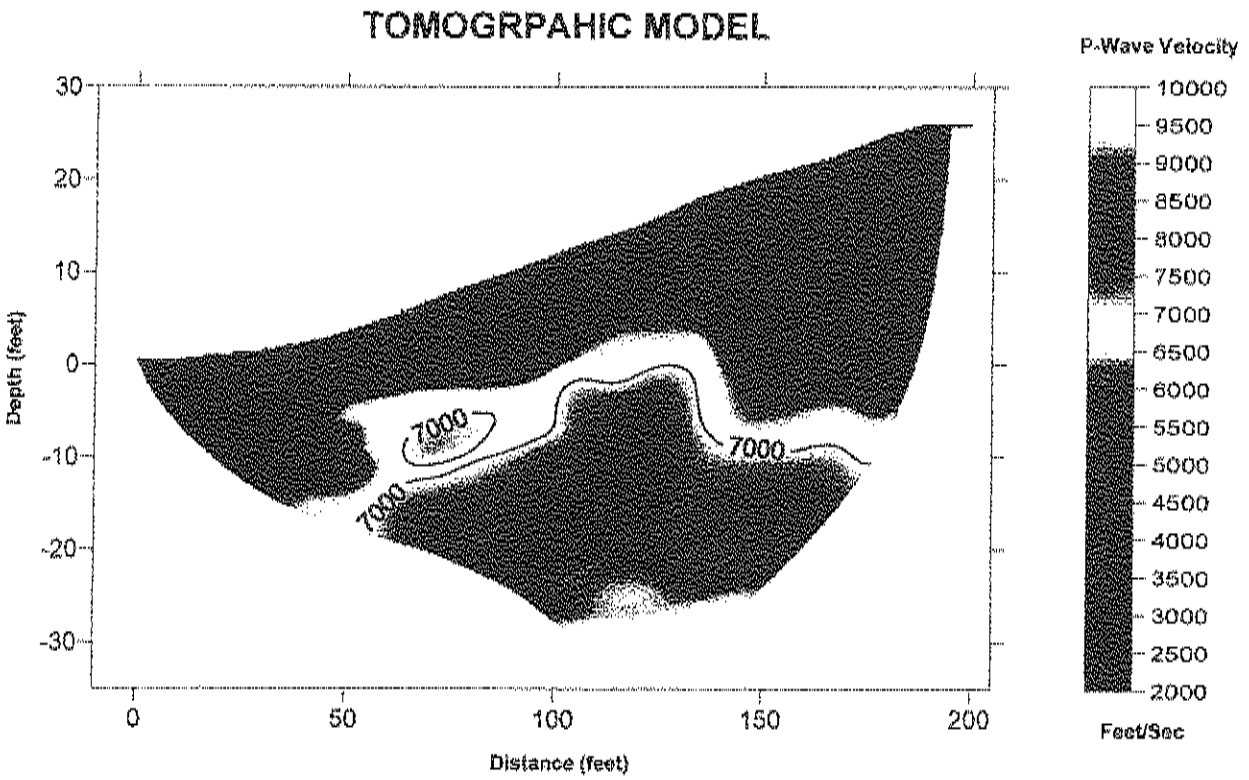
Trench Number	Depth (Feet)	U.S.C.S. Symbol	Field Description
T-11			ARTIFICIAL FILL (Qaf):
	0.0-20.0	SM	Silty SAND: Fine- to coarse-grained with gravel to boulder-size rocks, brown, damp, loose. @ 3.0 feet: Numerous boulders from 18"-24" in diameter. @ 5.0 feet: Becomes medium dense to dense. @ 13.0 feet: 3' to 5' diameter boulders, loose. Total Depth: 20.0 feet Slight Caving No Groundwater Backfill not compacted

APPENDIX B

SEISMIC REFRACTION SURVEY

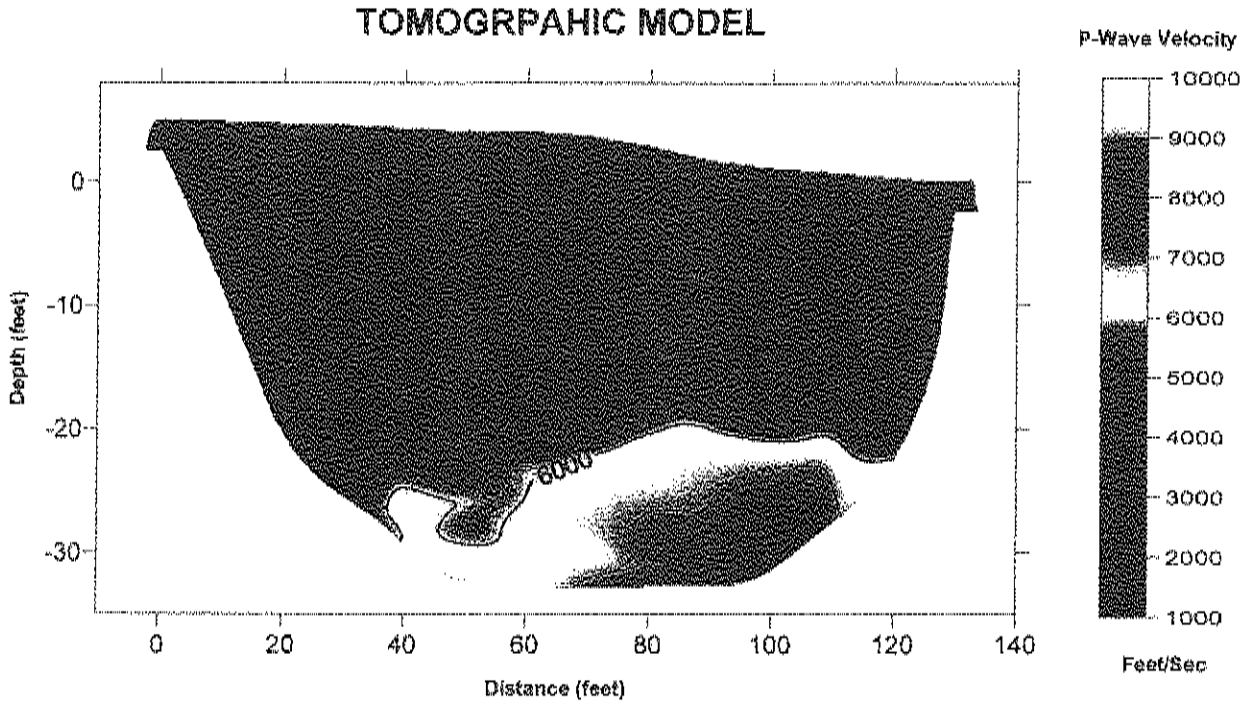
SEISMIC LINE S-1

South 55 East →



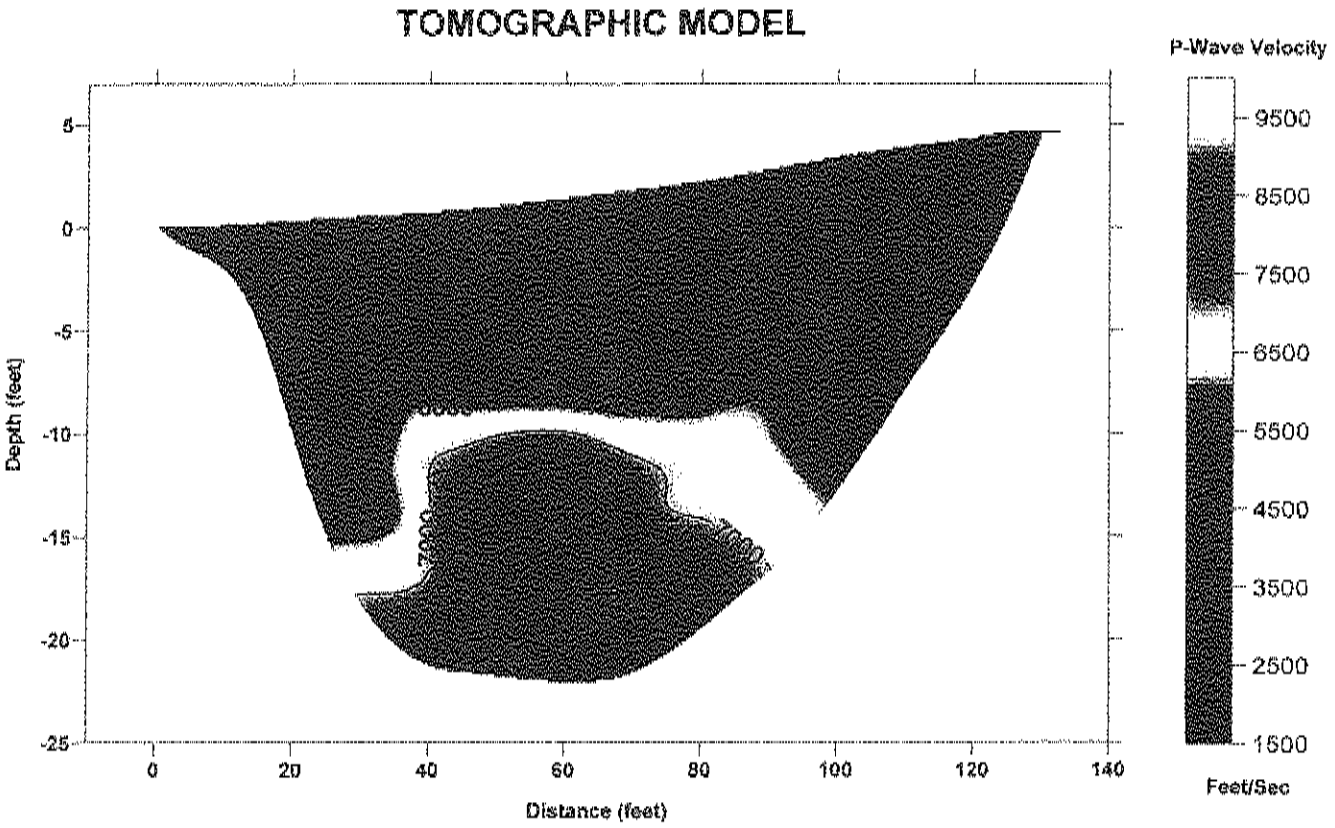
SEISMIC LINE S-2

South 15 East →



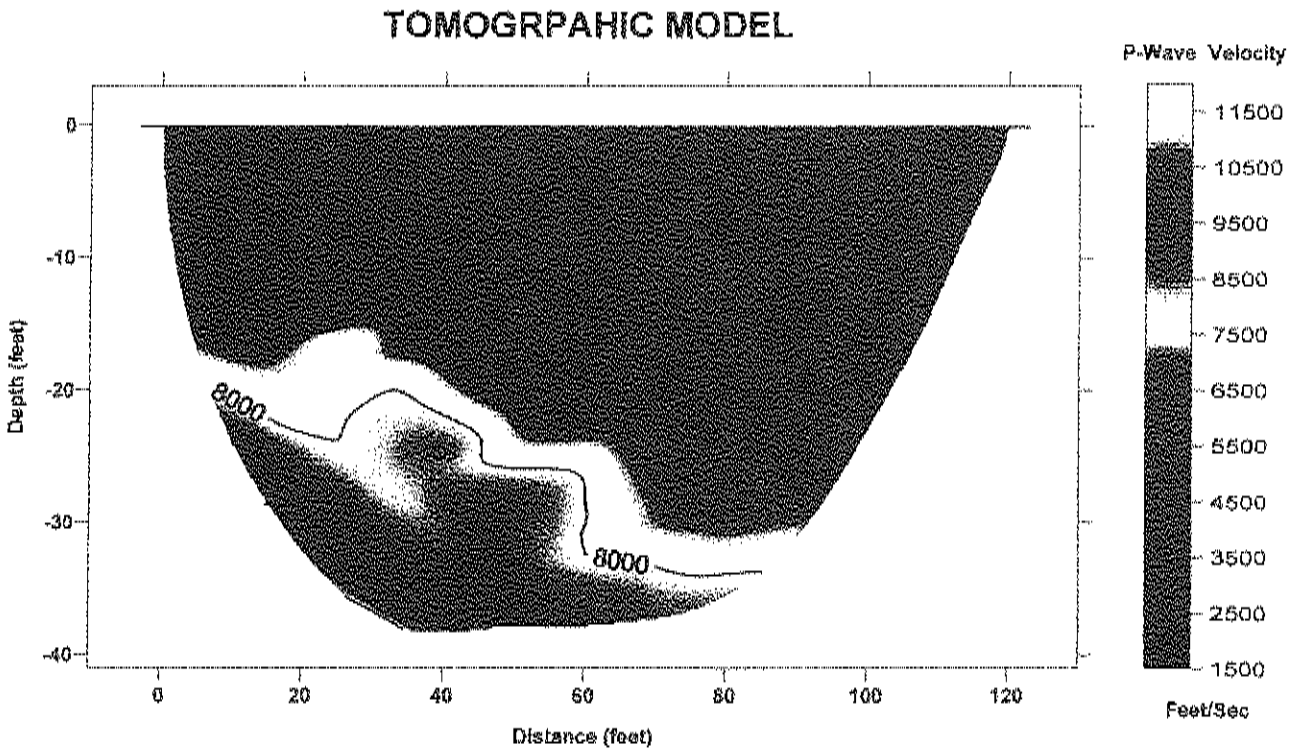
SEISMIC LINE S-3

North 30 East →



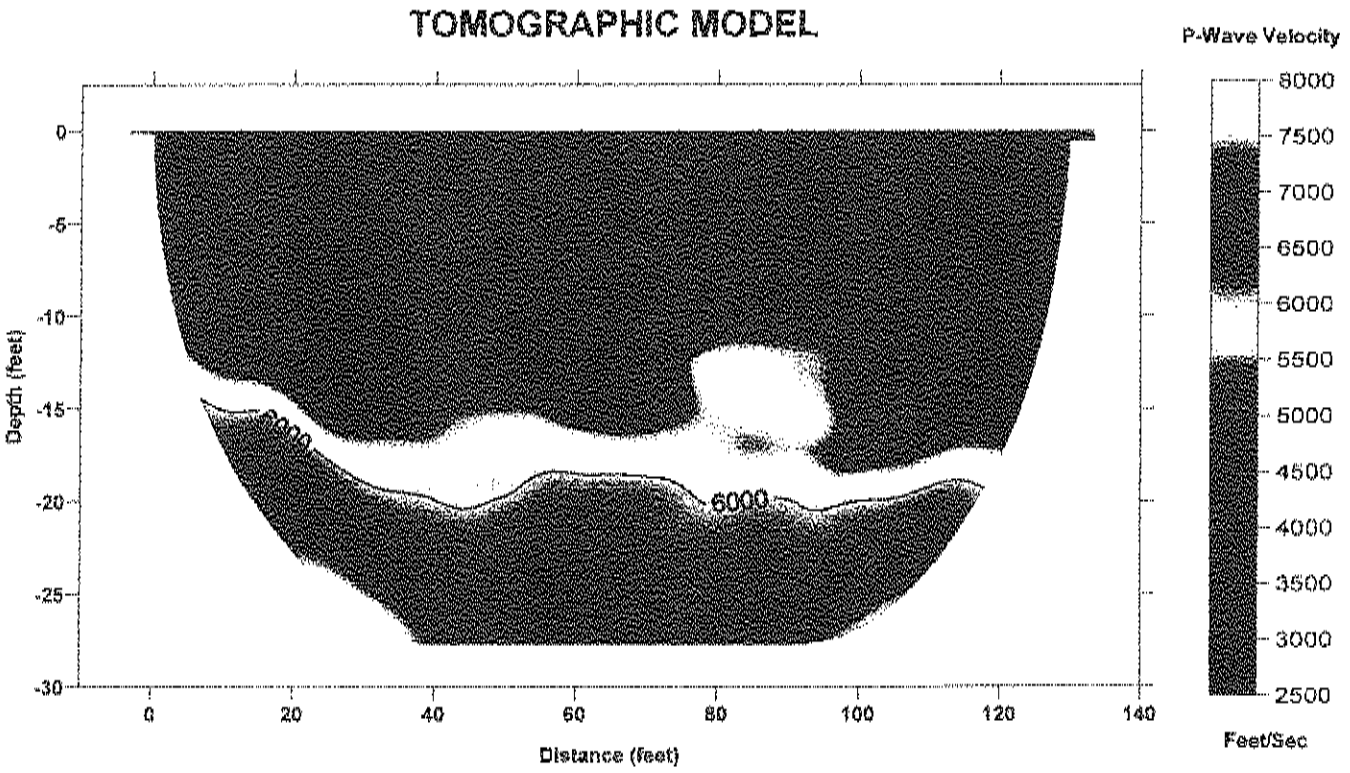
SEISMIC LINE S-4

North 35 East →



SEISMIC LINE S-5

North 55 East →



APPENDIX C

LABORATORY TEST PROGRAM

LABORATORY TESTING PROGRAM

Laboratory Maximum Dry Density

Maximum dry density and optimum moisture content were performed on a representative sample of the site materials obtained from the field. The test was performed in accordance with ASTM D 1557-02. Pertinent test values are given in Table C.

Direct Shear

The Coulomb shear strength parameters, angle of internal friction and cohesion, were determined for a bulk sample obtained from the subsurface exploration. The test was performed in general conformance with ASTM D 3080-80. The sample was remolded to 90 percent of maximum dry density and 2% over optimum. Three specimens were prepared for the test, artificially saturated, and then sheared under varied loads at an appropriate constant rate of strain. Results are graphically presented on Plate C-1.

Expansion Potential

An Expansion Index test was performed on a selected sample in accordance with Uniform Building Code Standard 18-2. The expansion potential classification was determined from C.B.C. Table 18-I-B on the basis of the expansion index value. The test result and expansion potential are presented on Table C.

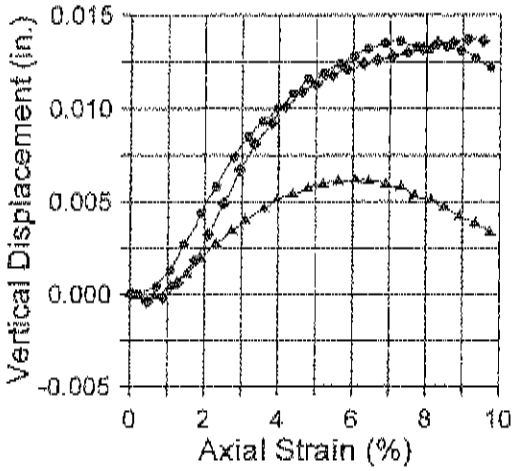
Corrosion Analysis

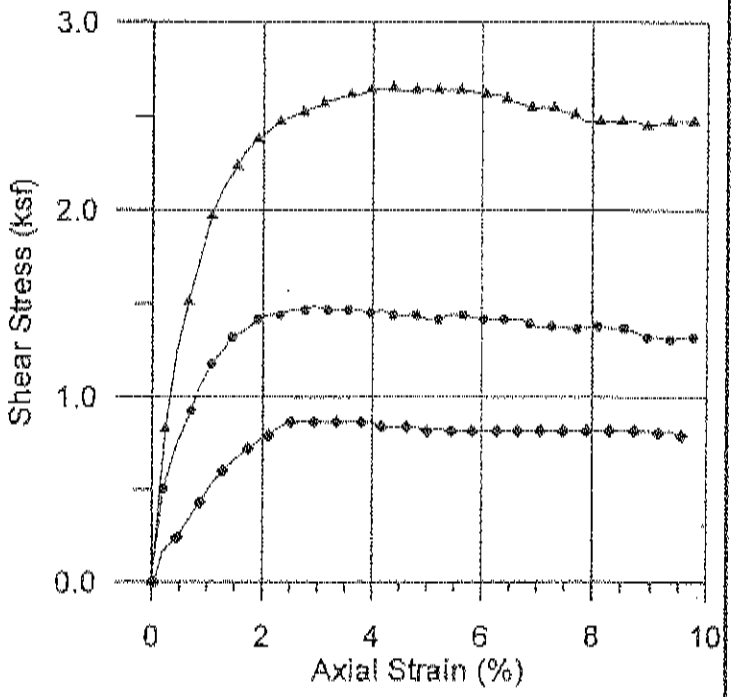
Corrosion analyses, which include soluble sulfate content, chloride content, minimum resistivity, and pH, were performed on a selected sample. The tests were performed in accordance with California Test Method (CTM) 417, CTM 422, CTM 643 and CTM 643, respectively. The test results are included in Table C.

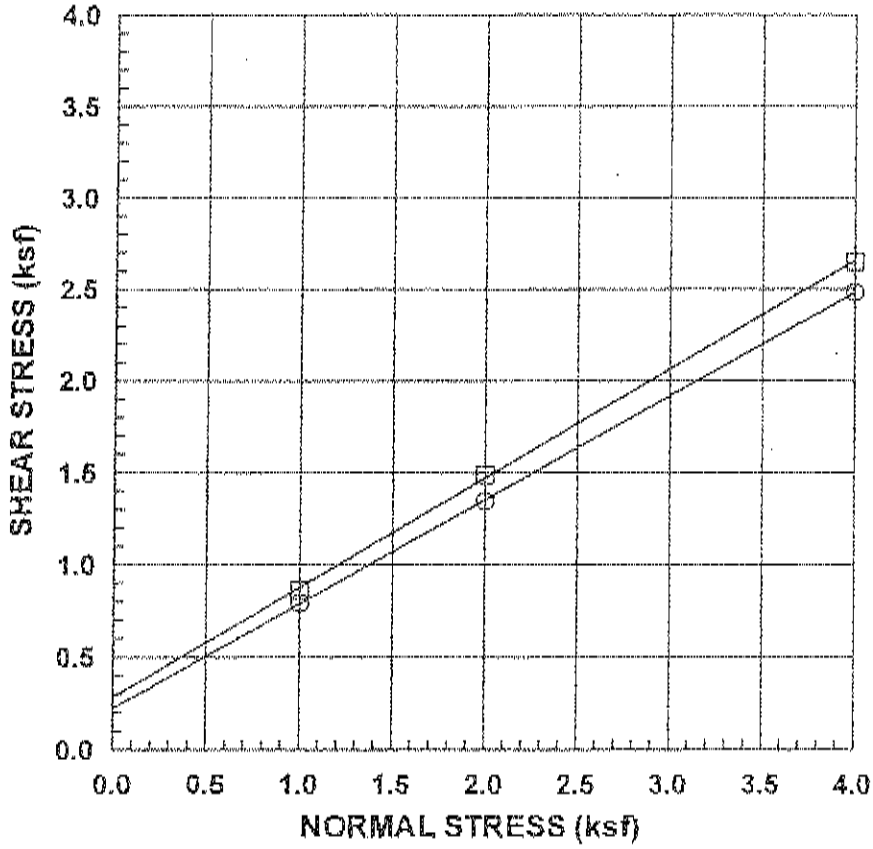
TABLE C
SUMMARY OF LABORATORY TEST RESULTS

Sample No.	Soil Description	Test Results	
S-2 @ 0-1'	Silty Sand (SM) with decomposed granite	Maximum Dry Density:	131.5 pcf
		Optimum Moisture Content:	7.0%
		Soluble Sulfate:	0.001%
		Expansion Index:	1
		Expansion Potential:	Very Low
		pH:	7.6
		Minimum Resistivity:	2400 ohm-cm
		Chloride Content:	42.5 ppm

Specimen No.	1	2	3
Normal Stress (ksf)	1	2	4
Peak Stress (ksf)	0.864	1.488	2.652
Peak Displacement (in)	0.0605	0.071	0.106
Ultimate Stress (ksf)	0.792	1.344	2.484
Ultimate Displacement (in)	0.242	0.246	0.247
Initial Dry Density	118.4	118.4	118.4
Initial Moisture Content (%)	7.479	7.479	7.479
Strain Rate (in/min)	0.040		







Strain Legend

- ◆ 1 Ksf
- ● 2 Ksf
- ▲ 4 Ksf

Strength Legend

- □ Peak
- ○ Ultimate

SAMPLE LOCATION	SAMPLE TYPE	SAMPLE DESCRIPTION
S-2 @ 0 - 1'	Remolded - Saturated	Silty Sand (SM)

ALBUS-KEEFE & ASSOCIATES, INC.
GEOTECHNICAL CONSULTANTS

DIRECT SHEAR

Job No: 1566.00

Plate No: C-1

APPENDIX D

EXPLORATORY TRENCH LOGS & LABORATORY TEST RESULTS BY JOHN R. BYERLY, INC.

PROJECT: Canyon Crest Courtyard
PROJECT LOCATION: Riverside, CA
ENCLOSURE NO.: 2
DATE OF TESTS: 8/30/97

FILE NUMBER: S-8913
TEST PIT NUMBER: 1
REPORT NO.: 6065

Blows Per Foot	Driving Energy k-ft/ft	Dry Density PCF	Moist. Content %	Rel. Comp. %	Feet	Visual Classification
					1	[SW] Gray-brown silty fine to coarse sand, dry and moderately dense. FILL
	---	113	4.2	87	2	Light brown silty fine to coarse sand with rock fragments, damp and medium dense. FILL
					3	
	---	110	5.6	84	4	
					5	- becoming loose at 5.0 feet
	---	108	6.5	83	6	
					7	
	---	105	6.3	81	8	Light brown silty fine to medium sand, porous, moist and loose. ORIGINAL GROUND
					9	
					10	[ ] Light gray weathered granitic bedrock, damp and dense Total Depth at 10.5 Feet - No Free Groundwater Encountered

PROJECT: Canyon Crest Courtyard
PROJECT LOCATION: Riverside, CA
ENCLOSURE NO.: 2
DATE OF TESTS: 8/30/97

FILE NUMBER: S-8913
TEST PIT NUMBER: 2
REPORT NO.: 5065

Blows Per Foot	Driving Energy k-ft/ft	Dry Density PCF	Moist. Content %	Rel. Comp. %	Feet	Visual Classification
					1	(SM) Gray-brown silty fine to coarse sand with rock fragments, damp and moderately dense. FILL
	---	117	4.8	90	2	
					3	- becoming loose at 3.0 feet
	---	108	7.1	83	4	
					5	
	---	104	7.6	80	6	
	---	104	6.4	80	7	
					8	
					9	Light brown silty fine to medium sand with organic debris, moist and loose. FILL
					10	
					11	Light brown silty fine to medium sand, porous, moist and loose. ORIGINAL GROUND
					12	
					13	[ ] Light gray-brown weathered granitic bedrock, damp and dense Total Depth at 13.5 Feet - No Free Groundwater Encountered

PROJECT: Canyon Crest Courtyard
PROJECT LOCATION: Riverside, CA
ENCLOSURE NO.: 2
DATE OF TESTS: 8/30/97

FILE NUMBER: S-8913
TEST PIT NUMBER: 3
REPORT NO.: 5065

Blows Per Foot	Driving Energy ft-lb/ft	Dry Density PCF	Moist. Content %	Rel. Comp. %	Feet	Visual Classification
					1	[SM] Mottled gray and light brown silty fine to coarse sand with boulders up to 30 inches in diameter, and fragments of wire, brick, asphalt concrete, pipe, and concrete, damp and dense. FILL
	---	124	5.0	92	2	
					3	
					4	
					5	- less debris and very dense below 5.0 feet
					6	
	---	129	7.6	96	7	- large concrete fragments with voids below 6.5 feet
					8	- large concrete slab and footing at 8.5 feet
					9	
					10	
					11	
					12	
					13	
					14	
					15	Light red-brown silty fine to coarse sand, very porous, moist and loose. ORIGINAL GROUND
					16	[ ] Light gray weathered granitic bedrock, damp & medium dense Total Depth at 16.0 Feet - No Free Groundwater Encountered

PROJECT: Canyon Crest Courtyard
PROJECT LOCATION: Riverside, CA
ENCLOSURE NO.: 2
DATE OF TESTS: 8/30/97

FILE NUMBER: S-8913
TEST PIT NUMBER: 4
REPORT NO.: 5065

Blows Per Foot	Driving Energy k-ft/ft	Dry Density PCF	Moist. Content %	Rel. Comp. %	Feet	Visual Classification
					1	[SM] Light brown silty fine to coarse sand with rock fragments, damp and dense. FILL
	---	127	4.4	95	2	
					3	
	---	131	6.6	98	4	Gray-brown silty fine to coarse sand with rock fragments and tire debris, damp and very dense. FILL
					5	
	---	132	6.0	99	6	- becoming medium dense at 6.0 feet
					7	
					8	- boulders up to 4 inches in diameter at 8.0 feet
					9	
					10	
					11	
					12	
					13	Light brown silty fine to coarse sand, very porous, moist and loose. ORIGINAL GROUND
					14	
					15	
					16	[ ] Light red-yellow weathered granitic bedrock, damp and dense Total Depth at 16.5 Feet No Free Groundwater Encountered

PROJECT: Canyon Crest Courtyard
PROJECT LOCATION: Riverside, CA
ENCLOSURE NO.: 2
DATE OF TESTS: 8/30/97

FILE NUMBER: S-8913
TEST PIT NUMBER: 5
REPORT NO.: 5065

Blows Per Foot	Driving Energy k-ft/ft	Dry Density PCF	Moist. Content %	Rel. Comp. %	Feet	Visual Classification
					1	(SP) Light gray-white gravelly fine to coarse sand with concrete debris up to 4.0 feet in diameter, dry and loose. FILL
					2	
---		86	6.4	71	3	(SM) Gray-brown silty fine to coarse sand with gravel and concrete debris, damp and loose. FILL
					4	
					5	- becoming moist at 5.5 feet
---		113	11.0	84	6	Dark brown silty fine to medium sand with a trace of clay, porous, moist and loose. ORIGINAL GROUND
					7	
---		110	9.0	82	8	
					9	
					10	- very porous at 10.0 feet
					11	
					12	
					13	Light brown-gray silty fine to coarse sand with a trace of caliche, porous, slightly cemented, damp and medium dense
					14	
					15	Gray-brown weathered granitic bedrock, moist and very dense
					16	Refusal on very dense bedrock at 16.0 feet No Free Groundwater Encountered

PROJECT: Canyon Crest Courtyard
PROJECT LOCATION: Riverside, CA
ENCLOSURE NO.: 2
DATE OF TESTS: 8/30/97

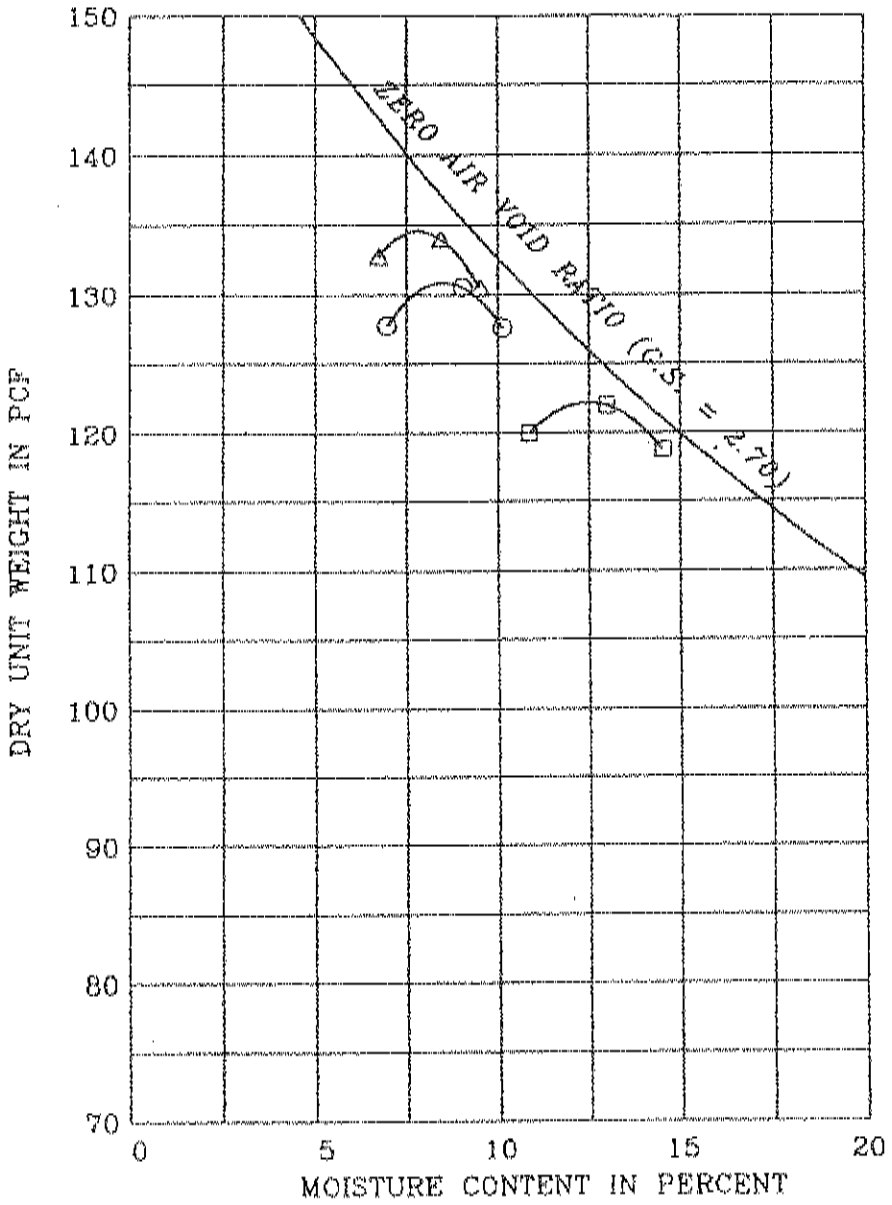
FILE NUMBER: S-8913
TEST PIT NUMBER: 6
REPORT NO.: 5065

Blows Per Foot	Driving Energy k-ft/ft	Dry Density PCF	Moist. Content %	Rel. Comp. %	Feet	Visual Classification
					1	(SM) Gray mottled-light brown silty fine to coarse sand with voids and gravel, cobbles, and boulders (up to 5.0 feet in diameter), dry and loose. FILL
					2	
					3	
					4	
					5	
					6	
					7	
					8	Refusal on large nested boulders at 8.0 feet No Free Groundwater Encountered

PROJECT: Canyon Crest Courtyard
PROJECT LOCATION: Riverside, CA
ENCLOSURE NO.: 2
DATE OF TESTS: 8/30/97

FILE NUMBER: S-8813
TEST PIT NUMBER: 7
REPORT NO.: 5065

Blows Per Foot	Driving Energy ft-lb/ft	Dry Density PCF	Moist. Content %	Rel. Comp. %	Feet	Visual Classification
					1	[SM] Light gray silty fine to coarse sand with rock fragments, dry and moderately dense. FILL
	---	120	3.8	98	2	
					3	
	---	119	4.7	98	4	
					5	
					6	
					7	
					8	[ ] Light gray weathered granitic bedrock, damp and dense. ORIGINAL GROUND Total Depth at 8.0 Feet - No Free Groundwater Encountered



SYMBOL	SAMPLE LOCATION	DEPTH (ft)	DESCRIPTION	TEST METHOD	OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)
○	Test Pit 1	3.0	Brn si f-c sand w/gvl SM	ASTM D 1557	8.4	130.8
□	Test Pit 5	3.0	Gray si f-c sand w/gvl SM	ASTM D 1557	12.6	122.2
△	Test Pit 5	5.5	Brn si f-c sand w/gvl SM	ASTM D 1557	7.9	134.6

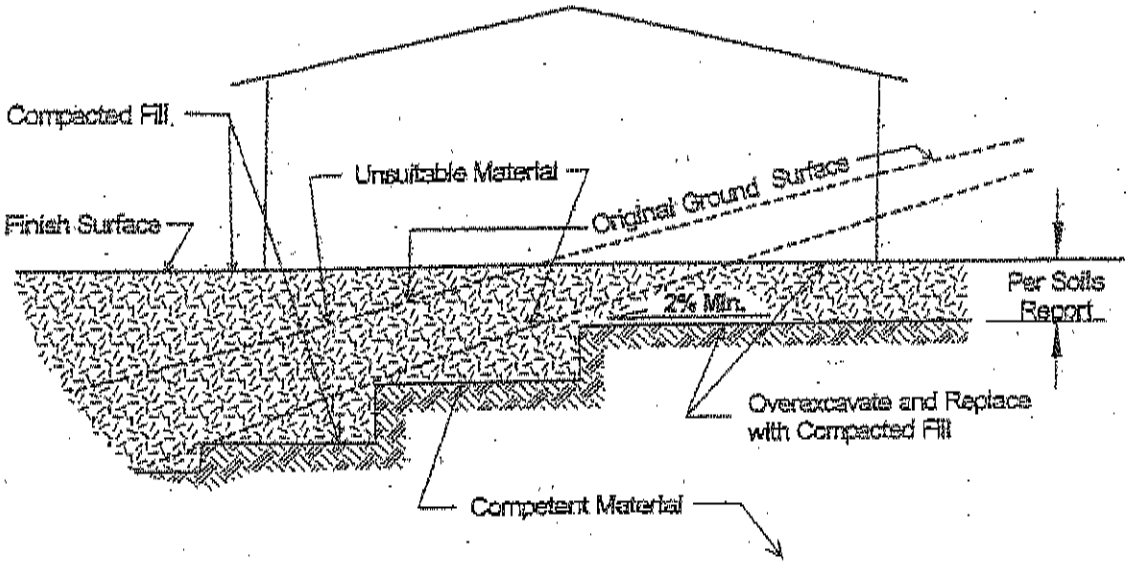
Remark :

File No.: S-8913	Canyon Crest Courtyard, Riverside, CA
John R. Byerly INCORPORATED	COMPACTION TEST — Enclosure 3, Rpt. No.: 5065

APPENDIX E

STANDARD GRADING DETAILS

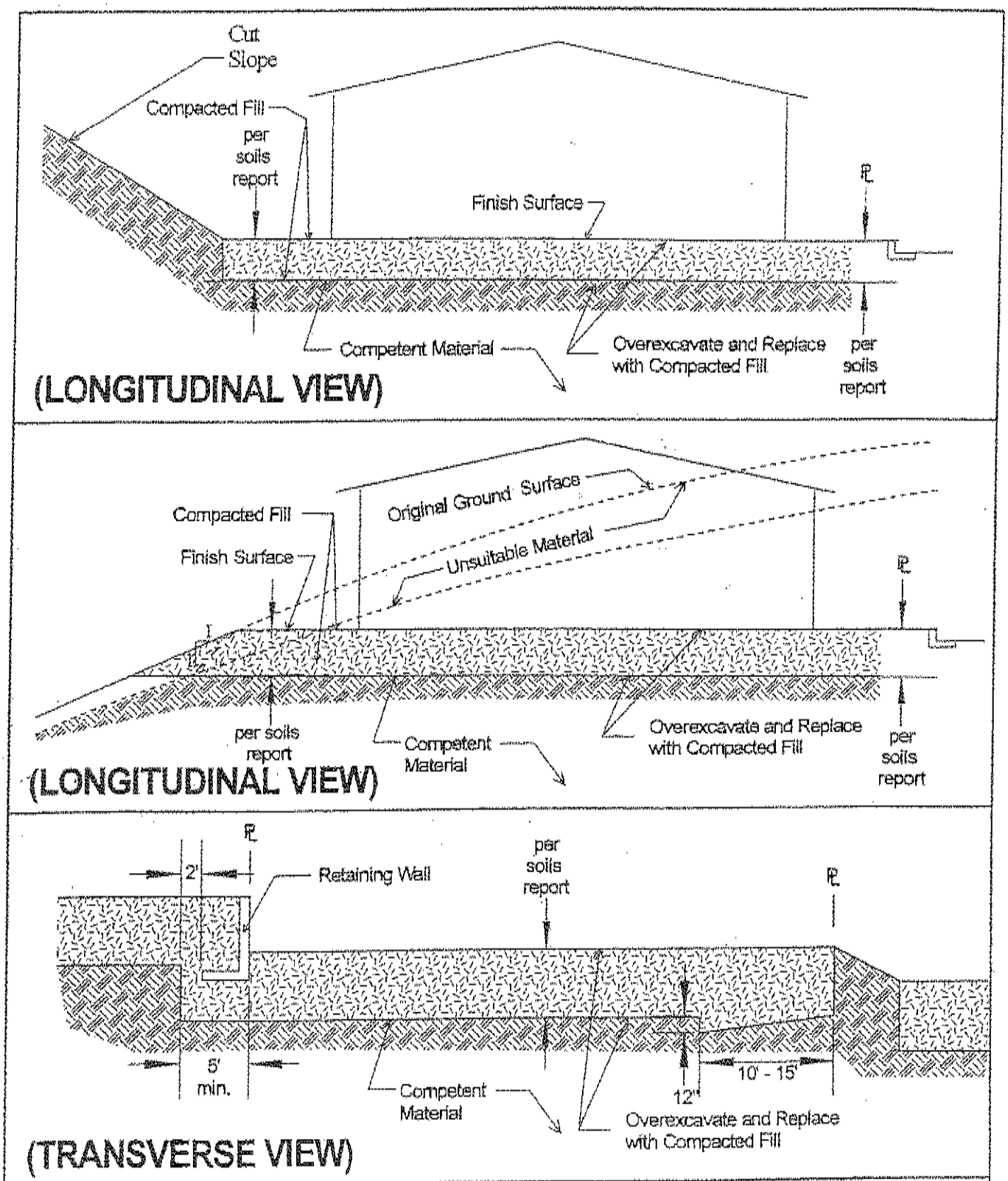
CUT/FILL TRANSITION LOT



TRANSITION LOT CAPPING

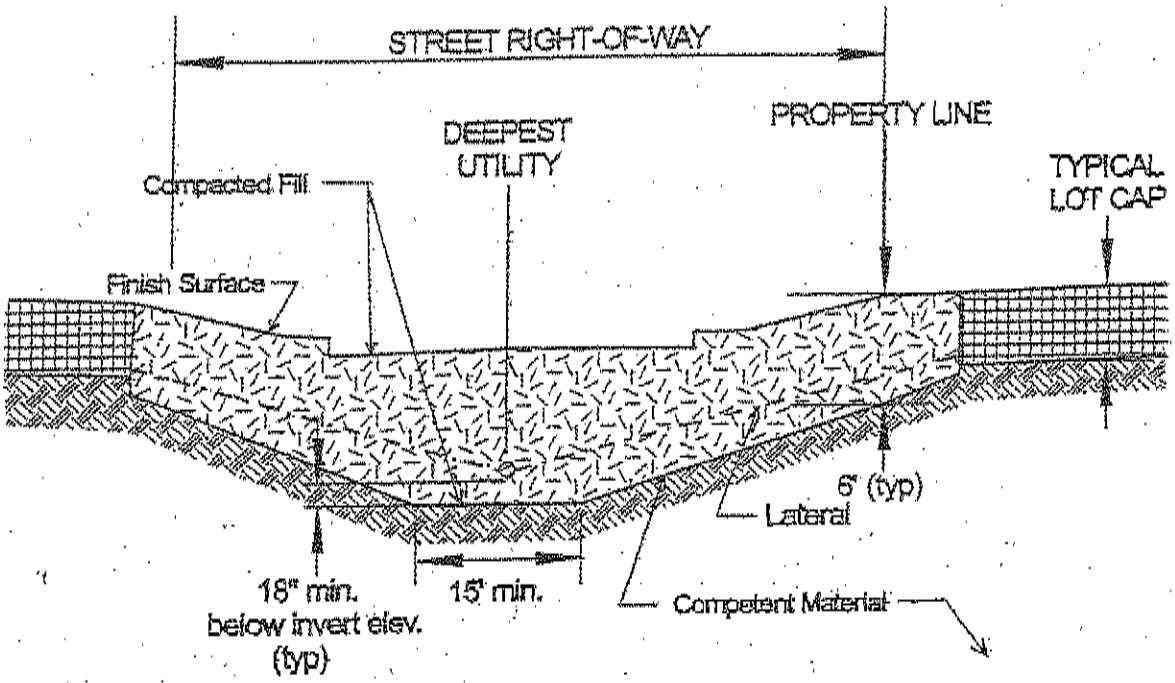
Not To Scale
See attached soils report for specific recommendations.

Detail No. 14



CUT LOT CAPPING

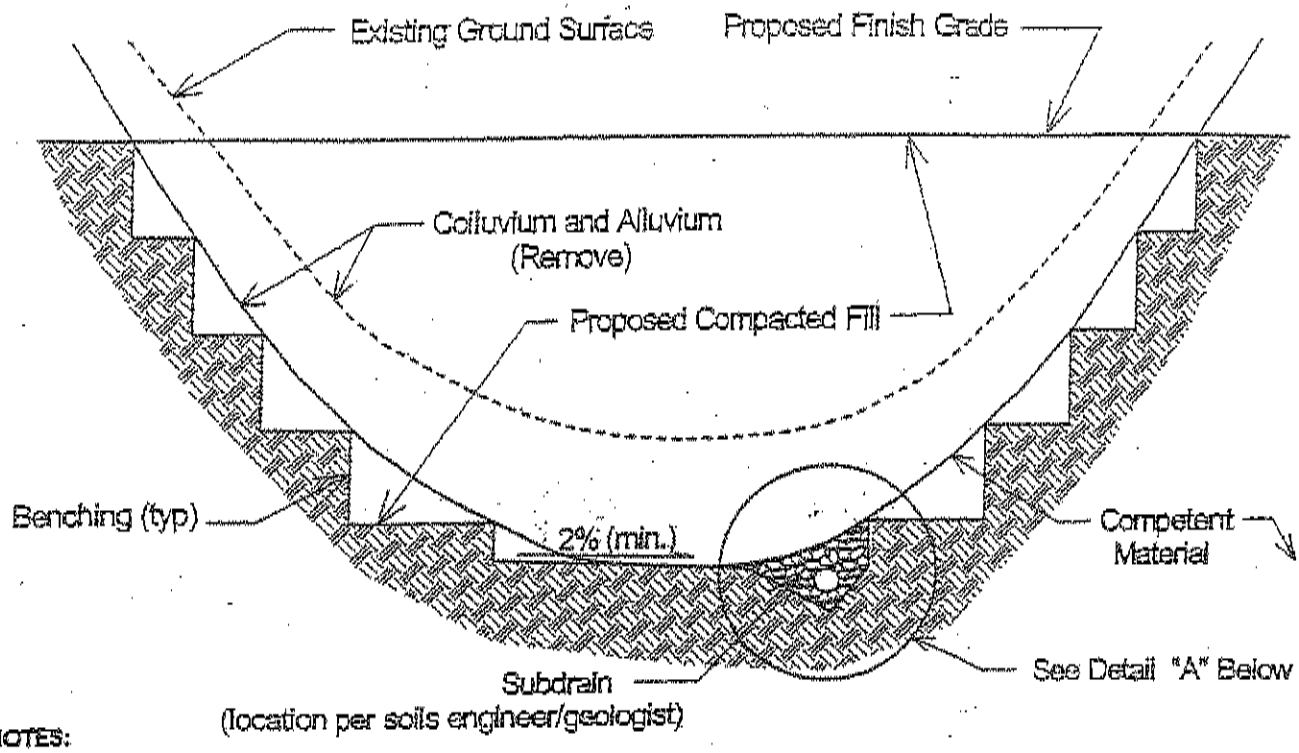
Not To Scale
See attached soils report for specific recommendations.



STREET CAPPING

Not To Scale
See attached soils report for specific recommendations.

Detail No. 17le



NOTES:

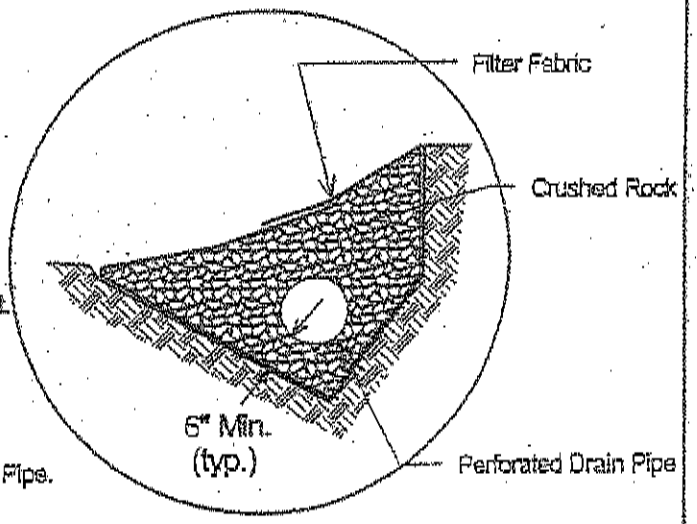
Perforated Drain Pipe should be at least 6 inches in diameter, or 8 inches for runs of more than 500 feet, consisting of either Shedule 40 PVC or SDR 35.
A min. of 8 perforations per linear foot should be provided along the bottom of pipe. The perforations should be in two rows 120 degrees apart, and have diameters of 3/8".
Upstream ends should be provided with a cap. The pipe should slope at a min. 1% gradient toward Outlet Pipes.
Glue all joints.

Outlet Pipe should equal the diameter of the perforated pipe, consisting of either shedule 40 PVC or SDR 35. The pipe should slope at a min. 1% gradient toward the Discharge Point.
Backfill around Outlet Pipe should consist of onsite soils.
Glue all joints.

Crushed Rock should conform to the Standard Specifications for Public Works Construction, Section 200-1.2, for 3/4".
Provide at least 9 cubic feet per lineal foot of Perforated Drain Pipe.
Provide at least 6 inches of gravel below Perforated Pipe.

Filter Fabric should consist of Mirifi 140N or equivelent.
Ends should overlap at least 12 inches.

CALTRANS Class II Permeable Filter Material can be used in lieu of Crushed Rock encased in Filter Fabric

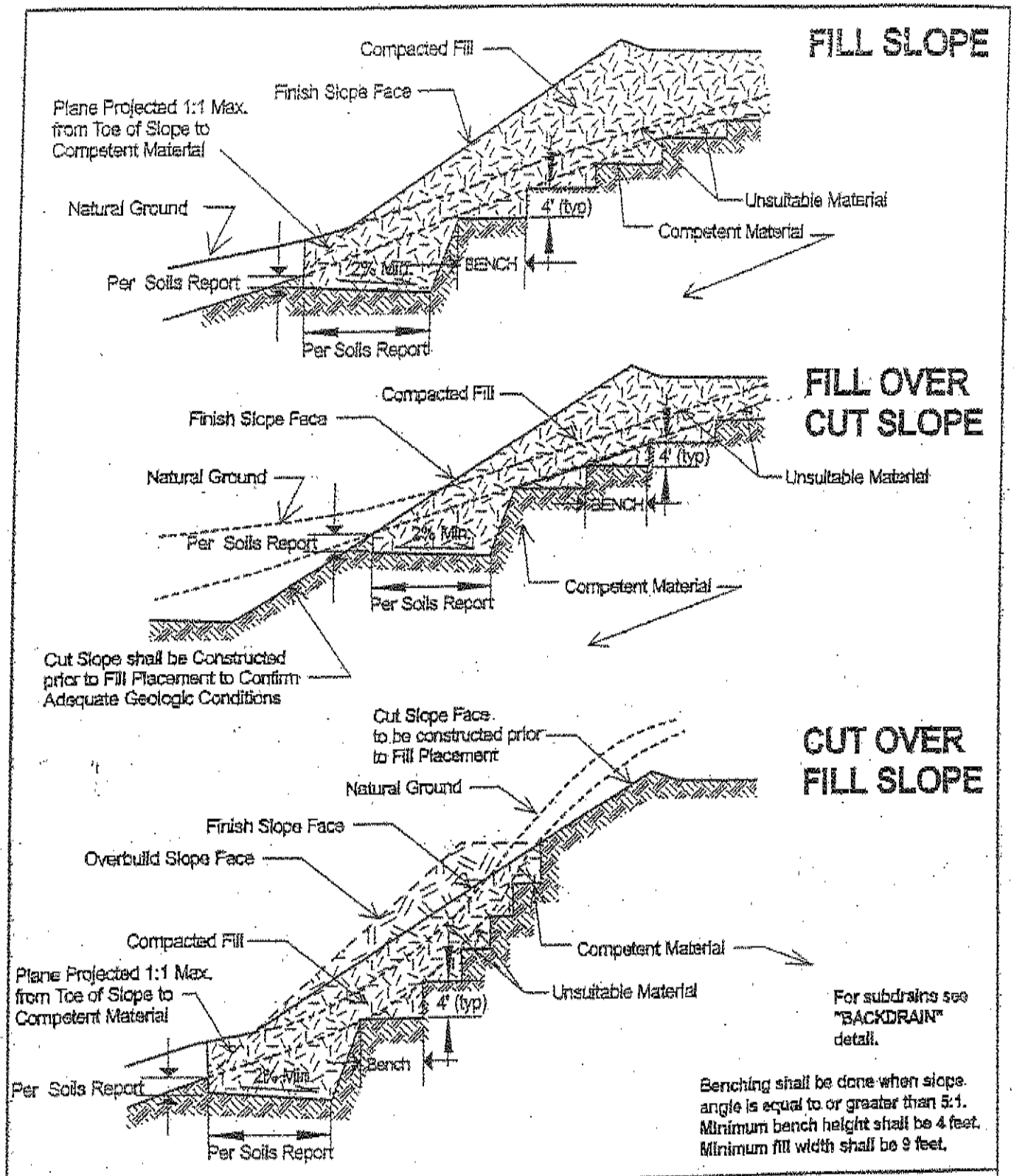


DETAIL "A"

CANYON SUBDRAIN

Not To Scale
See attached soils report for specific recommendations.

Detail No. 7b

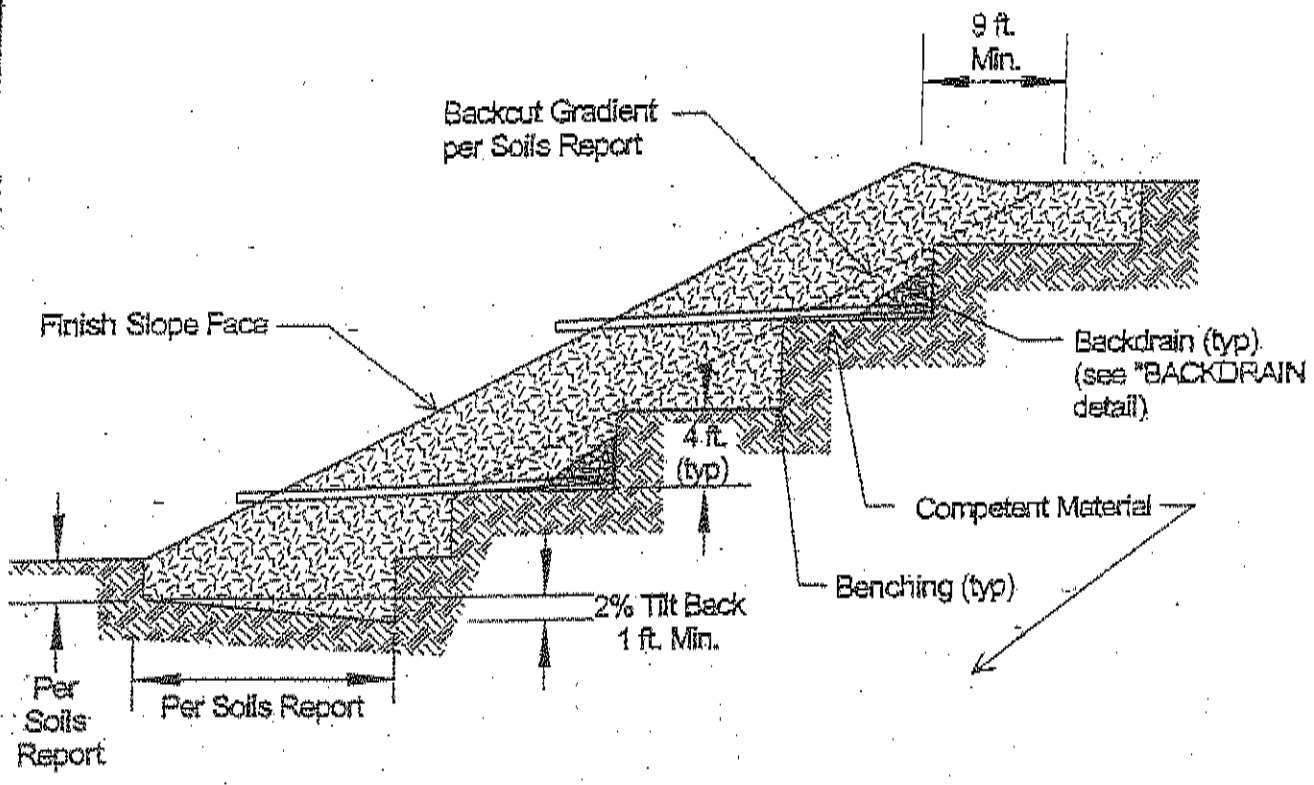


FILL SLOPE CONSTRUCTION

Not To Scale

See attached soils report for specific recommendations.

Detail No. 1



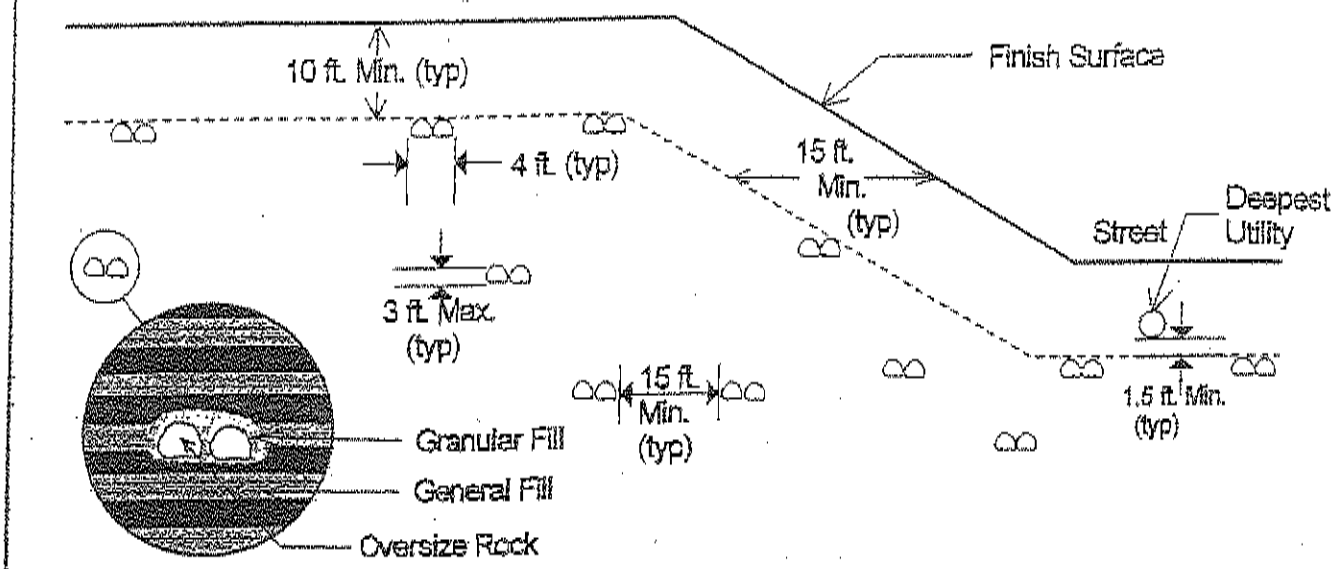
STABILIZATION FILL

Not To Scale
See attached soils report for specific recommendations.

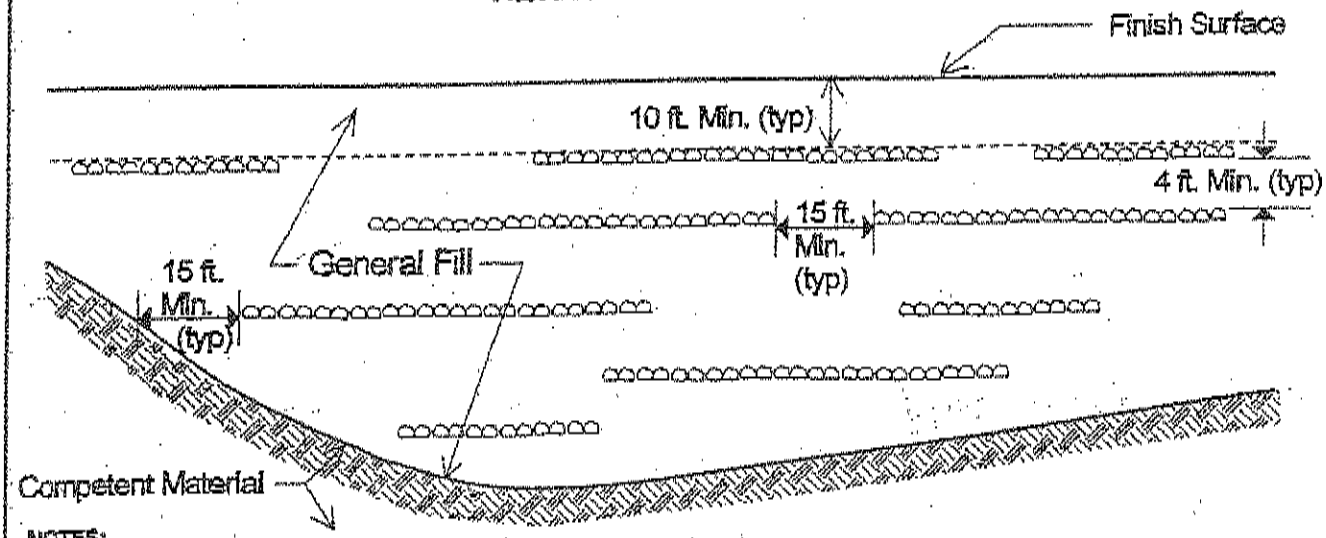
Detail No. 3b

ALBUS-KEEFE & ASSOCIATES, INC.

VIEW NORMAL TO SLOPE FACE



VIEW PARALLEL TO SLOPE FACE



NOTES:

A. Oversize Rock should be placed within troughs created in the General Fill (windrows)

B. Oversize Rock should be placed to avoid nesting.

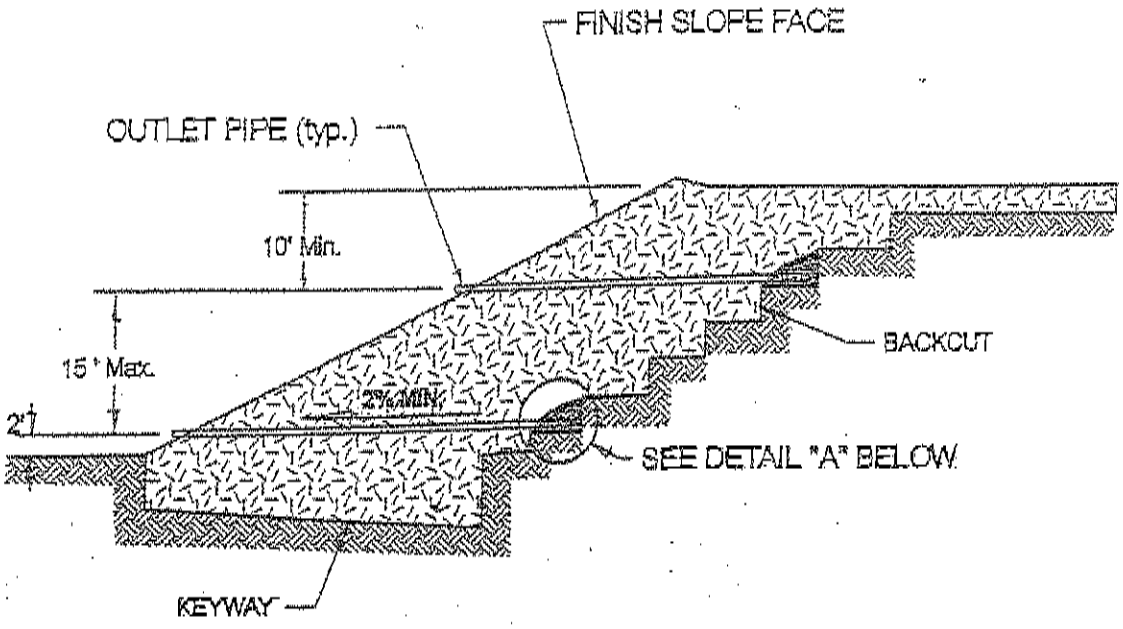
C. A layer of Granular Fill (soil material having a maximum particle size of 3 inches or less, and with a Sand Equivalent of 30 or more) should be placed over the Oversize Rock windrow and flooded.
This process should be repeated until all voids have been filled.

D. After the voids are filled with Granular Fill, the windrow should be track-walked with a dozer prior to placing General Fill over the windrow.

E. Oversize Rock, suitable for disposal by these methods, is defined as larger than 12 inches but not more than 36 inches in smallest dimension.

OVERSIZE ROCK DISPOSAL

Not To Scale
See attached soils report for specific recommendations.



NOTES:

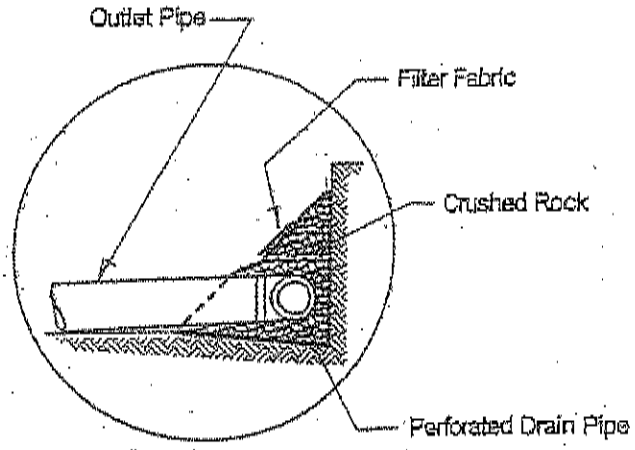
Perforated Drain Pipe should be at least 4 inches in diameter, or 6 inches for runs of more than 100 feet, consisting of either Shedule 40 PVC or SDR 35.
A min. of 8 perforations per linear foot should be provided along the bottom of pipe. The perforations should be in two rows 120 degrees apart, and have diameters of 3/8".
Upstream ends should be provided with a cap. The pipe should slope at a min. 1% gradient toward Outlet Pipes.
Glue all joints.

Outlet Pipe should equal the diameter of the perforated pipe, consisting of either shedule 40 PVC or SDR 35. The pipe should slope at a min. 1% gradient toward the Discharge Point.
Backfill around Outlet Pipe should consist of onsite soils.
Glue all joints.

Crushed Rock should conform to the Standard Specifications for Public Works Construction, Section 200-1.2, for 3/4".
Provide at least 5 cubic feet per lineal foot of Perforated Drain Pipe.
Provide at least 6 inches of gravel below Perforated Pipe.

Filter Fabric should consist of Mirifi 140N or equivelent.
Ends should overlap at least 12 inches.

CALTRANS Class II Permeable Filter Material can be used in lieu of Crushed Rock encased in Filter Fabric

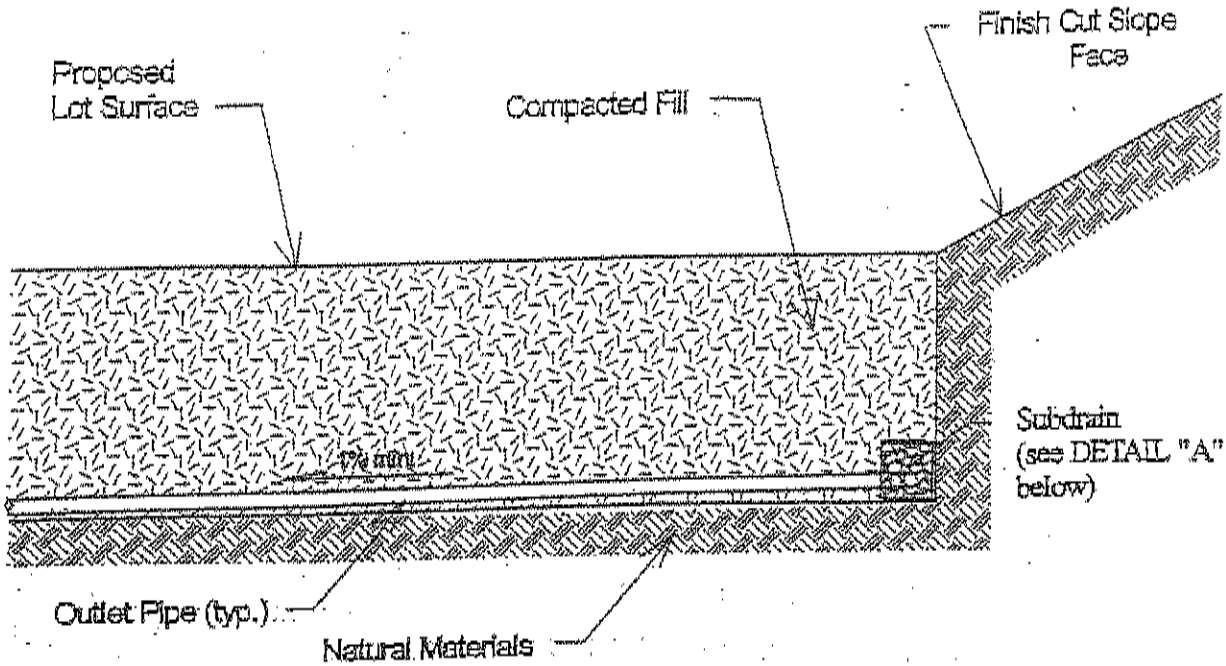


DETAIL "A"

BACKDRAIN

Not To Scale
See attached soils report for specific recommendations.

Detail No. 8a



NOTES:

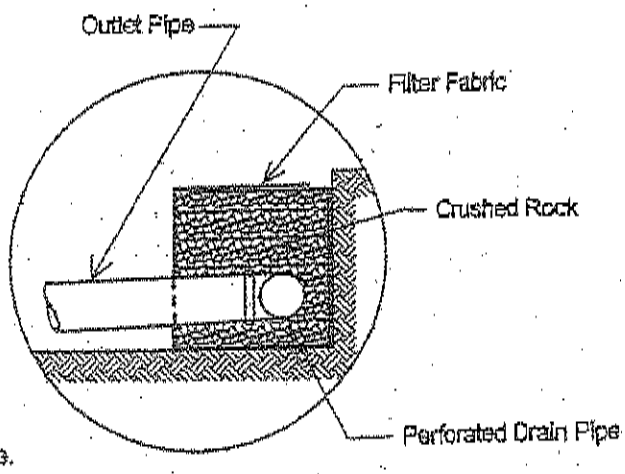
Perforated Drain Pipe should be at least 4 inches in diameter, or 6 inches for runs of more than 500 feet, consisting of either Shedule 40 PVC or SDR 35. A min. of 8 perforations per linear foot should be provided along the bottom of pipe. The perforations should be in two rows 120 degrees apart, and have diameters of 3/8". Upstream ends should be provided with a cap. The pipe should slope at a min. 1% gradient toward Outlet Pipes. Glue all joints.

Outlet Pipe should equal the diameter of the perforated pipe, consisting of either shedule 40 PVC or SDR 35. The pipe should slope at a min. 1% gradient toward the Discharge Point. Backfill around Outlet Pipe should consist of onsite soils. Glue all joints.

Crushed Rock should conform to the Standard Specifications for Public Works Construction, Section 200-1.2, for 3/4". Provide at least 3 cubic feet per lineal foot of Perforated Drain Pipe. Provide at least 6 inches of gravel below Perforated Pipe.

Filter Fabric should consist of Mirifi 140N or equivelent. Ends should overlap at least 12 inches.

CALTRANS Class II Permeable Filter Material can be used in lieu of Crushed Rock encased in Filter Fabric



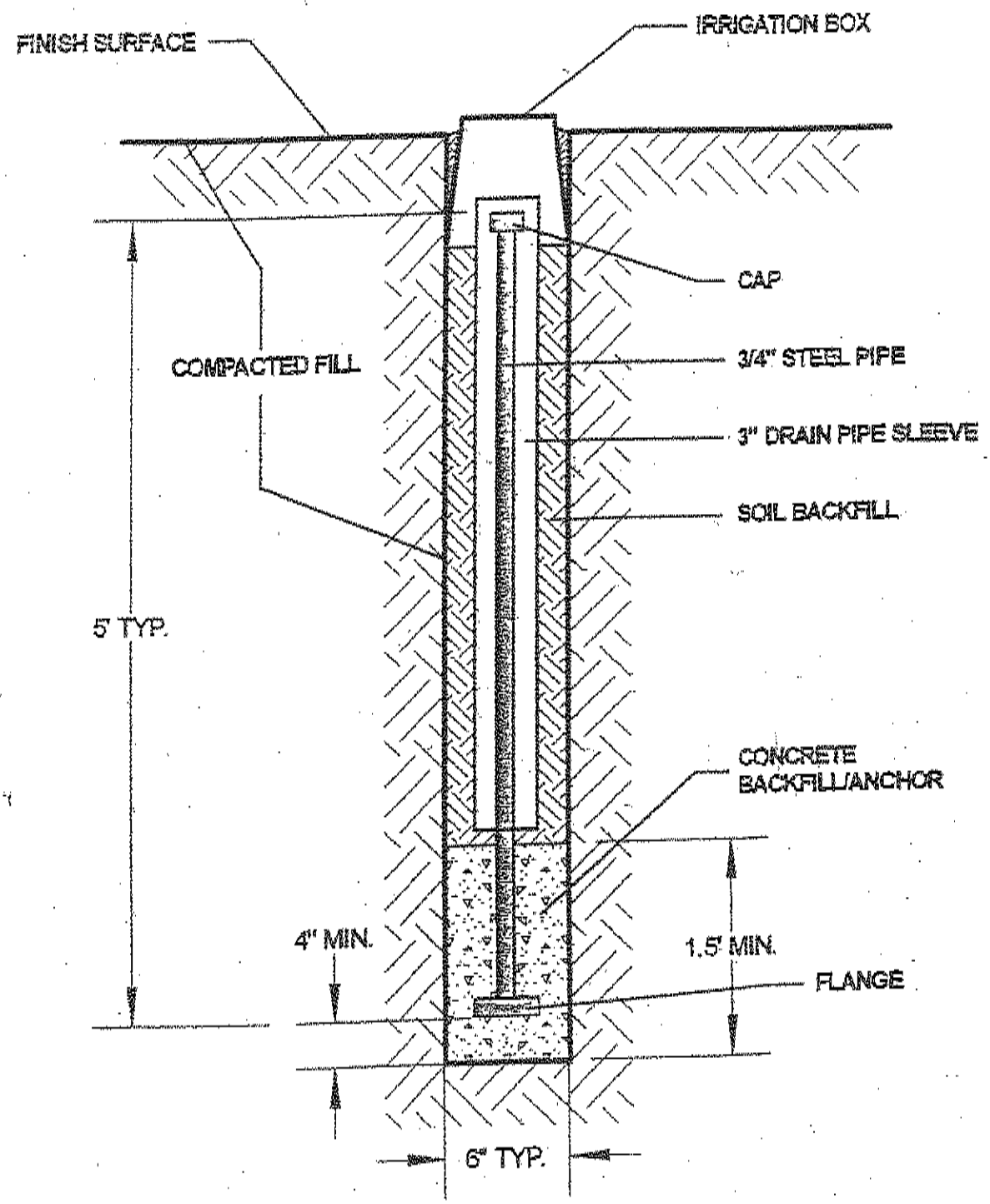
DETAIL "A"

LOT SUBDRAIN

Not To Scale

See attached soils report for specific recommendations.

Detail No. 12



SURFACE SETTLEMENT MONUMENT

Not To Scale

See attached soils report for specific recommendations.

Detail No. 20

APPENDIX B

2018 Geotechnical Investigation by Geocon West, Inc.

SUPPLEMENTAL GEOTECHNICAL INVESTIGATION

CREST VIEW
NORTHWEST CORNER OF CENTRAL & SYCAMORE CANYON
RIVERSIDE, CALIFORNIA

GEOCON
WEST, INC.

GEOTECHNICAL
ENVIRONMENTAL
MATERIALS

PREPARED FOR

STRATA EQUITY GROUP
SAN DIEGO, CALIFORNIA

PROJECT NO. T2820-22-01
SEPTEMBER 11, 2018

GEOCON
WEST, INC.
GEOTECHNICAL ■ ENVIRONMENTAL ■ MATERIALS

Project No. T2820-22-01
September 11, 2018

Strata Equity
Strata Equity Group
4370 La Jolla Village Drive, Suite 960
San Diego, California 92122

Attention: Mr. Eric Flodine

Subject: SUPPLEMENTAL GEOTECHNICAL INVESTIGATION
CREST VIEW
NORTHWEST CORNER OF CENTRAL & SYCAMORE CANYON
RIVERSIDE, CALIFORNIA

Dear Mr. Flodine:

In accordance with your authorization of our Proposal No. IE-2148, dated May 9, 2018, Geocon West, Inc. (Geocon) has prepared this supplemental geotechnical investigation to explore the depth and condition of previously placed fill and the rippability of bedrock within proposed cut areas on the site. The property is located immediately northwest of the intersection of Central Avenue and Sycamore Canyon Boulevard in Riverside, California (see *Vicinity Map*, Figure 1). This report presents a summary of the soil conditions, bedrock rippability, and remedial grading recommendations for the property.

Should you have any questions regarding this report, or if we may be of further service, please contact the undersigned at your convenience.

Very truly yours,

GEOCON WEST, INC.

PROFESSIONAL GEOLOGIST
LISA A. BATTIATO
No. 2316
CERTIFIED ENGINEERING GEOLOGIST
STATE OF CALIFORNIA

Lisa A. Battiato
CEG 2316

LAB:CER:DE:hd

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TABLE OF CONTENTS

1. PURPOSE AND SCOPE 1
2. PROJECT UNDERSTANDING 1
3. BACKGROUND 2
4. SOIL AND GEOLOGIC CONDITIONS 3
   4.1 Undocumented Fill (afu) 3
   4.2 Alluvium (Qal) 3
   4.3 Val Verde Tonalite (Ktv) 3
5. ROCK RIPPABILITY 4
   5.1 Undercutting 4
   5.2 Capping Material 5
6. CONCLUSIONS AND RECOMMENDATIONS 6
   6.1 General 6
   6.2 Excavation and Soil Characteristics 7

LIMITATIONS AND UNIFORMITY OF CONDITIONS

LIST OF REFERENCES

MAPS AND ILLUSTRATIONS
   Figure 1, Vicinity Map
   Figure 2, Test Pit Location Map

APPENDIX A
   FIELD INVESTIGATION
   Figures A-1 through A-18, Test Pit Logs
   Figures A-19 through A-39, Photographs of Test Pits
   JRB and Albus-Keefe Test Pit Logs

APPENDIX B
   RECOMMENDED GRADING SPECIFICATIONS

SUPPLEMENTAL GEOTECHNICAL INVESTIGATION

1. PURPOSE AND SCOPE

The purpose of our work is to provide additional subsurface information regarding the depth and condition of the previously placed fill in the central and southern portions of the site and bedrock rippability in the northern portion of the site. In addition, we provide recommendations for remedial grading.

The scope of this investigation included performing a site reconnaissance, field exploration, and preparing this letter report. We performed our field investigation on June 7 and 8, 2018 by excavating 18 test pits with a Hyundai 480 LC-9 excavator to a maximum depth of approximately 33 feet below the existing ground surface. The *Test Pit Location Map*, Figure 2, presents the approximate locations of the test pits. *Appendix A* provides a discussion of the field investigation including logs of the test pits and photographs. Remedial grading recommendations presented herein are based on observations from our site investigation and our understanding of proposed site development. References reviewed to prepare this report are provided in the *List of References*. If project details vary significantly from those described herein, Geocon should be contacted to evaluate the necessity for review and possible revision of this letter report.

2. PROJECT UNDERSTANDING

The site is generally a triangular-shaped 9.45-acre parcel which was rough graded to a super pad in 1995/1996. At the time of our site work, the property had a light to moderate growth of brush with scattered and windrowed boulders. An approximately 39-foot-high bedrock cut slope descends eastward to the northern portion of the site and an approximately 41-foot-high fill slope descends from the site to a canyon to the west. Central Avenue forms the southern boundary, Sycamore Canyon Boulevard forms the eastern boundary, and the western area of the site is bounded by undeveloped land. Site elevations range from 1,333 feet above mean sea level (MSL) in the southeastern corner to 1,357 feet MSL in the northern portion of the super pad.

We understand that the property is currently zoned for a commercial retail center but is being considered for a residential development which is expected to include lightly loaded two- and three-story residential buildings with a club house, pool, parking, flatwork and infrastructure. Based on site and surrounding topography we expect that finished grade elevations will vary within 15 feet of existing grades. A site or grading plan was not available at the time of our investigation; therefore, we utilized a Google Earth image as the base for our *Test Pit Location Map*. Once a grading plan becomes available for the project, a geotechnical update should be performed to provide development specific geotechnical recommendations and design parameters.

Since there was no current site plan available at time of preparation of this investigation, the recommended grading specifications included herein assumed that the majority of the site would be utilized for development of multi-story residential buildings and the associated uses. If an alternative site design with less development footprint is considered, the grading specifications could be revisited based on a revised site specific geotechnical study.

3. BACKGROUND

Prior to grading, the site consisted of bedrock highlands cut by two southwest trending canyons. Grading took place in 1995/1996 with geotechnical observation and testing reportedly provided by Hi Desert Testing & Inspection, who, in a letter dated August 29, 1997, indicated the grading was not performed in accordance with the project plans and specifications. They did not provide geotechnical certification of the fill (Albus-Keefe, 2007). Albus-Keefe reported a storm drain pipe is present within the main canyon on the property to facilitate drainage in a southwesterly direction across the site to the canyon on the west.

As discussed in the Albus-Keefe report (2007), John R. Byerly, Inc. (JRB) performed a geotechnical investigation of the site in 1997 for a proposed retail development. In the seven geotechnical test pits excavated during their exploration, they reported encountering fills the had a relative density of 71 to 99 percent and included unsuitable debris, oversized rock, and nested rock with voids. JRB recommended removal of the fill and underlying alluvial and colluvial soils to bedrock during grading.

Albus-Keefe & Associates, Inc. performed a geotechnical investigation of the site in 2007 when they excavated eleven exploratory trenches up to 33 feet deep with an excavator (Cat 245) and performed five seismic refraction traverses within the site. They reported the fill contained boulders up to 11 feet in diameter, concrete up to 5 feet in length, and other assorted construction debris. They indicated the boulders were often nested with voids between the rock. They reported that the soil was dry to damp and loose. Albus-Keefe reported they encountered native soil (alluvium, topsoil, and colluvium) under the fill which was dry to moist, loose, and porous. The seismic refraction data indicated bedrock would be rippable to depths of 5 to 15 feet with core stones that may require blasting. Albus-Keefe recommended removal of the previously placed fill and underlying native soils to bedrock with the installation of canyon drains. They recommended cut fill differentials be no steeper than 1.5:1 (h:v) and no more than 15 feet. If the differential conditions could not be met, they recommended construction be delayed allowing for the differential settlement to take place prior to construction. A bedrock over excavation of 5 feet was recommended for all cut lots.

The excavation logs from both JRB and Albus-Keefe are included in Appendix A and the test pit locations are depicted on the *Test Pit Location Map*, Figure 2. The first two JRB test pits (T-1 and T-2) are not included on Figure 2 because they were not depicted on the referenced Albus-Keefe test pit location map.

4. SOIL AND GEOLOGIC CONDITIONS

We encountered previously placed undocumented fill, native soils, and granitic bedrock during our field investigation. The distribution and description of each unit encountered is shown on the *Test Pit Location Map*, Figure 2, and the excavation logs in *Appendix A*. The surficial soils and geologic units are described herein in order of increasing age.

4.1 Undocumented Fill (afu)

Previously placed fill was encountered in the test pits located in the central and southern portions of the site. The fill consists of nested boulders up to 11 feet in diameter in a silty sand to poorly graded sand with silt matrix which is dry and loose. Some construction debris such as blasting cords, one 2-foot-long metal pipe, one 18-inch-long PVC pipe, and one trash bag were observed within the test pits. Buried construction debris and trash may be present in areas of the site not explored for this study. This fill was reportedly placed in 1995/1996 and the geotechnical engineer of record indicated it was not placed in accordance with the plans and specifications (Albus-Keefe, 2007).

4.2 Alluvium (Qal)

Native soils were encountered beneath the undocumented fill. They are classified as alluvium herein for simplicity but also include top soil and colluvium. The soil is typically strong to red brown, damp to moist and loose to medium dense. It consists of silty to clayey sands which contain pores up to ¼ inch in diameter. Some to trace cobbles and small boulders were also present and were found to be angular to semi-rounded and slightly to moderately weathered. These soils appear to have been left in place beneath the fill.

4.3 Val Verde Tonalite (Ktv)

Val Verde Tonalite was encountered beneath the fill and alluvium within the geotechnical test pits and is present at the surface in the northern portion of the site and within the northern cut slope. This granitic bedrock is fresh to slightly weathered within the cut slope with the predominant joint pattern trending N45W to N85W and dipping steeply to the southwest, and secondary joints generally trending N30E dipping vertically. The central and southern areas of the slope have a joint spacing of approximately 1 to 4 feet. The northern portion of the cut slope is fractured with a joint spacing of approximately 8 to 12 inches. Practical refusal was encountered at depths of 1 to 7 feet below the ground surface within the cut pad in the northern portion of the property. Bedrock encountered beneath the fill and alluvium in the central and southern portions of the site was found to be moderately to completely weathered, moist, and red brown to bright yellow.

5. ROCK RIPPABILITY

We excavated seven trenches within the area exposing bedrock (TP-11 through 15, 17, and 18) using a Hyundai 480 LC-9 Excavator (110,000 pounds) to evaluate rock rippability characteristics. The rock exposed at grade in the northern area is generally fresh. Excavations were possible within the rock affected by blasting but could not be advanced once the non-shot rock was encountered. Granitic bedrock present beneath the fill is expected to be moderately to completely weathered and favorable rippability characteristics are anticipated to depths of several feet. Proposed excavations within the Granitic Rock will require blasting. Bedrock excavations beneath fill areas, if proposed, will require very difficult ripping, rock breaking, and possible blasting. We estimate the thickness of the rippable rock within the northern cut area will vary between 1 to 7 feet below existing grades as shown on Table 1.

TABLE 1
GRANITIC ROCK RIPPABILITY SUMMARY

Excavation Trench No.	Estimated Rippable Depth (feet)
TP-11	7
TP-12	5
TP-13	3
TP-14	6.5
TP-15	1
TP-17	4.5
TP-18	2.5

5.1 Undercutting

Over-excavations up to 15 feet will be required to achieve the undercut recommendations in accordance with the *Recommended Grading Specifications* in *Appendix B*. The estimate considers the maximum fill depth is 45 feet and the maximum differential fill thickness is H/3 where H is the fill thickness within a 1:1 projection of structures. Based on our analysis of the excavator trenches, blasting of the Granitic Rock will be necessary to achieve excavation depths in the northern portion of the site.

Roadway/utility corridor undercutting should also be considered when calculating the volume of hard rock. It is recommended that roadways and adjacent parkways to be undercut 1 to 2 feet below the lowest depth of the utility and replaced with properly compacted soil fill that is suitable for use as trench backfill materials. Undercutting of 3 feet below finish grade should also be performed in pads exposing Granitic Rock. Proposed cuts in hard rock areas can be expected to generate oversized fragments (rocks greater than 6 inches in dimension) which will necessitate typical rock handling and placement procedures during grading operations. The grading contractor should perform their own independent analysis of the depth of rippable rock based on their experience in Granitic Rock and the type of grading equipment proposed to be used at the site.

5.2 Capping Material

Capping material refers to select material placed within 3 feet of finish pad grade and to 1 foot below the deepest utility within roadways. The capping material should consist of "soil" fill with an approximate maximum particle dimension of 6 inches with a minimum of 40 percent soil passing the ¾-inch sieve. In addition, the upper 3 feet of finish pad grade should have at least 20 percent of the soil passing the No. 4 screen. Utility agencies may restrict rock to 3-inch minus within utility trench zones. In general, capping material can be obtained from the undocumented fill, alluvium, and completely weathered portions of Granitic Rock. The capping material will need to be properly managed and stockpiled for use in the upper 3 feet of building pads and within roadway undercuts such that suitable backfill materials will be generated during future utility excavations. The quantity of capping material should be determined to check if sufficient volumes exist to cap lots and streets or if crushing or screening of the less weathered rock will be required.

6. CONCLUSIONS AND RECOMMENDATIONS

6.1 General

6.1.1 Our field investigation indicates the site is underlain by undocumented fill, alluvium, and Val Verde Tonalite. The undocumented fill and underlying alluvium is not suitable to support additional fill or settlement sensitive structures and should be removed and replaced with compacted/documented fill during remedial grading. Remedial grading within structural areas of the site should consist of the removal of undocumented fill and alluvium until granitic bedrock is encountered. The structural area is considered as a 1:1 projection (horizontal:vertical) from any embankment or structure to a depth at which bedrock is encountered.

6.1.2 Excavations planned in the northwest portion of the existing pad will require blasting (geologic symbol Kvt).

6.1.3 The existing site soils are suitable for re-use as engineered fill provided trash or construction debris and oversize rock are removed and the recommendations in the *Standard Grading Specifications* section of this report are followed.

6.1.4 Complete remedial removals should be performed within utility corridors and should extend at least 15 feet laterally on either side of the utility pipe. This is to prevent future pipe alignment or separation issues caused by settlement of the undocumented fill soils.

6.1.5 The fill slope along the western portion of the site will require re-grading to remove the oversized rock and reconstruct it in accordance with the *Standard Grading Specifications*. No oversized rock should be placed in the outer 15 feet of the slope face.

6.1.6 Caving in the test pit excavations was common and should be expected in un-shored excavations at the site. Further, oversized rocks and boulders could become loose and fall during over excavation. It is the responsibility of the contractor to ensure that excavations and trenches are properly shored and maintained in accordance with OSHA rules and regulations to maintain the stability of adjacent existing improvements.

6.1.7 Exposed embankment conditions along the perimeter of the site within influence of a structure will be evaluated by the geotechnical consultant during grading.

6.1.8 Boulders were observed across the surface of the site and were encountered in our test pits. Some of the boulders broke down when excavated. Others were fresh and will require rock breaking to reduce them to a suitable size for placement in fills. Rocks can be placed within the fill in accordance with the *Standard Grading Specifications* in *Appendix B.*

6.1.9 We did not encounter groundwater during our investigation and do not expect groundwater would impact site improvements. However, wet conditions and seepage could affect proposed construction if grading and improvement operations occur during or shortly after a rain event.

6.1.10 When site plans become available, a geotechnical update should be performed based on the proposed grades and improvements and the governing California Building Code.

6.2 Excavation and Soil Characteristics

6.2.1 Excavation of the previously placed fill should be possible with moderate to heavy effort using conventional heavy-duty equipment. Excavation difficulty may be encountered where nested rock or large boulders are present. Blasting will be required within the bedrock cut in the northern portion of the site.

6.2.2 Grading should be performed in accordance with the recommendations provided in this report, the *Recommended Grading Specifications* contained in *Appendix B*.

6.2.3 Prior to commencing grading, a pre-construction conference should be held at the site with the owner/developer, city inspector, grading contractor, civil engineer, and geotechnical engineer in attendance. Special soil handling requirements can be discussed at that time.

6.2.4 Where grading is planned, the site should be brought to finish grade elevations with fill compacted in layers. Layers of fill should be no thicker than will allow for adequate bonding and compaction. Fill, including backfill and scarified ground surfaces, should be compacted to a dry density of at least 90 percent of the laboratory maximum dry density near optimum moisture content as determined by ASTM D 1557. Fill materials placed below optimum moisture content may require additional moisture conditioning prior to placing additional fill.

6.2.5 The upper 12 inches of subgrade soil underlying pavement should be compacted to a dry density of at least 95 percent of the laboratory maximum dry density at 0 to 2 percent above optimum moisture content shortly before paving operations.

6.2.6 Import fill soil (if necessary) should consist of granular materials with a “very low” expansion potential (EI of less than 20), non-corrosive, free of deleterious material and rock fragments larger than 6 inches and should be compacted as recommended herein. Geocon should be notified of the import soil source and should perform laboratory testing of import soil prior to its arrival at the site to determine its suitability as fill material.

LIMITATIONS AND UNIFORMITY OF CONDITIONS

1. The recommendations of this report pertain only to the site investigated and are based upon the assumption that the soil conditions do not deviate from those disclosed in the investigation. If any variations or undesirable conditions are encountered during construction, or if the proposed construction will differ from that anticipated herein, Geocon West, Inc. should be notified so that supplemental recommendations can be given. The evaluation or identification of the potential presence of hazardous or corrosive materials was not part of the scope of services provided by Geocon West, Inc.

2. This report is issued with the understanding that it is the responsibility of the owner, or of his representative, to ensure that the information and recommendations contained herein are brought to the attention of the engineer and contractor for the project and incorporated into the plans, and the necessary steps are taken to see that the contractor and subcontractors carry out such recommendations in the field.

3. The findings of this report are valid as of the date of this report. However, changes in the conditions of a property can occur with the passage of time, whether they are due to natural processes or the works of man on this or adjacent properties. In addition, changes in applicable or appropriate standards may occur, whether they result from legislation or the broadening of knowledge. Accordingly, the findings of this report may be invalidated wholly or partially by changes outside our control. Therefore, this report is subject to review and should not be relied upon after a period of three years.

4. The firm that performed the geotechnical investigation for the project should be retained to provide testing and observation services during construction to provide continuity of geotechnical interpretation and to check that the recommendations presented for geotechnical aspects of site development are incorporated during site grading, construction of improvements, and excavation of foundations. If another geotechnical firm is selected to perform the testing and observation services during construction operations, that firm should prepare a letter indicating their intent to assume the responsibilities of project geotechnical engineer of record. A copy of the letter should be provided to the regulatory agency for their records. In addition, that firm should provide revised recommendations concerning the geotechnical aspects of the proposed development, or a written acknowledgement of their concurrence with the recommendations presented in our report. They should also perform additional analyses deemed necessary to assume the role of Geotechnical Engineer of Record.

LIST OF REFERENCES

1. Albus-Keefe& Associates, Inc., 2007, *"Revised" Preliminary Geotechnical Investigation, Proposed Apartment Complex, Tract 34946 (Alexan Cityscape Project), City of Riverside, California*, Job Number 1566.00, dated December 11.

2. Google, Inc., 2018, Google Earth Pro, accessed June 2018.

3. U.S. Geological Survey (USGS), 2001, *Geologic Map of the Riverside East 7.5' Quadrangle, California*, v. 1.0, USGS Open-File Report 01-452; scale 1: 25,000.

N

1000 ft

SOURCE: Google Maps, 2018

VICINITY MAP

GEOCON WEST, INC.

GEOTECHNICAL ENVIRONMENTAL MATERIALS

41571 CORNING PLACE, SUITE 101, MURRIETA, CA 92562-7065

PHONE 951-304-2300 FAX 951-304-2392

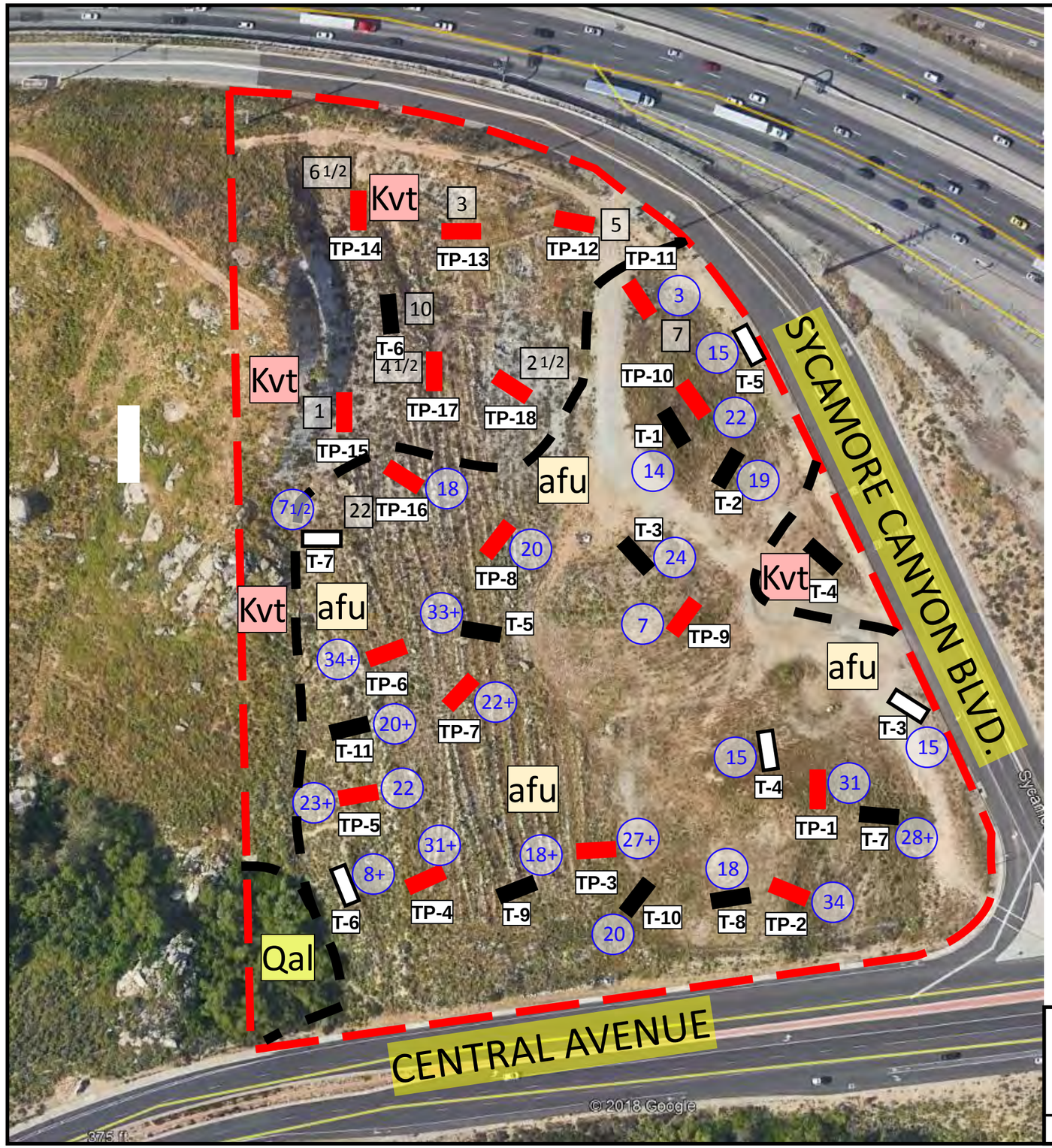
PDT		

CREST VIEW

NEC CENTRAL AVE. AND SYCAMORE CANYON BLVD.

RIVERSIDE, CALIFORNIA

SEPTEMBER, 2018	PROJECT NO. T2820-22-01	FIG. 1



GEOCON LEGEND

Locations are approximate

TP-18 ..... TEST PIT LOCATION, THIS REPORT

31 ..... DEPTH TO BEDROCK

7 ..... DEPTH TO REFUSAL WITH HYUNDAI 480 EXCAVATOR W/3' BUCKET

T-11 ..... TEST PIT LOCATION, ALBUS-KEEFE, 2007

T-7 ..... TEST PIT LOCATION, BYERLY, 1997 T-1, T-2 NOT SHOWN ON MAP

afu ..... UNDOCUMENTED FILL

Qal ..... ALLUVIUM

Kvt ..... VAL VERDE TONALITE

..... GEOLOGIC CONTACT

..... LIMITS OF THIS REPORT

N

SCALE:1"≈100'

Source: Google Earth

GEOCON WEST, INC.

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TEST PIT LOCATION MAP

CREST VIEW
NEC CENTRAL AVE. AND SYCOMORE CANYON BLVD.
RIVERSIDE, CALIFORNIA

PDT			SEPTEMBER, 2018	PROJECT NO. T2820-22-01	FIG. 2

APPENDIX A

APPENDIX A

FIELD INVESTIGATION

Geocon performed the field investigation on June 7 and 8, 2018. Our subsurface exploration consisted of excavating 18 test pits to depths of 1 to 34 feet utilizing a Hyundai 480 LC-9 excavator equipped with a 3-foot bucket. Test pits were excavated to practical refusal within bedrock cut areas to evaluate rippability, and to bedrock or the extent of maximum reach in fill areas to determine the depth of fill and the consistency of the fill soil in fill areas. Test pits were loosely backfilled with native soil upon completion.

The soil conditions encountered in the test pits were visually examined, classified and logged in general accordance with the Unified Soil Classification System (USCS). Logs of the test pits are presented on Figures A-1 through A-18. The logs depict the soil and geologic conditions encountered and the depth at which samples were obtained. The approximate locations of the excavations are indicated on the *Test Pit Location Map*, Figure 2.

PROJECT NO. T2820-22-01

TEST PIT TP-1

ELEV. (MSL.) **1347** DATE COMPLETED **06/07/2018**

EQUIPMENT **EXCAVATOR W/ 36" BUCKET** BY: **L. BATTIATO**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SM	**UNDOCUMENTED FILL (afu)** Silty SAND, very loose, dry, strong brown to olive brown			
2								
4								
6								
8					-Caving			
10					-Boulders up to 8' diameter			
12								
14								
16								
18								
20					- Becomes loose; some cobbles			
22	TP-1@22'			SC	**ALLUVIUM (Qal)** Clayey SAND, medium dense, moist, reddish brown; coarse sand; some roots; porosity up to 1/4-inch			
24								
26					**VAL VERDE TONALITE (Kvt)** Completely weathered, weak, moist, reddish brown, GRANITIC BEDROCK; excavates as a silty sand			
28								
30								
					-Becomes highly weathered, moderately weak			

Total Depth 31.5'
Groundwater not encountered
Caving from 7 to 20'
Backfilled with cuttings 6/7/2018

Figure A-1,
Log of Test Pit TP-1, Page 1 of 1

T2820-22-01 TEST PIT LOGS.GPJ

SAMPLE SYMBOLS

- ... SAMPLING UNSUCCESSFUL
- ... STANDARD PENETRATION TEST
- ... DRIVE SAMPLE (UNDISTURBED)
- ... DISTURBED OR BAG SAMPLE
- ... CHUNK SAMPLE
- ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. T2820-22-01

TEST PIT TP-2

ELEV. (MSL.) **1341** DATE COMPLETED **06/07/2018**

EQUIPMENT **EXCAVATOR W/ 36" BUCKET** BY: **L. BATTIATO**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SM	**UNDOCUMENTED FILL (afu)** Silty SAND, medium dense, dry, brown; fine to coarse sand; some cobbles up to 1' diameter			
2								
4								
6								
8								
10								
12					-Abundant boulders up to 2' diameter; some wire (blasting cord)			
14								
16					-Boulders up to 4' diameter; nested buoulders with loose fill matrix -Caving to 26'			
18								
20								
22								
24								
26				SM	**ALLUVIUM (Qal)** Silty SAND, loose, moist, strong brown to reddish brown			
28								
30								
32								
34					-Becomes medium dense			
					Total Depth 34' Groundwater not encountered Caving from 16' to 26' Backfilled with cuttings 06/07/2018			

Figure A-2,
Log of Test Pit TP-2, Page 1 of 1

T2820-22-01 TEST PIT LOGS.GPJ

SAMPLE SYMBOLS

- ... SAMPLING UNSUCCESSFUL
- ... STANDARD PENETRATION TEST
- ... DRIVE SAMPLE (UNDISTURBED)
- ... DISTURBED OR BAG SAMPLE
- ... CHUNK SAMPLE
- ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. T2820-22-01

TEST PIT TP-3

ELEV. (MSL.) **1344** DATE COMPLETED **06/07/2018**

EQUIPMENT **EXCAVATOR W/ 36" BUCKET** BY: **L. BATTIATO**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SM	**UNDOCUMENTED FILL (afu)** Silty SAND, loose, dry, light brown; fine to coarse sand; abundant boulders up to 4' diameter; some debris (pvc pipe, blasting chord)			
2								
4								
6								
8					-Boulder up to 6' diameter			
10					-Nested boulders with loose matrix to 26'			
12								
14								
16								
18								
20								
22								
24								
26				SM	**ALLUVIUM (Qal)** Silty SAND, loose, moist, redish brown to strong brown			

Total Depth 27'
Groundawater not encountered
No Caving
Backfilled with cuttings 06/07/2018

Figure A-3,
Log of Test Pit TP-3, Page 1 of 1

T2820-22-01 TEST PIT LOGS.GPJ

SAMPLE SYMBOLS

- ... SAMPLING UNSUCCESSFUL
- ... STANDARD PENETRATION TEST
- ... DRIVE SAMPLE (UNDISTURBED)
- ... DISTURBED OR BAG SAMPLE
- ... CHUNK SAMPLE
- ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. T2820-22-01

TEST PIT TP-4

ELEV. (MSL.) **1339** DATE COMPLETED **06/07/2018**

EQUIPMENT **EXCAVATOR W/ 36" BUCKET** BY: **L. BATTIATO**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SM	**UNDOCUMENTED FILL (afu)** Silty SAND, loose, dry, light brown; medium to coarse sand; abundant boulders -Wire -Rubber tubing			
2								
4								
6								
8								
10								
12								
14								
16								
18								
20					-Boulders up to 4' diameter; redish brown matrix			
22				SP	Poorly graded SAND, loose, dry to moist, brown; coarse sand; cohesionless			
24								
26				SM	**ALLUVIUM (Qal)** Silty SAND, medium dense, moist, brown; overlying contact dips to the south			
28								
30								
					Total Depth 31' Groundwater not encountered No Caving Backfilled with cuttings 06/07/2018			

Figure A-4,
Log of Test Pit TP-4, Page 1 of 1

T2820-22-01 TEST PIT LOGS.GPJ

SAMPLE SYMBOLS

- ... SAMPLING UNSUCCESSFUL
- ... STANDARD PENETRATION TEST
- ... DRIVE SAMPLE (UNDISTURBED)
- ... DISTURBED OR BAG SAMPLE
- ... CHUNK SAMPLE
- ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. T2820-22-01

TEST PIT TP-5

ELEV. (MSL.) **1315** DATE COMPLETED **06/07/2018**

EQUIPMENT **EXCAVATOR W/ 36" BUCKET** BY: **L. BATTIATO**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SM/SP	**UNDOCUMENTED FILL (afu)** Silty SAND to poorly graded SAND, loose, dry, grayish brown; cobble and boulders			
2								
4								
6								
8								
10								
12								
14								
16								
18								
20								
22					**VAL VERDE TONALITE Kvt)** Moderately weathered, strong, damp, black/white with reddish yellow staining, GRANITIC BEDROCK; excavates as a gravelly sand; in northern end of trench; falls off to the south			
24				SM/SP	**ALLUVIUM (Qal)** Silty SAND to poorly graded sand, loose to medium dense, moist, strong brown; fine to coarse sand			

Total Depth 24'
Groundwater not encountered
No Caving
Backfilled 06/07/2018

Figure A-5,
Log of Test Pit TP-5, Page 1 of 1

T2820-22-01 TEST PIT LOGS.GPJ

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ⊠ ... DISTURBED OR BAG SAMPLE
- ◪ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. T2820-22-01

TEST PIT TP-6

ELEV. (MSL.) **1350** DATE COMPLETED **06/07/2018**

EQUIPMENT **EXCAVATOR W/ 36" BUCKET** BY: **L. BATTIATO**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SM/SP	**UNDOCUMENTED FILL (afu)** Silty SAND to poorly graded SAND, loose to medium dense, dry to damp, light brown and strong brown; common cobbles			
2								
4								
6					-Debris (pvc pipe)			
8					Debris (metal pipe)			
10								
12								
14								
16								
18								
20								
22								
24					-Boulder, 2' diameter			
26								
28				SM	**ALLUVIUM (Qal)** Silty SAND, loose to medium dense, moist, strong brown; coarse sand			
30								
32								
34					-Some cobble			
					Total Depth 34' Groundwater not encountered No Caving Backfilled witj cuttings 06/07/201/			

Figure A-6,
Log of Test Pit TP-6, Page 1 of 1

T2820-22-01 TEST PIT LOGS.GPJ

SAMPLE SYMBOLS

☐ ... SAMPLING UNSUCCESSFUL ◧ ... STANDARD PENETRATION TEST ■ ... DRIVE SAMPLE (UNDISTURBED)

⊠ ... DISTURBED OR BAG SAMPLE ◪ ... CHUNK SAMPLE ▼ ... WATER TABLE OR SEEPAGE

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GEOCON

PROJECT NO. T2820-22-01

TEST PIT TP-7

ELEV. (MSL.) **1350** DATE COMPLETED **06/08/2018**

EQUIPMENT **EXCAVATOR W/ 36" BUCKET** BY: **P. THERIAULT**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SM/SP	**UNDOCUMTENED FILL (afu)** Silty SAND to poorly graded SAND, damp, grayish brown; fine to coarse sand; some gravel and cobble; micaceous -Becomes reddish brown -Becomes olive brown; increase in cobbles some boulders, up to 2' diameter; slight caving -Trace debris (shot chord)			
2								
4								
6								
8								
10					-Increase in boulders, up to 6' diameter; nested; voids			
12								
14								
16								
18								
20								
22					-Increase in boulders			
24								
					Total Depth 25' Groundwater not encountered Slight caving from 4' to 22' Backfilled with cuttings 6/18/2018			

Figure A-7,
Log of Test Pit TP-7, Page 1 of 1

T2820-22-01 TEST PIT LOGS.GPJ

SAMPLE SYMBOLS

... SAMPLING UNSUCCESSFUL
... STANDARD PENETRATION TEST
... DRIVE SAMPLE (UNDISTURBED)
... DISTURBED OR BAG SAMPLE
... CHUNK SAMPLE
... WATER TABLE OR SEEPAGE

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GEOCON

PROJECT NO. T2820-22-01

TEST PIT TP-8

ELEV. (MSL.) **1352** DATE COMPLETED **06/08/2018**

EQUIPMENT **EXCAVATOR W/ 36" BUCKET** BY: **P. THERIAULT**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SM/SP	**UNDOCUMENTED FILL** Silty SAND to poorly graded SAND, dry, reddish brown; fine to coarse sand; some gravel and cobble; micaceous -Becomes damp; olive; increase in cobble -Some boulders up to 3' in diameter -Increase in boulder size, up to 8' in diameter			
2								
4								
6								
8								
10								
12								
14								
16								
18				SM	**ALLUVIUM** Silty SAND, moist, strong brown; fine to medium sand; some coarse sand; trace gravel; some cobble; micaceous			
20					**VAL VERDE TONALITE (Kvt)** Highly weathered, weak, moist, brownish yellow, GRANITIC BEDROCK; excavtes as a gravelly sand			
22								

Total Depth 22'
Groundwater not encountered
No caving
Backfilled with cuttings 6/18/2018

Figure A-8,
Log of Test Pit TP-8, Page 1 of 1

T2820-22-01 TEST PIT LOGS.GPJ

SAMPLE SYMBOLS

☐ ... SAMPLING UNSUCCESSFUL ◧ ... STANDARD PENETRATION TEST ■ ... DRIVE SAMPLE (UNDISTURBED)

⊠ ... DISTURBED OR BAG SAMPLE ◪ ... CHUNK SAMPLE ▼ ... WATER TABLE OR SEEPAGE

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GEOCON

PROJECT NO. T2820-22-01

TEST PIT TP-9

ELEV. (MSL.) **1351** DATE COMPLETED **06/08/2018**

EQUIPMENT **EXCAVATOR W/ 36" BUCKET** BY: **P. THERIAULT**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SM/SP	**UNDOCUMENTED FILL (afu)** Silty SAND to poorly graded SAND, dry, reddish brown; fine to coarse sand; some gravell and cobble; micaceous; some debris			
2								
4				SM	VAL VERDE TONALITE (Kvt) Soil (grus), weak, moist, brownish red, GRANITIC BEDROCK; fine to coarse sand			
6								
8					Highly weathered, moderately weak, moist, gray with reddish yellow staining GRANITIC BEDROCK; excavates as a gravelly sand			
10					-Slow advance, moderately weathered; cobble size chunks			
12					Total Depth 12' (Refusal) Groundwater not encountered No caving Backfilled with cuttings 6/18/2018			

Figure A-9,
Log of Test Pit TP-9, Page 1 of 1

T2820-22-01 TEST PIT LOGS.GPJ

SAMPLE SYMBOLS

... SAMPLING UNSUCCESSFUL
... STANDARD PENETRATION TEST
... DRIVE SAMPLE (UNDISTURBED)
... DISTURBED OR BAG SAMPLE
... CHUNK SAMPLE
... WATER TABLE OR SEEPAGE

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GEOCON

PROJECT NO. T2820-22-01

TEST PIT TP-10

ELEV. (MSL.) **1352** DATE COMPLETED **06/08/2018**

EQUIPMENT **EXCAVATOR W/ 36" BUCKET** BY: **P. THERIAULT**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SM/SP	**UNDOCUMENTED FILL (afu)** Silty SAND to poorly graded SAND, loose, dry, light brown; fine to coarse sand; some gravel and cobble; micaceous -Some boulders; some debris; some concrete chunks (possible concrete washout area)			
2								
4				SM	**ALLUVIUM (Qal)** Silty SAND, medium dense, moist, brown, fine to coarse sand; some mica			
6					-Becomes dark brown, some rounded cobbles			
8					-Moderately cemented; some porosity up to 1/4-inch; some calcium carbonate			
10								
12								
14								
16								
18								
20								
22					**VAL VERDE TONALITE (Kvt)** Highly weathered, moderately weak, moist, gray with reddish yellow staining, GRANITIC BEDROCK; excavates as a gravelly sand			

Total Depth 23' (Refusal)
Groundwater not encountered
No caving
Backfilled with cuttings 6/18/2018

Figure A-10,
Log of Test Pit TP-10, Page 1 of 1

T2820-22-01 TEST PIT LOGS.GPJ

SAMPLE SYMBOLS

... SAMPLING UNSUCCESSFUL
... STANDARD PENETRATION TEST
... DRIVE SAMPLE (UNDISTURBED)
... DISTURBED OR BAG SAMPLE
... CHUNK SAMPLE
... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. T2820-22-01

TEST PIT TP-11

ELEV. (MSL.) **1356** DATE COMPLETED **06/08/2018**

EQUIPMENT **EXCAVATOR W/ 36" BUCKET** BY: **P. THERIAULT**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SM/SP	**UNDOCUMENTED FILL (afu)** Silty SAND to poorly graded SAND, loose, dry, grayish brown; fine to coarse sand -Becomes damp; reddish brown			
2								
4					**VAL VERDE TONALITE (Kvt)** Moderately weathered, moderately strong, damp, black/white with reddish yellow staining, GRANITIC BEDROCK; excavates as a gravelly sand with cobble			
6								
					Total Depth 7' (Refusal) Groundwater not encountered Slight caving Backfilled with cuttings 6/18/2018			

Figure A-11,
Log of Test Pit TP-11, Page 1 of 1

T2820-22-01 TEST PIT LOGS.GPJ

SAMPLE SYMBOLS

- ... SAMPLING UNSUCCESSFUL
- ... STANDARD PENETRATION TEST
- ... DRIVE SAMPLE (UNDISTURBED)
- ... DISTURBED OR BAG SAMPLE
- ... CHUNK SAMPLE
- ... WATER TABLE OR SEEPAGE

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GEOCON

PROJECT NO. T2820-22-01

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	TEST PIT TP-12 ELEV. (MSL.) 1364 DATE COMPLETED 06/08/2018 EQUIPMENT EXCAVATOR W/ 36" BUCKET BY: P. THERIAULT	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
					MATERIAL DESCRIPTION			
0				SM/SP	**UNDOCUMENTED FILL (afu)** Silty SAND to poorly graded SAND, dry, grayish brown; fine to coarse sand			
2					**VAL VERDE TONALITE (Kvt)** Moderately weathered, moderately strong, damp, black/white, GRANITIC BEDROCK; excavates as a gravelly sand -Some cobble size chunks -Becomes slightly weathered; strong; pegmatitie dike N40W/60S			
4								

Total Depth 5' (Refusal)
Groundwater not encountered
No caving
Backfilled with cuttings 6/18/2018

Figure A-12,
Log of Test Pit TP-12, Page 1 of 1

T2820-22-01 TEST PIT LOGS.GPJ

SAMPLE SYMBOLS

- ... SAMPLING UNSUCCESSFUL
- ... STANDARD PENETRATION TEST
- ... DRIVE SAMPLE (UNDISTURBED)
- ... DISTURBED OR BAG SAMPLE
- ... CHUNK SAMPLE
- ... WATER TABLE OR SEEPAGE

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GEOCON

PROJECT NO. T2820-22-01

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	**TEST PIT TP-13** ELEV. (MSL.) **1369** DATE COMPLETED **06/08/2018** EQUIPMENT **EXCAVATOR W/ 36" BUCKET** BY: **P. THERIAULT**	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
					MATERIAL DESCRIPTION			
0					**VAL VERDE TONALITE (Kvt)** Fresh, strong, dry, black/white, GRANITIC BEDROCK; excavates as boulder with cobble (shot rock)			
2					-Becomes non-shot rock			
					Total Depth 3' (Refusal) Groundwater not encountered No caving Backfilled with cuttings 6/18/2018			

Figure A-13,
Log of Test Pit TP-13, Page 1 of 1

T2820-22-01 TEST PIT LOGS.GPJ

SAMPLE SYMBOLS			
	... SAMPLING UNSUCCESSFUL	... STANDARD PENETRATION TEST	... DRIVE SAMPLE (UNDISTURBED)
	... DISTURBED OR BAG SAMPLE	... CHUNK SAMPLE	... WATER TABLE OR SEEPAGE

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PROJECT NO. T2820-22-01

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	**TEST PIT TP-14** ELEV. (MSL.) **1366** DATE COMPLETED **06/08/2018** EQUIPMENT **EXCAVATOR W/ 36" BUCKET** BY: **P. THERIAULT**	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
					MATERIAL DESCRIPTION			
0					**VAL VERDE TONALITE (Kvt)** Fresh, strong, dry, black/white, GRANITIC BEDROCK; excavates as boulder with cobble (shot rock)			
2								
4					-Beomes non-shot rock			
6								
					Total Depth 6.5' (Refusal) Groundwater not encountered No caving Backfilled with cuttings 6/18/2018			

Figure A-14,
Log of Test Pit TP-14, Page 1 of 1

T2820-22-01 TEST PIT LOGS.GPJ

SAMPLE SYMBOLS

... SAMPLING UNSUCCESSFUL
... STANDARD PENETRATION TEST
... DRIVE SAMPLE (UNDISTURBED)
... DISTURBED OR BAG SAMPLE
... CHUNK SAMPLE
... WATER TABLE OR SEEPAGE

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GEOCON

PROJECT NO. T2820-22-01

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	**TEST PIT TP-15** ELEV. (MSL.) **1359** DATE COMPLETED **06/08/2018** EQUIPMENT **EXCAVATOR W/ 36" BUCKET** BY: **P. THERIAULT**	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
					MATERIAL DESCRIPTION			
0					**VAL VERDE TONALITE (Kvt)** Fresh, strong, dry, black/white, GRANITIC BEDROCK; excavates as boulder with cobble (shot rock) -Becomes non-shot rock			

Total Depth 1' (Refusal)
Groundwater not encountered
No caving
Backfilled with cuttings 6/18/2018

Figure A-15,
Log of Test Pit TP-15, Page 1 of 1

T2820-22-01 TEST PIT LOGS.GPJ

SAMPLE SYMBOLS			
	... SAMPLING UNSUCCESSFUL	... STANDARD PENETRATION TEST	... DRIVE SAMPLE (UNDISTURBED)
	... DISTURBED OR BAG SAMPLE	... CHUNK SAMPLE	... WATER TABLE OR SEEPAGE

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GEOCON

PROJECT NO. T2820-22-01

TEST PIT TP-16

ELEV. (MSL.) **1356** DATE COMPLETED **06/08/2018**

EQUIPMENT **EXCAVATOR W/ 36" BUCKET** BY: **P. THERIAULT**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SM/SP	**UNDOCUMENTED FILL (afu)** Silty SAND to poorly graded SAND, loose, dry, light grayish brown; fine to coarse sand; some cobble and boulders -Boulders up to 4' diameter			
2								
4								
6				SM	**ALLUVIUM (Qal)** Silty SAND, medium dense, moist, brown; fine to coarse sand; micaceous -Some porosity up to 1/4-inch			
8								
10								
12								
14								
16								
18					**VAL VERDE TONALITE (Kvt)** Moderately weathered, moderately strong, moist, reddish yellow, GRANITIC BEDROCK; excavates as a gravelly sand			
20								
22					Total Depth 22' (Refusal) Groundwater not encountered No caving Backfilled with cuttings 6/18/2018			

Figure A-16,
Log of Test Pit TP-16, Page 1 of 1

T2820-22-01 TEST PIT LOGS.GPJ

SAMPLE SYMBOLS

☐ ... SAMPLING UNSUCCESSFUL ◧ ... STANDARD PENETRATION TEST ■ ... DRIVE SAMPLE (UNDISTURBED)

⊠ ... DISTURBED OR BAG SAMPLE ◪ ... CHUNK SAMPLE ▼ ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. T2820-22-01

TEST PIT TP-17

ELEV. (MSL.) **1358** DATE COMPLETED **06/08/2018**

EQUIPMENT **EXCAVATOR W/ 36" BUCKET** BY: **P. THERIAULT**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SM	**UNDOCUMENTED FILL (afu)** Silty SAND, loose, dry, grayish brown; fine to coarse sand; some cobbles			
2					**VAL VERDE TONALITE (Kvt)** fresh, strong, damp, black/white, GRANITIC BEDROCK; shot rock			
4					-Becomes non-shot rock			

Total Depth 4.5' (Refusal)
Groundwater not encountered
No caving
Backfilled with cuttings 6/18/2018

Figure A-17,
Log of Test Pit TP-17, Page 1 of 1

T2820-22-01 TEST PIT LOGS.GPJ

SAMPLE SYMBOLS

... SAMPLING UNSUCCESSFUL
... STANDARD PENETRATION TEST
... DRIVE SAMPLE (UNDISTURBED)
... DISTURBED OR BAG SAMPLE
... CHUNK SAMPLE
... WATER TABLE OR SEEPAGE

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GEOCON

PROJECT NO. T2820-22-01

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	**TEST PIT TP-18** ELEV. (MSL.) **1356** DATE COMPLETED **06/08/2018** EQUIPMENT **EXCAVATOR W/ 36" BUCKET** BY: **P. THERIAULT**	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
					MATERIAL DESCRIPTION			
0					**UNDOCUMENTED FILL (afu)** Silty SAND, loose, dry, grayish brown; fine to coarse sand; some cobbles			
2					**VAL VERDE TONALITE (Kvt)** Fresh, strong, damp, black/white, GRANITIC BEDROCK; shot rock -Becomes non-shot rock			
					Total Depth 2.5' (Refusal) Groundwater not encountered No caving Backfilled with cuttings 6/18/2018			

Figure A-18,
Log of Test Pit TP-18, Page 1 of 1

T2820-22-01 TEST PIT LOGS.GPJ

SAMPLE SYMBOLS

... SAMPLING UNSUCCESSFUL
... STANDARD PENETRATION TEST
... DRIVE SAMPLE (UNDISTURBED)
... DISTURBED OR BAG SAMPLE
... CHUNK SAMPLE
... WATER TABLE OR SEEPAGE

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GEOCON

TP-1 Spoil Pile

TP-1 Excavation

GEOCON
WEST, INC.
GEOTECHNICAL ENVIRONMENTAL MATERIALS
41571 CORNING PLACE, SUITE 101, MURRIETA, CA 92562-7065
PHONE 951-304-2300 FAX 951-304-2392

LAB

PHOTOGRAPHS OF TEST PITS

CREST VIEW
NORTHWEST CORNER OF CENTRAL & SYCAMORE CANYON
RIVERSIDE, CALIFORNIA

JUNE, 2018 | PROJECT NO. T2820-22-01 | **Fig. A-19**

TP-2 Excavation

TP-2 Oversized Rock

TP-2 Spoil Pile

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LAB

PHOTOGRAPHS OF TEST PITS

CREST VIEW
NORTHWEST CORNER OF CENTRAL & SYCAMORE CANYON
RIVERSIDE, CALIFORNIA

JUNE, 2018 | PROJECT NO. T2820-22-01 | Fig. A-20

TP-3 Excavation

TP-3 Oversized Rock

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LAB

PHOTOGRAPHS OF TEST PITS

CREST VIEW
NORTHWEST CORNER OF CENTRAL & SYCAMORE CANYON
RIVERSIDE, CALIFORNIA

JUNE, 2018 | PROJECT NO. T2820-22-01 | **Fig. A-21**

TP-3

TP-3 Spoil Pile

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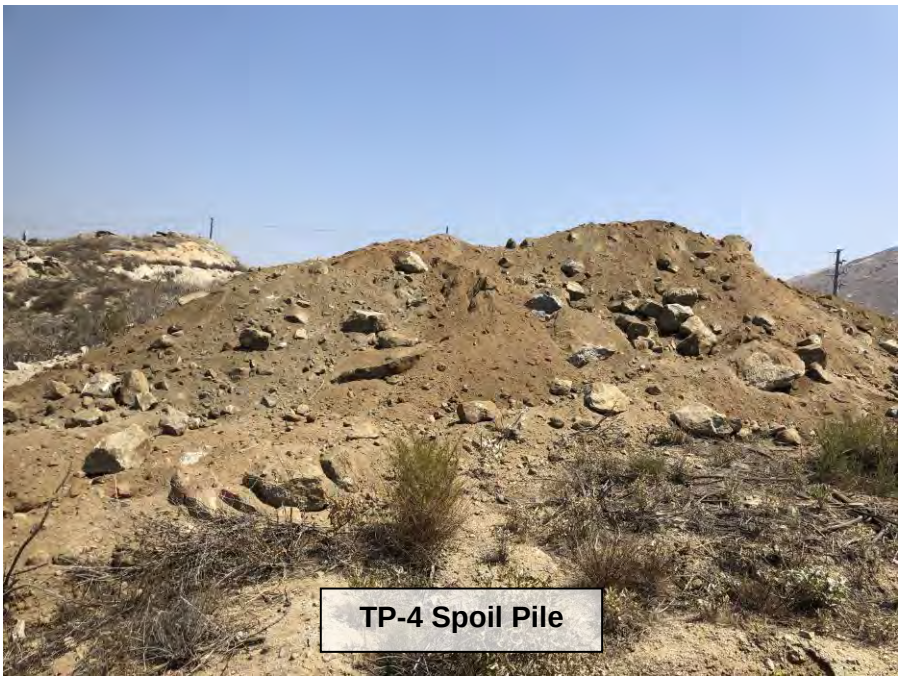
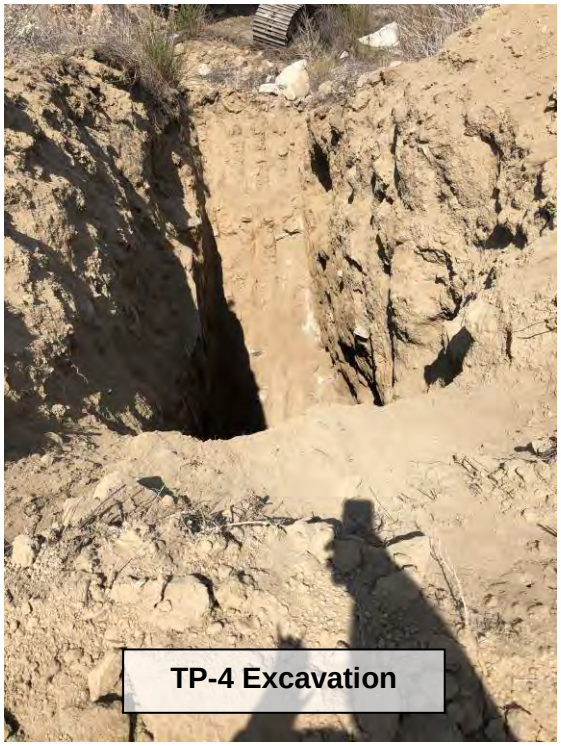
LAB

PHOTOGRAPHS OF TEST PITS

CREST VIEW
NORTHWEST CORNER OF CENTRAL & SYCAMORE CANYON
RIVERSIDE, CALIFORNIA

JUNE, 2018 | PROJECT NO. T2820-22-01 | **Fig. A-22**





GEOCON
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GEOTECHNICAL ENVIRONMENTAL MATERIALS
41571 CORNING PLACE, SUITE 101, MURRIETA, CA 92562-7065
PHONE 951-304-2300 FAX 951-304-2392

LAB

PHOTOGRAPHS OF TEST PITS

CREST VIEW
NORTHWEST CORNER OF CENTRAL & SYCAMORE CANYON
RIVERSIDE, CALIFORNIA

JUNE, 2018 | PROJECT NO. T2820-22-01 | **Fig. A-23**

TP-4

TP-4 Excavation

GEOCON
WEST, INC.
GEOTECHNICAL ENVIRONMENTAL MATERIALS
41571 CORNING PLACE, SUITE 101, MURRIETA, CA 92562-7065
PHONE 951-304-2300 FAX 951-304-2392

LAB

PHOTOGRAPHS OF TEST PITS

CREST VIEW
NORTHWEST CORNER OF CENTRAL & SYCAMORE CANYON
RIVERSIDE, CALIFORNIA

JUNE, 2018 | PROJECT NO. T2820-22-01 | **Fig. A-24**

TP-5 Location

TP-5 Spoil Pile

GEOCON
WEST, INC.
GEOTECHNICAL ENVIRONMENTAL MATERIALS
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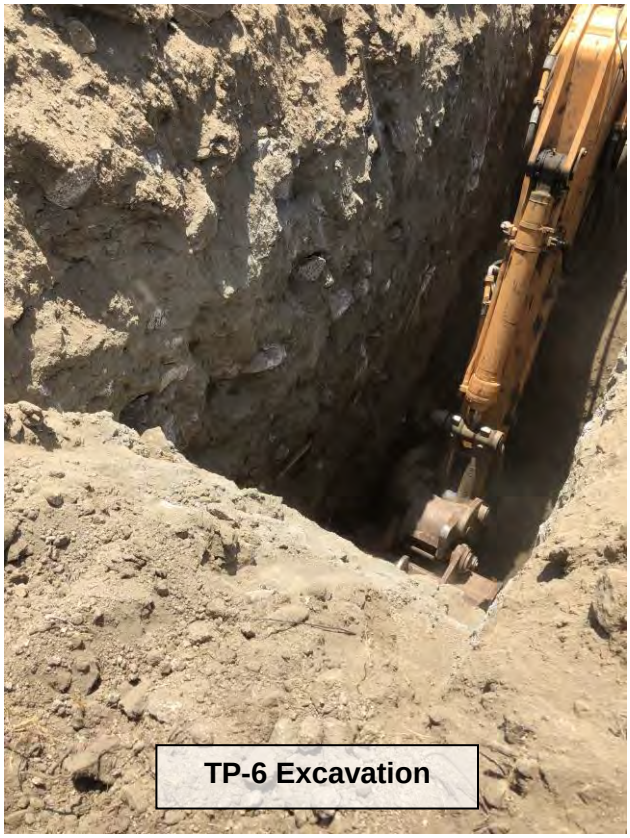
LAB

PHOTOGRAPHS OF TEST PITS

CREST VIEW
NORTHWEST CORNER OF CENTRAL & SYCAMORE CANYON
RIVERSIDE, CALIFORNIA

JUNE, 2018 | PROJECT NO. T2820-22-01 | **Fig. A25**

TP-6 Excavation



TP-6 Excavation

TP-6 Spoil Pile

GEOCON
WEST, INC.
GEOTECHNICAL ENVIRONMENTAL MATERIALS
41571 CORNING PLACE, SUITE 101, MURRIETA, CA 92562-7065
PHONE 951-304-2300 FAX 951-304-2392

LAB

PHOTOGRAPHS OF TEST PITS

CREST VIEW
NORTHWEST CORNER OF CENTRAL & SYCAMORE CANYON
RIVERSIDE, CALIFORNIA

JUNE, 2018 | PROJECT NO. T2820-22-01 | **Fig. A-26**

TP-7 Spoil Pile

GEOCON
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CREST VIEW
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JUNE, 2018 | PROJECT NO. T2820-22-01 | **Fig. A-27**

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CREST VIEW
NORTHWEST CORNER OF CENTRAL & SYCAMORE CANYON
RIVERSIDE, CALIFORNIA

JUNE, 2018 | PROJECT NO. T2820-22-01 | **Fig. A-28**

TP-9 Spoil Pile

GEOCON
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CREST VIEW
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RIVERSIDE, CALIFORNIA

JUNE, 2018 | PROJECT NO. T2820-22-01 | **Fig. A-29**

TP-11 Spoil Pile

GEOCON
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CREST VIEW
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RIVERSIDE, CALIFORNIA

JUNE, 2018 | PROJECT NO. T2820-22-01 | **Fig. A-30**

TP-12 Spoil Pile

GEOCON
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CREST VIEW
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RIVERSIDE, CALIFORNIA

JUNE, 2018 | PROJECT NO. T2820-22-01 | **Fig. A-31**

TP-13 Spoil Pile

GEOCON
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PHOTOGRAPHS OF TEST PITS

CREST VIEW
NORTHWEST CORNER OF CENTRAL & SYCAMORE CANYON
RIVERSIDE, CALIFORNIA

JUNE, 2018 | PROJECT NO. T2820-22-01 | **Fig. A-32**

TP-14 Spoil Pile

GEOCON
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CREST VIEW
NORTHWEST CORNER OF CENTRAL & SYCAMORE CANYON
RIVERSIDE, CALIFORNIA

JUNE, 2018 | PROJECT NO. T2820-22-01 | **Fig. A-33**

TP-15 Spoil Pile

GEOCON
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PHOTOGRAPHS OF TEST PITS

CREST VIEW
NORTHWEST CORNER OF CENTRAL & SYCAMORE CANYON
RIVERSIDE, CALIFORNIA

JUNE, 2018 | PROJECT NO. T2820-22-01 | **Fig. A-34**

TP-16 Spoil Pile

GEOCON
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GEOTECHNICAL ENVIRONMENTAL MATERIALS
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LAB

PHOTOGRAPHS OF TEST PITS

CREST VIEW
NORTHWEST CORNER OF CENTRAL & SYCAMORE CANYON
RIVERSIDE, CALIFORNIA

JUNE, 2018 | PROJECT NO. T2820-22-01 | **Fig. A-35**

TP-17 Spoil Pile

GEOCON
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LAB

PHOTOGRAPHS OF TEST PITS

CREST VIEW
NORTHWEST CORNER OF CENTRAL & SYCAMORE CANYON
RIVERSIDE, CALIFORNIA

JUNE, 2018 | PROJECT NO. T2820-22-01 | **Fig. A-36**

TP-18 Spoil Pile

GEOCON
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LAB

PHOTOGRAPHS OF TEST PITS

CREST VIEW
NORTHWEST CORNER OF CENTRAL & SYCAMORE CANYON
RIVERSIDE, CALIFORNIA

JUNE, 2018 | PROJECT NO. T2820-22-01 | **Fig. A-37**

Fill Slope Face

GEOCON
WEST, INC.
GEOTECHNICAL ENVIRONMENTAL MATERIALS
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PHOTOGRAPHS OF TEST PITS

CREST VIEW
NORTHWEST CORNER OF CENTRAL & SYCAMORE CANYON
RIVERSIDE, CALIFORNIA

JUNE, 2018 | PROJECT NO. T2820-22-01 | **Fig. A-38**

Fill Slope Face

GEOCON
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GEOTECHNICAL ENVIRONMENTAL MATERIALS
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LAB

PHOTOGRAPHS OF TEST PITS

CREST VIEW
NORTHWEST CORNER OF CENTRAL & SYCAMORE CANYON
RIVERSIDE, CALIFORNIA

JUNE, 2018 | PROJECT NO. T2820-22-01 | **Fig. A-39**

DESCRIPTIVE LOG OF TRENCH EXCAVATION

Trench Number	Depth (Feet)	U.S.C.S. Symbol	Field Description
T-1			ARTIFICIAL FILL (Qaf):
	0.0-1.0	SM	Silty SAND: Fine- to coarse-grained, brown to reddish-brown, dry, loose, desiccated.
			ALLUVIUM (Qal):
	1.0-14.0	SM	Silty SAND: Fine- to coarse-grained, brown to reddish-brown, dry to damp, loose to medium dense, porous, desiccated to 3 feet.
			BEDROCK (Kgr):
	14.0-16.0		Granitic Rock: Gray-brown, dry to damp, moderately hard, very coarse-grained, moderately weathered.
			Total Depth: 16.0 feet No Caving No Groundwater Backfill not compacted
T-2			ARTIFICIAL FILL (Qaf):
	0.0-13.0	SM	Silty SAND: Fine- to coarse-grained with gravel to boulder-size rocks to 5' in diameter, brown, damp, loose; large pocket of debris (tire fragments, wood, organic material, concrete, asphalt), concrete to 5' in diameter.
			ALLUVIUM (Qal):
	13.0-19.0	SM	Silty SAND: Fine- to coarse-grained, brown, damp to moist, loose, porous.
			BEDROCK (Kgr):
	19.0-21.0		Granitic Rock: Gray-brown, dry to damp, moderately hard, very coarse-grained.
			Total Depth: 21.0 feet Slight Caving of Fill No Groundwater Backfill not compacted

DESCRIPTIVE LOG OF TRENCH EXCAVATION

Trench Number	Depth (Feet)	U.S.C.S. Symbol	Field Description
T-3			ARTIFICIAL FILL (Qaf):
	0.0-20.0	SM	Silty SAND: Fine- to coarse-grained with gravel to boulder-size rocks to 3' in diameter, brown, dry, loose, minor debris.
			@ 5.0-20.0: portion of trench exposes slurry or concrete truck wash out materials.
			@ 12 feet: roll of chain-link fence.
			ALLUVIUM (Qal):
	20.0-24.0	SM	Silty SAND: Fine- to coarse-grained, brown, damp to moist, loose, porous.
			BEDROCK (Kgr):
	24.0-26.0		Granitic Rock: Gray-brown, dry to damp, moderately hard, very coarse-grained.
			Total Depth: 26.0 feet Moderate Caving of fill No Groundwater Backfill not compacted
T-4			BEDROCK (Kgr):
	0.0-4.0		Granitic Rock: Gray-brown, dry, moderately hard to hard, very coarse-grained.
			Total Depth: 4.0 feet No Caving No Groundwater Backfill not compacted

DESCRIPTIVE LOG OF TRENCH EXCAVATION

Trench Number	Depth (Feet)	U.S.C.S. Symbol	Field Description
T-5			ARTIFICIAL FILL (Qaf):
	0.0-33.0	SM	Silty SAND: Fine- to coarse-grained with gravel to boulder-size rocks up to 11' in diameter, brown, damp, loose; extensive debris including wood, tires, metal pipe, etc.
			Total Depth: 33.0 feet Slight Caving No Groundwater Backfill not compacted
T-6	0.0-10.0		BEDROCK (Ker):
			Granitic Rock: Mottled black, white and gray, dry to damp, hard to very hard, very coarse-grained.
			@ 3.0 feet: Becomes locally very hard.
			@ 10 feet: Refusal.
			Total Depth: 10.0 feet No Caving No Groundwater Backfill not compacted

DESCRIPTIVE LOG OF TRENCH EXCAVATION

Trench Number	Depth (Feet)	U.S.C.S. Symbol	Field Description
T-7			ARTIFICIAL FILL (Qaf):
	0.0-21.0	SM	Silty SAND: Fine- to coarse-grained, reddish-brown, dry, medium dense. @ 5.0 feet: Becomes brown, damp, gravel to boulder-size rocks. @ 6.0 feet: Concrete and brick debris. @ 12 feet: Increase in boulders up to 5' in diameter, concrete debris continues. @ 15 feet: Misc. debris (plastic bottles, pipe, etc.).
			ALLUVIUM (Qal):
	21.0-28.0	SM	Silty SAND: Fine- to coarse-grained, reddish-brown, moist, medium dense.
			Total Depth: 28.0 feet Slight Caving of Fill No Groundwater Backfill not compacted
T-8			ARTIFICIAL FILL (Qaf):
	0.0-15.0	SM	Silty SAND: Fine- to coarse-grained with gravel and boulder-size rocks up to 2' in diameter, brown, dry, loose; minor debris.
			TOPSOIL (No Map Symbol):
	15.0-18.0	SM	Silty SAND: Fine- to coarse-grained, brown, damp to moist, loose, porous.
			BEDROCK (Kgr):
	18.0-19.0		Granitic Rock: Gray-brown, dry to damp, hard, very coarse-grained.
			Total Depth: 19.0 feet Slight Caving of fill No Groundwater Backfill not compacted

DESCRIPTIVE LOG OF TRENCH EXCAVATION

Trench Number	Depth (Feet)	U.S.C.S. Symbol	Field Description
T-9			ARTIFICIAL FILL (Qaf):
	0.0-18.0	SM	Silty SAND: Fine- to coarse-grained with gravel to boulder-size rocks, brown, damp, loose. @ 2.0 feet: Numerous boulders up to 5' in diameter. @ 10.0 feet: Slight decrease in boulder concentration. Total Depth: 18.0 feet Slight Caving No Groundwater Backfill not compacted
T-10			ARTIFICIAL FILL (Qaf):
	0.0-16.0	SM	Silty SAND: Fine- to coarse-grained with gravel to boulder-size rocks, brown, damp, loose, minor debris. @ 2 feet: 5' diameter boulder, caving around boulder. @ 5 feet: Scattered 3' diameter boulders, moderate caving, very loose down to 10 feet.
			TOPSOIL (No Map Symbol):
	16.0-20.0	SM	Silty SAND: Fine- to coarse-grained, reddish-brown, moist, loose to medium dense, slightly porous.
			BEDROCK (Kgr):
	20.0-21.0		Granitic Rock: Gray-brown, dry to damp, hard, very coarse-grained. Total Depth: 21.0 feet Slight to Moderate Caving of fill No Groundwater Backfill not compacted

DESCRIPTIVE LOG OF TRENCH EXCAVATION

Trench Number	Depth (feet)	U.S.C.S. Symbol	Field Description
T-11			ARTIFICIAL FILL (Qaf):
	0.0-20.0	SM	Silty SAND: Fine- to coarse-grained with gravel to boulder-size rocks, brown, damp, loose. @ 3.0 feet: Numerous boulders from 18"-24" in diameter. @ 5.0 feet: Becomes medium dense to dense. @ 13.0 feet: 3' to 5' diameter boulders, loose. Total Depth: 20.0 feet Slight Caving No Groundwater Backfill not compacted

PROJECT: Canyon Crest Courtyard
PROJECT LOCATION: Riverside, CA
ENCLOSURE NO.: 2
DATE OF TESTS: 8/30/87

FILE NUMBER: S-8913
TEST PIT NUMBER: 1
REPORT NO.: 4065

Blows Per Foot	Driving Energy ft-lb/ft	Dry Density PCF	Moist. Content %	Rel. Comp. %	Feet	Visual Classification
					1	(SM) Gray-brown silty fine to coarse sand, dry and moderately dense. FILL
	---	113	4.3	87	2	Light brown silty fine to coarse sand with rock fragments, damp and medium dense. FILL
	---	110	6.6	84	4	
	---	108	6.5	83	6	- becoming loose at 5.0 feet
	---	105	6.3	81	8	Light brown silty fine to medium sand, porous, moist and loose. ORIGINAL GROUND
					10	[ ] Light gray weathered granitic bedrock, damp and dense

Total Depth at 10.5 Feet - No Free Groundwater Encountered

PROJECT: Canyon Crest Courtyard
PROJECT LOCATION: Riverside, CA
ENCLOSURE NO.: 2
DATE OF TESTS: 8/30/97

FILE NUMBER: S-8513
TEST PIT NUMBER: 2
REPORT NO.: 5965

Blows Per Foot	Driving Energy ft-lb/ft	Dry Density PCF	Moist. Content %	Rel. Comp. %	Feet	Visual Classification
					1	(SM) Gray-brown silty fine to coarse sand with rock fragments, damp and moderately dense. FILL
	---	117	4.8	90	2	
					3	- becoming loose at 3.0 feet
	---	108	7.1	85	4	
					5	
	---	104	7.6	80	6	
	---	101	8.4	80	7	
					8	
					9	Light brown silty fine to medium sand with organic debris, moist and loose. FILL
					10	
					11	Light brown silty fine to medium sand, porous, moist and loose. ORIGINAL GROUND
					12	
					13	[ ] Light gray-brown weathered granitic bedrock, damp and dense Total Depth at 13.5 Feet - No Free Groundwater Encountered

PROJECT: Canyon Crest Courtyard
PROJECT LOCATION: Riverside, CA
ENCLOSURE NO.: 2
DATE OF TESTS: 8/30/87

FILE NUMBER: 5-8913
TEST PIT NUMBER: 3
REPORT NO.: 5065

Blows Per Foot	Driving Energy ft-lb/ft	Dry Density PCF	Moist. Content %	Rel. Comp. %	Feet	Visual Classification
					1	(SM) Mottled gray and light brown silty fine to coarse sand with boulders up to 30 inches in diameter, and fragments of wire, brick, asphalt concrete, pipe, and concrete, damp and dense. FILL
	---	124	5.0	82	2	
					3	
					4	
					5	- less debris and very dense below 5.0 feet
					6	
	---	129	7.0	95	7	- large concrete fragments with voids below 6.5 feet
					8	
					9	- large concrete slab and footing at 8.5 feet
					10	
					11	
					12	
					13	
					14	
					15	Light red-brown silty fine to coarse sand, very porous, moist and loose. ORIGINAL GROUND
					16	[ ] Light gray weathered granitic bedrock, damp & medium dense Total Depth at 16.0 Feet - No Free Groundwater Encountered

PROJECT: Canyon Crest Courtyard
PROJECT LOCATION: Riverside, CA
ENCLOSURE NO.: 2
DATE OF TESTS: 8/30/97

FILE NUMBER: S-8912
TEST PIT NUMBER: 4
REPORT NO.: 5065

Blows Per Foot	Driving Energy k-ft/ft	Dry Density PCF	Moist. Content %	Rel. Comp. %	Feet	Visual Classification
					1	(SM) Light brown silty fine to coarse sand with rock fragments, damp and dense. FILL
	---	127	4.1	95	2	
					3	
	---	131	6.8	98	4	Gray-brown silty fine to coarse sand with rock fragments and tire debris, damp and very dense. FILL
					5	
	---	132	6.0	99	6	- becoming medium dense at 6.0 feet
					7	
					8	- boulders up to 4 inches in diameter at 8.0 feet
					9	
					10	
					11	
					12	
					13	Light brown silty fine to coarse sand, very porous, moist and loose. ORIGINAL GROUND
					14	
					15	
					16	Light red-yellow weathered granitic bedrock, damp and dense Total Depth at 16.5 Feet No Free Groundwater Encountered

PROJECT: Canyon Crest Courtyard
PROJECT LOCATION: Riverside, CA
ENCLOSURE NO.: 2
DATE OF TESTS: 8/30/97

FILE NUMBER: E-8913
TEST PIT NUMBER: 5
REPORT NO.: 5086

Blows Per Foot	Driving Energy k-ft/ft	Dry Density PCF	Moist. Content %	Rel. Comp. %	Feet	Visual Classification
					1	(SP) Light gray-white gravelly fine to coarse sand with concrete debris up to 4.0 feet in diameter, dry and loose. FILL
					2	
	---	86	8.4	71	3	(SM) Gray-brown silty fine to coarse sand with gravel and concrete debris, damp and loose. FILL
					4	
					5	- becoming moist at 5.5 feet
	---	113	11.0	84	6	Dark brown silty fine to medium sand with a trace of clay, porous, moist and loose. ORIGINAL GROUND
					7	
	---	110	9.0	82	8	
					9	
					10	- very porous at 10.0 feet
					11	
					12	
					13	Light brown-gray silty fine to coarse sand with a trace of caliche, porous, slightly cemented, damp and medium dense
					14	
					15	Gray-brown weathered granitic bedrock, moist and very dense
					16	Refusal on very dense bedrock at 16.0 feet No Free Groundwater Encountered

PROJECT: Canyon Crest Courtyard
PROJECT LOCATION: Riverside, CA
ENCLOSURE NO.: 2
DATE OF TESTS: 8/30/97

FILE NUMBER: S-8913
TEST PIT NUMBER: 6
REPORT NO.: 5055

Blows Per Foot	Driving Energy ft-lb/ft	Dry Density PCF	Moist. Content %	Rel. Comp. %	Feet	Visual Classification
					1	(SM) Gray mottled-light brown silty fine to coarse sand with voids and gravel, cobbles, and boulders (up to 5.0 feet in diameter), dry and loose, FILL
					2	
					3	
					4	
					5	
					6	
					7	
					8	Refusal on large nested boulders at 8.0 feet No Free Groundwater Encountered

PROJECT: Canyon Crest Courtyard
PROJECT LOCATION: Riverside, CA
ENCLOSURE NO.: 8
DATE OF TESTS: 8/30/97

FILE NUMBER: 5-8513
TEST PIT NUMBER: 1
REPORT NO.: 5065

Blows Per Foot	Driving Energy k-ft/ft	Dry Density PCF	Moist. Content %	Rel. Comp. %	Feet	Visual Classification
					1	(SM) Light gray silty fine to coarse sand with rock fragments, dry and moderately dense. FILL
	---	120	3.8	98	2	
					3	
	---	119	4.7	98	4	
					5	
					6	
					7	
					8	[ ] Light gray weathered granitic bedrock, damp and dense. ORIGINAL GROUND Total Depth at 8.0 Feet - No Free Groundwater Encountered

APPENDIX B

APPENDIX B

RECOMMENDED GRADING SPECIFICATIONS

FOR

CREST VIEW
NORTHWEST CORNER OF CENTRAL & SYCAMORE CANYON
RIVERSIDE, CALIFORNIA

PROJECT NO. T2820-22-01

RECOMMENDED GRADING SPECIFICATIONS

1. GENERAL

1.1 These Recommended Grading Specifications shall be used in conjunction with the Geotechnical Report for the project prepared by Geocon. The recommendations contained in the text of the Geotechnical Report are a part of the earthwork and grading specifications and shall supersede the provisions contained hereinafter in the case of conflict.

1.2 Prior to the commencement of grading, a geotechnical consultant (Consultant) shall be employed for the purpose of observing earthwork procedures and testing the fills for substantial conformance with the recommendations of the Geotechnical Report and these specifications. The Consultant should provide adequate testing and observation services so that they may assess whether, in their opinion, the work was performed in substantial conformance with these specifications. It shall be the responsibility of the Contractor to assist the Consultant and keep them apprised of work schedules and changes so that personnel may be scheduled accordingly.

1.3 It shall be the sole responsibility of the Contractor to provide adequate equipment and methods to accomplish the work in accordance with applicable grading codes or agency ordinances, these specifications and the approved grading plans. If, in the opinion of the Consultant, unsatisfactory conditions such as questionable soil materials, poor moisture condition, inadequate compaction, and/or adverse weather result in a quality of work not in conformance with these specifications, the Consultant will be empowered to reject the work and recommend to the Owner that grading be stopped until the unacceptable conditions are corrected.

2. DEFINITIONS

2.1 **Owner** shall refer to the owner of the property or the entity on whose behalf the grading work is being performed and who has contracted with the Contractor to have grading performed.

2.2 **Contractor** shall refer to the Contractor performing the site grading work.

2.3 **Civil Engineer** or **Engineer of Work** shall refer to the California licensed Civil Engineer or consulting firm responsible for preparation of the grading plans, surveying and verifying as-graded topography.

2.4 **Consultant** shall refer to the soil engineering and engineering geology consulting firm retained to provide geotechnical services for the project.

2.5 **Soil Engineer** shall refer to a California licensed Civil Engineer retained by the Owner, who is experienced in the practice of geotechnical engineering. The Soil Engineer shall be responsible for having qualified representatives on-site to observe and test the Contractor's work for conformance with these specifications.

2.6 **Engineering Geologist** shall refer to a California licensed Engineering Geologist retained by the Owner to provide geologic observations and recommendations during the site grading.

2.7 **Geotechnical Report** shall refer to a soil report (including all addenda) which may include a geologic reconnaissance or geologic investigation that was prepared specifically for the development of the project for which these Recommended Grading Specifications are intended to apply.

3. MATERIALS

3.1 Materials for compacted fill shall consist of any soil excavated from the cut areas or imported to the site that, in the opinion of the Consultant, is suitable for use in construction of fills. In general, fill materials can be classified as *soil* fills, *soil-rock* fills or *rock* fills, as defined below.

3.1.1 **Soil fills** are defined as fills containing no rocks or hard lumps greater than 12 inches in maximum dimension and containing at least 40 percent by weight of material smaller than ¾ inch in size.

3.1.2 **Soil-rock fills** are defined as fills containing no rocks or hard lumps larger than 4 feet in maximum dimension and containing a sufficient matrix of soil fill to allow for proper compaction of soil fill around the rock fragments or hard lumps as specified in Paragraph 6.2. **Oversize rock** is defined as material greater than 12 inches.

3.1.3 **Rock fills** are defined as fills containing no rocks or hard lumps larger than 3 feet in maximum dimension and containing little or no fines. Fines are defined as material smaller than ¾ inch in maximum dimension. The quantity of fines shall be less than approximately 20 percent of the rock fill quantity.

3.2 Material of a perishable, spongy, or otherwise unsuitable nature as determined by the Consultant shall not be used in fills.

3.3 Materials used for fill, either imported or on-site, shall not contain hazardous materials as defined by the California Code of Regulations, Title 22, Division 4, Chapter 30, Articles 9

and 10; 40CFR; and any other applicable local, state or federal laws. The Consultant shall not be responsible for the identification or analysis of the potential presence of hazardous materials. However, if observations, odors or soil discoloration cause Consultant to suspect the presence of hazardous materials, the Consultant may request from the Owner the termination of grading operations within the affected area. Prior to resuming grading operations, the Owner shall provide a written report to the Consultant indicating that the suspected materials are not hazardous as defined by applicable laws and regulations.

3.4 The outer 15 feet of *soil-rock* fill slopes, measured horizontally, should be composed of properly compacted *soil* fill materials approved by the Consultant. *Rock* fill may extend to the slope face, provided that the slope is not steeper than 2:1 (horizontal:vertical) and a soil layer no thicker than 12 inches is track-walked onto the face for landscaping purposes. This procedure may be utilized provided it is acceptable to the governing agency, Owner and Consultant.

3.5 Samples of soil materials to be used for fill should be tested in the laboratory by the Consultant to determine the maximum density, optimum moisture content, and, where appropriate, shear strength, expansion, and gradation characteristics of the soil.

3.6 During grading, soil or groundwater conditions other than those identified in the Geotechnical Report may be encountered by the Contractor. The Consultant shall be notified immediately to evaluate the significance of the unanticipated condition

4. CLEARING AND PREPARING AREAS TO BE FILLED

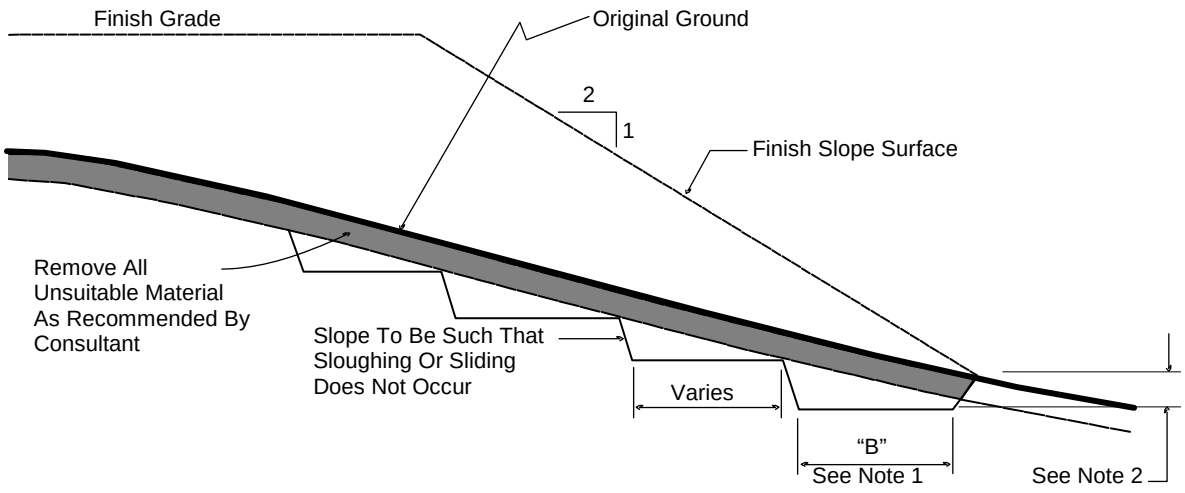
4.1 Areas to be excavated and filled shall be cleared and grubbed. Clearing shall consist of complete removal above the ground surface of trees, stumps, brush, vegetation, man-made structures, and similar debris. Grubbing shall consist of removal of stumps, roots, buried logs and other unsuitable material and shall be performed in areas to be graded. Roots and other projections exceeding 1½ inches in diameter shall be removed to a depth of 3 feet below the surface of the ground. Borrow areas shall be grubbed to the extent necessary to provide suitable fill materials.

4.2 Asphalt pavement material removed during clearing operations should be properly disposed at an approved off-site facility or in an acceptable area of the project evaluated by Geocon and the property owner. Concrete fragments that are free of reinforcing steel may be placed in fills, provided they are placed in accordance with Section 6.2 or 6.3 of this document.

4.3 After clearing and grubbing of organic matter and other unsuitable material, loose or porous soils shall be removed to the depth recommended in the Geotechnical Report. The depth of removal and compaction should be observed and approved by a representative of the Consultant. The exposed surface shall then be plowed or scarified to a minimum depth of 6 inches and until the surface is free from uneven features that would tend to prevent uniform compaction by the equipment to be used.

4.4 Where the slope ratio of the original ground is steeper than 5:1 (horizontal:vertical), or where recommended by the Consultant, the original ground should be benched in accordance with the following illustration.

TYPICAL BENCHING DETAIL



No Scale

DETAIL NOTES:

(1) Key width "B" should be a minimum of 10 feet, or sufficiently wide to permit complete coverage with the compaction equipment used. The base of the key should be graded horizontal, or inclined slightly into the natural slope.

(2) The outside of the key should be below the topsoil or unsuitable surficial material and at least 2 feet into dense formational material. Where hard rock is exposed in the bottom of the key, the depth and configuration of the key may be modified as approved by the Consultant.

4.5 After areas to receive fill have been cleared and scarified, the surface should be moisture conditioned to achieve the proper moisture content, and compacted as recommended in Section 6 of these specifications.

5. COMPACTION EQUIPMENT

5.1 Compaction of *soil* or *soil-rock* fill shall be accomplished by sheepsfoot or segmented-steel wheeled rollers, vibratory rollers, multiple-wheel pneumatic-tired rollers, or other types of acceptable compaction equipment. Equipment shall be of such a design that it will be capable of compacting the *soil* or *soil-rock* fill to the specified relative compaction at the specified moisture content.

5.2 Compaction of *rock* fills shall be performed in accordance with Section 6.3.

6. PLACING, SPREADING AND COMPACTION OF FILL MATERIAL

6.1 *Soil* fill, as defined in Paragraph 3.1.1, shall be placed by the Contractor in accordance with the following recommendations:

6.1.1 *Soil* fill shall be placed by the Contractor in layers that, when compacted, should generally not exceed 8 inches. Each layer shall be spread evenly and shall be thoroughly mixed during spreading to obtain uniformity of material and moisture in each layer. The entire fill shall be constructed as a unit in nearly level lifts. Rock materials greater than 12 inches in maximum dimension shall be placed in accordance with Section 6.2 or 6.3 of these specifications.

6.1.2 In general, the *soil* fill shall be compacted at a moisture content at or above the optimum moisture content as determined by ASTM D 1557.

6.1.3 When the moisture content of *soil* fill is below that specified by the Consultant, water shall be added by the Contractor until the moisture content is in the range specified.

6.1.4 When the moisture content of the *soil* fill is above the range specified by the Consultant or too wet to achieve proper compaction, the *soil* fill shall be aerated by the Contractor by blading/mixing, or other satisfactory methods until the moisture content is within the range specified.

6.1.5 After each layer has been placed, mixed, and spread evenly, it shall be thoroughly compacted by the Contractor to a relative compaction of at least 90 percent. Relative compaction is defined as the ratio (expressed in percent) of the in-place dry density of the compacted fill to the maximum laboratory dry density as determined in accordance with ASTM D 1557. Compaction shall be continuous over the entire area, and compaction equipment shall make sufficient passes so that the specified minimum relative compaction has been achieved throughout the entire fill.

6.1.6 Where practical, soils having an Expansion Index greater than 50 should be placed at least 3 feet below finish pad grade and should be compacted at a moisture content generally 2 to 4 percent greater than the optimum moisture content for the material.

6.1.7 Properly compacted *soil* fill shall extend to the design surface of fill slopes. To achieve proper compaction, it is recommended that fill slopes be over-built by at least 3 feet and then cut to the design grade. This procedure is considered preferable to track-walking of slopes, as described in the following paragraph.

6.1.8 As an alternative to over-building of slopes, slope faces may be back-rolled with a heavy-duty loaded sheepsfoot or vibratory roller at maximum 4-foot fill height intervals. Upon completion, slopes should then be track-walked with a D-8 dozer or similar equipment, such that a dozer track covers all slope surfaces at least twice.

6.2 *Soil-rock* fill, as defined in Paragraph 3.1.2, shall be placed by the Contractor in accordance with the following recommendations:

6.2.1 Rocks larger than 12 inches but less than 4 feet in maximum dimension may be incorporated into the compacted *soil* fill, but shall be limited to the area measured 15 feet minimum horizontally from the slope face and 5 feet below finish grade or 3 feet below the deepest utility, whichever is deeper.

6.2.2 Rocks or rock fragments up to 4 feet in maximum dimension may either be individually placed or placed in windrows. Under certain conditions, rocks or rock fragments up to 10 feet in maximum dimension may be placed using similar methods. The acceptability of placing rock materials greater than 4 feet in maximum dimension shall be evaluated during grading as specific cases arise and shall be approved by the Consultant prior to placement.

6.2.3 For individual placement, sufficient space shall be provided between rocks to allow for passage of compaction equipment.

6.2.4 For windrow placement, the rocks should be placed in trenches excavated in properly compacted *soil* fill. Trenches should be approximately 5 feet wide and 4 feet deep in maximum dimension. The voids around and beneath rocks should be filled with approved granular soil having a Sand Equivalent of 30 or greater and should be compacted by flooding. Windrows may also be placed utilizing an "open-face" method in lieu of the trench procedure, however, this method should first be approved by the Consultant.

6.2.5 Windrows should generally be parallel to each other and may be placed either parallel to or perpendicular to the face of the slope depending on the site geometry. The minimum horizontal spacing for windrows shall be 12 feet center-to-center with a 5-foot stagger or offset from lower courses to next overlying course. The minimum vertical spacing between windrow courses shall be 2 feet from the top of a lower windrow to the bottom of the next higher windrow.

6.2.6 Rock placement, fill placement and flooding of approved granular soil in the windrows should be continuously observed by the Consultant.

6.3 *Rock* fills, as defined in Section 3.1.3, shall be placed by the Contractor in accordance with the following recommendations:

6.3.1 The base of the *rock* fill shall be placed on a sloping surface (minimum slope of 2 percent). The surface shall slope toward suitable subdrainage outlet facilities. The *rock* fills shall be provided with subdrains during construction so that a hydrostatic pressure buildup does not develop. The subdrains shall be permanently connected to controlled drainage facilities to control post-construction infiltration of water.

6.3.2 *Rock* fills shall be placed in lifts not exceeding 3 feet. Placement shall be by rock trucks traversing previously placed lifts and dumping at the edge of the currently placed lift. Spreading of the *rock* fill shall be by dozer to facilitate *seating* of the rock. The *rock* fill shall be watered heavily during placement. Watering shall consist of water trucks traversing in front of the current rock lift face and spraying water continuously during rock placement. Compaction equipment with compactive energy comparable to or greater than that of a 20-ton steel vibratory roller or other compaction equipment providing suitable energy to achieve the required compaction or deflection as recommended in Paragraph 6.3.3 shall be utilized. The number of passes to be made should be determined as described in Paragraph 6.3.3. Once a *rock* fill lift has been covered with *soil* fill, no additional *rock* fill lifts will be permitted over the *soil* fill.

6.3.3 Plate bearing tests, in accordance with ASTM D 1196, may be performed in both the compacted *soil* fill and in the *rock* fill to aid in determining the required minimum number of passes of the compaction equipment. If performed, a minimum of three plate bearing tests should be performed in the properly compacted *soil* fill (minimum relative compaction of 90 percent). Plate bearing tests shall then be performed on areas of *rock* fill having two passes, four passes and six passes of the compaction equipment, respectively. The number of passes required for the *rock* fill shall be determined by comparing the results of the plate bearing tests for the *soil* fill and the *rock* fill and by evaluating the deflection

variation with number of passes. The required number of passes of the compaction equipment will be performed as necessary until the plate bearing deflections are equal to or less than that determined for the properly compacted *soil* fill. In no case will the required number of passes be less than two.

6.3.4 A representative of the Consultant should be present during *rock* fill operations to observe that the minimum number of "passes" have been obtained, that water is being properly applied and that specified procedures are being followed. The actual number of plate bearing tests will be determined by the Consultant during grading.

6.3.5 Test pits shall be excavated by the Contractor so that the Consultant can state that, in their opinion, sufficient water is present and that voids between large rocks are properly filled with smaller rock material. In-place density testing will not be required in the *rock* fills.

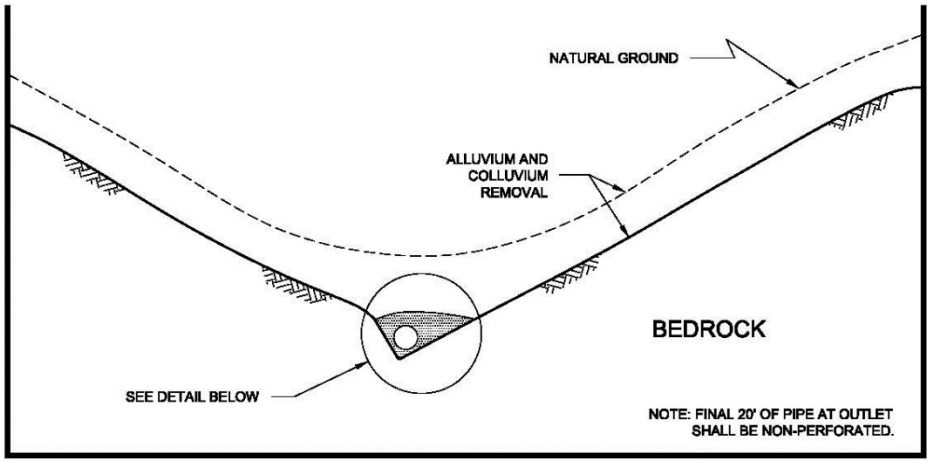
6.3.6 To reduce the potential for "piping" of fines into the *rock* fill from overlying *soil* fill material, a 2-foot layer of graded filter material shall be placed above the uppermost lift of *rock* fill. The need to place graded filter material below the *rock* should be determined by the Consultant prior to commencing grading. The gradation of the graded filter material will be determined at the time the *rock* fill is being excavated. Materials typical of the *rock* fill should be submitted to the Consultant in a timely manner, to allow design of the graded filter prior to the commencement of *rock* fill placement.

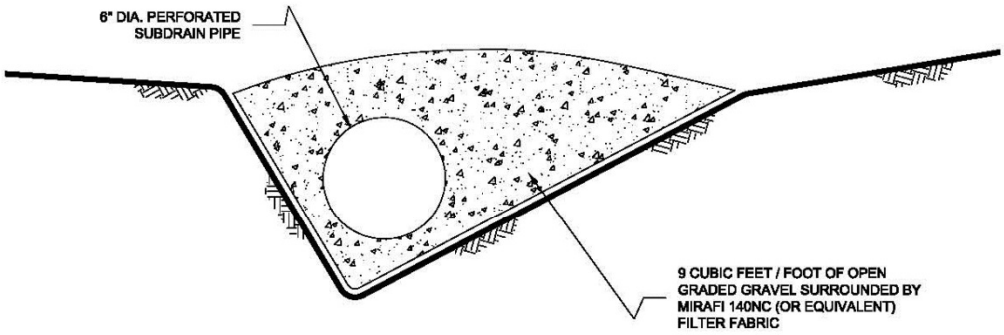
6.3.7 *Rock* fill placement should be continuously observed during placement by the Consultant.

7. SUBDRAINS

7.1 The geologic units on the site may have permeability characteristics and/or fracture systems that could be susceptible under certain conditions to seepage. The use of canyon subdrains may be necessary to mitigate the potential for adverse impacts associated with seepage conditions. Canyon subdrains with lengths in excess of 500 feet or extensions of existing offsite subdrains should use 8-inch-diameter pipes. Canyon subdrains less than 500 feet in length should use 6-inch-diameter pipes.

TYPICAL CANYON DRAIN DETAIL





NOTES:

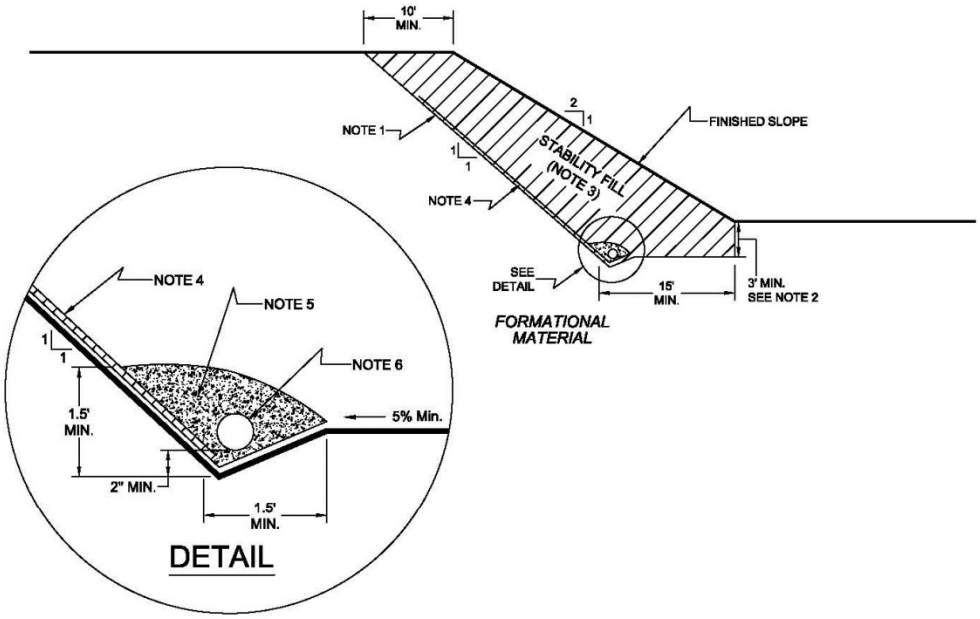
1.....8-INCH DIAMETER, SCHEDULE 80 PVC PERFORATED PIPE FOR FILLS
IN EXCESS OF 100-FEET IN DEPTH OR A PIPE LENGTH OF LONGER THAN 500 FEET.

2.....6-INCH DIAMETER, SCHEDULE 40 PVC PERFORATED PIPE FOR FILLS
LESS THAN 100-FEET IN DEPTH OR A PIPE LENGTH SHORTER THAN 500 FEET.

NO SCALE

7.2 Slope drains within stability fill keyways should use 4-inch-diameter (or lager) pipes.

TYPICAL STABILITY FILL DETAIL



NOTES:

1.....EXCAVATE BACKCUT AT 1:1 INCLINATION (UNLESS OTHERWISE NOTED).

2.....BASE OF STABILITY FILL TO BE 3 FEET INTO FORMATIONAL MATERIAL, SLOPING A MINIMUM 5% INTO SLOPE.

3.....STABILITY FILL TO BE COMPOSED OF PROPERLY COMPACTED GRANULAR SOIL.

4.....CHIMNEY DRAINS TO BE APPROVED PREFABRICATED CHIMNEY DRAIN PANELS (MIRADRAIN G200N OR EQUIVALENT) SPACED APPROXIMATELY 20 FEET CENTER TO CENTER AND 4 FEET WIDE. CLOSER SPACING MAY BE REQUIRED IF SEEPAGE IS ENCOUNTERED.

5.....FILTER MATERIAL TO BE 3/4-INCH, OPEN-GRADED CRUSHED ROCK ENCLOSED IN APPROVED FILTER FABRIC (MIRAFI 140NC).

6.....COLLECTOR PIPE TO BE 4-INCH MINIMUM DIAMETER, PERFORATED, THICK-WALLED PVC SCHEDULE 40 OR EQUIVALENT, AND SLOPED TO DRAIN AT 1 PERCENT MINIMUM TO APPROVED OUTLET.

NO SCALE

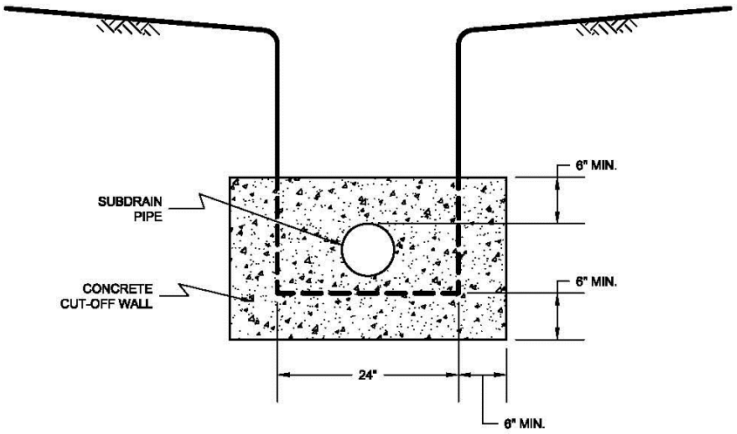
7.3 The actual subdrain locations will be evaluated in the field during the remedial grading operations. Additional drains may be necessary depending on the conditions observed and the requirements of the local regulatory agencies. Appropriate subdrain outlets should be evaluated prior to finalizing 40-scale grading plans.

7.4 *Rock* fill or *soil-rock* fill areas may require subdrains along their down-slope perimeters to mitigate the potential for buildup of water from construction or landscape irrigation. The subdrains should be at least 6-inch-diameter pipes encapsulated in gravel and filter fabric. *Rock* fill drains should be constructed using the same requirements as canyon subdrains.

7.5 Prior to outletting, the final 20-foot segment of a subdrain that will not be extended during future development should consist of non-perforated drainpipe. At the non-perforated/ perforated interface, a seepage cutoff wall should be constructed on the downslope side of the pipe.

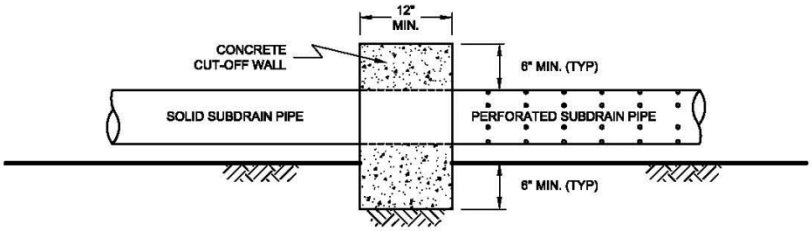
TYPICAL CUT OFF WALL DETAIL

FRONT VIEW



NO SCALE

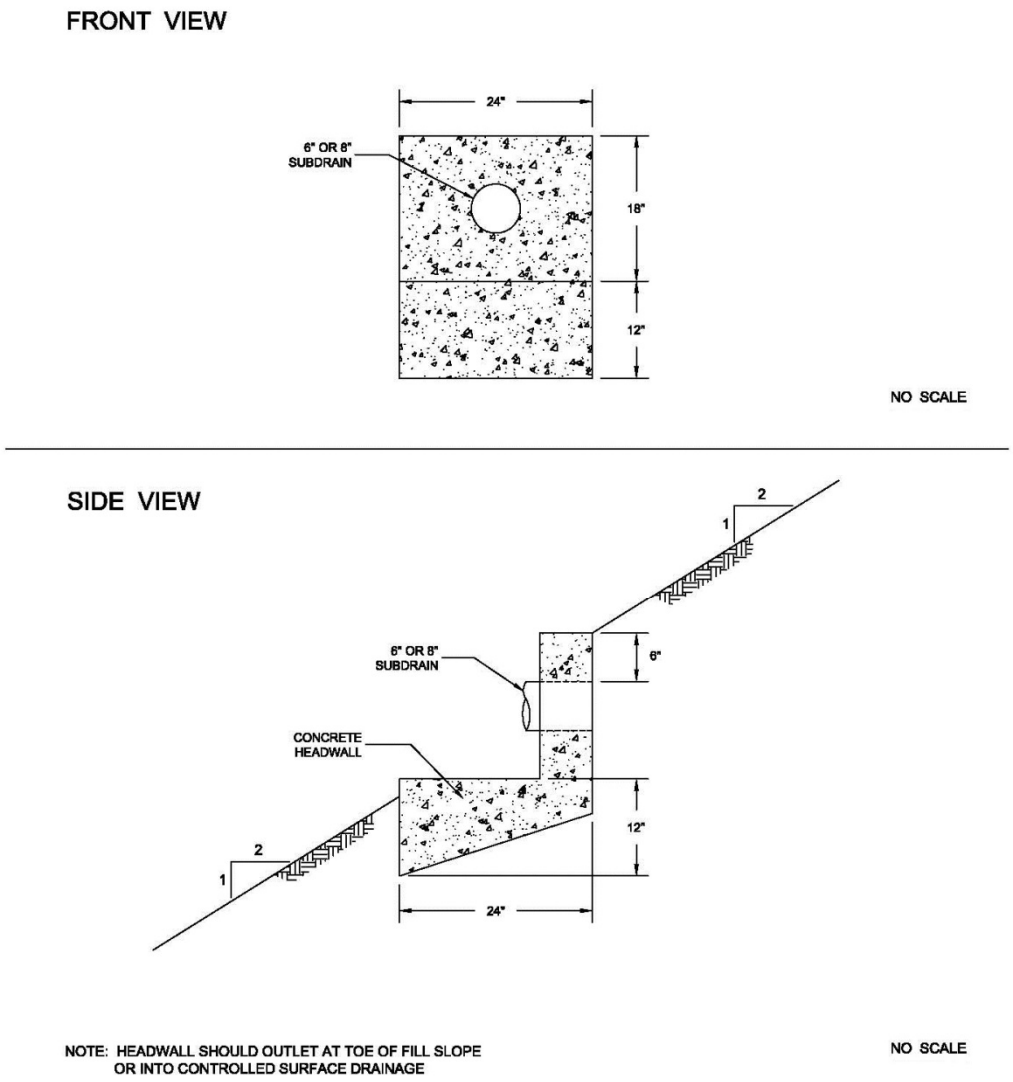
SIDE VIEW



NO SCALE

7.6 Subdrains that discharge into a natural drainage course or open space area should be provided with a permanent headwall structure.

TYPICAL HEADWALL DETAIL



7.7 The final grading plans should show the location of the proposed subdrains. After completion of remedial excavations and subdrain installation, the project civil engineer should survey the drain locations and prepare an “as-built” map showing the drain locations. The final outlet and connection locations should be determined during grading operations. Subdrains that will be extended on adjacent projects after grading can be placed on formational material and a vertical riser should be placed at the end of the subdrain. The grading contractor should consider videoing the subdrains shortly after burial to check proper installation and functionality. The contractor is responsible for the performance of the drains.

8. OBSERVATION AND TESTING

8.1 The Consultant shall be the Owner's representative to observe and perform tests during clearing, grubbing, filling, and compaction operations. In general, no more than 2 feet in vertical elevation of *soil* or *soil-rock* fill should be placed without at least one field density test being performed within that interval. In addition, a minimum of one field density test should be performed for every 2,000 cubic yards of *soil* or *soil-rock* fill placed and compacted.

8.2 The Consultant should perform a sufficient distribution of field density tests of the compacted *soil* or *soil-rock* fill to provide a basis for expressing an opinion whether the fill material is compacted as specified. Density tests shall be performed in the compacted materials below any disturbed surface. When these tests indicate that the density of any layer of fill or portion thereof is below that specified, the particular layer or areas represented by the test shall be reworked until the specified density has been achieved.

8.3 During placement of *rock* fill, the Consultant should observe that the minimum number of passes have been obtained per the criteria discussed in Section 6.3.3. The Consultant should request the excavation of observation pits and may perform plate bearing tests on the placed *rock* fills. The observation pits will be excavated to provide a basis for expressing an opinion as to whether the *rock* fill is properly seated and sufficient moisture has been applied to the material. When observations indicate that a layer of *rock* fill or any portion thereof is below that specified, the affected layer or area shall be reworked until the *rock* fill has been adequately seated and sufficient moisture applied.

8.4 A settlement monitoring program designed by the Consultant may be conducted in areas of *rock* fill placement. The specific design of the monitoring program shall be as recommended in the Conclusions and Recommendations section of the project Geotechnical Report or in the final report of testing and observation services performed during grading.

8.5 We should observe the placement of subdrains, to check that the drainage devices have been placed and constructed in substantial conformance with project specifications.

8.6 Testing procedures shall conform to the following Standards as appropriate:

8.6.1 Soil and Soil-Rock Fills:

8.6.1.1 Field Density Test, ASTM D 1556, *Density of S oil In-Place By the Sand-Cone Method.*

8.6.1.2 Field Density Test, Nuclear Method, ASTM D 6938, *Density of Soil and Soil-Aggregate In-Place by Nuclear Methods (Shallow Depth).*

8.6.1.3 Laboratory Compaction Test, ASTM D 1557, *Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10-Pound Hammer and 18-Inch Drop*.

8.6.1.4. Expansion Index Test, ASTM D 4829, *Expansion Index Test*.

9. PROTECTION OF WORK

9.1 During construction, the Contractor shall properly grade all excavated surfaces to provide positive drainage and prevent ponding of water. Drainage of surface water shall be controlled to avoid damage to adjoining properties or to finished work on the site. The Contractor shall take remedial measures to prevent erosion of freshly graded areas until such time as permanent drainage and erosion control features have been installed. Areas subjected to erosion or sedimentation shall be properly prepared in accordance with the Specifications prior to placing additional fill or structures.

9.2 After completion of grading as observed and tested by the Consultant, no further excavation or filling shall be conducted except in conjunction with the services of the Consultant.

10. CERTIFICATIONS AND FINAL REPORTS

10.1 Upon completion of the work, Contractor shall furnish Owner a certification by the Civil Engineer stating that the lots and/or building pads are graded to within 0.1 foot vertically of elevations shown on the grading plan and that all tops and toes of slopes are within 0.5 foot horizontally of the positions shown on the grading plans. After installation of a section of subdrain, the project Civil Engineer should survey its location and prepare an *as-built* plan of the subdrain location. The project Civil Engineer should verify the proper outlet for the subdrains and the Contractor should ensure that the drain system is free of obstructions.

10.2 The Owner is responsible for furnishing a final as-graded soil and geologic report satisfactory to the appropriate governing or accepting agencies. The as-graded report should be prepared and signed by a California licensed Civil Engineer experienced in geotechnical engineering and by a California Certified Engineering Geologist, indicating that the geotechnical aspects of the grading were performed in substantial conformance with the Specifications or approved changes to the Specifications.

APPENDIX D

ENVIRONMENTAL DATABASE REPORT

NWC of Central Ave and Sycamore Cyn Blvd
Not Reported
Riverside, CA 92507

Inquiry Number: 5995121.2s
March 03, 2020

The EDR Radius Map™ Report

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

TABLE OF CONTENTS

SECTION	PAGE
Executive Summary	ES1
Overview Map	2
Detail Map	3
Map Findings Summary	4
Map Findings	9
Orphan Summary	10
Government Records Searched/Data Currency Tracking	GR-1

GEOCHECK ADDENDUM

GeoCheck - Not Requested

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13), the ASTM Standard Practice for Environmental Site Assessments for Forestland or Rural Property (E 2247-16), the ASTM Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (E 1528-14) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

NOT REPORTED
RIVERSIDE, CA 92507

COORDINATES

Latitude (North):	33.9590030 - 33˚ 57' 32.41''
Longitude (West):	117.3128470 - 117˚ 18' 46.24''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	471094.7
UTM Y (Meters):	3757460.0
Elevation:	1339 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	5641312 RIVERSIDE EAST, CA
Version Date:	2012

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20140603
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
NOT REPORTED
RIVERSIDE, CA 92507

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION

NO MAPPED SITES FOUND

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL ..... National Priority List
Proposed NPL ..... Proposed National Priority List Sites
NPL LIENS ..... Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL ..... National Priority List Deletions

Federal CERCLIS list

FEDERAL FACILITY ..... Federal Facility Site Information listing
SEMS ..... Superfund Enterprise Management System

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE ..... Superfund Enterprise Management System Archive

Federal RCRA CORRACTS facilities list

CORRACTS ..... Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF ..... RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-LQG ..... RCRA - Large Quantity Generators
RCRA-SQG ..... RCRA - Small Quantity Generators
RCRA-VSQG ..... RCRA - Very Small Quantity Generators (Formerly Conditionally Exempt Small Quantity Generators)

Federal institutional controls / engineering controls registries

LUCIS ..... Land Use Control Information System

EXECUTIVE SUMMARY

US ENG CONTROLS..... Engineering Controls Sites List
US INST CONTROL..... Sites with Institutional Controls

Federal ERNS list

ERNS..... Emergency Response Notification System

State- and tribal - equivalent NPL

RESPONSE..... State Response Sites

State- and tribal - equivalent CERCLIS

ENVIROSTOR..... EnviroStor Database

State and tribal landfill and/or solid waste disposal site lists

SWF/LF..... Solid Waste Information System

State and tribal leaking storage tank lists

LUST..... Geotracker's Leaking Underground Fuel Tank Report
INDIAN LUST..... Leaking Underground Storage Tanks on Indian Land
CPS-SLIC..... Statewide SLIC Cases

State and tribal registered storage tank lists

FEMA UST..... Underground Storage Tank Listing
UST..... Active UST Facilities
AST..... Aboveground Petroleum Storage Tank Facilities
INDIAN UST..... Underground Storage Tanks on Indian Land

State and tribal voluntary cleanup sites

INDIAN VCP..... Voluntary Cleanup Priority Listing
VCP..... Voluntary Cleanup Program Properties

State and tribal Brownfields sites

BROWNFIELDS..... Considered Brownfieds Sites Listing

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS..... A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT..... Waste Management Unit Database
SWRCY..... Recycler Database
HAULERS..... Registered Waste Tire Haulers Listing
INDIAN ODI..... Report on the Status of Open Dumps on Indian Lands
DEBRIS REGION 9..... Torres Martinez Reservation Illegal Dump Site Locations

EXECUTIVE SUMMARY

ODI	Open Dump Inventory
IHS OPEN DUMPS	Open Dumps on Indian Land

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL	Delisted National Clandestine Laboratory Register
HIST Cal-Sites	Historical Calsites Database
SCH	School Property Evaluation Program
CDL	Clandestine Drug Labs
CERS HAZ WASTE	CERS HAZ WASTE
Toxic Pits	Toxic Pits Cleanup Act Sites
US CDL	National Clandestine Laboratory Register
PFAS	PFAS Contamination Site Location Listing

Local Lists of Registered Storage Tanks

SWEEPS UST	SWEEPS UST Listing
HIST UST	Hazardous Substance Storage Container Database
CA FID UST	Facility Inventory Database
CERS TANKS	California Environmental Reporting System (CERS) Tanks

Local Land Records

LIENS	Environmental Liens Listing
LIENS 2	CERCLA Lien Information
DEED	Deed Restriction Listing

Records of Emergency Release Reports

HMIRS	Hazardous Materials Information Reporting System
CHMIRS	California Hazardous Material Incident Report System
LDS	Land Disposal Sites Listing
MCS	Military Cleanup Sites Listing
SPILLS 90	SPILLS 90 data from FirstSearch

Other Ascertainable Records

RCRA NonGen / NLR	RCRA - Non Generators / No Longer Regulated
FUDS	Formerly Used Defense Sites
DOD	Department of Defense Sites
SCRD DRYCLEANERS	State Coalition for Remediation of Drycleaners Listing
US FIN ASSUR	Financial Assurance Information
EPA WATCH LIST	EPA WATCH LIST
2020 COR ACTION	2020 Corrective Action Program List
TSCA	Toxic Substances Control Act
TRIS	Toxic Chemical Release Inventory System
SSTS	Section 7 Tracking Systems
ROD	Records Of Decision
RMP	Risk Management Plans
RAATS	RCRA Administrative Action Tracking System
PRP	Potentially Responsible Parties
PADS	PCB Activity Database System
ICIS	Integrated Compliance Information System
FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

EXECUTIVE SUMMARY

MLTS	Material Licensing Tracking System
COAL ASH DOE	Steam-Electric Plant Operation Data
COAL ASH EPA	Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER	PCB Transformer Registration Database
RADINFO	Radiation Information Database
HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing
DOT OPS	Incident and Accident Data
CONSENT	Superfund (CERCLA) Consent Decrees
INDIAN RESERV	Indian Reservations
FUSRAP	Formerly Utilized Sites Remedial Action Program
UMTRA	Uranium Mill Tailings Sites
LEAD SMELTERS	Lead Smelter Sites
US AIRS	Aerometric Information Retrieval System Facility Subsystem
US MINES	Mines Master Index File
ABANDONED MINES	Abandoned Mines
FINDS	Facility Index System/Facility Registry System
UXO	Unexploded Ordnance Sites
ECHO	Enforcement & Compliance History Information
DOCKET HWC	Hazardous Waste Compliance Docket Listing
FUELS PROGRAM	EPA Fuels Program Registered Listing
CA BOND EXP. PLAN	Bond Expenditure Plan
Cortese	"Cortese" Hazardous Waste & Substances Sites List
CUPA Listings	CUPA Resources List
DRYCLEANERS	Cleaner Facilities
EMI	Emissions Inventory Data
ENF	Enforcement Action Listing
Financial Assurance	Financial Assurance Information Listing
HAZNET	Facility and Manifest Data
ICE	ICE
HIST CORTESE	Hazardous Waste & Substance Site List
HWP	EnviroStor Permitted Facilities Listing
HWT	Registered Hazardous Waste Transporter Database
MINES	Mines Site Location Listing
MWMP	Medical Waste Management Program Listing
NPDES	NPDES Permits Listing
PEST LIC	Pesticide Regulation Licenses Listing
PROC	Certified Processors Database
Notify 65	Proposition 65 Records
UIC	UIC Listing
UIC GEO	UIC GEO (GEOTRACKER)
WASTEWATER PITS	Oil Wastewater Pits Listing
WDS	Waste Discharge System
WIP	Well Investigation Program Case List
MILITARY PRIV SITES	MILITARY PRIV SITES (GEOTRACKER)
PROJECT	PROJECT (GEOTRACKER)
WDR	Waste Discharge Requirements Listing
CIWQS	California Integrated Water Quality System
CERS	CERS
NON-CASE INFO	NON-CASE INFO (GEOTRACKER)
OTHER OIL GAS	OTHER OIL & GAS (GEOTRACKER)
PROD WATER PONDS	PROD WATER PONDS (GEOTRACKER)
SAMPLING POINT	SAMPLING POINT (GEOTRACKER)
WELL STIM PROJ	Well Stimulation Project (GEOTRACKER)
MINES MRDS	Mineral Resources Data System
HWTS	Hazardous Waste Tracking System

EXECUTIVE SUMMARY

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP..... EDR Proprietary Manufactured Gas Plants
EDR Hist Auto..... EDR Exclusive Historical Auto Stations
EDR Hist Cleaner..... EDR Exclusive Historical Cleaners

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF..... Recovered Government Archive Solid Waste Facilities List
RGA LUST..... Recovered Government Archive Leaking Underground Storage Tank

SURROUNDING SITES: SEARCH RESULTS

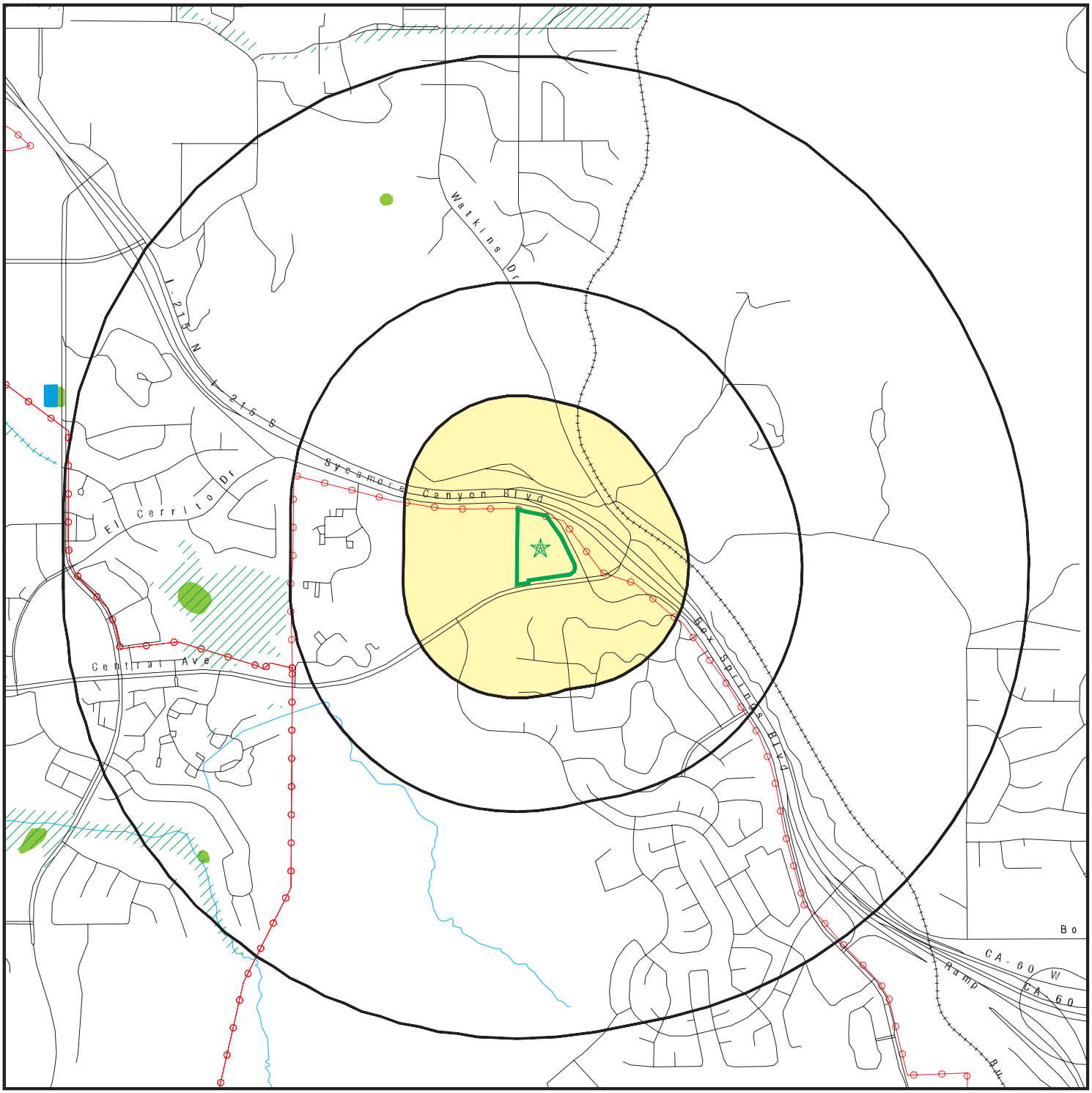
Surrounding sites were not identified.

Unmappable (orphan) sites are not considered in the foregoing analysis.

EXECUTIVE SUMMARY

There were no unmapped sites in this report.

OVERVIEW MAP - 5995121.2S



Target Property

Sites at elevations higher than or equal to the target property

Sites at elevations lower than the target property

Manufactured Gas Plants

National Priority List Sites

Dept. Defense Sites

0 1/4 1/2 1 Miles

Indian Reservations BIA

Power transmission lines

Special Flood Hazard Area (1%)

0.2% Annual Chance Flood Hazard

National Wetland Inventory

State Wetlands

Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: NWC of Central Ave and Sycamore Cyn Blvd ADDRESS: Not Reported Riverside CA 92507 LAT/LONG: 33.959003 / 117.312847	CLIENT: Ardent Environmental Group CONTACT: Tyler Burt INQUIRY #: 5995121.2s DATE: March 03, 2020 10:16 pm

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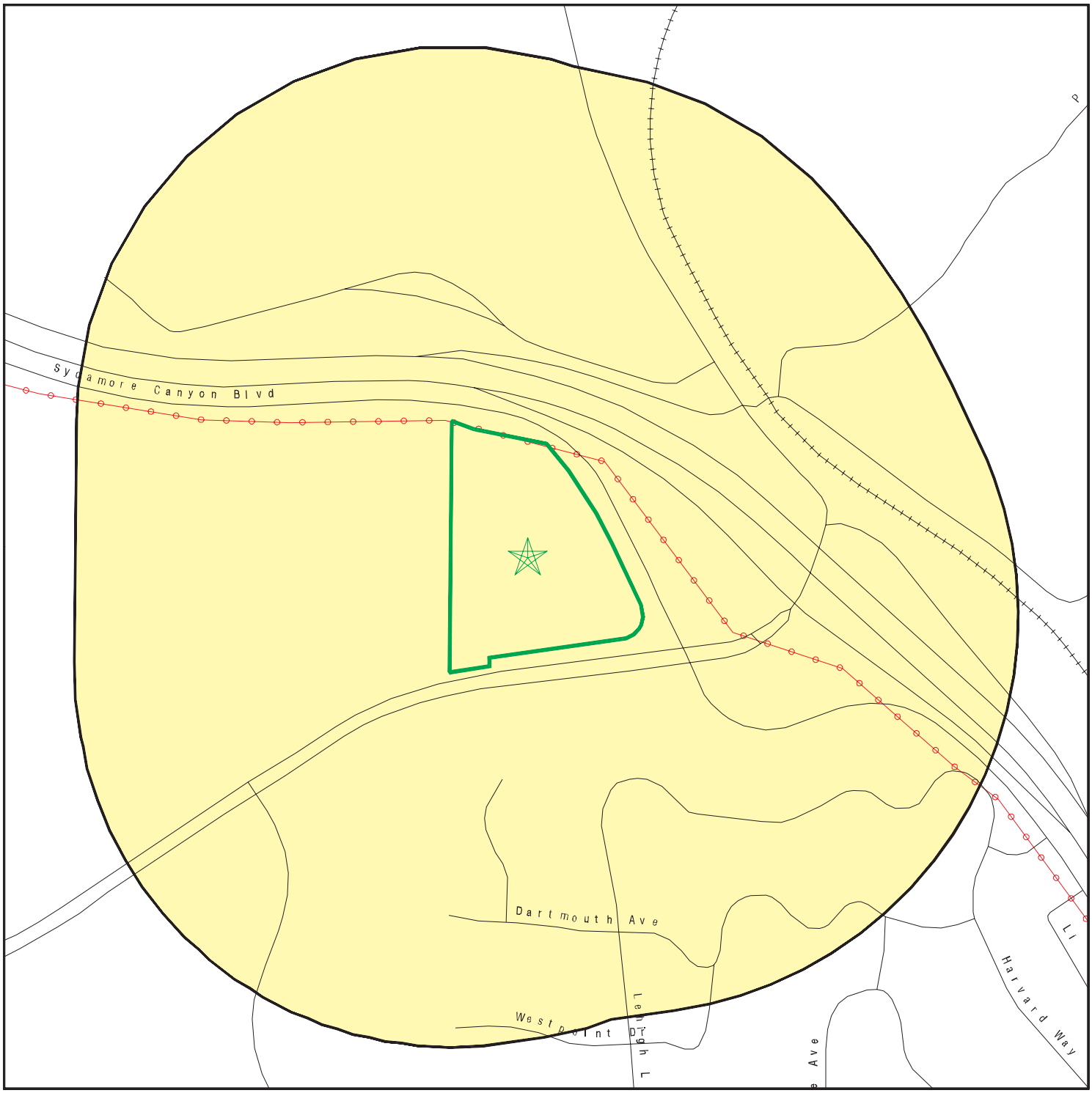
DETAIL MAP - 5995121.2S



Target Property

Sites at elevations higher than or equal to the target property

Sites at elevations lower than the target property

Manufactured Gas Plants

Sensitive Receptors

National Priority List Sites

Dept. Defense Sites

0 1/16 1/8 1/4 Miles

Indian Reservations BIA

Power transmission lines

Special Flood Hazard Area (1%)

0.2% Annual Chance Flood Hazard

Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: NWC of Central Ave and Sycamore Cyn Blvd ADDRESS: Not Reported Riverside CA 92507 LAT/LONG: 33.959003 / 117.312847	CLIENT: Ardent Environmental Group CONTACT: Tyler Burt INQUIRY #: 5995121.2s DATE: March 03, 2020 10:18 pm

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MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	1.000		0	0	0	0	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	0	NR	NR	0
Federal CERCLIS NFRAP site list								
SEMS-ARCHIVE	0.500		0	0	0	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-VSQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROL	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	0.001		0	NR	NR	NR	NR	0
State- and tribal - equivalent NPL								
RESPONSE	1.000		0	0	0	0	NR	0
State- and tribal - equivalent CERCLIS								
ENVIROSTOR	1.000		0	0	0	0	NR	0
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF	0.500		0	0	0	NR	NR	0
State and tribal leaking storage tank lists								
LUST	0.500		0	0	0	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
INDIAN LUST	0.500		0	0	0	NR	NR	0
CPS-SLIC	0.500		0	0	0	NR	NR	0
State and tribal registered storage tank lists								
FEMA UST	0.250		0	0	NR	NR	NR	0
UST	0.250		0	0	NR	NR	NR	0
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
State and tribal voluntary cleanup sites								
INDIAN VCP	0.500		0	0	0	NR	NR	0
VCP	0.500		0	0	0	NR	NR	0
State and tribal Brownfields sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
WMUDS/SWAT	0.500		0	0	0	NR	NR	0
SWRCY	0.500		0	0	0	NR	NR	0
HAULERS	0.001		0	NR	NR	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
IHS OPEN DUMPS	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	0.001		0	NR	NR	NR	NR	0
HIST Cal-Sites	1.000		0	0	0	0	NR	0
SCH	0.250		0	0	NR	NR	NR	0
CDL	0.001		0	NR	NR	NR	NR	0
CERS HAZ WASTE	0.250		0	0	NR	NR	NR	0
Toxic Pits	1.000		0	0	0	0	NR	0
US CDL	0.001		0	NR	NR	NR	NR	0
PFAS	0.500		0	0	0	NR	NR	0
Local Lists of Registered Storage Tanks								
SWEEPS UST	0.250		0	0	NR	NR	NR	0
HIST UST	0.250		0	0	NR	NR	NR	0
CA FID UST	0.250		0	0	NR	NR	NR	0
CERS TANKS	0.250		0	0	NR	NR	NR	0
Local Land Records								
LIENS	0.001		0	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
LIENS 2	0.001		0	NR	NR	NR	NR	0
DEED	0.500		0	0	0	NR	NR	0
Records of Emergency Release Reports								
HMIRS	0.001		0	NR	NR	NR	NR	0
CHMIRS	0.001		0	NR	NR	NR	NR	0
LDS	0.001		0	NR	NR	NR	NR	0
MCS	0.001		0	NR	NR	NR	NR	0
SPILLS 90	0.001		0	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		0	0	NR	NR	NR	0
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	0.001		0	NR	NR	NR	NR	0
EPA WATCH LIST	0.001		0	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	0.001		0	NR	NR	NR	NR	0
TRIS	0.001		0	NR	NR	NR	NR	0
SSTS	0.001		0	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	0.001		0	NR	NR	NR	NR	0
RAATS	0.001		0	NR	NR	NR	NR	0
PRP	0.001		0	NR	NR	NR	NR	0
PADS	0.001		0	NR	NR	NR	NR	0
ICIS	0.001		0	NR	NR	NR	NR	0
FTTS	0.001		0	NR	NR	NR	NR	0
MLTS	0.001		0	NR	NR	NR	NR	0
COAL ASH DOE	0.001		0	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	0.001		0	NR	NR	NR	NR	0
RADINFO	0.001		0	NR	NR	NR	NR	0
HIST FTTS	0.001		0	NR	NR	NR	NR	0
DOT OPS	0.001		0	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	0.001		0	NR	NR	NR	NR	0
US AIRS	0.001		0	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
ABANDONED MINES	0.250		0	0	NR	NR	NR	0
FINDS	0.001		0	NR	NR	NR	NR	0
UXO	1.000		0	0	0	0	NR	0
ECHO	0.001		0	NR	NR	NR	NR	0
DOCKET HWC	0.001		0	NR	NR	NR	NR	0
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0
CA BOND EXP. PLAN	1.000		0	0	0	0	NR	0
Cortese	0.500		0	0	0	NR	NR	0
CUPA Listings	0.250		0	0	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
EMI	0.001		0	NR	NR	NR	NR	0
ENF	0.001		0	NR	NR	NR	NR	0
Financial Assurance	0.001		0	NR	NR	NR	NR	0
HAZNET	0.001		0	NR	NR	NR	NR	0
ICE	0.001		0	NR	NR	NR	NR	0
HIST CORTESE	0.500		0	0	0	NR	NR	0
HWP	1.000		0	0	0	0	NR	0
HWT	0.250		0	0	NR	NR	NR	0
MINES	0.250		0	0	NR	NR	NR	0
MWMP	0.250		0	0	NR	NR	NR	0
NPDES	0.001		0	NR	NR	NR	NR	0
PEST LIC	0.001		0	NR	NR	NR	NR	0
PROC	0.500		0	0	0	NR	NR	0
Notify 65	1.000		0	0	0	0	NR	0
UIC	0.001		0	NR	NR	NR	NR	0
UIC GEO	0.001		0	NR	NR	NR	NR	0
WASTEWATER PITS	0.500		0	0	0	NR	NR	0
WDS	0.001		0	NR	NR	NR	NR	0
WIP	0.250		0	0	NR	NR	NR	0
MILITARY PRIV SITES	0.001		0	NR	NR	NR	NR	0
PROJECT	0.001		0	NR	NR	NR	NR	0
WDR	0.001		0	NR	NR	NR	NR	0
CIWQS	0.001		0	NR	NR	NR	NR	0
CERS	0.001		0	NR	NR	NR	NR	0
NON-CASE INFO	0.001		0	NR	NR	NR	NR	0
OTHER OIL GAS	0.001		0	NR	NR	NR	NR	0
PROD WATER PONDS	0.001		0	NR	NR	NR	NR	0
SAMPLING POINT	0.001		0	NR	NR	NR	NR	0
WELL STIM PROJ	0.001		0	NR	NR	NR	NR	0
MINES MRDS	0.001		0	NR	NR	NR	NR	0
HWTS	TP		NR	NR	NR	NR	NR	0
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR Hist Auto	0.125		0	NR	NR	NR	NR	0
EDR Hist Cleaner	0.125		0	NR	NR	NR	NR	0
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA LF	0.001		0	NR	NR	NR	NR	0
RGA LUST	0.001		0	NR	NR	NR	NR	0
- Totals --		0	0	0	0	0	0	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

MAP FINDINGS

Map ID Direction Distance Elevation	Site	Database(s)	EDR ID Number EPA ID Number

NO SITES FOUND

Count: 0 records.

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
		NO SITES FOUND			

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 01/30/2020
Date Data Arrived at EDR: 02/05/2020
Date Made Active in Reports: 02/14/2020
Number of Days to Update: 9

Source: EPA
Telephone: N/A
Last EDR Contact: 02/05/2020
Next Scheduled EDR Contact: 04/13/2020
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 01/30/2020
Date Data Arrived at EDR: 02/05/2020
Date Made Active in Reports: 02/14/2020
Number of Days to Update: 9

Source: EPA
Telephone: N/A
Last EDR Contact: 02/05/2020
Next Scheduled EDR Contact: 04/13/2020
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

Federal Delisted NPL site list

Delisted NPL: National Priority List Deletions

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.

Date of Government Version: 01/30/2020
Date Data Arrived at EDR: 02/05/2020
Date Made Active in Reports: 02/14/2020
Number of Days to Update: 9

Source: EPA
Telephone: N/A
Last EDR Contact: 02/05/2020
Next Scheduled EDR Contact: 04/13/2020
Data Release Frequency: Quarterly

Federal CERCLIS list

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 04/03/2019
Date Data Arrived at EDR: 04/05/2019
Date Made Active in Reports: 05/14/2019
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 04/05/2019
Next Scheduled EDR Contact: 04/13/2020
Data Release Frequency: Varies

SEMS: Superfund Enterprise Management System

SEMS (Superfund Enterprise Management System) tracks hazardous waste sites, potentially hazardous waste sites, and remedial activities performed in support of EPA's Superfund Program across the United States. The list was formerly know as CERCLIS, renamed to SEMS by the EPA in 2015. The list contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This dataset also contains sites which are either proposed to or on the National Priorities List (NPL) and the sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 01/30/2020
Date Data Arrived at EDR: 02/05/2020
Date Made Active in Reports: 02/14/2020
Number of Days to Update: 9

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 02/05/2020
Next Scheduled EDR Contact: 04/27/2020
Data Release Frequency: Quarterly

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE: Superfund Enterprise Management System Archive

SEMS-ARCHIVE (Superfund Enterprise Management System Archive) tracks sites that have no further interest under the Federal Superfund Program based on available information. The list was formerly known as the CERCLIS-NFRAP, renamed to SEMS ARCHIVE by the EPA in 2015. EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or new information becomes available. Archived sites have been removed and archived from the inventory of SEMS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list the site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. The 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 potential NPL site.

Date of Government Version: 01/30/2020
Date Data Arrived at EDR: 02/05/2020
Date Made Active in Reports: 02/14/2020
Number of Days to Update: 9

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 02/05/2020
Next Scheduled EDR Contact: 04/27/2020
Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report
CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 12/16/2019
Date Data Arrived at EDR: 12/16/2019
Date Made Active in Reports: 12/20/2019
Number of Days to Update: 4

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 02/27/2020
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal
RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 12/16/2019
Date Data Arrived at EDR: 12/16/2019
Date Made Active in Reports: 12/20/2019
Number of Days to Update: 4

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 02/27/2020
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators
RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 12/16/2019
Date Data Arrived at EDR: 12/16/2019
Date Made Active in Reports: 12/20/2019
Number of Days to Update: 4

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 02/27/2020
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 12/16/2019
Date Data Arrived at EDR: 12/16/2019
Date Made Active in Reports: 12/20/2019
Number of Days to Update: 4

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 02/27/2020
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Quarterly

RCRA-VSQG: RCRA - Very Small Quantity Generators (Formerly Conditionally Exempt Small Quantity Generators)

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Very small quantity generators (VSQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 12/16/2019
Date Data Arrived at EDR: 12/16/2019
Date Made Active in Reports: 12/20/2019
Number of Days to Update: 4

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 02/27/2020
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Quarterly

Federal institutional controls / engineering controls registries

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 11/04/2019
Date Data Arrived at EDR: 11/13/2019
Date Made Active in Reports: 01/28/2020
Number of Days to Update: 76

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 02/10/2020
Next Scheduled EDR Contact: 05/25/2020
Data Release Frequency: Varies

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 11/22/2019
Date Data Arrived at EDR: 11/22/2019
Date Made Active in Reports: 01/28/2020
Number of Days to Update: 67

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 02/20/2020
Next Scheduled EDR Contact: 06/08/2020
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 11/22/2019
Date Data Arrived at EDR: 11/22/2019
Date Made Active in Reports: 01/28/2020
Number of Days to Update: 67

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 02/20/2020
Next Scheduled EDR Contact: 06/08/2020
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 09/09/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 09/23/2019
Number of Days to Update: 14

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 12/19/2019
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Quarterly

State- and tribal - equivalent NPL

RESPONSE: State Response Sites

Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

Date of Government Version: 10/28/2019
Date Data Arrived at EDR: 10/29/2019
Date Made Active in Reports: 01/07/2020
Number of Days to Update: 70

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/28/2020
Next Scheduled EDR Contact: 05/11/2020
Data Release Frequency: Quarterly

State- and tribal - equivalent CERCLIS

ENVIROSTOR: EnviroStor Database

The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

Date of Government Version: 10/28/2019
Date Data Arrived at EDR: 10/29/2019
Date Made Active in Reports: 01/07/2020
Number of Days to Update: 70

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/28/2020
Next Scheduled EDR Contact: 05/11/2020
Data Release Frequency: Quarterly

State and tribal landfill and/or solid waste disposal site lists

SWF/LF (SWIS): Solid Waste Information System

Active, Closed and Inactive Landfills. SWF/LF records typically contain an inve ntory of solid waste disposal facilities or landfills. These may be active or i nactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 11/11/2019
Date Data Arrived at EDR: 11/12/2019
Date Made Active in Reports: 01/08/2020
Number of Days to Update: 57

Source: Department of Resources Recycling and Recovery
Telephone: 916-341-6320
Last EDR Contact: 02/11/2020
Next Scheduled EDR Contact: 05/25/2020
Data Release Frequency: Quarterly

State and tribal leaking storage tank lists

LUST REG 3: Leaking Underground Storage Tank Database
Leaking Underground Storage Tank locations. Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz counties.

Date of Government Version: 05/19/2003
Date Data Arrived at EDR: 05/19/2003
Date Made Active in Reports: 06/02/2003
Number of Days to Update: 14

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-542-4786
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: No Update Planned

LUST REG 2: Fuel Leak List
Leaking Underground Storage Tank locations. Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma counties.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-622-2433
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: No Update Planned

LUST REG 9: Leaking Underground Storage Tank Report
Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 03/01/2001
Date Data Arrived at EDR: 04/23/2001
Date Made Active in Reports: 05/21/2001
Number of Days to Update: 28

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-637-5595
Last EDR Contact: 09/26/2011
Next Scheduled EDR Contact: 01/09/2012
Data Release Frequency: No Update Planned

LUST REG 7: Leaking Underground Storage Tank Case Listing
Leaking Underground Storage Tank locations. Imperial, Riverside, San Diego, Santa Barbara counties.

Date of Government Version: 02/26/2004
Date Data Arrived at EDR: 02/26/2004
Date Made Active in Reports: 03/24/2004
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Colorado River Basin Region (7)
Telephone: 760-776-8943
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST REG 4: Underground Storage Tank Leak List
Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6710
Last EDR Contact: 09/06/2011
Next Scheduled EDR Contact: 12/19/2011
Data Release Frequency: No Update Planned

LUST REG 6L: Leaking Underground Storage Tank Case Listing
For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/2003
Date Data Arrived at EDR: 09/10/2003
Date Made Active in Reports: 10/07/2003
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 530-542-5572
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 5: Leaking Underground Storage Tank Database
Leaking Underground Storage Tank locations. Alameda, Alpine, Amador, Butte, Colusa, Contra Costa, Calveras, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Lassen, Madera, Mariposa, Merced, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba counties.

Date of Government Version: 07/01/2008
Date Data Arrived at EDR: 07/22/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 9

Source: California Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-4834
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: No Update Planned

LUST REG 1: Active Toxic Site Investigation
Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/01/2001
Date Data Arrived at EDR: 02/28/2001
Date Made Active in Reports: 03/29/2001
Number of Days to Update: 29

Source: California Regional Water Quality Control Board North Coast (1)
Telephone: 707-570-3769
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST REG 6V: Leaking Underground Storage Tank Case Listing
Leaking Underground Storage Tank locations. Inyo, Kern, Los Angeles, Mono, San Bernardino counties.

Date of Government Version: 06/07/2005
Date Data Arrived at EDR: 06/07/2005
Date Made Active in Reports: 06/29/2005
Number of Days to Update: 22

Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Telephone: 760-241-7365
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 8: Leaking Underground Storage Tanks
California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/2005
Date Data Arrived at EDR: 02/15/2005
Date Made Active in Reports: 03/28/2005
Number of Days to Update: 41

Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 909-782-4496
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

LUST: Leaking Underground Fuel Tank Report (GEOTRACKER)
Leaking Underground Storage Tank (LUST) Sites included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 12/09/2019
Date Data Arrived at EDR: 12/10/2019
Date Made Active in Reports: 02/14/2020
Number of Days to Update: 66

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Quarterly

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 10/04/2019
Date Data Arrived at EDR: 12/04/2019
Date Made Active in Reports: 02/27/2020
Number of Days to Update: 85

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 01/24/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 10/02/2019
Date Data Arrived at EDR: 12/04/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 68

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 01/24/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

INDIAN LUST R5: Leaking Underground Storage Tanks on Indian Land
Leaking underground storage tanks located on Indian Land in Michigan, Minnesota and Wisconsin.

Date of Government Version: 10/01/2019
Date Data Arrived at EDR: 12/04/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 68

Source: EPA, Region 5
Telephone: 312-886-7439
Last EDR Contact: 01/24/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 10/15/2019
Date Data Arrived at EDR: 12/17/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 55

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 12/16/2019
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 10/10/2019
Date Data Arrived at EDR: 12/05/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 67

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 01/24/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 10/11/2019
Date Data Arrived at EDR: 12/04/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 68

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 01/24/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 10/03/2019
Date Data Arrived at EDR: 12/04/2019
Date Made Active in Reports: 02/14/2020
Number of Days to Update: 72

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 01/24/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 10/01/2019
Date Data Arrived at EDR: 12/04/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 68

Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 01/24/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

CPS-SLIC: Statewide SLIC Cases (GEOTRACKER)
Cleanup Program Sites (CPS; also known as Site Cleanups [SC] and formerly known as Spills, Leaks, Investigations, and Cleanups [SLIC] sites) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 12/09/2019
Date Data Arrived at EDR: 12/10/2019
Date Made Active in Reports: 02/18/2020
Number of Days to Update: 70

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Varies

SLIC REG 1: Active Toxic Site Investigations
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2003
Date Data Arrived at EDR: 04/07/2003
Date Made Active in Reports: 04/25/2003
Number of Days to Update: 18

Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: No Update Planned

SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/18/2006
Date Data Arrived at EDR: 05/18/2006
Date Made Active in Reports: 06/15/2006
Number of Days to Update: 28

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: No Update Planned

SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/17/2004
Date Data Arrived at EDR: 11/18/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 47

Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: No Update Planned

SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/01/2005
Date Data Arrived at EDR: 04/05/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 16

Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/24/2005
Date Data Arrived at EDR: 05/25/2005
Date Made Active in Reports: 06/16/2005
Number of Days to Update: 22

Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

SLIC REG 6L: SLIC Sites
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board, Lahontan Region
Telephone: 530-542-5574
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

SLIC REG 7: SLIC List
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/24/2004
Date Data Arrived at EDR: 11/29/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 36

Source: California Regional Quality Control Board, Colorado River Basin Region
Telephone: 760-346-7491
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2008
Date Data Arrived at EDR: 04/03/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 11

Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-3298
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/10/2007
Date Data Arrived at EDR: 09/11/2007
Date Made Active in Reports: 09/28/2007
Number of Days to Update: 17

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 08/08/2011
Next Scheduled EDR Contact: 11/21/2011
Data Release Frequency: No Update Planned

State and tribal registered storage tank lists

FEMA UST: Underground Storage Tank Listing
A listing of all FEMA owned underground storage tanks.

Date of Government Version: 08/27/2019
Date Data Arrived at EDR: 08/28/2019
Date Made Active in Reports: 11/11/2019
Number of Days to Update: 75

Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 01/21/2020
Next Scheduled EDR Contact: 04/20/2020
Data Release Frequency: Varies

MILITARY UST SITES: Military UST Sites (GEOTRACKER)
Military ust sites

Date of Government Version: 12/09/2019
Date Data Arrived at EDR: 12/10/2019
Date Made Active in Reports: 02/18/2020
Number of Days to Update: 70

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Varies

UST CLOSURE: Proposed Closure of Underground Storage Tank (UST) Cases

UST cases that are being considered for closure by either the State Water Resources Control Board or the Executive Director have been posted for a 60-day public comment period. UST Case Closures being proposed for consideration by the State Water Resources Control Board. These are primarily UST cases that meet closure criteria under the decisional framework in State Water Board Resolution No. 92-49 and other Board orders. UST Case Closures proposed for consideration by the Executive Director pursuant to State Water Board Resolution No. 2012-0061. These are cases that meet the criteria of the Low-Threat UST Case Closure Policy. UST Case Closure Review Denials and Approved Orders.

Date of Government Version: 12/06/2019
Date Data Arrived at EDR: 12/10/2019
Date Made Active in Reports: 02/25/2020
Number of Days to Update: 77

Source: State Water Resources Control Board
Telephone: 916-327-7844
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Varies

UST: Active UST Facilities

Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 12/09/2019
Date Data Arrived at EDR: 12/10/2019
Date Made Active in Reports: 02/21/2020
Number of Days to Update: 73

Source: SWRCB
Telephone: 916-341-5851
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Semi-Annually

AST: Aboveground Petroleum Storage Tank Facilities

A listing of aboveground storage tank petroleum storage tank locations.

Date of Government Version: 07/06/2016
Date Data Arrived at EDR: 07/12/2016
Date Made Active in Reports: 09/19/2016
Number of Days to Update: 69

Source: California Environmental Protection Agency
Telephone: 916-327-5092
Last EDR Contact: 12/11/2019
Next Scheduled EDR Contact: 03/30/2020
Data Release Frequency: Varies

INDIAN UST R10: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 10/11/2019
Date Data Arrived at EDR: 12/04/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 68

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 01/24/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 10/01/2019
Date Data Arrived at EDR: 12/04/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 68

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 01/24/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 10/10/2019
Date Data Arrived at EDR: 12/05/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 67

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 01/24/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

INDIAN UST R5: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 10/01/2019
Date Data Arrived at EDR: 12/04/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 68

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 01/24/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 10/02/2019
Date Data Arrived at EDR: 12/04/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 68

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 01/24/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

INDIAN UST R7: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 10/11/2019
Date Data Arrived at EDR: 12/04/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 68

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 01/24/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

INDIAN UST R8: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 10/03/2019
Date Data Arrived at EDR: 12/04/2019
Date Made Active in Reports: 02/14/2020
Number of Days to Update: 72

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 01/24/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

INDIAN UST R9: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 10/04/2019
Date Data Arrived at EDR: 12/04/2019
Date Made Active in Reports: 02/27/2020
Number of Days to Update: 85

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 01/24/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

State and tribal voluntary cleanup sites

INDIAN VCP R1: Voluntary Cleanup Priority Listing

A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 07/27/2015
Date Data Arrived at EDR: 09/29/2015
Date Made Active in Reports: 02/18/2016
Number of Days to Update: 142

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 12/17/2019
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Varies

VCP: Voluntary Cleanup Program Properties
Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Date of Government Version: 10/28/2019
Date Data Arrived at EDR: 10/29/2019
Date Made Active in Reports: 01/07/2020
Number of Days to Update: 70

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/28/2020
Next Scheduled EDR Contact: 05/11/2020
Data Release Frequency: Quarterly

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng
A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

State and tribal Brownfields sites

BROWNFIELDS: Considered Brownfieds Sites Listing
A listing of sites the SWRCB considers to be Brownfields since these are sites have come to them through the MOA Process.

Date of Government Version: 12/18/2019
Date Data Arrived at EDR: 12/19/2019
Date Made Active in Reports: 02/19/2020
Number of Days to Update: 62

Source: State Water Resources Control Board
Telephone: 916-323-7905
Last EDR Contact: 12/19/2019
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Quarterly

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites
Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 06/03/2019
Date Data Arrived at EDR: 06/04/2019
Date Made Active in Reports: 08/26/2019
Number of Days to Update: 83

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 12/16/2019
Next Scheduled EDR Contact: 03/30/2020
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT: Waste Management Unit Database

Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 04/01/2000
Date Data Arrived at EDR: 04/10/2000
Date Made Active in Reports: 05/10/2000
Number of Days to Update: 30

Source: State Water Resources Control Board
Telephone: 916-227-4448
Last EDR Contact: 01/24/2020
Next Scheduled EDR Contact: 05/11/2020
Data Release Frequency: No Update Planned

SWRCY: Recycler Database

A listing of recycling facilities in California.

Date of Government Version: 12/09/2019
Date Data Arrived at EDR: 12/10/2019
Date Made Active in Reports: 02/19/2020
Number of Days to Update: 71

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing

A listing of registered waste tire haulers.

Date of Government Version: 11/15/2019
Date Data Arrived at EDR: 11/15/2019
Date Made Active in Reports: 01/23/2020
Number of Days to Update: 69

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 02/07/2020
Next Scheduled EDR Contact: 05/25/2020
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands

Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 01/27/2020
Next Scheduled EDR Contact: 05/11/2020
Data Release Frequency: Varies

ODI: Open Dump Inventory

An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations

A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 01/17/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: No Update Planned

IHS OPEN DUMPS: Open Dumps on Indian Land
A listing of all open dumps located on Indian Land in the United States.

Date of Government Version: 04/01/2014
Date Data Arrived at EDR: 08/06/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 176

Source: Department of Health & Human Serivces, Indian Health Service
Telephone: 301-443-1452
Last EDR Contact: 01/31/2020
Next Scheduled EDR Contact: 05/11/2020
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL: National Clandestine Laboratory Register
A listing of clandestine drug lab locations that have been removed from the DEAs National Clandestine Laboratory Register.

Date of Government Version: 06/11/2019
Date Data Arrived at EDR: 06/13/2019
Date Made Active in Reports: 09/03/2019
Number of Days to Update: 82

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 02/21/2020
Next Scheduled EDR Contact: 06/08/2020
Data Release Frequency: No Update Planned

HIST CAL-SITES: Calsites Database
The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

Date of Government Version: 08/08/2005
Date Data Arrived at EDR: 08/03/2006
Date Made Active in Reports: 08/24/2006
Number of Days to Update: 21

Source: Department of Toxic Substance Control
Telephone: 916-323-3400
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: No Update Planned

SCH: School Property Evaluation Program
This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.

Date of Government Version: 10/28/2019
Date Data Arrived at EDR: 10/29/2019
Date Made Active in Reports: 01/07/2020
Number of Days to Update: 70

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/28/2020
Next Scheduled EDR Contact: 05/11/2020
Data Release Frequency: Quarterly

CDL: Clandestine Drug Labs
A listing of drug lab locations. Listing of a location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the location either requires or does not require additional cleanup work.

Date of Government Version: 06/30/2018
Date Data Arrived at EDR: 07/16/2019
Date Made Active in Reports: 09/24/2019
Number of Days to Update: 70

Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 01/06/2020
Next Scheduled EDR Contact: 04/20/2020
Data Release Frequency: Varies

CERS HAZ WASTE: CERS HAZ WASTE
List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Hazardous Chemical Management, Hazardous Waste Onsite Treatment, Household Hazardous Waste Collection, Hazardous Waste Generator, and RCRA LQ HW Generator programs.

Date of Government Version: 10/21/2019
Date Data Arrived at EDR: 10/22/2019
Date Made Active in Reports: 01/02/2020
Number of Days to Update: 72

Source: CalEPA
Telephone: 916-323-2514
Last EDR Contact: 01/22/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Quarterly

TOXIC PITS: Toxic Pits Cleanup Act Sites

Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/1995
Date Data Arrived at EDR: 08/30/1995
Date Made Active in Reports: 09/26/1995
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 916-227-4364
Last EDR Contact: 01/26/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: No Update Planned

US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains 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 Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 06/11/2019
Date Data Arrived at EDR: 06/13/2019
Date Made Active in Reports: 09/03/2019
Number of Days to Update: 82

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 02/21/2020
Next Scheduled EDR Contact: 06/08/2020
Data Release Frequency: Quarterly

PFAS: PFAS Contamination Site Location Listing

A listing of PFAS contaminated sites included in the GeoTracker database.

Date of Government Version: 12/09/2019
Date Data Arrived at EDR: 12/10/2019
Date Made Active in Reports: 02/19/2020
Number of Days to Update: 71

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Varies

Local Lists of Registered Storage Tanks

SWEEPS UST: SWEEPS UST Listing

Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

Date of Government Version: 06/01/1994
Date Data Arrived at EDR: 07/07/2005
Date Made Active in Reports: 08/11/2005
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/03/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

UST MENDOCINO: Mendocino County UST Database

A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 12/19/2019
Date Data Arrived at EDR: 12/23/2019
Date Made Active in Reports: 02/21/2020
Number of Days to Update: 60

Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 02/21/2020
Next Scheduled EDR Contact: 06/08/2020
Data Release Frequency: Annually

HIST UST: Hazardous Substance Storage Container Database
The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/1990
Date Data Arrived at EDR: 01/25/1991
Date Made Active in Reports: 02/12/1991
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-341-5851
Last EDR Contact: 07/26/2001
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

SAN FRANCISCO AST: Aboveground Storage Tank Site Listing
Aboveground storage tank sites

Date of Government Version: 08/01/2019
Date Data Arrived at EDR: 08/02/2019
Date Made Active in Reports: 10/11/2019
Number of Days to Update: 70

Source: San Francisco County Department of Public Health
Telephone: 415-252-3896
Last EDR Contact: 01/31/2020
Next Scheduled EDR Contact: 05/18/2020
Data Release Frequency: Varies

CA FID UST: Facility Inventory Database
The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.

Date of Government Version: 10/31/1994
Date Data Arrived at EDR: 09/05/1995
Date Made Active in Reports: 09/29/1995
Number of Days to Update: 24

Source: California Environmental Protection Agency
Telephone: 916-341-5851
Last EDR Contact: 12/28/1998
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CERS TANKS: California Environmental Reporting System (CERS) Tanks
List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Aboveground Petroleum Storage and Underground Storage Tank regulatory programs.

Date of Government Version: 10/21/2019
Date Data Arrived at EDR: 10/22/2019
Date Made Active in Reports: 01/03/2020
Number of Days to Update: 73

Source: California Environmental Protection Agency
Telephone: 916-323-2514
Last EDR Contact: 01/22/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Quarterly

Local Land Records

LIENS: Environmental Liens Listing
A listing of property locations with environmental liens for California where DTSC is a lien holder.

Date of Government Version: 12/02/2019
Date Data Arrived at EDR: 12/04/2019
Date Made Active in Reports: 02/04/2020
Number of Days to Update: 62

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 02/27/2020
Next Scheduled EDR Contact: 06/15/2020
Data Release Frequency: Varies

LIENS 2: CERCLA Lien Information
A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 01/30/2020
Date Data Arrived at EDR: 02/05/2020
Date Made Active in Reports: 02/14/2020
Number of Days to Update: 9

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 02/05/2020
Next Scheduled EDR Contact: 04/13/2020
Data Release Frequency: Semi-Annually

DEED: Deed Restriction Listing

Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Date of Government Version: 12/03/2019
Date Data Arrived at EDR: 12/04/2019
Date Made Active in Reports: 02/04/2020
Number of Days to Update: 62

Source: DTSC and SWRCB
Telephone: 916-323-3400
Last EDR Contact: 12/04/2019
Next Scheduled EDR Contact: 03/16/2020
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 12/05/2019
Date Data Arrived at EDR: 12/06/2019
Date Made Active in Reports: 02/14/2020
Number of Days to Update: 70

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 12/06/2019
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Quarterly

CHMIRS: California Hazardous Material Incident Report System

California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 05/15/2019
Date Data Arrived at EDR: 06/24/2019
Date Made Active in Reports: 08/21/2019
Number of Days to Update: 58

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 01/22/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Semi-Annually

LDS: Land Disposal Sites Listing (GEOTRACKER)

Land Disposal sites (Landfills) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 12/09/2019
Date Data Arrived at EDR: 12/10/2019
Date Made Active in Reports: 02/14/2020
Number of Days to Update: 66

Source: State Water Qualilty Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Quarterly

MCS: Military Cleanup Sites Listing (GEOTRACKER)

Military sites (consisting of: Military UST sites; Military Privatized sites; and Military Cleanup sites [formerly known as DoD non UST]) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 12/09/2019
Date Data Arrived at EDR: 12/10/2019
Date Made Active in Reports: 02/18/2020
Number of Days to Update: 70

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Quarterly

SPILLS 90: SPILLS90 data from FirstSearch

Spills 90 includes those spill and release records available exclusively from FirstSearch databases. Typically, they may include chemical, oil and/or hazardous substance spills recorded after 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 90.

Date of Government Version: 06/06/2012
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 02/22/2013
Number of Days to Update: 50

Source: FirstSearch
Telephone: N/A
Last EDR Contact: 01/03/2013
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Other Ascertainable Records

RCRA NonGen / NLR: RCRA - Non Generators / No Longer Regulated

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 12/16/2019
Date Data Arrived at EDR: 12/16/2019
Date Made Active in Reports: 12/20/2019
Number of Days to Update: 4

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 02/27/2020
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Quarterly

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 11/12/2019
Date Data Arrived at EDR: 11/19/2019
Date Made Active in Reports: 01/28/2020
Number of Days to Update: 70

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 02/19/2020
Next Scheduled EDR Contact: 06/01/2020
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 01/10/2020
Next Scheduled EDR Contact: 04/20/2020
Data Release Frequency: Semi-Annually

FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 04/02/2018
Date Data Arrived at EDR: 04/11/2018
Date Made Active in Reports: 11/06/2019
Number of Days to Update: 574

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 01/09/2020
Next Scheduled EDR Contact: 04/20/2020
Data Release Frequency: N/A

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 01/01/2017
Date Data Arrived at EDR: 02/03/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 63

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 02/13/2020
Next Scheduled EDR Contact: 05/25/2020
Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 12/16/2019
Date Data Arrived at EDR: 12/19/2019
Date Made Active in Reports: 02/27/2020
Number of Days to Update: 70

Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 12/19/2019
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Quarterly

EPA WATCH LIST: EPA WATCH LIST

EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 08/30/2013
Date Data Arrived at EDR: 03/21/2014
Date Made Active in Reports: 06/17/2014
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 02/03/2020
Next Scheduled EDR Contact: 05/18/2020
Data Release Frequency: Quarterly

2020 COR ACTION: 2020 Corrective Action Program List

The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 09/30/2017
Date Data Arrived at EDR: 05/08/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 73

Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 02/07/2020
Next Scheduled EDR Contact: 05/18/2020
Data Release Frequency: Varies

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 06/21/2017
Date Made Active in Reports: 01/05/2018
Number of Days to Update: 198

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 12/20/2019
Next Scheduled EDR Contact: 03/30/2020
Data Release Frequency: Every 4 Years

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 11/16/2018
Date Made Active in Reports: 11/21/2019
Number of Days to Update: 370

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 02/05/2020
Next Scheduled EDR Contact: 06/01/2020
Data Release Frequency: Annually

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 05/01/2019
Date Data Arrived at EDR: 10/23/2019
Date Made Active in Reports: 01/15/2020
Number of Days to Update: 84

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 01/24/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Annually

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 01/30/2020
Date Data Arrived at EDR: 02/05/2020
Date Made Active in Reports: 02/14/2020
Number of Days to Update: 9

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 02/05/2020
Next Scheduled EDR Contact: 03/16/2020
Data Release Frequency: Annually

RMP: Risk Management Plans

When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: 04/25/2019
Date Data Arrived at EDR: 05/02/2019
Date Made Active in Reports: 05/23/2019
Number of Days to Update: 21

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 01/21/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

PRP: Potentially Responsible Parties
A listing of verified Potentially Responsible Parties

Date of Government Version: 01/30/2020
Date Data Arrived at EDR: 02/06/2020
Date Made Active in Reports: 02/14/2020
Number of Days to Update: 8

Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 02/06/2020
Next Scheduled EDR Contact: 05/18/2020
Data Release Frequency: Quarterly

PADS: PCB Activity Database System
PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 10/09/2019
Date Data Arrived at EDR: 10/11/2019
Date Made Active in Reports: 12/20/2019
Number of Days to Update: 70

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 01/10/2020
Next Scheduled EDR Contact: 04/20/2020
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System
The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 11/18/2016
Date Data Arrived at EDR: 11/23/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 79

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 01/06/2020
Next Scheduled EDR Contact: 04/20/2020
Data Release Frequency: Quarterly

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: No Update Planned

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: No Update Planned

MLTS: Material Licensing Tracking System
MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 10/25/2019
Date Data Arrived at EDR: 10/25/2019
Date Made Active in Reports: 01/15/2020
Number of Days to Update: 82

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 01/21/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Quarterly

COAL ASH DOE: Steam-Electric Plant Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 12/04/2019
Date Made Active in Reports: 01/15/2020
Number of Days to Update: 42

Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 12/04/2019
Next Scheduled EDR Contact: 03/16/2020
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List
A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 01/12/2017
Date Data Arrived at EDR: 03/05/2019
Date Made Active in Reports: 11/11/2019
Number of Days to Update: 251

Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 02/27/2020
Next Scheduled EDR Contact: 06/15/2020
Data Release Frequency: Varies

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 09/13/2019
Date Data Arrived at EDR: 11/06/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 96

Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 02/07/2020
Next Scheduled EDR Contact: 05/18/2020
Data Release Frequency: Varies

RADINFO: Radiation Information Database
The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 07/01/2019
Date Data Arrived at EDR: 07/01/2019
Date Made Active in Reports: 09/23/2019
Number of Days to Update: 84

Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 12/20/2019
Next Scheduled EDR Contact: 04/13/2020
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing
A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing
A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 10/01/2019
Date Data Arrived at EDR: 10/29/2019
Date Made Active in Reports: 01/15/2020
Number of Days to Update: 78

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 01/28/2020
Next Scheduled EDR Contact: 05/11/2020
Data Release Frequency: Quarterly

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 09/30/2019
Date Data Arrived at EDR: 10/09/2019
Date Made Active in Reports: 12/20/2019
Number of Days to Update: 72

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 01/06/2020
Next Scheduled EDR Contact: 04/20/2020
Data Release Frequency: Varies

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2015
Date Data Arrived at EDR: 02/22/2017
Date Made Active in Reports: 09/28/2017
Number of Days to Update: 218

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 02/27/2020
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Biennially

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 07/14/2015
Date Made Active in Reports: 01/10/2017
Number of Days to Update: 546

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 01/07/2020
Next Scheduled EDR Contact: 04/20/2020
Data Release Frequency: Semi-Annually

FUSRAP: Formerly Utilized Sites Remedial Action Program

DOE established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations.

Date of Government Version: 08/08/2017
Date Data Arrived at EDR: 09/11/2018
Date Made Active in Reports: 09/14/2018
Number of Days to Update: 3

Source: Department of Energy
Telephone: 202-586-3559
Last EDR Contact: 01/31/2020
Next Scheduled EDR Contact: 05/18/2020
Data Release Frequency: Varies

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 08/30/2019
Date Data Arrived at EDR: 11/15/2019
Date Made Active in Reports: 01/28/2020
Number of Days to Update: 74

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 02/21/2020
Next Scheduled EDR Contact: 06/01/2020
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites
A listing of former lead smelter site locations.

Date of Government Version: 01/30/2020
Date Data Arrived at EDR: 02/05/2020
Date Made Active in Reports: 02/14/2020
Number of Days to Update: 9

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 02/05/2020
Next Scheduled EDR Contact: 04/13/2020
Data Release Frequency: Varies

LEAD SMELTER 2: Lead Smelter Sites
A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931and 1964. These sites may pose a threat to public health through ingestion or inhalation of contaminated soil or dust

Date of Government Version: 04/05/2001
Date Data Arrived at EDR: 10/27/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 36

Source: American Journal of Public Health
Telephone: 703-305-6451
Last EDR Contact: 12/02/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem (AFS)
The database is a sub-system of Aerometric Information Retrieval System (AIRS). AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. Action, air program, air program pollutant, and general level plant data. It is used to track emissions and compliance data from industrial plants.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US AIRS MINOR: Air Facility System Data
A listing of minor source facilities.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

MINES VIOLATIONS: MSHA Violation Assessment Data
Mines violation and assessment information. Department of Labor, Mine Safety & Health Administration.

Date of Government Version: 12/03/2019
Date Data Arrived at EDR: 12/03/2019
Date Made Active in Reports: 01/28/2020
Number of Days to Update: 56

Source: DOL, Mine Safety & Health Admi
Telephone: 202-693-9424
Last EDR Contact: 03/02/2020
Next Scheduled EDR Contact: 06/15/2020
Data Release Frequency: Quarterly

US MINES: Mines Master Index File
Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 11/06/2019
Date Data Arrived at EDR: 11/25/2019
Date Made Active in Reports: 01/28/2020
Number of Days to Update: 64

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 02/25/2020
Next Scheduled EDR Contact: 06/08/2020
Data Release Frequency: Semi-Annually

US MINES 2: Ferrous and Nonferrous Metal Mines Database Listing

This map layer includes ferrous (ferrous metal mines are facilities that extract ferrous metals, such as iron ore or molybdenum) and nonferrous (Nonferrous metal mines are facilities that extract nonferrous metals, such as gold, silver, copper, zinc, and lead) metal mines in the United States.

Date of Government Version: 12/05/2005
Date Data Arrived at EDR: 02/29/2008
Date Made Active in Reports: 04/18/2008
Number of Days to Update: 49

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 02/28/2020
Next Scheduled EDR Contact: 06/08/2020
Data Release Frequency: Varies

US MINES 3: Active Mines & Mineral Plants Database Listing

Active Mines and Mineral Processing Plant operations for commodities monitored by the Minerals Information Team of the USGS.

Date of Government Version: 04/14/2011
Date Data Arrived at EDR: 06/08/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 97

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 02/28/2020
Next Scheduled EDR Contact: 06/08/2020
Data Release Frequency: Varies

ABANDONED MINES: Abandoned Mines

An inventory of land and water impacted by past mining (primarily coal mining) is maintained by OSMRE to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The inventory contains information on the location, type, and extent of AML impacts, as well as, information on the cost associated with the reclamation of those problems. The inventory is based upon field surveys by State, Tribal, and OSMRE program officials. It is dynamic to the extent that it is modified as new problems are identified and existing problems are reclaimed.

Date of Government Version: 12/09/2019
Date Data Arrived at EDR: 12/11/2019
Date Made Active in Reports: 02/27/2020
Number of Days to Update: 78

Source: Department of Interior
Telephone: 202-208-2609
Last EDR Contact: 12/04/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 11/22/2019
Date Data Arrived at EDR: 12/04/2019
Date Made Active in Reports: 03/02/2020
Number of Days to Update: 89

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 12/04/2019
Next Scheduled EDR Contact: 03/16/2020
Data Release Frequency: Quarterly

UXO: Unexploded Ordnance Sites

A listing of unexploded ordnance site locations

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 01/17/2019
Date Made Active in Reports: 04/01/2019
Number of Days to Update: 74

Source: Department of Defense
Telephone: 703-704-1564
Last EDR Contact: 01/13/2020
Next Scheduled EDR Contact: 04/27/2020
Data Release Frequency: Varies

ECHO: Enforcement & Compliance History Information
ECHO provides integrated compliance and enforcement information for about 800,000 regulated facilities nationwide.

Date of Government Version: 10/06/2019
Date Data Arrived at EDR: 10/08/2019
Date Made Active in Reports: 01/02/2020
Number of Days to Update: 86

Source: Environmental Protection Agency
Telephone: 202-564-2280
Last EDR Contact: 01/07/2020
Next Scheduled EDR Contact: 04/20/2020
Data Release Frequency: Quarterly

DOCKET HWC: Hazardous Waste Compliance Docket Listing
A complete list of the Federal Agency Hazardous Waste Compliance Docket Facilities.

Date of Government Version: 05/31/2018
Date Data Arrived at EDR: 07/26/2018
Date Made Active in Reports: 10/05/2018
Number of Days to Update: 71

Source: Environmental Protection Agency
Telephone: 202-564-0527
Last EDR Contact: 02/21/2020
Next Scheduled EDR Contact: 06/08/2020
Data Release Frequency: Varies

FUELS PROGRAM: EPA Fuels Program Registered Listing
This listing includes facilities that are registered under the Part 80 (Code of Federal Regulations) EPA Fuels Programs. All companies now are required to submit new and updated registrations.

Date of Government Version: 11/18/2019
Date Data Arrived at EDR: 11/19/2019
Date Made Active in Reports: 01/28/2020
Number of Days to Update: 70

Source: EPA
Telephone: 800-385-6164
Last EDR Contact: 02/19/2020
Next Scheduled EDR Contact: 06/01/2020
Data Release Frequency: Quarterly

CA BOND EXP. PLAN: Bond Expenditure Plan
Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/1989
Date Data Arrived at EDR: 07/27/1994
Date Made Active in Reports: 08/02/1994
Number of Days to Update: 6

Source: Department of Health Services
Telephone: 916-255-2118
Last EDR Contact: 05/31/1994
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CORTESE: "Cortese" Hazardous Waste & Substances Sites List
The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites).

Date of Government Version: 12/18/2019
Date Data Arrived at EDR: 12/20/2019
Date Made Active in Reports: 02/20/2020
Number of Days to Update: 62

Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 12/20/2019
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Quarterly

CUPA LIVERMORE-PLEASANTON: CUPA Facility Listing
list of facilities associated with the various CUPA programs in Livermore-Pleasanton

Date of Government Version: 05/01/2019
Date Data Arrived at EDR: 05/14/2019
Date Made Active in Reports: 07/17/2019
Number of Days to Update: 64

Source: Livermore-Pleasanton Fire Department
Telephone: 925-454-2361
Last EDR Contact: 02/14/2020
Next Scheduled EDR Contact: 05/25/2020
Data Release Frequency: Varies

CUPA SAN FRANCISCO CO: CUPA Facility Listing
Cupa facilities

Date of Government Version: 10/31/2019
Date Data Arrived at EDR: 11/01/2019
Date Made Active in Reports: 12/11/2019
Number of Days to Update: 40

Source: San Francisco County Department of Environmental Health
Telephone: 415-252-3896
Last EDR Contact: 01/31/2020
Next Scheduled EDR Contact: 05/18/2020
Data Release Frequency: Varies

DRYCLEAN SOUTH COAST: South Coast Air Quality Management District Drycleaner Listing
A listing of dry cleaners in the South Coast Air Quality Management District

Date of Government Version: 09/27/2019
Date Data Arrived at EDR: 10/01/2019
Date Made Active in Reports: 11/07/2019
Number of Days to Update: 37

Source: South Coast Air Quality Management District
Telephone: 909-396-3211
Last EDR Contact: 02/21/2020
Next Scheduled EDR Contact: 06/08/2020
Data Release Frequency: Varies

DRYCLEAN AVAQMD: Antelope Valley Air Quality Management District Drycleaner Listing
A listing of dry cleaners in the Antelope Valley Air Quality Management District.

Date of Government Version: 12/02/2019
Date Data Arrived at EDR: 12/03/2019
Date Made Active in Reports: 02/04/2020
Number of Days to Update: 63

Source: Antelope Valley Air Quality Management District
Telephone: 661-723-8070
Last EDR Contact: 02/27/2020
Next Scheduled EDR Contact: 06/15/2020
Data Release Frequency: Varies

DRYCLEANERS: Cleaner Facilities
A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

Date of Government Version: 09/06/2019
Date Data Arrived at EDR: 10/11/2019
Date Made Active in Reports: 12/12/2019
Number of Days to Update: 62

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 02/27/2020
Next Scheduled EDR Contact: 06/15/2020
Data Release Frequency: Annually

EMI: Emissions Inventory Data
Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 06/24/2019
Date Made Active in Reports: 08/22/2019
Number of Days to Update: 59

Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 12/19/2019
Next Scheduled EDR Contact: 03/29/2020
Data Release Frequency: Varies

ENF: Enforcement Action Listing
A listing of Water Board Enforcement Actions. Formal is everything except Oral/Verbal Communication, Notice of Violation, Expedited Payment Letter, and Staff Enforcement Letter.

Date of Government Version: 07/19/2019
Date Data Arrived at EDR: 07/22/2019
Date Made Active in Reports: 09/26/2019
Number of Days to Update: 66

Source: State Water Resoruces Control Board
Telephone: 916-445-9379
Last EDR Contact: 01/22/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

Financial Assurance 1: Financial Assurance Information Listing
Financial Assurance information

Date of Government Version: 10/17/2019
Date Data Arrived at EDR: 10/22/2019
Date Made Active in Reports: 01/02/2020
Number of Days to Update: 72

Source: Department of Toxic Substances Control
Telephone: 916-255-3628
Last EDR Contact: 01/17/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

Financial Assurance 2: Financial Assurance Information Listing

A listing of financial assurance information for solid waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 11/08/2019
Date Data Arrived at EDR: 11/12/2019
Date Made Active in Reports: 01/08/2020
Number of Days to Update: 57

Source: California Integrated Waste Management Board
Telephone: 916-341-6066
Last EDR Contact: 02/07/2020
Next Scheduled EDR Contact: 05/25/2020
Data Release Frequency: Varies

HAZNET: Facility and Manifest Data

Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method. This database begins with calendar year 1993.

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 05/29/2019
Date Made Active in Reports: 07/22/2019
Number of Days to Update: 54

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 04/20/2020
Data Release Frequency: Annually

ICE: ICE

Contains data pertaining to the Permitted Facilities with Inspections / Enforcements sites tracked in Envirostor.

Date of Government Version: 11/18/2019
Date Data Arrived at EDR: 11/19/2019
Date Made Active in Reports: 01/23/2020
Number of Days to Update: 65

Source: Department of Toxic Subsances Control
Telephone: 877-786-9427
Last EDR Contact: 02/19/2020
Next Scheduled EDR Contact: 06/01/2020
Data Release Frequency: Quarterly

HIST CORTESE: Hazardous Waste & Substance Site List

The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

Date of Government Version: 04/01/2001
Date Data Arrived at EDR: 01/22/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/22/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

HWP: EnviroStor Permitted Facilities Listing

Detailed information on permitted hazardous waste facilities and corrective action ("cleanups") tracked in EnviroStor.

Date of Government Version: 11/18/2019
Date Data Arrived at EDR: 11/19/2019
Date Made Active in Reports: 01/23/2020
Number of Days to Update: 65

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 02/19/2020
Next Scheduled EDR Contact: 06/01/2020
Data Release Frequency: Quarterly

HWT: Registered Hazardous Waste Transporter Database

A listing of hazardous waste transporters. In California, unless specifically exempted, it is unlawful for any person to transport hazardous wastes unless the person holds a valid registration issued by DTSC. A hazardous waste transporter registration is valid for one year and is assigned a unique registration number.

Date of Government Version: 10/07/2019
Date Data Arrived at EDR: 10/08/2019
Date Made Active in Reports: 11/07/2019
Number of Days to Update: 30

Source: Department of Toxic Substances Control
Telephone: 916-440-7145
Last EDR Contact: 01/07/2020
Next Scheduled EDR Contact: 04/20/2020
Data Release Frequency: Quarterly

MINES: Mines Site Location Listing
A listing of mine site locations from the Office of Mine Reclamation.

Date of Government Version: 12/09/2019
Date Data Arrived at EDR: 12/10/2019
Date Made Active in Reports: 02/24/2020
Number of Days to Update: 76

Source: Department of Conservation
Telephone: 916-322-1080
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Quarterly

MWMP: Medical Waste Management Program Listing
The Medical Waste Management Program (MWMP) ensures the proper handling and disposal of medical waste by permitting and inspecting medical waste Offsite Treatment Facilities (PDF) and Transfer Stations (PDF) throughout the state. MWMP also oversees all Medical Waste Transporters.

Date of Government Version: 11/22/2019
Date Data Arrived at EDR: 12/04/2019
Date Made Active in Reports: 02/04/2020
Number of Days to Update: 62

Source: Department of Public Health
Telephone: 916-558-1784
Last EDR Contact: 12/04/2019
Next Scheduled EDR Contact: 03/16/2020
Data Release Frequency: Varies

NPDES: NPDES Permits Listing
A listing of NPDES permits, including stormwater.

Date of Government Version: 11/11/2019
Date Data Arrived at EDR: 11/12/2019
Date Made Active in Reports: 01/08/2020
Number of Days to Update: 57

Source: State Water Resources Control Board
Telephone: 916-445-9379
Last EDR Contact: 02/11/2020
Next Scheduled EDR Contact: 05/25/2020
Data Release Frequency: Quarterly

PEST LIC: Pesticide Regulation Licenses Listing
A listing of licenses and certificates issued by the Department of Pesticide Regulation. The DPR issues licenses and/or certificates to: Persons and businesses that apply or sell pesticides; Pest control dealers and brokers; Persons who advise on agricultural pesticide applications.

Date of Government Version: 12/03/2019
Date Data Arrived at EDR: 12/04/2019
Date Made Active in Reports: 02/04/2020
Number of Days to Update: 62

Source: Department of Pesticide Regulation
Telephone: 916-445-4038
Last EDR Contact: 12/04/2019
Next Scheduled EDR Contact: 03/16/2020
Data Release Frequency: Quarterly

PROC: Certified Processors Database
A listing of certified processors.

Date of Government Version: 12/09/2019
Date Data Arrived at EDR: 12/10/2019
Date Made Active in Reports: 02/19/2020
Number of Days to Update: 71

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Quarterly

NOTIFY 65: Proposition 65 Records
Listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency.

Date of Government Version: 12/11/2019
Date Data Arrived at EDR: 12/12/2019
Date Made Active in Reports: 02/21/2020
Number of Days to Update: 71

Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 12/11/2019
Next Scheduled EDR Contact: 03/30/2020
Data Release Frequency: No Update Planned

UIC: UIC Listing
A listing of wells identified as underground injection wells, in the California Oil and Gas Wells database.

Date of Government Version: 12/06/2019
Date Data Arrived at EDR: 12/10/2019
Date Made Active in Reports: 02/19/2020
Number of Days to Update: 71

Source: Deaprtment of Conservation
Telephone: 916-445-2408
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Varies

UIC GEO: Underground Injection Control Sites (GEOTRACKER)
Underground control injection sites

Date of Government Version: 12/09/2019
Date Data Arrived at EDR: 12/10/2019
Date Made Active in Reports: 02/18/2020
Number of Days to Update: 70

Source: State Water Resource Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Varies

WASTEWATER PITS: Oil Wastewater Pits Listing
Water officials discovered that oil producers have been dumping chemical-laden wastewater into hundreds of unlined pits that are operating without proper permits. Inspections completed by the Central Valley Regional Water Quality Control Board revealed the existence of previously unidentified waste sites. The water boards review found that more than one-third of the region's active disposal pits are operating without permission.

Date of Government Version: 05/08/2018
Date Data Arrived at EDR: 07/11/2018
Date Made Active in Reports: 09/13/2018
Number of Days to Update: 64

Source: RWQCB, Central Valley Region
Telephone: 559-445-5577
Last EDR Contact: 01/07/2020
Next Scheduled EDR Contact: 04/20/2020
Data Release Frequency: Varies

WDS: Waste Discharge System
Sites which have been issued waste discharge requirements.

Date of Government Version: 06/19/2007
Date Data Arrived at EDR: 06/20/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 9

Source: State Water Resources Control Board
Telephone: 916-341-5227
Last EDR Contact: 02/14/2020
Next Scheduled EDR Contact: 06/01/2020
Data Release Frequency: No Update Planned

WIP: Well Investigation Program Case List
Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 07/03/2009
Date Data Arrived at EDR: 07/21/2009
Date Made Active in Reports: 08/03/2009
Number of Days to Update: 13

Source: Los Angeles Water Quality Control Board
Telephone: 213-576-6726
Last EDR Contact: 12/17/2019
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: No Update Planned

MILITARY PRIV SITES: Military Privatized Sites (GEOTRACKER)
Military privatized sites

Date of Government Version: 12/09/2019
Date Data Arrived at EDR: 12/10/2019
Date Made Active in Reports: 02/18/2020
Number of Days to Update: 70

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Varies

PROJECT: Project Sites (GEOTRACKER)
Projects sites

Date of Government Version: 12/09/2019
Date Data Arrived at EDR: 12/10/2019
Date Made Active in Reports: 02/18/2020
Number of Days to Update: 70

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Varies

WDR: Waste Discharge Requirements Listing

In general, the Waste Discharge Requirements (WDRs) Program (sometimes also referred to as the "Non Chapter 15 (Non 15) Program") regulates point discharges that are exempt pursuant to Subsection 20090 of Title 27 and not subject to the Federal Water Pollution Control Act. Exemptions from Title 27 may be granted for nine categories of discharges (e.g., sewage, wastewater, etc.) that meet, and continue to meet, the preconditions listed for each specific exemption. The scope of the WDRs Program also includes the discharge of wastes classified as inert, pursuant to section 20230 of Title 27.

Date of Government Version: 12/09/2019
Date Data Arrived at EDR: 12/10/2019
Date Made Active in Reports: 02/19/2020
Number of Days to Update: 71

Source: State Water Resources Control Board
Telephone: 916-341-5810
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Quarterly

CIWQS: California Integrated Water Quality System

The California Integrated Water Quality System (CIWQS) is a computer system used by the State and Regional Water Quality Control Boards to track information about places of environmental interest, manage permits and other orders, track inspections, and manage violations and enforcement activities.

Date of Government Version: 12/03/2019
Date Data Arrived at EDR: 12/04/2019
Date Made Active in Reports: 02/04/2020
Number of Days to Update: 62

Source: State Water Resources Control Board
Telephone: 866-794-4977
Last EDR Contact: 12/04/2019
Next Scheduled EDR Contact: 03/16/2020
Data Release Frequency: Varies

CERS: CalEPA Regulated Site Portal Data

The CalEPA Regulated Site Portal database combines data about environmentally regulated sites and facilities in California into a single database. It combines data from a variety of state and federal databases, and provides an overview of regulated activities across the spectrum of environmental programs for any given location in California. These activities include hazardous materials and waste, state and federal cleanups, impacted ground and surface waters, and toxic materials

Date of Government Version: 10/21/2019
Date Data Arrived at EDR: 10/22/2019
Date Made Active in Reports: 01/03/2020
Number of Days to Update: 73

Source: California Environmental Protection Agency
Telephone: 916-323-2514
Last EDR Contact: 01/22/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

NON-CASE INFO: Non-Case Information Sites (GEOTRACKER)

Non-Case Information sites

Date of Government Version: 12/09/2019
Date Data Arrived at EDR: 12/10/2019
Date Made Active in Reports: 02/18/2020
Number of Days to Update: 70

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Varies

OTHER OIL GAS: Other Oil & Gas Projects Sites (GEOTRACKER)

Other Oil & Gas Projects sites

Date of Government Version: 12/09/2019
Date Data Arrived at EDR: 12/10/2019
Date Made Active in Reports: 02/18/2020
Number of Days to Update: 70

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Varies

PROD WATER PONDS: Produced Water Ponds Sites (GEOTRACKER)
Produced water ponds sites

Date of Government Version: 12/09/2019
Date Data Arrived at EDR: 12/10/2019
Date Made Active in Reports: 02/18/2020
Number of Days to Update: 70

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Varies

SAMPLING POINT: Sampling Point ? Public Sites (GEOTRACKER)
Sampling point - public sites

Date of Government Version: 12/09/2019
Date Data Arrived at EDR: 12/10/2019
Date Made Active in Reports: 02/18/2020
Number of Days to Update: 70

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Varies

WELL STIM PROJ: Well Stimulation Project (GEOTRACKER)
Includes areas of groundwater monitoring plans, a depiction of the monitoring network, and the facilities, boundaries, and subsurface characteristics of the oilfield and the features (oil and gas wells, produced water ponds, UIC wells, water supply wells, etc?) being monitored

Date of Government Version: 12/09/2019
Date Data Arrived at EDR: 12/10/2019
Date Made Active in Reports: 02/18/2020
Number of Days to Update: 70

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Varies

HWTS: Hazardous Waste Tracking System
The Hazardous Waste Tracking System (HWTS) is the Department of Toxic Substances Control?s data repository for hazardous waste Identification (ID) numbers and manifest information. HWTS generates reports on hazardous waste shipments for generators, transporters, and TSDFs.

Date of Government Version: 10/15/2019
Date Data Arrived at EDR: 11/14/2019
Date Made Active in Reports: 02/07/2020
Number of Days to Update: 85

Source: Department of Toxic Substances Control
Telephone: 916-324-2444
Last EDR Contact: 01/17/2020
Next Scheduled EDR Contact: 04/20/2020
Data Release Frequency: Varies

MINES MRDS: Mineral Resources Data System
Mineral Resources Data System

Date of Government Version: 04/06/2018
Date Data Arrived at EDR: 10/21/2019
Date Made Active in Reports: 10/24/2019
Number of Days to Update: 3

Source: USGS
Telephone: 703-648-6533
Last EDR Contact: 02/28/2020
Next Scheduled EDR Contact: 06/08/2020
Data Release Frequency: Varies

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP: EDR Proprietary Manufactured Gas Plants
The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Hist Auto: EDR Exclusive Historical Auto Stations

EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Hist Cleaner: EDR Exclusive Historical Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF: Recovered Government Archive Solid Waste Facilities List

The EDR Recovered Government Archive Landfill database provides a list of landfills derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Resources Recycling and Recovery in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/13/2014
Number of Days to Update: 196

Source: Department of Resources Recycling and Recovery
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

RGA LUST: Recovered Government Archive Leaking Underground Storage Tank

The EDR Recovered Government Archive Leaking Underground Storage Tank database provides a list of LUST incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the State Water Resources Control Board in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 12/30/2013
Number of Days to Update: 182

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

COUNTY RECORDS

ALAMEDA COUNTY:

CS ALAMEDA: Contaminated Sites
A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 01/09/2019
Date Data Arrived at EDR: 01/11/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 53

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 01/06/2020
Next Scheduled EDR Contact: 04/20/2020
Data Release Frequency: Semi-Annually

UST ALAMEDA: Underground Tanks
Underground storage tank sites located in Alameda county.

Date of Government Version: 10/02/2019
Date Data Arrived at EDR: 10/03/2019
Date Made Active in Reports: 11/06/2019
Number of Days to Update: 34

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 01/06/2020
Next Scheduled EDR Contact: 04/24/2047
Data Release Frequency: Semi-Annually

AMADOR COUNTY:

CUPA AMADOR: CUPA Facility List
Cupa Facility List

Date of Government Version: 09/06/2019
Date Data Arrived at EDR: 09/10/2019
Date Made Active in Reports: 10/31/2019
Number of Days to Update: 51

Source: Amador County Environmental Health
Telephone: 209-223-6439
Last EDR Contact: 02/27/2020
Next Scheduled EDR Contact: 06/15/2020
Data Release Frequency: Varies

BUTTE COUNTY:

CUPA BUTTE: CUPA Facility Listing
Cupa facility list.

Date of Government Version: 04/21/2017
Date Data Arrived at EDR: 04/25/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 106

Source: Public Health Department
Telephone: 530-538-7149
Last EDR Contact: 01/06/2020
Next Scheduled EDR Contact: 04/20/2020
Data Release Frequency: No Update Planned

CALVERAS COUNTY:

CUPA CALVERAS: CUPA Facility Listing
Cupa Facility Listing

Date of Government Version: 12/02/2019
Date Data Arrived at EDR: 12/03/2019
Date Made Active in Reports: 02/04/2020
Number of Days to Update: 63

Source: Calveras County Environmental Health
Telephone: 209-754-6399
Last EDR Contact: 12/03/2019
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Quarterly

COLUSA COUNTY:

CUPA COLUSA: CUPA Facility List
Cupa facility list.

Date of Government Version: 08/14/2019
Date Data Arrived at EDR: 08/20/2019
Date Made Active in Reports: 10/18/2019
Number of Days to Update: 59

Source: Health & Human Services
Telephone: 530-458-0396
Last EDR Contact: 02/27/2020
Next Scheduled EDR Contact: 05/18/2020
Data Release Frequency: Semi-Annually

CONTRA COSTA COUNTY:

SL CONTRA COSTA: Site List
List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 12/02/2019
Date Data Arrived at EDR: 12/04/2019
Date Made Active in Reports: 02/04/2020
Number of Days to Update: 62

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 01/27/2020
Next Scheduled EDR Contact: 05/11/2020
Data Release Frequency: Semi-Annually

DEL NORTE COUNTY:

CUPA DEL NORTE: CUPA Facility List
Cupa Facility list

Date of Government Version: 10/11/2019
Date Data Arrived at EDR: 10/29/2019
Date Made Active in Reports: 12/11/2019
Number of Days to Update: 43

Source: Del Norte County Environmental Health Division
Telephone: 707-465-0426
Last EDR Contact: 01/24/2020
Next Scheduled EDR Contact: 05/11/2020
Data Release Frequency: Varies

EL DORADO COUNTY:

CUPA EL DORADO: CUPA Facility List
CUPA facility list.

Date of Government Version: 09/06/2019
Date Data Arrived at EDR: 09/12/2019
Date Made Active in Reports: 10/31/2019
Number of Days to Update: 49

Source: El Dorado County Environmental Management Department
Telephone: 530-621-6623
Last EDR Contact: 01/03/2020
Next Scheduled EDR Contact: 05/11/2020
Data Release Frequency: Varies

FRESNO COUNTY:

CUPA FRESNO: CUPA Resources List
Certified Unified Program Agency. CUPA's are responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

Date of Government Version: 10/08/2019
Date Data Arrived at EDR: 10/10/2019
Date Made Active in Reports: 12/11/2019
Number of Days to Update: 62

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 01/03/2020
Next Scheduled EDR Contact: 04/13/2020
Data Release Frequency: Semi-Annually

GLENN COUNTY:

CUPA GLENN: CUPA Facility List
Cupa facility list

Date of Government Version: 01/22/2018
Date Data Arrived at EDR: 01/24/2018
Date Made Active in Reports: 03/14/2018
Number of Days to Update: 49

Source: Glenn County Air Pollution Control District
Telephone: 830-934-6500
Last EDR Contact: 01/17/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: No Update Planned

HUMBOLDT COUNTY:

CUPA HUMBOLDT: CUPA Facility List
CUPA facility list.

Date of Government Version: 11/13/2019
Date Data Arrived at EDR: 11/14/2019
Date Made Active in Reports: 01/23/2020
Number of Days to Update: 70

Source: Humboldt County Environmental Health
Telephone: N/A
Last EDR Contact: 02/18/2020
Next Scheduled EDR Contact: 06/01/2020
Data Release Frequency: Semi-Annually

IMPERIAL COUNTY:

CUPA IMPERIAL: CUPA Facility List
Cupa facility list.

Date of Government Version: 10/17/2019
Date Data Arrived at EDR: 10/22/2019
Date Made Active in Reports: 01/02/2020
Number of Days to Update: 72

Source: San Diego Border Field Office
Telephone: 760-339-2777
Last EDR Contact: 01/17/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

INYO COUNTY:

CUPA INYO: CUPA Facility List
Cupa facility list.

Date of Government Version: 04/02/2018
Date Data Arrived at EDR: 04/03/2018
Date Made Active in Reports: 06/14/2018
Number of Days to Update: 72

Source: Inyo County Environmental Health Services
Telephone: 760-878-0238
Last EDR Contact: 02/13/2020
Next Scheduled EDR Contact: 06/01/2020
Data Release Frequency: Varies

KERN COUNTY:

UST KERN: Underground Storage Tank Sites & Tank Listing
Kern County Sites and Tanks Listing.

Date of Government Version: 10/28/2019
Date Data Arrived at EDR: 11/05/2019
Date Made Active in Reports: 01/08/2020
Number of Days to Update: 64

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 01/31/2020
Next Scheduled EDR Contact: 05/18/2020
Data Release Frequency: Quarterly

KINGS COUNTY:

CUPA KINGS: CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 11/25/2019
Date Data Arrived at EDR: 12/05/2019
Date Made Active in Reports: 02/04/2020
Number of Days to Update: 61

Source: Kings County Department of Public Health
Telephone: 559-584-1411
Last EDR Contact: 02/13/2020
Next Scheduled EDR Contact: 06/01/2020
Data Release Frequency: Varies

LAKE COUNTY:

CUPA LAKE: CUPA Facility List
Cupa facility list

Date of Government Version: 08/16/2019
Date Data Arrived at EDR: 08/20/2019
Date Made Active in Reports: 10/18/2019
Number of Days to Update: 59

Source: Lake County Environmental Health
Telephone: 707-263-1164
Last EDR Contact: 01/08/2020
Next Scheduled EDR Contact: 04/27/2020
Data Release Frequency: Varies

LASSEN COUNTY:

CUPA LASSEN: CUPA Facility List
Cupa facility list

Date of Government Version: 07/22/2019
Date Data Arrived at EDR: 07/23/2019
Date Made Active in Reports: 09/26/2019
Number of Days to Update: 65

Source: Lassen County Environmental Health
Telephone: 530-251-8528
Last EDR Contact: 01/17/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

LOS ANGELES COUNTY:

AOCONCERN: Key Areas of Concerns in Los Angeles County
San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office. Date of Government Version: 3/30/2009 Exide Site area is a cleanup plan of lead-impacted soil surrounding the former Exide Facility as designated by the DTSC. Date of Government Version: 7/17/2017

Date of Government Version: 03/30/2009
Date Data Arrived at EDR: 03/31/2009
Date Made Active in Reports: 10/23/2009
Number of Days to Update: 206

Source: N/A
Telephone: N/A
Last EDR Contact: 12/11/2019
Next Scheduled EDR Contact: 03/30/2020
Data Release Frequency: No Update Planned

HMS LOS ANGELES: HMS: Street Number List
Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 01/15/2020
Date Data Arrived at EDR: 01/16/2020
Date Made Active in Reports: 02/07/2020
Number of Days to Update: 22

Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 01/06/2020
Next Scheduled EDR Contact: 04/20/2020
Data Release Frequency: Semi-Annually

LF LOS ANGELES: List of Solid Waste Facilities
Solid Waste Facilities in Los Angeles County.

Date of Government Version: 10/15/2019
Date Data Arrived at EDR: 10/16/2019
Date Made Active in Reports: 12/12/2019
Number of Days to Update: 57

Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 01/14/2020
Next Scheduled EDR Contact: 04/27/2020
Data Release Frequency: Varies

LF LOS ANGELES CITY: City of Los Angeles Landfills
Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 01/01/2019
Date Data Arrived at EDR: 01/15/2019
Date Made Active in Reports: 03/07/2019
Number of Days to Update: 51

Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 01/13/2020
Next Scheduled EDR Contact: 04/27/2020
Data Release Frequency: Varies

LOS ANGELES AST: Active & Inactive AST Inventory
A listing of active & inactive above ground petroleum storage tank site locations, located in the City of Los Angeles.

Date of Government Version: 06/01/2019
Date Data Arrived at EDR: 06/25/2019
Date Made Active in Reports: 08/22/2019
Number of Days to Update: 58

Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 12/20/2019
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Varies

LOS ANGELES CO LF METHANE: Methane Producing Landfills
This data was created on April 30, 2012 to represent known disposal sites in Los Angeles County that may produce and emanate methane gas. The shapefile contains disposal sites within Los Angeles County that once accepted degradable refuse material. Information used to create this data was extracted from a landfill survey performed by County Engineers (Major Waste System Map, 1973) as well as historical records from CalRecycle, Regional Water Quality Control Board, and Los Angeles County Department of Public Health

Date of Government Version: 04/30/2012
Date Data Arrived at EDR: 04/17/2019
Date Made Active in Reports: 05/29/2019
Number of Days to Update: 42

Source: Los Angeles County Department of Public Works
Telephone: 626-458-6973
Last EDR Contact: 01/17/2020
Next Scheduled EDR Contact: 04/27/2020
Data Release Frequency: No Update Planned

LOS ANGELES HM: Active & Inactive Hazardous Materials Inventory
A listing of active & inactive hazardous materials facility locations, located in the City of Los Angeles.

Date of Government Version: 06/01/2019
Date Data Arrived at EDR: 06/25/2019
Date Made Active in Reports: 08/22/2019
Number of Days to Update: 58

Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 12/20/2019
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Varies

LOS ANGELES UST: Active & Inactive UST Inventory
A listing of active & inactive underground storage tank site locations and underground storage tank historical sites, located in the City of Los Angeles.

Date of Government Version: 06/01/2019
Date Data Arrived at EDR: 06/25/2019
Date Made Active in Reports: 08/22/2019
Number of Days to Update: 58

Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 12/20/2019
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Varies

SITE MIT LOS ANGELES: Site Mitigation List
Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 10/01/2019
Date Data Arrived at EDR: 10/29/2019
Date Made Active in Reports: 01/08/2020
Number of Days to Update: 71

Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 01/14/2020
Next Scheduled EDR Contact: 04/27/2020
Data Release Frequency: Annually

UST EL SEGUNDO: City of El Segundo Underground Storage Tank
Underground storage tank sites located in El Segundo city.

Date of Government Version: 01/21/2017
Date Data Arrived at EDR: 04/19/2017
Date Made Active in Reports: 05/10/2017
Number of Days to Update: 21

Source: City of El Segundo Fire Department
Telephone: 310-524-2236
Last EDR Contact: 01/13/2020
Next Scheduled EDR Contact: 04/27/2020
Data Release Frequency: No Update Planned

UST LONG BEACH: City of Long Beach Underground Storage Tank
Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 04/22/2019
Date Data Arrived at EDR: 04/23/2019
Date Made Active in Reports: 06/27/2019
Number of Days to Update: 65

Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 01/17/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

UST TORRANCE: City of Torrance Underground Storage Tank
Underground storage tank sites located in the city of Torrance.

Date of Government Version: 06/27/2019
Date Data Arrived at EDR: 07/30/2019
Date Made Active in Reports: 10/02/2019
Number of Days to Update: 64

Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 01/17/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Semi-Annually

MADERA COUNTY:

CUPA MADERA: CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 11/18/2019
Date Data Arrived at EDR: 11/20/2019
Date Made Active in Reports: 01/27/2020
Number of Days to Update: 68

Source: Madera County Environmental Health
Telephone: 559-675-7823
Last EDR Contact: 02/14/2020
Next Scheduled EDR Contact: 06/01/2020
Data Release Frequency: Varies

MARIN COUNTY:

UST MARIN: Underground Storage Tank Sites
Currently permitted USTs in Marin County.

Date of Government Version: 09/26/2018
Date Data Arrived at EDR: 10/04/2018
Date Made Active in Reports: 11/02/2018
Number of Days to Update: 29

Source: Public Works Department Waste Management
Telephone: 415-473-6647
Last EDR Contact: 12/19/2019
Next Scheduled EDR Contact: 04/13/2020
Data Release Frequency: Semi-Annually

MERCED COUNTY:

CUPA MERCED: CUPA Facility List
CUPA facility list.

Date of Government Version: 11/18/2019
Date Data Arrived at EDR: 11/20/2019
Date Made Active in Reports: 01/03/2020
Number of Days to Update: 44

Source: Merced County Environmental Health
Telephone: 209-381-1094
Last EDR Contact: 02/13/2020
Next Scheduled EDR Contact: 06/01/2020
Data Release Frequency: Varies

MONO COUNTY:

CUPA MONO: CUPA Facility List
CUPA Facility List

Date of Government Version: 11/20/2019
Date Data Arrived at EDR: 12/02/2019
Date Made Active in Reports: 02/07/2020
Number of Days to Update: 67

Source: Mono County Health Department
Telephone: 760-932-5580
Last EDR Contact: 02/21/2020
Next Scheduled EDR Contact: 06/08/2020
Data Release Frequency: Varies

MONTEREY COUNTY:

CUPA MONTEREY: CUPA Facility Listing
CUPA Program listing from the Environmental Health Division.

Date of Government Version: 11/06/2019
Date Data Arrived at EDR: 11/07/2019
Date Made Active in Reports: 01/08/2020
Number of Days to Update: 62

Source: Monterey County Health Department
Telephone: 831-796-1297
Last EDR Contact: 12/19/2019
Next Scheduled EDR Contact: 04/13/2020
Data Release Frequency: Varies

NAPA COUNTY:

LUST NAPA: Sites With Reported Contamination
A listing of leaking underground storage tank sites located in Napa county.

Date of Government Version: 01/09/2017
Date Data Arrived at EDR: 01/11/2017
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 50

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 02/21/2020
Next Scheduled EDR Contact: 06/08/2020
Data Release Frequency: No Update Planned

UST NAPA: Closed and Operating Underground Storage Tank Sites
Underground storage tank sites located in Napa county.

Date of Government Version: 09/05/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 10/31/2019
Number of Days to Update: 52

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 02/21/2020
Next Scheduled EDR Contact: 06/08/2020
Data Release Frequency: No Update Planned

NEVADA COUNTY:

CUPA NEVADA: CUPA Facility List
CUPA facility list.

Date of Government Version: 10/30/2019
Date Data Arrived at EDR: 10/30/2019
Date Made Active in Reports: 12/11/2019
Number of Days to Update: 42

Source: Community Development Agency
Telephone: 530-265-1467
Last EDR Contact: 01/24/2020
Next Scheduled EDR Contact: 05/11/2020
Data Release Frequency: Varies

ORANGE COUNTY:

IND_SITE ORANGE: List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 10/04/2019
Date Data Arrived at EDR: 12/02/2019
Date Made Active in Reports: 02/04/2020
Number of Days to Update: 64

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 02/03/2020
Next Scheduled EDR Contact: 05/18/2020
Data Release Frequency: Annually

LUST ORANGE: List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 10/04/2019
Date Data Arrived at EDR: 12/02/2019
Date Made Active in Reports: 02/04/2020
Number of Days to Update: 64

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 02/03/2020
Next Scheduled EDR Contact: 05/18/2020
Data Release Frequency: Quarterly

UST ORANGE: List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 10/04/2019
Date Data Arrived at EDR: 11/05/2019
Date Made Active in Reports: 01/08/2020
Number of Days to Update: 64

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 02/04/2020
Next Scheduled EDR Contact: 05/18/2020
Data Release Frequency: Quarterly

PLACER COUNTY:

MS PLACER: Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 12/02/2019
Date Data Arrived at EDR: 12/03/2019
Date Made Active in Reports: 02/07/2020
Number of Days to Update: 66

Source: Placer County Health and Human Services
Telephone: 530-745-2363
Last EDR Contact: 02/27/2020
Next Scheduled EDR Contact: 06/15/2020
Data Release Frequency: Semi-Annually

PLUMAS COUNTY:

CUPA PLUMAS: CUPA Facility List
Plumas County CUPA Program facilities.

Date of Government Version: 03/31/2019
Date Data Arrived at EDR: 04/23/2019
Date Made Active in Reports: 06/26/2019
Number of Days to Update: 64

Source: Plumas County Environmental Health
Telephone: 530-283-6355
Last EDR Contact: 01/17/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

RIVERSIDE COUNTY:

LUST RIVERSIDE: Listing of Underground Tank Cleanup Sites
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 10/17/2019
Date Data Arrived at EDR: 10/22/2019
Date Made Active in Reports: 12/13/2019
Number of Days to Update: 52

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 02/10/2020
Next Scheduled EDR Contact: 03/30/2020
Data Release Frequency: Quarterly

UST RIVERSIDE: Underground Storage Tank Tank List
Underground storage tank sites located in Riverside county.

Date of Government Version: 10/17/2019
Date Data Arrived at EDR: 10/22/2019
Date Made Active in Reports: 01/03/2020
Number of Days to Update: 73

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 02/10/2020
Next Scheduled EDR Contact: 03/30/2020
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

CS SACRAMENTO: Toxic Site Clean-Up List
List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 11/14/2019
Date Data Arrived at EDR: 12/23/2019
Date Made Active in Reports: 02/20/2020
Number of Days to Update: 59

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 12/23/2019
Next Scheduled EDR Contact: 04/13/2020
Data Release Frequency: Quarterly

ML SACRAMENTO: Master Hazardous Materials Facility List
Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 11/14/2019
Date Data Arrived at EDR: 12/23/2019
Date Made Active in Reports: 02/21/2020
Number of Days to Update: 60

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 12/23/2019
Next Scheduled EDR Contact: 04/13/2020
Data Release Frequency: Quarterly

SAN BENITO COUNTY:

CUPA SAN BENITO: CUPA Facility List
Cupa facility list

Date of Government Version: 11/14/2019
Date Data Arrived at EDR: 11/15/2019
Date Made Active in Reports: 01/23/2020
Number of Days to Update: 69

Source: San Benito County Environmental Health
Telephone: N/A
Last EDR Contact: 01/31/2020
Next Scheduled EDR Contact: 05/18/2020
Data Release Frequency: Varies

SAN BERNARDINO COUNTY:

PERMITS SAN BERNARDINO: Hazardous Material Permits
This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 11/26/2019
Date Data Arrived at EDR: 11/27/2019
Date Made Active in Reports: 02/04/2020
Number of Days to Update: 69

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 02/03/2020
Next Scheduled EDR Contact: 05/18/2020
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

HMMD SAN DIEGO: Hazardous Materials Management Division Database

The database includes: HE58 - This report contains the business name, site address, business phone number, establishment 'H' permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 12/03/2019
Date Data Arrived at EDR: 12/04/2019
Date Made Active in Reports: 02/04/2020
Number of Days to Update: 62

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 12/04/2019
Next Scheduled EDR Contact: 03/16/2020
Data Release Frequency: Quarterly

LF SAN DIEGO: Solid Waste Facilities

San Diego County Solid Waste Facilities.

Date of Government Version: 04/18/2018
Date Data Arrived at EDR: 04/24/2018
Date Made Active in Reports: 06/19/2018
Number of Days to Update: 56

Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 01/17/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

SAN DIEGO CO LOP: Local Oversight Program Listing

A listing of all LOP release sites that are or were under the County of San Diego's jurisdiction. Included are closed or transferred cases, open cases, and cases that did not have a case type indicated. The cases without a case type are mostly complaints; however, some of them could be LOP cases.

Date of Government Version: 10/16/2019
Date Data Arrived at EDR: 10/22/2019
Date Made Active in Reports: 12/13/2019
Number of Days to Update: 52

Source: Department of Environmental Health
Telephone: 858-505-6874
Last EDR Contact: 01/17/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

SAN DIEGO CO SAM: Environmental Case Listing

The listing contains all underground tank release cases and projects pertaining to properties contaminated with hazardous substances that are actively under review by the Site Assessment and Mitigation Program.

Date of Government Version: 03/23/2010
Date Data Arrived at EDR: 06/15/2010
Date Made Active in Reports: 07/09/2010
Number of Days to Update: 24

Source: San Diego County Department of Environmental Health
Telephone: 619-338-2371
Last EDR Contact: 02/27/2020
Next Scheduled EDR Contact: 06/15/2020
Data Release Frequency: No Update Planned

SAN FRANCISCO COUNTY:

LUST SAN FRANCISCO: Local Oversite Facilities

A listing of leaking underground storage tank sites located in San Francisco county.

Date of Government Version: 09/19/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 09/29/2008
Number of Days to Update: 10

Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920
Last EDR Contact: 01/31/2020
Next Scheduled EDR Contact: 05/18/2020
Data Release Frequency: No Update Planned

UST SAN FRANCISCO: Underground Storage Tank Information
Underground storage tank sites located in San Francisco county.

Date of Government Version: 08/01/2019
Date Data Arrived at EDR: 08/02/2019
Date Made Active in Reports: 10/08/2019
Number of Days to Update: 67

Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 01/07/2020
Next Scheduled EDR Contact: 05/18/2020
Data Release Frequency: Quarterly

SAN JOAQUIN COUNTY:

UST SAN JOAQUIN: San Joaquin Co. UST
A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 06/22/2018
Date Data Arrived at EDR: 06/26/2018
Date Made Active in Reports: 07/11/2018
Number of Days to Update: 15

Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 12/11/2019
Next Scheduled EDR Contact: 03/30/2020
Data Release Frequency: Semi-Annually

SAN LUIS OBISPO COUNTY:

CUPA SAN LUIS OBISPO: CUPA Facility List
Cupa Facility List.

Date of Government Version: 12/12/2019
Date Data Arrived at EDR: 12/13/2019
Date Made Active in Reports: 02/20/2020
Number of Days to Update: 69

Source: San Luis Obispo County Public Health Department
Telephone: 805-781-5596
Last EDR Contact: 02/14/2020
Next Scheduled EDR Contact: 06/01/2020
Data Release Frequency: Varies

SAN MATEO COUNTY:

BI SAN MATEO: Business Inventory
List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 09/03/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 11/05/2019
Number of Days to Update: 57

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 02/20/2020
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Annually

LUST SAN MATEO: Fuel Leak List
A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 03/29/2019
Date Data Arrived at EDR: 03/29/2019
Date Made Active in Reports: 05/29/2019
Number of Days to Update: 61

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 12/05/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Semi-Annually

SANTA BARBARA COUNTY:

CUPA SANTA BARBARA: CUPA Facility Listing
CUPA Program Listing from the Environmental Health Services division.

Date of Government Version: 09/08/2011
Date Data Arrived at EDR: 09/09/2011
Date Made Active in Reports: 10/07/2011
Number of Days to Update: 28

Source: Santa Barbara County Public Health Department
Telephone: 805-686-8167
Last EDR Contact: 02/14/2020
Next Scheduled EDR Contact: 06/01/2020
Data Release Frequency: No Update Planned

SANTA CLARA COUNTY:

CUPA SANTA CLARA: Cupa Facility List
Cupa facility list

Date of Government Version: 11/18/2019
Date Data Arrived at EDR: 11/19/2019
Date Made Active in Reports: 01/23/2020
Number of Days to Update: 65

Source: Department of Environmental Health
Telephone: 408-918-1973
Last EDR Contact: 02/14/2020
Next Scheduled EDR Contact: 06/01/2020
Data Release Frequency: Varies

HIST LUST SANTA CLARA: HIST LUST - Fuel Leak Site Activity Report
A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

Date of Government Version: 03/29/2005
Date Data Arrived at EDR: 03/30/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 22

Source: Santa Clara Valley Water District
Telephone: 408-265-2600
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

LUST SANTA CLARA: LOP Listing
A listing of leaking underground storage tanks located in Santa Clara county.

Date of Government Version: 03/03/2014
Date Data Arrived at EDR: 03/05/2014
Date Made Active in Reports: 03/18/2014
Number of Days to Update: 13

Source: Department of Environmental Health
Telephone: 408-918-3417
Last EDR Contact: 02/21/2020
Next Scheduled EDR Contact: 06/08/2020
Data Release Frequency: No Update Planned

SAN JOSE HAZMAT: Hazardous Material Facilities
Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 10/30/2019
Date Data Arrived at EDR: 11/01/2019
Date Made Active in Reports: 01/08/2020
Number of Days to Update: 68

Source: City of San Jose Fire Department
Telephone: 408-535-7694
Last EDR Contact: 02/13/2020
Next Scheduled EDR Contact: 05/18/2020
Data Release Frequency: Annually

SANTA CRUZ COUNTY:

CUPA SANTA CRUZ: CUPA Facility List
CUPA facility listing.

Date of Government Version: 01/21/2017
Date Data Arrived at EDR: 02/22/2017
Date Made Active in Reports: 05/23/2017
Number of Days to Update: 90

Source: Santa Cruz County Environmental Health
Telephone: 831-464-2761
Last EDR Contact: 02/14/2020
Next Scheduled EDR Contact: 06/01/2020
Data Release Frequency: Varies

SHASTA COUNTY:

CUPA SHASTA: CUPA Facility List
Cupa Facility List.

Date of Government Version: 06/15/2017
Date Data Arrived at EDR: 06/19/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 51

Source: Shasta County Department of Resource Management
Telephone: 530-225-5789
Last EDR Contact: 02/14/2020
Next Scheduled EDR Contact: 06/01/2020
Data Release Frequency: Varies

SOLANO COUNTY:

LUST SOLANO: Leaking Underground Storage Tanks
A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 06/04/2019
Date Data Arrived at EDR: 06/06/2019
Date Made Active in Reports: 08/13/2019
Number of Days to Update: 68

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 02/27/2020
Next Scheduled EDR Contact: 06/15/2020
Data Release Frequency: Quarterly

UST SOLANO: Underground Storage Tanks
Underground storage tank sites located in Solano county.

Date of Government Version: 12/09/2019
Date Data Arrived at EDR: 12/11/2019
Date Made Active in Reports: 02/21/2020
Number of Days to Update: 72

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 02/27/2020
Next Scheduled EDR Contact: 06/15/2020
Data Release Frequency: Quarterly

SONOMA COUNTY:

CUPA SONOMA: Cupa Facility List
Cupa Facility list

Date of Government Version: 06/18/2019
Date Data Arrived at EDR: 06/25/2019
Date Made Active in Reports: 07/24/2019
Number of Days to Update: 29

Source: County of Sonoma Fire & Emergency Services Department
Telephone: 707-565-1174
Last EDR Contact: 01/07/2020
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Varies

LUST SONOMA: Leaking Underground Storage Tank Sites
A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 10/01/2019
Date Data Arrived at EDR: 10/02/2019
Date Made Active in Reports: 11/07/2019
Number of Days to Update: 36

Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 12/17/2019
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Quarterly

STANISLAUS COUNTY:

CUPA STANISLAUS: CUPA Facility List
Cupa facility list

Date of Government Version: 11/04/2019
Date Data Arrived at EDR: 11/07/2019
Date Made Active in Reports: 01/08/2020
Number of Days to Update: 62

Source: Stanislaus County Department of Ennvironmental Protection
Telephone: 209-525-6751
Last EDR Contact: 01/13/2020
Next Scheduled EDR Contact: 04/27/2020
Data Release Frequency: Varies

SUTTER COUNTY:

UST SUTTER: Underground Storage Tanks
Underground storage tank sites located in Sutter county.

Date of Government Version: 12/02/2019
Date Data Arrived at EDR: 12/03/2019
Date Made Active in Reports: 02/07/2020
Number of Days to Update: 66

Source: Sutter County Environmental Health Services
Telephone: 530-822-7500
Last EDR Contact: 02/27/2020
Next Scheduled EDR Contact: 06/15/2020
Data Release Frequency: Semi-Annually

TEHAMA COUNTY:

CUPA TEHAMA: CUPA Facility List
Cupa facilities

Date of Government Version: 05/20/2019
Date Data Arrived at EDR: 05/21/2019
Date Made Active in Reports: 07/18/2019
Number of Days to Update: 58

Source: Tehama County Department of Environmental Health
Telephone: 530-527-8020
Last EDR Contact: 01/23/2020
Next Scheduled EDR Contact: 05/18/2020
Data Release Frequency: Varies

TRINITY COUNTY:

CUPA TRINITY: CUPA Facility List
Cupa facility list

Date of Government Version: 10/17/2019
Date Data Arrived at EDR: 10/22/2019
Date Made Active in Reports: 01/02/2020
Number of Days to Update: 72

Source: Department of Toxic Substances Control
Telephone: 760-352-0381
Last EDR Contact: 01/17/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

TULARE COUNTY:

CUPA TULARE: CUPA Facility List
Cupa program facilities

Date of Government Version: 11/25/2019
Date Data Arrived at EDR: 11/27/2019
Date Made Active in Reports: 02/04/2020
Number of Days to Update: 69

Source: Tulare County Environmental Health Services Division
Telephone: 559-624-7400
Last EDR Contact: 02/03/2020
Next Scheduled EDR Contact: 05/18/2020
Data Release Frequency: Varies

TUOLUMNE COUNTY:

CUPA TUOLUMNE: CUPA Facility List
Cupa facility list

Date of Government Version: 04/23/2018
Date Data Arrived at EDR: 04/25/2018
Date Made Active in Reports: 06/25/2018
Number of Days to Update: 61

Source: Divison of Environmental Health
Telephone: 209-533-5633
Last EDR Contact: 01/17/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

VENTURA COUNTY:

BWT VENTURA: Business Plan, Hazardous Waste Producers, and Operating Underground Tanks
The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 05/29/2019
Date Data Arrived at EDR: 07/29/2019
Date Made Active in Reports: 09/30/2019
Number of Days to Update: 63

Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 01/21/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Quarterly

LF VENTURA: Inventory of Illegal Abandoned and Inactive Sites
Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 12/01/2011
Date Data Arrived at EDR: 12/01/2011
Date Made Active in Reports: 01/19/2012
Number of Days to Update: 49

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 12/19/2019
Next Scheduled EDR Contact: 04/13/2020
Data Release Frequency: No Update Planned

LUST VENTURA: Listing of Underground Tank Cleanup Sites
Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 05/29/2008
Date Data Arrived at EDR: 06/24/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 37

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 02/07/2020
Next Scheduled EDR Contact: 05/25/2020
Data Release Frequency: No Update Planned

MED WASTE VENTURA: Medical Waste Program List
To protect public health and safety and the environment from potential exposure to disease causing agents, the Environmental Health Division Medical Waste Program regulates the generation, handling, storage, treatment and disposal of medical waste throughout the County.

Date of Government Version: 09/26/2019
Date Data Arrived at EDR: 10/23/2019
Date Made Active in Reports: 12/13/2019
Number of Days to Update: 51

Source: Ventura County Resource Management Agency
Telephone: 805-654-2813
Last EDR Contact: 01/21/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Quarterly

UST VENTURA: Underground Tank Closed Sites List
Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 11/26/2019
Date Data Arrived at EDR: 12/10/2019
Date Made Active in Reports: 02/21/2020
Number of Days to Update: 73

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Quarterly

YOLO COUNTY:

UST YOLO: Underground Storage Tank Comprehensive Facility Report
Underground storage tank sites located in Yolo county.

Date of Government Version: 09/25/2019
Date Data Arrived at EDR: 10/01/2019
Date Made Active in Reports: 10/31/2019
Number of Days to Update: 30

Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 12/19/2019
Next Scheduled EDR Contact: 04/13/2020
Data Release Frequency: Annually

YUBA COUNTY:

CUPA YUBA: CUPA Facility List
CUPA facility listing for Yuba County.

Date of Government Version: 11/04/2019
Date Data Arrived at EDR: 11/06/2019
Date Made Active in Reports: 01/08/2020
Number of Days to Update: 63

Source: Yuba County Environmental Health Department
Telephone: 530-749-7523
Last EDR Contact: 02/07/2020
Next Scheduled EDR Contact: 05/25/2020
Data Release Frequency: Varies

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data
Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 05/14/2019
Date Data Arrived at EDR: 12/05/2019
Date Made Active in Reports: 02/03/2020
Number of Days to Update: 60

Source: Department of Energy & Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 01/30/2020
Next Scheduled EDR Contact: 05/25/2020
Data Release Frequency: No Update Planned

NJ MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 04/10/2019
Date Made Active in Reports: 05/16/2019
Number of Days to Update: 36

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 01/06/2020
Next Scheduled EDR Contact: 04/20/2020
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data
Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 01/01/2019
Date Data Arrived at EDR: 05/01/2019
Date Made Active in Reports: 06/21/2019
Number of Days to Update: 51

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 01/31/2020
Next Scheduled EDR Contact: 05/11/2020
Data Release Frequency: Quarterly

PA MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 06/30/2018
Date Data Arrived at EDR: 07/19/2019
Date Made Active in Reports: 09/10/2019
Number of Days to Update: 53

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 01/14/2020
Next Scheduled EDR Contact: 04/07/2020
Data Release Frequency: Annually

RI MANIFEST: Manifest information
Hazardous waste manifest information

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 10/02/2019
Date Made Active in Reports: 12/10/2019
Number of Days to Update: 69

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 02/18/2020
Next Scheduled EDR Contact: 06/01/2020
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 05/31/2018
Date Data Arrived at EDR: 06/19/2019
Date Made Active in Reports: 09/03/2019
Number of Days to Update: 76

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 12/18/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Annually

Oil/Gas Pipelines
Source: Endeavor Business Media
Petroleum Bundle (Crude Oil, Refined Products, Petrochemicals, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)) N = Natural Gas Bundle (Natural Gas, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)). This map includes information copyrighted by Endeavor Business Media. This information is provided on a best effort basis and Endeavor Business Media does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of Endeavor Business Media.

Electric Power Transmission Line Data
Source: Endeavor Business Media
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Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 916-657-4041

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish and Wildlife
Telephone: 916-445-0411

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

STREET AND ADDRESS INFORMATION

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APPENDIX E

LABORATORY REPORTS

Enviro – Chem, Inc.
1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

Date: March 23, 2020

Mr. Tyler Burt
Ardent Environmental Group, Inc.
1827 Capital Street, #103
Corona, CA 92880
Tel(951)736-5334 E-Mail: TBurt@ArdentEnv.com

Project: **101150001**
Lab I.D.: **200313-99 through -113**

Dear Mr. Burt:

The **analytical results** for the soil samples, received by our laboratory on March 13, 2020, are attached. The samples were received chilled, intact and accompanying chain of custody record.

Enviro-Chem appreciates the opportunity to provide you and your company this and other services. Please do not hesitate to call us if you have any questions.

Sincerely,

Curtis Desilets
Vice President/Program Manager

Andy Wang
Laboratory Manager

Enviro – Chem, Inc.
1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

LABORATORY REPORT

CUSTOMER: **Ardent Environmental Group, Inc.**
1827 Capital Street, #103, Corona, CA 92880
Tel(951)736-5334 E-Mail: TBurt@ArdentEnv.com

PROJECT: **101150001**

MATRIX: SOIL
SAMPLING DATE: 03/12/20
REPORT TO: MR. TYLER BURT

DATE RECEIVED: 03/13/20
DATE EXTRACTED: 03/17/20
DATE ANALYZED: 03/17/20
DATE REPORTED: 03/23/20

TOTAL PETROLEUM HYDROCARBONS(TPH) - CARBON CHAIN ANALYSIS
METHOD: EPA 8015B
UNIT: mg/Kg = MILLIGRAM PER KILOGRAM = PPM

SAMPLE I.D.	LAB I.D.	C6-C12	C13-C22	C23-C32	DF
TP1-5	200313-101	ND	ND	ND	1
TP2-5	200313-104	ND	ND	ND	1
TP3-5	200313-107	ND	ND	ND	1
TP4-5	200313-110	ND	ND	ND	1
METHOD BLANK		ND	ND	ND	1
	PQL	10	10	50	

COMMENTS
C6-C12 = GASOLINE RANGE
C13-C22 = DIESEL RANGE
C23-C32 = MOTOR OIL RANGE
DF = DILUTION FACTOR
PQL = PRACTICAL QUANTITATION LIMIT
ACTUAL DETECTION LIMIT = DF X PQL
ND = NON-DETECTED OR BELOW THE ACTUAL DETECTION LIMIT

Data Reviewed and Approved by: _____
CAL-DHS ELAP CERTIFICATE No.: 1555

Enviro Chem, Inc

1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909)590-5905 Fax (909)590-5907

8015B QA/QC Report

Date Analyzed: 3/17/2020 **Units:** mg/Kg (ppm)

Matrix: **Soil/Solid/Sludge/Liquid**

Matrix Spike (MS)/Matrix Spike Duplicate (MSD)

Spiked Sample Lab I.D.: **200313-101 MS/MSD**

Analyte	SR	spk conc	MS	%MS	MSD	%MSD	%RPD	ACP %MS	ACP RPD
C10~C28 Range	0	200	200	**100%**	216	**108%**	**8%**	**75-125**	**0-20%**

LCS STD RECOVERY:

Analyte	spk conc	LCS	% REC	ACP
C10~C28 Range	200	166	**83%**	**75-125**

Analyzed and Reviewed By: _____

Final Reviewer: _____

Enviro – Chem, Inc.
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LABORATORY REPORT

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Tel(951)736-5334 E-Mail: TBurt@ArdentEnv.com

PROJECT: **101150001**
MATRIX: SOIL
SAMPLING DATE: 03/12/20
REPORT TO: MR. TYLER BURT

DATE RECEIVED: 03/13/20
DATE ANALYZED: 03/17/20
DATE REPORTED: 03/23/20

SAMPLE I.D.: **TP1-0.5**
LAB I.D.: 200313-99

TOTAL THRESHOLD LIMIT CONCENTRATION ANALYSIS
UNIT: mg/Kg = MILLIGRAM PER KILOGRAM = PPM

ELEMENT ANALYZED	SAMPLE RESULT	PQL	DF	TTLC LIMIT	STLC LIMIT	EPA METHOD
Lead(Pb)	2.35	0.5	1	1,000	5.0	6010B

COMMENTS
DF = Dilution Factor
PQL = Practical Quantitation Limit
Actual Detection Limit = PQL X DF
TTLC = Total Threshold Limit Concentration
STLC = Soluble Threshold Limit Concentration
* = STLC analysis for the metal is recommended (if marked)
*** = The concentration exceeds the TTLC Limit, and the sample is defined as hazardous waste as per CCR-TITLE 22 (if marked)

Data Reviewed and Approved by: _____
CAL-DHS ELAP CERTIFICATE No.: 1555

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LABORATORY REPORT

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PROJECT: **101150001**
MATRIX: SOIL
SAMPLING DATE: 03/12/20
REPORT TO: MR. TYLER BURT

DATE RECEIVED: 03/13/20
DATE ANALYZED: 03/16&17/20
DATE REPORTED: 03/23/20

SAMPLE I.D.: **TP1-5**
LAB I.D.: 200313-101

TOTAL THRESHOLD LIMIT CONCENTRATION ANALYSIS
UNIT: mg/Kg = MILLIGRAM PER KILOGRAM = PPM

ELEMENT ANALYZED	SAMPLE RESULT	PQL	DF	TTLC LIMIT	STLC LIMIT	EPA METHOD
Antimony(Sb)	ND	1.0	1	500	15	6010B
Arsenic(As)	ND	0.3	1	500	5.0	6010B
Barium(Ba)	78.3	5.0	1	10,000	100	6010B
Beryllium(Be)	ND	0.5	1	75	0.75	6010B
Cadmium(Cd)	ND	0.5	1	100	1.0	6010B
Chromium Total(Cr)	21.9	0.5	1	2,500	560/5@	6010B
Chromium VI (Cr6)	--	0.2	-	500	5.0	7196A
Cobalt(Co)	7.38	1.0	1	8,000	80	6010B
Copper(Cu)	5.40	1.0	1	2,500	25	6010B
Lead(Pb)	3.23	0.5	1	1,000	5.0	6010B
Mercury(Hg)	0.015	0.01	1	20	0.2	7471A
Molybdenum(Mo)	ND	5.0	1	3,500	350	6010B
Nickel(Ni)	2.66	2.5	1	2,000	20	6010B
Selenium(Se)	ND	1.0	1	100	1.0	6010B
Silver(Ag)	ND	1.0	1	500	5.0	6010B
Thallium(Tl)	ND	1.0	1	700	7.0	6010B
Vanadium(V)	39.9	5.0	1	2,400	24	6010B
Zinc(Zn)	38.7	0.5	1	5,000	250	6010B

COMMENTS
DF = Dilution Factor
PQL = Practical Quantitation Limit
Actual Detection Limit = PQL X DF
ND = Below the Actual Detection Limit or non-detected
TTLC = Total Threshold Limit Concentration
STLC = Soluble Threshold Limit Concentration
@ = Must meet both the STLC Limit at 560 and EPA-TCLP Limit at 5
* = STLC analysis for the metal is recommended (if marked)
** = Additional Analysis required, please call to discuss (if marked)
*** = The concentration exceeds the TTLC Limit, and the sample is defined as hazardous waste as per CCR-TITLE 22 (if marked)
-- = Not analyzed/not requested

Data Reviewed and Approved by: _____
CAL-DHS ELAP CERTIFICATE No.: 1555

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LABORATORY REPORT

CUSTOMER: **Ardent Environmental Group, Inc.**
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PROJECT: **101150001**
MATRIX: SOIL
SAMPLING DATE: 03/12/20
REPORT TO: MR. TYLER BURT

DATE RECEIVED: 03/13/20
DATE ANALYZED: 03/17/20
DATE REPORTED: 03/23/20

SAMPLE I.D.: **TP2-0.5** LAB I.D.: 200313-102

TOTAL THRESHOLD LIMIT CONCENTRATION ANALYSIS
UNIT: mg/Kg = MILLIGRAM PER KILOGRAM = PPM

ELEMENT ANALYZED	SAMPLE RESULT	PQL	DF	TTLC LIMIT	STLC LIMIT	EPA METHOD
Lead(Pb)	1.01	0.5	1	1,000	5.0	6010B

COMMENTS
DF = Dilution Factor
PQL = Practical Quantitation Limit
Actual Detection Limit = PQL X DF
TTLC = Total Threshold Limit Concentration
STLC = Soluble Threshold Limit Concentration
* = STLC analysis for the metal is recommended (if marked)
*** = The concentration exceeds the TTLC Limit, and the sample is defined as hazardous waste as per CCR-TITLE 22 (if marked)

Data Reviewed and Approved by: _____
CAL-DHS ELAP CERTIFICATE No.: 1555

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LABORATORY REPORT

CUSTOMER: **Ardent Environmental Group, Inc.**
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PROJECT: **101150001**
MATRIX: SOIL
SAMPLING DATE: 03/12/20
REPORT TO: MR. TYLER BURT

DATE RECEIVED: 03/13/20
DATE ANALYZED: 03/16&17/20
DATE REPORTED: 03/23/20

SAMPLE I.D.: **TP2-5**
LAB I.D.: 200313-104

TOTAL THRESHOLD LIMIT CONCENTRATION ANALYSIS
UNIT: mg/Kg = MILLIGRAM PER KILOGRAM = PPM

ELEMENT ANALYZED	SAMPLE RESULT	PQL	DF	TTLC LIMIT	STLC LIMIT	EPA METHOD
Antimony(Sb)	ND	1.0	1	500	15	6010B
Arsenic(As)	0.413	0.3	1	500	5.0	6010B
Barium(Ba)	84.5	5.0	1	10,000	100	6010B
Beryllium(Be)	ND	0.5	1	75	0.75	6010B
Cadmium(Cd)	ND	0.5	1	100	1.0	6010B
Chromium Total(Cr)	23.7	0.5	1	2,500	560/5@	6010B
Chromium VI (Cr6)	--	0.2	-	500	5.0	7196A
Cobalt(Co)	8.03	1.0	1	8,000	80	6010B
Copper(Cu)	4.84	1.0	1	2,500	25	6010B
Lead(Pb)	6.36	0.5	1	1,000	5.0	6010B
Mercury(Hg)	0.016	0.01	1	20	0.2	7471A
Molybdenum(Mo)	ND	5.0	1	3,500	350	6010B
Nickel(Ni)	3.66	2.5	1	2,000	20	6010B
Selenium(Se)	ND	1.0	1	100	1.0	6010B
Silver(Ag)	ND	1.0	1	500	5.0	6010B
Thallium(Tl)	ND	1.0	1	700	7.0	6010B
Vanadium(V)	43.4	5.0	1	2,400	24	6010B
Zinc(Zn)	40.6	0.5	1	5,000	250	6010B

COMMENTS
DF = Dilution Factor
PQL = Practical Quantitation Limit
Actual Detection Limit = PQL X DF
ND = Below the Actual Detection Limit or non-detected
TTLC = Total Threshold Limit Concentration
STLC = Soluble Threshold Limit Concentration
@ = Must meet both the STLC Limit at 560 and EPA-TCLP Limit at 5
* = STLC analysis for the metal is recommended (if marked)
** = Additional Analysis required, please call to discuss (if marked)
*** = The concentration exceeds the TTLC Limit, and the sample is defined as hazardous waste as per CCR-TITLE 22 (if marked)
-- = Not analyzed/not requested

Data Reviewed and Approved by: _____
CAL-DHS ELAP CERTIFICATE No.: 1555

Enviro – Chem, Inc.
1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

LABORATORY REPORT

CUSTOMER: **Ardent Environmental Group, Inc.**
1827 Capital Street, #103, Corona, CA 92880
Tel(951)736-5334 E-Mail: TBurt@ArdentEnv.com

PROJECT: **101150001**
MATRIX: SOIL
SAMPLING DATE: 03/12/20
REPORT TO: MR. TYLER BURT

DATE RECEIVED: 03/13/20
DATE ANALYZED: 03/17/20
DATE REPORTED: 03/23/20

SAMPLE I.D.: **TP3-0.5** LAB I.D.: 200313-105

TOTAL THRESHOLD LIMIT CONCENTRATION ANALYSIS
UNIT: mg/Kg = MILLIGRAM PER KILOGRAM = PPM

ELEMENT ANALYZED	SAMPLE RESULT	PQL	DF	TTLC LIMIT	STLC LIMIT	EPA METHOD
Lead(Pb)	28.4	0.5	1	1,000	5.0	6010B

COMMENTS
DF = Dilution Factor
PQL = Practical Quantitation Limit
Actual Detection Limit = PQL X DF
TTLC = Total Threshold Limit Concentration
STLC = Soluble Threshold Limit Concentration
* = STLC analysis for the metal is recommended (if marked)
*** = The concentration exceeds the TTLC Limit, and the sample is defined as hazardous waste as per CCR-TITLE 22 (if marked)

Data Reviewed and Approved by: _____
CAL-DHS ELAP CERTIFICATE No.: 1555

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LABORATORY REPORT

CUSTOMER: **Ardent Environmental Group, Inc.**
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Tel(951)736-5334 E-Mail: TBurt@ArdentEnv.com

PROJECT: **101150001**
MATRIX: SOIL
SAMPLING DATE: 03/12/20
REPORT TO: MR. TYLER BURT

DATE RECEIVED: 03/13/20
DATE ANALYZED: 03/16&17/20
DATE REPORTED: 03/23/20

SAMPLE I.D.: **TP3-5**
LAB I.D.: 200313-107

TOTAL THRESHOLD LIMIT CONCENTRATION ANALYSIS
UNIT: mg/Kg = MILLIGRAM PER KILOGRAM = PPM

ELEMENT ANALYZED	SAMPLE RESULT	PQL	DF	TTLC LIMIT	STLC LIMIT	EPA METHOD
Antimony(Sb)	ND	1.0	1	500	15	6010B
Arsenic(As)	1.72	0.3	1	500	5.0	6010B
Barium(Ba)	96.7	5.0	1	10,000	100	6010B
Beryllium(Be)	ND	0.5	1	75	0.75	6010B
Cadmium(Cd)	ND	0.5	1	100	1.0	6010B
Chromium Total(Cr)	31.7	0.5	1	2,500	560/5@	6010B
Chromium VI (Cr6)	--	0.2	-	500	5.0	7196A
Cobalt(Co)	9.80	1.0	1	8,000	80	6010B
Copper(Cu)	7.71	1.0	1	2,500	25	6010B
Lead(Pb)	8.54	0.5	1	1,000	5.0	6010B
Mercury(Hg)	ND	0.01	1	20	0.2	7471A
Molybdenum(Mo)	ND	5.0	1	3,500	350	6010B
Nickel(Ni)	6.91	2.5	1	2,000	20	6010B
Selenium(Se)	ND	1.0	1	100	1.0	6010B
Silver(Ag)	ND	1.0	1	500	5.0	6010B
Thallium(Tl)	ND	1.0	1	700	7.0	6010B
Vanadium(V)	52.3	5.0	1	2,400	24	6010B
Zinc(Zn)	40.6	0.5	1	5,000	250	6010B

COMMENTS
DF = Dilution Factor
PQL = Practical Quantitation Limit
Actual Detection Limit = PQL X DF
ND = Below the Actual Detection Limit or non-detected
TTLC = Total Threshold Limit Concentration
STLC = Soluble Threshold Limit Concentration
@ = Must meet both the STLC Limit at 560 and EPA-TCLP Limit at 5
* = STLC analysis for the metal is recommended (if marked)
** = Additional Analysis required, please call to discuss (if marked)
*** = The concentration exceeds the TTLC Limit, and the sample is defined as hazardous waste as per CCR-TITLE 22 (if marked)
-- = Not analyzed/not requested

Data Reviewed and Approved by: _____
CAL-DHS ELAP CERTIFICATE No.: 1555

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LABORATORY REPORT

CUSTOMER: **Ardent Environmental Group, Inc.**
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Tel(951)736-5334 E-Mail: TBurt@ArdentEnv.com

PROJECT: **101150001**
MATRIX: SOIL
SAMPLING DATE: 03/12/20
REPORT TO: MR. TYLER BURT

DATE RECEIVED: 03/13/20
DATE ANALYZED: 03/17/20
DATE REPORTED: 03/23/20

SAMPLE I.D.: **TP4-0.5** LAB I.D.: 200313-108

TOTAL THRESHOLD LIMIT CONCENTRATION ANALYSIS
UNIT: mg/Kg = MILLIGRAM PER KILOGRAM = PPM

ELEMENT ANALYZED	SAMPLE RESULT	PQL	DF	TTLC LIMIT	STLC LIMIT	EPA METHOD
Lead(Pb)	3.79	0.5	1	1,000	5.0	6010B

COMMENTS
DF = Dilution Factor
PQL = Practical Quantitation Limit
Actual Detection Limit = PQL X DF
TTLC = Total Threshold Limit Concentration
STLC = Soluble Threshold Limit Concentration
* = STLC analysis for the metal is recommended (if marked)
*** = The concentration exceeds the TTLC Limit, and the sample is defined as hazardous waste as per CCR TITLE 22 (if marked)

Data Reviewed and Approved by: _____
CAL-DHS ELAP CERTIFICATE No.: 1555

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LABORATORY REPORT

CUSTOMER: **Ardent Environmental Group, Inc.**
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Tel(951)736-5334 E-Mail: TBurt@ArdentEnv.com

PROJECT: **101150001**
MATRIX: SOIL
SAMPLING DATE: 03/12/20
REPORT TO: MR. TYLER BURT

DATE RECEIVED: 03/13/20
DATE ANALYZED: 03/16&17/20
DATE REPORTED: 03/23/20

SAMPLE I.D.: **TP4-5**
LAB I.D.: 200313-110

TOTAL THRESHOLD LIMIT CONCENTRATION ANALYSIS
UNIT: mg/Kg = MILLIGRAM PER KILOGRAM = PPM

ELEMENT ANALYZED	SAMPLE RESULT	PQL	DF	TTLC LIMIT	STLC LIMIT	EPA METHOD
Antimony(Sb)	ND	1.0	1	500	15	6010B
Arsenic(As)	ND	0.3	1	500	5.0	6010B
Barium(Ba)	88.1	5.0	1	10,000	100	6010B
Beryllium(Be)	ND	0.5	1	75	0.75	6010B
Cadmium(Cd)	ND	0.5	1	100	1.0	6010B
Chromium Total(Cr)	22.3	0.5	1	2,500	560/5@	6010B
Chromium VI (Cr6)	--	0.2	-	500	5.0	7196A
Cobalt(Co)	8.26	1.0	1	8,000	80	6010B
Copper(Cu)	6.46	1.0	1	2,500	25	6010B
Lead(Pb)	1.44	0.5	1	1,000	5.0	6010B
Mercury(Hg)	ND	0.01	1	20	0.2	7471A
Molybdenum(Mo)	ND	5.0	1	3,500	350	6010B
Nickel(Ni)	2.55	2.5	1	2,000	20	6010B
Selenium(Se)	ND	1.0	1	100	1.0	6010B
Silver(Ag)	ND	1.0	1	500	5.0	6010B
Thallium(Tl)	ND	1.0	1	700	7.0	6010B
Vanadium(V)	43.5	5.0	1	2,400	24	6010B
Zinc(Zn)	37.7	0.5	1	5,000	250	6010B

COMMENTS
DF = Dilution Factor
PQL = Practical Quantitation Limit
Actual Detection Limit = PQL X DF
ND = Below the Actual Detection Limit or non-detected
TTLC = Total Threshold Limit Concentration
STLC = Soluble Threshold Limit Concentration
@ = Must meet both the STLC Limit at 560 and EPA-TCLP Limit at 5
* = STLC analysis for the metal is recommended (if marked)
** = Additional Analysis required, please call to discuss (if marked)
*** = The concentration exceeds the TTLC Limit, and the sample is defined as hazardous waste as per CCR-TITLE 22 (if marked)
-- = Not analyzed/not requested

Data Reviewed and Approved by: _____
CAL-DHS ELAP CERTIFICATE No.: 1555

Enviro – Chem, Inc.
1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

LABORATORY REPORT

CUSTOMER: **Ardent Environmental Group, Inc.**
1827 Capital Street, #103, Corona, CA 92880
Tel(951)736-5334 E-Mail: TBurt@ArdentEnv.com

PROJECT: **101150001**
MATRIX: SOIL
SAMPLING DATE: 03/12/20
REPORT TO: MR. TYLER BURT

DATE RECEIVED: 03/13/20
DATE ANALYZED: 03/17/20
DATE REPORTED: 03/23/20

SAMPLE I.D.: **TP5-0.5** LAB I.D.: 200313-111

TOTAL THRESHOLD LIMIT CONCENTRATION ANALYSIS
UNIT: mg/Kg = MILLIGRAM PER KILOGRAM = PPM

ELEMENT ANALYZED	SAMPLE RESULT	PQL	DF	TTLC LIMIT	STLC LIMIT	EPA METHOD
Lead(Pb)	2.05	0.5	1	1,000	5.0	6010B

COMMENTS
DF = Dilution Factor
PQL = Practical Quantitation Limit
Actual Detection Limit = PQL X DF
TTLC = Total Threshold Limit Concentration
STLC = Soluble Threshold Limit Concentration
* = STLC analysis for the metal is recommended (if marked)
*** = The concentration exceeds the TTLC Limit, and the sample is defined as hazardous waste as per CCR-TITLE 22 (if marked)

Data Reviewed and Approved by: _____
CAL-DHS ELAP CERTIFICATE No.: 1555

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PROJECT: **101150001**
MATRIX: SOIL
SAMPLING DATE: 03/12/20
REPORT TO: MR. TYLER BURT

DATE RECEIVED: 03/13/20
DATE ANALYZED: 03/17/20
DATE REPORTED: 03/23/20

SAMPLE I.D.: **TP6-0.5** LAB I.D.: 200313-112

TOTAL THRESHOLD LIMIT CONCENTRATION ANALYSIS
UNIT: mg/Kg = MILLIGRAM PER KILOGRAM = PPM

ELEMENT ANALYZED	SAMPLE RESULT	PQL	DF	TTLC LIMIT	STLC LIMIT	EPA METHOD
Lead(Pb)	1.67	0.5	1	1,000	5.0	6010B

COMMENTS
DF = Dilution Factor
PQL = Practical Quantitation Limit
Actual Detection Limit = PQL X DF
TTLC = Total Threshold Limit Concentration
STLC = Soluble Threshold Limit Concentration
* = STLC analysis for the metal is recommended (if marked)
*** = The concentration exceeds the TTLC Limit, and the sample is defined as hazardous waste as per CCR-TITLE 22 (if marked)

Data Reviewed and Approved by: _____
CAL-DHS ELAP CERTIFICATE No.: 1555

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LABORATORY REPORT

CUSTOMER: **Ardent Environmental Group, Inc.**
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Tel(951)736-5334 E-Mail: TBurt@ArdentEnv.com

PROJECT: **101150001**
MATRIX: SOIL
SAMPLING DATE: 03/12/20
REPORT TO: MR. TYLER BURT

DATE RECEIVED: 03/13/20
DATE ANALYZED: 03/17/20
DATE REPORTED: 03/23/20

SAMPLE I.D.: **TP7-0.5** LAB I.D.: 200313-113

TOTAL THRESHOLD LIMIT CONCENTRATION ANALYSIS
UNIT: mg/Kg = MILLIGRAM PER KILOGRAM = PPM

ELEMENT ANALYZED	SAMPLE RESULT	PQL	DF	TTLC LIMIT	STLC LIMIT	EPA METHOD
Lead(Pb)	3.46	0.5	1	1,000	5.0	6010B

COMMENTS
DF = Dilution Factor
PQL = Practical Quantitation Limit
Actual Detection Limit = PQL X DF
TTLC = Total Threshold Limit Concentration
STLC = Soluble Threshold Limit Concentration
* = STLC analysis for the metal is recommended (if marked)
*** = The concentration exceeds the TTLC Limit, and the sample is defined as hazardous waste as per CCR-TITLE 22 (if marked)

Data Reviewed and Approved by: _____
CAL-DHS ELAP CERTIFICATE No.: 1555

Enviro – Chem, Inc.
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METHOD BLANK REPORT

CUSTOMER: **Ardent Environmental Group, Inc.**
1827 Capital Street, #103, Corona, CA 92880
Tel(951)736-5334 E-Mail: TBurt@ArdentEnv.com

PROJECT: **101150001**
MATRIX: SOIL
SAMPLING DATE: 03/12/20
REPORT TO: MR. TYLER BURT

DATE RECEIVED: 03/13/20
DATE ANALYZED: 03/16&17/20
DATE REPORTED: 03/23/20

METHOD BLANK REPORT FOR LAB I.D.:
200313-99, -101, -102, -104, -105, -107, -108, -110, -111, -112, -113

TOTAL THRESHOLD LIMIT CONCENTRATION ANALYSIS
UNIT: mg/Kg = MILLIGRAM PER KILOGRAM = PPM

ELEMENT ANALYZED	SAMPLE RESULT	PQL	DF	TTLC LIMIT	STLC LIMIT	EPA METHOD
Antimony(Sb)	ND	1.0	1	500	15	6010B
Arsenic(As)	ND	0.3	1	500	5.0	6010B
Barium(Ba)	ND	5.0	1	10,000	100	6010B
Beryllium(Be)	ND	0.5	1	75	0.75	6010B
Cadmium(Cd)	ND	0.5	1	100	1.0	6010B
Chromium Total(Cr)	ND	0.5	1	2,500	560/5@	6010B
Chromium VI (Cr6)	--	0.2	-	500	5.0	7196A
Cobalt(Co)	ND	1.0	1	8,000	80	6010B
Copper(Cu)	ND	1.0	1	2,500	25	6010B
Lead(Pb)	ND	0.5	1	1,000	5.0	6010B
Mercury(Hg)	ND	0.01	1	20	0.2	7471A
Molybdenum(Mo)	ND	5.0	1	3,500	350	6010B
Nickel(Ni)	ND	2.5	1	2,000	20	6010B
Selenium(Se)	ND	1.0	1	100	1.0	6010B
Silver(Ag)	ND	1.0	1	500	5.0	6010B
Thallium(Tl)	ND	1.0	1	700	7.0	6010B
Vanadium(V)	ND	5.0	1	2,400	24	6010B
Zinc(Zn)	ND	0.5	1	5,000	250	6010B

COMMENTS
DF = Dilution Factor
PQL = Practical Quantitation Limit
Actual Detection Limit = PQL X DF
ND = Below the Actual Detection Limit or non-detected
TTLC = Total Threshold Limit Concentration
STLC = Soluble Threshold Limit Concentration
@ = Must meet both the STLC Limit at 560 and EPA-TCLP Limit at 5
* = STLC analysis for the metal is recommended (if marked)
** = Additional Analysis required, please call to discuss (if marked)
*** = The concentration exceeds the TTLC Limit, and the sample is defined as hazardous waste as per CCR-TITLE 22 (if marked)
-- = Not analyzed/not requested

Data Reviewed and Approved by: _____
CAL-DHS ELAP CERTIFICATE No.: 1555

QA/QC for Metals Analysis --TTLC--SOLID/SOIL *MATRIX*

Matrix Spike/ Matrix Spike Duplicate/ LCS :

ANALYSIS DATE: 3/17/2020 Unit : mg/Kg(ppm)

Analysis	Spk.Sample ID	CONC.	LCS %Rec.	LCS STATUS	*Sample Result*	Spike Conc.	MS	% Rec MS	MSD	% Rec MSD	% RPD
Arsenic(As)	200313-112	50.0	108	*PASS*	0.350	50.0	42.7	85%	42.9	85%	0%
Lead(Pb)	200313-112	50.0	109	*PASS*	1.67	50.0	40.4	77%	40.4	77%	0%
Nickel(Ni)	200313-112	50.0	106	*PASS*	2.82	50.0	42.2	79%	42.4	79%	1%

ANALYSIS DATE. : 3/16/2020

Analysis	Spk.Sample ID	LCS CONC.	LCS %Rec.	LCS STATUS	*Sample Result*	Spike Conc.	MS	% Rec MS	MSD	% Rec MSD	% RPD
Mercury (Hg)	200313-41	0.125	95	*PASS*	*0*	0.125	0.108	87%	0.104	83%	4%

MS/MSD Status:

Analysis	%MS	%MSD	%LCS	%RPD
Arsenic(As)	*PASS*	*PASS*	*PASS*	*PASS*
Lead(Pb)	*PASS*	*PASS*	*PASS*	*PASS*
Nickel(Ni)	*PASS*	*PASS*	*PASS*	*PASS*
Mercury (Hg)	*PASS*	*PASS*	*PASS*	*PASS*
Accepted Range	**75 ~ 125**	**75 ~ 125**	**85 ~ 115**	**0 ~ 20**

ANALYST: _____

FINAL REVIEWER: _____

*=Fail due to matrix interference

Note:LCS is in control therefore results are in control

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LABORATORY REPORT

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Tel(951)736-5334 E-Mail: TBurt@ArdentEnv.com

PROJECT: **101150001**
MATRIX: SOIL
SAMPLING DATE: 03/12/20
REPORT TO: MR. TYLER BURT

DATE RECEIVED: 03/13/20
DATE ANALYZED: 03/17/20
DATE REPORTED: 03/23/20

SAMPLE I.D.: **TP1-5**
LAB I.D.: 200313-101

ANALYSIS: VOLATILE ORGANICS, EPA METHOD 5030B/8260B, PAGE 1 OF 2
UNIT: mg/Kg = MILLIGRAM PER KILOGRAM = PPM

PARAMETER	SAMPLE RESULT	PQL X1
ACETONE	ND	0.020
BENZENE	ND	0.005
BROMOBENZENE	ND	0.005
BROMOCHLOROMETHANE	ND	0.005
BROMODICHLOROMETHANE	ND	0.005
BROMOFORM	ND	0.005
BROMOMETHANE	ND	0.005
2-BUTANONE (MEK)	ND	0.020
N-BUTYLBENZENE	ND	0.005
SEC-BUTYLBENZENE	ND	0.005
TERT-BUTYLBENZENE	ND	0.005
CARBON DISULFIDE	ND	0.010
CARBON TETRACHLORIDE	ND	0.005
CHLOROBENZENE	ND	0.005
CHLOROETHANE	ND	0.005
CHLOROFORM	ND	0.005
CHLOROMETHANE	ND	0.005
2-CHLOROTOLUENE	ND	0.005
4-CHLOROTOLUENE	ND	0.005
DIBROMOCHLOROMETHANE	ND	0.005
1,2-DIBROMO-3-CHLOROPROPANE	ND	0.005
1,2-DIBROMOETHANE	ND	0.005
DIBROMOMETHANE	ND	0.005
1,2-DICHLOROBENZENE	ND	0.005
1,3-DICHLOROBENZENE	ND	0.005
1,4-DICHLOROBENZENE	ND	0.005
DICHLORODIFLUOROMETHANE	ND	0.005
1,1-DICHLOROETHANE	ND	0.005
1,2-DICHLOROETHANE	ND	0.005
1,1-DICHLOROETHENE	ND	0.005
CIS-1,2-DICHLOROETHENE	ND	0.005
TRANS-1,2-DICHLOROETHENE	ND	0.005
1,2-DICHLOROPROPANE	ND	0.005

----- TO BE CONTINUED ON PAGE #2 -----

DATA REVIEWED AND APPROVED BY: _____

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PROJECT: **101150001**
MATRIX: SOIL
SAMPLING DATE: 03/12/20
REPORT TO: MR. TYLER BURT

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DATE ANALYZED: 03/17/20
DATE REPORTED: 03/23/20

SAMPLE I.D.: **TP1-5**
LAB I.D.: 200313-101

ANALYSIS: VOLATILE ORGANICS, EPA METHOD 5030B/8260B, PAGE 2 OF 2
UNIT: mg/Kg = MILLIGRAM PER KILOGRAM = PPM

PARAMETER	SAMPLE RESULT	PQL X1
1,3-DICHLOROPROPANE	ND	0.005
2,2-DICHLOROPROPANE	ND	0.005
1,1-DICHLOROPROPENE	ND	0.005
CIS-1,3-DICHLOROPROPENE	ND	0.005
TRANS-1,3-DICHLOROPROPENE	ND	0.005
ETHYLBENZENE	ND	0.005
2-HEXANONE	ND	0.020
HEXACHLOROBUTADIENE	ND	0.005
ISOPROPYLBENZENE	ND	0.005
4-ISOPROPYLTOLUENE	ND	0.005
4-METHYL-2-PENTANONE (MIBK)	ND	0.020
METHYL tert-BUTYL ETHER (MTBE)	ND	0.005
METHYLENE CHLORIDE	ND	0.010
NAPHTHALENE	ND	0.005
N-PROPYLBENZENE	ND	0.005
STYRENE	ND	0.005
1,1,1,2-TETRACHLOROETHANE	ND	0.005
1,1,2,2-TETRACHLOROETHANE	ND	0.005
TETRACHLOROETHENE (PCE)	ND	0.005
TOLUENE	ND	0.005
1,2,3-TRICHLOROBENZENE	ND	0.005
1,2,4-TRICHLOROBENZENE	ND	0.005
1,1,1-TRICHLOROETHANE	ND	0.005
1,1,2-TRICHLOROETHANE	ND	0.005
TRICHLOROETHENE (TCE)	ND	0.005
TRICHLOROFLUOROMETHANE	ND	0.005
1,2,3-TRICHLOROPROPANE	ND	0.005
1,2,4-TRIMETHYLBENZENE	ND	0.005
1,3,5-TRIMETHYLBENZENE	ND	0.005
VINYL CHLORIDE	ND	0.005
M/P-XYLENE	ND	0.010
O-XYLENE	ND	0.005

COMMENTS PQL = PRACTICAL QUANTITATION LIMIT
ND = NON-DETECTED OR BELOW THE PQL
DATA REVIEWED AND APPROVED BY:
CAL-DHS CERTIFICATE # 1555

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LABORATORY REPORT

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Tel(951)736-5334 E-Mail: TBurt@ArdentEnv.com

PROJECT: **101150001**
MATRIX: SOIL
SAMPLING DATE: 03/12/20
REPORT TO: MR. TYLER BURT

DATE RECEIVED: 03/13/20
DATE ANALYZED: 03/17/20
DATE REPORTED: 03/23/20

SAMPLE I.D.: **TP2-5**
LAB I.D.: 200313-104

ANALYSIS: VOLATILE ORGANICS, EPA METHOD 5030B/8260B, PAGE 1 OF 2
UNIT: mg/Kg = MILLIGRAM PER KILOGRAM = PPM

PARAMETER	SAMPLE RESULT	PQL X1
ACETONE	ND	0.020
BENZENE	ND	0.005
BROMOBENZENE	ND	0.005
BROMOCHLOROMETHANE	ND	0.005
BROMODICHLOROMETHANE	ND	0.005
BROMOFORM	ND	0.005
BROMOMETHANE	ND	0.005
2-BUTANONE (MEK)	ND	0.020
N-BUTYLBENZENE	ND	0.005
SEC-BUTYLBENZENE	ND	0.005
TERT-BUTYLBENZENE	ND	0.005
CARBON DISULFIDE	ND	0.010
CARBON TETRACHLORIDE	ND	0.005
CHLOROBENZENE	ND	0.005
CHLOROETHANE	ND	0.005
CHLOROFORM	ND	0.005
CHLOROMETHANE	ND	0.005
2-CHLOROTOLUENE	ND	0.005
4-CHLOROTOLUENE	ND	0.005
DIBROMOCHLOROMETHANE	ND	0.005
1,2-DIBROMO-3-CHLOROPROPANE	ND	0.005
1,2-DIBROMOETHANE	ND	0.005
DIBROMOMETHANE	ND	0.005
1,2-DICHLOROBENZENE	ND	0.005
1,3-DICHLOROBENZENE	ND	0.005
1,4-DICHLOROBENZENE	ND	0.005
DICHLORODIFLUOROMETHANE	ND	0.005
1,1-DICHLOROETHANE	ND	0.005
1,2-DICHLOROETHANE	ND	0.005
1,1-DICHLOROETHENE	ND	0.005
CIS-1,2-DICHLOROETHENE	ND	0.005
TRANS-1,2-DICHLOROETHENE	ND	0.005
1,2-DICHLOROPROPANE	ND	0.005

----- TO BE CONTINUED ON PAGE #2 -----

DATA REVIEWED AND APPROVED BY: _____

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PROJECT: **101150001**
MATRIX: SOIL
SAMPLING DATE: 03/12/20
REPORT TO: MR. TYLER BURT

DATE RECEIVED: 03/13/20
DATE ANALYZED: 03/17/20
DATE REPORTED: 03/23/20

SAMPLE I.D.: **TP2-5**
LAB I.D.: 200313-104

ANALYSIS: VOLATILE ORGANICS, EPA METHOD 5030B/8260B, PAGE 2 OF 2
UNIT: mg/Kg = MILLIGRAM PER KILOGRAM = PPM

PARAMETER	SAMPLE RESULT	PQL X1
1,3-DICHLOROPROPANE	ND	0.005
2,2-DICHLOROPROPANE	ND	0.005
1,1-DICHLOROPROPENE	ND	0.005
CIS-1,3-DICHLOROPROPENE	ND	0.005
TRANS-1,3-DICHLOROPROPENE	ND	0.005
ETHYLBENZENE	ND	0.005
2-HEXANONE	ND	0.020
HEXACHLOROBUTADIENE	ND	0.005
ISOPROPYLBENZENE	ND	0.005
4-ISOPROPYLTOLUENE	ND	0.005
4-METHYL-2-PENTANONE (MIBK)	ND	0.020
METHYL tert-BUTYL ETHER (MTBE)	ND	0.005
METHYLENE CHLORIDE	ND	0.010
NAPHTHALENE	ND	0.005
N-PROPYLBENZENE	ND	0.005
STYRENE	ND	0.005
1,1,1,2-TETRACHLOROETHANE	ND	0.005
1,1,2,2-TETRACHLOROETHANE	ND	0.005
TETRACHLOROETHENE (PCE)	ND	0.005
TOLUENE	ND	0.005
1,2,3-TRICHLOROBENZENE	ND	0.005
1,2,4-TRICHLOROBENZENE	ND	0.005
1,1,1-TRICHLOROETHANE	ND	0.005
1,1,2-TRICHLOROETHANE	ND	0.005
TRICHLOROETHENE (TCE)	ND	0.005
TRICHLOROFLUOROMETHANE	ND	0.005
1,2,3-TRICHLOROPROPANE	ND	0.005
1,2,4-TRIMETHYLBENZENE	ND	0.005
1,3,5-TRIMETHYLBENZENE	ND	0.005
VINYL CHLORIDE	ND	0.005
M/P-XYLENE	ND	0.010
O-XYLENE	ND	0.005

COMMENTS PQL = PRACTICAL QUANTITATION LIMIT
ND = NON-DETECTED OR BELOW THE PQL
DATA REVIEWED AND APPROVED BY:
CAL-DHS CERTIFICATE # 1555

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LABORATORY REPORT

CUSTOMER: **Ardent Environmental Group, Inc.**
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Tel(951)736-5334 E-Mail: TBurt@ArdentEnv.com

PROJECT: **101150001**
MATRIX: SOIL
SAMPLING DATE: 03/12/20
REPORT TO: MR. TYLER BURT

DATE RECEIVED: 03/13/20
DATE ANALYZED: 03/17/20
DATE REPORTED: 03/23/20

SAMPLE I.D.: **TP3-5**
LAB I.D.: 200313-107

ANALYSIS: VOLATILE ORGANICS, EPA METHOD 5030B/8260B, PAGE 1 OF 2
UNIT: mg/Kg = MILLIGRAM PER KILOGRAM = PPM

PARAMETER	SAMPLE RESULT	PQL X1
ACETONE	ND	0.020
BENZENE	ND	0.005
BROMOBENZENE	ND	0.005
BROMOCHLOROMETHANE	ND	0.005
BROMODICHLOROMETHANE	ND	0.005
BROMOFORM	ND	0.005
BROMOMETHANE	ND	0.005
2-BUTANONE (MEK)	ND	0.020
N-BUTYLBENZENE	ND	0.005
SEC-BUTYLBENZENE	ND	0.005
TERT-BUTYLBENZENE	ND	0.005
CARBON DISULFIDE	ND	0.010
CARBON TETRACHLORIDE	ND	0.005
CHLOROBENZENE	ND	0.005
CHLOROETHANE	ND	0.005
CHLOROFORM	ND	0.005
CHLOROMETHANE	ND	0.005
2-CHLOROTOLUENE	ND	0.005
4-CHLOROTOLUENE	ND	0.005
DIBROMOCHLOROMETHANE	ND	0.005
1,2-DIBROMO-3-CHLOROPROPANE	ND	0.005
1,2-DIBROMOETHANE	ND	0.005
DIBROMOMETHANE	ND	0.005
1,2-DICHLOROBENZENE	ND	0.005
1,3-DICHLOROBENZENE	ND	0.005
1,4-DICHLOROBENZENE	ND	0.005
DICHLORODIFLUOROMETHANE	ND	0.005
1,1-DICHLOROETHANE	ND	0.005
1,2-DICHLOROETHANE	ND	0.005
1,1-DICHLOROETHENE	ND	0.005
CIS-1,2-DICHLOROETHENE	ND	0.005
TRANS-1,2-DICHLOROETHENE	ND	0.005
1,2-DICHLOROPROPANE	ND	0.005

----- TO BE CONTINUED ON PAGE #2 -----

DATA REVIEWED AND APPROVED BY: _____

Enviro – Chem, Inc.
1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

LABORATORY REPORT

CUSTOMER: **Ardent Environmental Group, Inc.**
1827 Capital Street, #103, Corona, CA 92880
Tel(951)736-5334 E-Mail: TBurt@ArdentEnv.com

PROJECT: **101150001**
MATRIX: SOIL
SAMPLING DATE: 03/12/20
REPORT TO: MR. TYLER BURT

DATE RECEIVED: 03/13/20
DATE ANALYZED: 03/17/20
DATE REPORTED: 03/23/20

SAMPLE I.D.: **TP3-5**
LAB I.D.: 200313-107

ANALYSIS: VOLATILE ORGANICS, EPA METHOD 5030B/8260B, PAGE 2 OF 2
UNIT: mg/Kg = MILLIGRAM PER KILOGRAM = PPM

PARAMETER	SAMPLE RESULT	PQL X1
1,3-DICHLOROPROPANE	ND	0.005
2,2-DICHLOROPROPANE	ND	0.005
1,1-DICHLOROPROPENE	ND	0.005
CIS-1,3-DICHLOROPROPENE	ND	0.005
TRANS-1,3-DICHLOROPROPENE	ND	0.005
ETHYLBENZENE	ND	0.005
2-HEXANONE	ND	0.020
HEXACHLOROBUTADIENE	ND	0.005
ISOPROPYLBENZENE	ND	0.005
4-ISOPROPYLTOLUENE	ND	0.005
4-METHYL-2-PENTANONE (MIBK)	ND	0.020
METHYL tert-BUTYL ETHER (MTBE)	ND	0.005
METHYLENE CHLORIDE	ND	0.010
NAPHTHALENE	ND	0.005
N-PROPYLBENZENE	ND	0.005
STYRENE	ND	0.005
1,1,1,2-TETRACHLOROETHANE	ND	0.005
1,1,2,2-TETRACHLOROETHANE	ND	0.005
TETRACHLOROETHENE (PCE)	ND	0.005
TOLUENE	ND	0.005
1,2,3-TRICHLOROBENZENE	ND	0.005
1,2,4-TRICHLOROBENZENE	ND	0.005
1,1,1-TRICHLOROETHANE	ND	0.005
1,1,2-TRICHLOROETHANE	ND	0.005
TRICHLOROETHENE (TCE)	ND	0.005
TRICHLOROFLUOROMETHANE	ND	0.005
1,2,3-TRICHLOROPROPANE	ND	0.005
1,2,4-TRIMETHYLBENZENE	ND	0.005
1,3,5-TRIMETHYLBENZENE	ND	0.005
VINYL CHLORIDE	ND	0.005
M/P-XYLENE	ND	0.010
O-XYLENE	ND	0.005

COMMENTS PQL = PRACTICAL QUANTITATION LIMIT
ND = NON-DETECTED OR BELOW THE PQL
DATA REVIEWED AND APPROVED BY:
CAL-DHS CERTIFICATE # 1555

Enviro – Chem, Inc.
1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

LABORATORY REPORT

CUSTOMER: **Ardent Environmental Group, Inc.**
1827 Capital Street, #103, Corona, CA 92880
Tel(951)736-5334 E-Mail: TBurt@ArdentEnv.com

PROJECT: **101150001**
MATRIX: SOIL
SAMPLING DATE: 03/12/20
REPORT TO: MR. TYLER BURT

DATE RECEIVED: 03/13/20
DATE ANALYZED: 03/17/20
DATE REPORTED: 03/23/20

SAMPLE I.D.: **TP4-5**
LAB I.D.: 200313-110

ANALYSIS: VOLATILE ORGANICS, EPA METHOD 5030B/8260B, PAGE 1 OF 2
UNIT: mg/Kg = MILLIGRAM PER KILOGRAM = PPM

PARAMETER	SAMPLE RESULT	PQL X1
ACETONE	ND	0.020
BENZENE	ND	0.005
BROMOBENZENE	ND	0.005
BROMOCHLOROMETHANE	ND	0.005
BROMODICHLOROMETHANE	ND	0.005
BROMOFORM	ND	0.005
BROMOMETHANE	ND	0.005
2-BUTANONE (MEK)	ND	0.020
N-BUTYLBENZENE	ND	0.005
SEC-BUTYLBENZENE	ND	0.005
TERT-BUTYLBENZENE	ND	0.005
CARBON DISULFIDE	ND	0.010
CARBON TETRACHLORIDE	ND	0.005
CHLOROBENZENE	ND	0.005
CHLOROETHANE	ND	0.005
CHLOROFORM	ND	0.005
CHLOROMETHANE	ND	0.005
2-CHLOROTOLUENE	ND	0.005
4-CHLOROTOLUENE	ND	0.005
DIBROMOCHLOROMETHANE	ND	0.005
1,2-DIBROMO-3-CHLOROPROPANE	ND	0.005
1,2-DIBROMOETHANE	ND	0.005
DIBROMOMETHANE	ND	0.005
1,2-DICHLOROBENZENE	ND	0.005
1,3-DICHLOROBENZENE	ND	0.005
1,4-DICHLOROBENZENE	ND	0.005
DICHLORODIFLUOROMETHANE	ND	0.005
1,1-DICHLOROETHANE	ND	0.005
1,2-DICHLOROETHANE	ND	0.005
1,1-DICHLOROETHENE	ND	0.005
CIS-1,2-DICHLOROETHENE	ND	0.005
TRANS-1,2-DICHLOROETHENE	ND	0.005
1,2-DICHLOROPROPANE	ND	0.005

----- TO BE CONTINUED ON PAGE #2 -----

DATA REVIEWED AND APPROVED BY: _____

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LABORATORY REPORT

CUSTOMER: **Ardent Environmental Group, Inc.**
1827 Capital Street, #103, Corona, CA 92880
Tel(951)736-5334 E-Mail: TBurt@ArdentEnv.com

PROJECT: **101150001**
MATRIX: SOIL
SAMPLING DATE: 03/12/20
REPORT TO: MR. TYLER BURT

DATE RECEIVED: 03/13/20
DATE ANALYZED: 03/17/20
DATE REPORTED: 03/23/20

SAMPLE I.D.: **TP4-5**

LAB I.D.: 200313-110

ANALYSIS: VOLATILE ORGANICS, EPA METHOD 5030B/8260B, PAGE 2 OF 2
UNIT: mg/Kg = MILLIGRAM PER KILOGRAM = PPM

PARAMETER	SAMPLE RESULT	PQL X1
1,3-DICHLOROPROPANE	ND	0.005
2,2-DICHLOROPROPANE	ND	0.005
1,1-DICHLOROPROPENE	ND	0.005
CIS-1,3-DICHLOROPROPENE	ND	0.005
TRANS-1,3-DICHLOROPROPENE	ND	0.005
ETHYLBENZENE	ND	0.005
2-HEXANONE	ND	0.020
HEXACHLOROBUTADIENE	ND	0.005
ISOPROPYLBENZENE	ND	0.005
4-ISOPROPYLTOLUENE	ND	0.005
4-METHYL-2-PENTANONE (MIBK)	ND	0.020
METHYL tert-BUTYL ETHER (MTBE)	ND	0.005
METHYLENE CHLORIDE	ND	0.010
NAPHTHALENE	ND	0.005
N-PROPYLBENZENE	ND	0.005
STYRENE	ND	0.005
1,1,1,2-TETRACHLOROETHANE	ND	0.005
1,1,2,2-TETRACHLOROETHANE	ND	0.005
TETRACHLOROETHENE (PCE)	ND	0.005
TOLUENE	ND	0.005
1,2,3-TRICHLOROBENZENE	ND	0.005
1,2,4-TRICHLOROBENZENE	ND	0.005
1,1,1-TRICHLOROETHANE	ND	0.005
1,1,2-TRICHLOROETHANE	ND	0.005
TRICHLOROETHENE (TCE)	ND	0.005
TRICHLOROFLUOROMETHANE	ND	0.005
1,2,3-TRICHLOROPROPANE	ND	0.005
1,2,4-TRIMETHYLBENZENE	ND	0.005
1,3,5-TRIMETHYLBENZENE	ND	0.005
VINYL CHLORIDE	ND	0.005
M/P-XYLENE	ND	0.010
O-XYLENE	ND	0.005

COMMENTS PQL = PRACTICAL QUANTITATION LIMIT
ND = NON-DETECTED OR BELOW THE PQL
DATA REVIEWED AND APPROVED BY:
CAL-DHS CERTIFICATE # 1555

Enviro – Chem, Inc.
1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

METHOD BLANK REPORT

CUSTOMER: **Ardent Environmental Group, Inc.**
1827 Capital Street, #103, Corona, CA 92880
Tel(951)736-5334 E-Mail: TBurt@ArdentEnv.com

PROJECT: **101150001**
MATRIX: SOIL
SAMPLING DATE: 03/12/20
REPORT TO: MR. TYLER BURT

DATE RECEIVED: 03/13/20
DATE ANALYZED: 03/17/20
DATE REPORTED: 03/23/20

METHOD BLANK REPORT FOR LAB I.D.: 200313-101, -104, -107, -110

ANALYSIS: VOLATILE ORGANICS, EPA METHOD 5030B/8260B, PAGE 1 OF 2
UNIT: mg/Kg = MILLIGRAM PER KILOGRAM = PPM

PARAMETER	SAMPLE RESULT	PQL X1
ACETONE	ND	0.020
BENZENE	ND	0.005
BROMOBENZENE	ND	0.005
BROMOCHLOROMETHANE	ND	0.005
BROMODICHLOROMETHANE	ND	0.005
BROMOFORM	ND	0.005
BROMOMETHANE	ND	0.005
2-BUTANONE (MEK)	ND	0.020
N-BUTYLBENZENE	ND	0.005
SEC-BUTYLBENZENE	ND	0.005
TERT-BUTYLBENZENE	ND	0.005
CARBON DISULFIDE	ND	0.010
CARBON TETRACHLORIDE	ND	0.005
CHLOROBENZENE	ND	0.005
CHLOROETHANE	ND	0.005
CHLOROFORM	ND	0.005
CHLOROMETHANE	ND	0.005
2-CHLOROTOLUENE	ND	0.005
4-CHLOROTOLUENE	ND	0.005
DIBROMOCHLOROMETHANE	ND	0.005
1,2-DIBROMO-3-CHLOROPROPANE	ND	0.005
1,2-DIBROMOETHANE	ND	0.005
DIBROMOMETHANE	ND	0.005
1,2-DICHLOROBENZENE	ND	0.005
1,3-DICHLOROBENZENE	ND	0.005
1,4-DICHLOROBENZENE	ND	0.005
DICHLORODIFLUOROMETHANE	ND	0.005
1,1-DICHLOROETHANE	ND	0.005
1,2-DICHLOROETHANE	ND	0.005
1,1-DICHLOROETHENE	ND	0.005
CIS-1,2-DICHLOROETHENE	ND	0.005
TRANS-1,2-DICHLOROETHENE	ND	0.005
1,2-DICHLOROPROPANE	ND	0.005

----- TO BE CONTINUED ON PAGE #2 -----

DATA REVIEWED AND APPROVED BY: _____

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METHOD BLANK REPORT

CUSTOMER: **Ardent Environmental Group, Inc.**
1827 Capital Street, #103, Corona, CA 92880
Tel(951)736-5334 E-Mail: TBurt@ArdentEnv.com

PROJECT: **101150001**
MATRIX: SOIL
SAMPLING DATE: 03/12/20
REPORT TO: MR. TYLER BURT

DATE RECEIVED: 03/13/20
DATE ANALYZED: 03/17/20
DATE REPORTED: 03/23/20

METHOD BLANK REPORT FOR LAB I.D.: 200313-101, -104, -107, -110

ANALYSIS: VOLATILE ORGANICS, EPA METHOD 5030B/8260B, PAGE 2 OF 2
UNIT: mg/Kg = MILLIGRAM PER KILOGRAM = PPM

PARAMETER	SAMPLE RESULT	PQL X1
1,3-DICHLOROPROPANE	ND	0.005
2,2-DICHLOROPROPANE	ND	0.005
1,1-DICHLOROPROPENE	ND	0.005
CIS-1,3-DICHLOROPROPENE	ND	0.005
TRANS-1,3-DICHLOROPROPENE	ND	0.005
ETHYLBENZENE	ND	0.005
2-HEXANONE	ND	0.020
HEXACHLOROBUTADIENE	ND	0.005
ISOPROPYLBENZENE	ND	0.005
4-ISOPROPYLTOLUENE	ND	0.005
4-METHYL-2-PENTANONE (MIBK)	ND	0.020
METHYL tert-BUTYL ETHER (MTBE)	ND	0.005
METHYLENE CHLORIDE	ND	0.010
NAPHTHALENE	ND	0.005
N-PROPYLBENZENE	ND	0.005
STYRENE	ND	0.005
1,1,1,2-TETRACHLOROETHANE	ND	0.005
1,1,2,2-TETRACHLOROETHANE	ND	0.005
TETRACHLOROETHENE (PCE)	ND	0.005
TOLUENE	ND	0.005
1,2,3-TRICHLOROBENZENE	ND	0.005
1,2,4-TRICHLOROBENZENE	ND	0.005
1,1,1-TRICHLOROETHANE	ND	0.005
1,1,2-TRICHLOROETHANE	ND	0.005
TRICHLOROETHENE (TCE)	ND	0.005
TRICHLOROFLUOROMETHANE	ND	0.005
1,2,3-TRICHLOROPROPANE	ND	0.005
1,2,4-TRIMETHYLBENZENE	ND	0.005
1,3,5-TRIMETHYLBENZENE	ND	0.005
VINYL CHLORIDE	ND	0.005
M/P-XYLENE	ND	0.010
O-XYLENE	ND	0.005

COMMENTS PQL = PRACTICAL QUANTITATION LIMIT
ND = NON-DETECTED OR BELOW THE PQL
DATA REVIEWED AND APPROVED BY:
CAL-DHS CERTIFICATE # 1555

Enviro-Chem, Inc.
1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909)590-5905 Fax (909)590-5907

8260B QA/QC Report

Date Analyzed: 3/17-18/20 **Matrix:** Solid/Soil/Liquid
Machine: C **Unit:** mg/Kg (PPM)

Matrix Spike (MS)/Matrix Spike Duplicate (MSD)
Spiked Sample Lab I.D.: 200316-8 MS/MSD

Analyte	S.R.	spk conc	MS	%RC	MSD	%RC	%RPD	ACP %RC	ACP RPD
Benzene	0	0.050	0.049	98%	0.050	100%	2%	75-125	0-20
Chlorobenzene	0	0.050	0.048	96%	0.048	96%	0%	75-125	0-20
1,1-Dichloroethene	0	0.050	0.038	76%	0.039	78%	2%	75-125	0-20
Toluene	0	0.050	0.049	98%	0.049	98%	0%	75-125	0-20
Trichloroethene (TCE)	0	0.050	0.047	94%	0.047	94%	0%	75-125	0-20

Lab Control Spike (LCS):

Analyte	spk conc	LCS	%RC	ACP %RC
Benzene	0.050	0.051	102%	75-125
Chlorobenzene	0.050	0.053	106%	75-125
Chloroform	0.050	0.052	104%	75-125
1,1-Dichlorothene	0.050	0.038	76%	75-125
Ethylbenzene	0.050	0.051	102%	75-125
o-Xylene	0.050	0.053	106%	75-125
m,p-Xylene	0.100	0.103	103%	75-125
Toluene	0.050	0.052	104%	75-125
1,1,1-Trichloroethane	0.050	0.050	100%	75-125
Trichloroethene (TCE)	0.050	0.051	102%	75-125

Surrogate Recovery	spk conc	ACP %RC	MB %RC	%RC	%RC	%RC	%RC	%RC	%RC
Sample I.D.			**M-BLK**	**200313-38**	**200313-101**	**200313-104**	**200313-107**	**200313-110**	**200313-114**
Dibromofluoromethane	50.0	70-130	101%	92%	102%	103%	105%	105%	107%
Toluene-d8	50.0	70-130	103%	98%	100%	101%	102%	101%	101%
4-Bromofluorobenzene	50.0	70-130	98%	98%	99%	100%	99%	99%	99%

Surrogate Recovery	spk conc	ACP %RC	%RC	%RC	%RC	%RC	%RC	%RC	%RC
Sample I.D.			**200316-8**	**200316-9**	**200316-10**	**200316-11**	**200316-75**	**200316-76**	**200316-77**
Dibromofluoromethane	50.0	70-130	106%	107%	106%	106%	106%	107%	106%
Toluene-d8	50.0	70-130	101%	101%	102%	101%	102%	102%	102%
4-Bromofluorobenzene	50.0	70-130	98%	99%	99%	98%	99%	99%	98%

Surrogate Recovery	spk conc	ACP %RC	%RC	%RC	%RC	%RC	%RC	%RC	%RC
Sample I.D.			**200316-78**	**200316-79**	**200316-80**	**200316-81**	**200316-82**	**200316-83**	**200316-84**
Dibromofluoromethane	50.0	70-130	106%	106%	106%	105%	105%	106%	106%
Toluene-d8	50.0	70-130	102%	103%	102%	102%	102%	101%	102%
4-Bromofluorobenzene	50.0	70-130	98%	97%	98%	98%	98%	98%	98%

** = Surrogate fail due to matrix interference; LCS, MS, MSD are in control therefore the analysis is in control.*
S.R. = Sample Results *%RC = Percent Recovery*
spk conc = Spike Concentration *ACP %RC = Accepted Percent Recovery*
MS = Matrix Spike *MSD = Matrix Spike Duplicate*

Analyzed/Reviewed By: _____

Final Reviewer: _____

Enviro-Chem, Inc. Laboratories
1214 E. Lexington Avenue,
Pomona, CA 91766
Tel: (909) 590-5905 Fax: (909) 590-5907
CA-DHS ELAP CERTIFICATE #1555

Turnaround Time
0 Same Day
0 24 Hours
0 48 Hours
0 72 Hours
0 1 Week (Standard)
Other:

Misc./PO#

SAMPLE ID	LAB ID	SAMPLING DATE	SAMPLING TIME	MATRIX	No. OF CONTAINERS	TEMPERATURE	PRESERVATION	Lead 6010B	TPHcc 8015mod	VOCs 8260B	Title 22 Metals	Hold					COMMENTS
TP1-0.5	200313-PP	3/12/20	903AM	soil	1	1x4oz	HV	X									
TP1-3	-100		907AM									X					
TP1-5	-101		909AM						X	X	X						
TP2-0.5	-102		919AM					X									
TP2-3	-103		922AM									X					
TP2-5	-104		924AM						X	X	X						
TP3-0.5	-105		934AM					X									
TP3-3	-106		935AM									X					
TP3-5	-107		938AM						X	X	X						
TP4-0.5	-108		1010AM					X									
TP4-3	-109		1014AM									X					
TP4-5	-110		1017AM						X	X	X						
TP5-0.5	-111		1043AM					X									
TP6-0.5	-112		1051AM					X									
TP7-0.5	-113		1058AM					X									

Analysis Required

Company Name: Ardent Environmental Group
Address: 1827 Capital St, Suite 103
City/State/Zip: Corona, CA 92880

Project Contact: Tyler Burt
Tel: 951-736-5334
Fax/Email: tburt@ardentenv.com

Sampler's Signature: Tyler Burt
Project Name/ID: 10115000 1

Relinquished by: Tyler Burt	Received by: [illegible]	Date & Time: 03/13/20 0855
Relinquished by: [illegible]	Received by: WP	Date & Time: 03/13/20 1530
Relinquished by:	Received by:	Date & Time:

Instructions for Sample Storage After Analysis:
O Dispose of O Return to Client O Store (30 Days)
O Other:

CHAIN OF CUSTODY RECORD

Date: 3-13-2020

WHITE WITH SAMPLE • YELLOW TO CLIENT

APPENDIX F

RESUMES

RESUME OF PAUL A. ROBERTS
Principal Geologist

EDUCATION

Bachelor of Science, Geology, 1987, California State University, Fullerton, California

REGISTRATION AND CERTIFICATIONS

Professional Geologist, California PG 6897
Registered Geologist, Arizona RG 42445
Ventura County Well Inspector
OSHA 40-Hour Health and Safety Training (with annual updates)
OSHA 8-Hour Health and Safety Supervisor Training

EMPLOYMENT HISTORY

1986-1996 – Applied Geosciences Inc. (environmental consulting)
1996-1998 – ATC Associates (environmental consulting)
1998-2007 – Ninyo & Moore (environmental consulting)
2007-present – Ardent Environmental Group, Inc. (environmental consulting)

PROFESSIONAL EXPERIENCE AND RESPONSIBILITIES

As a Principal Geologist for Ardent Environmental Group, Inc., Mr. Roberts conducts and coordinates high-profile hydrogeologic and geologic field evaluations. Mr. Roberts also supervises staff- and project-level geologists, engineers, and scientists to complete the installation of groundwater monitoring wells and soil and groundwater remediation systems, as well as completing pilot tests and feasibility studies for remedial system design. Mr. Roberts is very familiar with mud- and air-rotary, sonic, direct-push, and hollow stem auger drilling techniques, and interprets geophysical data and soil physical analyses to design water well construction. As part of these tasks, Mr. Roberts interacts with clients, attorneys, and agency representatives. The following presents a partial list of projects supervised and/or completed by Mr. Roberts.

- **Water Replenishment District of Southern California (District), Santa Fe Springs:** California Professional Geologist retained to log and sample deep borings in preparation to install nested groundwater monitoring wells as part of the Central Basin Groundwater Contamination Study. The work was completed to assist the United States Geological Survey (USGS) and the District to find mergence zones or pathways where known volatile organic compound (VOC)-impacted shallow groundwater could be migrating into deeper water supply aquifers. The work included drilling pilot borings using mud-rotary drilling methods to depths of approximately 518 feet below the ground surface (bgs). During drilling activities, Mr. Roberts monitored drilling conditions, logged cuttings and collected soil samples for lithological interpretation. Following drilling activities, downhole geophysical equipment, including suspension velocity measurements, resistivity, spontaneous potential and natural gamma logging, and caliper and natural gamma logging, was used to further assess lithological conditions. Based on these data, Mr. Roberts assisted representatives from the USGS and District to design and oversee installation of 10 groundwater monitoring wells. Following installation, the wells were developed and sampled.

- **Former Ashland Chemical Plant, Santa Fe Springs:** Principal Geologist retained to log and sample deep borings for the installation of groundwater monitoring, extraction, and injection wells used to characterize and remediate VOC impacted groundwater associated with a former chemical plant. Sonic, mud-rotary, and hollow stem auger drilling methods were used to drill pilot borings to depths of up to 407 feet bgs. Hydropunch sampling results and soil physical analyses were used to design deep nested groundwater monitoring and remediation wells. Well development and sampling were also completed.

- **Former Optical Lens Manufacturing Facility, Costa Mesa:** Mr. Roberts is the Project Coordinator for an on-going VOC soil and groundwater investigation/remediation effort associated with a former optical lens manufacturing facility. The investigations are being completed under the direction and oversight of the Department of Toxic Substances Control (DTSC) as part of the regional Costa Mesa Site Discovery Project. Investigations have included the installation and sampling of groundwater monitoring wells, soil investigations and characterization, indoor air monitoring, and remedial design of a soil vapor extraction system (VES).

- **Former CENCO Refinery Properties, Santa Fe Springs**: Mr. Roberts supervised and coordinated the environmental activities associated with the acquisition and redevelopment of two properties formerly occupied by the CENCO Refinery. These properties, located immediately east and southeast of the main refinery, were used by CENCO and others for product storage and oil recycling. Oil field production and oil well drilling waste disposal was also historically associated with this land. Mr. Roberts worked with the City of Santa Fe Springs Fire Department and DTSC to investigate historical environmental issues; mitigate petroleum hydrocarbon and polychlorinated biphenyl (PCB)-impacted soil through on-site management by the installation of an impermeable cap (referred to as the "PCB-Capped Area") or by excavation; removal of underground storage tanks (USTs); methane gas assessment, mitigation design and implementation, and monitoring; groundwater well video logging and abandonment; and oil well abandonment. Currently, Mr. Roberts completes annual inspections and 5-year reviews of the PCB-Capped Area and supervises the annual monitoring of methane gas beneath the buildings.

- **Former Nissan North America Corporate Headquarters, Carson:** Project Geologist to oversee the characterization of petroleum hydrocarbon-impacted soil and groundwater associated with a release from a fuel UST. Mr. Roberts oversaw the installation of 15 groundwater monitoring wells and four vapor extraction wells. Following completion of a soil vapor extraction pilot test, Mr. Roberts designed and implemented a VES which successfully remediated the impacted soil. Groundwater remediation was completed using in-situ air stripping techniques.

- **Northwest Pipe Company Property, Jurupa Valley; Commerce Casino, Commerce; Rock-Lomita Property, Torrance; Former Ball Glass Plant, Torrance; and BMW of Riverside, Riverside:** Principal Geologist managing and coordinating environmental characterization of petroleum hydrocarbon or VOC-impacted soil associated with releases from historical manufacturing activities or USTs at a number of properties throughout Southern California. Tasks included the installation of soil remediation systems, completion of pilot studies, and the design and implementation of full-scale SVE systems. These systems were operated until effluent soil vapor concentrations and/or the results of confirmation soil samples met residential or commercial standards. During these operations,

Mr. Roberts interacted with lead regulatory agencies including the Regional Water Quality Control Board, DTSC, or local fire departments. Most of these facilities also included the installation and monitoring of groundwater monitoring wells. Some of these systems are on-going.

- **Port of Los Angeles:** Project Geologist managing several environmental projects for the Port of Los Angeles (POLA) under an on-call contract. Project Geologist interacting with POLA personnel regarding environmental issues associated with land purchases, tenant audits, and on-call remediation. Projects have involved removal of underground storage tanks at the Yang Ming Terminal and continued groundwater monitoring, and the implementation of a corrosion study at a potential automobile storage yard in the Port of Los Angeles.

- **Alameda Corridor Transportation Authority:** Project Geologist managing numerous environmental projects under an on-call remediation services contract. Projects have involved remediation of petroleum pipelines and impacted soil discovered during construction activities of the Alameda Corridor. One project involved dredging metal-impacted soil from the Port of Los Angeles, where Mr. Roberts acted as the liaison between POLA and ACTA representatives.

- **Riverside County Transportation Commission (RCTC):** Project Manager for several projects for RCTC. On one occasion, RCTC discovered impacted soil and a groundwater well during redevelopment of a property in Corona. As not to delay grading activities, Mr. Roberts successfully obtained an expedited groundwater well destruction permit with Riverside County, profiled the soil for excavation and disposal, and abandoned the well. The property was subsequently developed with a Metrolink station with minimal delays.

- **Jack in the Box and Qdoba Restaurants:** Since 1991, Mr. Roberts has acted as Project Geologist managing numerous Phase I Environmental Site Assessments and other environmental issues regarding real estate transactions for Jack in the Box Inc. Since most of the properties are corner parcels which contained historical gasoline stations, Mr. Roberts would subsequently manage and conduct Phase II Subsurface Investigations to assess whether impacted soil and/or groundwater exists at the site and, if present, characterize the extent of the contaminants. In June 2012, Jack in the Box Inc. and Qdoba Restaurants (owned by Jack in the Box Inc.) awarded Ardent Environmental Group, Inc. an on-call environmental management contract for all Jack in the Box and Qdoba properties throughout the United States. Mr. Roberts is the Project Manager for this contract which includes completing Preliminary Environmental Reviews of possible property acquisitions, completing and managing Phase I and Phase II Environmental Site Assessments and asbestos surveys, and on-call consultation regarding environmental issues and concerns.

ASSOCIATIONS

The Geological Society of America

RESUME OF TYLER BURT
Staff Geologist

EDUCATION

Bachelor of Science, Geology, 2015, California State University, Long Beach

REGISTRATION AND CERTIFICATIONS

HAZWOPPER 40-Hour Training
24-Hour CPR and First Aid Certification

EMPLOYMENT HISTORY

2017-present – Ardent Environmental Group, Inc. (Environmental Consulting)

PROFESSIONAL EXPERIENCE AND RESPONSIBILITIES

Mr. Burt has a strong background in geology, geography, and geochemistry which provides support in completing a variety of field and office tasks during environmental assessments, site characterization, and remediation projects. Tasks include development of work plans, research and review of regulatory records and historical land use records, directing subcontractors, data evaluation and technical report preparation. Mr. Burt's project experience includes:

- **Phase I Environmental Site Assessment:** Staff Geologist for Phase I Environmental Site Assessment reports throughout Southern California. Report preparation includes site reconnaissance activities involving visual site inspection, research and review of regulatory records and historical land use records, and identification of potential environmental concerns and/or impacts to the site.
- **Phase II Site Characterization:** Staff Geologist for projects involving the advancement of soil borings by direct-push, MIP, and hollow stem auger methods to assess the nature, magnitude, and extent of soil contamination. These duties also include conducting soil gas surveys to assess vapor concentrations of volatile organic compounds (VOCs) for human health risks.
- **Excavation Monitoring:** Conducting soil gas surveys to assess concentrations of volatile organic compounds (VOCs) for human health risks.
- **Groundwater Monitoring:** Perform groundwater monitoring activities at facilities throughout Southern California. Depth to groundwater is measured with electric sounders before sampling. Wells are purged of static groundwater using submersible pumps and hand bailers. Groundwater is collected from monitoring wells and sent to a laboratory for analyses to determine the effectiveness of remedial actions at the properties.
- **Monitoring Well Abandonment:** Staff Geologist supervising the abandonment of groundwater monitoring wells. Duties include obtaining permits, directing subcontractors, and preparation of a well closure report for submittal to a regulatory agency.

- **Soil Vapor Monitoring Point Installation and Sampling:** Mr. Burt installed and sampled soil vapor monitoring points at a number of properties located in Southern California to further assess whether a vapor intrusion issue was present due to past and/or present site activities. This task included the installation of soil vapor monitoring points, purging stagnant air, and collecting vapor samples in Tedlar bags, Summa canisters, or by glass syringe for analysis by a mobile laboratory. Installation and sampling were conducted in accordance with current Department of Toxic Substances Control (DTSC) guidelines.

- **Soil Vapor Extraction System Monitoring:** Staff geologist conducting weekly monitoring activities of an operational soil vapor extraction system. Monitoring activities included the use of a photoionization detector (PID) to monitor approximate vapor concentrations at multiple points throughout the system in order to assess the effectiveness of the remediation activities. Vapor samples were also periodically collected in Tedlar bags for analyses by a laboratory.

ASSOCIATIONS

Geological Society of America
South Coast Geological Society

Crestview Apartments Initial Study

Appendix B - Water Quality Management Plan (WQMP)

Planning Cases: P19-0775, P19-0776, P19-0777, P19-0905,

P20-0307, P20-0308, P20-0309, P20-0310

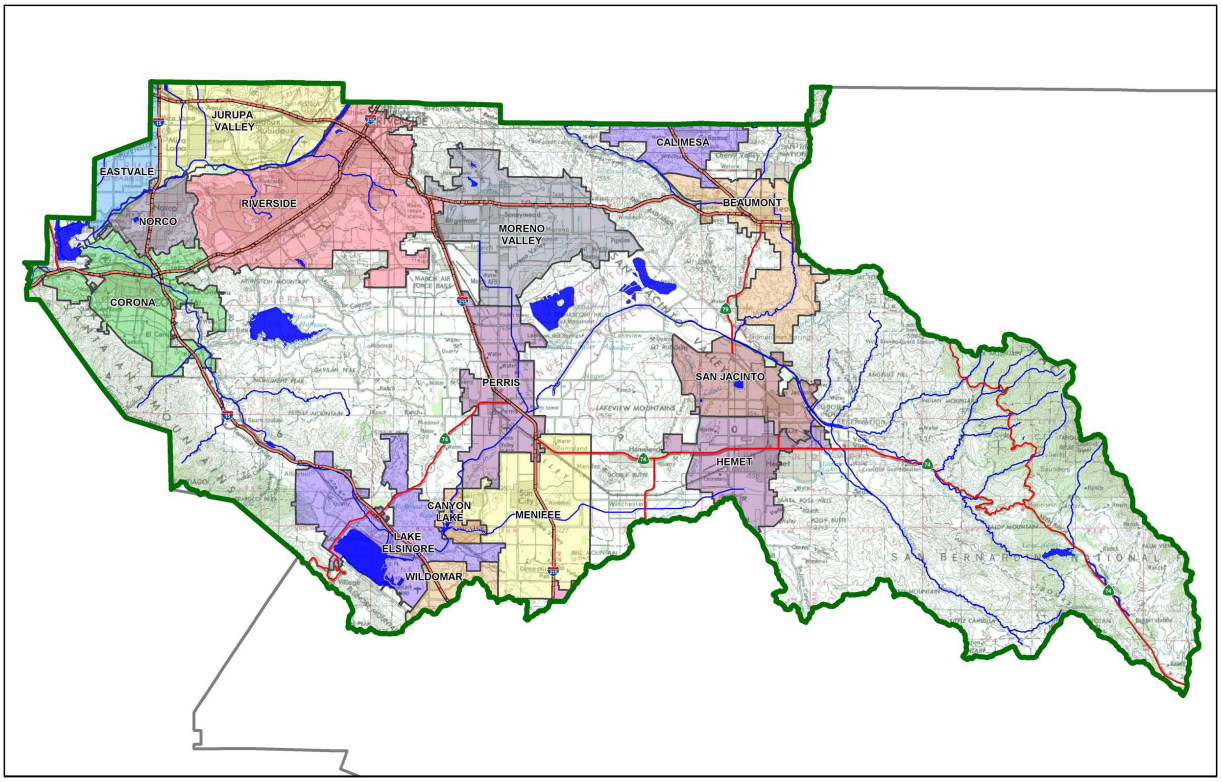
Project Specific Water Quality Management Plan

*A Template for Projects located within the **Santa Ana Watershed** Region of Riverside County*

Project Title: Crestview Apartments

Development No: PW19-0952

Design Review/Case No: P19-0777



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☒ **Preliminary**
☐ **Final**

Original Date Prepared: July 12, 2019

Revision Date(s): February 28, 2020
May 4, 2020

Prepared for Compliance with
Regional Board Order No. **R8-2010-0033**

OWNER'S CERTIFICATION

This Project-Specific Water Quality Management Plan (WQMP) has been prepared for KA Enterprises by Tory R. Walker Engineering for the Crestview Apartments project.

This WQMP is intended to comply with the requirements of City of Riverside for the design review of the multi-family residential project comprised of 7 buildings with parking proposed on one parcel totaling in 9.44 acres at the northwesterly corner of Sycamore Canyon Boulevard and Central Avenue (Public Works Case No. TBD), which includes the requirement for the preparation and implementation of a Project-Specific WQMP.

The undersigned, while owning the property/project described in the preceding paragraph, shall be responsible for the implementation and funding of this WQMP and will ensure that this WQMP is amended as appropriate to reflect up-to-date conditions on the site. In addition, the property owner accepts responsibility for interim operation and maintenance of Stormwater BMPs until such time as this responsibility is formally transferred to a subsequent owner. This WQMP will be reviewed with the facility operator, facility supervisors, employees, tenants, maintenance and service contractors, or any other party (or parties) having responsibility for implementing portions of this WQMP. At least one copy of this WQMP will be maintained at the project site or project office in perpetuity. The undersigned is authorized to certify and to approve implementation of this WQMP. The undersigned is aware that implementation of this WQMP is enforceable under City of Riverside Water Quality Ordinance (Municipal Code Section 14.12.315).

"I, the undersigned, certify under penalty of law that the provisions of this WQMP have been reviewed and accepted and that the WQMP will be transferred to future successors in interest."

Owner's Signature	Date
Owner's Printed Name	Owner's Title/Position

PREPARER'S CERTIFICATION

"The selection, sizing and design of stormwater treatment and other stormwater quality and quantity control measures in this plan meet the requirements of Regional Water Quality Control Board Order No. **R8-2010-0033** and any subsequent amendments thereto."

Preparer's Signature	Date
Preparer's Printed Name	Preparer's Title/Position

Preparer's Licensure:

Table of Contents

Section A: Project and Site Information 6
A.1 Maps and Site Plans 7
A.2 Identify Receiving Waters 8
A.3 Additional Permits/Approvals required for the Project: 9
Section B: Optimize Site Utilization (LID Principles) 10
Section C: Delineate Drainage Management Areas (DMAs) 11
Section D: Implement LID BMPs 13
D.1 Infiltration Applicability 13
D.2 Harvest and Use Assessment 14
D.3 Bioretention and Biotreatment Assessment 15
D.4 Feasibility Assessment Summaries 16
D.5 LID BMP Sizing 17
Section E: Alternative Compliance (LID Waiver Program) 19
E.1 Identify Pollutants of Concern 20
E.2 Stormwater Credits 21
E.3 Sizing Criteria 22
E.4 Treatment Control BMP Selection 23
Section F: Hydromodification 24
F.1 Hydrologic Conditions of Concern (HCOC) Analysis 24
F.2 HCOC Mitigation 26
Section G: Source Control BMPs 27
Section H: Construction Plan Checklist 29
Section I: Operation, Maintenance and Funding 30

List of Tables

Table A.1 Identification of Receiving Waters 8
Table A.2 Other Applicable Permits 9
Table C.1 DMA Classifications 11
Table C.2 Type 'A', Self-Treating Areas 11
Table C.3 Type 'B', Self-Retaining Areas 11
Table C.4 Type 'C', Areas that Drain to Self-Retaining Areas 12
Table C.5 Type 'D', Areas Draining to BMPs 12
Table D.1 Infiltration Feasibility 13
Table D.2 LID Prioritization Summary Matrix 16
Table D.3 DCV Calculations for LID BMPs 17
Table E.1 Potential Pollutants by Land Use Type 20
Table E.2 Water Quality Credits 21
Table E.3 Treatment Control BMP Sizing 22
Table E.4 Treatment Control BMP Selection 23
Table F.1 Hydrologic Conditions of Concern Summary 24
Table G.1 Permanent and Operational Source Control Measures 27
Table H.1 Construction Plan Cross-reference 29

List of Appendices

Appendix 1: Maps and Site Plans 31
Appendix 2: Construction Plans 32
Appendix 3: Soils Information 33
Appendix 4: Historical Site Conditions 34
Appendix 5: LID Infeasibility 35
Appendix 6: BMP Design Details 36
Appendix 7: Hydromodification 37
Appendix 8: Source Control 38
Appendix 9: O&M 39
Appendix 10: Educational Materials 40

Section A: Project and Site Information

PROJECT INFORMATION	
Type of Project:	Residential
Ward Area:	Ward 2
Community Name:	Canyon Crest
Development Name:	Crestview Apartments
PROJECT LOCATION	
Latitude & Longitude (DD): 33.959, -117.3129	
Project Watershed and Sub-Watershed: Santa Ana Watershed, Tequesquite Arroyo Sub-Watershed	
APN(s): 256-050-012	
Map Book and Page No.: Thomas Brothers Page 686	
PROJECT CHARACTERISTICS	
Proposed or Potential Land Use(s)	Mixed Family Residential
Proposed or Potential SIC Code(s)	6513
Area of Impervious Project Footprint (SF)	383,150
Total Area of proposed Impervious Surfaces within the Project Limits (SF)/or Replacement	279,260
Does the project consist of offsite road improvements?	☒ Y ☐ N
Does the project propose to construct unpaved roads?	☐ Y ☒ N
Is the project part of a larger common plan of development (phased project)?	☐ Y ☒ N
EXISTING SITE CHARACTERISTICS	
Total area of existing Impervious Surfaces within the project limits (SF)	0
Is the project located within any MSHCP Criteria Cell?	☒ Y ☐ N
If so, identify the Cell number:	721
Are there any natural hydrologic features on the project site?	☐ Y ☒ N
Is a Geotechnical Report attached?	☒ Y ☐ N
If no Geotech. Report, list the NRCS soils type(s) present on the site (A, B, C and/or D)	N/A
What is the Water Quality Design Storm Depth for the project?	0.61 inches

The Crestview Apartments project is a proposed 9-acre multi-family residential development in the City of Riverside. The site is bounded by Sycamore Canyon Boulevard to the north and east, Central Avenue to the south, and Qual Run Open Space to the west. The existing site appears to serve as a rock quarry. Existing land cover is unvegetated and consists of boulder-sized rocks scattered throughout the site. The proposed development includes seven structures, covered carport spaces, paved parking and drive aisles, a pool and spa, LID landscaped areas, and three lined bioretention basins for volumetric pollutant control. Infiltration was determined to be feasible for the site. Pollutant sources are projected to include on-site storm drain inlets, landscape/outdoor pesticide use, refuse areas, plazas, sidewalks, and parking lots.

A.1 Maps and Site Plans

The WQMP Site Plan and Rough Grading Plan are provided in Appendices 1 and 2, respectively, and include the following:

- Drainage Management Areas
- Proposed Structural BMPs
- Drainage Path
- Drainage Infrastructure, Inlets, Overflows
- Source Control BMPs
- Buildings, Roof Lines, Downspouts
- Impervious Surfaces
- Standard Labeling

A.2 Identify Receiving Waters

Using Table A.1 below, list in order of upstream to downstream, the receiving waters that the project site is tributary to. Continue to fill each row with the Receiving Water's 303(d) listed impairments (if any), designated beneficial uses, and proximity, if any, to a RARE beneficial use. Include a map of the receiving waters in Appendix 1.

Table A.1 Identification of Receiving Waters

Receiving Waters	EPA Approved 303(d) List Impairments	Designated Beneficial Uses	Proximity to RARE Beneficial Use
Box Springs Canyon	N/A	AGR, GWR, REC1, REC2, WARM, WILD, RARE, SPWN	N/A
Box Springs Dam	N/A	AGR, GWR, REC1, REC2, WARM, WILD, RARE, SPWN	N/A
Santa Ana River, Reach 3	Copper, Indicator Bacteria, Lead	AGR, GWR, REC1, REC2, WARM, WILD, RARE, SPWN	N/A
Prado Flood Control Basin	pH	AGR, GWR, REC1, REC2, WARM, LWRM, WILD, RARE, SPWN	N/A
Santa Ana River, Reach 2	N/A	AGR, GWR, REC1, REC2, WARM, WILD, RARE	N/A
Santa Ana River, Reach 1	N/A	REC1, REC2, WARM, WILD	Downstream of RARE

A.3 Additional Permits/Approvals required for the Project:

Table A.2 Other Applicable Permits

Agency	Permit Required	
State Department of Fish and Game, 1602 Streambed Alteration Agreement	☐ Y	☒ N
State Water Resources Control Board, Clean Water Act (CWA) Section 401 Water Quality Cert.	☐ Y	☒ N
US Army Corps of Engineers, CWA Section 404 Permit	☐ Y	☒ N
US Fish and Wildlife, Endangered Species Act Section 7 Biological Opinion	☐ Y	☒ N
Statewide Construction General Permit Coverage	☒ Y	☐ N
Statewide Industrial General Permit Coverage	☐ Y	☒ N
Western Riverside MSHCP Consistency Approval (e.g., JPR, DBESP)	☒ Y	☐ N
Other *(please list in the space below as required)* City of Riverside Grading Permit City of Riverside Building Permit	☒ Y	☐ N

If yes is answered to any of the questions above, the Co-Permittee may require proof of approval/coverage from those agencies as applicable including documentation of any associated requirements that may affect this Project-Specific WQMP.

Section B: Optimize Site Utilization (LID Principles)

Site Optimization

Did you identify and preserve existing drainage patterns? If so, how? If not, why?

Existing drainage patterns have been identified as southwesterly overland flow. The proposed drainage patterns will be preserve the existing site drainage discharge locations. Pollutant and flow control practices will maintain the site's existing hydrologic response.

Did you identify and protect existing vegetation? If so, how? If not, why?

Existing vegetation is not existent, as the site is barren rockland. The proposed landscaping will improve upon existing conditions with native, drought-tolerant vegetation.

Did you identify and preserve natural infiltration capacity? If so, how? If not, why?

Natural infiltration capacity is not present, as the site is barren rockland and does not percolate per the geotechnical report.

Did you identify and minimize impervious area? If so, how? If not, why?

Proposed impervious area has been limited to provide for essential proposed functions and safety (i.e., building footprint, parking, sidewalk, ADA compliance, etc.). The site will host business office activity; therefore paved parking and drive aisles are necessary to support the vehicular traffic required by the proposed function.

Did you identify and disperse runoff to adjacent pervious areas? If so, how? If not, why?

The rooftop downspouts will disperse runoff to adjacent pervious areas. In addition, sidewalks will be graded to disperse runoff to adjacent pervious areas throughout the project site.

Section C: Delineate Drainage Management Areas (DMAs)

Table C.1 DMA Classifications

DMA Name or ID	Surface Type(s)[1]	Area (Sq. Ft.)	DMA Type
DMA A/1	Natural (D Soil)	21,435	A
DMA A/2	Ornamental Landscaping	2,707	A
DMA A/3	Ornamental Landscaping	28,944	A
DMA A/4	Spa (Water)	177	A
DMA A/5	Pool (Water)	2,783	A
DMA D/1	Mixed	181,347	D
DMA D/2	Mixed	122,788	D
DMA D/3	Mixed	44,530	D

[1]Reference Table 2-1 in the WQMP Guidance Document to populate this column
[2]If multi-surface provide back-up

**Mixed surface types include roof areas, paved parking, LID BMPs, and self-retaining landscaped islands. Therefore, the associated BMPs have been conservatively over-sized by assuming these self-retaining areas produce runoff.*

Table C.2 Type 'A', Self-Treating Areas

DMA Name or ID	Area (Sq. Ft.)	Stabilization Type	Irrigation Type (if any)
DMA A/1	21,435	Natural (D Soil)	N/A
DMA A/2	2,707	Ornamental Landscaping	Drip
DMA A/3	28,944	Ornamental Landscaping	Drip
DMA A/4	177	N/A	N/A
DMA A/5	2,783	N/A	N/A

Table C.3 Type 'B', Self-Retaining Areas

Self-Retaining Area				**Type 'C' DMAs that are draining to the Self-Retaining Area**		
DMA Name/ ID	Post-project surface type	Area (square feet) [A]	Storm Depth (inches) [B]	DMA Name / ID	[C] from Table C.4 = [C]	Required Retention Depth (inches) [D]
N/A						

Table C.4 Type 'C', Areas that Drain to Self-Retaining Areas

DMA					Receiving Self-Retaining DMA		
DMA Name/ ID	Area (square feet)	Post-project surface type	Runoff factor	Product	DMA name /ID	Area (square feet)	Ratio
	[A]		[B]	[C] = [A] x [B]		[D]	[C]/[D]
N/A							

Table C.5 Type 'D', Areas Draining to BMPs

DMA Name or ID	BMP Name or ID
DMA D/1	BMP D/1
DMA D/2	BMP D/2
DMA D/3	BMP D/3

Note: More than one drainage management area can drain to a single LID BMP, however, one drainage management area may not drain to more than one BMP.

Section D: Implement LID BMPs

D.1 Infiltration Applicability

Is there an approved downstream 'Highest and Best Use' for stormwater runoff (see discussion in Chapter 2.4.4 of the WQMP Guidance Document for further details)? ☐ Y ☒ N

Geotechnical Report

A Geotechnical Report or Phase I Environmental Site Assessment may be required by the Copermittee to confirm present and past site characteristics that may affect the use of Infiltration BMPs. In addition, the Co-Permittee, at their discretion, may not require a geotechnical report for small projects as described in Chapter 2 of the WQMP Guidance Document. If a geotechnical report has been prepared, include it in Appendix 3. In addition, if a Phase I Environmental Site Assessment has been prepared, include it in Appendix 4.

Is this project classified as a small project consistent with the requirements of Chapter 2 of the WQMP Guidance Document? ☐ Y ☒ N

Infiltration Feasibility

Table D.1 Infiltration Feasibility

Does the project site…	YES	NO
…have any DMAs with a seasonal high groundwater mark shallower than 10 feet?		✓
If Yes, list affected DMAs:		
…have any DMAs located within 100 feet of a water supply well?		✓
If Yes, list affected DMAs:		
…have any areas identified by the geotechnical report as posing a public safety risk where infiltration of stormwater could have a negative impact?		✓
If Yes, list affected DMAs:		
…have measured in-situ infiltration rates of less than 1.6 inches / hour?	✓	
If Yes, list affected DMAs: D/1, D/2, D/3		
…have significant cut and/or fill conditions that would preclude in-situ testing of infiltration rates at the final infiltration surface?		✓
If Yes, list affected DMAs:		
…geotechnical report identify other site-specific factors that would preclude effective and safe infiltration?	✓	
Describe here:		

D.2 Harvest and Use Assessment

Please check what applies*:*

☐ Reclaimed water will be used for the non-potable water demands for the project.

☐Downstream water rights may be impacted by Harvest and Use as approved by the Regional Board (verify with the Copermittee).

☐The Design Capture Volume will be addressed using Infiltration Only BMPs. In such a case, Harvest and Use BMPs are still encouraged, but it would not be required if the Design Capture Volume will be infiltrated or evapotranspired.

Harvest and Use BMPs need to be assessed for the site.

Irrigation Use Feasibility

Step 1: *Total Area of Irrigated Landscape*: 2.25 acres

Type of Landscaping (Conservation Design or Active Turf): Conservation Design

Step 2: *Total Area of Impervious Surfaces:* 6.41 acres

Step 3: *Enter your EIATIA factor*: 0.86

Step 4: *Minimum required irrigated area*: 3.24 acres

Step 5:

Minimum required irrigated area (Step 4)	Available Irrigated Landscape (Step 1)
3.24 acres	2.25 acres

Toilet Use Feasibility

Step 1: *Projected Number of Daily Toilet Users: 516*

Project Type: Residential

Step 2: *Total Area of Impervious Surfaces: 6.41 acres*

Step 3: *Enter your TUTIA factor: 103*

Step 4: *Minimum number of toilet users: 661*

Step 5:

Minimum required Toilet Users (Step 4)	Projected number of toilet users (Step 1)
661	516

Other Non-Potable Use Feasibility

Are there other non-potable uses for stormwater runoff on the site (e.g. industrial use)? See Chapter 2 of the Guidance for further information. If yes, describe below. If no, write N/A.

N/A

D.3 Bioretention and Biotreatment Assessment

Other LID Bioretention and Biotreatment BMPs as described in Chapter 2.4.7 of the WQMP Guidance Document are feasible on nearly all development sites with sufficient advance planning.

Select one of the following:

☒ LID Bioretention/Biotreatment BMPs will be used for some or all DMAs of the project as noted below in Section D.4

☐ A site-specific analysis demonstrating the technical infeasibility of all LID BMPs has been performed and is included in Appendix 5.

D.4 Feasibility Assessment Summaries

Table D.2 LID Prioritization Summary Matrix

DMA Name/ID	LID BMP Hierarchy				No LID (Alternative Compliance)
	1. Infiltration	2. Harvest and use	3. Bioretention	4. Biotreatment	
BMP D/1	☐	☐	☒	☐	☐
BMP D/2	☐	☐	☒	☐	☐
BMP D/3	☐	☐	☒	☐	☐

D.5 LID BMP Sizing

Table D.3 DCV Calculations for LID BMPs

DMA Type/ID	DMA Area (square feet) [A]	Post-Project Surface Type	Effective Impervious Fraction, I_f [B]	DMA Runoff Factor [C]	DMA Areas x Runoff Factor [A] x [C]	*BMP D/1* *Bioretention Basin*		
D/1 ROOF	58,162	*Roofs*	*1*	*0.89*	*51,881*	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
D/1 CONC	65,271	*Concrete or Asphalt*	*1*	*0.89*	*58,222*			
D/1 PAVER	15,043	*Grouted or Gapless Paving Blocks*	*1*	*0.89*	*13,418*			
D/1 LSCAPE	41,252	*Ornamental Landscaping*	*0.1*	*0.11*	*4,557*			
D/1 TURF	1,619	*Turf block*	*0.1*	*0.11*	*179*			
	181,347				128,256	0.61	6,552	6,735

[B], [C] is obtained as described in Section 2.3.1 of the WQMP Guidance Document
[E] is obtained from Exhibit A in the WQMP Guidance Document
[G] is obtained from a design procedure sheet, such as in LID BMP Design Handbook and placed in Appendix 6

DMA Type/ID	DMA Area (square feet) [A]	Post-Project Surface Type	Effective Impervious Fraction, I_f [B]	DMA Runoff Factor [C]	DMA Areas x Runoff Factor [A] x [C]	*BMP D/2* *Bioretention Basin*		
D/2 ROOF	58,438	*Roofs*	*1*	*0.89*	*52,127*	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
D/2 CONC	48,237	*Concrete or Asphalt*	*1*	*0.89*	*43,027*			
D/2 LSCAPE	12,926	*Ornamental Landscaping*	*0.1*	*0.11*	*1,428*			
D/2 TURF	3,187	*Ornamental Landscaping*	*0.1*	*0.11*	*352*			
	122,788				96,934	0.61	4,952	4,967

DMA Type/ID	DMA Area (square feet) [A]	Post-Project Surface Type	Effective Impervious Fraction, I_f [B]	DMA Runoff Factor [C]	DMA Areas x Runoff Factor [A] x [C]	*BMP D/3* *Bioretention Basin*		
D/3 ROOF	21,404	*Roofs*	*1*	*0.89*	*19,092*	*Design Storm Depth (in)*	*Design Capture Volume,* V_{BMP} *(cubic feet)*	*Proposed Volume on Plans (cubic feet)*
D/3 CONC	12,711	*Concrete or Asphalt*	*1*	*0.89*	*11,338*			
D/3 LSCAPE	10,415	*Ornamental Landscaping*	*0.1*	*0.11*	*1,150*			
	44,530				31,581	0.61	1,613	1,620

Section E: Alternative Compliance (LID Waiver Program)

LID BMPs are expected to be feasible on virtually all projects. Where LID BMPs have been demonstrated to be infeasible as documented in Section D, other Treatment Control BMPs must be used (subject to LID waiver approval by the Copermittee). Check one of the following Boxes:

☒ LID Principles and LID BMPs have been incorporated into the site design to fully address all Drainage Management Areas. No alternative compliance measures are required for this project and thus this Section is not required to be completed.

- *Or* -

☐ The following Drainage Management Areas are unable to be addressed using LID BMPs. A site-specific analysis demonstrating technical infeasibility of LID BMPs has been approved by the Co-Permittee and included in Appendix 5. Additionally, no downstream regional and/or sub-regional LID BMPs exist or are available for use by the project. The following alternative compliance measures on the following pages are being implemented to ensure that any pollutant loads expected to be discharged by not incorporating LID BMPs, are fully mitigated.

E.1 Identify Pollutants of Concern

Table E.1 Potential Pollutants by Land Use Type

Priority Development Project Categories and/or Project Features (check those that apply)	General Pollutant Categories							
	Bacterial Indicators	Metals	Nutrients	Pesticides	Toxic Organic Compounds	Sediments	Trash & Debris	Oil & Grease
☐ Detached Residential Development	P	N	P	P	N	P	P	P
☐ Attached Residential Development	P	N	P	P	N	P	P	P(2)
☐ Commercial/Industrial Development	P(3)	P	P(1)	P(1)	P(5)	P(1)	P	P
☐ Automotive Repair Shops	N	P	N	N	P(4, 5)	N	P	P
☐ Restaurants (>5,000 ft^2)	P	N	N	N	N	N	P	P
☐ Hillside Development (>5,000 ft^2)	P	N	P	P	N	P	P	P
☐ Parking Lots (>5,000 ft^2)	P(6)	P	P(1)	P(1)	P(4)	P(1)	P	P
☐ Retail Gasoline Outlets	N	P	N	N	P	N	P	P
Project Priority Pollutant(s) of Concern	☐	☐	☐	☐	☐	☐	☐	☐

P = Potential

N = Not Potential

(1) A potential Pollutant if non-native landscaping exists or is proposed onsite; otherwise not expected

(2) A potential Pollutant if the project includes uncovered parking areas; otherwise not expected

(3) A potential Pollutant is land use involving animal waste

(4) Specifically petroleum hydrocarbons

(5) Specifically solvents

(6) Bacterial indicators are routinely detected in pavement runoff

E.2 Stormwater Credits

Table E.2 Water Quality Credits

Qualifying Project Categories	Credit Percentage[2]
N/A	
Total Credit Percentage[1]	

[1]Cannot Exceed 50%
[2]Obtain corresponding data from Table 3-8 in the WQMP Guidance Document

E.3 Sizing Criteria

Table E.3 Treatment Control BMP Sizing

DMA Type/ID	DMA Area (square feet) [A]	Post-Project Surface Type	Effective Impervious Fraction, I_f [B]	DMA Runoff Factor [C]	DMA Area x Runoff Factor [A] x [C]		*Enter BMP Name / Identifier Here*		
						Design Storm Depth (in)	*Minimum Design Capture Volume or Design Flow Rate (cubic feet or cfs)*	*Total Storm Water Credit % Reduction*	*Proposed Volume or Flow on Plans (cubic feet or cfs)*
	A_T = Σ[A]				Σ= [D]	[E]	$[F] = \frac{[D]x[E]}{[G]}$	[F] X (1-[H])	[I]

[B], [C] is obtained as described in Section 2.3.1 from the WQMP Guidance Document
[E] is obtained from Exhibit A in the WQMP Guidance Document
[G] is for Flow-Based Treatment Control BMPs [G] = 43,560, for Volume-Based Control Treatment BMPs, [G] = 12
[H] is from the Total Credit Percentage as Calculated from Table E.2 above
[I] as obtained from a design procedure sheet from the BMP manufacturer and should be included in Appendix 6

E.4 Treatment Control BMP Selection

Treatment Control BMPs typically provide proprietary treatment mechanisms to treat potential pollutants in runoff, but do not sustain significant biological processes. Treatment Control BMPs must have a removal efficiency of a medium or high effectiveness as quantified below:

- **High**: equal to or greater than 80% removal efficiency
- **Medium**: between 40% and 80% removal efficiency

Table E.4 Treatment Control BMP Selection

Selected Treatment Control BMP Name or ID[1]	Priority Pollutant(s) of Concern to Mitigate[2]	Removal Efficiency Percentage[3]
N/A		

[1] Treatment Control BMPs must not be constructed within Receiving Waters. In addition, a proposed Treatment Control BMP may be listed more than once if they possess more than one qualifying pollutant removal efficiency.
[2] Cross Reference Table E.1 above to populate this column.
[3] As documented in a Co-Permittee Approved Study and provided in Appendix 6.

Section F: Hydromodification

F.1 Hydrologic Conditions of Concern (HCOC) Analysis

HCOC EXEMPTION 1: The Priority Development Project disturbs less than one acre. The Copermittee has the discretion to require a Project-Specific WQMP to address HCOCs on projects less than one acre on a case by case basis. The disturbed area calculation should include all disturbances associated with larger common plans of development.

Does the project qualify for this HCOC Exemption? ☐ Y ☒ N

If Yes, HCOC criteria do not apply.

HCOC EXEMPTION 2: The volume and time of concentration[1] of storm water runoff for the post-development condition is not significantly different from the pre-development condition for a 2-year return frequency storm (a difference of 5% or less is considered insignificant) using one of the following methods to calculate:

- Riverside County Hydrology Manual
- Technical Release 55 (TR-55): Urban Hydrology for Small Watersheds (NRCS 1986), or derivatives thereof, such as the Santa Barbara Urban Hydrograph Method
- Other methods acceptable to the Co-Permittee

Does the project qualify for this HCOC Exemption? ☒ Y ☐ N

If Yes, report results in Table F.1 below and provide your substantiated hydrologic analysis in Appendix 7.

Table F.1 Hydrologic Conditions of Concern Summary

	2 year – 24-hour storm		
	Pre-condition	**Post-condition**	**% Difference**
Time of Concentration (min)	11.45	10.91	-5%
Volume (Cubic Feet)	41,269	39,445	-4%

[1] Time of concentration is defined as the time after the beginning of the rainfall when all portions of the drainage basin are contributing to flow at the outlet.

HCOC EXEMPTION 3: All downstream conveyance channels to an adequate sump (for example, Prado Dam, Lake Elsinore, Canyon Lake, Santa Ana River, or other lake, reservoir or naturally erosion resistant feature) that will receive runoff from the project are engineered and regularly maintained to ensure design flow capacity; no sensitive stream habitat areas will be adversely affected; or are not identified on the Co-Permittees Hydromodification Sensitivity Maps.

Does the project qualify for this HCOC Exemption? ☐ Y ☒ N

If Yes, HCOC criteria do not apply and note below which adequate sump applies to this HCOC qualifier:

F.2 HCOC Mitigation

If none of the above HCOC Exemption Criteria are applicable, HCOC criteria is considered mitigated if they meet one of the following conditions:

a. Additional LID BMPS are implemented onsite or offsite to mitigate potential erosion or habitat impacts as a result of HCOCs. This can be conducted by an evaluation of site-specific conditions utilizing accepted professional methodologies published by entities such as the California Stormwater Quality Association (CASQA), the Southern California Coastal Water Research Project (SCCRWP), or other Co-Permittee approved methodologies for site-specific HCOC analysis.

b. The project is developed consistent with an approved Watershed Action Plan that addresses HCOC in Receiving Waters.

c. Mimicking the pre-development hydrograph with the post-development hydrograph, for a 2-year return frequency storm. Generally, the hydrologic conditions of concern are not significant, if the post-development hydrograph is no more than 10% greater than pre-development hydrograph. In cases where excess volume cannot be infiltrated or captured and reused, discharge from the site must be limited to a flow rate no greater than 110% of the pre-development 2-year peak flow.

Section G: Source Control BMPs

Table G.1 Permanent and Operational Source Control Measures

Potential Sources of Runoff pollutants	Permanent Structural Source Control BMPs	Operational Source Control BMPs
On-site storm drain inlets	Mark all inlets with the words "Only Rain Down the Storm Drain" or similar. Catch Basin Markers may be available from the Riverside County Flood Control and Water Conservation District, call 951.955.1200 to verify.	1. Maintain and periodically repaint or replace inlet markings. 2. Provide stormwater pollution prevention information to new site owners, lessees, or operators. 3. Include the following in lease agreements: "Tenant shall now allow anyone to discharge anything to storm drains or to store or deposit materials so as to create a potential discharge to storm drain."
Landscape/outdoor pesticide use	1. Preserve existing native trees, shrubs, and ground cover to the maximum extent possible. 2. Design landscaping to minimize irrigation and runoff, to promote surface infiltration where appropriate, and to minimize the use of fertilizers and pesticides that can contribute to stormwater pollution. 3. Where landscaped areas are used to retain or detain stormwater, specify plants that are tolerant of saturated soil conditions. 4. Consider using pest-resistant plants, especially adjacent to hardscape. 5. To insure successful establishment, select plants	1. Maintain landscaping using minimum or no pesticides. 2. Prevent erosion of slopes by planting fast-growing, dense ground covering plants. 3. Plant native vegetation to reduce the amount of water, fertilizers, and pesticides applied to the landscape. 4. Do not overwater. Use irrigation practices such as drip irrigation, soaker hoses or micro-spray systems. Periodically inspect and fix leaks and misdirected sprinklers. 5. Do not rake or blow leaves, clippings, or pruning waste into the street, gutter, or storm drain. Instead, dispose of green waste by composting, hauling it to a permitted landfill, or recycling it through your city's program. 6. Provide IPM information to new owners, lessees and operators.

Potential Sources of Runoff pollutants	Permanent Structural Source Control BMPs	Operational Source Control BMPs
	appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions.	
Refuse areas	1. Site design features dumpster enclosures. 2. Signs will be posted on or near dumpsters with the words "Do not dump hazardous materials here" or similar.	1. Periodic inspections for leaky, overfilled, uncovered, or other problematic conditions will occur. Corrective action will be made upon detection, as circumstances permit. 2. Dumping of liquid or hazardous wastes will be prohibited. 3. Spill control materials will be available on-site.
Miscellaneous Drain or Wash Water or Other Sources	N/A	1. Rooftop equipment with potential to produce pollutants shall be roofed and/or have secondary containment. 2. Avoid roofing, gutters, and trim made of copper or other unprotected metals that may leach into runoff.
Plazas, Sidewalks, and Parking Lots	N/A	Sweep plazas, sidewalks, and parking lots regularly to prevent accumulation of litter and debris. Collect debris from pressure washing to prevent entry into the storm drain system. Collect washwater containing any cleaning agent or degreaser and discharge to the sanitary sewer not to a storm drain.

Section H: Construction Plan Checklist

Table H.1 Construction Plan Cross-reference

BMP No. or ID	BMP Identifier and Description	Corresponding Plan Sheet(s)
BMP D/1	Bioretention basin, vertical walls Composed of six (6) separate components hydraulically connected via flat surface equalization pipe and underdrain • 6” ponding depth • 21” engineered soil media • 12” gravel layer - 6” diameter underdrain	TBD
BMP D/2	Bioretention basin, vertical walls Composed of seven (7) separate components hydraulically connected via flat surface equalization pipe and underdrain • All connected components must have same finished grade elevation and media layer thickness6” ponding depth • 30” engineered soil media • 12” gravel layer - 6” diameter underdrain	TBD
BMP D/3	Bioretention basin, vertical walls: • 6” ponding depth • 36” engineered soil media • 12” gravel layer - 6” diameter underdrain	TBD

Section I: Operation, Maintenance and Funding

The Copermittee will periodically verify that Stormwater BMPs on your site are maintained and continue to operate as designed. To make this possible, your Copermittee will require that you include in Appendix 9 of this Project-Specific WQMP:

1. A means to finance and implement facility maintenance in perpetuity, including replacement cost.
2. Acceptance of responsibility for maintenance from the time the BMPs are constructed until responsibility for operation and maintenance is legally transferred. A warranty covering a period following construction may also be required.
3. An outline of general maintenance requirements for the Stormwater BMPs you have selected.
4. Figures delineating and designating pervious and impervious areas, location, and type of Stormwater BMP, and tables of pervious and impervious areas served by each facility. Geo-locating the BMPs using a coordinate system of latitude and longitude is recommended to help facilitate a future statewide database system.
5. A separate list and location of self-retaining areas or areas addressed by LID Principles that do not require specialized O&M or inspections but will require typical landscape maintenance as noted in Chapter 5, pages 85-86, in the WQMP Guidance. Include a brief description of typical landscape maintenance for these areas.

Your local Co-Permittee will also require that you prepare and submit a detailed Stormwater BMP Operation and Maintenance Plan that sets forth a maintenance schedule for each of the Stormwater BMPs built on your site. An agreement assigning responsibility for maintenance and providing for inspections and certification may also be required.

Maintenance Mechanism: Project Owner

Will the proposed BMPs be maintained by a Home Owners' Association (HOA) or Property Owners Association (POA)?

☐ Y ☒ N

Include your Operation and Maintenance Plan and Maintenance Mechanism in Appendix 9. Additionally, include all pertinent forms of educational materials for those personnel that will be maintaining the proposed BMPs within this Project-Specific WQMP in Appendix 10.

Appendix 1: Maps and Site Plans

Location Map, WQMP Site Plan and Receiving Waters Map

Location Map
Central Avenue
Riverside, CA 92507

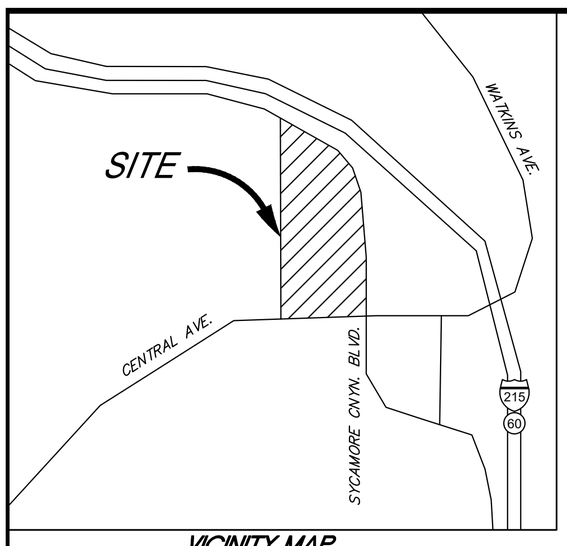
NOT TO SCALE

Feet
0 125 250 500

TRWE

Exhibit Date: 4/2/2019
X:\Projects2\156 (Steve Sommers)\23 (Central Apartments)\05 GIS\Map Docs\App1A_LocationMap.mxd

WQMP SITE PLAN
CRESTVIEW APARTMENTS
CITY OF RIVERSIDE



VICINITY MAP
NOT TO SCALE

LID CONSTRAINTS

1. SITE SOILS HAVE POOR INFILTRATION RATES
2. INSUFFICIENT DEMAND FOR HARVEST AND USE

LID OPPORTUNITIES

1. SITE PLAN PROVIDES STREAM SETBACK

LEGEND

- DRAINAGE MANAGEMENT AREA
- BMP FOOTPRINT
- PROPOSED STORM DRAIN
- BASIN UNDERDRAIN
- CURB AND GUTTER
- RIBBON DRAIN
- 1280 EXISTING CONTOUR LINE
- SLOPE
- LANDSCAPE/PERVIOUS AREA
- CONCRETE/IMPERVIOUS AREA
- ROOFS/IMPERVIOUS AREA
- OFFSITE PERVIOUS
- STORM DRAIN CATCH BASIN
- ROOF DOWNSPOUTS
- DISCHARGE POINT

OWNER/APPLICANT
KA ENTERPRISES
5820 OBERLIN DRIVE, SUITE 201
SAN DIEGO, CA 92121

CIVIL ENGINEER
SDH & ASSOCIATES
14060 MERIDIAN PARKWAY
RIVERSIDE, CA 92518
(951) 683-3691

WQMP ENGINEER
TORY R. WALKER ENGINEERING, INC.
122 CIVIC CENTER DRIVE, STE. 206
VISTA, CA 92084
(760) 414-9212

PERMANENT SOURCE CONTROL BMPs

1. MARK ALL INLETS WITH THE WORDS "ONLY RAIN DOWN THE STORM DRAIN" OR SIMILAR
2. ENCLOSED REFUSE AREA WITH SIGNS POSTED NEARBY STATING "DO NOT DUMP HAZARDOUS MATERIALS HERE" OR SIMILAR

- LANDSCAPING DESIGNED TO MINIMIZE IRRIGATION AND RUNOFF, TO PROMOTE SURFACE INFILTRATION WHERE APPROPRIATE, AND TO MINIMIZE THE USE OF FERTILIZERS AND PESTICIDES THAT CAN CONTRIBUTE TO STORMWATER POLLUTION.
- ALL PROCESS ACTIVITIES TO BE PERFORMED INDOORS. NO PROCESSES TO DRAIN TO EXTERIOR OR TO STORM DRAIN SYSTEM.
- ROOFTOP EQUIPMENT WITH POTENTIAL TO PRODUCE POLLUTANTS SHALL BE ROOFED AND/OR HAVE SECONDARY CONTAINMENT.
- AVOID ROOFING, GUTTERS, AND TRIM MADE OF COPPER OR OTHER UNPROTECTED METALS THAT MAY LEACH INTO RUNOFF.

OPERATIONAL SOURCE CONTROL BMPs

- MAINTAIN LANDSCAPING USING MINIMUM OR NO PESTICIDES
- PREVENT EROSION OF SLOPES BY PLANTING FAST-GROWING, DENSE GROUND COVERING PLANTS
- PLANT NATIVE VEGETATION TO REDUCE THE AMOUNT OF WATER, FERTILIZERS, AND PESTICIDES APPLIED TO THE LANDSCAPE
- DO NOT OVERWATER
- USE IRRIGATION PRACTICES SUCH AS DRIP IRRIGATION, SOAKER HOSES OR MICRO-SPRAY SYSTEMS
- PERIODICALLY INSPECT AND FIX LEAKS AND MISDIRECTED SPRINKLERS.
- DO NOT RAKE OR BLOW LEAVES, CLIPPINGS, OR PRUNING WASTE INTO THE STREET, GUTTER OR STORM DRAIN
- DISPOSE OF GREEN WASTE BY COMPOSTING, HAULING IT TO A PERMITTED LANDFILL, OR RECYCLING IT THROUGH YOUR CITY'S PROGRAM
- PROVIDE IPM INFORMATION TO NEW OWNERS, LESSEES AND OPERATORS
- PERIODIC TRASH ENCLOSURE INSPECTIONS FOR LEAKY, OVERFILLED, UNCOVERED, OR OTHER PROBLEMATIC CONDITIONS WILL OCCUR
- CORRECTIVE ACTION WILL BE MADE UPON DETECTION, AS CIRCUMSTANCES PERMIT
- DUMPING OF LIQUID OR HAZARDOUS WASTES WILL BE PROHIBITED
- SWEEP PLAZAS, SIDEWALKS, AND PARKING LOTS REGULARLY TO PREVENT ACCUMULATION OF LITTER AND DEBRIS
- COLLECT DEBRIS FROM PRESSURE WASHING TO PREVENT ENTRY INTO THE STORM DRAIN SYSTEM
- COLLECT WASHWATER CONTAINING ANY CLEANING AGENT OR DEGREASER AND DISCHARGE TO THE SANITARY SEWER (NOT TO THE STORM DRAIN)

DMA ID (Type/ID)	Surface Type	Imp Area (ac)	Pervious (ac)	Total Area (ac)	BMP ID	V_{BMP} (cf)	V (cf)
A/1	Natural (D Soil)	0.49	0.00	0.49	N/A	N/A	N/A
A/2	Ornamental Landscaping	0.06	0.00	0.06	N/A	N/A	N/A
A/3	Ornamental Landscaping	0.66	0.00	0.66	N/A	N/A	N/A
A/4	Spa (Water)	0.00	0.00	0.004	N/A	N/A	N/A
A/5	Pool (Water)	0.00	0.00	0.06	N/A	N/A	N/A
D/1	Mixed	0.32	3.85	4.16	D/1	6,552	6,735
D/2	Mixed	2.45	0.37	2.82	D/2	4,952	4,967
D/3	Mixed	0.78	0.24	1.02	D/3	1,613	1,620

N

0 25 50 100 150 200
SCALE: 1"=50'

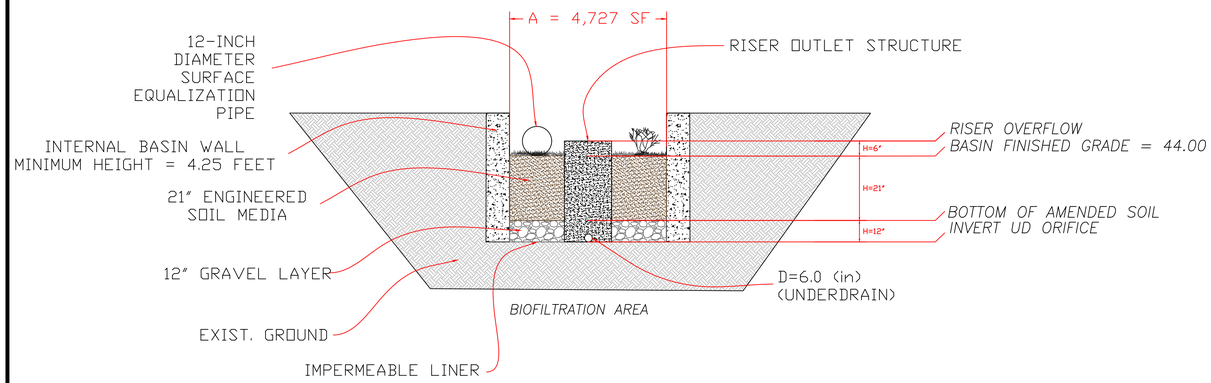
PW19-0952

CITY OF RIVERSIDE

POST-CONSTRUCTION BMP SITE PLAN
CRESTVIEW APARTMENTS

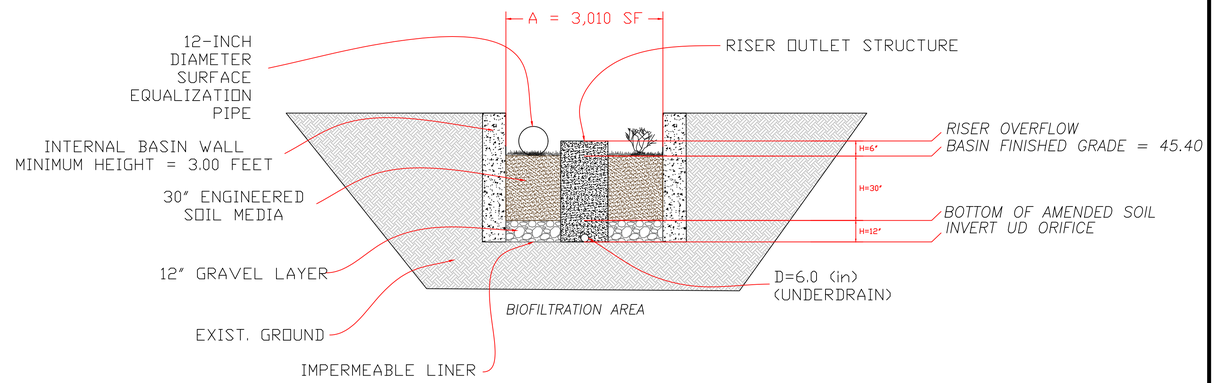
1 OF 2 SHEETS

BMP DETAILS
CRESTVIEW APARTMENTS
CITY OF RIVERSIDE, CA



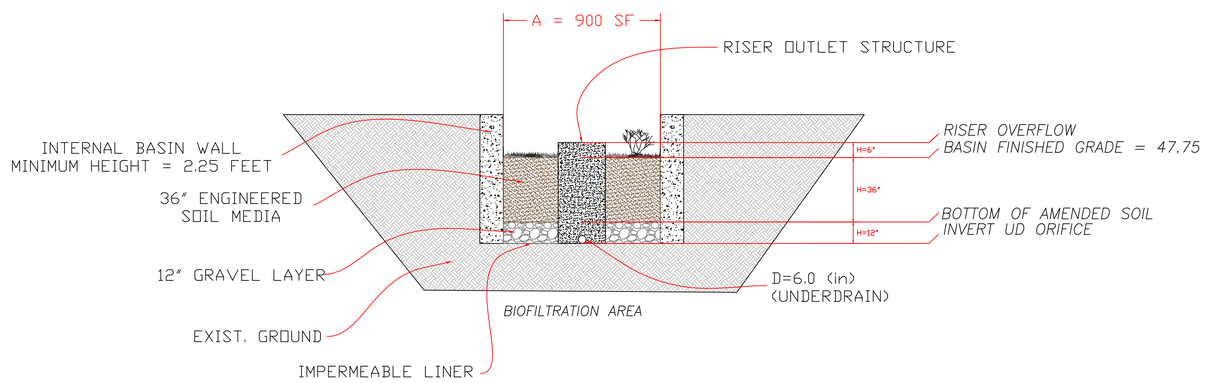
BIOFILTRATION BASIN CROSS SECTION (BMP D/1)

NOT TO SCALE



BIOFILTRATION BASIN CROSS SECTION (BMP D/2)

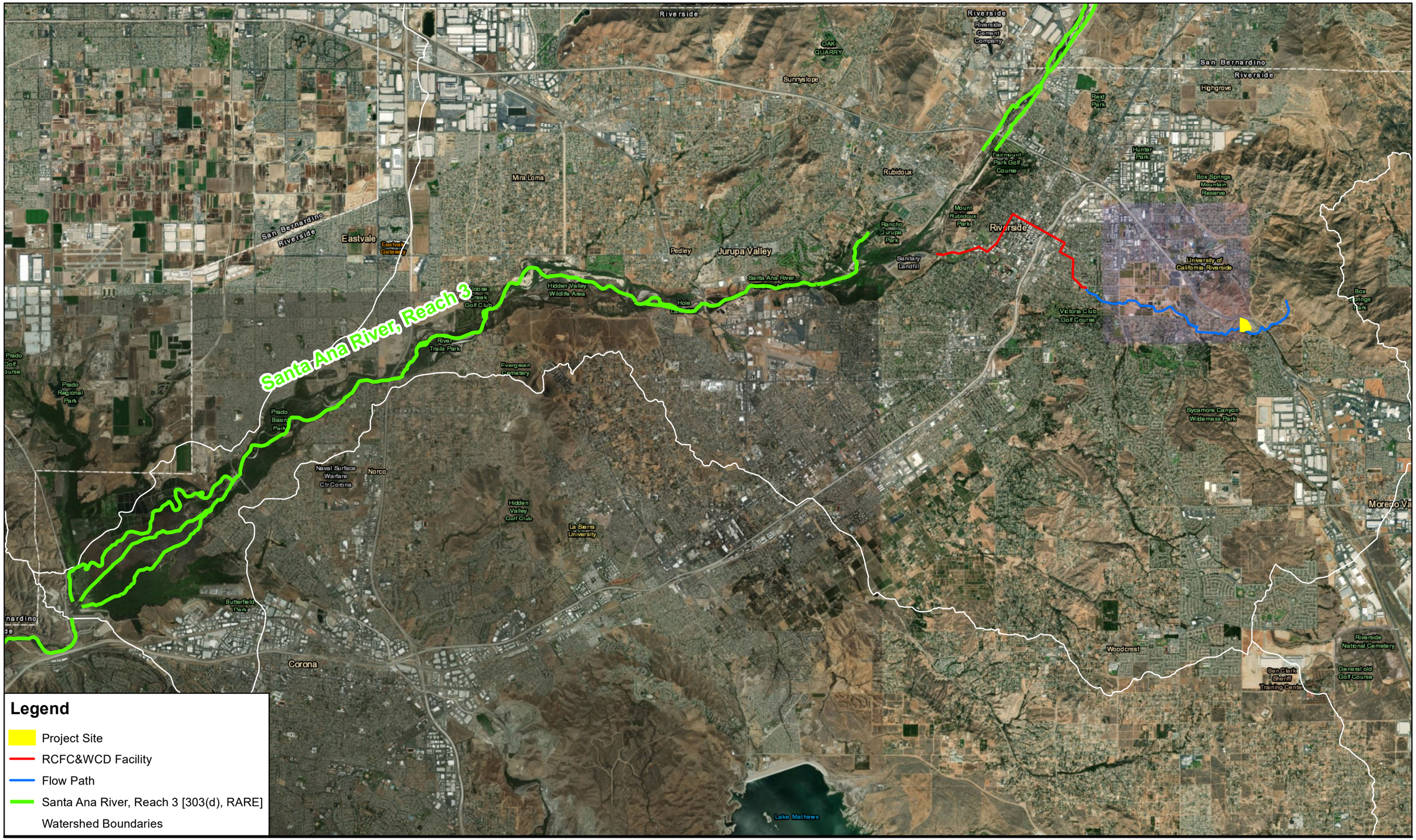
NOT TO SCALE



BIOFILTRATION BASIN CROSS SECTION (BMP D/3)

NOT TO SCALE

PW19-0952	
CITY OF RIVERSIDE	2 OF 2 SHEETS
CRESTVIEW APARTMENTS BMP DETAILS	



Legend

- Project Site
- RCFC&WCD Facility
- Flow Path
- Santa Ana River, Reach 3 [303(d), RARE]
- Watershed Boundaries

Receiving Waters Map
Crestview Apartments
Riverside, CA 92507

Exhibit Date: 2/27/2020
X:\Projects2\156 (Steve Sommers)\23 (Central Apartments)\05 GIS\Map Docs\App1B_ReceivingWatersMap.mxd

Sources:
Drainage Path: USGS National Hydrography Dataset
303(d) Water Bodies: California Water Resrouces Control Board
Watershed Boundaries: USGS National Hydrography Dataset

NOT TO SCALE

Feet
0 2,500 5,000 10,000

TRWE

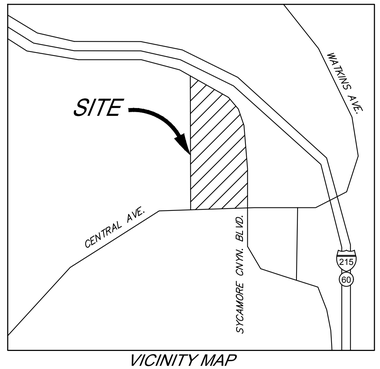
Appendix 2: Construction Plans

Grading and Drainage Plans

IN THE CITY RIVERSIDE, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA.

PRELIMINARY GRADING PLAN
CRESTVIEW APARTMENTS

MAY 2020



VICINITY MAP
NOT TO SCALE

OWNER/ APPLICANT
KA ENTERPRISES
55820 OBERLIN DR. STE. 201
SAN DIEGO, CA 92121
TEL (858) 404-6080
ATTN: EUGENE MARINI

ENGINEER
SDH & ASSOCIATES, INC.
14060 MERIDIAN PARKWAY 102
RIVERSIDE, CALIFORNIA 92518
TEL (951) 683-3691
FAX (951) 788-2314
ATTN: STEFFEN SOMMERS

ARCHITECT
ARCHITECTS ORANGE
321 CHAPMAN AVE.
ORANGE, CA 92866
TEL (714) 639-9860

SOILS ENGINEER
ARCHITECTS ORANGE
321 CHAPMAN AVE.
ORANGE, CA 92866
TEL (714) 639-9860

UTILITY PURVEYORS
WATER.....CITY OF RIVERSIDE
GAS.....SO. CALIF. GAS
ELECTRICAL.....CITY OF RIVERSIDE
TELEPHONE.....PACIFIC BELL
SEWER.....CITY OF RIVERSIDE

ZONING AND LAND USE
EXISTING ZONING: CG COMMERCIAL GENERAL ZONE
PROPOSED ZONING: R-4

ASSESSORS PARCEL NO.
256-050-012-5

SCHOOL DISTRICT
RIVERSIDE UNIFIED
SCHOOL DISTRICT

SURROUNDING GENERAL PLAN DESIGNATION
NORTH..... HR - HILLSIDE RESIDENTIAL
EAST..... HR - HILLSIDE RESIDENTIAL
SOUTH..... P - PUBLIC PARK
WEST..... VHDR - VERY HIGH DENSITY RES./ OS - OPEN SPACE

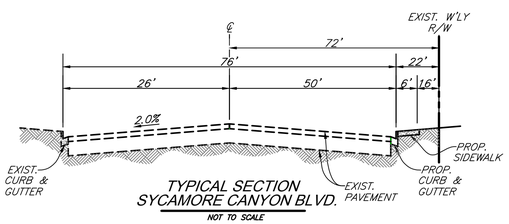
SURROUNDING ZONING
NORTH..... RC RESIDENTIAL COMMERCIAL
EAST..... COMMERCIAL
SOUTH..... (COUNTY) C-P-S, W-1-9, R-2-80, R-1-80
WEST..... RI RESIDENTIAL CONSERVATION ZONE, R-3-3000 MULTI FAMILY RESIDENTIAL

SHEET INDEX
SHEET 1 - TITLE SHEET
SHEET 2 - PRELIMINARY GRADING PLAN
SHEET 3 - PRELIMINARY GRADING PLAN
SHEET 4 - DRAINAGE PLAN PLAN
SHEET 5 - SECTIONS AND DETAILS

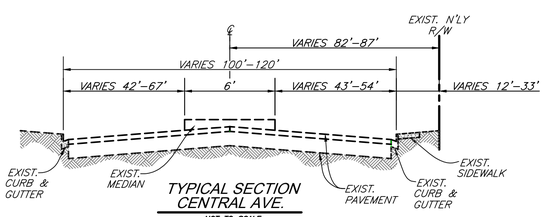
LEGEND
T.C.B. - TOP CATCH BASIN
F.G. - FINISHED GRADE
F.L. - FLOW LINE
H.P. - HIGH POINT
EXIST. - EXISTING
P.E. - PAD ELEVATION
G.B. - GRADE BREAK
- STEM WALL HEIGHT
- TRACT BOUNDARY
- CENTERLINE
- CURB AND GUTTER
1280 - EXISTING CONTOUR LINE
- LOT LINE
- SLOPE

PROJECT INFO
GROSS SITE AREA: 9.77 AC.
UNIT COUNT: 237
PARKING REQUIRED: 427
PARKING PROVIDED: 427

SHEET INDEX
SHEET 1: TITLE SHEET
SHEET 2: PRECISE GRADING PLAN
SHEET 3: PRECISE GRADING PLAN
SHEET 4: DRAINAGE PLAN
SHEET 5: SECTIONS AND DETAILS
SHEET 6: SECTIONS AND DETAILS

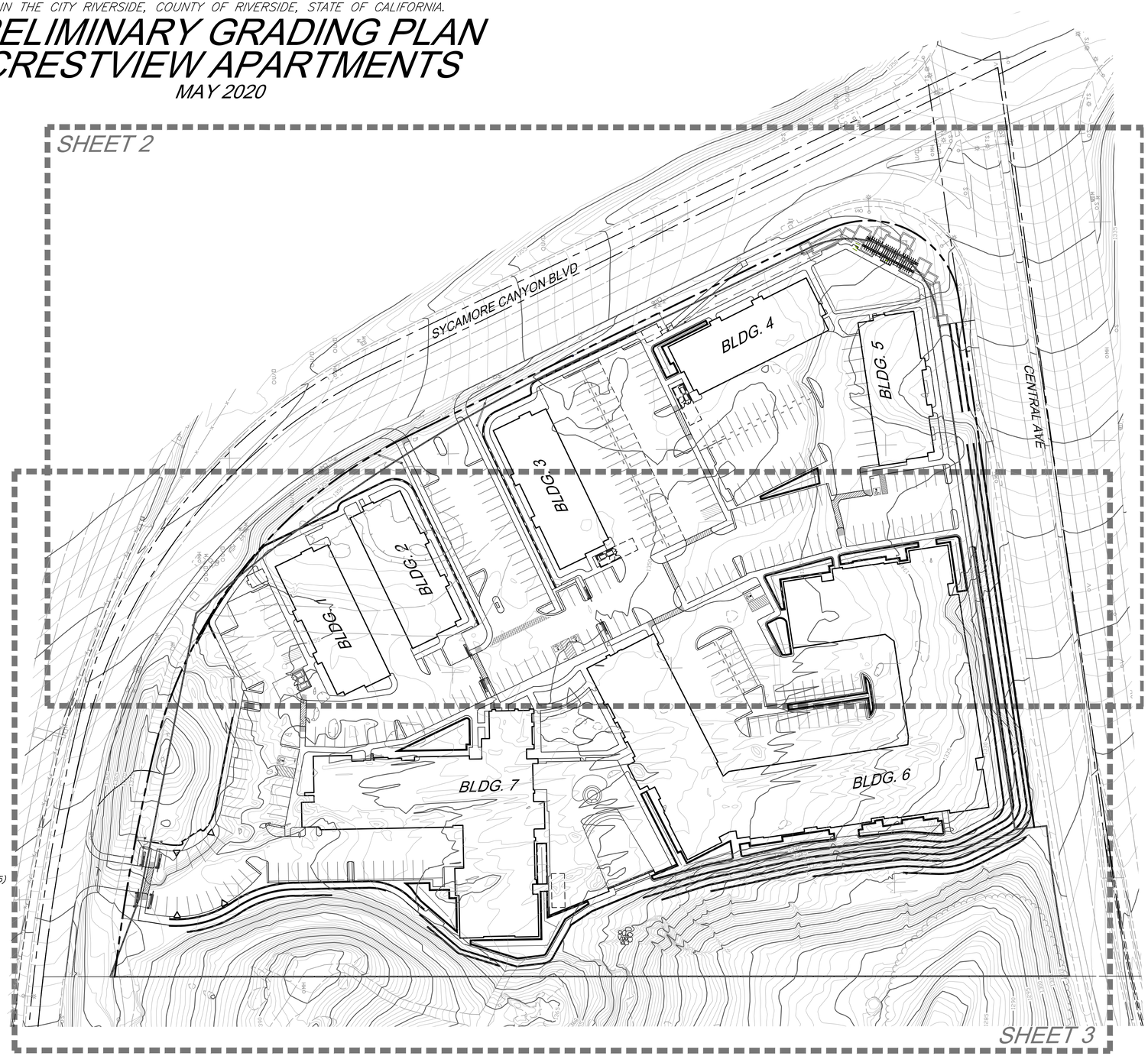


TYPICAL SECTION
SYCAMORE CANYON BLVD.
NOT TO SCALE

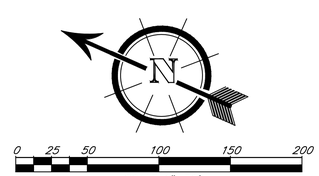


TYPICAL SECTION
CENTRAL AVE.
NOT TO SCALE

CONSTRUCTION NOTES
1. CONSTRUCT P.C.C. DRIVE ISLE & PARKING AREAS
2. CONSTRUCT 6" CURB ONLY (PER DETAIL ON SHEET 5)
3. CONSTRUCT 6" CURB AND GUTTER (PER DETAIL ON SHEET 5)
4. PROPOSED MODULAR WETLANDS
5. CONSTRUCT P.C.C. SIDEWALK (FINISHED SURFACE MATERIALS PER ARCH. PLANS)
6. CONSTRUCT 3' RIBBON GUTTER
7. CONSTRUCT 8" HDPE STORM DRAIN
8. CONSTRUCT 24" X 24" DRAIN BOX
9. CONSTRUCT GATE PER ARCH. PLANS
10. CONSTRUCT A.D.A. COMPLIANT HANDICAP RAMP
11. CONSTRUCT RETAINING WALL
12. CONSTRUCT SIDE INLET CATCH BASIN
13. CONSTRUCT 12" HDPE STORM DRAIN
14. CONSTRUCT 18" HDPE STORM DRAIN
15. CONSTRUCT 24" HDPE STORM DRAIN
16. CONSTRUCT PRINSCO HYDROSTOR UNDERGROUND DETENTION SYSTEM
17. CONSTRUCT 12" LANDSCAPE CATCH BASIN WITH ATRIUM GRATE
18. CONSTRUCT 12" MIN. DIA. ANGULAR RIP RAP
19. 2' WIDE 12" DEEP CONCRETE "V" DITCH
20. WATER QUALITY BASIN



INDEX MAP
SCALE 1"=50'



SCALE 1"=50'

BUSINESS TAX CERTIFICATE NO. 107994 EXP. 6-30-20

SEAL: REGISTERED PROFESSIONAL ENGINEER DANIE A. SOMMERS No. 90433 Exp. 9-30-21 CIVIL STATE OF CALIFORNIA

PREPARED BY: SDH ASSOCIATES INCORPORATED
SDH AND ASSOCIATES INC.
14060 Meridian Parkway 102
Riverside, California 92518
TEL: (951) 683-3691 FAX (951) 788-2314

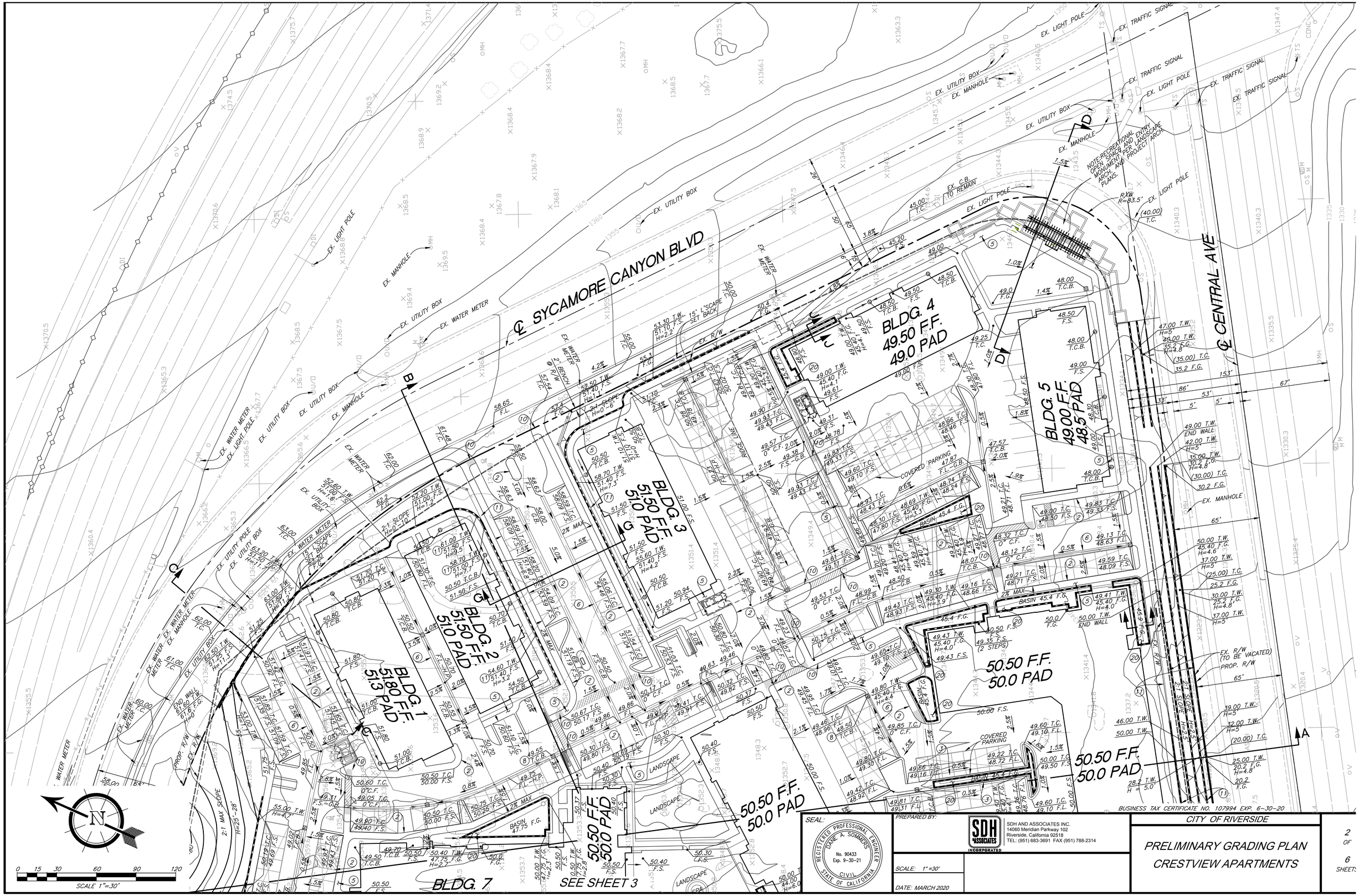
SCALE: 1"=50'

DATE: MAY 2020

CITY OF RIVERSIDE

PRELIMINARY GRADING PLAN
CRESTVIEW APARTMENTS

1 OF 6 SHEETS



SEAL:

REGISTERED PROFESSIONAL ENGINEER
DANE A. SOMMERS
No. 90433
Exp. 9-30-21
CIVIL
STATE OF CALIFORNIA

PREPARED BY:

SDH & ASSOCIATES INCORPORATED

SDH AND ASSOCIATES INC.
14060 Meridian Parkway 102
Riverside, California 92518
TEL: (951) 683-3691 FAX (951) 788-2314

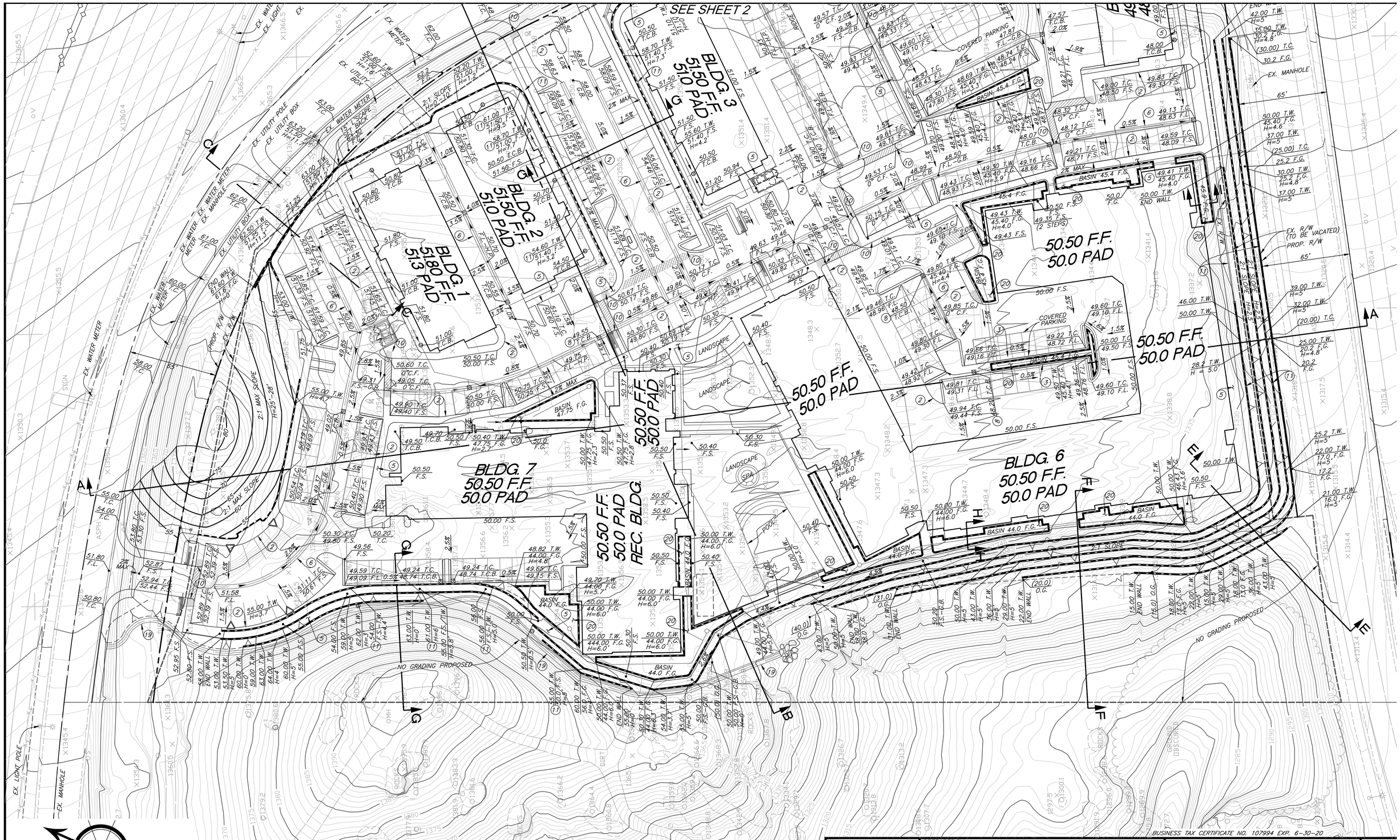
SCALE: 1" =30'

DATE: MARCH 2020

BUSINESS TAX CERTIFICATE NO. 107994 EXP. 6-30-20

CITY OF RIVERSIDE

PRELIMINARY GRADING PLAN
CRESTVIEW APARTMENTS



BUSINESS TAX CERTIFICATE NO. 107994 EXP. 6-30-20

SEAL:

REGISTERED PROFESSIONAL ENGINEER
DANIE A. SOMMERS
No. 90433
Exp. 9-30-21
CIVIL
STATE OF CALIFORNIA

PREPARED BY:

SDH ASSOCIATES INCORPORATED

SDH AND ASSOCIATES INC.
14060 Meridian Parkway 102
Riverside, California 92518
TEL: (951) 683-3691 FAX (951) 788-2314

SCALE: 1"=30'

DATE: MARCH 2020

CITY OF RIVERSIDE

PRELIMINARY GRADING PLAN
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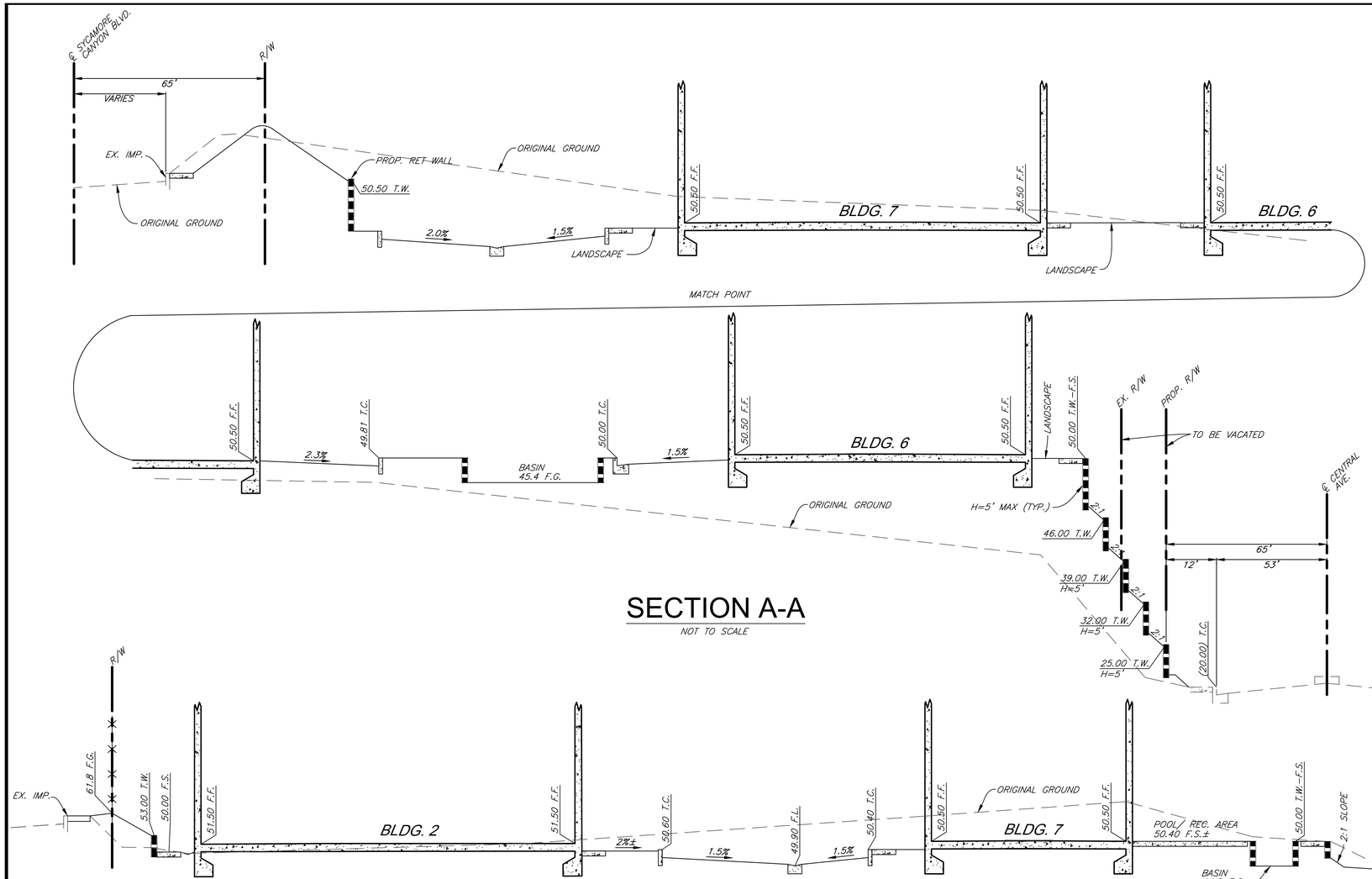

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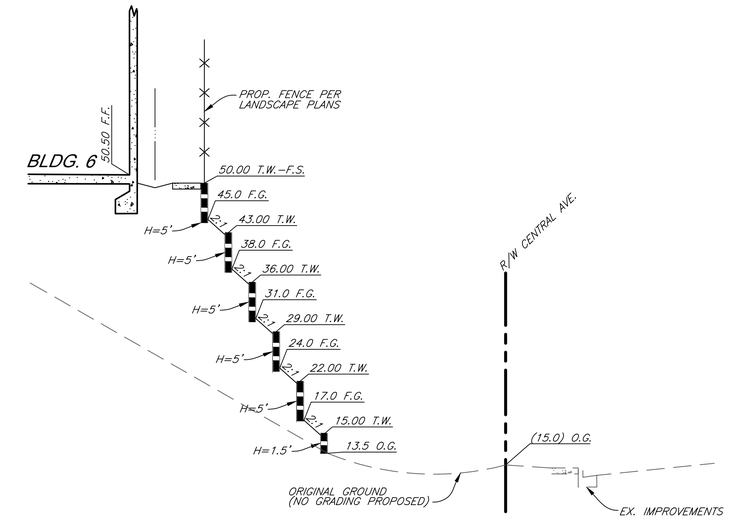

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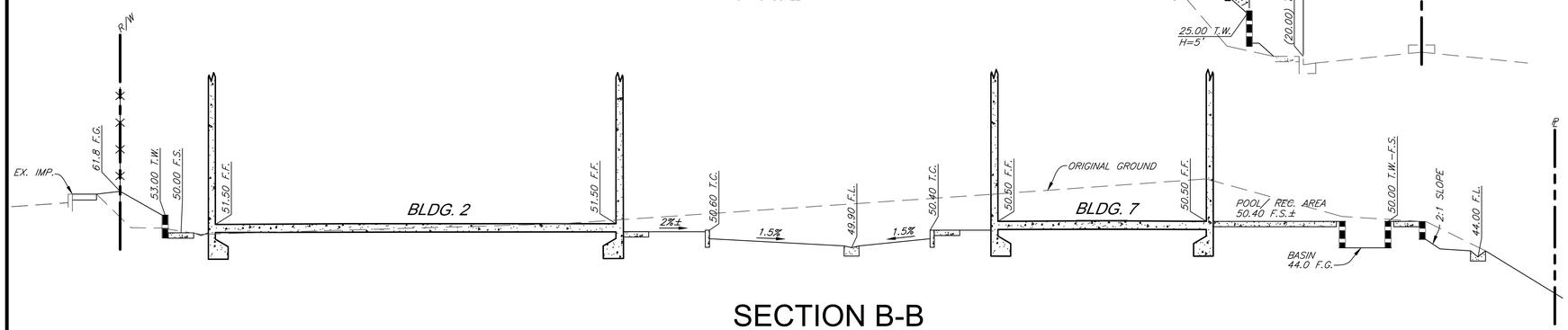

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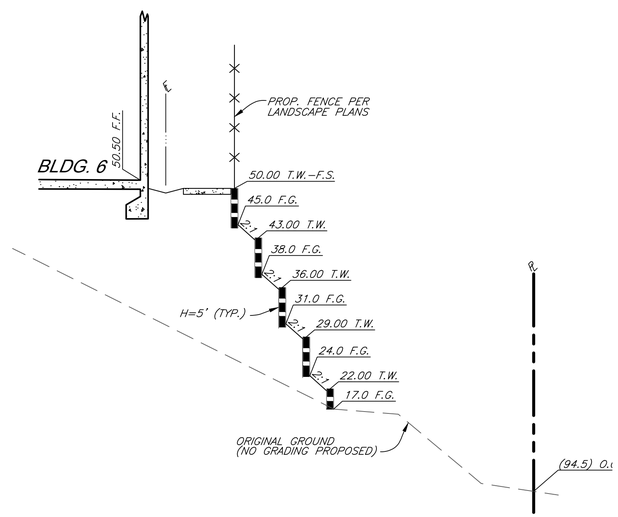

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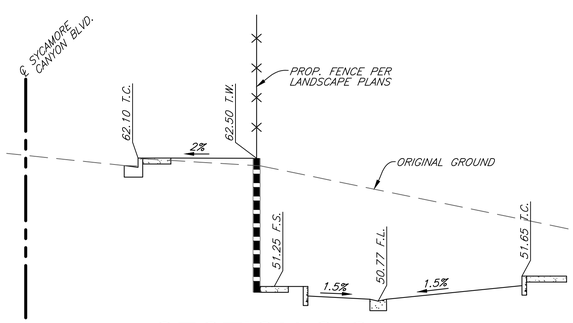

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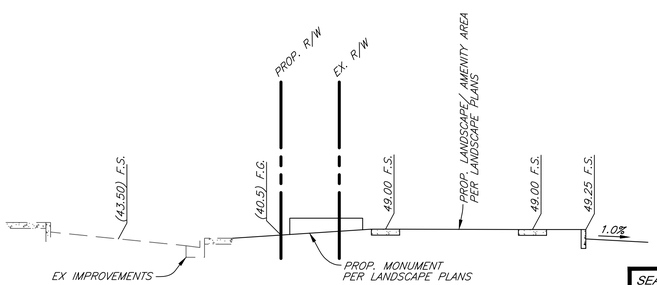

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DATE: MAY 2020

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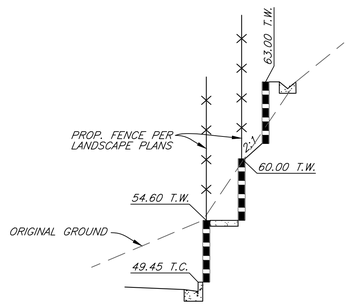
SECTIONS AND DETAILS
CRESTVIEW APARTMENTS



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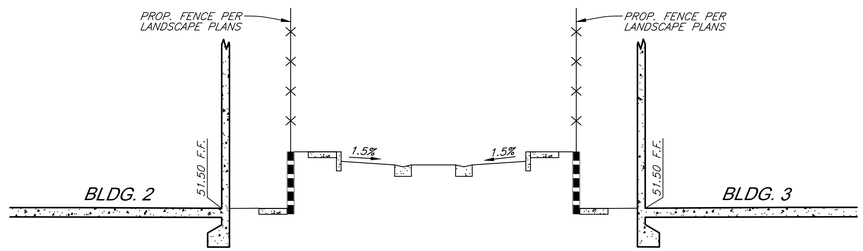

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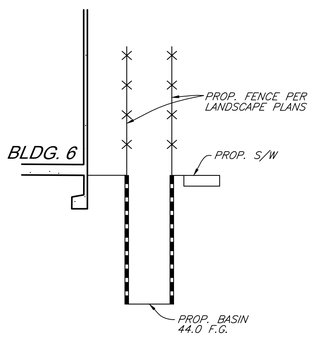

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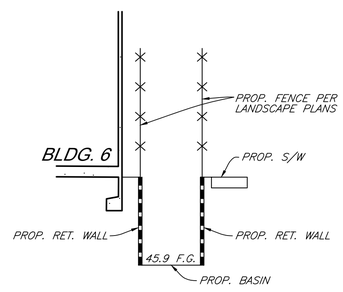

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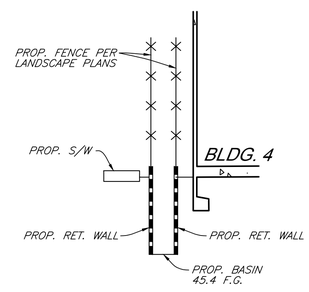

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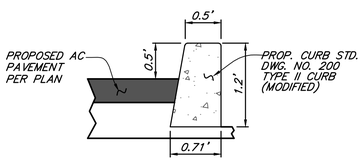

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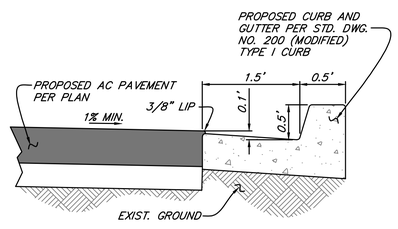

CURB & GUTTER

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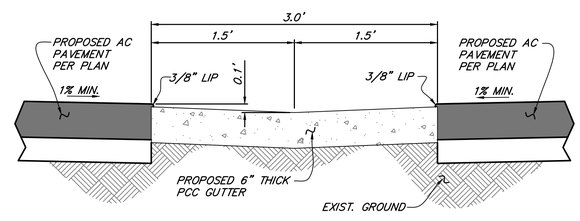

RIBBON GUTTER

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BUSINESS TAX CERTIFICATE NO. 107994 EXP. 6-30-20

SEAL: REGISTERED PROFESSIONAL ENGINEER DANE A. SOMMERS No. 90433 Exp. 9-30-21 CIVIL STATE OF CALIFORNIA

PREPARED BY:

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SCALE: NOT TO SCALE

DATE: MAY 2020

CITY OF RIVERSIDE

SECTIONS AND DETAILS
CRESTVIEW APARTMENTS

6 OF 6 SHEETS

Appendix 3: Soils Information

Geotechnical Study and Other Infiltration Testing Data

ALBUS-KEEFE & ASSOCIATES, INC.
GEOTECHNICAL CONSULTANTS

December 11, 2007
J.N.: 1566.00

Mr. Alex Gill
TCRSC Development LP
949 South Coast Drive, Suite 400
Costa Mesa, California 92626

Subject: **"Revised" Preliminary Geotechnical Investigation, Proposed Apartment Complex, Tract 34946 (Alexan Cityscape Project), City of Riverside, California.**

Dear Mr. Gill:

Albus-Keefe & Associates, Inc. is pleased to present to you our "revised" preliminary geotechnical investigation report for the subject site. This report presents the results of our review of available aerial photographs, geologic literature, previous geotechnical reports for the site and nearby vicinity, subsurface exploration, laboratory testing, engineering and geologic analyses, and conclusions and recommendations pertaining to the proposed site development. The report was revised from our originally dated report of June 15, 2007 due to some minor modifications in the proposed site development plans.

We appreciate this opportunity to be of service to you. If you should have any questions regarding the contents of this report, please do not hesitate to call our office.

Sincerely yours,

ALBUS-KEEFE & ASSOCIATES, INC.

Michael Putt
Project Engineering Geologist

Distribution: (6) Addressee

1011 North Armando Street, Anaheim CA 92806-2606 (714) 630-1626 FAX (714) 630-1916

TABLE OF CONTENTS

REPORT

1.0 INTRODUCTION **1**
1.1 PURPOSE AND SCOPE 1
1.2 PROPOSED DEVELOPMENT 1
1.3 SITE LOCATION AND DESCRIPTION 2
2.0 INVESTIGATION **4**
2.1 RESEARCH 4
2.1.1 General 4
2.1.2 Previous Site Use and History 4
2.1.3 Previous Geotechnical Studies 4
2.2 GEOLOGIC MAPPING 5
2.3 SUBSURFACE EXPLORATION 5
2.4 SEISMIC REFRACTION SURVEY 5
2.5 LABORATORY TESTING 5
3.0 SUBSURFACE CONDITIONS **5**
3.1 GEOLOGIC UNITS 5
3.2 GEOLOGIC UNITS 6
3.2.1 Artificial Fill (Qaf) 6
3.2.2 Topsoil (no map symbol) 6
3.2.3 Alluvium (Qal) 6
3.2.4 Bedrock; Granitic Rock (Kgr) 6
3.3 JOINTING 6
3.4 FAULTING 7
3.5 LANDSLIDES 7
3.6 GROUNDWATER 7
4.0 ANALYSES **7**
4.1 SEISMICITY 7
4.2 SETTLEMENT 8
5.0 CONCLUSIONS **9**
5.1 FEASIBILITY OF PROPOSED DEVELOPMENT 9
5.2 SEISMIC HAZARDS 9
5.2.1 Ground Rupture 9
5.2.2 Ground Shaking 9
5.2.3 Liquefaction 9
5.2.4 Seiche and Tsunami 10
5.3 SLOPE STABILITY 10
5.4 SETTLEMENT 10
5.5 GROUNDWATER 10
5.6 SHRINKAGE AND SUBSIDENCE 10
5.7 EXCAVATION AND MATERIAL CHARACTERISTICS 11
6.0 RECOMMENDATIONS **11**
6.1 EARTHWORK 11
6.1.1 General Earthwork and Grading Specifications 11
6.1.2 Pre-Grade Meeting and Geotechnical Observation 12
6.1.3 Site Clearing 12

TABLE OF CONTENTS

REPORT

6.1.4 Ground Preparation 12
6.1.5 Geometry of Bedrock/Fill Contact 12
6.1.6 Building Pad Capping 12
6.1.7 Street Capping 13
6.1.8 Temporary Excavations 13
6.1.9 Scarification 13
6.1.10 Canyon Subdrains 13
6.1.11 Fill Materials and Placement 14
6.1.12 Over-sized Materials 14
6.1.13 Fill Slopes 14
6.1.14 Cut Slopes 15
6.1.15 Stabilization Fills 15
6.1.16 Slope Backdrain 15
6.1.17 Rock Fall Protection During Rough Grading 15
6.1.18 Import Material 15
6.1.19 Settlement Monitoring 16
6.2 SEISMIC DESIGN PARAMETERS 16
6.3 PRELIMINARY CONVENTIONAL FOUNDATION RECOMMENDATIONS 16
6.3.1 General 16
6.3.2 Soil Expansion 17
6.3.3 Settlement Considerations 17
6.3.4 Allowable Bearing Value 17
6.3.5 Lateral Resistance 17
6.3.6 Footings Dimensions and Reinforcement 17
6.3.7 Slabs on Grade 18
6.3.8 Footing Observations 18
6.4 RETAINING WALLS 18
6.4.1 General 18
6.4.2 Bearing Capacity, Lateral Bearing, and Reinforcement 19
6.4.3 Earth Pressures 19
6.4.4 Drainage and Moisture-Proofing 19
6.4.5 Retaining Wall Backfill 20
6.5 SEGMENTAL RETAINING WALL 20
6.6 SETBACK FROM SLOPES 20
6.7 EXTERIOR FLATWORK 20
6.8 CORROSION POTENTIAL 21
6.9 POST GRADING CONSIDERATIONS 21
6.9.1 Site Drainage 21
6.9.2 Utility Trenches 21
6.9.3 Irrigation Considerations 22
6.10 SLOPE MAINTENANCE 22
6.11 PRELIMINARY PAVEMENT RECOMMENDATIONS 22
6.12 PLAN REVIEW AND ADDITIONAL GEOTECHNICAL SERVICES 23
7.0 LIMITATIONS 24

TABLE OF CONTENTS

REPORT

REFERENCES 25

FIGURES AND PLATES

Figure 1 - Site Location Map
Plate 1 - Geologic Map (pocket enclosure)

APPENDICES

APPENDIX A - Exploratory Trench Logs

APPENDIX B - Seismic Refraction Survey

APPENDIX C - Laboratory Test Program

APPENDIX D - Exploratory Trench Logs & Laboratory Test Results By John R. Byerly, Inc.

APPENDIX E - Standard Grading Details
Plates E-1 through E-10

1.0 INTRODUCTION

1.1 PURPOSE AND SCOPE

The purposes of this investigation were to identify and evaluate the geotechnical conditions within the project area, to evaluate engineering characteristics of site earth materials, and to provide conclusions and geotechnical recommendations relevant to general site development as indicated on the referenced preliminary grading plans.

The scope of this investigation included the following:

- Review of published geologic and seismic data for the site
- Review of the referenced geotechnical reports for the site and vicinity
- Review of the referenced Preliminary Grading Plan
- Review of available aerial photographs for the site and surrounding areas
- Geologic mapping
- Exploratory trenching and sampling
- Seismic refraction survey
- Laboratory testing
- Engineering and geologic analyses of data
- Preparation of this report.

1.2 PROPOSED DEVELOPMENT

Based on our discussions with the project civil engineer and our review of the referenced preliminary grading plans, the site will be developed to accommodate 9 apartment buildings, a recreation building with swimming pool, detached garages, covered parking bays, and associated interior driveways and parking lots. The proposed development will also include concrete walkways and open space/landscaped areas. Underground storm water recharge chambers are proposed beneath the center of the site under the park area "Village Green" and in the southwest corner of the site under the other amenity.

Rough grading of the site will consist of cuts and fills up to approximately 25 feet and 20 feet, respectively. Cut slopes are proposed at a maximum gradient of 1 to 1 (H:V) to a maximum height of approximately 45 feet. Fill slopes are proposed at a maximum gradient of 2 to 1 (H:V) to a maximum height of approximately 46 feet. Grading will also require the construction of retaining

walls up to a maximum height of approximately 18 feet to achieve proposed design grades. Some of the walls, based on discussion with the project civil engineer, may be deigned as segmental walls.

Details of the proposed apartment structures are not known at this time. We anticipate that the proposed structures will consist of two- to three-story, wood-framed structures with tuck under garages yielding relatively light to moderate structural loads. We have assumed that maximum column loads (D.L. + L.L.) will not exceed 100 kips and wall loads (D.L. + L.L.) will not exceed 8 kips per linear foot. The opinions and geotechnical recommendations presented herein are preliminary and subject to revision when actual design structural loads become available.

1.3 SITE LOCATION AND DESCRIPTION

The site is located at the northwest corner of Central Avenue and the proposed realigned Sycamore Canyon Boulevard, within the city of Riverside, California. The location of the site and its relationship to the surrounding areas are shown on Figure 1, Site Location Map.

The site is roughly triangular in shape and encompasses roughly 9.45 acres of vacant land that had been previously graded to a large super pad. The site is bounded by Central Avenue to the south, by undeveloped land to the west and by the proposed realigned Sycamore Canyon Boulevard to the north and east.

Topography within the majority of the site is gently inclined toward the southwest. Graded 2:1 (H:V) fill slopes up to a maximum height of approximately 45 feet are present along the southerly and southwesterly margins of the site. A manufactured 1.5:1 (H:V) cut slope up to a maximum height of approximately 35 feet is present along the northwesterly margin of the site . Numerous boulder-size rocks are scattered over most of the site, particularly in the westerly half of the property. Prior to site development, the site topography was dominated by two small hills, one in the northwest corner of the site and one in the center. Two southwest draining canyons extended between the two hills and along the southerly margin of the site, adjacent Central Avenue. The two canyons merged into a major southeast draining canyon at the southwest corner of the site.

Existing site improvement consists of a 30-inch diameter storm drain extending diagonally (southwest-northeast) beneath the property. The storm drain discharges into the canyon at the southwest corner of the site. We understand that the existing storm drain will be abandoned and removed during future site development.

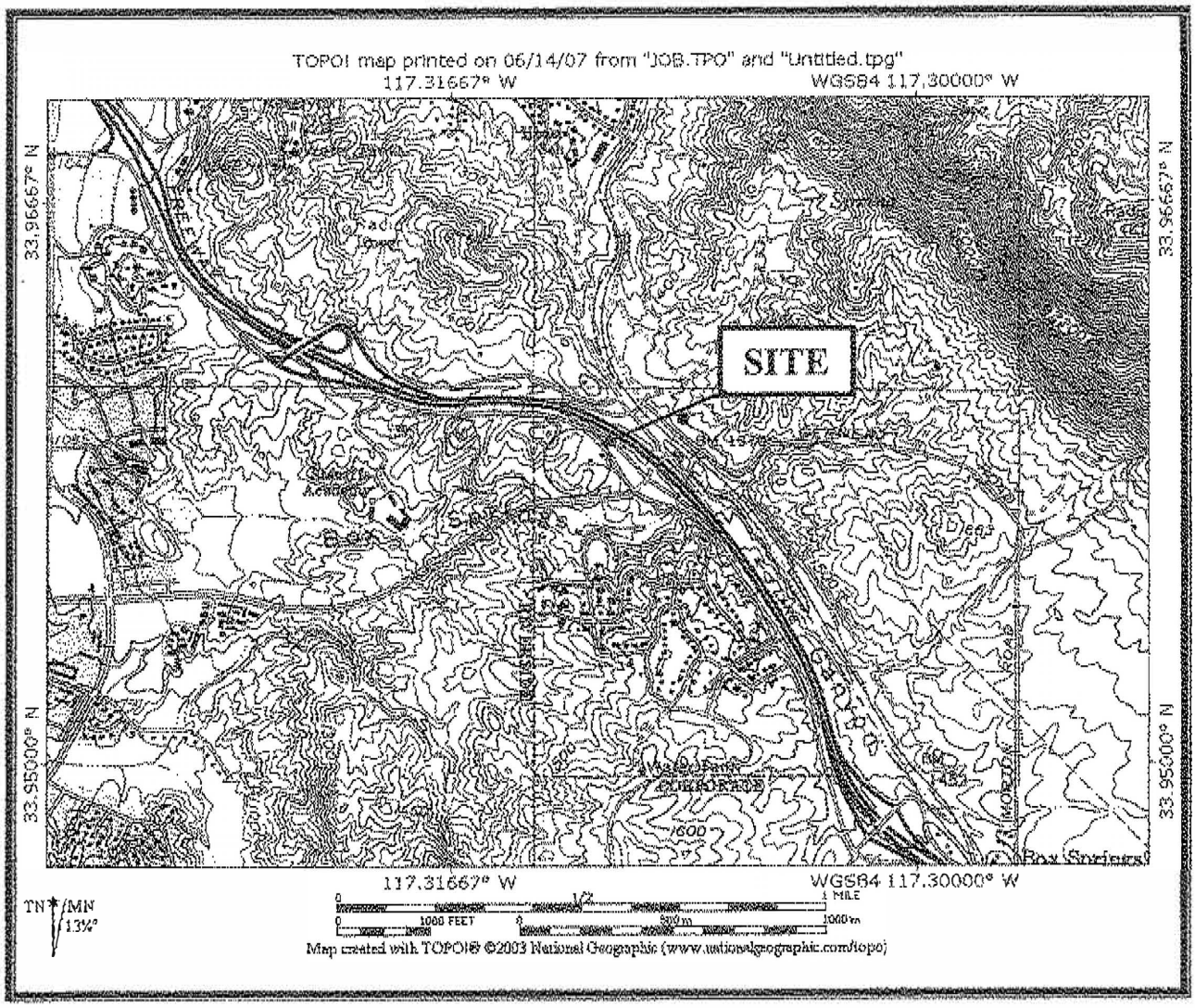

FIGURE 1 – SITE LOCATION MAP

TCRSC Development LP
Northwest Corner of Sycamore Canyon Boulevard and Central Avenue
Riverside, California

From USGS 7.5 Minute Riverside East Quadrangle
1967 (photo revised 1980)

2.0 INVESTIGATION

2.1 RESEARCH

2.1.1 General

We have reviewed available geologic publications, aerial photographs, and maps for the site and nearby vicinity (see references). We have also reviewed the referenced geotechnical reports provided to us. Pertinent data from these sources were utilized in developing some of the findings and conclusions presented herein.

2.1.2 Previous Site Use and History

Based on our review, the site was initially utilized for rural residential use as far back as 1949. Several structures, presumably residential structures, were present on the hillside in the central northeasterly margin of the site. Between April 1995 and April 1996, the residential structures were removed and the site was graded to its current configuration. The subject grading generally involved the placement of up to approximately 45 feet of fills with very high percentage of rocks in the canyon areas and cuts of up to approximately 45 feet on the hilltops. The grading also involved cut and fill slope construction. Hi Desert Testing & Inspection (HDTI) was reportedly the Soils Engineer of record during the subject grading. In a letter dated August 29, 1997, HDTI reports that the grading was not completed per the approved plans and they have not certified any portion of the work due to circumstances beyond their control.

2.1.3 Previous Geotechnical Studies

John R. Byerly Incorporated (JBI) completed a geotechnical investigation for a proposed retail center at the subject property on November 10, 1997, following the site grading. Their investigation consisted of excavating 7 exploratory test pits using a tractor mounted backhoe to a maximum depth of 16.5 feet below the existing ground surface (bgs), laboratory testing of selected soil samples obtained from subsurface exploration, and engineering analyses. JBI reported that artificial fills beneath the site posses variable densities with relative compaction ranging from 71% to 99% of the laboratory determined maximum dry density and the fills contain unsuitable debris, oversized materials and large voids between rock fragments. The underlying alluvial and residual soils were also found to be loose, porous and compressible. JBI concluded in their report that the fill materials and underlying alluvial and residual soils on the site were unsuitable to support structural improvements and recommended removal of these materials. Logs of the exploratory trenches and results of laboratory testing by JBI are presented in Appendix D of this report.

As presented in the JBI report, Leighton and Associates completed two geotechnical reports for the site prior to the site being graded. These reports include a Geotechnical Evaluation report completed on December 28, 1987, and a Geotechnical Review of Grading Plan and Slope Stability Analysis report completed on July 16, 1990. These reports, however, were not available for our review and data from these reports were not provided in the JBI report.

2.2 GEOLOGIC MAPPING

Geologic mapping of the site and adjacent areas was performed by our engineering geologist in November 2006. The purpose of our geologic mapping was to field check the referenced geologic data, identify the surficial distribution of geologic units, map geologic structures (jointing) and identify site improvements. The data from the mapping was used to aid our subsurface exploration program. Information derived from our mapping is shown on the Geologic Map, Plate 1.

2.3 SUBSURFACE EXPLORATION

Subsurface exploration within the site was conducted on November 17, 2006, and consisted of excavating 11 exploratory trenches up to 33 feet in depth utilizing a track mounted excavator (Cat 245). The primary purpose of this work was to assist in evaluating the distribution and engineering characteristics of the earth materials near the surface of the site. The exploratory trench excavations were logged by our engineering geologists. Visual and tactile identifications were made of the materials encountered. The exploratory trench logs are presented in Appendix A. The approximate locations of the exploratory trench excavations are shown on the enclosed Geologic Map, Plate 1. The exploratory trench excavations were loosely backfilled with spoils upon completion.

2.4 SEISMIC REFRACTION SURVEY

In conjunction with our subsurface exploration, a seismic refraction survey was conducted within selected cut portions of the site. The seismic refraction survey, which consisted of five seismic traverses (S-1 through S-5), was performed at our direction by Terra Geosciences. The approximate locations of the survey lines are shown on the enclosed Geologic Map, Plate 1. The seismic refraction profiles are presented in Appendix B.

2.5 LABORATORY TESTING

Selected samples of representative earth materials within the site were returned to the laboratory for testing. Tests consisted of maximum dry density and optimum moisture content, expansion index, direct shear strength, soluble sulfate, and corrosion (pH, minimum resistivity and chloride content). A description of laboratory test criteria and a summary of the test data are presented in Appendix C.

3.0 SUBSURFACE CONDITIONS

3.1 GEOLOGIC UNITS

Based on our subsurface exploration and review of the referenced geotechnical report by JBI, the subject site is underlain by artificial fill materials, topsoil, alluvium, and granitic bedrock. The approximate surficial distributions of the geologic units are illustrated on the enclosed Geologic Map, Plate 1. Detailed descriptions of each of the units are provided in the following section.

3.2 GEOLOGIC UNITS

3.2.1 Artificial Fill (Qaf)

Artificial fill materials associated with previous site grading are present beneath most the site. These fills are generally comprised of locally derived brown to reddish brown fine to coarse grained silty sands and sands that were observed to be dry to damp and loose. Significant quantities of boulders up to 11 feet in diameters, concrete debris up to 5 feet in diameters, and other assorted construction debris were also observed in the fills. The boulders and concrete debris were typically nested and contained large voids. The thickness of the artificial fills observed in our exploratory trenches generally varied from 1 foot to 33 feet. However, the fills may reach depths of as much as 45 feet within the southerly portions of the site. Only those fills of significant thickness and/or extent are indicated on the enclosed Geologic Map, Plate 1. Local stockpiles and boulders on the surface of the site may not be included.

3.2.2 Topsoil (no map symbol)

Topsoil materials locally mantle the bedrock on the natural slopes within and adjacent the site. Topsoil materials were also encountered beneath the fills in two of the exploratory trenches. The topsoil materials generally consist of brown to reddish brown, fine- to coarse-grained silty sands with trace amounts of gravel. These materials are generally dry to moist, loose, and porous. The thickness of the topsoil varies from as little as 6 inches to as much as 4 feet.

3.2.3 Alluvium (Qal)

Alluvial soils were mapped in the bottom of the canyon in the far southwesterly corner of the site as well as mapped in the northeast central margin of the site. They were also encountered beneath the fills in some of the exploratory trenches in the vicinity of the old drainages. The alluvial soils generally consist of brown to reddish brown fine- to coarse-grained silty sands that were observed to be damp to moist, loose to medium dense and porous. The thickness of the alluvial soils encountered generally varied from 4 feet to 13 feet.

3.2.4 Bedrock; Granitic Rock (Kgr)

Cretaceous-age, granitic bedrock underlies the entire site and is exposed on the natural hillsides and cut areas within and adjacent the site. The granitic bedrock is generally gray brown in color, very coarse grained, dry to damp, moderately hard to very hard, and moderately weathered.

3.3 JOINTING

Joints were mapped in the granitic bedrock along the base of the existing cut slope in the northwest corner of the site. The joint attitudes generally strike northeast and east-west and dip at high angles. The joint orientations are indicated on the enclosed Geologic Map, Plate 1

3.4 FAULTING

Evidence of active faulting within and adjacent the site was not observed during this investigation. Based on our review of the referenced publications and seismic data, no active faults are known to project through the site and the site does not lie within an "Earthquake Fault Zone" as defined by the State of California in the Alquist-Priolo Earthquake Fault Zoning Act.

3.5 LANDSLIDES

No evidence of landslides was observed during our investigation.

3.6 GROUNDWATER

Groundwater was not encountered in our exploratory excavations to the depths explored.

4.0 ANALYSES

4.1 SEISMICITY

We have performed integrated historical and deterministic seismic analyses utilizing computer programs *EQSEARCH* (Blake, 1989, updated 2004), *EQFAULT* (Blake, 1989, updated 2002), and UBCSEIS (Blake, 1989, updated 2000). A brief description of the programs and their functions are discussed below:

EQSEARCH performs historical seismic analyses that computes estimated ground motions at the site using a catalog of historical earthquake data within a 62-mile (100-km) radius of the site and a selected attenuation relation to model subsurface earth materials similar to the site. The results of analyses can be utilized to estimate how historical earthquakes may have shaken the site.

EQFAULT performs a deterministic seismic analysis that computes estimated ground motion of the site using a selected attenuation relation to model earth materials similar to the site and a catalog of up to 222 digitized, 3-D California faults as earthquake sources within a 62-mile (100-km) radius of the site. The results of analyses can deterministically estimate how future earthquakes may shake the site.

UBCSEIS performs an analysis to compute the distance to California faults. The program indicates the type of fault as classified in the 1997 UBC and develops the UBC seismic design parameters based on the selected soil profile type.

Pertinent results from the historical and deterministic seismic hazard analyses are provided below:

Historical Event: Based on the computer program EQSEARCH, the earthquake that occurred on July 23, 1923, appears to have affected the site the most during the past 205 years. This earthquake was located approximately 4.5 miles (7.3 km) from the site and was estimated to have a magnitude of 6.3. Peak horizontal ground accelerations (PHGA) were estimated for the historical earthquake

using the Bozorgnia, Campbell and Niazi attenuation equation (1999) for alluvium sites. The largest estimated mean PHGA experienced at the site since 1800 was 0.34g (fraction of gravity) with a standard deviation of 0.23g.

Deterministic Event: Based on the computer program EQFAULT and using Bozorgnia, Campbell and Niazi attenuation equation (1999) for alluvium sites, the largest estimated mean PHGA is 0.37g with a standard deviation of 0.25g, associated with a moment magnitude 6.9 earthquake along the San Jacinto Valley segment of the San Jacinto Fault.

UBC Faults: Based on the computer program UBCSEIS, the closest Type A fault is the southern segment of the San Andreas Fault located approximately 15.2 miles (24.5 km) from the site and the closest Type B fault is the San Jacinto – San Bernardino Fault located approximately 5.3 miles (8.6 km) from the site.

4.2 SETTLEMENT

Based on our subsurface exploration, laboratory testing and previous experience with similar projects, the existing artificial fill, topsoil and alluvium would undergo significant settlement due to the weight of new fills and introduction of water. If these materials are left in place, we estimate total settlement will beyond the tolerable limits of the proposed structures.

Engineering analyses were performed to evaluate settlement potential of compacted fills. The fill is assumed to only undergo secondary compression shortly after finish grades are achieved. Since the fill soils are placed in a partially saturated state, they would not follow the classic consolidation theory whereby excess pore water pressure is expelled to cause consolidation. Instead, primary settlement is primarily dictated by the compression and/or expulsion of air from the pore space, which can be assumed to happen instantaneously as subsequent layers of fill are placed above. By the time the entire fill is placed to grade, only secondary compression remains. The rate of secondary compression, $C\alpha$, was estimated using the correlations of natural water content to coefficient of secondary consolidation presented in NAVFAC 7.1-237. Using "natural" water content of the fill equal to 8% to 10%, we obtain a $C\alpha$ equals to 0.0016. Using this coefficient, the maximum magnitude of secondary settlement for 55 feet of fill (the anticipated maximum fill thickness plus remedial grading) is estimated to be a total of 1.3 inches.

The underlying fill contact is not anticipated to exceed a slope ratio of approximately 1.5 to 1 (H:V) within the areas underlain by bedrock. Ignoring the three dimensional effects of canyon fills, differential settlement was estimated using the same approach as above to calculate the total settlement at a point located at the top of the canyon flank and comparing that value to the center of the canyon. On this basis, we calculated a differential secondary settlement of 0.48 inches over a horizontal distance of 30 feet. Both total and secondary settlement estimates are based on a 50-year life span.

5.0 CONCLUSIONS

5.1 FEASIBILITY OF PROPOSED DEVELOPMENT

From a geotechnical point of view, the proposed site development is considered feasible provided the recommendations presented in this report are incorporated into the design and construction of the project.

5.2 SEISMIC HAZARDS

5.2.1 Ground Rupture

No active faults are known to project through the site nor does the site lie within the bounds of an "Earthquake Fault Zone" as defined by the State of California in the Alquist-Priolo Earthquake Fault Zoning Act. The potential for ground rupture due to an earthquake beneath the site is considered very small.

5.2.2 Ground Shaking

The site is situated in a seismically active area that has historically been affected by generally moderate to occasionally high levels of ground motion. Due to the site's close proximity to several active faults, the proposed development will probably experience similar moderate to occasionally high ground shaking from these faults as well as some background shaking from other seismically active areas of the southern California region. Design in accordance with current CBC requirements is considered suitable to mitigate the effects of ground shaking.

5.2.3 Liquefaction

Generally three basic factors must exist concurrently in order for liquefaction to occur. These factors include:

- A source of ground shaking, such as an earthquake, capable of generating soil mass distortions.
- A relatively loose silty and/or sandy soil.
- A relative shallow groundwater table (within approximately 50 feet below ground surface) or completely saturated soil conditions that will allow positive pore pressure generation.

The liquefaction susceptibility of the onsite subsurface soils was evaluated by analyzing the potential concurrent occurrence of the above-mentioned three basic factors. The liquefaction evaluation for this site was completed under the guidance of Special Publication 117: Guidelines for Evaluating and Mitigating Seismic Hazards in California (CDMG, 1997).

Provided rough grading is performed in accordance with the recommendations presented herein, the site will be underlain by compacted artificial fill and granitic bedrock. Therefore, the potential for liquefaction at the site is considered very small.

5.2.4 Seiche and Tsunami

The site is located a substantial distance from significant body of water and is elevated more than 1300 feet above mean sea level. As such, the potential for hazards related to seiche and tsunami is nil.

5.3 SLOPE STABILITY

A cut slope is proposed at a maximum slope ratio of 1:1 (H:V) to a maximum height of approximately 45 feet within the northwesterly corner of the site. The cut slope is expected to expose granitic bedrock and is generally not anticipated to expose adversely-oriented geologic structure. Considering the typical strength values of in-place granitic bedrock and the anticipated favorable orientations of geologic structure in the bedrock, the proposed cut slope is anticipated to be grossly stable under static and pseudo-static conditions. However, during construction, local portions of the bedrock in the slope may become disturbed and may require stabilization by means of rock anchors or other acceptable alternatives as discussed in Section 6.1.15.

Fill slopes are proposed at a maximum gradient of 2 to 1 (H:V) and at a maximum height of 46 feet. Based on our experience with similar sites, proposed fill slopes are anticipated to be grossly stable under static and pseudo-static conditions. However, significant portions of site materials are relatively cohesionless. As such, fill slopes may be prone to erosion during periods of rain. This condition can be mitigated by the use of surface stabilizing methods. Specific recommendations are provided in Section 6.9.

5.4 SETTLEMENT

Based on the anticipated foundation loads and provided rough grading will be performed in accordance with the recommendations presented herein, differential settlement of proposed structures is not anticipated to exceed ½-inch over 30 feet. The estimated magnitude of differential settlement is considered within tolerable limits for the proposed structures.

5.5 GROUNDWATER

Adverse effects from groundwater or seepage are not anticipated at the subject site provided that future surface water is controlled to limit excessive subsurface infiltration from irrigation or concentrated runoff.

5.6 SHRINKAGE AND SUBSIDENCE

Volumetric changes in earth quantities will occur when excavated onsite soil materials are replaced as properly compacted fill. We estimate that the artificial fills, topsoil, and alluvium will shrink approximately 5% to 25%, whereas the granitic bedrock is estimated to bulk approximately 10% to 20%. Subsidence from scarification and recompaction of exposed surfaces is estimated to be negligible.

The estimates of shrinkage and subsidence are intended as an aid for project engineers in determining earthwork quantities. However, these estimates should be used with some caution since they are not absolute values and that these values can be significantly impacted by the grading contractors method of operations. Contingencies should be made for balancing earthwork quantities based on actual shrinkage and subsidence that occurs during the grading process.

5.7 EXCAVATION AND MATERIAL CHARACTERISTICS

The artificial fills, topsoil, alluvium are anticipated to be relatively easy to excavate with conventional heavy earthmoving equipment. However, the artificial fill materials contain a significant amount of boulder size rocks and construction debris. As such, rock trucks and excavators will likely be required to excavate these materials.

Based on the results of our rippability study, cuts that will encounter intact granitic bedrock materials should generally be rippable with heavy earth moving equipment to depths varying from 5 to 15 feet below the current ground surface. Excavations in the lower undisturbed portions of the granitic bedrock, however, will likely be more difficult to excavate and may require heavy ripping with a single-shank Caterpillar D-9 or D-10 dozer (or equivalent). Very hard core stones (boulder-like inclusions) are common in granitic bedrock and will likely be encountered locally. Heavy ripping with a D-11 dozer (or equivalent) and/or the use of high-impact pneumatic rock breaking equipment should be anticipated where hard core stones are encountered. Future trenching in the granitic bedrock materials for underground improvements may also require an excavator with a hydraulic ram (or equivalent). As an alternative, very hard bedrock materials could be blasted to facilitate excavation. Blasting options should be thoroughly assessed by a licensed blasting and demolition contractor.

Oversize rocks (>12") are currently present on the ground surface and excavations in the artificial fill materials and granitic bedrock are also expected to generate significant amount oversize rocks as well as some concrete debris. Special handling of oversize materials will be required during future site development. In general, materials between 12 inches and 36 inches in diameter should be reduced in size or placed within engineered fills at least 10 feet below proposed pad grades or at least 18 inches below deepest utilities within streets. Materials greater than 3 feet in diameter that cannot be reduced in size should be removed from the site.

6.0 RECOMMENDATIONS

6.1 EARTHWORK

6.1.1 General Earthwork and Grading Specifications

All earthwork and grading should be performed in accordance with all applicable requirements of CAL OSHA and the Grading Code of the City of Riverside, California, in addition to recommendations presented herein.

6.1.2 Pre-Grade Meeting and Geotechnical Observation

Prior to commencement of grading, we recommend a meeting be held between the owner, City Inspector, grading contractor, civil engineer, and geotechnical consultant to discuss proposed work and logistics. We also recommend that a geotechnical consultant be retained to provide soil engineering and engineering geologic services during site grading. This is to observe compliance with the design specifications or recommendations, and to allow design changes in the event that subsurface conditions differ from those anticipated prior to the start of construction. If conditions are encountered during construction that appears to be different than those indicated in this report, the project geotechnical consultant should be notified immediately. Design and construction revisions may be required.

6.1.3 Site Clearing

All vegetation and deleterious materials including the existing storm drain should be removed from the site. The project geotechnical consultant should be notified at the appropriate times to provide observation services during clearing operations to verify compliance with the above recommendations. Voids created by clearing should be left open for observation by the geotechnical consultant. Should any unusual soil conditions or subsurface structures be encountered during site clearing and/or grading that are not described or anticipated herein, these conditions should be brought to the immediate attention of the project geotechnical consultant for corrective recommendations.

6.1.4 Ground Preparation

All existing exploratory trench backfill, artificial fill, topsoil, and alluvium are considered unsuitable for support of proposed structural fills and site development. These materials should be removed through excavation or benching to expose competent granitic bedrock. *Where removals are limited due to property line constraints, temporary shoring, pre-designed slot cuts or other acceptable measures may be required.* Estimated depths of unsuitable materials, based on subsurface exploration and our review, are indicated on the Geologic Map, Plate 1.

All removal excavations should be evaluated by the geotechnical consultant during grading to confirm the exposed conditions are as anticipated and to provide supplemental recommendations if required.

6.1.5 Geometry of Bedrock/Fill Contact

To mitigate excessive differential settlement, the overall geometry of the bedrock/fill contact should be no steeper than 1.5 to 1 (H:V). Locally steeper gradients can be allowed provided the local over-steepened condition is no more than 15 feet vertically and the overall gradient of 1.5 to 1 is not exceeded. If steeper overall gradients are created, the area may require a waiting period to obtain a tolerable long-term differential settlement.

6.1.6 Building Pad Capping

Building pads exposing granitic bedrock cut and/or shallow fill conditions should be overexcavated to a depth of 5 feet below final pad grade or at least 3 feet below bottom of footing, whichever is deeper, and replaced with a fill blanket. The overexcavation should extend at least 5 feet beyond the

perimeter building footings and the overexcavation bottom should slope at a minimum 2% toward the deeper fill portion of the building pad or to the direction recommended by the geotechnical consultant. Typical lot capping details are provided on Plates E-1 and E-2 in Appendix E.

6.1.7 Street Capping

Granitic bedrock materials exposed within the streets could be very difficult to impossible to trench with conventional backhoe equipment for the installation of future underground improvements. Therefore, we recommend the cut and shallow fill portions of the future streets be overexcavated at least 18 inches below the invert of the deepest utility line where hard rock is encountered. The overexcavation should also consider future utility hook-ups to residences and any utilities behind curb. A typical street capping detail is provided on Plate E-3 in Appendix E.

6.1.8 Temporary Excavations

Temporary excavations in soil materials, including trench excavations and retaining wall backcuts, may be cut vertically up to a height of 4 feet provided that no adverse geologic conditions or surcharging of the excavations are present. Temporary excavations in soil materials that are greater than 4 feet but less than 15 feet in height should be laid back at a maximum gradient of 1:1 (H: V). If temporary excavations greater than 15 feet in depth are required in soil materials, the project geotechnical consultant should provide specific recommendations based on proposed work and site conditions.

Temporary excavations in bedrock materials may be cut vertically up to a height of 10 feet provided that no adverse geologic conditions or surcharging of the excavations are present. Temporary excavations in bedrock materials that are greater than 10 feet in height should be laid back at a maximum gradient of 1/2:1 (H:V). If cuts in bedrock create a rock fall hazard for workers, the excavation should be laid back as recommended by the project engineering geologist or soil engineer.

The project geologist or soil engineer should observe all temporary cuts to confirm that conditions are as anticipated herein and to provide specific recommendations in the event conditions differ. All temporary excavations should conform to the requirements of CAL OSHA.

6.1.9 Scarification

Prior to placement of compacted fill, the prepared ground should be scarified where practical to a depth of 6 inches, brought to a uniform moisture content of 100 to 125 percent of optimum, then compacted to at least 90 percent of the laboratory standard. If the ground surface exposes rock that has been disturbed and contains voids, a 6-inch layer of granular soil should be placed over the ground surface and flooded until the voids are filled.

6.1.10 Canyon Subdrains

Subdrains should be installed within all significant drainage courses following removals. The subdrains should consist of a 6-inch-diameter PVC schedule 40 perforated pipe or 8-inch-diameter PVC schedule 40 perforated pipe when over 500 feet in length. The pipe should be embedded in 9 cubic feet per linear foot of 3/4-inch gravel wrapped in Mirafi 140N, or equivalent. The subdrain, where possible, should be placed on the bottom of the cleanout area. Within the lower portions of

the drainage course, the subdrain may be placed on a bench in the sidewall of the canyon, above the cleanout bottom, to permit the subdrain to daylight. The subdrain should be set to drain generally at a minimum gradient of 1 percent. The outlets should consist of similar solid pipe and should daylight approximately 2 feet above the toe of slope or into a storm drain device. Tentative canyon subdrain locations are indicated on the enclosed Geologic Map, Plate 1. The actual locations of the canyons subdrains will be determined in the field by the geotechnical consultant during rough grading. A typical canyon subdrain detail is provided on Plate E-4 in Appendix E.

6.1.11 Fill Materials and Placement

In general, materials excavated from the site may be used as fill provided they are free of deleterious materials and rocks greater than 12 inches in maximum dimension. *Within the* upper *5 feet of building pads, the fill material should not contain rocks greater than 6 inches in maximum dimension.* Rock size criteria for fill materials to be placed within street undercut sections or within influence of future underground utilities should also be evaluated to avoid costly screening and/or importing of future trench backfill materials.

Fill materials should be placed in lifts no greater than approximately 8 inches in thickness. The fills should contain sufficient finer granular materials to eliminate nesting of rock fragments as recommended by the geotechnical consultant during grading. Each lift should be watered or air dried as necessary to achieve a uniform moisture content of 100 to 125 percent of optimum, and then compacted in place to at least 90 percent of the laboratory standard. *Where fills are placed below a depth of 50 feet from finish grade, fills should be compacted to at least 95 percent of the laboratory standard.* Each lift should be treated in a similar manner. Each lift should be treated in a similar manner. Subsequent lifts should not be placed until the project geotechnical consultant has approved the preceding lift. Lifts should be maintained relatively level and should not exceed a gradient of 20 to 1 (H:V). When placing fill on ground sloping steeper than 5:1 (H:V), vertical benches should be excavated into the adjacent slope. Typical benching details are provided on Plates E-5 and E-6, in Appendix E.

The laboratory standard for maximum dry density and optimum moisture content for each soil type should be determined in accordance with ASTM D 1557-02.

6.1.12 Over-sized Materials

Rocks over 12 inches in diameter should be reduced in size, where practical, and incorporated within the fill materials provided they are mixed with granular materials and spread throughout the fill to eliminate nesting. Rocks greater than 12 inches but less than 3 feet in diameter may be placed within engineered fills at least 10 feet below proposed grades as well as at least 18 inches below deepest utilities within streets, as presented on Plate E-7 in Appendix E. Rocks greater than 3 feet in diameter that cannot be reduced in size should be removed from the site.

6.1.13 Fill Slopes

Fill slopes (fill over natural slopes, fill over cut slopes) should be constructed with a keyway having a minimum width of 15 feet and a minimum embedment of 2 feet into competent bedrock. Details for fill slope construction are presented on Plate E-5 in Appendix E.

Where practical, fill slopes should be constructed by over filling and trimming to a compacted core. The face of slopes that are not over-built should be backrolled with a sheepsfoot roller at least every 4 vertical feet of slope construction. The process should provide compacted fill to within 12 inches of the slope face. Finished slopes should be track-walked with a small dozer in order to compact the slope face. The slope face materials will tend to dry out prior to final face compaction. As such, the addition of water to the slope face will likely be required prior to compaction to achieve the required degree of compaction at the time of slope face compaction.

6.1.14 Cut Slopes

Cut slopes should be cleared of loose rock fragments and inspected at intervals not exceeding 10 feet during grading by an engineering geologist, to evaluate the competency of the slope. Heavy ripping should be designed in a manner as to minimize disturbing the bedrock below proposed slope grades. Disturbed bedrock or core stones exposed in the cut slope that pose a rock fall hazard will require stabilization by means of rock anchors and /or flexible high tensile steel wire netting or other acceptable alternatives. Containment fencing and/or debris wall will also likely be required along the toe of the proposed cut slope to contain debris. Specific recommendations to mitigate slope instabilities and catchment structures should be provided by the geotechnical consultant based on conditions exposed during rough grading.

6.1.15 Stabilization Fills

Cut slopes exposing rock that pose a rock fall hazard and cannot be locally mitigated as discussed in Section 6.1.14 may require replacement with stabilization fill slopes. Cut slopes exposing bedrock will also be very difficult to landscape. If desired, such slopes could also be replaced with stabilization fills. General details for stabilization fill slope construction are presented on Plate E-6 in Appendix E. However, specific recommendations should be provided by the geotechnical consultant during grading depending on the actual conditions exposed.

6.1.16 Slope Backdrain

Slope backdrain is generally recommended in all fill key excavations and stabilization fill slopes. The locations and necessity of the slope backdrain should be determined by the project geotechnical consultant in the field during rough grading. General details for slope backdrain are presented on Plate E-8 in Appendix E.

6.1.17 Rock Fall Protection During Rough Grading

Rough grading along the hilltops may result in potential rock fall hazards. Special precautions such as fencing or other acceptable measures should be taken to mitigate rock falls during rough grading.

6.1.18 Import Material

If earth materials are imported to the site in order to balance the cut and fill rough grading operations or is needed to provide necessary soil for mixing with rock fragments, the proposed import soil should have an Expansion Index less than 20 (UBC Standard 18-2). Import sources should be indicated to the geotechnical consultant prior to hauling the materials to the site so that appropriate testing and evaluation of the fill material can be performed in advance.

6.1.19 Settlement Monitoring

The site may have fills that are greater than 50 feet in depth depending on actual removal depths. Fills over 50 feet in depth will generally require settlement monitoring. Specific recommendations for settlement monitoring should be provided by the geotechnical consultant during grading depending on the actual conditions exposed. A settlement monument detail is provided in Appendix E, Plate E-10.

In general, the monuments should be installed as soon as practically possible following completion of grading in this area. The monuments should be surveyed for elevation once each week for the first month then every other week for at least two additional months. The data should be provided to the soils engineer for review to confirm that actual post construction differential settlement is within tolerable limits of proposed structures. Once monitoring confirms post construction differential settlement is less than ½-inch in 20 feet, the lots may be released for building construction. The benchmark used for the survey should be coordinated with the soils engineer to confirm its suitability.

6.2 SEISMIC DESIGN PARAMETERS

For design of the project in accordance with the 2001 C.B.C., seismic design factors as defined by Chapter 16 are presented in Table 6.1.

TABLE 6.1
C.B.C. Seismic Design Parameters

Parameter	Value
Seismic Zone Factor, Z	0.4
Soil Profile Type, S	S_D
Fault Distance	5.3 km
Seismic Source Type	B
Near Source Factor, Na	1.0
Near Source Factor , Nv	1.1
Seismic Coefficient, Ca	0.44
Seismic Coefficient, Cv	0.68

6.3 PRELIMINARY CONVENTIONAL FOUNDATION RECOMMENDATIONS

6.3.1 General

The following recommendations are presented for preliminary design and estimating purposes. These recommendations have been based on typical site materials encountered and tested during this investigation as well as our experience with similar projects. Final recommendations should be

provided by the project geotechnical consultant following observation and testing of site materials during grading. Depending upon actual site conditions, the recommendations contained herein may require modification.

6.3.2 Soil Expansion

The recommendations presented herein for foundations and slabs on grade are based on soils with Very Low expansion potential. Following site grading, additional testing of site soils should be performed by the project geotechnical consultant to confirm the basis of these recommendations. If site soils with a higher expansion potential are encountered, the recommendations contained herein may require modification.

6.3.3 Settlement Considerations

Foundations should be designed to tolerate a maximum differential settlement of ½-inch over 30 feet.

6.3.4 Allowable Bearing Value

Provided site grading is performed as recommended herein, a bearing value of 2,000 pounds per square foot (psf) may be used for spread and continuous footings having a minimum width of 24 and 12 inches, respectively, and founded at a minimum depth of 12 inches below the lowest adjacent grade. The bearing value may be increased by 250 psf and 500 psf for each additional foot in width and depth, respectively, up to a maximum value of 4000 psf. Recommended allowable bearing values include both dead and live loads, and may be increased by one-third for wind and seismic forces.

6.3.5 Lateral Resistance

A passive earth pressure of 250 pounds per square foot per foot of depth up to a maximum value of 1500 pounds per square foot may be used to determine lateral bearing for footings. A coefficient of friction of 0.35 times the dead load forces may also be used between concrete and the supporting soils to determine lateral sliding resistance. An increase of one-third of the above values may also be used when designing for short duration wind and seismic forces.

The above values are based on footings placed directly against competent soils or compacted fill. In the case where footing sides are formed, all backfill against the footings should be compacted to at least 90 percent of the laboratory standard.

6.3.6 Footings Dimensions and Reinforcement

Exterior building footings may be founded at the minimum depths indicated in C.B.C. Table 18-I-D. Interior bearing wall footings for both one-story and two-story construction may be founded at a minimum depth of 12 inches below the lowest adjacent finish grade. Interior bearing wall footings for three-story construction may be founded at a minimum depth of 18 inches below the lowest adjacent finish grade. All continuous footings should be reinforced with a minimum of two No. 4 bars, one top and one bottom. The structural engineer may require different reinforcement and should dictate if greater than the recommendations presented herein.

6.3.7 Slabs on Grade

Interior concrete slabs constructed on grade should be a minimum of 4 inches thick. No minimum reinforcement is required from a geotechnical perspective for expansive soils. The project structural engineer should determine reinforcement of interior concrete slabs on grade.

Slabs that may be subjected to heavy point loads, such as storage rack systems or forklifts, may be designed using a modulus of subgrade reaction equal to 200 pci.

Concrete floor slabs in areas to receive carpet, tile, or other moisture sensitive coverings should be underlain with a moisture vapor barrier consisting of a poly-vinyl chloride membrane such as 10-mil Visqueen, or equal. The moisture vapor barrier should be lapped at least 12 inches at joints and protected with at least 2 inches of sand placed over the barrier. This vapor barrier system is anticipated to be suitable for most flooring finishes that can accommodate some vapor emissions. However, this system may emit more than 4 pounds of water per 1000 sq. ft. and therefore, may not be suitable for all flooring finishes. Additional steps should be taken if such vapor emission levels are too high for anticipated flooring finishes.

The structural engineer should provide recommendations appropriate for crack control of the slab including consideration of areas to receive ceramic tile or other rigid, crack-sensitive floor coverings.

Block-outs should be provided around interior columns to permit relative movement and mitigate distress to the floor slabs due to differential settlement that will occur between column footings and adjacent floor subgrade soils as loads are applied.

Prior to placing concrete, subgrade soils below slab-on-grade areas should be thoroughly moistened to provide a moisture content that is equal to or greater than 100% of the optimum moisture content.

Based on the very low expansion potential (expansion index less than 21), special design for expansive soils in accordance with Section 1815 of the 2001 CBC is not required.

6.3.8 Footing Observations

All footing trenches should be observed by the project geotechnical consultant to verify that they have been excavated into competent bearing soils and to the minimum embedment recommended herein. These observations should be performed prior to placement of forms or reinforcement. The excavations should be trimmed neat, level and square. All loose, sloughed or moisture softened materials and debris should be removed prior to placing concrete.

6.4 RETAINING WALLS

6.4.1 General

The following design and construction recommendations are provided for general masonry retaining walls. Retaining wall footing should be supported by engineered fill or competent older alluvium.

The structural engineer and architect should provide appropriate recommendations for sealing at all joints and waterproofing material on the back of the walls.

6.4.2 Bearing Capacity, Lateral Bearing, and Reinforcement

Retaining walls may utilize the bearing capacities and lateral resistance values provided for conventional foundations as discussed above. The passive pressure used for lateral bearing should be reduced by 50% for walls that have a descending slope below the face of wall.

All continuous footings should be reinforced with a minimum of two No. 4 bars, one top and one bottom.

6.4.3 Earth Pressures

Conventional retaining walls should be designed for the active earth pressures as indicated in the table below. These values are based on typical onsite materials on drained backfill conditions and do not consider hydrostatic pressures. Thee values in the following table should be increased by 50% for restrained wall conditions. All walls should be designed to support any adjacent structural surcharge loads imposed by other nearby walls or footings and traffic loads in addition to the earth pressures provided below.

TABLE 6.2
Active Earth Pressures

Backfill Condition	Wall Height up to 6 feet (pcf)
Level	35
2 to 1 slope	50

6.4.4 Drainage and Moisture-Proofing

Retaining walls should be constructed with a perforated pipe and gravel subdrain to prevent entrapment of water in the backfill. The perforated pipe should consist of 4-inch-diameter, ABS SDR-35 or PVC Schedule 40 with the perforations laid down. The pipe should be embedded in ¾- to 1½-inch open-graded gravel wrapped in filter fabric. The gravel should be at least one foot wide and extend at least one foot up the wall above the footing. Filter fabric should consist of Mirafi 140N, or equal. Non-perforated drain outlets should be provided at a minimum of every 100 lineal feet. Outlet pipes should be directed to positive drainage devices, such as graded swales, and/or area drains.

The use of weepholes may be considered in locations where aesthetic issues from potential nuisance water are not a concern. Weepholes should be 2 inches in diameter and provided at least every 6 feet on center. Where weepholes are used, perforated pipe may be omitted from the gravel subdrain.

Retaining walls supporting backfill should also be coated with a waterproofing compound or covered with such material to inhibit infiltration of moisture through the walls. The waterproofing

should cover all portions of the wall that may come in contact with soil and should overlap down over the top of footing. The top of footing should be finished smooth with a trowel to inhibit the infiltration of water into the footing and through the wall. The project structural engineer should provide specific recommendations for waterproofing, water stops, and joint details

6.4.5 Retaining Wall Backfill

Onsite soils may generally be used for backfill of retaining walls. The project geotechnical consultant should approve all backfill used for retaining walls. All wall backfill should be brought to a uniform moisture slightly over optimum, placed in lifts no greater than 12 inches in thickness, and then mechanically compacted with appropriate equipment to at least 90 percent of the laboratory standard. Flooding or jetting of backfill material is not recommended

6.5 SEGMENTAL RETAINING WALL

We understand that the retaining wall along the southwesterly portion of the site may be a segmental retaining wall and that the wall will be constructed during site grading operations. Prior to construction, this office can prepare plans and specifications for this wall. Engineering analyses addressing the internal and external stability of these walls would be provided under a separate submittal. If the segmental retaining wall plans are prepared by another consulting firm, they should be forwarded to this office for review.

6.6 SETBACK FROM SLOPES

The bottom outside edge of foundations for structures and walls, etc., adjacent a top of slope should be setback from the slope face a horizontal distance of one-third the slope height under consideration. The horizontal distance should not be less than 7 feet but need not exceed 40 feet.

Building adjacent the toe of a slope should be set back a horizontal distance equal to one-half the vertical height of the slope. The minimum and maximum clearances are 5 feet and 15 feet, respectively.

6.7 EXTERIOR FLATWORK

Exterior flatwork should be a nominal 4 inches thick. Cold joints or saw cuts should be provided at least every 10 feet in each direction. Special jointing detail should be provided in areas of block-outs, notches, or other irregularities to avoid cracking at points of high stress. Subgrade soils below flatwork should be thoroughly moistened to a moisture content of at least 100% of optimum. Moistening should be accomplished by lightly spraying the area over a period of a few days just prior to pouring concrete.

Drainage from flatwork areas should be directed to local area drains and/or other appropriate collection devices designed to carry runoff water to the street or other approved drainage structures. The concrete flatwork should also be sloped at a minimum gradient of 1% away from building foundations and masonry walls.

The geotechnical consultant should observe and verify the density and moisture content of subgrade soils prior to pouring concrete to ensure that the required compaction and pre-moistening recommendations have been met.

6.8 CORROSION POTENTIAL

Laboratory testing of near-surface soils for soluble sulfate content indicates soluble sulfate concentration less than 0.10%. Based on the laboratory test result, the procedures provided in C.B.C. Section 1904.3.1 and Table 19A-A-4, 2001 Edition, for concrete exposed to sulfate-containing solutions may be followed for **Negligible** sulfate exposure. Additional testing for soluble sulfate content will be required subsequent to rough grading and prior to construction of foundations and other concrete work to confirm these conditions.

Laboratory testing of site soils indicates a minimum resistivity of approximately 24700 ohm-cm and a soluble chloride content of 42 ppm. As such, site soils are moderately corrosive to ferrous metals. Structures fabricated from steel or other ferrous metals should have appropriate corrosion protection if they will be in contact with site soils. Under such conditions, a corrosion specialist should provide specific recommendations.

6.9 POST GRADING CONSIDERATIONS

6.9.1 Site Drainage

Positive drainage devices, such as sloping concrete flatwork, graded swales, and/or area drains, should be provided around the new construction to collect and direct all water to a suitable discharge area. No rain or excess water should be allowed to pond against building walls or foundations.

6.9.2 Utility Trenches

Trench excavations should be constructed in accordance with the recommendations contained in Section 6.1.5 of this report. All trench excavations should conform to the requirements of CAL OSHA.

All utility trench backfill should be compacted to at least 90 percent of the laboratory standard. Trench backfill should be brought to a uniform moisture content of 100 to 125 percent of optimum, placed in lifts no greater than 12 inches in thickness, and then mechanically compacted with appropriate equipment to at least 90 percent of the laboratory standard. The project geotechnical consultant should perform density testing, along with probing, to verify adequate compaction.

Within shallow trenches (less than 18 inches deep) where pipes may be damaged by heavy compaction equipment, imported clean sand having a Sand Equivalent (SE) of 30 or greater may be utilized. The sand should be placed in the trench, thoroughly watered, and then compacted with a vibratory compactor.

Where utility trenches are proposed parallel to any building footing (interior and/or exterior trenches), the bottom of the trench should not be located below a 1:1 (H:V) plane projecting downward from the outside edge of the adjacent footing base. For utility trenches located below a

1:1 (H:V) plane projecting downward from the outside edge of the adjacent footing base or crossing footing trenches, concrete or slurry should be used as trench backfill.

6.9.3 Irrigation Considerations

Excessive irrigation water can be detrimental to the performance of proposed site development. Water applied in excess of the needs of vegetation will tend to percolate into the ground. Such percolation can lead to nuisance seepage and shallow perched groundwater. Seepage can form on slope faces, on the faces of retaining walls, in streets, or other low-lying areas. These conditions could lead to adverse effects such as the formation of stagnant water that breeds insects, distress or damage of trees, surface erosion, slope instability, discoloration and salt buildup on wall faces, and premature failure of pavement. Excessive watering can also lead to elevated vapor emissions within homes that can damage flooring finishes or lead to mold growth inside the home.

Key factors that can help mitigate the potential for adverse effects of over watering include the judicious use of water for irrigation, use of irrigation systems that are appropriate for the type of vegetation and geometric configuration of the planted area, the use of soil amendments to enhance moisture retention, use of low-water demand vegetation, regular use of appropriate fertilizers, and seasonal adjustments of irrigation systems to match vegetation needs for water. A landscape architect or other knowledgeable professional should provide specific recommendations. Future homebuyers should be made aware of these issues and consequences.

6.10 SLOPE MAINTENANCE

The long-term performance and stability of slopes can be greatly affected by maintenance. Initially, slopes should be provided with erosion resistance in the form of an herbaceous plant material, jute matting, polymer coating, or other suitable method as recommended by the landscape architect. Slopes should also be planted with deep-rooting, drought-tolerant, woody vegetation material as recommended by the landscape architect. The initial protection should be maintained until the woody material has become fully mature. Areas of slopes where vegetation becomes particularly distressed or dies should be replaced promptly. Watering of slopes should make judicious use of water by providing only that amount required to support the vegetation and adjusting the watering seasonally. Over watering must be avoided. Excessive drying of the soils is also detrimental to long-term slope performance and stability. The moisture content of soils should be maintained at a relatively uniform level. Rodent activity should be monitored and kept to a minimum. Excessive rodent burrowing can be detrimental to long-term slope performance and stability and should be repaired promptly. Drainage devices, such as V-ditches and backdrain outlet pipes installed on the slope face, should be periodically inspected to confirm they are clear and functional. Any accumulated debris should be removed promptly.

6.11 PRELIMINARY PAVEMENT RECOMMENDATIONS

Based on the soil conditions present at the site and estimated traffic index, pavement sections are recommended in the table below. An "R-value" of 50 was used in this pavement design. The sections provided below are for planning purposes only and should be re-evaluated subsequent to

site grading. Final pavement sections should be based on actual R-value testing of in-place soils and analysis of anticipated traffic.

TABLE 6.3
Pavement Design

Location	Traffic Index	Asphalt Concrete (inches)	Aggregate Base (inches)
Drive Aisles	6.0	4	4
Car Parking Areas	-	3	4

Prior to placement of aggregate base, pavement subgrade should be scarified to a depth of 6 inches, brought to uniform moisture content slightly over optimum, then compacted to at least 90 percent of the laboratory standard. The laboratory standard should be ASTM D1557-02.

Aggregate base should be placed in lifts no greater than 6 inches in thickness, brought to a uniform moisture content slightly over optimum, then compacted to at least 95 percent of the laboratory standard. The laboratory standard should be ASTM D1557-02. Aggregate base materials should be either Crushed Aggregate Base or Crushed Miscellaneous Base conforming to Section 200-2 of the Standard Specification for Public Works Construction (Greenbook).

Paving asphalt should be either AR 4000 of viscosity grade or performance graded PG 64-10 conforming to the requirements of Section 203-1 of the Greenbook. Asphalt concrete materials should conform to Section 203-6 and construction should conform to Section 302 of the Greenbook.

6.12 PLAN REVIEW AND ADDITIONAL GEOTECHNICAL SERVICES

We recommend ***Albus-Keefe & Associates, Inc.*** be engaged to review any future development and foundation plans prior to construction. Design plans for the proposed percolation basins should also be forwarded to this office for review. This is to verify that the recommendations contained in this report have been properly interpreted and are incorporated into the project specifications. If we are not provided the opportunity to review these documents, we take no responsibility for misinterpretation of our recommendations.

We recommend that a geotechnical consultant be retained to provide soil engineering services during construction of the project. These services are to observe compliance with the design, specifications or recommendations, and to allow design changes in the event that subsurface conditions differ from those anticipated prior to the start of construction.

If the project plans change significantly, the project geotechnical consultant should review past design recommendations and their applicability to the revised construction. If conditions are encountered during construction that appears to be different than those indicated in final geotechnical report for the site, the project geotechnical consultant should be notified immediately. Design and construction revisions may be required.

7.0 LIMITATIONS

This report is based on the proposed development and geotechnical data as described herein. The materials encountered on the project site, described in other literature, and utilized in our laboratory testing for this investigation are believed representative of the total project area, and the conclusions and recommendations contained in this report are presented on that basis. However, soil and bedrock materials can vary in characteristics between points of exploration, both laterally and vertically, and those variations could affect the conclusions and recommendations contained herein. As such, observation and testing by a geotechnical consultant during the grading and construction phases of the project are essential to confirming the basis of this report.

This report has been prepared consistent with that level of care being provided by other professionals providing similar services at the same locale and time period. The contents of this report are professional opinions and as such, are not to be considered a guaranty or warranty.

This report should be reviewed and updated after a period of one year or if the site ownership or project concept changes from that described herein.

This report has been prepared for the exclusive use of **TCRSC Development LP** to assist the project consultants in the design of the proposed development. This report has not been prepared for use by parties or projects other than those named or described herein. This report may not contain sufficient information for other parties or other purposes.

This report is subject to review by the controlling governmental agency.

Respectfully submitted,

ALBUS-KEEFE & ASSOCIATES, INC

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Riverside County Flood Control and Water Conservation District Photo Map, Section 33, T. 2S., R. 4W, SBB & M, Scale 1:2400.

U.S.G.S. Topographic Map, 7.5 Minute Series, Riverside East Quadrangle, 1967, photorevised 1980.

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Hi Desert Testing & Inspection, 1997, Incomplete Grading, Canyon Crest Courtyard, APN 256-050-002 & APN 256-050-003, 20200 Central Avenue, Riverside, California, dated August 29, 1997 (P.N. 41032).

Plans

Alexan Cityscape, Preliminary Grading and Striping Plan, undated, prepared by Rick Engineering Company.

Aerial Photographs

Photo Source	Date Flown	Flight No.	Photo No.
Continental Aerial Photo, Inc.	2-23-99	C133-31	84, 85
Continental Aerial Photo, Inc.	10-16-97	C119-30	159, 160
Continental Aerial Photo, Inc.	7-11-95	C114-30	85, 86
Continental Aerial Photo, Inc.	5-19-93	C92-18	147, 148
Continental Aerial Photo, Inc.	6-12-90	C83-12	18, 19
Continental Aerial Photo, Inc.	2-11-88	C80-63	12, 13
Continental Aerial Photo, Inc.	1-9-87	F	192, 193
Continental Aerial Photo, Inc.	2-15-77	RIV-2	8,9
Continental Aerial Photo, Inc.	1-15-76	PCC11	37, 38
Continental Aerial Photo, Inc.	10-19-73	135B-1	2, 3
Continental Aerial Photo, Inc.	10-2-71	PCC.F43	13
Continental Aerial Photo, Inc.	9-30-69	35-1	2, 3
Continental Aerial Photo, Inc.	5-15-67	3HH	139, 140
Continental Aerial Photo, Inc.	10-15-59	16W	11, 12
Continental Aerial Photo, Inc.	5-6-49	5F	38, 39

APPENDIX A

EXPLORATORY TRENCH LOGS

DESCRIPTIVE LOG OF TRENCH EXCAVATION

Trench Number	Depth (Feet)	U.S.C.S. Symbol	Field Description
T-1			ARTIFICIAL FILL (Qaf):
	0.0-1.0	SM	Silty SAND: Fine- to coarse-grained, brown to reddish-brown, dry, loose, desiccated.
			ALLUVIUM (Qal):
	1.0-14.0	SM	Silty SAND: Fine- to coarse-grained, brown to reddish-brown, dry to damp, loose to medium dense, porous, desiccated to 3 feet.
			BEDROCK (Kgr):
	14.0-16.0		Granitic Rock: Gray-brown, dry to damp, moderately hard, very coarse-grained, moderately weathered.
			Total Depth: 16.0 feet No Caving No Groundwater Backfill not compacted
T-2			ARTIFICIAL FILL (Qaf):
	0.0-13.0	SM	Silty SAND: Fine- to coarse-grained with gravel to boulder-size rocks to 5' in diameter, brown, damp, loose; large pocket of debris (tire fragments, wood, organic material, concrete, asphalt), concrete to 5' in diameter.
			ALLUVIUM (Qal):
	13.0-19.0	SM	Silty SAND: Fine- to coarse-grained, brown, damp to moist, loose, porous.
			BEDROCK (Kgr):
	19.0-21.0		Granitic Rock: Gray-brown, dry to damp, moderately hard, very coarse-grained.
			Total Depth: 21.0 feet Slight Caving of Fill No Groundwater Backfill not compacted

DESCRIPTIVE LOG OF TRENCH EXCAVATION

Trench Number	Depth (Feet)	U.S.C.S. Symbol	Field Description
T-3			ARTIFICIAL FILL (Qaf):
	0.0-20.0	SM	Silty SAND: Fine- to coarse-grained with gravel to boulder-size rocks to 3' in diameter, brown, dry, loose, minor debris. @ 5.0-20.0: portion of trench exposes slurry or concrete truck wash out materials. @ 12 feet: roll of chain-link fence.
			ALLUVIUM (Qal):
	20.0-24.0	SM	Silty SAND: Fine- to coarse-grained, brown, damp to moist, loose, porous.
			BEDROCK (Kgr):
	24.0-26.0		Granitic Rock: Gray-brown, dry to damp, moderately hard, very coarse-grained. Total Depth: 26.0 feet Moderate Caving of fill No Groundwater Backfill not compacted
T-4			BEDROCK (Kgr):
	0.0-4.0		Granitic Rock: Gray-brown, dry, moderately hard to hard, very coarse-grained. Total Depth: 4.0 feet No Caving No Groundwater Backfill not compacted

DESCRIPTIVE LOG OF TRENCH EXCAVATION

Trench Number	Depth (Feet)	U.S.C.S. Symbol	Field Description
T-5			ARTIFICIAL FILL (Qaf):
	0.0-33.0	SM	Silty SAND: Fine- to coarse-grained with gravel to boulder-size rocks up to 11' in diameter, brown, damp, loose; extensive debris including wood, tires, metal pipe, etc.
			Total Depth: 33.0 feet Slight Caving No Groundwater Backfill not compacted
T-6	0.0-10.0		BEDROCK (Kgr):
			Granitic Rock: Mottled black, white and gray, dry to damp, hard to very hard, very coarse-grained.
			@ 3.0 feet: Becomes locally very hard.
			@ 10 feet: Refusal.
			Total Depth: 10.0 feet No Caving No Groundwater Backfill not compacted

DESCRIPTIVE LOG OF TRENCH EXCAVATION

Trench Number	Depth (Feet)	U.S.C.S. Symbol	Field Description
T-7			ARTIFICIAL FILL (Qaf):
	0.0-21.0	SM	Silty SAND: Fine- to coarse-grained, reddish-brown, dry, medium dense. @ 5.0 feet: Becomes brown, damp, gravel to boulder-size rocks. @ 6.0 feet: Concrete and brick debris. @ 12 feet: Increase in boulders up to 5' in diameter, concrete debris continues. @ 15 feet: Misc. debris (plastic bottles, pipe, etc.).
			ALLUVIUM (Qal):
	21.0-28.0	SM	Silty SAND: Fine- to coarse-grained, reddish-brown, moist, medium dense.
			Total Depth: 28.0 feet Slight Caving of Fill No Groundwater Backfill not compacted
T-8			ARTIFICIAL FILL (Qaf):
	0.0-15.0	SM	Silty SAND: Fine- to coarse-grained with gravel and boulder-size rocks up to 2' in diameter, brown, dry, loose; minor debris.
			TOPSOIL (No Map Symbol):
	15.0-18.0	SM	Silty SAND: Fine- to coarse-grained, brown, damp to moist, loose, porous.
			BEDROCK (Kgr):
	18.0-19.0		Granitic Rock: Gray-brown, dry to damp, hard, very coarse-grained.
			Total Depth: 19.0 feet Slight Caving of fill No Groundwater Backfill not compacted

DESCRIPTIVE LOG OF TRENCH EXCAVATION

Trench Number	Depth (Feet)	U.S.C.S. Symbol	Field Description
T-9			ARTIFICIAL FILL (Qaf):
	0.0-18.0	SM	Silty SAND: Fine- to coarse-grained with gravel to boulder-size rocks, brown, damp, loose. @ 2.0 feet: Numerous boulders up to 5' in diameter. @ 10.0 feet: Slight decrease in boulder concentration. Total Depth: 18.0 feet Slight Caving No Groundwater Backfill not compacted
T-10			ARTIFICIAL FILL (Qaf):
	0.0-16.0	SM	Silty SAND: Fine- to coarse-grained with gravel to boulder-size rocks, brown, damp, loose, minor debris. @ 2 feet: 5' diameter boulder, caving around boulder. @ 5 feet: Scattered 3' diameter boulders, moderate caving, very loose down to 10 feet.
			TOPSOIL (No Map Symbol):
	16.0-20.0	SM	Silty SAND: Fine- to coarse-grained, reddish-brown, moist, loose to medium dense, slightly porous.
			BEDROCK (Kgr):
	20.0-21.0		Granitic Rock: Gray-brown, dry to damp, hard, very coarse-grained. Total Depth: 21.0 feet Slight to Moderate Caving of fill No Groundwater Backfill not compacted

DESCRIPTIVE LOG OF TRENCH EXCAVATION

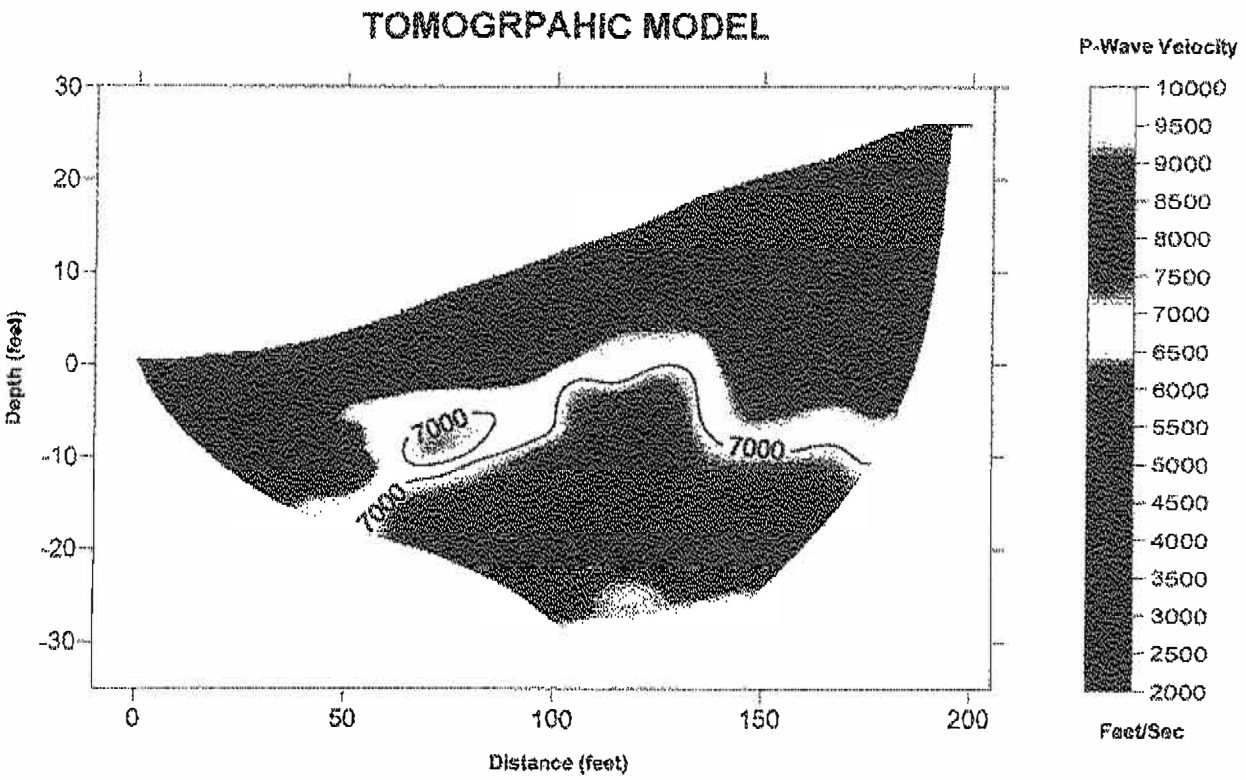
Trench Number	Depth (Feet)	U.S.C.S. Symbol	Field Description
T-11			ARTIFICIAL FILL (Qaf):
	0.0-20.0	SM	Silty SAND: Fine- to coarse-grained with gravel to boulder-size rocks, brown, damp, loose. @ 3.0 feet: Numerous boulders from 18"-24" in diameter. @ 5.0 feet: Becomes medium dense to dense. @ 13.0 feet: 3' to 5' diameter boulders, loose. Total Depth: 20.0 feet Slight Caving No Groundwater Backfill not compacted

APPENDIX B

SEISMIC REFRACTION SURVEY

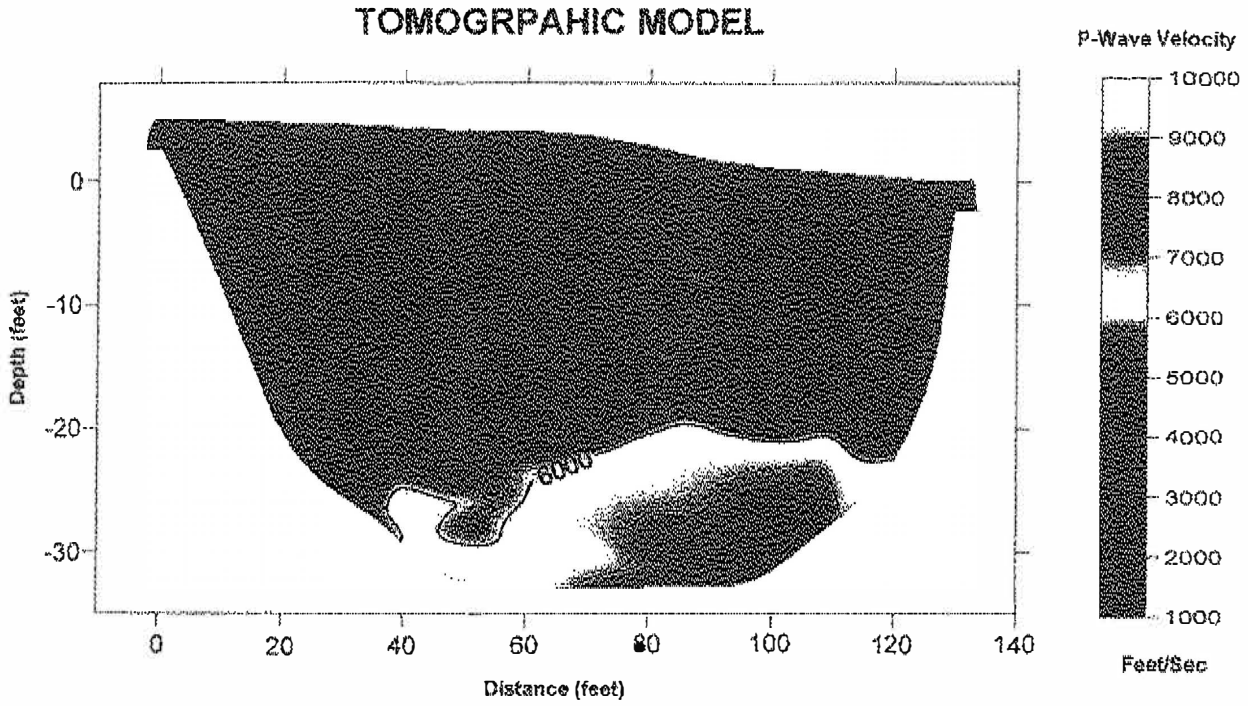
SEISMIC LINE S-1

South 55 East →



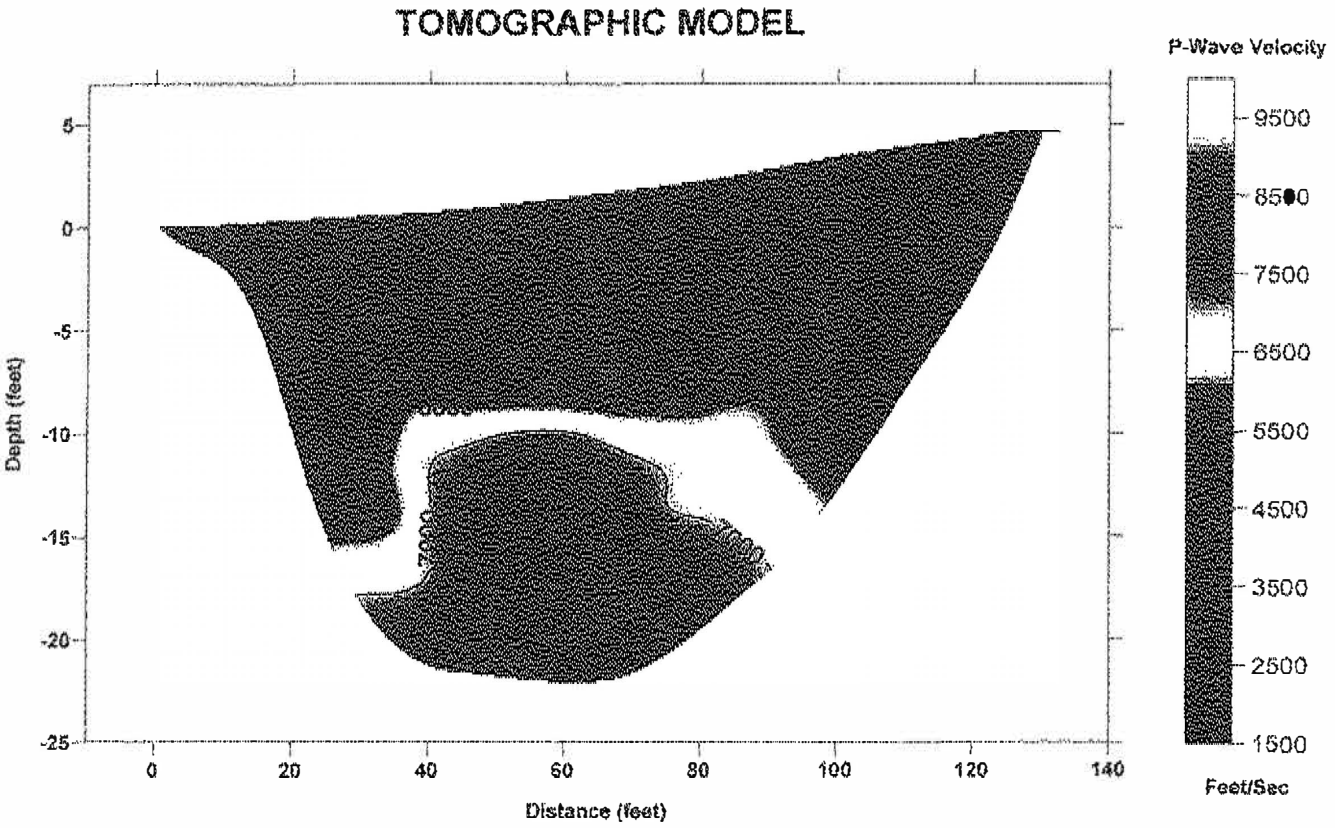
SEISMIC LINE S-2

South 15 East→



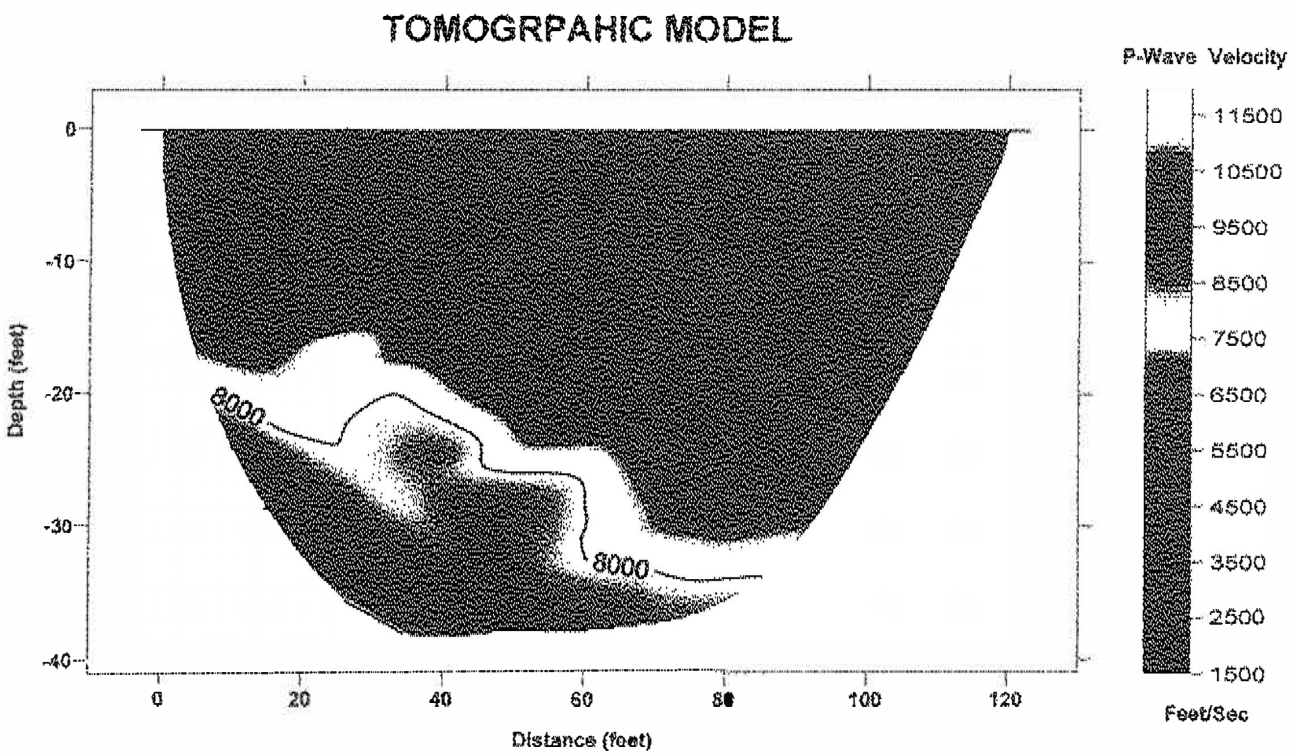
SEISMIC LINE S-3

North 30 East →



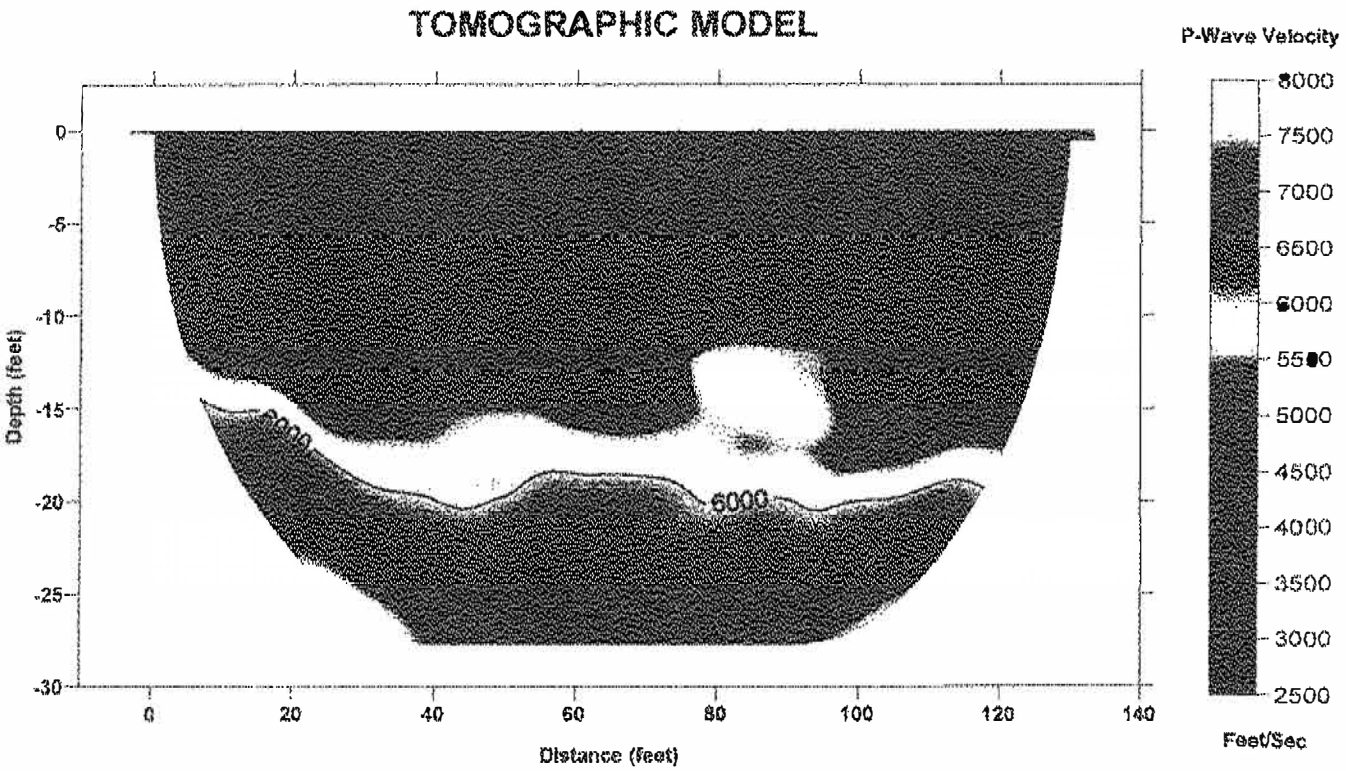
SEISMIC LINE S-4

North 35 East →



SEISMIC LINE S-5

North 55 East →



APPENDIX C

LABORATORY TEST PROGRAM

LABORATORY TESTING PROGRAM

Laboratory Maximum Dry Density

Maximum dry density and optimum moisture content were performed on a representative sample of the site materials obtained from the field. The test was performed in accordance with ASTM D 1557-02. Pertinent test values are given in Table C.

Direct Shear

The Coulomb shear strength parameters, angle of internal friction and cohesion, were determined for a bulk sample obtained from the subsurface exploration. The test was performed in general conformance with ASTM D 3080-80. The sample was remolded to 90 percent of maximum dry density and 2% over optimum. Three specimens were prepared for the test, artificially saturated, and then sheared under varied loads at an appropriate constant rate of strain. Results are graphically presented on Plate C-1.

Expansion Potential

An Expansion Index test was performed on a selected sample in accordance with Uniform Building Code Standard 18-2. The expansion potential classification was determined from C.B.C. Table 18-I-B on the basis of the expansion index value. The test result and expansion potential are presented on Table C.

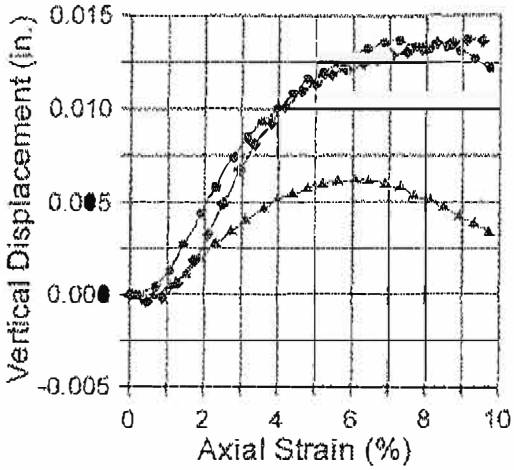
Corrosion Analysis

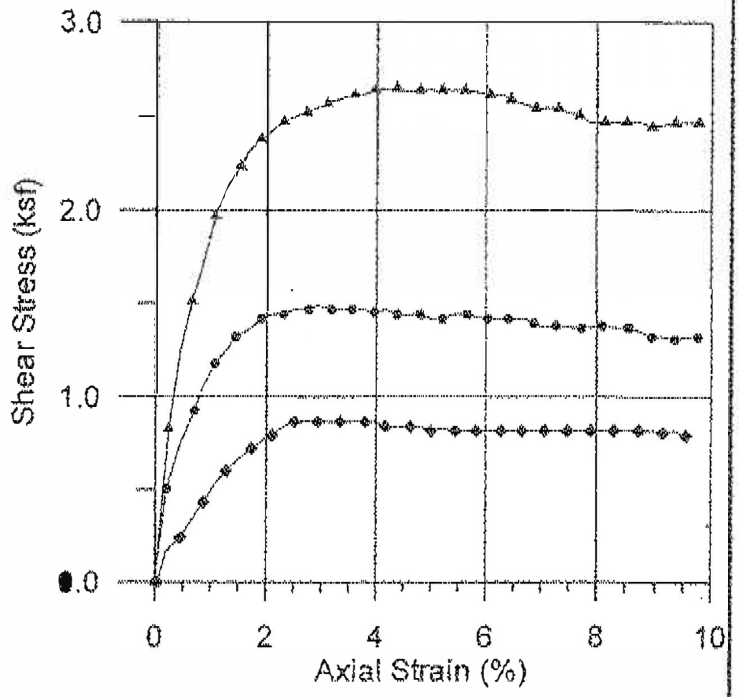
Corrosion analyses, which include soluble sulfate content, chloride content, minimum resistivity, and pH, were performed on a selected sample. The tests were performed in accordance with California Test Method (CTM) 417, CTM 422, CTM 643 and CTM 643, respectively. The test results are included in Table C.

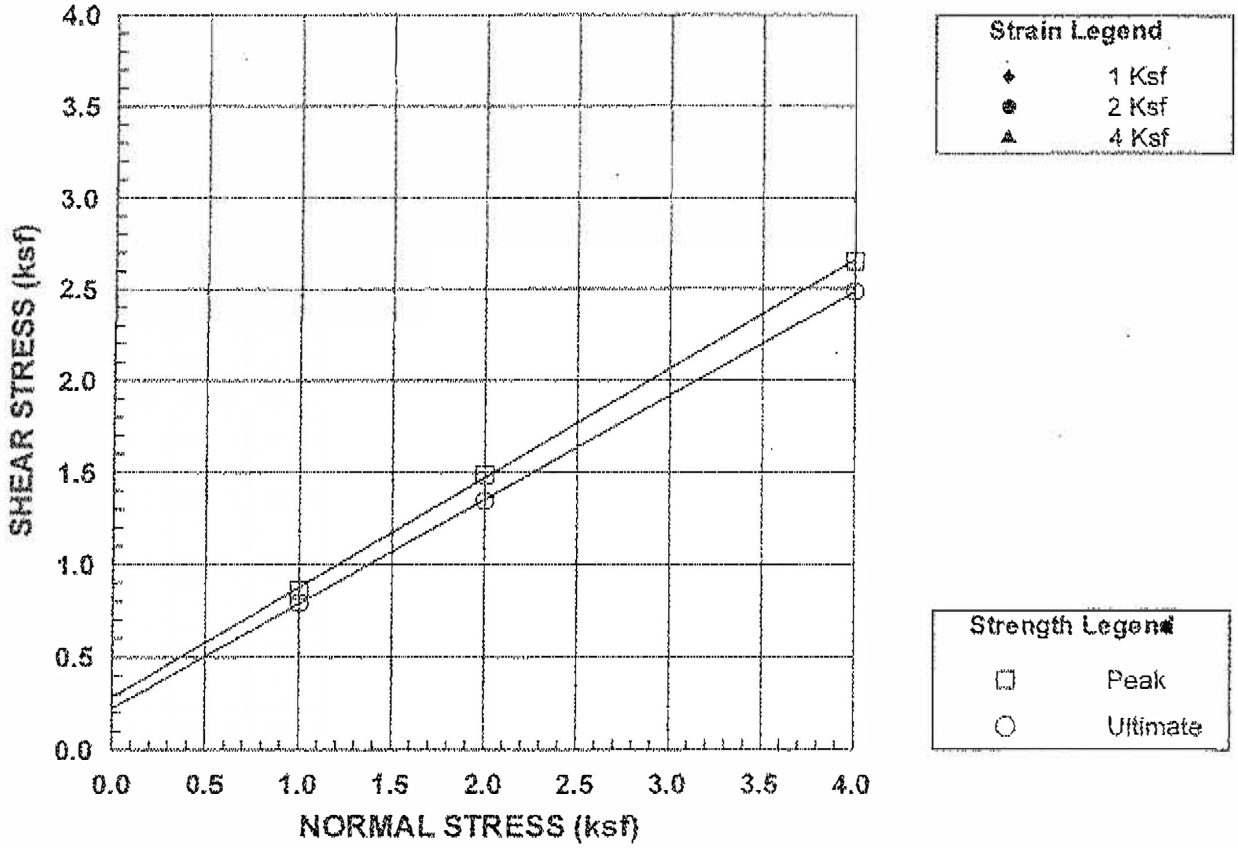
TABLE C
SUMMARY OF LABORATORY TEST RESULTS

Sample No.	Soil Description	Test Results	
S-2 @ 0-1'	Silty Sand (SM) with decomposed granite	Maximum Dry Density:	131.5 pcf
		Optimum Moisture Content:	7.0%
		Soluble Sulfate:	0.001%
		Expansion Index:	1
		Expansion Potential:	Very Low
		pH:	7.6
		Minimum Resistivity:	2400 ohm-cm
		Chloride Content:	42.5 ppm

Specimen No.	1	2	3
Normal Stress (ksf)	1	2	4
Peak Stress (ksf)	0.864	1.488	2.652
Peak Displacement (in)	0.0605	0.071	0.106
Ultimate Stress (ksf)	0.792	1.344	2.484
Ultimate Displacement (in)	0.242	0.246	0.247
Initial Dry Density	118.4	118.4	118.4
Initial Moisture Content (%)	7.479	7.479	7.479
Strain Rate (in/min)	0.040		







SAMPLE LOCATION	SAMPLE TYPE	SAMPLE DESCRIPTION
S-2 @ 0 - 1'	Remolded - Saturated	Silty Sand (SM)

ALBUS-KEEFE & ASSOCIATES, INC.
GEOTECHNICAL CONSULTANTS

DIRECT SHEAR

Job No: 1566.00

Plate No: C-1

APPENDIX D

EXPLORATORY TRENCH LOGS & LABORATORY TEST RESULTS BY JOHN R. BYERLY, INC.

PROJECT: Canyon Crest Courtyard
PROJECT LOCATION: Riverside, CA
ENCLOSURE NO.: 2
DATE OF TESTS: 8/30/97

FILE NUMBER: S-8913
TEST PIT NUMBER: 1
REPORT NO.: 5065

Blows Per Foot	Driving Energy ft-lb/ft	Dry Density PCF	Moist. Content %	Rel. Comp. %	Feet	Visual Classification
					1	(SM) Gray-brown silty fine to coarse sand, dry and moderately dense. FILL
	---	113	4.2	87	2	Light brown silty fine to coarse sand with rock fragments, damp and medium dense. FILL
					3	
	---	110	5.6	84	4	
					5	- becoming loose at 5.0 feet
	---	108	6.5	83	6	
					7	
	---	105	6.3	81	8	Light brown silty fine to medium sand, porous, moist and loose. ORIGINAL GROUND
					9	
					10	[ ] Light gray weathered granitic bedrock, damp and dense Total Depth at 10.5 Feet - No Free Groundwater Encountered

PROJECT: Canyon Crest Courtyard
PROJECT LOCATION: Riverside, CA
ENCLOSURE NO.: 2
DATE OF TESTS: 8/30/97

FILE NUMBER: S-8913
TEST PIT NUMBER: 2
REPORT NO.: 5065

Blows Per Foot	Driving Energy k-ft/ft	Dry Density PCF	Moist. Content %	Rel. Comp. %	Feet	Visual Classification
					1	(SM) Gray-brown silty fine to coarse sand with rock fragments, damp and moderately dense. FILL
	---	117	4.8	90	2	
					3	- becoming loose at 3.0 feet
	---	108	7.1	83	4	
					5	
	---	104	7.6	80	6	
	---	1 04	6.4	80	7	
					8	
					9	Light brown silty fine to medium sand with organic debris, moist and loose. FILL
					10	
					11	Light brown silty fine to medium sand, porous, moist and loose. ORIGINAL GROUND
					12	
					13	[ ] Light gray-brown weathered granitic bedrock, damp and dense Total Depth at 13.5 Feet - No Free Groundwater Encountered

PROJECT: Canyon Crest Courtyard
PROJECT LOCATION: Riverside, CA
ENCLOSURE NO.: 2
DATE OF TESTS: 8/30/97

FILE NUMBER: S-8913
TEST PIT NUMBER: 3
REPORT NO.: 5065

Blows Per Foot	Driving Energy ft-lb/ft	Dry Density PCF	Moist. Content %	Rel. Comp. %	Feet	Visual Classification
					1	[SM] Mottled gray and light brown silty fine to coarse sand with boulders up to 30 inches in diameter, and fragments of wire, brick, asphalt concrete, pipe, and concrete, damp and dense. FILL
	---	124	5.0	92	2	
					3	
					4	
					5	- less debris and very dense below 5.0 feet
					6	
	---	123	7.6	96	7	- large concrete fragments with voids below 6.5 feet
					8	- large concrete slab and footing at 8.5 feet
					9	
					10	
					11	
					12	
					13	
					14	
					15	Light red-brown silty fine to coarse sand, very porous, moist and loose. ORIGINAL GROUND
					16	[ ] Light gray weathered granitic bedrock, damp & medium dense Total Depth at 16.0 Feet No Free Groundwater Encountered

PROJECT: Canyon Crest Courtyard
PROJECT LOCATION: Riverside, CA
ENCLOSURE NO.: 2
DATE OF TESTS: 8/30/97

FILE NUMBER: S-8913
TEST PIT NUMBER: 4
REPORT NO.: 5065

Blows Per Foot	Driving Energy k-ft/ft	Dry Density PCF	Moist. Content %	Rel. Comp. %	Feet	Visual Classification
					1	[SM] Light brown silty fine to coarse sand with rock fragments, damp and dense. FILL
	---	127	4.4	95	2	
					3	
	---	131	6.6	98	4	Gray-brown silty fine to coarsand with rockfragments and tire debris, damp and very dense. FILL
					5	
	---	132	6.0	99	6	- becoming medium dense at 6.0 feet
					7	
					8	- boulders up to 4 inches in diameter at 8.0 feet
					9	
					10	
					11	
					12	
					13	Light brown silty fine to coarse sand, very porous, moist and loose. ORIGINAL GROUND
					14	
					15	
					16	[ ] Light red-yellow weathered granitic bedrock, damp and dense Total Depth at 16.5 Feet No Free Groundwater Encountered

PROJECT: Canyon Crest Courtyard
PROJECT LOCATION: Riverside, CA
ENCLOSURE NO.: 2
DATE OF TESTS: 8/30/97

FILE NUMBER: 5-8913
TEST PIT NUMBER: 5
REPORT NO.: 5065

Blows Per Foot	Driving Energy k-ft/ft	Dry Density PCF	Moist. Content %	Rel. Comp. %	Feet	Visual Classification
					1	(SP) Light gray-white gravelly fine to coarse sand with concrete debris up to 4.0 feet in diameter, dry and loose. FILL
					2	
	---	86	6.4	71	3	(SM) Gray-brown silty fine to coarse sand with gravel and concrete debris, damp and loose. FILL
					4	
					5	- becoming moist at 5.5 feet
	---	113	11.0	84	6	Dark brown silty fine to medium sand with a trace of clay, porous, moist and loose. ORIGINAL GROUND
					7	
	---	110	9.8	82	8	
					9	
					10	- very porous at 10.0 feet
					11	
					12	
					13	Light brown-gray silty fine to coarse sand with a trace of caliche, porous, slightly cemented, damp and medium dense
					14	
					15	Gray-brown weathered granitic bedrock, moist and very dense
					16	Refusal on very dense bedrock at 16.0 feet No Free Groundwater Encountered

PROJECT: Canyon Crest Courtyard
PROJECT LOCATION: Riverside, CA
ENCLOSURE NO.: 2
DATE OF TESTS: 8/30/97

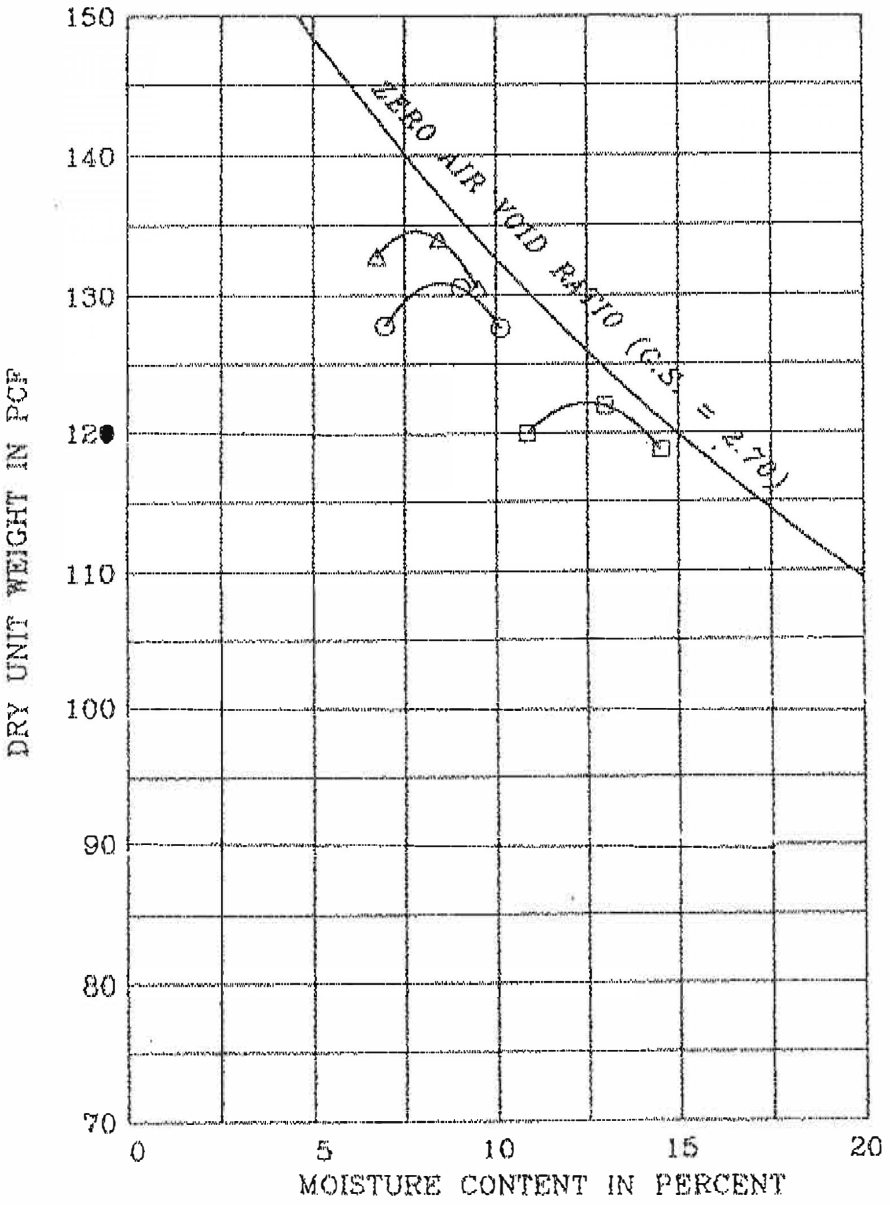
FILE NUMBER: S-8913
TEST PIT NUMBER: 6
REPORT NO.: 5065

Blows Per Foot	Driving Energy k-ft/ft	Dry Density PCF	Moist. Content %	Rel. Comp. %	Feet	Visual Classification
					1	(SM) Gray mottled-light brown silty fine to coarse sand with voids and gravel, cobbles, and boulders (up to 5.0 feet in diameter), dry and loose. FILL
					2	
					3	
					4	
					5	
					6	
					7	
					8	Refusal on large nested boulders at 8.0 feet No Free Groundwater Encountered

PROJECT: Canyon Crest Courtyard
PROJECT LOCATION: Riverside, CA
ENCLOSURE NO.: 2
DATE OF TESTS: 8/30/97

FILE NUMBER: S-8513
TEST PIT NUMBER: 7
REPORT NO.: 5065

Blows Per Foot	Driving Energy ft-lb/ft	Dry Density PCF	Moist. Content %	Rel. Comp. %	Feet	Visual Classification
					1	(SM) Light gray silty fine to coarse sand with rock fragments, dry and moderately dense. FILL
	---	120	3.8	98	2	
					3	
	---	119	4.7	98	4	
					5	
					6	
					7	
					8	Light gray weathered granitic bedrock, damp and dense. ORIGINAL GROUND Total Depth at 8.0 Feet - No Free Groundwater Encountered



SYMBOL	SAMPLE LOCATION	DEPTH (ft)	DESCRIPTION	TEST METHOD	OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)
○	Test Pit 1	3.0	Brn si f-c sand w/gvl SM	ASTM D 1557	8.4	130.8
□	Test Pit 5	3.0	Gray si f-c sand w/gvl SM	ASTM D 1557	12.6	122.2
△	Test Pit 5	5.5	Brn si f-c sand w/gvl SM	ASTM D 1557	7.9	134.6

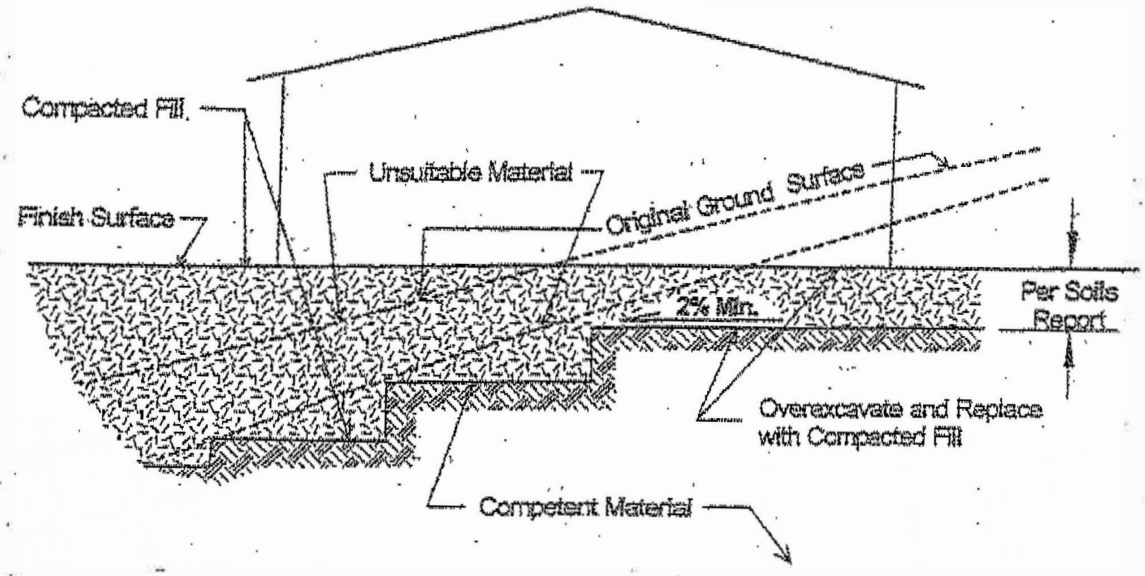
Remark :

File No.: S-8913	Canyon Crest Courtyard, Riverside, CA
John R. Byerly INCORPORATED	COMPACTION TEST — Enclosure 3 Rpt. No.: 5065

APPENDIX E

STANDARD GRADING DETAILS

CUT/FILL TRANSITION LOT

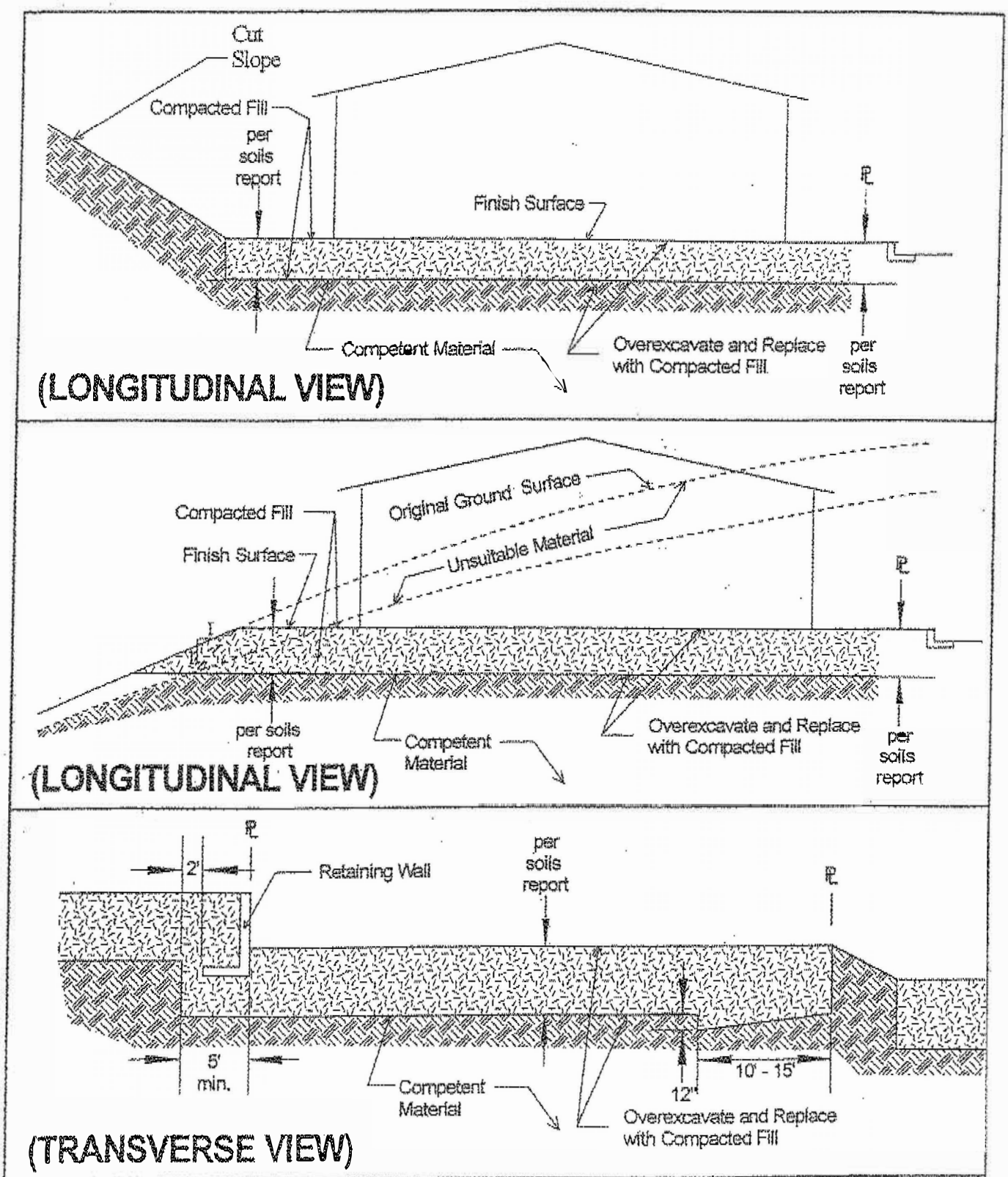


TRANSITION LOT CAPPING

Not To Scale
See attached soils report for specific recommendations.

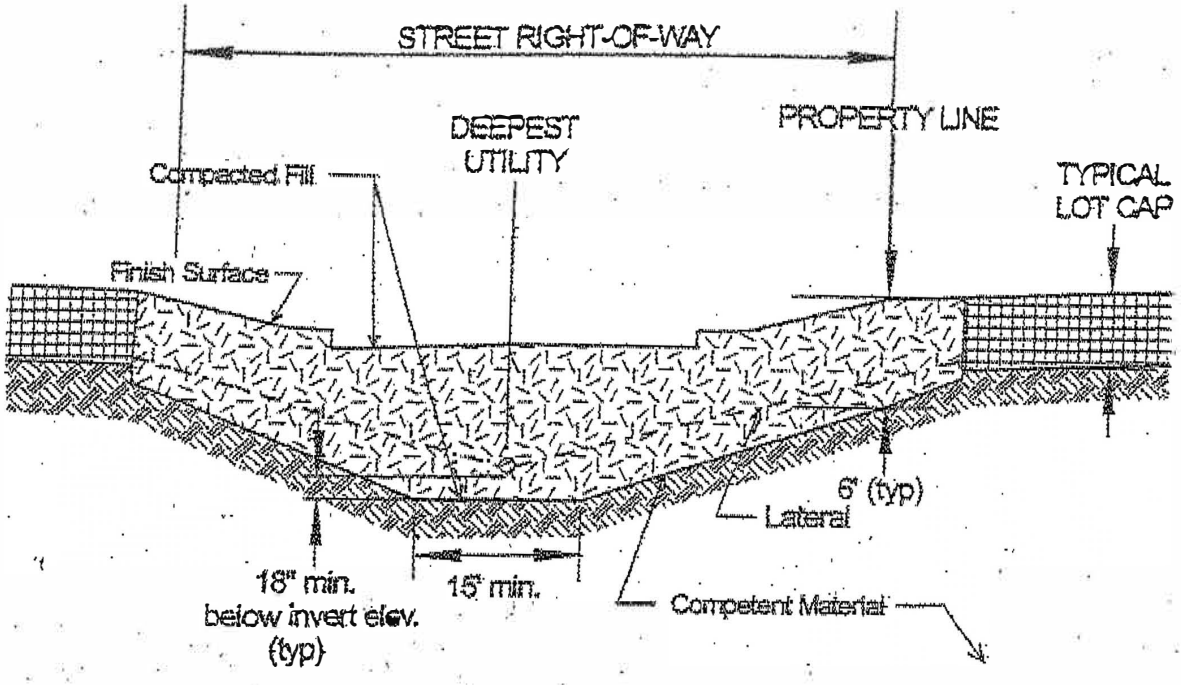
Detail No. 14

ALBUS-KEEFE & ASSOCIATES, INC.



CUT LOT CAPPING

Not To Scale
See attached soils report for specific recommendations.



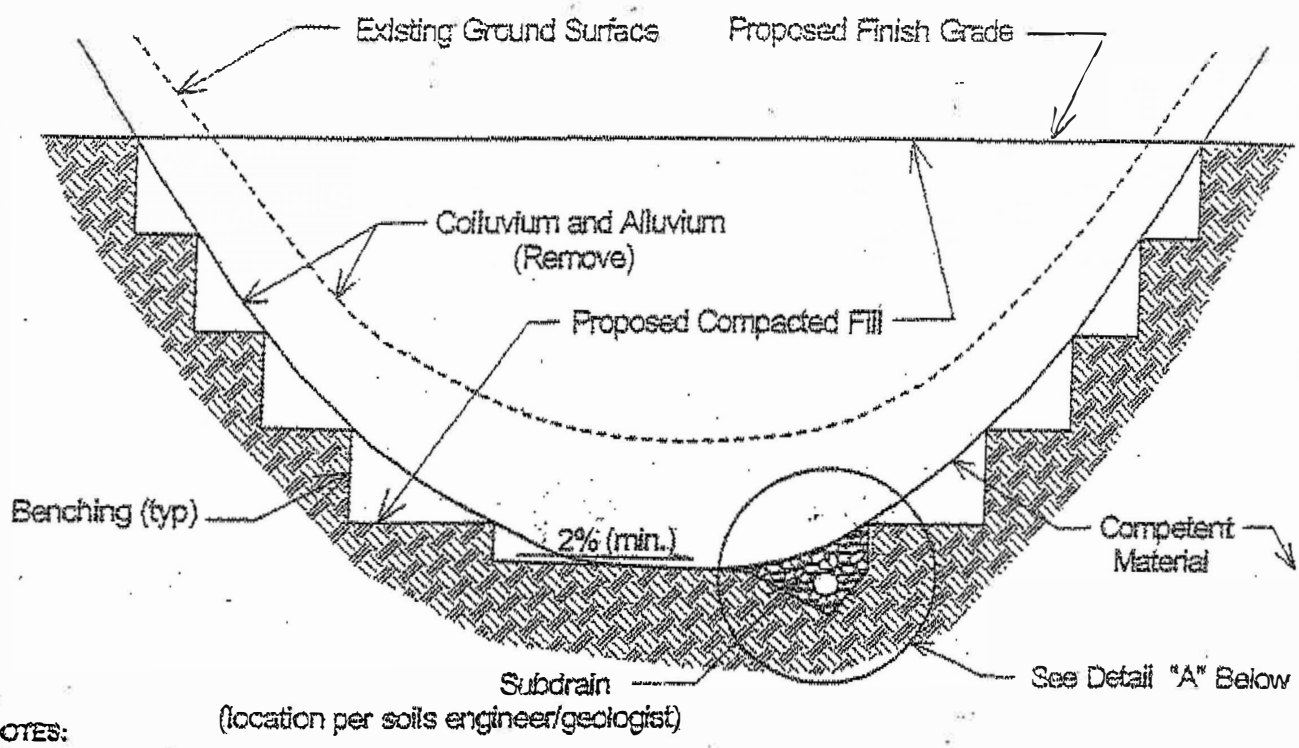
STREET CAPPING

Not To Scale
See attached soils report for specific recommendations.

Detail No. 19a

ALBUS-KREFE & ASSOCIATES, INC.

PLATE E-3



NOTES:

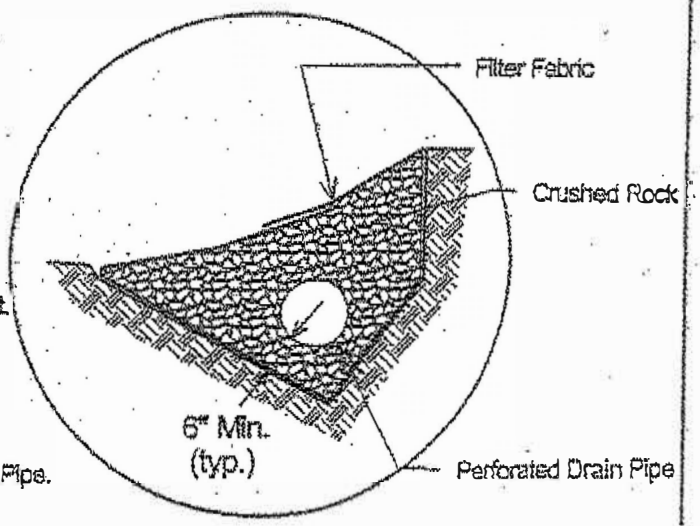
Perforated Drain Pipe should be at least 6 inches in diameter, or 8 inches for runs of more than 500 feet, consisting of either Shedule 40 PVC or SDR 35.
A min. of 8 perforations per linear foot should be provided along the bottom of pipe. The perforations should be in two rows 120 degrees apart, and have diameters of 3/8".
Upstream ends should be provided with a cap. The pipe should slope at a min. 1% gradient toward Outlet Pipes.
Glue all joints.

Outlet Pipe should equal the diameter of the perforated pipe, consisting of either shedule 40 PVC or SDR 35. The pipe should slope at a min. 1% gradient toward the Discharge Point.
Backfill around Outlet Pipe should consist of onsite soils.
Glue all joints.

Crushed Rock should conform to the Standard Specifications for Public Works Construction, Section 200-1.2, for 3/4".
Provide at least 9 cubic feet per lineal foot of Perforated Drain Pipe.
Provide at least 6 inches of gravel below Perforated Pipe.

Filter Fabric should consist of Miniff 140N or equivelent.
Ends should overlap at least 12 inches.

CALTRANS Class II Permeable Filter Material can be used in lieu of Crushed Rock encased in Filter Fabric



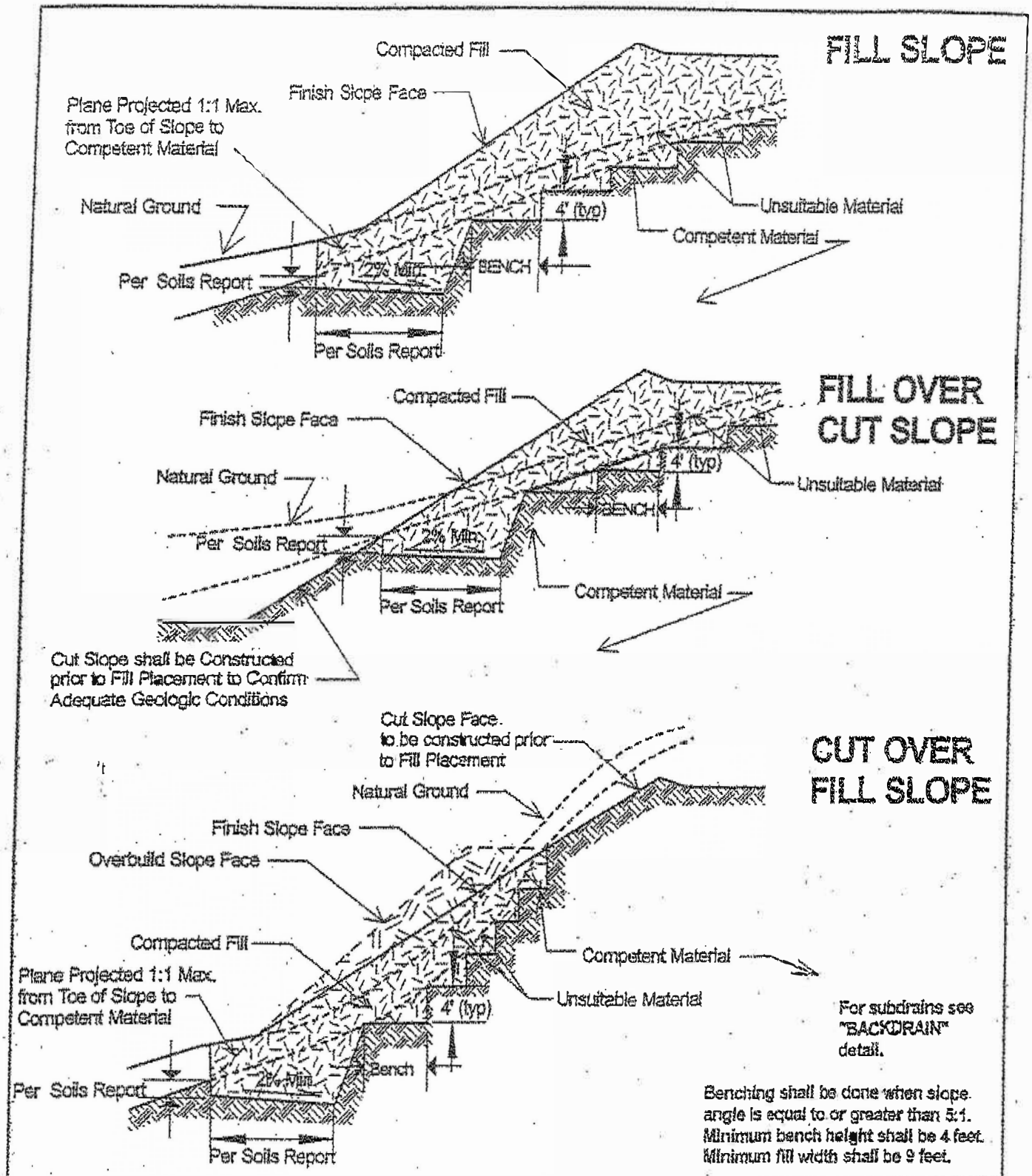
DETAIL "A"

CANYON SUBDRAIN

Not To Scale
See attached soils report for specific recommendations.

Detail No. 7b

ALBUS-KEEFE & ASSOCIATES, INC.



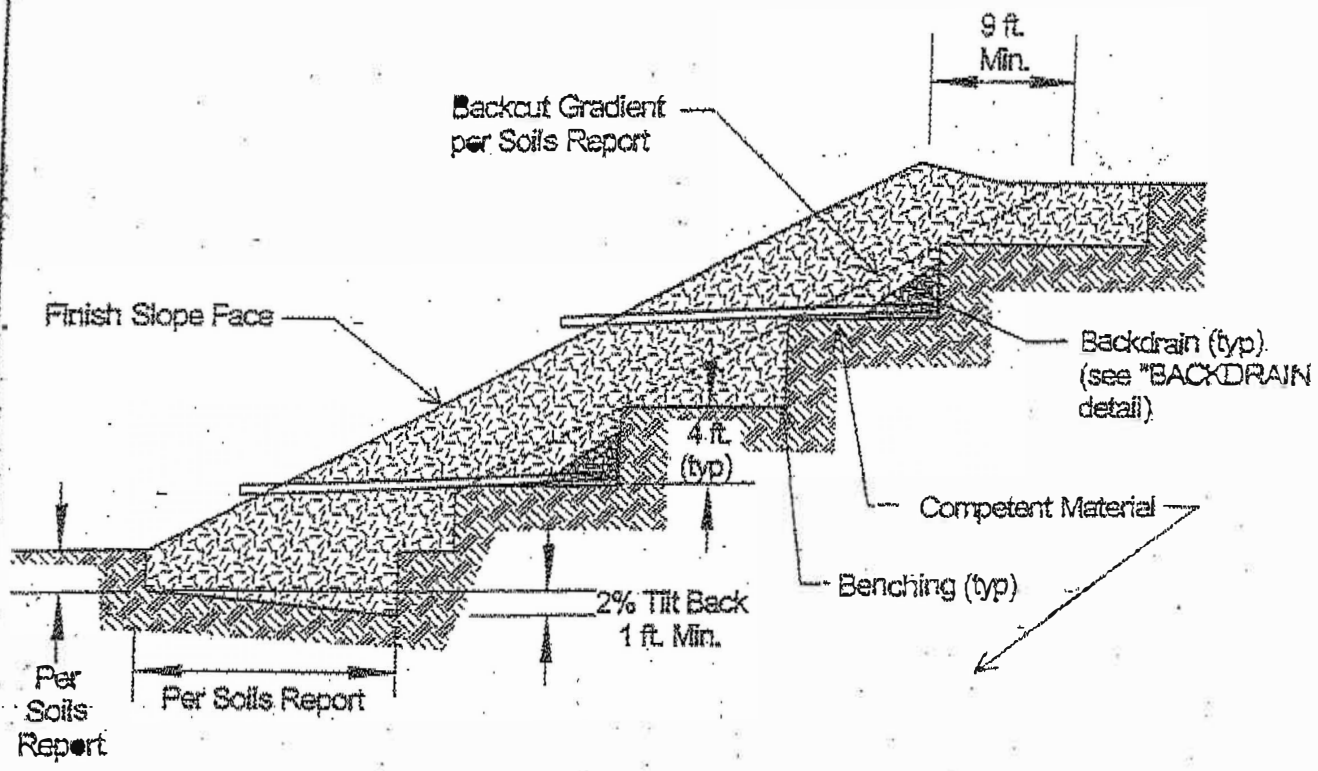
FILL SLOPE CONSTRUCTION

Not To Scale
See attached soils report for specific recommendations.

Detail No. 1

ALBUS-KEEFE & ASSOCIATES, INC.

PLATE E-5



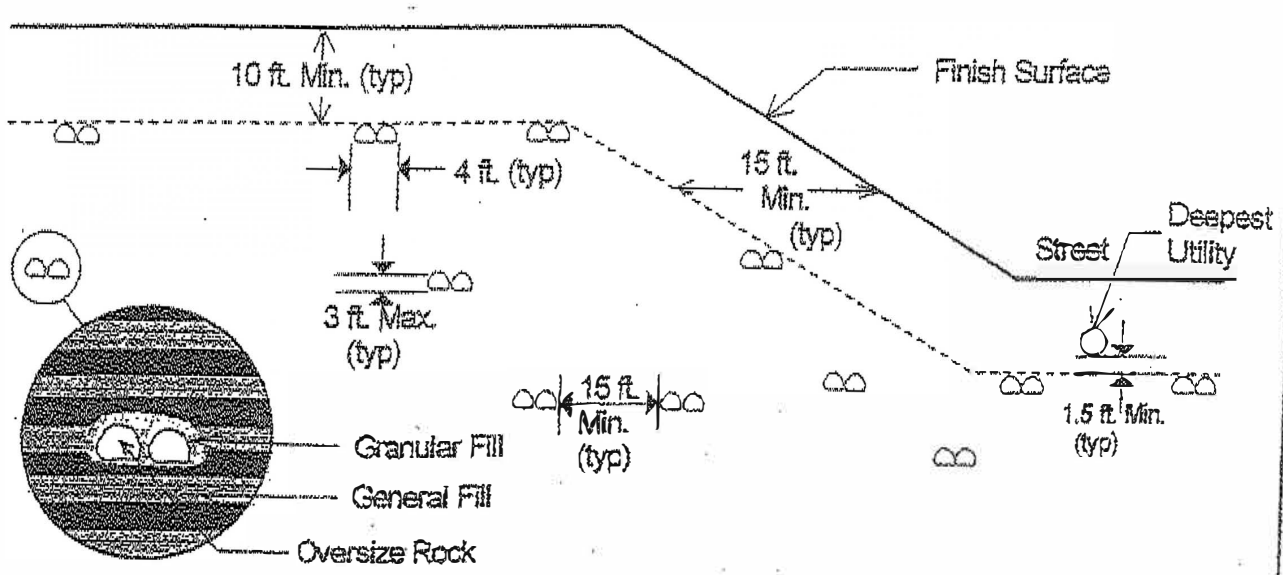
STABILIZATION FILL

Not To Scale
See attached soils report for specific recommendations.

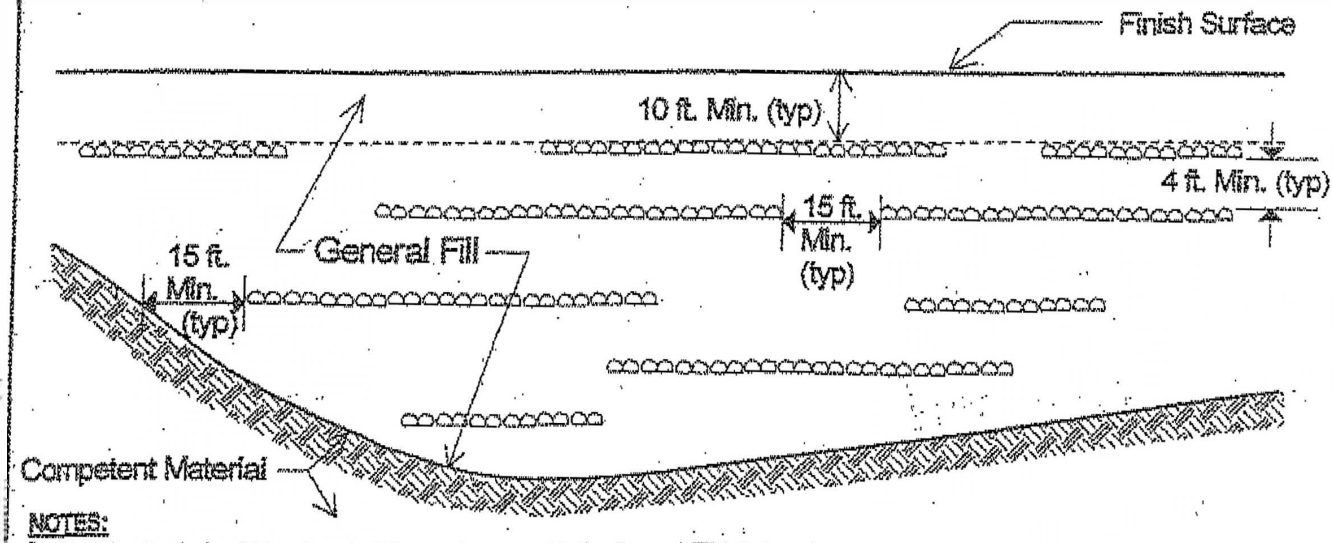
Detail No. 3b

ALBUS-KEEFE & ASSOCIATES, INC.

VIEW NORMAL TO SLOPE FACE



VIEW PARALLEL TO SLOPE FACE



NOTES:

A. Oversize Rock should be placed within troughs created in the General Fill (windrows)

B. Oversize Rock should be placed to avoid nesting.

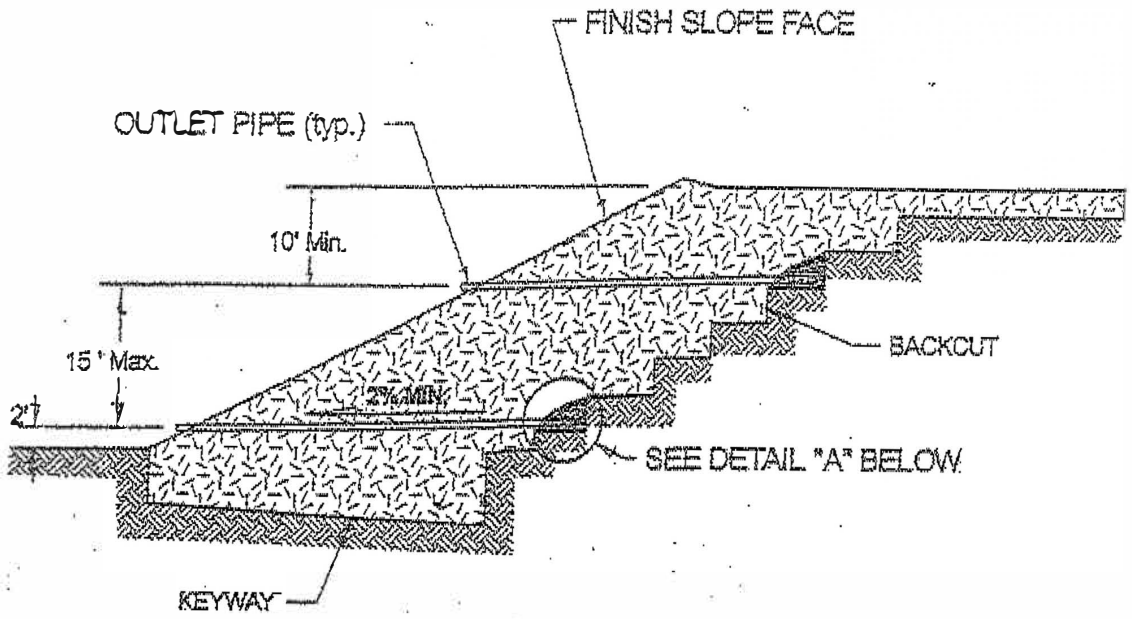
C. A layer of Granular Fill (soil material having a maximum particle size of 3 inches or less, and with a Sand Equivalent of 30 or more) should be placed over the Oversize Rock windrow and flooded.
This process should be repeated until all voids have been filled.

D. After the voids are filled with Granular Fill, the windrow should be track-walked with a dozer prior to placing General Fill over the windrow.

E. Oversize Rock, suitable for disposal by these methods, is defined as larger than 12 inches but not more than 36 inches in smallest dimension.

OVERSIZE ROCK DISPOSAL	Not To Scale See attached soils report for specific recommendations.

ALBUS-KEEFE & ASSOCIATES, INC.



NOTES:

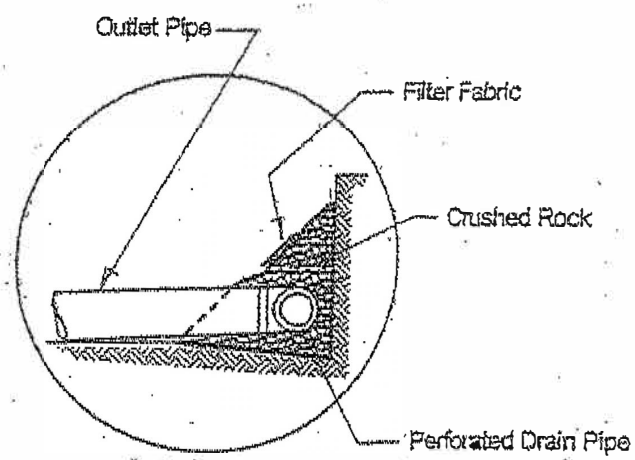
Perforated Drain Pipe should be at least 4 inches in diameter, or 6 inches for runs of more than 100 feet, consisting of either Shedule 40 PVC or SDR 35.
A min. of 8 perforations per linear foot should be provided along the bottom of pipe. The perforations should be in two rows 120 degrees apart, and have diameters of 3/8".
Upstream ends should be provided with a cap. The pipe should slope at a min. 1% gradient toward Outlet Pipes.
Glue all joints.

Outlet Pipe should equal the diameter of the perforated pipe, consisting of either shedule 40 PVC or SDR 35. The pipe should slope at a min. 1% gradient toward the Discharge Point.
Backfill around Outlet Pipe should consist of onsite soils.
Glue all joints.

Crushed Rock should conform to the Standard Specifications for Public Works Construction, Section 200-1.2, for 3/4".
Provide at least 5 cubic feet per lineal foot of Perforated Drain Pipe.
Provide at least 6 inches of gravel below Perforated Pipe.

Filter Fabric should consist of Mirifi 140N or equivelent.
Ends should overlap at least 12 inches.

CALTRANS Class II Permeable Filter Material can be used in lieu of Crushed Rock encased in Filter Fabric

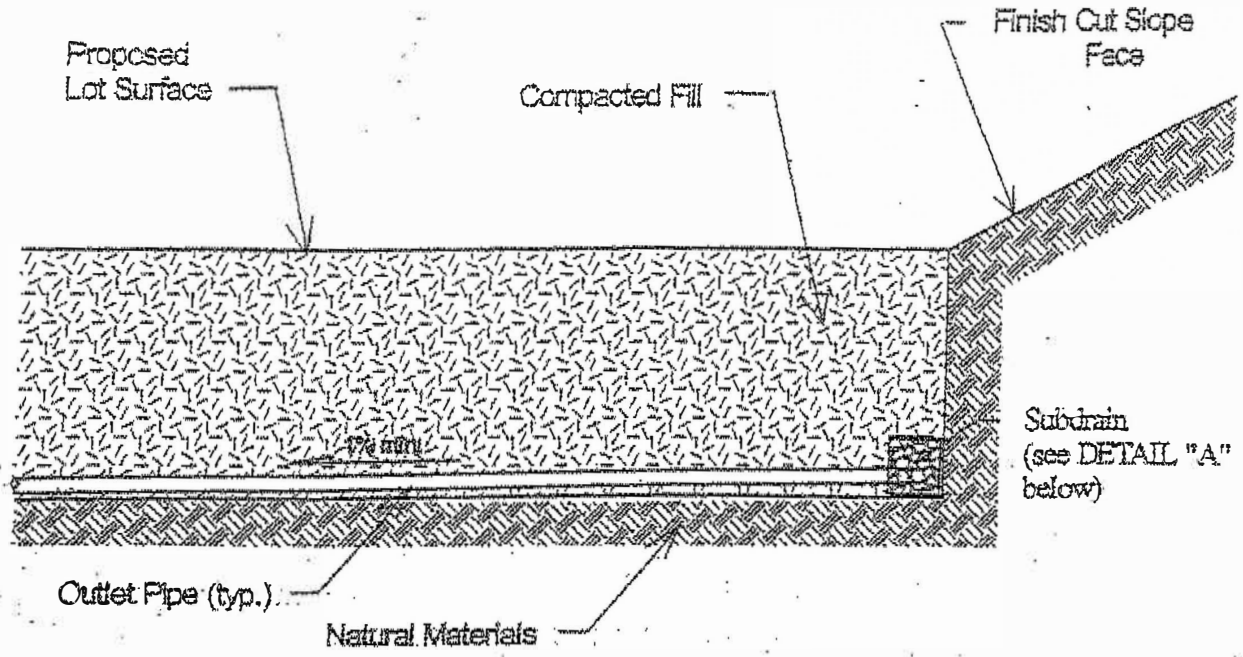


DETAIL "A"

BACKDRAIN

Not To Scale
See attached soils report for specific recommendations.

Detail No. 8a



NOTES:

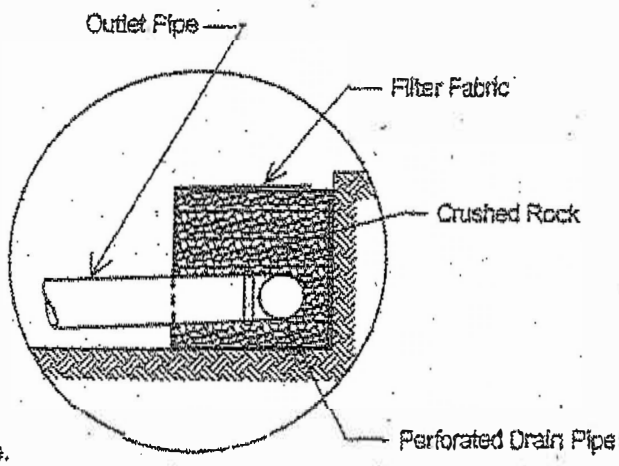
Perforated Drain Pipe should be at least 4 inches in diameter, or 6 inches for runs of more than 500 feet, consisting of either Shedule 40 PVC or SDR 35.
A min. of 8 perforations per linear foot should be provided along the bottom of pipe. The perforations should be in two rows 120 degrees apart, and have diameters of 3/8".
Upstream ends should be provided with a cap. The pipe should slope at a min. 1% gradient toward Outlet Pipes.
Glue all joints.

Outlet Pipe should equal the diameter of the perforated pipe, consisting of either shedule 40 PVC or SDR 35. The pipe should slope at a min. 1% gradient toward the Discharge Point.
Backfill around Outlet Pipe should consist of onsite soils.
Glue all joints.

Crushed Rock should conform to the Standard Specifications for Public Works Construction, Section 200-1.2, for 3/4".
Provide at least 3 cubic feet per lineal foot of Perforated Drain Pipe.
Provide at least 6 inches of gravel below Perforated Pipe.

Filter Fabric should consist of Mirifi 140N or equivelent.
Ends should overlap at least 12 inches.

CALTRANS Class II Permeable Filter Material can be used in lieu of Crushed Rock encased in Filter Fabric

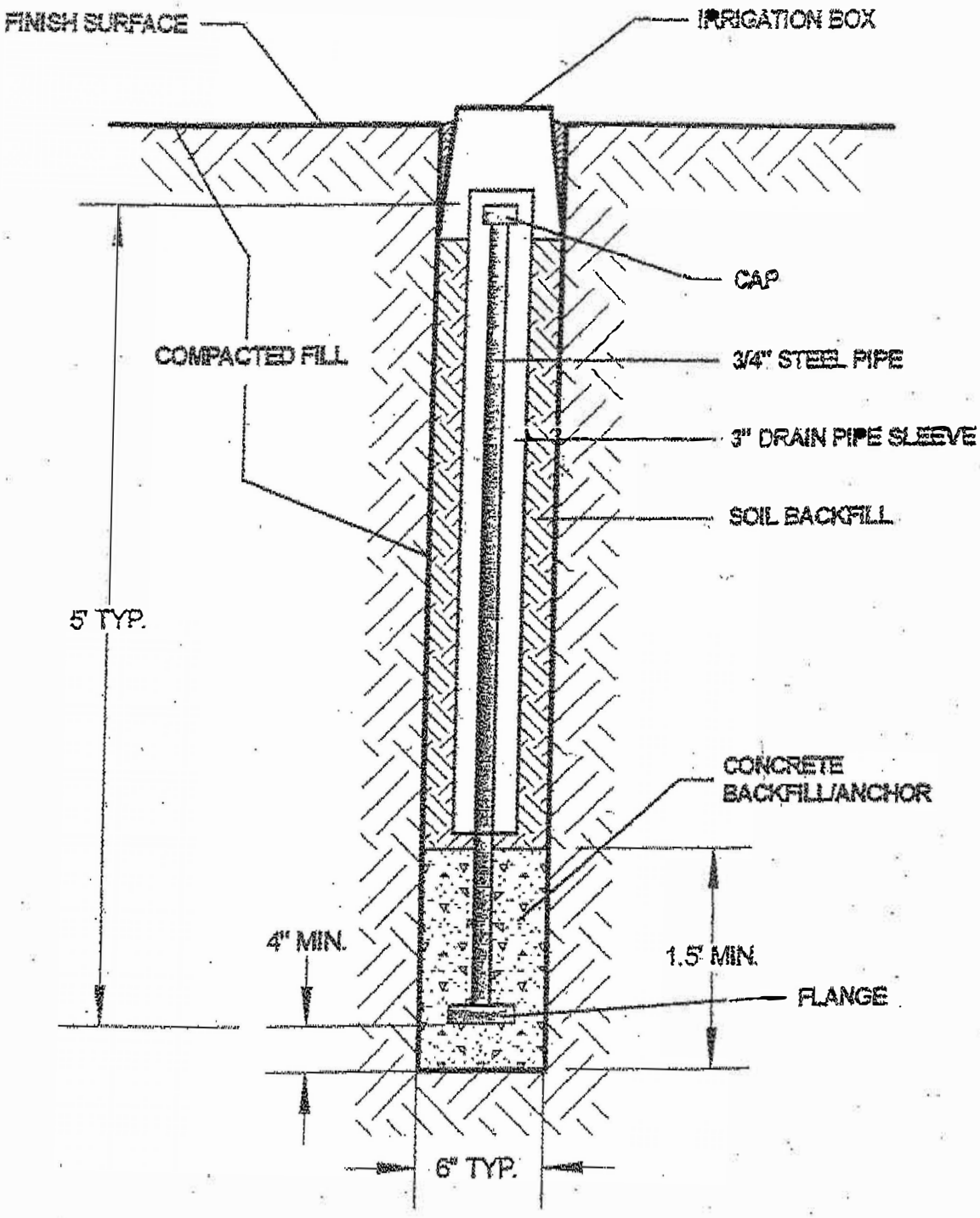


DETAIL "A"

LOT SUBDRAIN

Not To Scale
See attached soils report for specific recommendations.

Detail No. 12



SURFACE SETTLEMENT MONUMENT

Not To Scale
See attached soils report for specific recommendations.

Detail No. 20

ALBUS-KEEFE & ASSOCIATES, INC.

Appendix 4: Historical Site Conditions

Phase I Environmental Site Assessment or Other Information on Past Site Use

Appendix 5: LID Infeasibility

LID Technical Infeasibility Analysis

NOT APPLICABLE

Appendix 6: BMP Design Details

BMP Sizing, Design Details and other Supporting Documentation

WQMP Project Report

County of Riverside Stormwater Program

Santa Ana River Watershed Geodatabase

Monday, April 01, 2019

Note: The information provided in this report and on the Stormwater Geodatabase for the County of Riverside Stormwater Program is intended to provide basic guidance in the preparation of the applicant's Water Quality Management Plan (WQMP) and should not be relied upon without independent verification.

Project Site Parcel Number(s):	256050012
Latitude/Longitude:	33.959, -117.3129
Thomas Brothers Page:	686
Project Site Acreage:	9.39
Watershed(s):	SANTA ANA
This Project Site Resides in the following Hydrologic Unit(s) (HUC):	**HUC Name** - HUC Number **Tequesquite Arroyo** - 180702030802
The HUCs Contribute stormwater to the following 303d listed water bodies and TMDLs which may include drainage from your proposed Project Site:	**WBID Name** - WBID Number **Santa Ana River, Reach 3** - CAR8012100019990211140353
These 303d listed Water bodies and TMDLs have the following Pollutants of Concern (POC):	**Bacterial Indicators** - Pathogens **Metals/Metalloids** - Copper, Lead
Limitations on Infiltration:	**Project Site Onsite Soils Group(s)** - A, C, D **Known Groundwater Contamination Plumes within 1000'** - No **Adjacent Water Supply Wells(s)** - No information available please contact your local water agency for more information. Your local contact agency is CITY OF RIVERSIDE W.S.A. Your local wholesaler contact agency is .
Environmentally Sensitive Areas within 200'(Fish and Wildlife Habitat/Species):	None
Environmentally Sensitive Areas within 200'(CVMSHCP):	None
Environmentally Sensitive Areas within 200'(WRMSHCP):	Criteria Area Survey Req. - Area 6,Burrowing Owl Survey Required Area
Groundwater elevation from Mean Sea Level:	No Data
85th Percentile Design Storm Depth (in):	0.613
Groundwater Basin:	No Data
MSHCP/CVMSHCP Criteria Cell(s):	Click here for detailed MSHCP report
Retention Ordinance Information:	No Data
Studies and Reports Related to Project Site:	IBI Scores - Southern Cal ArlingtonBasin RiversideBasin bulletin118_4-sc water_fact_3_7.11 8039-SAR-Hydromodification Comprehensive Bacteria Reduction Plan 2012 Annual Report of Santa Ana River

Santa Ana Watershed - BMP Design Volume, V_{BMP}

(Rev. 10-2011)

Legend: Required Entries / Calculated Cells

*(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)*

Company Name	TRWE	Date	5/4/2020
Designed by	AJS	Case No	PW19-0952
Company Project Number/Name	Crestview Apartments		

BMP Identification

BMP NAME / ID: DMA D/1

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

85th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E

D_{85}= 0.61 inches

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	Design Storm Depth (in)	Design Capture Volume, V_{BMP} (cubic feet)	Proposed Volume on Plans (cubic feet)
D/1 ROOF	58162	Roofs	1	0.89	51880.5			
D/1 CONC	65271	Concrete or Asphalt	1	0.89	58221.7			
D/1 PAVER	15043	Grouted or Gapless Paving Blocks	1	0.89	13418.4			
D/1 LSCAPE	41252	Ornamental Landscaping	0.1	0.11	4556.6			
D/1 TURF	1619	Turf block	0.1	0.11	178.8			
	181347	Total			128256	0.61	6551.7	6,735

Notes:

Bioretention Facility - Design Procedure	BMP ID D/1	Legend:	Required Entries / Calculated Cells
Company Name:	TRWE	Date:	#########
Designed by:	AJS	County/City Case No.:	PW19-0952

Design Volume

Enter the area tributary to this feature	A_T=	4.1631543	acres
Enter V_{BMP} determined from Section 2.1 of this Handbook	V_{BMP}=	6,552	ft^3

Type of Bioretention Facility Design

- ○ Side slopes required (parallel to parking spaces or adjacent to walkways)
- ◉ No side slopes required (perpendicular to parking space or Planter Boxes)

Bioretention Facility Surface Area

Depth of Soil Filter Media Layer	d_S =	1.8	ft
Top Width of Bioretention Facility, excluding curb	w_T =	10.0	ft
Total Effective Depth, d_E			
$d_E = [(0.3) \times d_S + (0.4) \times 1] + 0.5$	d_E =	1.43	ft
Minimum Surface Area, A_m $A_M\ (ft^2) = \frac{V_{BMP}\ (ft^3)}{d_E\ (ft)}$	A_M =	4,598	ft^2
Proposed Surface Area	A=	4,727	ft^2
Minimum Required Length of Bioretention Facility, L	L =	459.8	ft

Bioretention Facility Properties

Side Slopes in Bioretention Facility	z =		:1
Diameter of Underdrain		6	inches
Longitudinal Slope of Site (3% maximum)			%
6" Check Dam Spacing			feet
Describe Vegetation:			

Notes: Basin is comprised of six (6) separate components

All components are hydraulically connected via underdrain and surface equalization pipe

All components are elevated at the same finished grade elevation

BMP D/1 Storage Curve

Depth (ft)	Area (ft^2)	Volume (ft^3)
0.00	4,726	0
0.08	4,726	158
0.17	4,726	315
0.25	4,726	473
0.33	4,726	630
0.42	4,726	788
0.50	4,726	945
0.58	4,726	1,103
0.67	4,726	1,260
0.75	4,726	1,418
0.83	4,726	1,575
0.92	4,726	1,733
1.00	4,726	1,890
1.08	4,726	2,009
1.17	4,726	2,127
1.25	4,726	2,245
1.33	4,726	2,363
1.42	4,726	2,481
1.50	4,726	2,599
1.58	4,726	2,717
1.67	4,726	2,836
1.75	4,726	2,954
1.83	4,726	3,072
1.92	4,726	3,190
2.00	4,726	3,308
2.08	4,726	3,426
2.17	4,726	3,545
2.25	4,726	3,663
2.33	4,726	3,781
2.42	4,726	3,899
2.50	4,726	4,017
2.58	4,726	4,135
2.67	4,726	4,253
2.75	4,726	4,372
2.83	4,726	4,765
2.92	4,726	5,159
3.00	4,726	5,553
3.08	4,726	5,947
3.17	4,726	6,341
3.25	4,726	6,735

Santa Ana Watershed - BMP Design Volume, V_{BMP}

(Rev. 10-2011)

Legend: Required Entries / Calculated Cells

*(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)*

Company Name	TRWE	Date	5/4/2020
Designed by	AJS	Case No	PW19-0952
Company Project Number/Name	Crestview Apartments		

BMP Identification

BMP NAME / ID: DMA D/2

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

85th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E

D_{85}= 0.61 inches

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	Design Storm Depth (in)	Design Capture Volume, V_{BMP} (cubic feet)	Proposed Volume on Plans (cubic feet)
D/2 ROOF	58438	Roofs	1	0.89	52126.7			
D/2 CONC	48237	Concrete or Asphalt	1	0.89	43027.4			
D/2 LSCAPE	12926	Ornamental Landscaping	0.1	0.11	1427.8			
D/2 TURF	3187	Turf block	0.1	0.11	352			
	122788	Total			96933.9	0.61	4951.7	4,967

Notes:

Bioretention Facility - Design Procedure	BMP ID D/2	Legend:	Required Entries / Calculated Cells
Company Name:	TRWE	Date:	#########
Designed by:	AJS	County/City Case No.:	PW19-0952

Design Volume

Enter the area tributary to this feature	A_T=	2.8188246	acres
Enter V_{BMP} determined from Section 2.1 of this Handbook	V_{BMP}=	4,952	ft^3

Type of Bioretention Facility Design

- ○ Side slopes required (parallel to parking spaces or adjacent to walkways)
- ◉ No side slopes required (perpendicular to parking space or Planter Boxes)

Bioretention Facility Surface Area

Depth of Soil Filter Media Layer	d_S =	2.5	ft
Top Width of Bioretention Facility, excluding curb	w_T =	5.0	ft
Total Effective Depth, d_E			
$d_E = [(0.3) \times d_S + (0.4) \times 1] + 0.5$	d_E =	1.65	ft
Minimum Surface Area, A_m $A_M\ (ft^2) = \frac{V_{BMP}\ (ft^3)}{d_E\ (ft)}$	A_M =	3,002	ft^2
Proposed Surface Area	A=	3,010	ft^2
Minimum Required Length of Bioretention Facility, L	L =	600.4	ft

Bioretention Facility Properties

Side Slopes in Bioretention Facility	z =		:1
Diameter of Underdrain		6	inches
Longitudinal Slope of Site (3% maximum)			%
6" Check Dam Spacing			feet
Describe Vegetation:			

Notes: Basin is comprised of seven (7) separate components

All components are hydraulically connected via underdrain and surface equalization pipe

All components are elevated at the same finished grade elevation

BMP D/2 Storage Curve

Depth (ft)	Area (ft^2)	Volume (ft^3)
0.00	3,010	0
0.08	3,010	100
0.17	3,010	201
0.25	3,010	301
0.33	3,010	401
0.42	3,010	502
0.50	3,010	602
0.58	3,010	702
0.67	3,010	803
0.75	3,010	903
0.83	3,010	1,003
0.92	3,010	1,104
1.00	3,010	1,204
1.08	3,010	1,279
1.17	3,010	1,355
1.25	3,010	1,430
1.33	3,010	1,505
1.42	3,010	1,580
1.50	3,010	1,656
1.58	3,010	1,731
1.67	3,010	1,806
1.75	3,010	1,881
1.83	3,010	1,957
1.92	3,010	2,032
2.00	3,010	2,107
2.08	3,010	2,182
2.17	3,010	2,258
2.25	3,010	2,333
2.33	3,010	2,408
2.42	3,010	2,483
2.50	3,010	2,559
2.58	3,010	2,634
2.67	3,010	2,709
2.75	3,010	2,784
2.83	3,010	2,860
2.92	3,010	2,935
3.00	3,010	3,010
3.08	3,010	3,085
3.17	3,010	3,161
3.25	3,010	3,236
3.33	3,010	3,311
3.42	3,010	3,386
3.50	3,010	3,462

BMP D/2 Storage Curve

Depth (ft)	Area (ft^2)	Volume (ft^3)
3.58	3,010	3,712
3.67	3,010	3,963
3.75	3,010	4,214
3.83	3,010	4,465
3.92	3,010	4,716
4.00	3,010	4,967

Santa Ana Watershed - BMP Design Volume, V_{BMP}

(Rev. 10-2011)

Legend: Required Entries / Calculated Cells

*(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)*

Company Name	TRWE	Date	5/4/2020
Designed by	AJS	Case No	PW19-0952
Company Project Number/Name	Crestview Apartments		

BMP Identification

BMP NAME / ID: DMA D/3

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

85th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E

D_{85}= 0.61 inches

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
D/3 ROOF	*21404*	*Roofs*	*1*	*0.89*	*19092.4*			
D/3 CONC	*12711*	*Concrete or Asphalt*	*1*	*0.89*	*11338.2*			
D/3 LSCAPE	*10415*	*Ornamental Landscaping*	*0.1*	*0.11*	*1150.4*			
	44530	***Total***			**31581**	**0.61**	***1613.3***	***1,620***

Notes:

Bioretention Facility - Design Procedure	BMP ID D/3	Legend:	Required Entries / Calculated Cells
Company Name:	TRWE	Date:	#########
Designed by:	AJS	County/City Case No.:	PW19-0952

Design Volume

Enter the area tributary to this feature	A_T=	1.0222681	acres
Enter V_{BMP} determined from Section 2.1 of this Handbook	V_{BMP}=	1,613	ft^3

Type of Bioretention Facility Design

- ○ Side slopes required (parallel to parking spaces or adjacent to walkways)
- ◉ No side slopes required (perpendicular to parking space or Planter Boxes)

Bioretention Facility Surface Area

Depth of Soil Filter Media Layer	d_S =	3.0	ft
Top Width of Bioretention Facility, excluding curb	w_T =	15.0	ft
Total Effective Depth, d_E			
$d_E = [(0.3) \times d_S + (0.4) \times 1] + 0.5$	d_E =	1.80	ft
Minimum Surface Area, A_m $A_M\ (ft^2) = \frac{V_{BMP}\ (ft^3)}{d_E\ (ft)}$	A_M =	897	ft^2
Proposed Surface Area	A=	900	ft^2
Minimum Required Length of Bioretention Facility, L	L =	59.8	ft

Bioretention Facility Properties

Side Slopes in Bioretention Facility	z =		:1
Diameter of Underdrain		6	inches
Longitudinal Slope of Site (3% maximum)			%
6" Check Dam Spacing			feet
Describe Vegetation:			

Notes:

BMP D/3 Storage Curve

Depth (ft)	Area (ft^2)	Volume (ft^3)
0.00	900	0
0.08	900	30
0.17	900	60
0.25	900	90
0.33	900	120
0.42	900	150
0.50	900	180
0.58	900	210
0.67	900	240
0.75	900	270
0.83	900	300
0.92	900	330
1.00	900	360
1.08	900	383
1.17	900	405
1.25	900	428
1.33	900	450
1.42	900	473
1.50	900	495
1.58	900	518
1.67	900	540
1.75	900	563
1.83	900	585
1.92	900	608
2.00	900	630
2.08	900	653
2.17	900	675
2.25	900	698
2.33	900	720
2.42	900	743
2.50	900	765
2.58	900	788
2.67	900	810
2.75	900	833
2.83	900	855
2.92	900	878
3.00	900	900
3.08	900	923
3.17	900	945
3.25	900	968
3.33	900	990
3.42	900	1,013
3.50	900	1,035

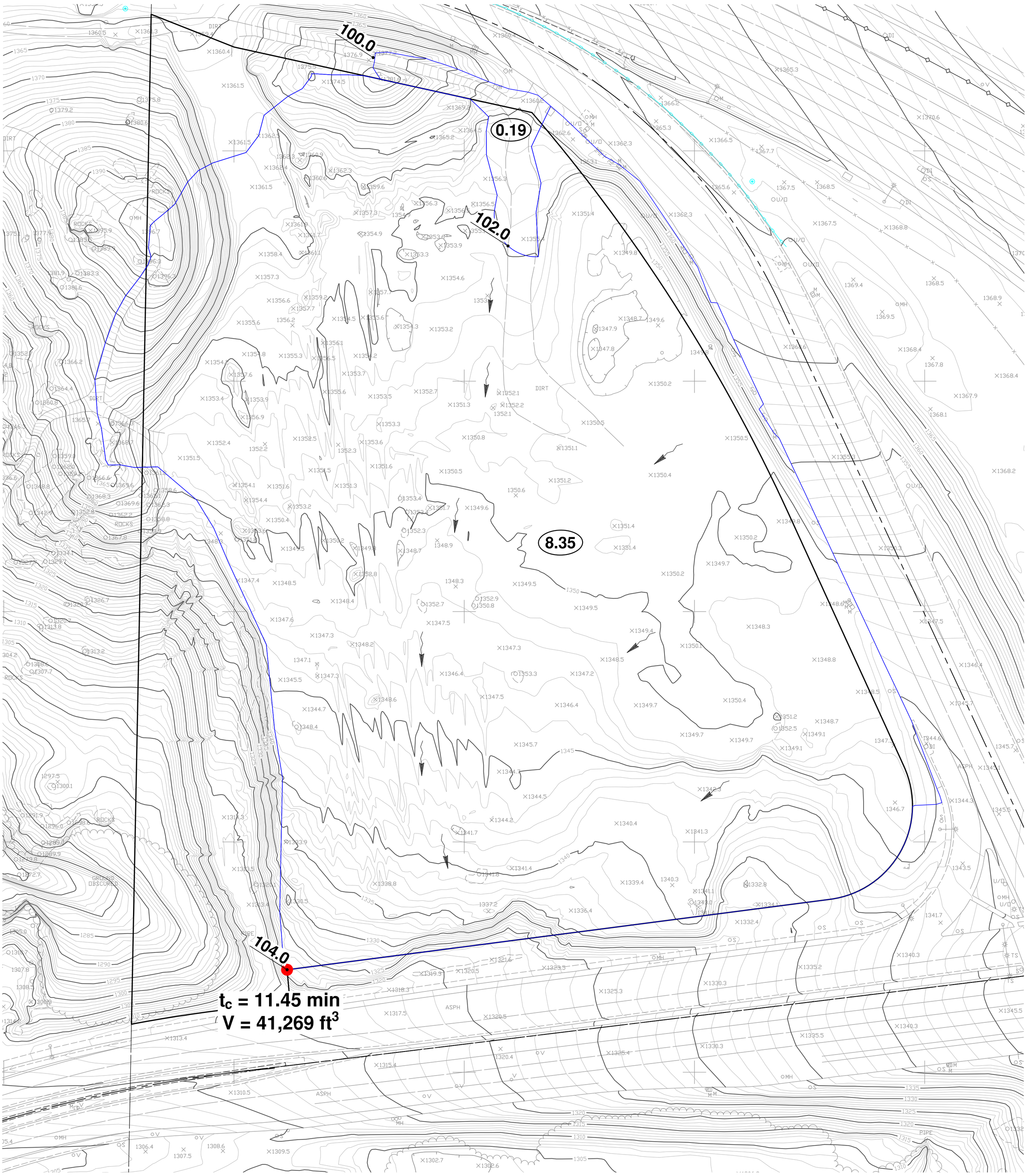
BMP D/3 Storage Curve

Depth (ft)	Area (ft^2)	Volume (ft^3)
3.58	900	1,058
3.67	900	1,080
3.75	900	1,103
3.83	900	1,125
3.92	900	1,148
4.00	900	1,170
4.08	900	1,245
4.17	900	1,320
4.25	900	1,395
4.33	900	1,470
4.42	900	1,545
4.50	900	1,620

Appendix 7: Hydromodification

Supporting Detail Relating to Hydrologic Conditions of Concern

HCOC EXHIBIT: EXISTING CONDITION
CENTRAL APARTMENTS



LEGEND

- DRAINAGE BOUNDARY
- 1280 — EXISTING CONTOUR LINE
- DISCHARGE POINT
- FLOW DIRECTION
- 147.0 — NODE
- 0.36 — AREA (AC)

N

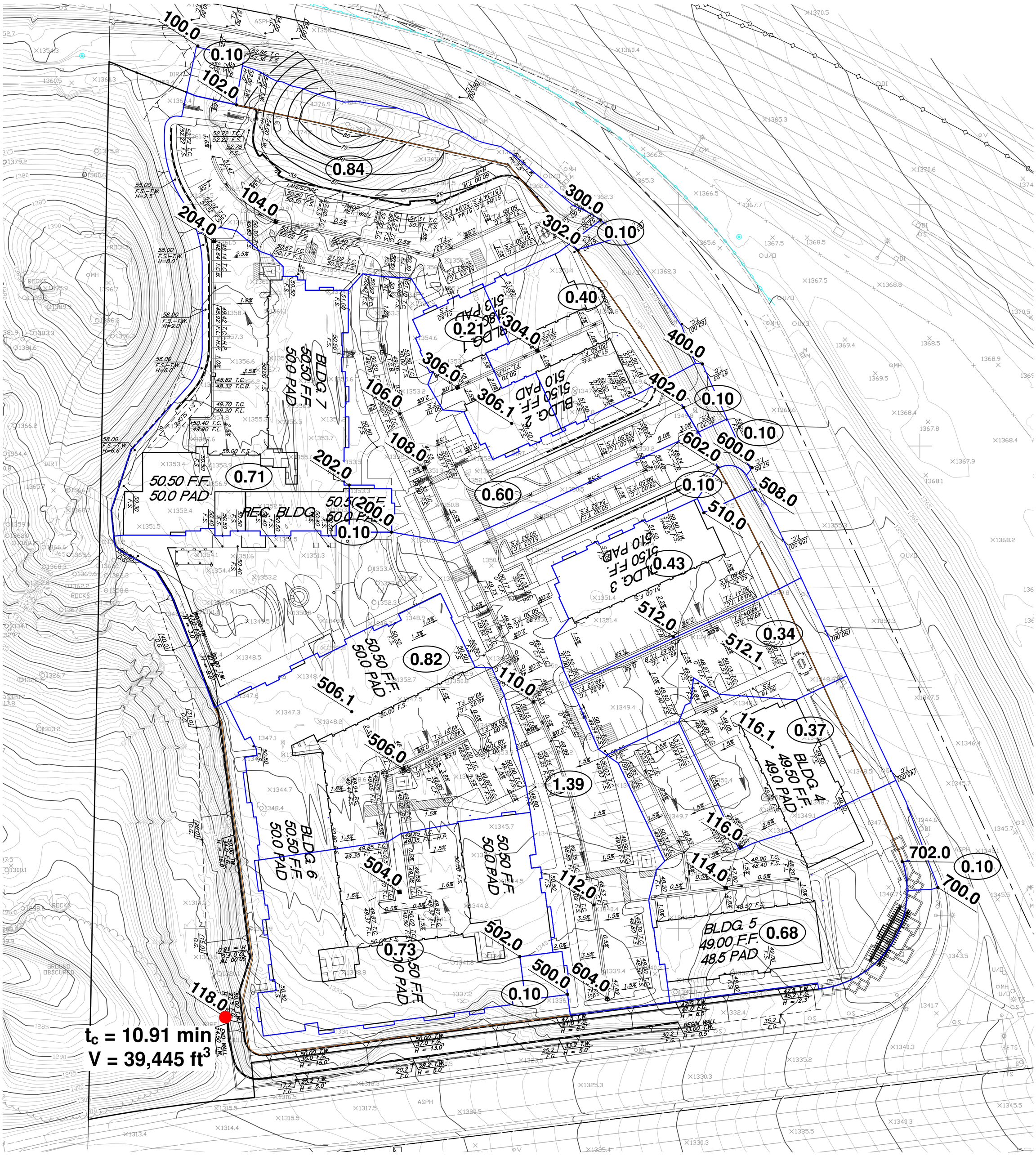
0 20 40 80 120 160

SCALE: 1"=40'

Date: May 4, 2020

Sheet 1 of 2

HCOC EXHIBIT: PROPOSED CONDITION
CENTRAL APARTMENTS



LEGEND

	DRAINAGE BOUNDARY
1280	EXISTING CONTOUR LINE
	DISCHARGE POINT
	FLOW DIRECTION
147.0	NODE
0.36	AREA (AC)

N

0 20 40 80 120 160

SCALE: 1"=40'

Date: May 4, 2020

Sheet 2 of 2

Hydrologic Soil Group—Western Riverside Area, California
(Central Apartments HSG)

Map Scale: 1:1,590 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 20 40 80 120

Feet: 0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Western Riverside Area, California
Survey Area Data: Version 11, Sep 12, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 17, 2018—Jun 28, 2018

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
ChF2	Cieneba sandy loam, 15 to 50 percent slopes, eroded	D	4.9	52.2%
CkF2	Cieneba rocky sandy loam, 15 to 50 percent slopes, eroded	D	2.0	21.1%
HcC	Hanford coarse sandy loam, 2 to 8 percent slopes	A	0.3	2.8%
MmD2	Monserate sandy loam, 8 to 15 percent slopes, eroded	C	0.3	2.7%
TeG	Terrace escarpments		2.0	21.1%
Totals for Area of Interest			**9.4**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Central Apartments (Existing Condition)

Storm	Volume (ac-ft)	Volume (cf)	Peak FLow (cfs)
2-yr, 24-hour	0.95	41269	1.89

Unit Time for 24-hour storms = 15 minutes (per Plate E-1.2)

Storm Event	Precipitation (inches)	RCFC&WCD Hydrology Manual Reference
2-yr, 24-hour	1.80	Plate E-5.6

Central Apartments (Existing Condition)

Drainage Area	372,096	sf		
	8.54	ac		
A_i	0	sf		
	0%	imp		
Runoff Index	93		Note:	Plate E-6.1: Barren (Rockland, eroded and graded land); Soil Type D
F_p	0.03	in/hr	Note:	Plate E-6.2: AMC I

$$F = F_p(1 - 0.9A_i)$$ ***F =*** **0.030 in/hr**

For 24-hr storms, F_T is variable loss rate

$$F_T = C[24 - (T/60)]^{1.55} + F_M$$ ***F_T =*** **0.053**

$$C = (F - F_M)/54$$ ***C =*** **0.0003**

$$T = \text{Unit Time}/2$$ ***T =*** **7.5**

$$F_M = 0.5F$$ ***F_M =*** **0.015**

R C F C & W C D HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph and Effective Rain Calculation Form	Project: Crestview Apartments (Existing Condition) By: AJS Date: 05/04/20 Checked: Date:	Sheet 1 / 1

[1] CONCENTRATION POINT	---	[2] AREA DESIGNATION	---
[3] DRAINAGE AREA-ACRES	8.54	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	N/A
[5] UNIT TIME-MINUTES	15	[6] LAG TIME-MINUTES	---
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	---	[8] S-CURVE	N/A
[9] STORM FREQUENCY & DURATION	2-YR, 24-HR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	1.8
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	0.030	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	0.015
[13] CONSTANT LOSS RATE-INCHES/HOUR	---	[14] LOW LOSS RATE-PERCENT	90%

	UNIT HYDROGRAPH				EFFECTIVE RAIN					FLOOD HYDROGRAPH
[15] UNIT TIME PERIOD m	[16] TIME PERCENT OF LAG [7]*[15]	[17] CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	[16] DISTRIB GRAPH PERCENT [17]m-[17]m-1	[17] UNIT HYDROGRAPH CFS-HRS/IN [4]*[18] 100.000	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN IN/HR 60[10][20] 100[5]	[22] LOSS RATE IN/HR MAX	[22] LOSS RATE IN/HR LOW	[23] EFFECTIVE RAIN IN/HR [21]-[22]	[24] FLOW CFS
1					0.2	0.014	0.053	0.000	0.014	0.12
2					0.3	0.022	0.052	0.000	0.021	0.18
3					0.3	0.022	0.052	0.000	0.021	0.18
4					0.4	0.029	0.051	0.000	0.029	0.25
5					0.3	0.022	0.051	0.000	0.021	0.18
6					0.3	0.022	0.050	0.000	0.021	0.18
7					0.3	0.022	0.049	0.000	0.021	0.18
8					0.4	0.029	0.049	0.000	0.029	0.25
9					0.4	0.029	0.048	0.000	0.029	0.25
10					0.4	0.029	0.048	0.000	0.029	0.25
11					0.5	0.036	0.047	0.000	0.036	0.31
12					0.5	0.036	0.046	0.000	0.036	0.31
13					0.5	0.036	0.046	0.000	0.036	0.31
14					0.5	0.036	0.045	0.000	0.036	0.31
15					0.5	0.036	0.045	0.000	0.036	0.31
16					0.6	0.043	0.044	0.000	0.043	0.37
17					0.6	0.043	0.044	0.000	0.043	0.37
18					0.7	0.050	0.043	0.000	0.007	0.06
19					0.7	0.050	0.042	0.000	0.008	0.07
20					0.8	0.058	0.042	0.001	0.016	0.14
21					0.6	0.043	0.041	0.000	0.002	0.02
22					0.7	0.050	0.041	0.000	0.010	0.08
23					0.8	0.058	0.040	0.001	0.017	0.15
24					0.8	0.058	0.040	0.001	0.018	0.15
25					0.9	0.065	0.039	0.001	0.026	0.22
26					0.9	0.065	0.039	0.001	0.026	0.22
27					1.0	0.072	0.038	0.001	0.034	0.29
28					1.0	0.072	0.038	0.001	0.034	0.30
29					1.0	0.072	0.037	0.001	0.035	0.30
30					1.1	0.079	0.037	0.001	0.043	0.37
31					1.2	0.086	0.036	0.001	0.050	0.43
32					1.3	0.094	0.036	0.001	0.058	0.50
33					1.5	0.108	0.035	0.001	0.073	0.63
34					1.5	0.108	0.035	0.001	0.073	0.63
35					1.6	0.115	0.034	0.001	0.081	0.70
36					1.7	0.122	0.034	0.001	0.089	0.76
37					1.9	0.137	0.033	0.001	0.104	0.89
38					2.0	0.144	0.033	0.001	0.111	0.96
39					2.1	0.151	0.032	0.001	0.119	1.02
40					2.2	0.158	0.032	0.001	0.127	1.09
41					1.5	0.108	0.031	0.001	0.077	0.66
42					1.5	0.108	0.031	0.001	0.077	0.66
43					2.0	0.144	0.030	0.001	0.114	0.98
44					2.0	0.144	0.030	0.001	0.114	0.98
45					1.9	0.137	0.030	0.001	0.107	0.92
46					1.9	0.137	0.029	0.001	0.108	0.93
47					1.7	0.122	0.029	0.001	0.094	0.81
48					1.8	0.130	0.028	0.001	0.101	0.87
49					2.5	0.180	0.028	0.002	0.152	1.31
50					2.6	0.187	0.027	0.002	0.160	1.38
51					2.8	0.202	0.027	0.002	0.175	1.50
52					2.9	0.209	0.027	0.002	0.182	1.57
53					3.4	0.245	0.026	0.002	0.219	1.88
54					3.4	0.245	0.026	0.002	0.219	**1.89**
55					2.3	0.166	0.025	0.001	0.140	1.21
56					2.3	0.166	0.025	0.001	0.141	1.21
57					2.7	0.194	0.025	0.002	0.170	1.46
58					2.6	0.187	0.024	0.002	0.163	1.40
59					2.6	0.187	0.024	0.002	0.163	1.41
60					2.5	0.180	0.024	0.002	0.156	1.35
61					2.4	0.173	0.023	0.002	0.150	1.29
62					2.3	0.166	0.023	0.001	0.143	1.23
63					1.9	0.137	0.022	0.001	0.114	0.98
64					1.9	0.137	0.022	0.001	0.115	0.99

R C F C & W C D HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph and Effective Rain Calculation Form	Project: Crestview Apartments (Existing Condition) By: AJS Date: 05/04/20 Checked: Date:	Sheet 1 / 1

[1] CONCENTRATION POINT	---	[2] AREA DESIGNATION	---
[3] DRAINAGE AREA-ACRES	8.54	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	N/A
[5] UNIT TIME-MINUTES	15	[6] LAG TIME-MINUTES	---
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	---	[8] S-CURVE	N/A
[9] STORM FREQUENCY & DURATION	2-YR, 24-HR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	1.8
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	0.030	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	0.015
[13] CONSTANT LOSS RATE-INCHES/HOUR	---	[14] LOW LOSS RATE-PERCENT	90%

	UNIT HYDROGRAPH				EFFECTIVE RAIN					FLOOD HYDROGRAPH
[15] UNIT TIME PERIOD m	[16] TIME PERCENT OF LAG [7]*[15]	[17] CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	[16] DISTRIB GRAPH PERCENT [17]m-[17]m-1	[17] UNIT HYDROGRAPH CFS-HRS/IN [4]*[18] / 100.000	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN IN/HR 60[10][20] / 100[5]	[22] LOSS RATE IN/HR MAX	[22] LOSS RATE IN/HR LOW	[23] EFFECTIVE RAIN IN/HR [21]-[22]	[24] FLOW CFS
65					0.4	0.029	0.022	0.000	0.007	0.06
66					0.4	0.029	0.021	0.000	0.007	0.06
67					0.3	0.022	0.021	0.000	0.000	0.00
68					0.3	0.022	0.021	0.000	0.001	0.01
69					0.5	0.036	0.021	0.000	0.015	0.13
70					0.5	0.036	0.020	0.000	0.016	0.14
71					0.5	0.036	0.020	0.000	0.016	0.14
72					0.4	0.029	0.020	0.000	0.009	0.08
73					0.4	0.029	0.019	0.000	0.009	0.08
74					0.4	0.029	0.019	0.000	0.010	0.08
75					0.3	0.022	0.019	0.000	0.003	0.02
76					0.2	0.014	0.018	0.000	0.014	0.12
77					0.3	0.022	0.018	0.000	0.003	0.03
78					0.4	0.029	0.018	0.000	0.011	0.09
79					0.3	0.022	0.018	0.000	0.004	0.03
80					0.2	0.014	0.017	0.000	0.014	0.12
81					0.3	0.022	0.017	0.000	0.004	0.04
82					0.3	0.022	0.017	0.000	0.005	0.04
83					0.3	0.022	0.017	0.000	0.005	0.04
84					0.2	0.014	0.017	0.000	0.014	0.12
85					0.3	0.022	0.016	0.000	0.005	0.04
86					0.2	0.014	0.016	0.000	0.014	0.12
87					0.3	0.022	0.016	0.000	0.006	0.05
88					0.2	0.014	0.016	0.000	0.014	0.12
89					0.3	0.022	0.016	0.000	0.006	0.05
90					0.2	0.014	0.016	0.000	0.014	0.12
91					0.2	0.014	0.015	0.000	0.014	0.12
92					0.2	0.014	0.015	0.000	0.014	0.12
93					0.2	0.014	0.015	0.000	0.014	0.12
94					0.2	0.014	0.015	0.000	0.014	0.12
95					0.2	0.014	0.015	0.000	0.014	0.12
96					0.2	0.014	0.015	0.000	0.014	0.12
TOTALS					100.0				5.32	45.85

EFFECTIVE RAIN = 1.33 INCHES
TOTAL RUNOFF VOLUME = 0.95 AC-FT

Central Apartments (Proposed Condition)

Storm	Volume (ac-ft)	Volume (cf)	Peak FLow (cfs)
2-yr, 24-hour	0.91	39445	1.29

Unit Time for 24-hour storms = 15 minutes (per Plate E-1.2)

Storm Event	Precipitation (inches)	RCFC&WCD Hydrology Manual Reference
2-yr, 24-hour	1.80	Plate E-5.6

Central Apartments (Proposed Condition)

Drainage Area	369,915	sf		
	8.49	ac		
A_i	279,266	sf		
	75%	imp		
Runoff Index	79		Note:	Plate E-6.1: 76% Residential or Commercial Landscaping, 24% Barren (Rockland, eroded and graded land); Soil Type D, WEIGHTED
F_p	0.45	in/hr	Note:	Plate E-6.2: AMC I

$$F = F_p(1 - 0.9A_i)$$ ***F =*** **0.144 in/hr**

For 24-hr storms, F_T is variable loss rate

$$F_T = C[24 - (T/60)]^{1.55} + F_M$$ ***F_T =*** **0.255**

$$C = (F - F_M)/54$$ ***C =*** **0.0013**

$$T = \text{Unit Time}/2$$ ***T =*** **7.5**

$$F_M = 0.5F$$ ***F_M =*** **0.072**

R C F C & W C D HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph and Effective Rain Calculation Form	Project: Crestview Apartments (Proposed Condition) By: AJS Date: 05/04/20 Checked: ____ Date: ____	Sheet 1 / 1

[1] CONCENTRATION POINT	---	[2] AREA DESIGNATION	---
[3] DRAINAGE AREA-ACRES	8.49	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	N/A
[5] UNIT TIME-MINUTES	15	[6] LAG TIME-MINUTES	---
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	---	[8] S-CURVE	N/A
[9] STORM FREQUENCY & DURATION	2-YR, 24-HR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	1.8
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	0.144	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	0.072
[13] CONSTANT LOSS RATE-INCHES/HOUR	---	[14] LOW LOSS RATE-PERCENT	30%

	UNIT HYDROGRAPH				EFFECTIVE RAIN					FLOOD HYDROGRAPH
[15] UNIT TIME PERIOD m	[16] TIME PERCENT OF LAG [7]*[15]	[17] CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	[16] DISTRIB GRAPH PERCENT [17]m-[17]m-1	[17] UNIT HYDROGRAPH CFS-HRS/IN [4]*[18] 100.000	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN IN/HR 60[10][20] 100[5]	[22] LOSS RATE IN/HR MAX	[22] LOSS RATE IN/HR LOW	[23] EFFECTIVE RAIN IN/HR [21]-[22]	[24] FLOW CFS
1					0.2	0.014	0.255	0.000	0.014	0.12
2					0.3	0.022	0.252	0.000	0.022	0.18
3					0.3	0.022	0.249	0.000	0.022	0.18
4					0.4	0.029	0.246	0.000	0.029	0.25
5					0.3	0.022	0.243	0.000	0.022	0.18
6					0.3	0.022	0.240	0.000	0.022	0.18
7					0.3	0.022	0.237	0.000	0.022	0.18
8					0.4	0.029	0.234	0.000	0.029	0.25
9					0.4	0.029	0.232	0.000	0.029	0.25
10					0.4	0.029	0.229	0.000	0.029	0.25
11					0.5	0.036	0.226	0.000	0.036	0.31
12					0.5	0.036	0.223	0.000	0.036	0.31
13					0.5	0.036	0.220	0.000	0.036	0.31
14					0.5	0.036	0.218	0.000	0.036	0.31
15					0.5	0.036	0.215	0.000	0.036	0.31
16					0.6	0.043	0.212	0.000	0.043	0.37
17					0.6	0.043	0.210	0.000	0.043	0.37
18					0.7	0.050	0.207	0.000	0.050	0.43
19					0.7	0.050	0.204	0.000	0.050	0.43
20					0.8	0.058	0.202	0.000	0.057	0.49
21					0.6	0.043	0.199	0.000	0.043	0.37
22					0.7	0.050	0.196	0.000	0.050	0.43
23					0.8	0.058	0.194	0.000	0.057	0.49
24					0.8	0.058	0.191	0.000	0.057	0.49
25					0.9	0.065	0.189	0.000	0.065	0.55
26					0.9	0.065	0.186	0.000	0.065	0.55
27					1.0	0.072	0.184	0.000	0.072	0.61
28					1.0	0.072	0.181	0.000	0.072	0.61
29					1.0	0.072	0.179	0.000	0.072	0.61
30					1.1	0.079	0.176	0.000	0.079	0.68
31					1.2	0.086	0.174	0.000	0.086	0.74
32					1.3	0.094	0.172	0.000	0.093	0.80
33					1.5	0.108	0.169	0.000	0.108	0.92
34					1.5	0.108	0.167	0.000	0.108	0.92
35					1.6	0.115	0.164	0.000	0.115	0.98
36					1.7	0.122	0.162	0.000	0.122	1.04
37					1.9	0.137	0.160	0.000	0.136	1.17
38					2.0	0.144	0.158	0.000	0.144	1.23
39					2.1	0.151	0.155	0.000	0.151	1.29
40					2.2	0.158	0.153	0.000	0.005	0.05
41					1.5	0.108	0.151	0.000	0.108	0.92
42					1.5	0.108	0.149	0.000	0.108	0.92
43					2.0	0.144	0.147	0.000	0.144	1.23
44					2.0	0.144	0.144	0.000	0.144	1.23
45					1.9	0.137	0.142	0.000	0.136	1.17
46					1.9	0.137	0.140	0.000	0.136	1.17
47					1.7	0.122	0.138	0.000	0.122	1.04
48					1.8	0.130	0.136	0.000	0.129	1.11
49					2.5	0.180	0.134	0.001	0.046	0.39
50					2.6	0.187	0.132	0.001	0.055	0.47
51					2.8	0.202	0.130	0.001	0.072	0.61
52					2.9	0.209	0.128	0.001	0.081	0.69
53					3.4	0.245	0.126	0.001	0.119	1.02
54					3.4	0.245	0.124	0.001	0.121	**1.03**
55					2.3	0.166	0.122	0.000	0.043	0.37
56					2.3	0.166	0.120	0.000	0.045	0.39
57					2.7	0.194	0.119	0.001	0.076	0.65
58					2.6	0.187	0.117	0.001	0.070	0.60
59					2.6	0.187	0.115	0.001	0.072	0.62
60					2.5	0.180	0.113	0.001	0.067	0.57
61					2.4	0.173	0.112	0.001	0.061	0.52
62					2.3	0.166	0.110	0.000	0.056	0.48
63					1.9	0.137	0.108	0.000	0.029	0.25
64					1.9	0.137	0.106	0.000	0.030	0.26

R C F C & W C D HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph and Effective Rain Calculation Form	Project: Crestview Apartments (Proposed Condition) By: AJS Date: 05/04/20 Checked: Date:	Sheet 1 / 1

[1] CONCENTRATION POINT	---	[2] AREA DESIGNATION	---
[3] DRAINAGE AREA-ACRES	8.49	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	N/A
[5] UNIT TIME-MINUTES	15	[6] LAG TIME-MINUTES	---
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	---	[8] S-CURVE	N/A
[9] STORM FREQUENCY & DURATION	2-YR, 24-HR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	1.8
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	0.144	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	0.072
[13] CONSTANT LOSS RATE-INCHES/HOUR	---	[14] LOW LOSS RATE-PERCENT	30%

	UNIT HYDROGRAPH				EFFECTIVE RAIN					FLOOD HYDROGRAPH
[15] UNIT TIME PERIOD m	[16] TIME PERCENT OF LAG [7]*[15]	[17] CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	[16] DISTRIB GRAPH PERCENT [17]m-[17]m-1	[17] UNIT HYDROGRAPH CFS-HRS/IN [4]*[18] / 100.000	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN IN/HR 60[10][20] / 100[5]	[22] LOSS RATE IN/HR MAX	[22] LOSS RATE IN/HR LOW	[23] EFFECTIVE RAIN IN/HR [21]-[22]	[24] FLOW CFS
65					0.4	0.029	0.105	0.000	0.029	0.25
66					0.4	0.029	0.103	0.000	0.029	0.25
67					0.3	0.022	0.102	0.000	0.022	0.18
68					0.3	0.022	0.100	0.000	0.022	0.18
69					0.5	0.036	0.099	0.000	0.036	0.31
70					0.5	0.036	0.097	0.000	0.036	0.31
71					0.5	0.036	0.096	0.000	0.036	0.31
72					0.4	0.029	0.094	0.000	0.029	0.25
73					0.4	0.029	0.093	0.000	0.029	0.25
74					0.4	0.029	0.092	0.000	0.029	0.25
75					0.3	0.022	0.090	0.000	0.022	0.18
76					0.2	0.014	0.089	0.000	0.014	0.12
77					0.3	0.022	0.088	0.000	0.022	0.18
78					0.4	0.029	0.086	0.000	0.029	0.25
79					0.3	0.022	0.085	0.000	0.022	0.18
80					0.2	0.014	0.084	0.000	0.014	0.12
81					0.3	0.022	0.083	0.000	0.022	0.18
82					0.3	0.022	0.082	0.000	0.022	0.18
83					0.3	0.022	0.081	0.000	0.022	0.18
84					0.2	0.014	0.080	0.000	0.014	0.12
85					0.3	0.022	0.079	0.000	0.022	0.18
86					0.2	0.014	0.078	0.000	0.014	0.12
87					0.3	0.022	0.077	0.000	0.022	0.18
88					0.2	0.014	0.076	0.000	0.014	0.12
89					0.3	0.022	0.076	0.000	0.022	0.18
90					0.2	0.014	0.075	0.000	0.014	0.12
91					0.2	0.014	0.074	0.000	0.014	0.12
92					0.2	0.014	0.074	0.000	0.014	0.12
93					0.2	0.014	0.073	0.000	0.014	0.12
94					0.2	0.014	0.073	0.000	0.014	0.12
95					0.2	0.014	0.072	0.000	0.014	0.12
96					0.2	0.014	0.072	0.000	0.014	0.12
TOTALS					100.0				5.12	43.83

EFFECTIVE RAIN = 1.28 INCHES
TOTAL RUNOFF VOLUME = 0.91 AC-FT

```
****************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM BASED ON
        RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
                      (RCFC&WCD)  1978 HYDROLOGY MANUAL
         (c) Copyright 1982-2007 Advanced Engineering Software (aes)
                      (Rational Tabling Version 7.0D)
                  Release Date: 06/01/2007  License ID 1532

                           Analysis prepared by:

                      Tory R. Walker Engineering, Inc.
                           122 Civic Center Drive
                                 Suite 206
                          Vista, California 92084

 ************************* DESCRIPTION OF STUDY *************************
* SYCAMORE APARTMENTS                                                    *
* EXISTING CONDITION                                                     *
* HCOC ANALYSIS                                                          *
 ************************************************************************

  FILE NAME: SYC_EX.DAT
  TIME/DATE OF STUDY: 15:57 07/02/2019
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  USER SPECIFIED STORM EVENT(YEAR) =    2.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =   6.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  2-YEAR, 1-HOUR PRECIPITATION(INCH) =  0.500
  100-YEAR, 1-HOUR PRECIPITATION(INCH) =  1.200
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =    2.00   1-HOUR INTENSITY(INCH/HOUR) =   0.500
  SLOPE OF INTENSITY DURATION CURVE = 0.5000
  RCFC&WCD HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: COMPUTE CONFLUENCE VALUES ACCORDING TO RCFC&WCD HYDROLOGY MANUAL
        AND IGNORE OTHER CONFLUENCE COMBINATIONS FOR DOWNSTREAM ANALYSES
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE    100.00 TO NODE    102.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
```

```
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS: UNDEVELOPED WITH POOR COVER
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   225.00
  UPSTREAM ELEVATION(FEET) =   1377.20
  DOWNSTREAM ELEVATION(FEET) =   1355.00
  ELEVATION DIFFERENCE(FEET) =     22.20
  TC = 0.533*[(  225.00**3)/(    22.20)]**.2 =    7.387
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.425
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .6860
  SOIL CLASSIFICATION IS "D"
  SUBAREA RUNOFF(CFS) =      0.18
  TOTAL AREA(ACRES) =      0.19   TOTAL RUNOFF(CFS) =      0.18

****************************************************************************
  FLOW PROCESS FROM NODE    102.00 TO NODE    104.00 IS CODE =  91
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1355.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1340.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   588.00
  "V" GUTTER WIDTH(FEET) =   5.00   GUTTER HIKE(FEET) =  0.050
  PAVEMENT LIP(FEET) =  0.010   MANNING'S N = .0350
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.20000
  MAXIMUM DEPTH(FEET) =   3.00
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.144
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .6482
  SOIL CLASSIFICATION IS "D"
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      3.34
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.41
  AVERAGE FLOW DEPTH(FEET) =   0.26   FLOOD WIDTH(FEET) =    7.02
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   4.07   Tc(MIN.) =   11.45
  SUBAREA AREA(ACRES) =    8.35       SUBAREA RUNOFF(CFS) =    6.20
  TOTAL AREA(ACRES) =        8.5         PEAK FLOW RATE(CFS) =       6.38

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.36   FLOOD WIDTH(FEET) =    8.02
  FLOW VELOCITY(FEET/SEC.) =   2.98   DEPTH*VELOCITY(FT*FT/SEC) =   1.08
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    104.00 =     813.00 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        8.5  TC(MIN.) =     11.45
  PEAK FLOW RATE(CFS)   =       6.38
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

↑

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****************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM BASED ON
        RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
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                      (Rational Tabling Version 7.0D)
                  Release Date: 06/01/2007  License ID 1532

                           Analysis prepared by:

                      Tory R. Walker Engineering, Inc.
                           122 Civic Center Drive
                                 Suite 206
                          Vista, California 92084

 ************************* DESCRIPTION OF STUDY *************************
* CENTRAL APARTMENTS                                                     *
* PROPOSED CONDITION                                                     *
* HCOC ANALYSIS                                                          *
 ************************************************************************

  FILE NAME: SYC_PROP.DAT
  TIME/DATE OF STUDY: 15:42 07/03/2019
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  USER SPECIFIED STORM EVENT(YEAR) =    2.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =   3.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  2-YEAR, 1-HOUR PRECIPITATION(INCH) =  0.500
  100-YEAR, 1-HOUR PRECIPITATION(INCH) =  1.200
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =    2.00   1-HOUR INTENSITY(INCH/HOUR) =   0.500
  SLOPE OF INTENSITY DURATION CURVE = 0.5000
  RCFC&WCD HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: COMPUTE CONFLUENCE VALUES ACCORDING TO RCFC&WCD HYDROLOGY MANUAL
        AND IGNORE OTHER CONFLUENCE COMBINATIONS FOR DOWNSTREAM ANALYSES
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE    100.00 TO NODE    102.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
```

```
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS COMMERCIAL
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    41.00
  UPSTREAM ELEVATION(FEET) =     52.60
  DOWNSTREAM ELEVATION(FEET) =     51.90
  ELEVATION DIFFERENCE(FEET) =      0.70
  TC = 0.303*[(   41.00**3)/(     0.70)]**.2 =    3.022
  COMPUTED TIME OF CONCENTRATION INCREASED TO 5 MIN.
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.732
  USER-SPECIFIED RUNOFF COEFFICIENT = .8816
  SOIL CLASSIFICATION IS "D"
  SUBAREA RUNOFF(CFS) =      0.15
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.15

****************************************************************************
  FLOW PROCESS FROM NODE    102.00 TO NODE    104.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =   50.85  DOWNSTREAM ELEVATION(FEET) =   49.77
  STREET LENGTH(FEET) =   220.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 30.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.018
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.018

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       0.61
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.26
    HALFSTREET FLOOD WIDTH(FEET) =    5.59
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.30
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.34
  STREET FLOW TRAVEL TIME(MIN.) =   2.82   Tc(MIN.) =    7.82
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.385
  USER-SPECIFIED RUNOFF COEFFICIENT = .7907
  SOIL CLASSIFICATION IS "D"
  SUBAREA AREA(ACRES) =    0.84      SUBAREA RUNOFF(CFS) =    0.92
  TOTAL AREA(ACRES) =        0.9        PEAK FLOW RATE(CFS) =       1.07

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.30   HALFSTREET FLOOD WIDTH(FEET) =   7.97
  FLOW VELOCITY(FEET/SEC.) =  1.41   DEPTH*VELOCITY(FT*FT/SEC.) =   0.43
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    104.00 =     261.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    104.00 TO NODE    104.00 IS CODE =   1
----------------------------------------------------------------------------
```

```
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    7.82
  RAINFALL INTENSITY(INCH/HR) =   1.38
  TOTAL STREAM AREA(ACRES) =     0.94
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.07

****************************************************************************
  FLOW PROCESS FROM NODE    200.00 TO NODE    202.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS COMMERCIAL
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    101.00
  DOWNSTREAM ELEVATION(FEET) =    100.00
  ELEVATION DIFFERENCE(FEET) =      1.00
  TC = 0.303*[(  100.00**3)/(     1.00)]**.2 =    4.804
  COMPUTED TIME OF CONCENTRATION INCREASED TO 5 MIN.
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.732
  USER-SPECIFIED RUNOFF COEFFICIENT = .8816
  SOIL CLASSIFICATION IS "D"
  SUBAREA RUNOFF(CFS) =      0.15
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.15

****************************************************************************
  FLOW PROCESS FROM NODE    202.00 TO NODE    204.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
==============================================================================
  UPSTREAM ELEVATION(FEET) =   50.00  DOWNSTREAM ELEVATION(FEET) =   48.10
  STREET LENGTH(FEET) =   200.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 30.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.018
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.018

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       0.61
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.24
    HALFSTREET FLOOD WIDTH(FEET) =    4.16
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.76
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.42
  STREET FLOW TRAVEL TIME(MIN.) =   1.89   Tc(MIN.) =    6.89
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.475
```

```
  USER-SPECIFIED RUNOFF COEFFICIENT = .8792
  SOIL CLASSIFICATION IS "D"
  SUBAREA AREA(ACRES) =    0.71      SUBAREA RUNOFF(CFS) =    0.92
  TOTAL AREA(ACRES) =        0.8        PEAK FLOW RATE(CFS) =       1.07

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.28   HALFSTREET FLOOD WIDTH(FEET) =   6.59
  FLOW VELOCITY(FEET/SEC.) =  1.84   DEPTH*VELOCITY(FT*FT/SEC.) =   0.52
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    204.00 =     300.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    204.00 TO NODE    104.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    45.81  DOWNSTREAM(FEET) =    45.53
  FLOW LENGTH(FEET) =    54.25   MANNING'S N =  0.012
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   6.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.19
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.07
  PIPE TRAVEL TIME(MIN.) =   0.28    Tc(MIN.) =    7.17
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    104.00 =     354.25 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    104.00 TO NODE    104.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    7.17
  RAINFALL INTENSITY(INCH/HR) =   1.45
  TOTAL STREAM AREA(ACRES) =     0.81
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.07

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        1.07     7.82        1.385          0.94
      2        1.07     7.17        1.446          0.81

 ********************************WARNING*********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ****************************************************************************

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
```

```
      1        2.06     7.17       1.446
      2        2.10     7.82       1.385

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       2.06   Tc(MIN.) =    7.17
  TOTAL AREA(ACRES) =        1.8
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    104.00 =     354.25 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    104.00 TO NODE    106.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    45.52  DOWNSTREAM(FEET) =    44.13
  FLOW LENGTH(FEET) =   240.22   MANNING'S N =  0.012
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   7.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.97
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.06
  PIPE TRAVEL TIME(MIN.) =   1.01    Tc(MIN.) =    8.18
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    106.00 =     594.47 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    106.00 TO NODE    106.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    8.18
  RAINFALL INTENSITY(INCH/HR) =   1.35
  TOTAL STREAM AREA(ACRES) =     1.75
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.06

****************************************************************************
  FLOW PROCESS FROM NODE    300.00 TO NODE    302.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS: UNDEVELOPED WITH POOR COVER
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    32.00
  UPSTREAM ELEVATION(FEET) =     63.00
  DOWNSTREAM ELEVATION(FEET) =     52.00
  ELEVATION DIFFERENCE(FEET) =     11.00
  TC = 0.533*[(   32.00**3)/(    11.00)]**.2 =    2.638
  COMPUTED TIME OF CONCENTRATION INCREASED TO 5 MIN.
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.732
  USER-SPECIFIED RUNOFF COEFFICIENT = .7162
  SOIL CLASSIFICATION IS "D"
  SUBAREA RUNOFF(CFS) =      0.12
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.12

****************************************************************************
```

```
  FLOW PROCESS FROM NODE    302.00 TO NODE    304.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =   51.00  DOWNSTREAM ELEVATION(FEET) =   50.50
  STREET LENGTH(FEET) =   120.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 30.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.018
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.018

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       0.36
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.22
    HALFSTREET FLOOD WIDTH(FEET) =    3.41
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.20
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.27
  STREET FLOW TRAVEL TIME(MIN.) =   1.67   Tc(MIN.) =    6.67
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.500
  USER-SPECIFIED RUNOFF COEFFICIENT = .7766
  SOIL CLASSIFICATION IS "D"
  SUBAREA AREA(ACRES) =    0.40      SUBAREA RUNOFF(CFS) =    0.47
  TOTAL AREA(ACRES) =        0.5        PEAK FLOW RATE(CFS) =       0.59

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.27   HALFSTREET FLOOD WIDTH(FEET) =   5.78
  FLOW VELOCITY(FEET/SEC.) =  1.20   DEPTH*VELOCITY(FT*FT/SEC.) =   0.32
  LONGEST FLOWPATH FROM NODE    300.00 TO NODE    304.00 =     152.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    304.00 TO NODE    306.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    47.50  DOWNSTREAM(FEET) =    47.15
  FLOW LENGTH(FEET) =    69.81   MANNING'S N =  0.012
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   4.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   2.78
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.59
  PIPE TRAVEL TIME(MIN.) =   0.42    Tc(MIN.) =    7.09
  LONGEST FLOWPATH FROM NODE    300.00 TO NODE    306.00 =     221.81 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    306.10 TO NODE    306.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
```

```
    2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.455
  USER-SPECIFIED RUNOFF COEFFICIENT = .8789
  SOIL CLASSIFICATION IS "D"
  SUBAREA AREA(ACRES) =    0.20   SUBAREA RUNOFF(CFS) =    0.26
  TOTAL AREA(ACRES) =        0.7   TOTAL RUNOFF(CFS) =       0.85
  TC(MIN.) =    7.09

****************************************************************************
  FLOW PROCESS FROM NODE    306.00 TO NODE    106.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    47.05  DOWNSTREAM(FEET) =    44.13
  FLOW LENGTH(FEET) =    51.00   MANNING'S N =  0.012
  DEPTH OF FLOW IN   6.0 INCH PIPE IS   3.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.56
  ESTIMATED PIPE DIAMETER(INCH) =   6.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.85
  PIPE TRAVEL TIME(MIN.) =   0.11    Tc(MIN.) =    7.20
  LONGEST FLOWPATH FROM NODE    300.00 TO NODE    106.00 =     272.81 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    106.00 TO NODE    106.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    7.20
  RAINFALL INTENSITY(INCH/HR) =   1.44
  TOTAL STREAM AREA(ACRES) =     0.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.85

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        2.06     8.18        1.354          1.75
      2        0.85     7.20        1.444          0.70

 ********************************WARNING*********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ************************************************************************

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1        2.66     7.20       1.444
      2        2.85     8.18       1.354
```

```
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       2.85   Tc(MIN.) =    8.18
  TOTAL AREA(ACRES) =        2.5
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    106.00 =     594.47 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    106.00 TO NODE    108.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    43.80  DOWNSTREAM(FEET) =    43.56
  FLOW LENGTH(FEET) =    47.91   MANNING'S N =  0.012
  DEPTH OF FLOW IN  15.0 INCH PIPE IS   8.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.10
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.85
  PIPE TRAVEL TIME(MIN.) =   0.19    Tc(MIN.) =    8.38
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    108.00 =     642.38 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    108.00 TO NODE    108.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    8.38
  RAINFALL INTENSITY(INCH/HR) =   1.34
  TOTAL STREAM AREA(ACRES) =     2.45
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.85

****************************************************************************
  FLOW PROCESS FROM NODE    400.00 TO NODE    402.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
          ASSUMED INITIAL SUBAREA UNIFORM
          DEVELOPMENT IS CONDOMINIUM
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    37.00
  UPSTREAM ELEVATION(FEET) =     61.23
  DOWNSTREAM ELEVATION(FEET) =     50.70
  ELEVATION DIFFERENCE(FEET) =     10.53
  TC = 0.359*[(   37.00**3)/(    10.53)]**.2 =    1.958
  COMPUTED TIME OF CONCENTRATION INCREASED TO 5 MIN.
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.732
  USER-SPECIFIED RUNOFF COEFFICIENT = .8357
  SOIL CLASSIFICATION IS "D"
  SUBAREA RUNOFF(CFS) =      0.14
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.14

****************************************************************************
  FLOW PROCESS FROM NODE    402.00 TO NODE    108.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
```

```
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
==============================================================================
  UPSTREAM ELEVATION(FEET) =   60.70  DOWNSTREAM ELEVATION(FEET) =   49.55
  STREET LENGTH(FEET) =   274.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 30.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.018
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.018

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       0.56
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.20
    HALFSTREET FLOOD WIDTH(FEET) =    2.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.38
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.87
  STREET FLOW TRAVEL TIME(MIN.) =   1.04   Tc(MIN.) =    6.04
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.576
  USER-SPECIFIED RUNOFF COEFFICIENT = .8802
  SOIL CLASSIFICATION IS "D"
  SUBAREA AREA(ACRES) =    0.60      SUBAREA RUNOFF(CFS) =    0.83
  TOTAL AREA(ACRES) =        0.7        PEAK FLOW RATE(CFS) =       0.98

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.20   HALFSTREET FLOOD WIDTH(FEET) =   2.00
  FLOW VELOCITY(FEET/SEC.) =  4.38   DEPTH*VELOCITY(FT*FT/SEC.) =   0.87
  LONGEST FLOWPATH FROM NODE    400.00 TO NODE    108.00 =     311.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    108.00 TO NODE    108.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    6.04
  RAINFALL INTENSITY(INCH/HR) =   1.58
  TOTAL STREAM AREA(ACRES) =     0.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.98

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        2.85     8.38        1.338          2.45
      2        0.98     6.04        1.576          0.70

 ********************************WARNING*********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
```

```
 ************************************************************************

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1        3.03     6.04       1.576
      2        3.68     8.38       1.338

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       3.68   Tc(MIN.) =    8.38
  TOTAL AREA(ACRES) =        3.2
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    108.00 =     642.38 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    108.00 TO NODE    110.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    43.55  DOWNSTREAM(FEET) =    42.48
  FLOW LENGTH(FEET) =   212.57   MANNING'S N =  0.012
  DEPTH OF FLOW IN  15.0 INCH PIPE IS   9.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.34
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.68
  PIPE TRAVEL TIME(MIN.) =   0.82    Tc(MIN.) =    9.19
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    110.00 =     854.95 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    110.00 TO NODE    110.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    9.19
  RAINFALL INTENSITY(INCH/HR) =   1.28
  TOTAL STREAM AREA(ACRES) =     3.15
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.68

****************************************************************************
  FLOW PROCESS FROM NODE    500.00 TO NODE    502.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS COMMERCIAL
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    101.00
  DOWNSTREAM ELEVATION(FEET) =    100.00
  ELEVATION DIFFERENCE(FEET) =      1.00
  TC = 0.303*[(  100.00**3)/(     1.00)]**.2 =    4.804
```

```
  COMPUTED TIME OF CONCENTRATION INCREASED TO 5 MIN.
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.732
  USER-SPECIFIED RUNOFF COEFFICIENT = .8816
  SOIL CLASSIFICATION IS "D"
  SUBAREA RUNOFF(CFS) =      0.15
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.15

****************************************************************************
  FLOW PROCESS FROM NODE    502.00 TO NODE    504.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =   50.00  DOWNSTREAM ELEVATION(FEET) =   49.10
  STREET LENGTH(FEET) =   118.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 30.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.018
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.018

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       0.65
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.25
    HALFSTREET FLOOD WIDTH(FEET) =    4.91
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.59
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.40
  STREET FLOW TRAVEL TIME(MIN.) =   1.23   Tc(MIN.) =    6.23
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.551
  USER-SPECIFIED RUNOFF COEFFICIENT = .8800
  SOIL CLASSIFICATION IS "D"
  SUBAREA AREA(ACRES) =    0.73      SUBAREA RUNOFF(CFS) =    1.00
  TOTAL AREA(ACRES) =        0.8        PEAK FLOW RATE(CFS) =       1.15

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.29   HALFSTREET FLOOD WIDTH(FEET) =   7.34
  FLOW VELOCITY(FEET/SEC.) =  1.70   DEPTH*VELOCITY(FT*FT/SEC.) =   0.50
  LONGEST FLOWPATH FROM NODE    500.00 TO NODE    504.00 =     218.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    504.00 TO NODE    506.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    47.00  DOWNSTREAM(FEET) =    46.45
  FLOW LENGTH(FEET) =   109.33   MANNING'S N =  0.012
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   6.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.18
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.15
```

```
  PIPE TRAVEL TIME(MIN.) =   0.57    Tc(MIN.) =    6.81
  LONGEST FLOWPATH FROM NODE    500.00 TO NODE    506.00 =     327.33 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    506.10 TO NODE    506.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.484
  USER-SPECIFIED RUNOFF COEFFICIENT = .8793
  SOIL CLASSIFICATION IS "D"
  SUBAREA AREA(ACRES) =    0.82   SUBAREA RUNOFF(CFS) =    1.07
  TOTAL AREA(ACRES) =        1.7   TOTAL RUNOFF(CFS) =       2.22
  TC(MIN.) =    6.81

****************************************************************************
  FLOW PROCESS FROM NODE    506.00 TO NODE    110.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    46.00  DOWNSTREAM(FEET) =    42.48
  FLOW LENGTH(FEET) =   119.41   MANNING'S N =  0.012
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   5.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.44
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.22
  PIPE TRAVEL TIME(MIN.) =   0.27    Tc(MIN.) =    7.07
  LONGEST FLOWPATH FROM NODE    500.00 TO NODE    110.00 =     446.74 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    110.00 TO NODE    110.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    7.07
  RAINFALL INTENSITY(INCH/HR) =   1.46
  TOTAL STREAM AREA(ACRES) =     1.65
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.22

****************************************************************************
  FLOW PROCESS FROM NODE    508.00 TO NODE    510.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS: UNDEVELOPED WITH POOR COVER
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    18.00
  UPSTREAM ELEVATION(FEET) =     57.00
  DOWNSTREAM ELEVATION(FEET) =     50.00
  ELEVATION DIFFERENCE(FEET) =      7.00
  TC = 0.533*[(   18.00**3)/(     7.00)]**.2 =    2.044
  COMPUTED TIME OF CONCENTRATION INCREASED TO 5 MIN.
```

```
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.732
  USER-SPECIFIED RUNOFF COEFFICIENT = .7162
  SOIL CLASSIFICATION IS "D"
  SUBAREA RUNOFF(CFS) =      0.12
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.12

****************************************************************************
  FLOW PROCESS FROM NODE    510.00 TO NODE    512.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =   50.00  DOWNSTREAM ELEVATION(FEET) =   48.92
  STREET LENGTH(FEET) =   158.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 30.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.018
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.018

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       0.40
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.20
    HALFSTREET FLOOD WIDTH(FEET) =    2.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.80
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.36
  STREET FLOW TRAVEL TIME(MIN.) =   1.47   Tc(MIN.) =    6.47
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.523
  USER-SPECIFIED RUNOFF COEFFICIENT = .8492
  SOIL CLASSIFICATION IS "D"
  SUBAREA AREA(ACRES) =    0.43      SUBAREA RUNOFF(CFS) =    0.56
  TOTAL AREA(ACRES) =        0.5        PEAK FLOW RATE(CFS) =       0.68

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.26   HALFSTREET FLOOD WIDTH(FEET) =   5.34
  FLOW VELOCITY(FEET/SEC.) =  1.52   DEPTH*VELOCITY(FT*FT/SEC.) =   0.39
  LONGEST FLOWPATH FROM NODE    508.00 TO NODE    512.00 =     176.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    512.10 TO NODE    512.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.523
  USER-SPECIFIED RUNOFF COEFFICIENT = .8593
  SOIL CLASSIFICATION IS "D"
  SUBAREA AREA(ACRES) =    0.34   SUBAREA RUNOFF(CFS) =    0.44
  TOTAL AREA(ACRES) =        0.9   TOTAL RUNOFF(CFS) =       1.13
  TC(MIN.) =    6.47

****************************************************************************
```

```
  FLOW PROCESS FROM NODE    512.00 TO NODE    110.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    46.56  DOWNSTREAM(FEET) =    42.48
  FLOW LENGTH(FEET) =   128.28   MANNING'S N =  0.012
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   3.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.47
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.13
  PIPE TRAVEL TIME(MIN.) =   0.33    Tc(MIN.) =    6.80
  LONGEST FLOWPATH FROM NODE    508.00 TO NODE    110.00 =     304.28 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    110.00 TO NODE    110.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =    6.80
  RAINFALL INTENSITY(INCH/HR) =   1.49
  TOTAL STREAM AREA(ACRES) =     0.87
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.13

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        3.68     9.19        1.277          3.15
      2        2.22     7.07        1.456          1.65
      3        1.13     6.80        1.486          0.87

 ********************************WARNING*********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ************************************************************************

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1        5.98     6.80       1.486
      2        6.15     7.07       1.456
      3        6.59     9.19       1.277

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       6.59   Tc(MIN.) =    9.19
  TOTAL AREA(ACRES) =        5.7
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    110.00 =     854.95 FEET.

****************************************************************************
```

```
  FLOW PROCESS FROM NODE    110.00 TO NODE    112.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    42.48  DOWNSTREAM(FEET) =    41.59
  FLOW LENGTH(FEET) =   176.32   MANNING'S N =  0.012
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.99
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       6.59
  PIPE TRAVEL TIME(MIN.) =   0.59    Tc(MIN.) =    9.78
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    112.00 =    1031.27 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    112.00 TO NODE    112.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    9.78
  RAINFALL INTENSITY(INCH/HR) =   1.24
  TOTAL STREAM AREA(ACRES) =     5.67
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.59

****************************************************************************
  FLOW PROCESS FROM NODE    600.00 TO NODE    602.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS MOBILE HOME PARK
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    37.00
  UPSTREAM ELEVATION(FEET) =     58.50
  DOWNSTREAM ELEVATION(FEET) =     50.70
  ELEVATION DIFFERENCE(FEET) =      7.80
  TC = 0.336*[(   37.00**3)/(     7.80)]**.2 =    1.944
  COMPUTED TIME OF CONCENTRATION INCREASED TO 5 MIN.
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.732
  USER-SPECIFIED RUNOFF COEFFICIENT = .8541
  SOIL CLASSIFICATION IS "D"
  SUBAREA RUNOFF(CFS) =      0.15
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.15

****************************************************************************
  FLOW PROCESS FROM NODE    602.00 TO NODE    604.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =   50.70  DOWNSTREAM ELEVATION(FEET) =   47.89
  STREET LENGTH(FEET) =   532.35   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 30.00
```

```
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.018
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.018

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       0.83
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.28
    HALFSTREET FLOOD WIDTH(FEET) =    6.72
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.39
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.39
  STREET FLOW TRAVEL TIME(MIN.) =   6.40   Tc(MIN.) =   11.40
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.147
  USER-SPECIFIED RUNOFF COEFFICIENT = .8372
  SOIL CLASSIFICATION IS "D"
  SUBAREA AREA(ACRES) =    1.39      SUBAREA RUNOFF(CFS) =    1.33
  TOTAL AREA(ACRES) =        1.5        PEAK FLOW RATE(CFS) =       1.48

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.33   HALFSTREET FLOOD WIDTH(FEET) =   9.28
  FLOW VELOCITY(FEET/SEC.) =  1.54   DEPTH*VELOCITY(FT*FT/SEC.) =   0.51
  LONGEST FLOWPATH FROM NODE    600.00 TO NODE    604.00 =     569.35 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    604.00 TO NODE    112.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    44.89  DOWNSTREAM(FEET) =    41.59
  FLOW LENGTH(FEET) =    77.87   MANNING'S N =  0.012
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   4.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.77
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.48
  PIPE TRAVEL TIME(MIN.) =   0.17    Tc(MIN.) =   11.57
  LONGEST FLOWPATH FROM NODE    600.00 TO NODE    112.00 =     647.22 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    112.00 TO NODE    112.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   11.57
  RAINFALL INTENSITY(INCH/HR) =   1.14
  TOTAL STREAM AREA(ACRES) =     1.49
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.48

  ** CONFLUENCE DATA **
```

```
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        6.59     9.78        1.238          5.67
      2        1.48    11.57        1.139          1.49

 ********************************WARNING*********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ************************************************************************

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1        7.85     9.78       1.238
      2        7.55    11.57       1.139

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       7.85   Tc(MIN.) =    9.78
  TOTAL AREA(ACRES) =        7.2
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    112.00 =    1031.27 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    112.00 TO NODE    114.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    41.59  DOWNSTREAM(FEET) =    40.90
  FLOW LENGTH(FEET) =   108.68   MANNING'S N =  0.012
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  13.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.65
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       7.85
  PIPE TRAVEL TIME(MIN.) =   0.32    Tc(MIN.) =   10.10
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    114.00 =    1139.95 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    114.00 TO NODE    114.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   10.10
  RAINFALL INTENSITY(INCH/HR) =   1.22
  TOTAL STREAM AREA(ACRES) =     7.16
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.85

****************************************************************************
  FLOW PROCESS FROM NODE    700.00 TO NODE    702.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
```

```
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS: UNDEVELOPED WITH POOR COVER
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    35.00
  UPSTREAM ELEVATION(FEET) =     40.00
  DOWNSTREAM ELEVATION(FEET) =     38.00
  ELEVATION DIFFERENCE(FEET) =      2.00
  TC = 0.533*[(   35.00**3)/(     2.00)]**.2 =    3.914
  COMPUTED TIME OF CONCENTRATION INCREASED TO 5 MIN.
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.732
  USER-SPECIFIED RUNOFF COEFFICIENT = .7162
  SOIL CLASSIFICATION IS "D"
  SUBAREA RUNOFF(CFS) =      0.12
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.12

****************************************************************************
  FLOW PROCESS FROM NODE    702.00 TO NODE    114.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =   48.00  DOWNSTREAM ELEVATION(FEET) =   47.90
  STREET LENGTH(FEET) =   150.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 30.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.018
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.018

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       0.48
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.32
    HALFSTREET FLOOD WIDTH(FEET) =    8.84
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    0.54
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.17
  STREET FLOW TRAVEL TIME(MIN.) =   4.62   Tc(MIN.) =    9.62
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.249
  USER-SPECIFIED RUNOFF COEFFICIENT = .8409
  SOIL CLASSIFICATION IS "D"
  SUBAREA AREA(ACRES) =    0.68      SUBAREA RUNOFF(CFS) =    0.71
  TOTAL AREA(ACRES) =        0.8        PEAK FLOW RATE(CFS) =       0.84

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.37   HALFSTREET FLOOD WIDTH(FEET) =  11.52
  FLOW VELOCITY(FEET/SEC.) =  0.61   DEPTH*VELOCITY(FT*FT/SEC.) =   0.22
  LONGEST FLOWPATH FROM NODE    700.00 TO NODE    114.00 =     185.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    114.00 TO NODE    114.00 IS CODE =   1
----------------------------------------------------------------------------
```

```
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    9.62
  RAINFALL INTENSITY(INCH/HR) =   1.25
  TOTAL STREAM AREA(ACRES) =     0.78
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.84

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        7.85    10.10        1.219          7.16
      2        0.84     9.62        1.249          0.78

 *********************************WARNING**********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ******************************************************************************

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1        8.31     9.62       1.249
      2        8.67    10.10       1.219

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       8.67   Tc(MIN.) =   10.10
  TOTAL AREA(ACRES) =        7.9
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    114.00 =    1139.95 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    114.00 TO NODE    116.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    40.90  DOWNSTREAM(FEET) =    40.73
  FLOW LENGTH(FEET) =    33.88   MANNING'S N =  0.012
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  13.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.38
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       8.67
  PIPE TRAVEL TIME(MIN.) =   0.10    Tc(MIN.) =   10.21
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    116.00 =    1173.83 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    116.10 TO NODE    116.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
```

```
    2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.212
  USER-SPECIFIED RUNOFF COEFFICIENT = .8396
  SOIL CLASSIFICATION IS "D"
  SUBAREA AREA(ACRES) =    0.37   SUBAREA RUNOFF(CFS) =    0.38
  TOTAL AREA(ACRES) =        8.3   TOTAL RUNOFF(CFS) =       9.04
  TC(MIN.) =   10.21

****************************************************************************
  FLOW PROCESS FROM NODE    116.00 TO NODE    118.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    44.13  DOWNSTREAM(FEET) =    14.00
  FLOW LENGTH(FEET) =   558.83   MANNING'S N =  0.012
  DEPTH OF FLOW IN  15.0 INCH PIPE IS   8.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  13.34
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       9.04
  PIPE TRAVEL TIME(MIN.) =   0.70    Tc(MIN.) =   10.91
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    118.00 =    1732.66 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        8.3  TC(MIN.) =     10.91
  PEAK FLOW RATE(CFS)   =       9.04
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

🡅

Appendix 8: Source Control

Pollutant Sources/Source Control Checklist

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

How to use this worksheet (also see instructions in Section G of the WQMP Template):

1. Review Column 1 and identify which of these potential sources of stormwater pollutants apply to your site. Check each box that applies.
2. Review Column 2 and incorporate all of the corresponding applicable BMPs in your WQMP Exhibit.
3. Review Columns 3 and 4 and incorporate all of the corresponding applicable permanent controls and operational BMPs in your WQMP. Use the format shown in Table G.1on page 23 of this WQMP Template. Describe your specific BMPs in an accompanying narrative, and explain any special conditions or situations that required omitting BMPs or substituting alternative BMPs for those shown here.

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
☑ A. **On-site storm drain inlets**	☑ **Locations of inlets.**	☑ **Mark all inlets with the words "Only Rain Down the Storm Drain" or similar. Catch Basin Markers may be available from the Riverside County Flood Control and Water Conservation District, call 951.955.1200 to verify.**	☑ **Maintain and periodically repaint or replace inlet markings.** ☑ **Provide stormwater pollution prevention information to new site owners, lessees, or operators.** ☐ **See applicable operational BMPs in Fact Sheet SC-44, "Drainage System Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com** ☑ **Include the following in lease agreements: "Tenant shall not allow anyone to discharge anything to storm drains or to store or deposit materials so as to create a potential discharge to storm drains."**
☐ B. **Interior floor drains and elevator shaft sump pumps**		☐ **State that interior floor drains and elevator shaft sump pumps will be plumbed to sanitary sewer.**	☐ **Inspect and maintain drains to prevent blockages and overflow.**
☐ C. **Interior parking garages**		☐ **State that parking garage floor drains will be plumbed to the sanitary sewer.**	☐ **Inspect and maintain drains to prevent blockages and overflow.**

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
☐ D1. **Need for future indoor & structural pest control**		☐ **Note building design features that discourage entry of pests.**	☐ **Provide Integrated Pest Management information to owners, lessees, and operators.**
☑ D2. **Landscape/ Outdoor Pesticide Use**	☑ **Show locations of native trees or areas of shrubs and ground cover to be undisturbed and retained.** ☐ **Show self-retaining landscape areas, if any.** ☑ **Show stormwater treatment and hydrograph modification management BMPs. (See instructions in Chapter 3, Step 5 and guidance in Chapter 5.)**	**State that final landscape plans will accomplish all of the following.** ☑ **Preserve existing native trees, shrubs, and ground cover to the maximum extent possible.** ☑ **Design landscaping to minimize irrigation and runoff, to promote surface infiltration where appropriate, and to minimize the use of fertilizers and pesticides that can contribute to stormwater pollution.** ☑ **Where landscaped areas are used to retain or detain stormwater, specify plants that are tolerant of saturated soil conditions.** ☑ **Consider using pest-resistant plants, especially adjacent to hardscape.** **To insure successful establishment, select plants appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions.**	☑ **Maintain landscaping using minimum or no pesticides.** ☑ **See applicable operational BMPs in "What you should know for…..Landscape and Gardening"** at http://rcflood.org/stormwater/**Error! Hyperlink reference not valid.** ☑ **Provide IPM information to new owners, lessees and operators.**

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
☐ E. **Pools, spas, ponds, decorative fountains, and other water features.**	☐ **Show location of water feature and a sanitary sewer cleanout in an accessible area within 10 feet. (Exception: Public pools must be plumbed according to County Department of Environmental Health Guidelines.)**	**If the Co-Permittee requires pools to be plumbed to the sanitary sewer, place a note on the plans and state in the narrative that this connection will be made according to local requirements.**	☐ **See applicable operational BMPs in** "Guidelines for Maintaining Your Swimming Pool, Jacuzzi and Garden Fountain" at http://rcflood.org/stormwater/
☐ F. **Food service**	☐ **For restaurants, grocery stores, and other food service operations, show location (indoors or in a covered area outdoors) of a floor sink or other area for cleaning floor mats, containers, and equipment.** ☐ **On the drawing, show a note that this drain will be connected to a grease interceptor before discharging to the sanitary sewer.**	☐ **Describe the location and features of the designated cleaning area.** ☐ **Describe the items to be cleaned in this facility and how it has been sized to insure that the largest items can be accommodated.**	☐ **See the brochure, "**The Food Service Industry Best Management Practices for: Restaurants, Grocery Stores, Delicatessens and Bakeries" at http://rcflood.org/stormwater/ **Provide this brochure to new site owners, lessees, and operators.**
☑ G. **Refuse areas**	☑ **Show where site refuse and recycled materials will be handled and stored for pickup. See local municipal requirements for sizes and other details of refuse areas.** ☑ **If dumpsters or other receptacles are outdoors, show how the designated area will be covered, graded, and paved to prevent run-on and show locations of berms to prevent runoff from the area.** ☐ **Any drains from dumpsters, compactors, and tallow bin areas shall be connected to a grease removal device before discharge to sanitary sewer.**	☑ **State how site refuse will be handled and provide supporting detail to what is shown on plans.** ☑ **State that signs will be posted on or near dumpsters with the words "Do not dump hazardous materials here" or similar.**	☑ **State how the following will be implemented:** **Provide adequate number of receptacles. Inspect receptacles regularly; repair or replace leaky receptacles. Keep receptacles covered. Prohibit/prevent dumping of liquid or hazardous wastes. Post "no hazardous materials" signs. Inspect and pick up litter daily and clean up spills immediately. Keep spill control materials available on-site. See Fact Sheet SC-34, "Waste Handling and Disposal" in the CASQA Stormwater Quality Handbooks at** www.cabmphandbooks.com

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
❑ H. **Industrial processes.**	❑ **Show process area.**	❑ **If industrial processes are to be located on site, state: "All process activities to be performed indoors. No processes to drain to exterior or to storm drain system."**	❑ **See Fact Sheet SC-10, "Non-Stormwater Discharges" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com** See the brochure "Industrial & Commercial Facilities Best Management Practices for: Industrial, Commercial Facilities" at http://rcflood.org/stormwater/

IF THESE SOURCES WILL BE ON THE PROJECT SITE …	… THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
❑ I. **Outdoor storage of equipment or materials. (See rows J and K for source control measures for vehicle cleaning, repair, and maintenance.)**	❑ **Show any outdoor storage areas, including how materials will be covered. Show how areas will be graded and bermed to prevent run-on or run-off from area.** ❑ **Storage of non-hazardous liquids shall be covered by a roof and/or drain to the sanitary sewer system, and be contained by berms, dikes, liners, or vaults.** ❑ **Storage of hazardous materials and wastes must be in compliance with the local hazardous materials ordinance and a Hazardous Materials Management Plan for the site.**	**Include a detailed description of materials to be stored, storage areas, and structural features to prevent pollutants from entering storm drains.** **Where appropriate, reference documentation of compliance with the requirements of Hazardous Materials Programs for:** ▪ **Hazardous Waste Generation** ▪ **Hazardous Materials Release Response and Inventory** ▪ **California Accidental Release (CalARP)** ▪ **Aboveground Storage Tank** ▪ **Uniform Fire Code Article 80 Section 103(b) & (c) 1991** ▪ **Underground Storage Tank** **www.cchealth.org/groups/hazmat/**	❑ **See the Fact Sheets SC-31, "Outdoor Liquid Container Storage" and SC-33, "Outdoor Storage of Raw Materials " in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com**

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
❑ J. **Vehicle and Equipment Cleaning**	❑ **Show on drawings as appropriate:** **(1) Commercial/industrial facilities having vehicle/equipment cleaning needs shall either provide a covered, bermed area for washing activities or discourage vehicle/equipment washing by removing hose bibs and installing signs prohibiting such uses.** **(2) Multi-dwelling complexes shall have a paved, bermed, and covered car wash area (unless car washing is prohibited on-site and hoses are provided with an automatic shut-off to discourage such use).** **(3) Washing areas for cars, vehicles, and equipment shall be paved, designed to prevent run-on to or runoff from the area, and plumbed to drain to the sanitary sewer.** **(4) Commercial car wash facilities shall be designed such that no runoff from the facility is discharged to the storm drain system. Wastewater from the facility shall discharge to the sanitary sewer, or a wastewater reclamation system shall be installed.**	❑ **If a car wash area is not provided, describe any measures taken to discourage on-site car washing and explain how these will be enforced.**	**Describe operational measures to implement the following (if applicable):** ❑ **Washwater from vehicle and equipment washing operations shall not be discharged to the storm drain system.** Refer to "Outdoor Cleaning Activities and Professional Mobile Service Providers" for many of the Potential Sources of Runoff Pollutants categories below. Brochure can be found at http://rcflood.org/stormwater/ ❑ **Car dealerships and similar may rinse cars with water only.**

IF THESE SOURCES WILL BE ON THE PROJECT SITE …	… THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
❑ K. **Vehicle/Equipment Repair and Maintenance**	❑ **Accommodate all vehicle equipment repair and maintenance indoors. Or designate an outdoor work area and design the area to prevent run-on and runoff of stormwater.** ❑ **Show secondary containment for exterior work areas where motor oil, brake fluid, gasoline, diesel fuel, radiator fluid, acid-containing batteries or other hazardous materials or hazardous wastes are used or stored. Drains shall not be installed within the secondary containment areas.** ❑ **Add a note on the plans that states either (1) there are no floor drains, or (2) floor drains are connected to wastewater pretreatment systems prior to discharge to the sanitary sewer and an industrial waste discharge permit will be obtained.**	❑ **State that no vehicle repair or maintenance will be done outdoors, or else describe the required features of the outdoor work area.** ❑ **State that there are no floor drains or if there are floor drains, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements.** ❑ **State that there are no tanks, containers or sinks to be used for parts cleaning or rinsing or, if there are, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements.**	**In the Stormwater Control Plan, note that all of the following restrictions apply to use the site:** ❑ **No person shall dispose of, nor permit the disposal, directly or indirectly of vehicle fluids, hazardous materials, or rinsewater from parts cleaning into storm drains.** ❑ **No vehicle fluid removal shall be performed outside a building, nor on asphalt or ground surfaces, whether inside or outside a building, except in such a manner as to ensure that any spilled fluid will be in an area of secondary containment. Leaking vehicle fluids shall be contained or drained from the vehicle immediately.** ❑ **No person shall leave unattended drip parts or other open containers containing vehicle fluid, unless such containers are in use or in an area of secondary containment.** Refer to "Automotive Maintenance & Car Care Best Management Practices for Auto Body Shops, Auto Repair Shops, Car Dealerships, Gas Stations and Fleet Service Operations". Brochure can be found at http://rcflood.org/stormwater/ Refer to Outdoor Cleaning Activities and Professional Mobile Service Providers for many of the Potential Sources of Runoff Pollutants categories below. Brochure can be found at http://rcflood.org/stormwater/

IF THESE SOURCES WILL BE ON THE PROJECT SITE …	… THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
❑ L. **Fuel Dispensing Areas**	❑ **Fueling areas[6] shall have impermeable floors (i.e., portland cement concrete or equivalent smooth impervious surface) that are: a) graded at the minimum slope necessary to prevent ponding; and b) separated from the rest of the site by a grade break that prevents run-on of stormwater to the maximum extent practicable.** ❑ **Fueling areas shall be covered by a canopy that extends a minimum of ten feet in each direction from each pump. [Alternative: The fueling area must be covered and the cover's minimum dimensions must be equal to or greater than the area within the grade break or fuel dispensing area[1].] The canopy [or cover] shall not drain onto the fueling area.**		❑ **The property owner shall dry sweep the fueling area routinely.** ❑ **See the Fact Sheet SD-30 , "Fueling Areas" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com**

[6] **The fueling area shall be defined as the area extending a minimum of 6.5 feet from the corner of each fuel dispenser or the length at which the hose and nozzle assembly may be operated plus a minimum of one foot, whichever is greater.**

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
❑ M. **Loading Docks**	❑ **Show a preliminary design for the loading dock area, including roofing and drainage. Loading docks shall be covered and/or graded to minimize run-on to and runoff from the loading area. Roof downspouts shall be positioned to direct stormwater away from the loading area. Water from loading dock areas shall be drained to the sanitary sewer, or diverted and collected for ultimate discharge to the sanitary sewer.** ❑ **Loading dock areas draining directly to the sanitary sewer shall be equipped with a spill control valve or equivalent device, which shall be kept closed during periods of operation.** ❑ **Provide a roof overhang over the loading area or install door skirts (cowling) at each bay that enclose the end of the trailer.**		❑ **Move loaded and unloaded items indoors as soon as possible.** ❑ **See Fact Sheet SC-30, "Outdoor Loading and Unloading," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com**

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
☐ N. **Fire Sprinkler Test Water**		☐ **Provide a means to drain fire sprinkler test water to the sanitary sewer.**	☐ **See the note in Fact Sheet SC-41, "Building and Grounds Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com**
O. **Miscellaneous Drain or Wash Water or Other Sources** ☐ **Boiler drain lines** ☐ **Condensate drain lines** ☑ **Rooftop equipment** ☐ **Drainage sumps** ☑ **Roofing, gutters, and trim.** ☐ **Other sources**		☐ **Boiler drain lines shall be directly or indirectly connected to the sanitary sewer system and may not discharge to the storm drain system.** ☐ **Condensate drain lines may discharge to landscaped areas if the flow is small enough that runoff will not occur. Condensate drain lines may not discharge to the storm drain system.** ☑ **Rooftop equipment with potential to produce pollutants shall be roofed and/or have secondary containment.** ☐ **Any drainage sumps on-site shall feature a sediment sump to reduce the quantity of sediment in pumped water.** ☑ **Avoid roofing, gutters, and trim made of copper or other unprotected metals that may leach into runoff.** **Include controls for other sources as specified by local reviewer.**	

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
☑ P. **Plazas, sidewalks, and parking lots.**			☑ **Sweep plazas, sidewalks, and parking lots regularly to prevent accumulation of litter and debris. Collect debris from pressure washing to prevent entry into the storm drain system. Collect washwater containing any cleaning agent or degreaser and discharge to the sanitary sewer not to a storm drain.**

Appendix 9: O&M

Operation and Maintenance Plan and Documentation of Finance, Maintenance and Recording Mechanisms

TO BE PROVIDED AT FINAL ENGINEERING

Appendix 10: Educational Materials

BMP Fact Sheets, Maintenance Guidelines and Other End-User BMP Information

TO BE PROVIDED AT FINAL ENGINEERING

Crestview Apartments Initial Study

Appendix C – Airport Land Use Commission (ALUCP) Determination Letter

Planning Cases: P19-0775, P19-0776, P19-0777, P19-0905,

P20-0307, P20-0308, P20-0309, P20-0310

AIRPORT LAND USE COMMISSION
RIVERSIDE COUNTY

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Community & Economic
Development Department

April 30, 2020

Ms. Candice Assadzadeh, Senior Planner
City of Riverside Community and Economic Department – Planning Division
3900 Main Street, 3rd Floor
Riverside CA 92522

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www.rcaluc.org

RE: AIRPORT LAND USE COMMISSION (ALUC) DEVELOPMENT REVIEW – DIRECTOR'S DETERMINATION

File No.:	ZAP1414MA20– Letter 1 of 2
Related File Nos.:	P19-0775 (General Plan Amendment), P19-0776 (Rezone)
APN:	256-050-012
Airport Zone:	Compatibility Zone E

Dear Ms. Assadzadeh:

Under the delegation of the Riverside County Airport Land Use Commission (ALUC) pursuant to ALUC Resolution No.15-01 (as adopted on August 13, 2015), staff reviewed City of Riverside Case Nos. P19-0775 (General Plan Amendment), P19-0776 (Rezone), a proposal to amend the City's General Plan land use designation of a 9.77 acre parcel located on the northwest corner of Central Avenue and Sycamore Canyon Boulevard from Commercial to Very High Density Residential, and change the zoning of the site from Commercial General to R-4 Multiple-Family Residential.

The site is located within Airport Compatibility Zone E of the March Air Reserve Base/Inland Port Airport Influence Area (AIA). Within Compatibility Zone E of the March Air Reserve Base/Inland Port Airport Land Use Compatibility Plan, residential density are not restricted.

As ALUC Director, I hereby find the above-referenced project **CONSISTENT** with the 2014 March Air Reserve Base/Inland Port Airport Land Use Compatibility Plan ("March ALUCP").

This finding of consistency relates to airport compatibility issues and does not necessarily constitute an endorsement of this general plan amendment and change of zone. Both the existing and proposed General Plan designation and zoning are consistent, as the site is located within Airport Compatibility Zone E, where non-residential intensity and residential density are not restricted.

If you have any questions, please contact Paul Rull, ALUC Principal Planner, at (951) 955-6893.

Sincerely,
RIVERSIDE COUNTY AIRPORT LAND USE COMMISSION

Simon A. Housman, ALUC Director

AIRPORT LAND USE COMMISSION

Attachments: Notice of Airport in Vicinity

cc: SDH & Associates (applicant)
KA Enterprise, Eugene Marini (property owner)
Gary Gosliga, Airport Manager, March Inland Port Airport Authority
Doug Waters, Civil Base Engineer, March Air Reserve Base
ALUC Case File

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AIRPORT LAND USE COMMISSION
RIVERSIDE COUNTY

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Riverside, CA 92501
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www.rcaluc.org

April 30, 2020

Ms. Candice Assadzadeh, Senior Planner
City of Riverside Community and Economic Department – Planning Division
3900 Main Street, 3rd Floor
Riverside CA 92522

RE: AIRPORT LAND USE COMMISSION (ALUC) DEVELOPMENT REVIEW – DIRECTOR'S DETERMINATION

File No.:	ZAP1414MA20– Letter 2 of 2
Related File Nos.:	P19-0777 (Design Review)
APN:	256-050-012
Airport Zone:	Compatibility Zone E

Dear Ms. Assadzadeh:

Under the delegation of the Riverside County Airport Land Use Commission (ALUC) pursuant to Policy 1.5.2(d) of the Countywide Policies of the 2004 Riverside County Airport Land Use Compatibility Plan, staff reviewed City of Riverside Case No. P19-0777 (Design Review), a proposal to construct a 237 unit apartment complex with recreational amenities such as a putting green, resort pool and spa, BBQ tables, walking loop, exercise stations, and a dog run on 9.77 acres located on the northwest corner of Central Avenue and Sycamore Canyon Boulevard.

The site is located within Airport Compatibility Zone E of the March Air Reserve Base/Inland Port Airport Influence Area (AIA). Within Compatibility Zone E of the March Air Reserve Base/Inland Port Airport Land Use Compatibility Plan, residential density is not restricted.

The elevation of Runway 14-32 at March Air Reserve Base/Inland Port Airport is approximately 1,535 feet above mean sea level (AMSL) at its northerly terminus. At a distance of 24,785 feet from the project to the nearest point on the runway, Federal Aviation Administration Obstruction Evaluation Service (FAA OES) review would be required for any structures with an elevation at top of roof exceeding 1,782 feet AMSL. The site's finished floor elevation is 1,351 feet AMSL, and the building height is 50 feet, resulting in a top point elevation of 1,401 feet AMSL. Therefore, FAA OES review for height/elevation reasons was not required.

As ALUC Director, I hereby find the above-referenced project **CONSISTENT** with the 2014 March Air Reserve Base/Inland Port Airport Land Use Compatibility Plan, provided that the City of Riverside applies the following recommended conditions:

CONDITIONS:

1. Any new outdoor lighting that is installed shall be hooded or shielded so as to prevent either the spillage of lumens or reflection into the sky. Outdoor lighting shall be downward facing.

2. The following uses/activities are not included in the proposed project and shall be prohibited at this site.

   (a) Any use which would direct a steady light or flashing light of red, white, green, or amber colors associated with airport operations toward an aircraft engaged in an initial straight climb following takeoff or toward an aircraft engaged in a straight final approach toward a landing at an airport, other than an FAA-approved navigational signal light or visual approach slope indicator.

   (b) Any use which would cause sunlight to be reflected towards an aircraft engaged in an initial straight climb following takeoff or towards an aircraft engaged in a straight final approach towards a landing at an airport.

   (c) Any use which would generate smoke or water vapor or which would attract large concentrations of birds, or which may otherwise affect safe air navigation within the area. (Such uses include landscaping utilizing water features, aquaculture, production of cereal grains, sunflower, and row crops, composting operations, trash transfer stations that are open on one or more sides, recycling centers containing putrescible wastes, construction and demolition debris facilities, fly ash disposal, and incinerators.)

   (d) Any use which would generate electrical interference that may be detrimental to the operation of aircraft and/or aircraft instrumentation.

3. The attached notice shall be provided to all prospective purchasers of the property and tenants of the building.

4. Any new aboveground detention or water quality basins on the site shall be designed so as to provide for a maximum 48-hour detention period following the conclusion of the storm event for the design storm (may be less, but not more), and to remain totally dry between rainfalls. Vegetation in and around the detention basins that would provide food or cover for bird species that would be incompatible with airport operations shall not be utilized in project landscaping.

If you have any questions, please contact Paul Rull, ALUC Principal Planner, at (951) 955-6893.

Sincerely,
RIVERSIDE COUNTY AIRPORT LAND USE COMMISSION

Simon A. Housman, ALUC Director

Attachments: Notice of Airport in Vicinity

cc: SDH & Associates (applicant)
KA Enterprise, Eugene Marini (property owner)
Gary Gosliga, Airport Manager, March Inland Port Airport Authority
Doug Waters, Civil Base Engineer, March Air Reserve Base
ALUC Case File

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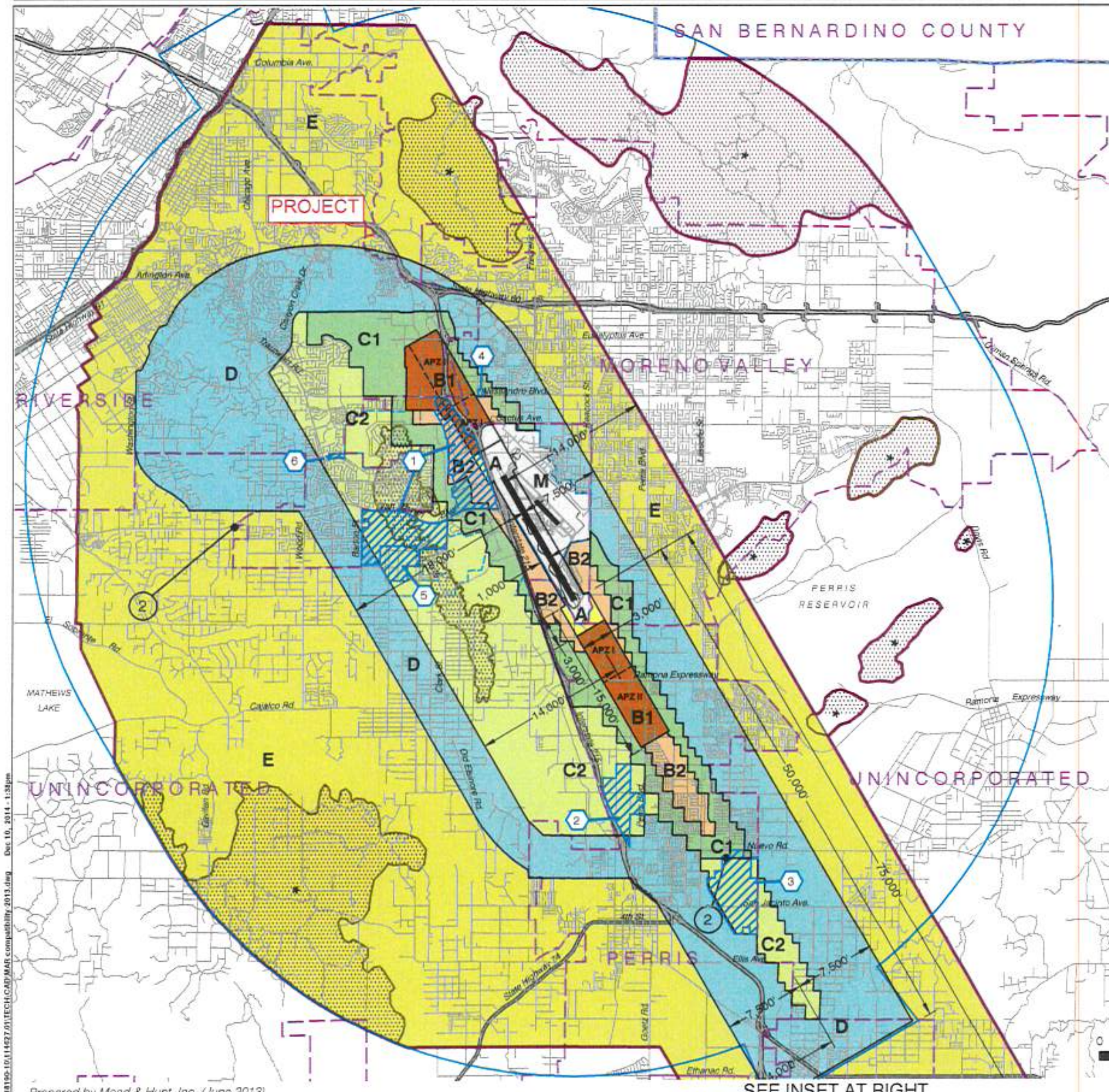
NOTICE OF AIRPORT IN VICINITY

This property is presently located in the vicinity of an airport, within what is known as an airport influence area. For that reason, the property may be subject to some of the annoyances or inconveniences associated with proximity to airport operations (for example: noise, vibration, or odors). Individual sensitivities to those annoyances [can vary from person to person. You may wish to consider what airport annoyances], if any, are associated with the property before you complete your purchase and determine whether they are acceptable to you. Business & Professions Code Section 11010 (b)(13)(A)



LEGEND

Compatibility Zones

- Airport Influence Area Boundary
- Zone A
- Zone B1
- Zone B2
- Zone C1
- Zone C2
- Zone D
- Zone E
- Zone M
- High Terrain Zone
- FAR Part 77 Military Outer Horizontal Surface Limits
- FAR Part 77 Notification Area

(1) Point at which aircraft on Runway 32 ILS approach descend below 3,000 feet above runway end. Airport Elevation is 1,535 feet MSL.

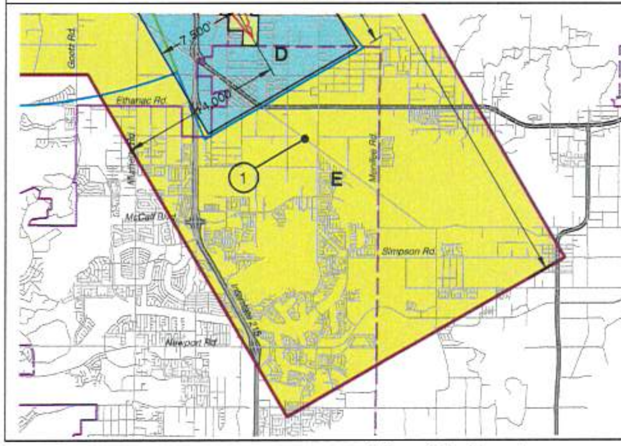
(2) Point at which departing aircraft typically reach 3,000 feet above runway end.

Boundary Lines

- March Air Reserve Base / Air Force Property
- March Joint Powers Authority Property Line
- County Boundary
- City Limits
- Site-Specific Exceptions (existing local agency commitments to development projects)

1. March JPA: March Business Center/Meridian
2. Perris: Harvest Landing
3. Perris: Park West
4. Moreno Valley: Affordable Housing
5. March JPA: Ben Clark Training Center
6. Riverside: Ridge Crest Subdivision

INSET



Note:
All dimensions are measured from runway ends and centerlines.

N

0 2 4 MILES

Base map source: County of Riverside 2013

Riverside County
Airport Land Use Commission

March Air Reserve Base / Inland Port Airport
Land Use Compatibility Plan

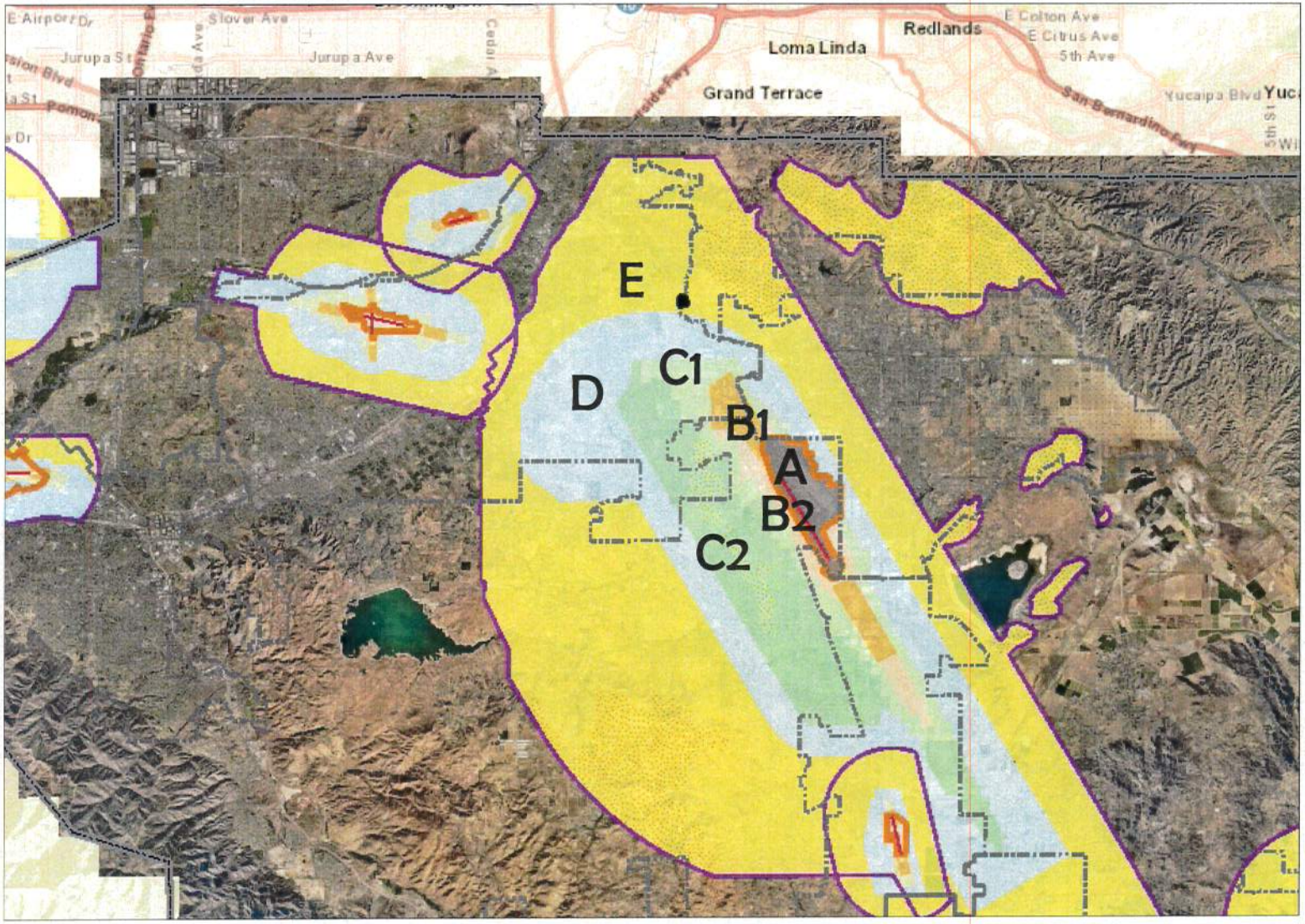
(Adopted November 13, 2014)

Map MA-1

Compatibility Map

March Air Reserve Base / Inland Port Airport

Map My County Map



Legend

- Runways
- Airports
- Airport Influence Areas
- Airport Compatibility Zones
  - OTHER COMPATIBILITY ZONE
  - A
  - A-EXC1
  - B1
  - B1-APZ I
  - B1-APZ I-EXC1
  - B1-APZ II
  - B1-APZ II-EXC1
  - B1-EXC1
  - B2
  - B2-EXC1
  - C
  - C1
  - C1-EXC1
  - C1-EXC3
  - C1-EXC4
  - C1-HIGHT
  - C2
  - C2-EXC1
  - C2-EXC2
  - C2-EXC3
  - C2-EXC5
  - C2-EXC6

RCIT

0 24,629 49,257 Feet

IMPORTANT Maps and data are to be used for reference purposes only. Map features are approximate, and are not necessarily accurate to surveying or engineering standards. The County of Riverside makes no warranty or guarantee as to the content (the source is often third party), accuracy, timeliness, or completeness of any of the data provided, and assumes no legal responsibility for the information contained on this map. Any use of this product with respect to accuracy and precision shall be the sole responsibility of the user.

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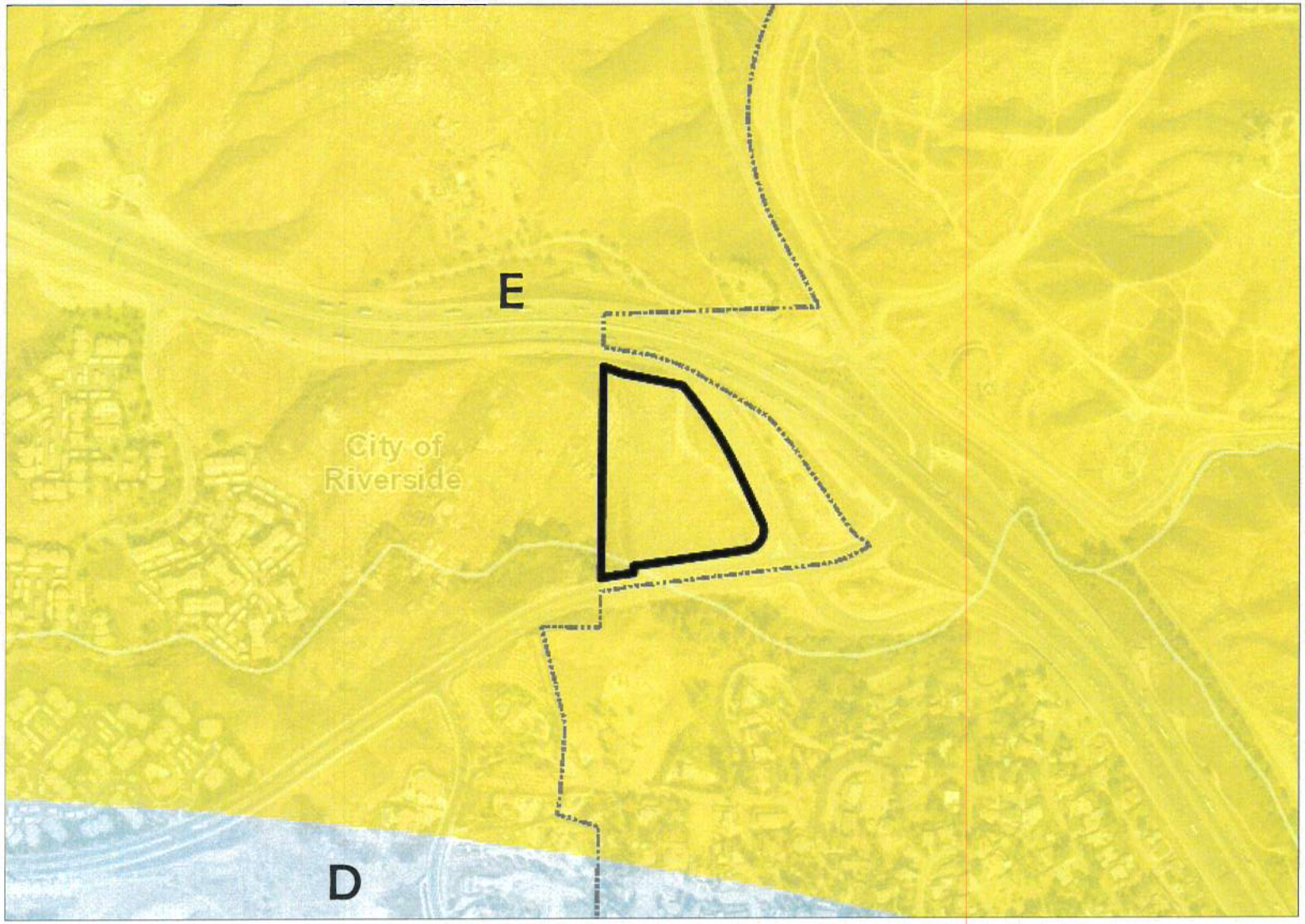
Notes

Map My County Map



Legend

- Runways
- Airports
- Airport Influence Areas
- Airport Compatibility Zones
  - OTHER COMPATIBILITY ZONE
  - A
  - A-EXC1
  - B1
  - B1-APZ I
  - B1-APZ I-EXC1
  - B1-APZ II
  - B1-APZ II-EXC1
  - B1-EXC1
  - B2
  - B2-EXC1
  - C
  - C1
  - C1-EXC1
  - C1-EXC3
  - C1-EXC4
  - C1-HIGHT
  - C2
  - C2-EXC1
  - C2-EXC2
  - C2-EXC3
  - C2-EXC5
  - C2-EXC6

0 770 1,539 Feet

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Notes

Map My County Map

Legend

- Blueline Streams
- City Areas
- World Street Map

0 770 1,539 Feet

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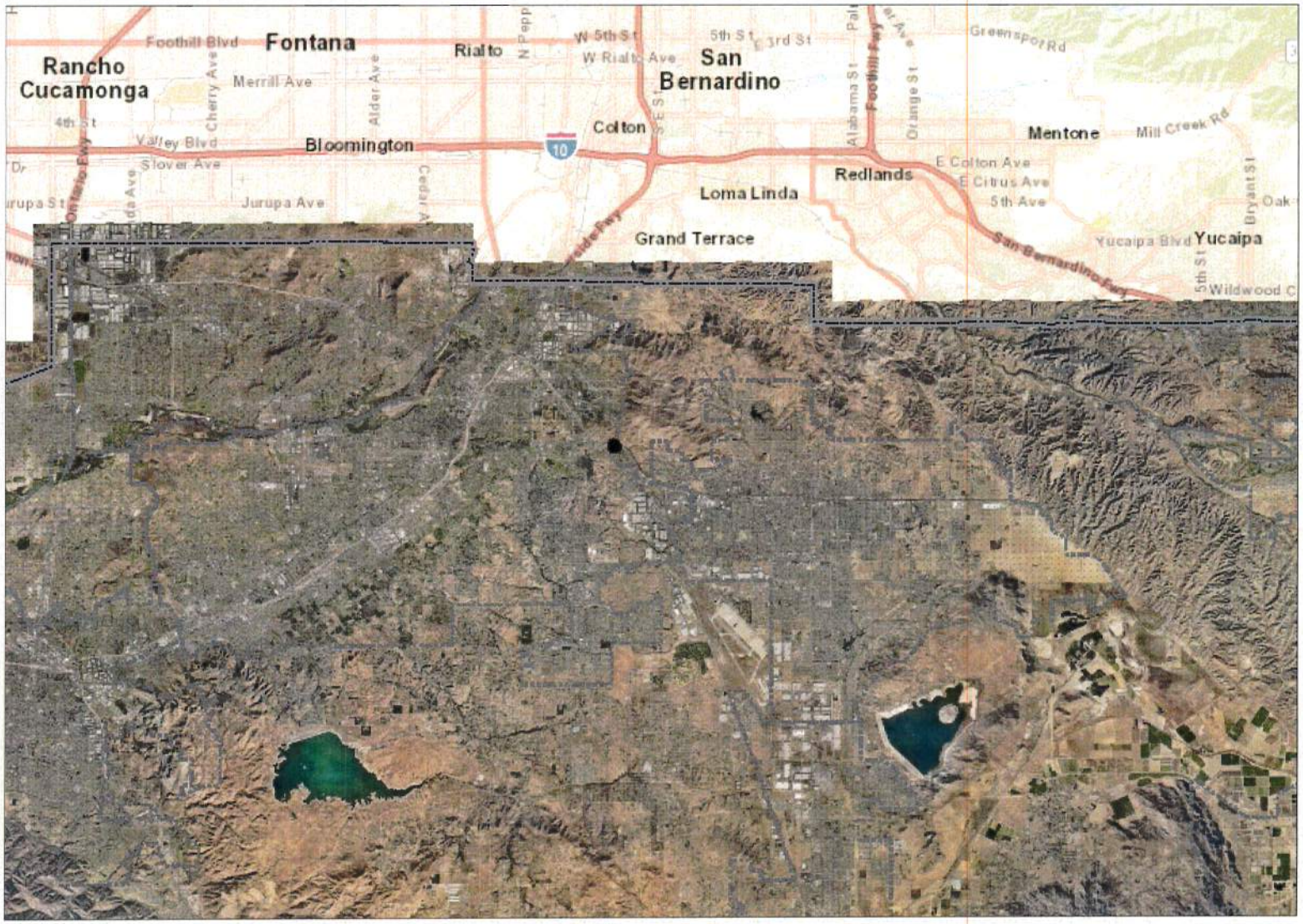
Notes

Map My County Map



Legend

City Areas

World Street Map

Notes

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0 24,629 49,257 Feet

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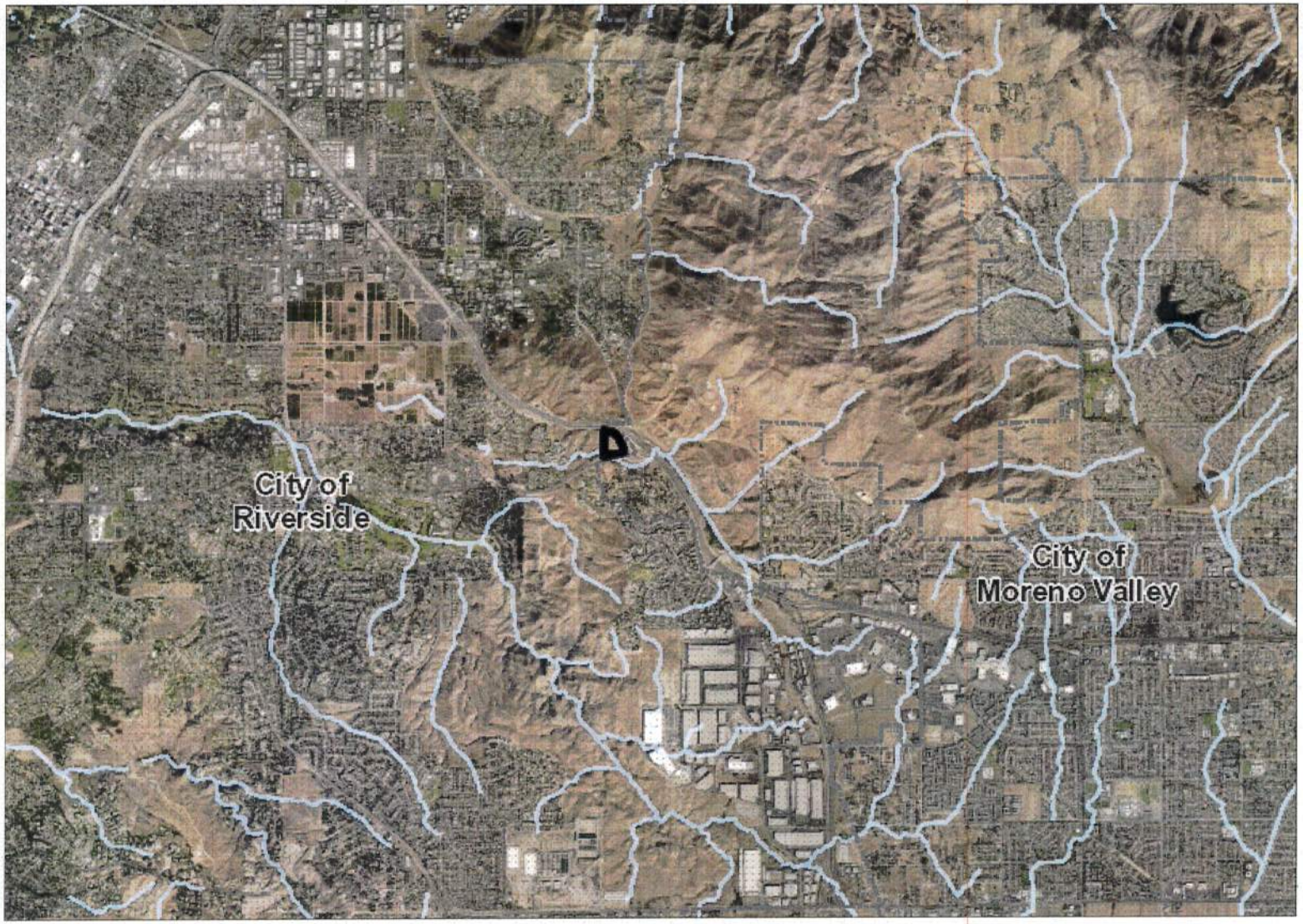
Map My County Map



Legend

- Blueline Streams
- City Areas
- World Street Map

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0 6, 12,314 Feet

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Notes

Map My County Map

Legend

- Blueline Streams
- City Areas
- World Street Map

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0 1,539 3,079 Feet

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Notes

Map My County Map

Legend

- Parcels
- Blueline Streams
- City Areas
- World Street Map

Notes

IMPORTANT Maps and data are to be used for reference purposes only. Map features are approximate, and are not necessarily accurate to surveying or engineering standards. The County of Riverside makes no warranty or guarantee as to the content (the source is often third party), accuracy, timeliness, or completeness of any of the data provided, and assumes no legal responsibility for the information contained on this map. Any use of this product with respect to accuracy and precision shall be the sole responsibility of the user.

0 385 770 Feet

REPORT PRINTED ON... 4/26/2020 9:23:59 AM

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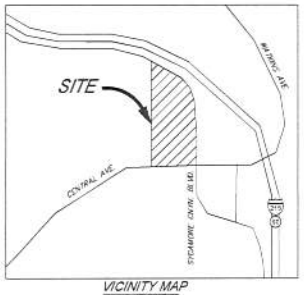
IN THE CITY RIVERSIDE, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA.

GENERAL PLAN AMENDMENT
CRESTVIEW APARTMENTS

OCTOBER 2019



VICINITY MAP
NOT TO SCALE

OWNER/ APPLICANT
KA ENTERPRISES
55820 OBERLIN DR. STE. 201
SAN DIEGO, CA 92121
TEL (858) 404-6080

ENGINEER
SDH & ASSOCIATES, INC.
14060 MERIDIAN PARKWAY 102
RIVERSIDE, CALIFORNIA 92518
TEL (951) 683-3691
FAX (951) 788-2314

ASSESSORS PARCEL NO.
256-050-012-5

SURROUNDING GENERAL PLAN DESIGNATION

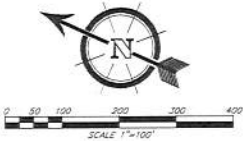
NORTH..... HP - HILLSIDE RESIDENTIAL
EAST..... HP - HILLSIDE RESIDENTIAL
SOUTH..... P - PUBLIC PARK
WEST..... VHDR - VERY HIGH DENSITY RES./ OS - OPEN SPACE

LEGEND

SYMBOL	ZONING DESIGNATION
	C - COMMERCIAL
	VHDR - VERY HIGH DENSITY RESIDENTIAL

EXISTING GENERAL PLAN DESIGNATION
SCALE: 1"=100'

PROPOSED GENERAL PLAN DESIGNATION
SCALE: 1"=100'



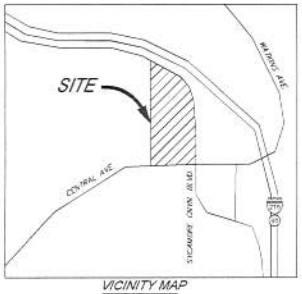
BUSINESS TAX CERTIFICATE NO. 107994 EXP. 6-30-20

SEAL: REGISTERED PROFESSIONAL ENGINEER FRANK A. SCHWERTNER No. 90433 Exp. 9-30-21 CIVIL STATE OF CALIFORNIA	PREPARED BY: SDH & ASSOCIATES INC. 14060 Meridian Parkway 102 Riverside, California 92518 TEL: (951) 683-3691 FAX (951) 788-2314	CITY OF RIVERSIDE	1 OF 1 SHEETS
	SCALE 1"=100'	GENERAL PLAN AMENDMENT CRESTVIEW APARTMENTS	
	DATE OCTOBER 2019	BENCHMARK	

IN THE CITY RIVERSIDE, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA.

ZONE CHANGE EXHIBIT
CRESTVIEW APARTMENTS

OCTOBER 2019



VICINITY MAP
NOT TO SCALE

EXISTING ZONING
SCALE: 1"=100'

PROPOSED ZONING
SCALE: 1"=100'

OWNER/ APPLICANT
KA ENTERPRISES
55820 OBERLIN DR. STE. 201
SAN DIEGO, CA 92121
TEL (858) 404-6080

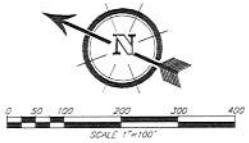
ENGINEER
SDH & ASSOCIATES, INC.
14060 MERIDIAN PARKWAY 102
RIVERSIDE, CALIFORNIA 92518
TEL (951) 683-3691
FAX (951) 788-2314

ASSESSORS PARCEL NO.
256-050-012-5

SURROUNDING ZONING
NORTH..... RC RESIDENTIAL COMMERCIAL
EAST..... COMMERCIAL
SOUTH..... (COUNTY) C-P-S, W-1-9, R-2-80, P-1-80
WEST..... RI RESIDENTIAL CONSERVATION ZONE, R-3-3000 MULTI FAMILY RESIDENTIAL

LEGEND

SYMBOL	ZONING DESIGNATION
	CG COMMERCIAL GENERAL ZONE
	R-4



BUSINESS TAX CERTIFICATE NO. 107994 EXP. 6-30-20

SEAL: REGISTERED PROFESSIONAL ENGINEER DONALD A. SCHWARTZ No. 50433 Exp. 9-30-21 CIVIL STATE OF CALIFORNIA

PREPARED BY: SDH & ASSOCIATES INC. 14060 Meridian Parkway 102 Riverside, California 92518 TEL. (951) 683-3691 FAX (951) 788-2314

BENCHMARK

SCALE 1"=100'

DATE OCTOBER 2019

CITY OF RIVERSIDE

ZONE CHANGE EXHIBIT
CRESTVIEW APARTMENTS

1 OF 1 SHEETS

PROJECT SUMMARY

	DATA
ZONING OF SITE:	R4
TOTAL GROSS SITE AREA:	9.77 AC
PROPOSED TOTAL # OF DWELLING UNITS:	237 UNITS
PROPOSED DENSITY OF UNITS:	24.3 DU/AC
MAXIMUN BUILDING HEIGHT:	50'
MAXIMUN NUMBER OF STORIES:	4 STORY

SITE COVERAGE

	SQ.FT.	AC	%
BUILDING COVERAGE	108,623	2.49	25.5%
ROAD COVERAGE	213,285	4.90	50.1%
LANDSCAPE COVERAGE	103,673	2.38	24.4%
TOTAL	425,581	9.77	100%

BUILDING/ UNIT MIX

BLDG. #	BLDG. TYPE	1 BDRM. A1	1 BDRM. A2	2 BDRM. B1	2 BDRM. B2	2 BDRM. B3	2 BDRM. B4	3 BDRM. C1	TOTAL UNIT	TOTAL GARAGE
		760 SQ.FT.	777 SQ.FT.	1,087 SQ.FT.	1,102 SQ.FT.	1241 SQ.FT.	1,094 SQ.FT.	1,388 SQ.FT.		
1	I-II/ 3 STORY	0	6	2	0	0	7	0	15	12
2	I-II/ 3 STORY	0	6	2	0	0	7	0	15	12
3	I-II/ 3 STORY	0	3	2	0	0	10	0	15	12
4	I-II/ 3 STORY	0	3	2	0	0	10	0	15	12
5	I-II/ 3 STORY	0	6	2	0	0	7	0	15	12
6	II/ 4 STORY	41	3	18	25	6	5	11	115	40
7	II/ 4 STORY	15	6	6	9	4	0	6	46	12
SUB-TOTAL	-	56	33	34	34	10	47	17	237	
TOTALS:	7	89		125				17		112
%		40%		53%				7%	100%	

TOTAL BUILDING FOOTPRINT SQ. FT.

BLDG. DEST.	TYPE	1st FL. SQ. FT.	2nd FL. SQ. FT.	3rd FL. SQ. FT.	4th FL. SQ. FT.	5th FL. SQ. FT.	ROOF GARDEN SQ. FT.	TOTAL SQ. FT.
1	TYPE Ia	6,860	6,707	6,009	-	-	-	20,445
2	TYPE Ia	6,860	6,707	6,025	-	-	-	19,716
3	TYPE Ib	7,153	6,407	6,153	-	-	-	19,713
4	TYPE Ib	7,155	6,407	6,153	-	-	-	20,445
5	TYPE Ia	6,860	6,707	6,009	-	-	-	21,557
6	TYPE II	43,636	42,007	42,761	44,828	42,761	1,870	103,220
7	TYPE III	21,922	18,514	21,135	20,313	21,135	-	418,248
TOTAL		103,472	93,456	88,309	82,341	83,896	1,870	817,251

LEASABLE SQ.FT. PROVIDED:

UNIT TYPE	SQ.FT.	QTY	%	TOTAL LEASABLE SF
A1	760	56	24%	42,560
A2	777	39	17%	30,303
B1	1,087	34	14%	37,298
B2	1,102	34	14%	37,468
B3	1,241	10	4%	12,410
B4	1,094	47	20%	51,418
C1	1,388	17	7%	23,768
SUB-TOTAL		237	100%	235,223

PARKING SUMMARY

A. TOTAL PARKING REQUIRED

A. TOTAL PARKING REQUIRED	UNITS	RATIO	QTY.
1 BDRM. UNITS:	95	1.5	143
2 BDRM. UNITS:	125	2.0	250
3 BDRM. UNITS:	17	2.0	34
TOTAL REQ. PARKING:	237	-	427

B. TOTAL PARKING PROVIDED

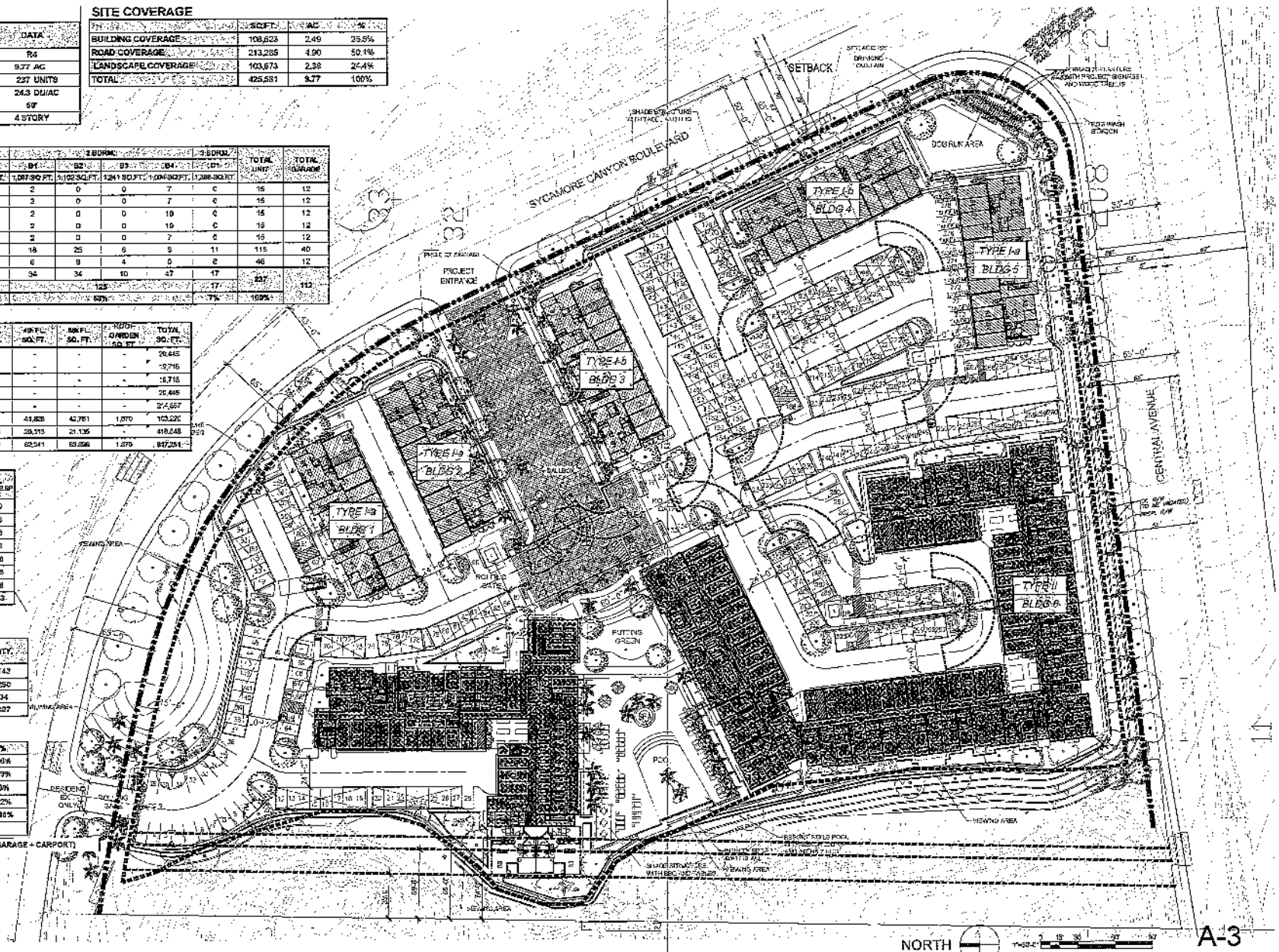
TOTAL PARKING PROVIDED:	QTY.	%
TOTAL GARAGE:	112	26%
TOTAL CARPORT:	209	49%
TOTAL TANDEM:	12	3%
TOTAL OPEN STALL:	94	22%
TOTAL PROVIDED PARKING:	427	100%
PARKING TO UNIT RATIO:	1.80 / DU	

75% X 427 TOTAL REQUIRED PARKING = 321 COVERED (GARAGE + CARPORT)

2 STORY

3 STORY

4 STORY



NORTH

SCALE : 1"= 30'-0"

DATE: 02-20-2020

JOB NO.: 2018-549

A-3

CRESTVIEW APARTMENTS

RIVERSIDE CA

CONCEPTUAL SITE PLAN

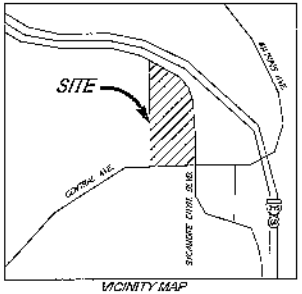
KA ENTERPRISES
5820 OBERLIN DRIVE SUITE 201, RIVERSIDE CA 92121
(858) 404-6080

ARCHITECTS ORANGE
144 NORTH ORANGE ST., ORANGE, CA 92866
(714) 639-9860

IN THE CITY RIVERSIDE, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA

PRELIMINARY GRADING PLAN
CRESTVIEW APARTMENTS

MARCH 2020



VICINITY MAP
NOT TO SCALE

OWNER/ APPLICANT
VIA ENTERPRISES
10880 CARBON DR. STE. 201
SAN DIEGO, CA 92131
TEL (858) 494-8060
ATTN: EUGENE MANN

ENGINEER
SDH & ASSOCIATES, INC.
14000 MERIDIAN PARKWAY 102
RIVERSIDE, CALIFORNIA 92518
TEL (951) 682-3691
FAX (951) 788-2314
ATTN: STEPHEN SCHMADES

ARCHITECT
ARCHITECTS ORANGE
321 CHAPMAN AVE.
ORANGE, CA 92866
TEL (714) 639-9860

SOILS ENGINEER
ARCHITECTS ORANGE
321 CHAPMAN AVE.
ORANGE, CA 92866
TEL (714) 639-9860

UTILITY PURVEYORS
WATER.....CITY OF RIVERSIDE
GAS.....SO. CALIF. GAS
ELECTRICAL.....CITY OF RIVERSIDE
TELEPHONE.....PACIFIC BELL
SEWER.....CITY OF RIVERSIDE

ZONING AND LAND USE
EXISTING ZONING: CG COMMERCIAL GENERAL ZONE
PROPOSED ZONING: R-4

ASSESSORS PARCEL NO.
256-050-012-3

SCHOOL DISTRICT
NIVERSIDE UNIFIED
SCHOOL DISTRICT

SURROUNDING GENERAL PLAN DESIGNATION
NORTH..... HR – HILLSIDE RESIDENTIAL
EAST..... HR – HILLSIDE RESIDENTIAL
SOUTH..... P – PUBLIC PARK
WEST..... VHDR – VERY HIGH DENSITY RES./ OS – OPEN SPACE

SURROUNDING ZONING
NORTH..... RC RESIDENTIAL COMMERCIAL
EAST..... COMMERCIAL
SOUTH..... (COUNTY) C-P-S, W-1-5, R-2-20, R-1-20
WEST..... RI RESIDENTIAL CONSERVATION ZONE, R-3-3000 MULTI FAMILY RESIDENTIAL

SHEET INDEX
SHEET 1 – TITLE SHEET
SHEET 2 – PRELIMINARY GRADING PLAN
SHEET 3 – PRELIMINARY GRADING PLAN
SHEET 4 – DRAINAGE PLAN PLAN
SHEET 5 – SECTIONS AND DETAILS

LEGEND
T.C.B. - TOP CATCH BASIN
F.G. - FINISHED GRADE
F.L. - FLOW LINE
H.P. - HIGH POINT
EXIST. - EXISTING
P.E. - PAD ELEVATION
G.B. - GRADE BREAK
○ - ITEM WALL HEIGHT
TRACT BOUNDARY
CENTERLINE
CURB AND GUTTER
1280 EXISTING CONTOUR LINE
LOT LINE
SLOPE

PROJECT INFO
GROSS SITE AREA: 6.77 AC.
UNIT COUNT: 237
PARKING REQUIRED: 427
PARKING PROVIDED: 427

SHEET INDEX
SHEET 1: TITLE SHEET
SHEET 2: PRELIMINARY GRADING PLAN
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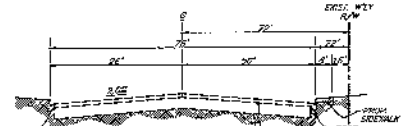
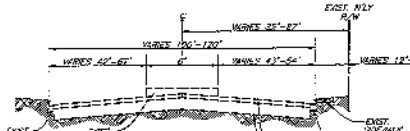
SHEET 5: SECTIONS AND DETAILS



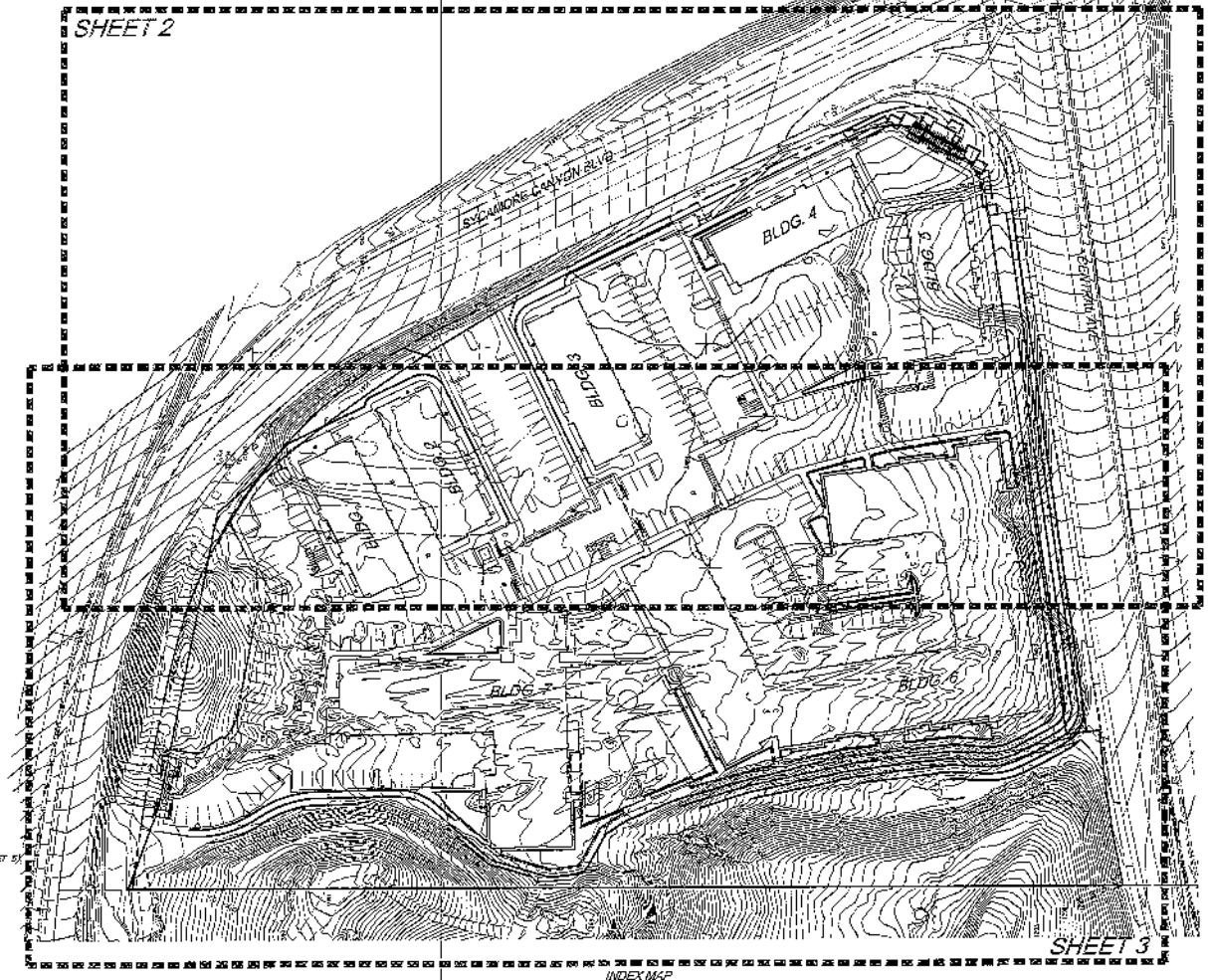
TYPICAL SECTION
SYCAMORE CANYON BL'VD. PAVEMENT
NOT TO SCALE



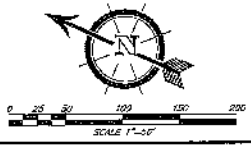
TYPICAL SECTION
CENTRAL AVE
NOT TO SCALE

CONSTRUCTION NOTES

1. CONSTRUCT P.C.C. DRIVE ISLE IN PARKING AREAS
2. CONSTRUCT 6" CURB ONLY (PER DETAIL ON SHEET 5)
3. CONSTRUCT 6" CURB AND GUTTER (PER DETAIL ON SHEET 5)
4. PROPOSED MODULAR WETLANDS
5. CONSTRUCT P.C.C. SIDEWALK (FINISHED SURFACE MATERIALS PER ARCH. PLANS)
6. CONSTRUCT 1' RIBBON GUTTER
7. CONSTRUCT 8" HDPE STORM DRAIN
8. CONSTRUCT 24" X 24" DRAIN BOX
9. CONSTRUCT GATE PER ARCH. PLANS
10. CONSTRUCT F.D.A. COMPLIANT HANDICAP RAMP
11. CONSTRUCT RETAINING WALL
12. CONSTRUCT CRDE INLET CATCH BASIN
13. CONSTRUCT 12" HDPE STORM DRAIN
14. CONSTRUCT 18" HDPE STORM DRAIN
15. CONSTRUCT 24" HDPE STORM DRAIN
16. CONSTRUCT PRIVATE HYDROSTOR UNDERGROUND DETENTION SYSTEM
17. CONSTRUCT 12" LANDSCAPE CATCH BASIN WITH ATRIUM GRATE
18. CONSTRUCT 12" MIN. DIA. ANGULAR RIP RAP



INDEX MAP
SCALE 1" = 50'



BUSINESS TAX CERTIFICATE NO. 160994 EXP. 6-30-20

SEAL:

PREPARED BY:
SDH & ASSOCIATES INC.
14000 Meridian Parkway 102
Riverside, CA 92518-9518
TEL (951) 682-3691 FAX (951) 788-2314

SCALE 1"=50'

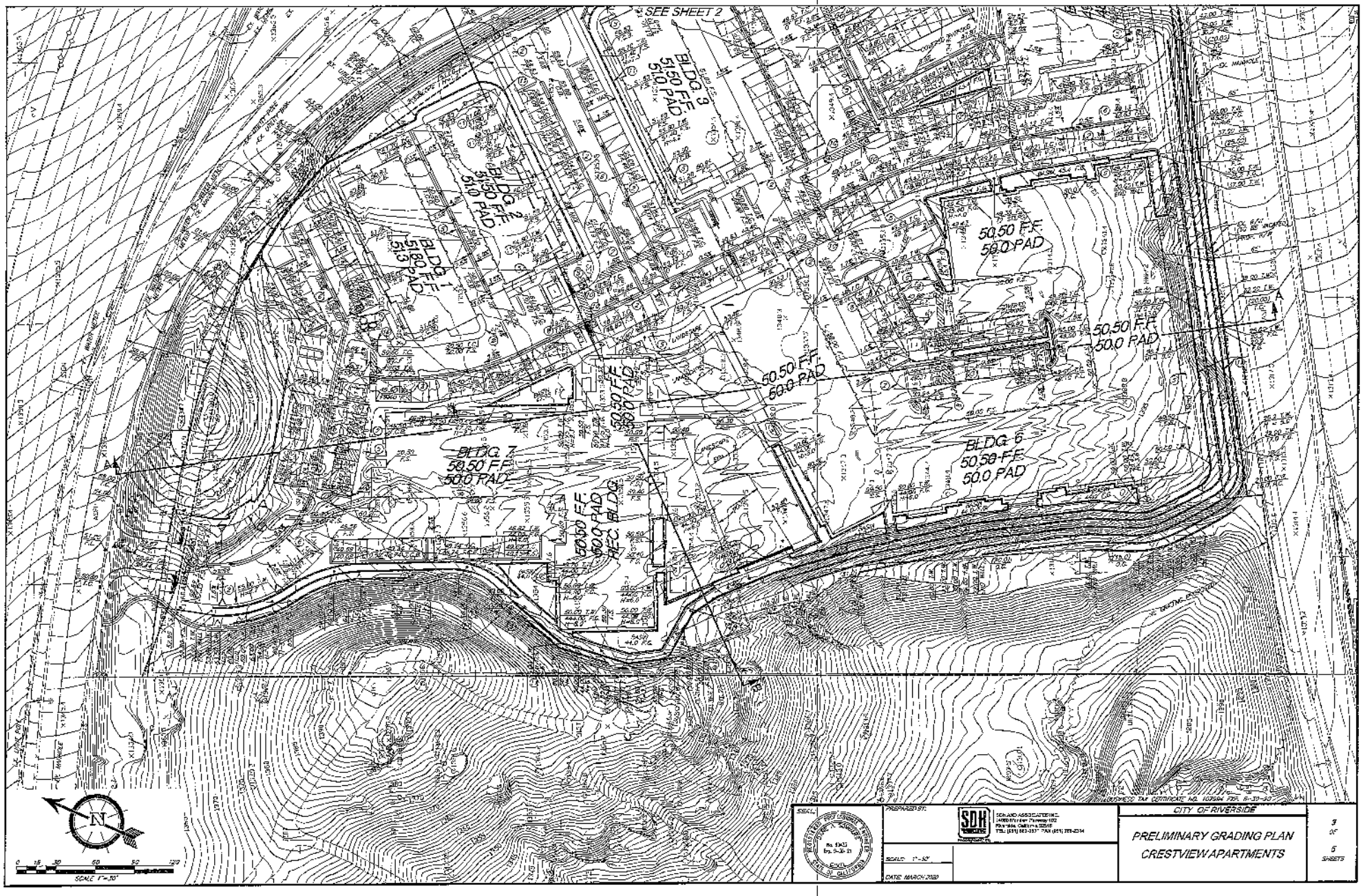
DATE: MARCH 2020

CITY OF RIVERSIDE

PRELIMINARY GRADING PLAN
CRESTVIEW APARTMENTS

1 OF 5 SHEETS

CENTRAL AVE
SYCAMORE CANYON BLVD.
BLDG. 1
51.80 F.F.
51.3 PAD
BLDG. 2
51.50 F.F.
51.0 PAD
BLDG. 3
51.50 F.F.
51.0 PAD
BLDG. 4
49.50 F.F.
49.0 PAD
BLDG. 5
49.00 F.F.
48.5 PAD
50.50 F.F.
50.0 PAD
50.50 F.F.
50.0 PAD
50.50 F.F.
50.0 PAD
BLDG. 7
SEE SHEET 3
B
B
N
SCALE 1"=30'
PRELIMINARY GRADING PLAN
CRESTVIEW APARTMENTS
CITY OF RIVERSIDE
SDH
SCALE 1"=30'
DATE MARCH 2020
2 OF 3 SHEETS


SEE SHEET 2
BLDG 9
51.50 F.F.
51.0 PAD
BLDG 2
51.50 F.F.
51.0 PAD
BLDG 1
51.80 F.F.
51.3 PAD
50.50 F.F.
50.0 PAD
50.50 F.F.
50.0 PAD
50.50 F.F.
50.0 PAD
BLDG 7
50.50 F.F.
50.0 PAD
50.50 F.F.
50.0 PAD
BLDG. REC.
BLDG 6
50.50 F.F.
50.0 PAD
A
A
N
0 15 30 60 90 120
SCALE 1"=30'
SEAL
PREPARED BY:
SDH
SCHMID & ASSOCIATES, INC.
CITY OF RIVERSIDE
PRELIMINARY GRADING PLAN
CRESTVIEW APARTMENTS
SCALE 1"=30'
DATE MARCH 2020
3 OF 5 SHEETS

SYCAMORE CANYON APARTMENTS

DESIGN REVIEW SUBMITTAL
FEBUARY 20, 2020

SHEET INDEX
ARCHITECTURE:

A-0 COVER SHEET
A-1 CENTRAL AVE. PERSPECTIVE
A-2.1 ARCHITECTURAL MASSING VIEWS
A-2.2 ARCHITECTURAL MASSING VIEWS
A-3 SITE PLAN
A-4 OPEN SPACE EXHIBIT
A-5 FIRE ACCESS PLAN
A-6 TYPE Ia - FRONT, REAR, RIGHT & LEFT ELEVATIONS
A-7 TYPE Ia - BUILDING COMPOSITE LEVEL 1,2,3,ROOF&SECTION A-A
A-8 TYPE Ib - FRONT, REAR, RIGHT & LEFT ELEVATIONS
A-9 TYPE Ib - BUILDING COMPOSITE LEVEL 1,2,3,ROOF&SECTION B-B
A-10 TYPE II - NORTH & SOUTH ELEVATIONS
A-11 TYPE II - EAST & WEST ELEVATIONS
A-12 TYPE II - NORTH & SOUTH COURTYARD ELEVATIONS
A-13 TYPE II - EAST & WEST COURTYARD ELEVATIONS
A-14 TYPE II - BUILDING COMPOSITE LEVEL 1 & 2
A-15 TYPE II - BUILDING COMPOSITE LEVEL 3 & 4
A-16 TYPE II - BUILDING COMPOSITE LEVEL 5,ROOF&SECTION C-C
A-17 TYPE III - NORTH & SOUTH ELEVATIONS
A-18 TYPE III - EAST & WEST ELEVATIONS
A-19 TYPE III - BUILDING COMPOSITE LEVEL 1&2
A-20 TYPE III - BUILDING COMPOSITE LEVEL 3,4,ROOF&SECTION D-D
A-21 LEASING / CLUBHOUSE FLOOR PLANS
A-22 MAIL LOUNGE / FITNESS FLOOR PLANS
A-23 UNIT PLANS
A-24 PARKING EXHIBIT
A-25 TASH ENCLOSURE EXHIBIT
A-26 MATERIAL BOARD

LANDSCAPE:

L-1 CONCEPTUAL LANDSCAPE SITE PLAN
L-2 CONCEPTUAL WALL AND FENCE EXHIBIT
L-3 CONCPTUAL RECREATIONAL EXHIBIT
L-4 CONCEPTUAL COMMUNITY DOG PARK EXHIBIT

PHOTOMETRIC:

P-1 SITE LIGHTING PHOTOMETRIC PLAN
P-2 LIGHTING FIXTURE SPECIFICATIONS

PROJECT TEAM

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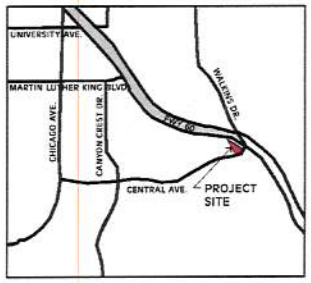
VINCINITY MAP



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A-1

VIEW FROM CENTRAL AVE. LOOKING NORTH WEST

FEBUARY 20, 2020
JOB NO.: 2018-549

CRESTVIEW APARTMENTS

RIVERSIDE, CA

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FRONT ELEVATION

FRONT ELEVATION

FRONT ELEVATION

FRONT ELEVATION

FRONT ELEVATION

FRONT ELEVATION

A-2.1

CRESTVIEW APARTMENTS

RIVERSIDE, CA

ARCHITECTURE MASSING VIEWS - 1

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JOB NO.: 2018-549

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FRONT ELEVATION

FRONT ELEVATION

FRONT ELEVATION

FRONT ELEVATION

FRONT ELEVATION

FRONT ELEVATION

A-2.2

CRESTVIEW APARTMENTS

RIVERSIDE, CA

ARCHITECTURE MASSING VIEWS - 2

DATE: 02-20-2020
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FRONT ELEVATION

FRONT ELEVATION

FRONT ELEVATION

FRONT ELEVATION

FRONT ELEVATION

FRONT ELEVATION

FRONT ELEVATION

FRONT ELEVATION

FRONT ELEVATION

A-2

CRESTVIEW APARTMENTS

RIVERSIDE, CA

ARCHITECTURE MASSING VIEWS

DATE: 02-20-2020
JOB NO.: 2018-549

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(714) 639-9860

EXTERIOR ELEVATION KEYNOTES

MATERIAL LEGEND:

1. EXTERIOR PLASTER WALL
2. ARCHITECTURAL DECORATIVE AWNING
3. VINYL WINDOW
4. ROOF GARDEN
5. GARAGE DOOR
6. METAL RAILING
7. GLASS RAILING
8. ALUMINUM FIXED STOREFRONT GLAZING SYSTEM
9. PAINTED STUCCO PATIO WALL
10. DECORATIVE GATE

FRONT ELEVATION

RIGHT ELEVATION

REAR ELEVATION

LEFT ELEVATION

CRESTVIEW APARTMENTS

RIVERSIDE, CA

TYPE Ia - FRONT, REAR, RIGHT & LEFT ELEVATIONS

SCALE : 3/32"= 1'-0"
DATE: 02-20-2020
JOB NO.: 2018-549

A-6

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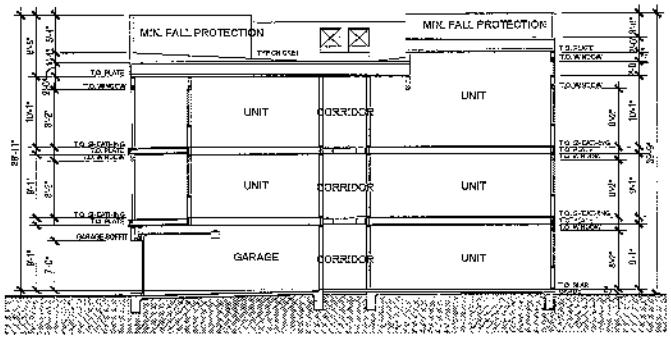
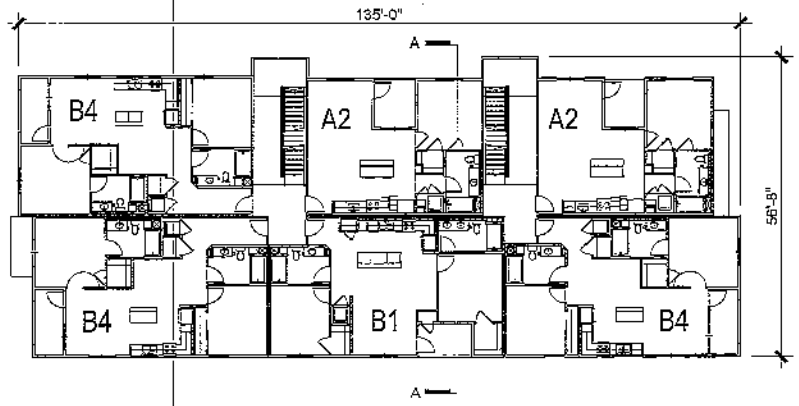
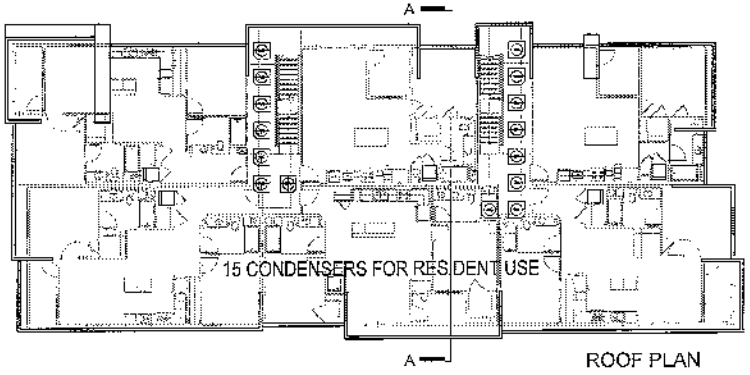


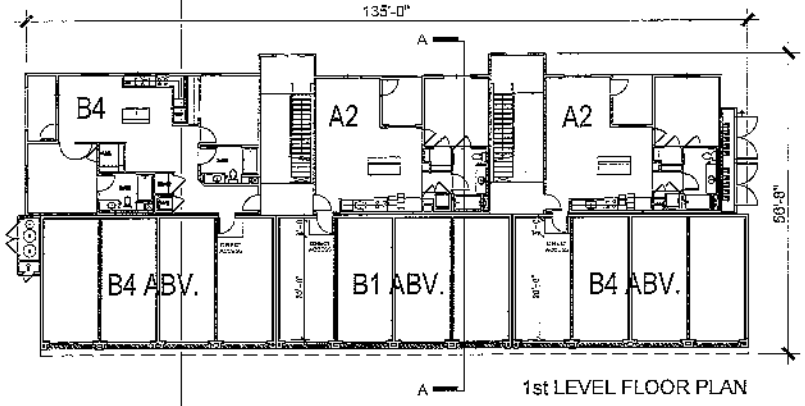
TYPICAL SECTION A-A



2nd & 3rd LEVEL FLOOR PLAN



ROOF PLAN



1st LEVEL FLOOR PLAN

A-7

TYPE Ia - BUILDING COMPOSITE
LEVEL 1, 2,3, ROOF & SECTION A-A

SCALE : 3/32"= 1'-0"
DATE: 02-20-2020
JOB NO.: 2018-549

CRESTVIEW APARTMENTS

RIVERSIDE, CA

KA ENTERPRISES
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ARCHITECTS ORANGE
144 NORTH ORANGE ST., ORANGE, CA 92866
(714) 639-9860

EXTERIOR ELEVATION KEYNOTES

MATERIAL LEGEND:

1. EXTERIOR PLASTER WALL
2. ARCHITECTURAL DECORATIVE AWNING
3. VINYL WINDOW
4. ROOF GARDEN
5. GARAGE DOOR
6. METAL RAILING
7. GLASS RAILING
8. ALUMINUM FIXED STOREFRONT GLAZING SYSTEM
9. PAINTED STUCCO PATIO WALL
10. DECORATIVE GATE

FRONT ELEVATION

RIGHT ELEVATION

REAR ELEVATION

LEFT ELEVATION

CRESTVIEW APARTMENTS

RIVERSIDE, CA

TYPE Ib - FRONT, REAR, RIGHT & LEFT ELEVATIONS

SCALE : 3/32"= 1'-0"
DATE: 02-20-2020
JOB NO.: 2018-549

A-8

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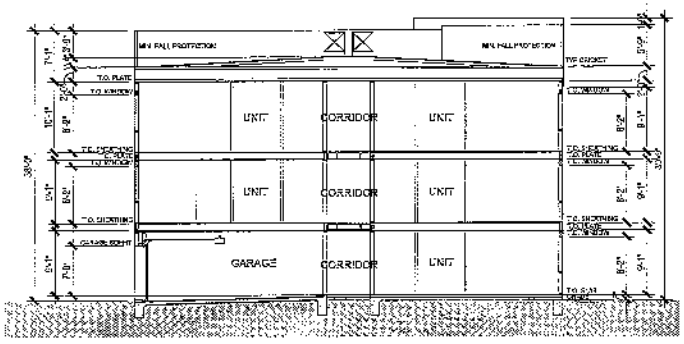
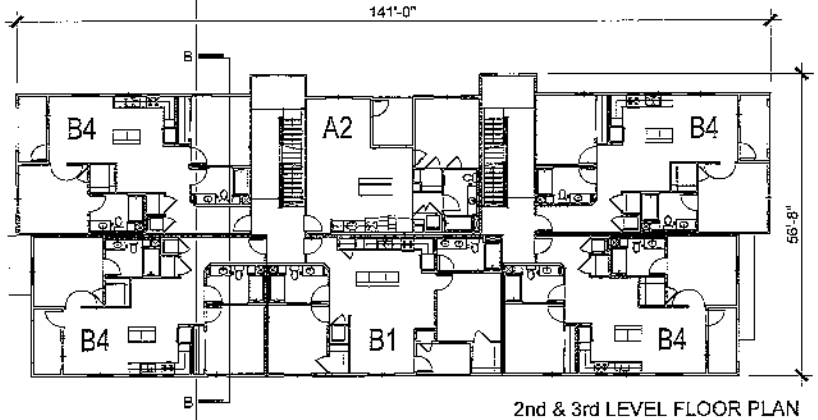
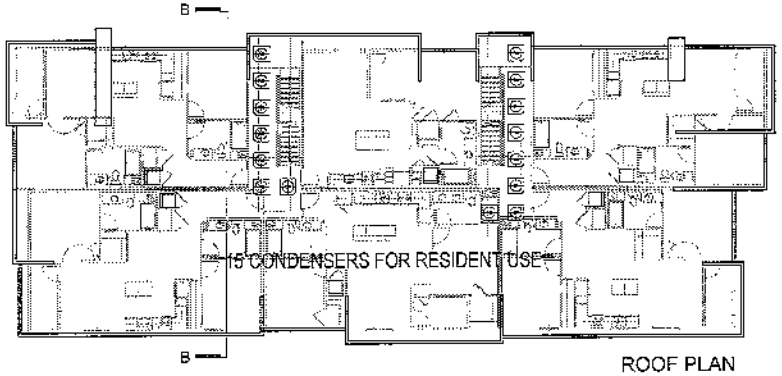


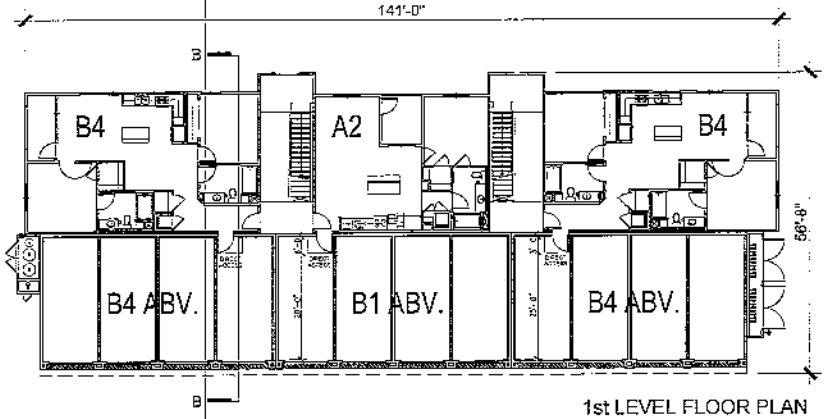
TYPICAL SECTION B-B



2nd & 3rd LEVEL FLOOR PLAN



ROOF PLAN



1st LEVEL FLOOR PLAN

A-9

TYPE Ib - BUILDING COMPOSITE
LEVEL 1, 2,3 & ROOF PLANS & SECTION B-B

SCALE : 3/32"= 1'-0"
DATE: 02-20-2020
JOB NO.: 2018-549

CRESTVIEW APARTMENTS

RIVERSIDE, CA

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EXTERIOR ELEVATION KEYNOTES

MATERIAL LEGEND:

1. EXTERIOR PLASTER WALL
2. ARCHITECTURAL DECORATIVE AWNING
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5. GARAGE DOOR
6. METAL RAILING
7. GLASS RAILING
8. ALUMINUM FIXED STOREFRONT GLAZING SYSTEM
9. PAINTED STUCCO PATIO WALL
10. DECORATIVE GATE

NORTH ELEVATION

SOUTH ELEVATION

SCALE : 3/32"= 1'-0"
DATE: 02-20-2020
JOB NO.: 2018-549

A-10

CRESTVIEW APARTMENTS

RIVERSIDE, CA

TYPE II - NORTH & SOUTH ELEVATIONS

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(714) 639-9860

EXTERIOR ELEVATION KEYNOTES

MATERIAL LEGEND:

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4. ROOF GARDEN
5. GARAGE DOOR
6. METAL RAILING
7. GLASS RAILING
8. ALUMINUM FIXED STOREFRONT GLAZING SYSTEM
9. PAINTED STUCCO PATIO WALL
10. DECORATIVE GATE

EAST ELEVATION

WEST ELEVATION

CRESTVIEW APARTMENTS

RIVERSIDE, CA

TYPE II - EAST & WEST ELEVATIONS

SCALE : 3/32"= 1'-0"
DATE: 02-20-2020
JOB NO.: 2018-549

A-11

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EXTERIOR ELEVATION KEYNOTES

MATERIAL LEGEND:

1. EXTERIOR PLASTER WALL
2. ARCHITECTURAL DECORATIVE AWNING
3. VINYL WINDOW
4. ROOF GARDEN
5. GARAGE DOOR
6. METAL RAILING
7. GLASS RAILING
8. ALUMINUM FIXED STOREFRONT GLAZING SYSTEM
9. PAINTED STUCCO PATIO WALL
10. DECORATIVE GATE

NORTH COURTYARD ELEVATION

SOUTH COURTYARD ELEVATION

A-12

SCALE : 3/32"= 1'-0"
DATE: 02-20-2020
JOB NO.: 2018-549

CRESTVIEW APARTMENTS

RIVERSIDE, CA

TYPE II - NORTH & SOUTH COURTYARD ELEVATIONS

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EXTERIOR ELEVATION KEYNOTES

MATERIAL LEGEND:

1. EXTERIOR PLASTER WALL
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4. ROOF GARDEN
5. GARAGE DOOR
6. METAL RAILING
7. GLASS RAILING
8. ALUMINUM FIXED STOREFRONT GLAZING SYSTEM
9. PAINTED STUCCO PATIO WALL
10. DECORATIVE GATE

EAST COURTYARD ELEVATION

WEST COURTYARD ELEVATION

A-13

SCALE : 3/32"= 1'-0"
DATE: 02-20-2020
JOB NO.: 2018-549

CRESTVIEW APARTMENTS

RIVERSIDE, CA

TYPE II - EAST & WEST COURTYARD ELEVATIONS

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ARCHITECTS ORANGE
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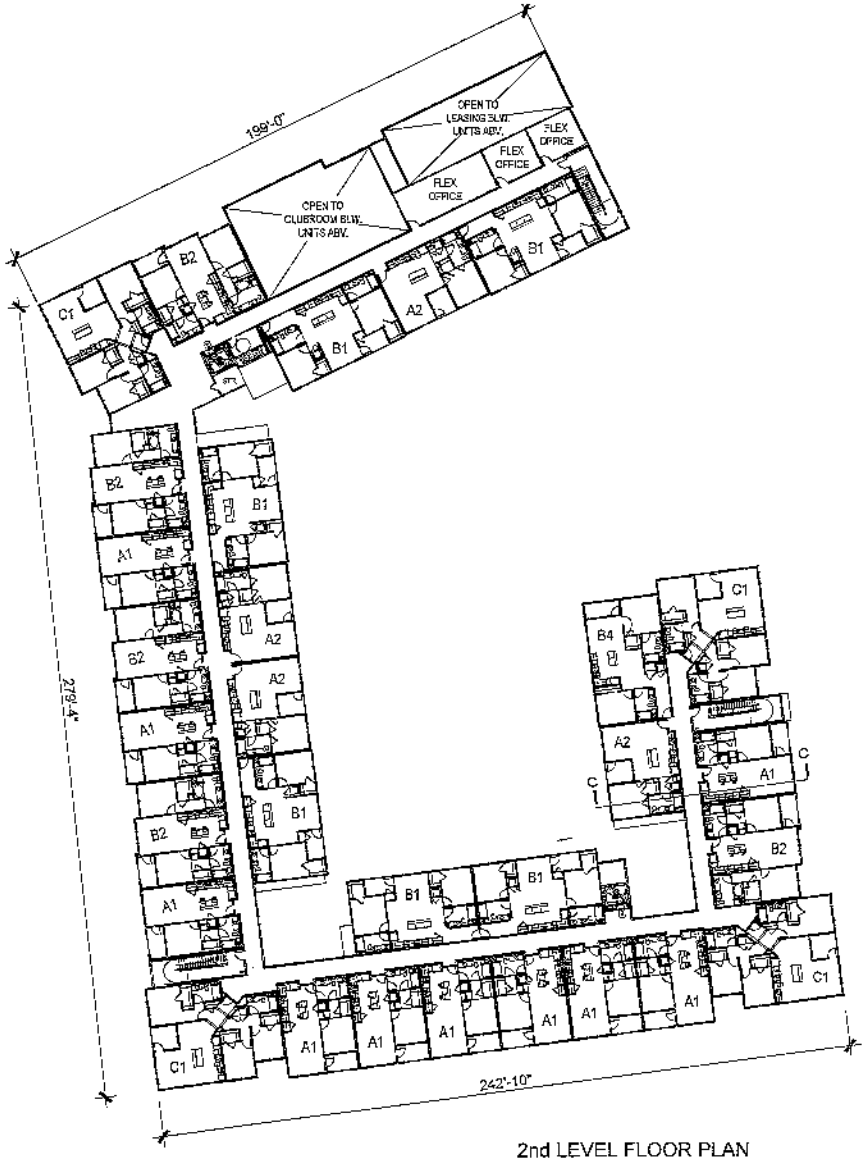
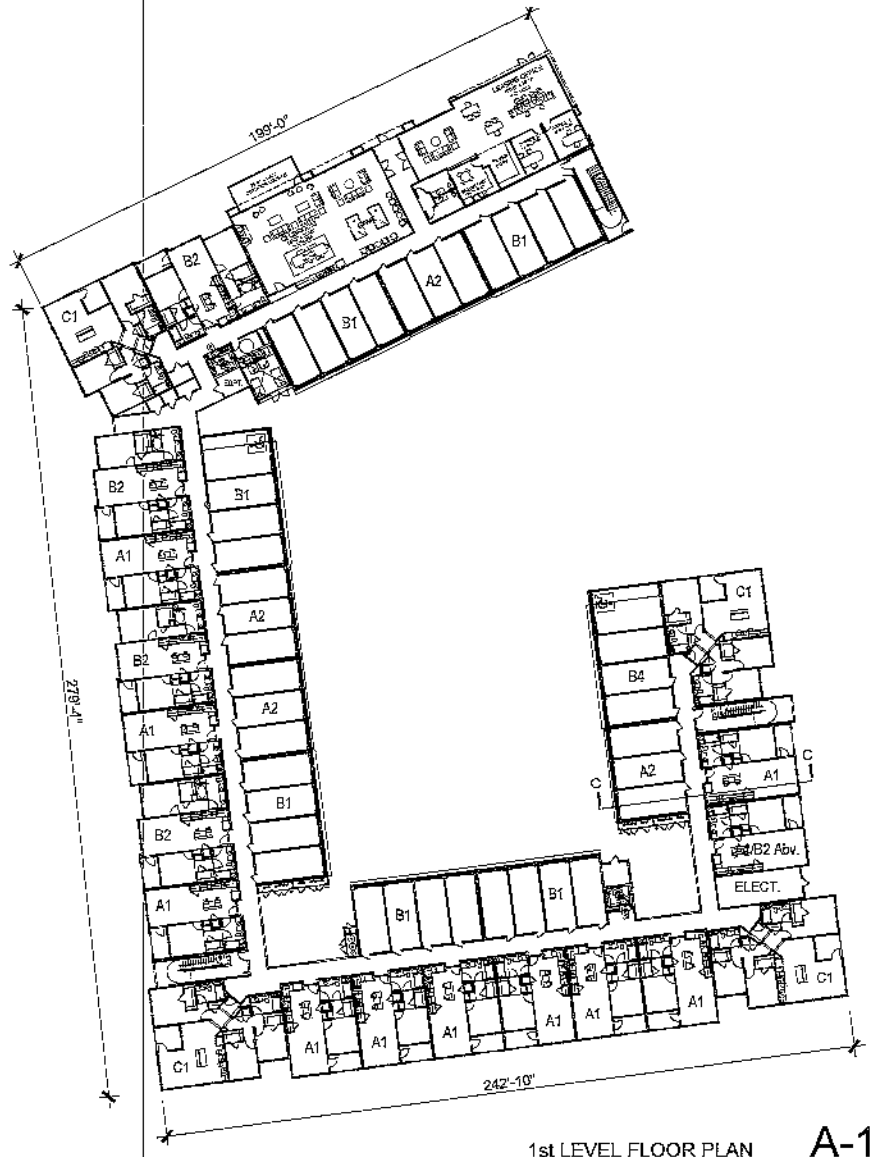
(714) 639-9860



2nd LEVEL FLOOR PLAN



1st LEVEL FLOOR PLAN

A-14

SCALE: 1:20

DATE: 02-20-2020

JOB NO.: 2018-549

CRESTVIEW APARTMENTS

RIVERSIDE, CA

TYPE II - BUILDING COMPOSITE LEVEL 1 & 2

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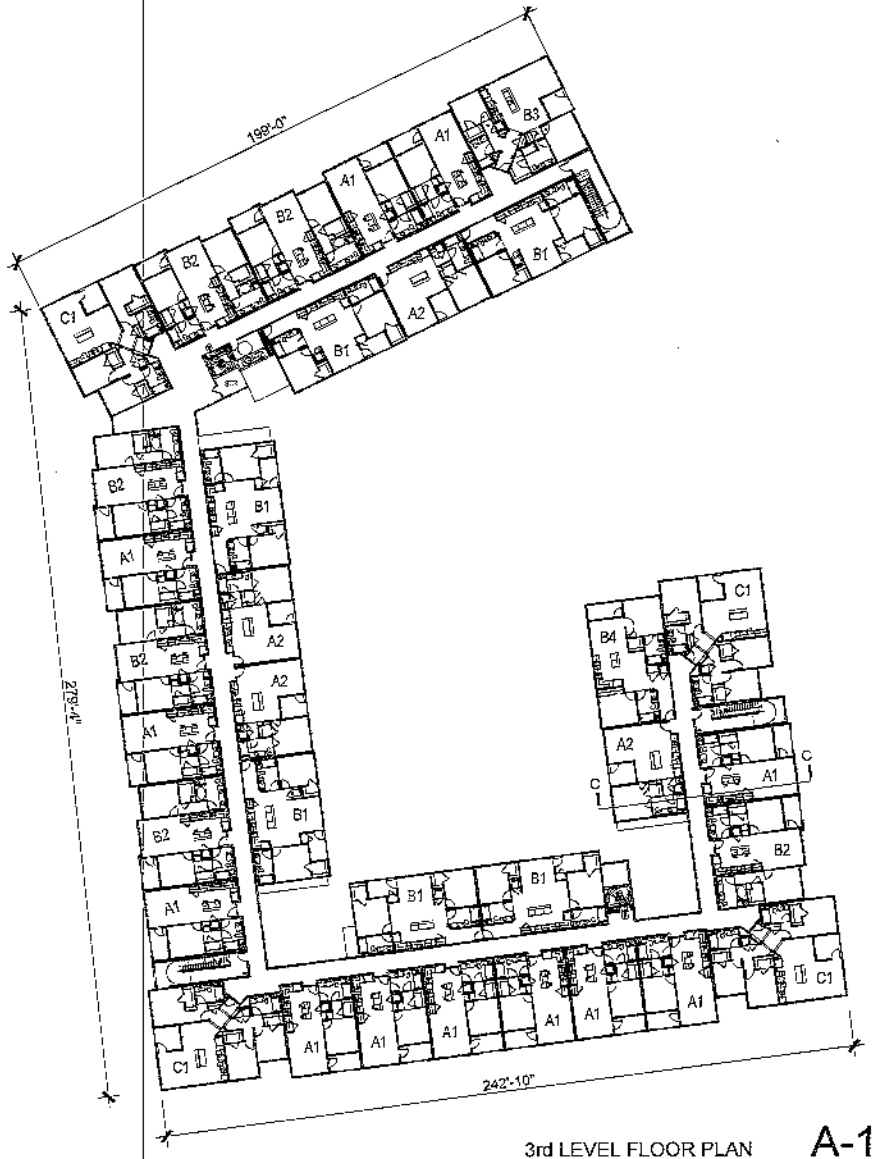
4th LEVEL FLOOR PLAN



3rd LEVEL FLOOR PLAN

A-15

SCALE: 1:20

DATE: 02-20-2020

JOB NO.: 2018-549

CRESTVIEW APARTMENTS

RIVERSIDE, CA

TYPE II - BUILDING COMPOSITE LEVEL 3 & 4

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ARCHITECTS ORANGE
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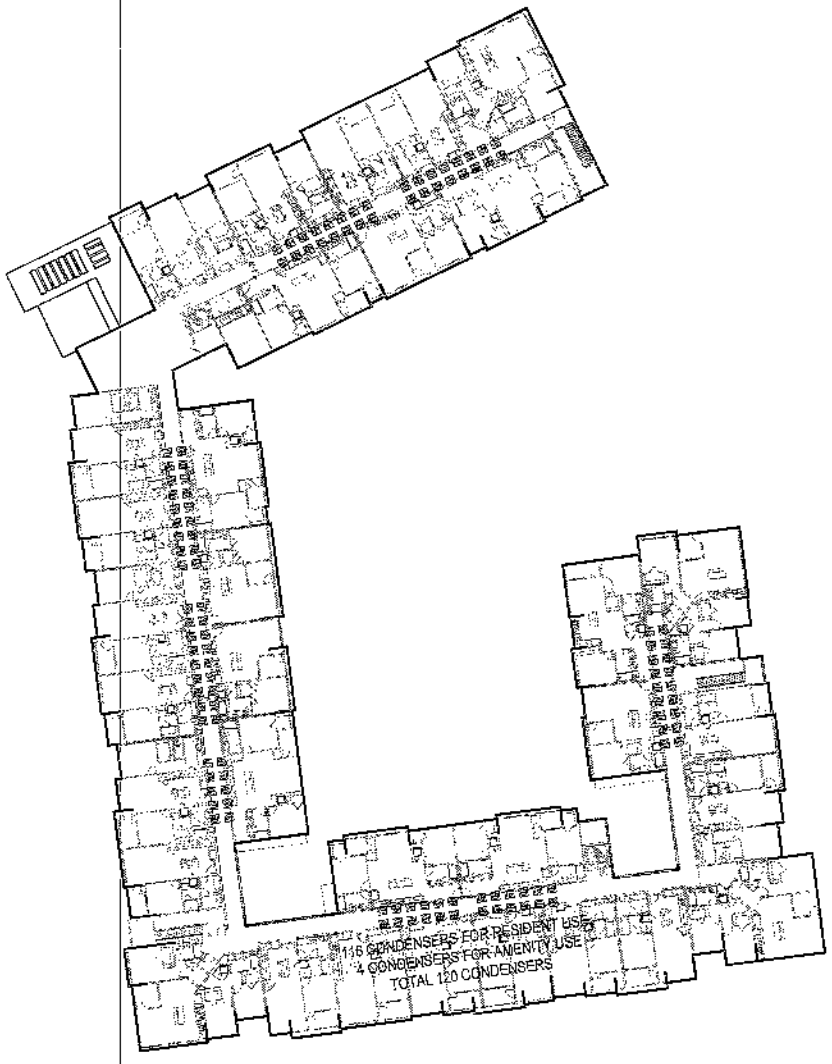
(714) 639-9860



ROOF PLAN

A-16

SCALE: 1:20

DATE: 02-20-2020

TYPE II - ROOF PLAN JOB NO.: 2018-549

CRESTVIEW APARTMENTS

RIVERSIDE, CA

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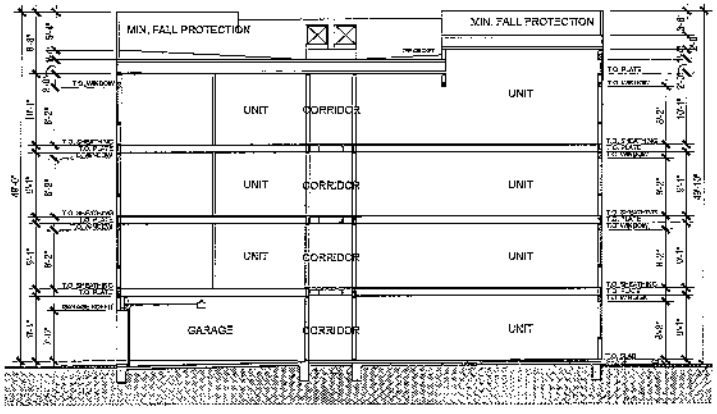
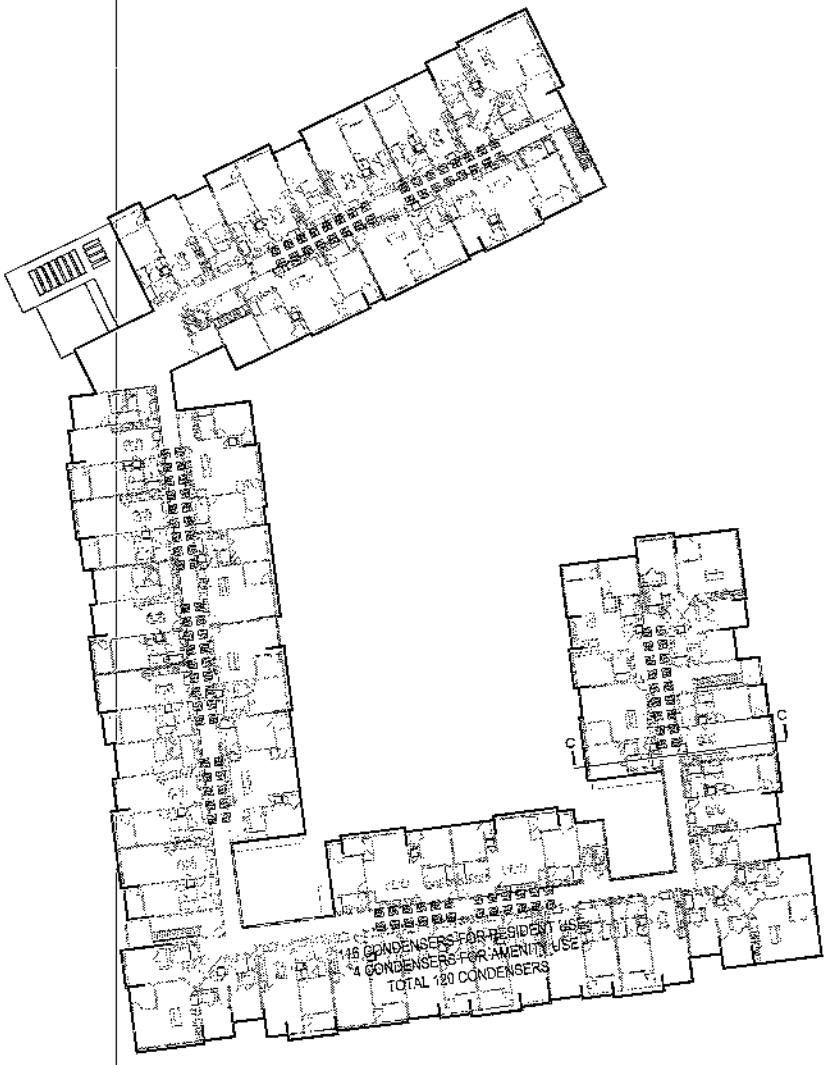


TYPICAL SECTION C-C



3rd LEVEL FLOOR PLAN

A-16

SCALE: 1:20

DATE: 02-20-2020

JOB NO.: 2018-549

CRESTVIEW APARTMENTS

RIVERSIDE, CA

TYPE II - ROOF PLAN & TYPICAL SECTION C-C

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(714) 639-9860

EXTERIOR ELEVATION KEYNOTES

MATERIAL LEGEND:

1. EXTERIOR PLASTER WALL
2. ARCHITECTURAL DECORATIVE AWNING
3. VINYL WINDOW
4. ROOF GARDEN
5. GARAGE DOOR
6. METAL RAILING
7. GLASS RAILING
8. ALUMINUM FIXED STOREFRONT GLAZING SYSTEM
9. PAINTED STUCCO PATIO WALL
10. DECORATIVE GATE

NORTH ELEVATION

SOUTH ELEVATION

A-17

SCALE : 3/32"= 1'-0"
DATE: 02-20-2020
JOB NO.: 2018-549

CRESTVIEW APARTMENTS

RIVERSIDE, CA

TYPE III - NORTH & SOUTH ELEVATIONS

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5820 OBERLIN DRIVE SUITE 201, RIVERSIDE CA 92121
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ARCHITECTS ORANGE
144 NORTH ORANGE ST., ORANGE, CA 92866
(714) 639-9860

EXTERIOR ELEVATION KEYNOTES

MATERIAL LEGEND:

1. EXTERIOR PLASTER WALL
2. ARCHITECTURAL DECORATIVE AWNING
3. VINYL WINDOW
4. ROOF GARDEN
5. GARAGE DOOR
6. METAL RAILING
7. GLASS RAILING
8. ALUMINUM FIXED STOREFRONT GLAZING SYSTEM
9. PAINTED STUCCO PATIO WALL
10. DECORATIVE GATE

EAST ELEVATION

SOUTH ELEVATION

CRESTVIEW APARTMENTS

RIVERSIDE, CA

TYPE III - EAST & WEST ELEVATIONS

SCALE : 3/32"= 1'-0"
DATE: 02-20-2020
JOB NO.: 2018-549

A-18

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(858) 404-6080

ARCHITECTS ORANGE
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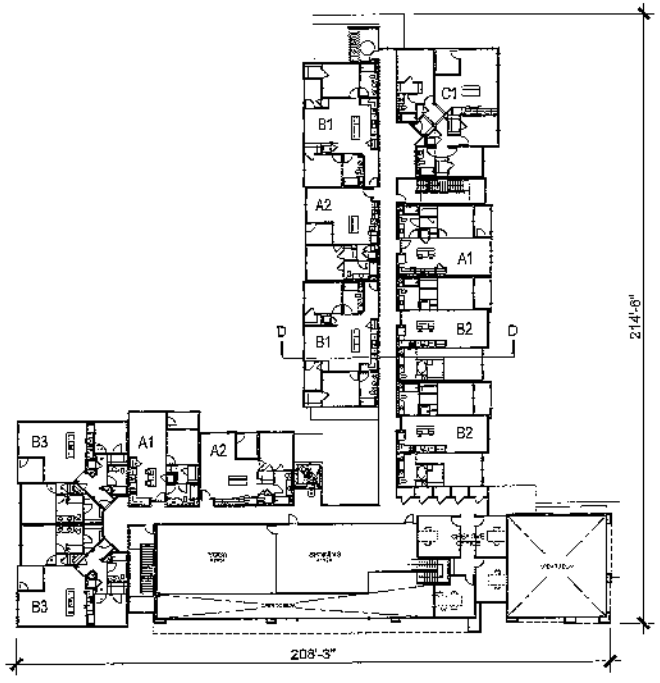
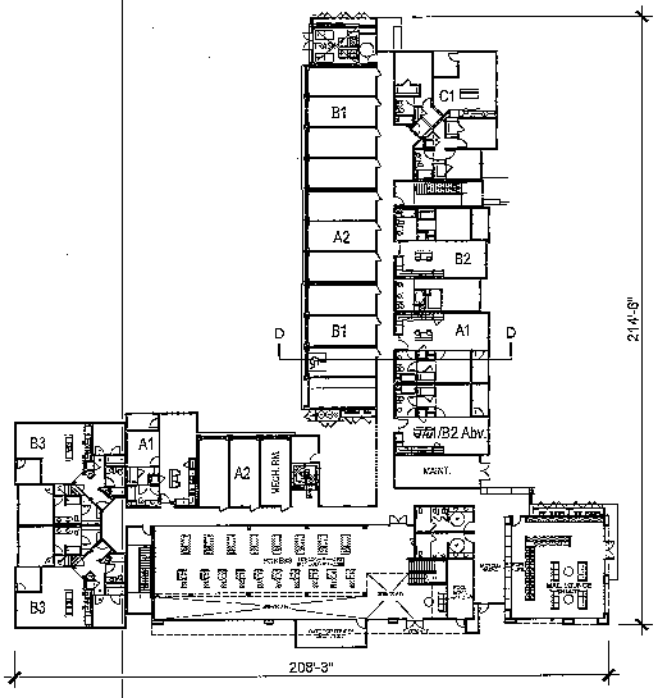
(714) 639-9860



2nd LEVEL FLOOR PLAN



1st LEVEL FLOOR PLAN

A-19

SCALE: 1:20
DATE: 02-20-2020
JOB NO.: 2018-549

CRESTVIEW APARTMENTS

RIVERSIDE, CA

TYPE III - BUILDING COMPOSITE LEVEL 1 & 2

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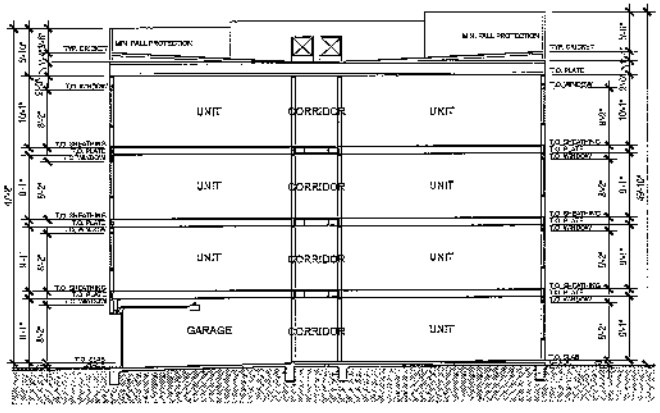
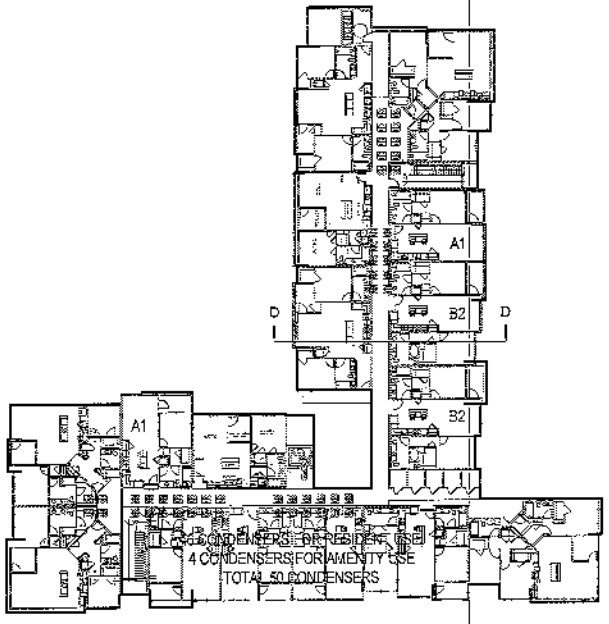
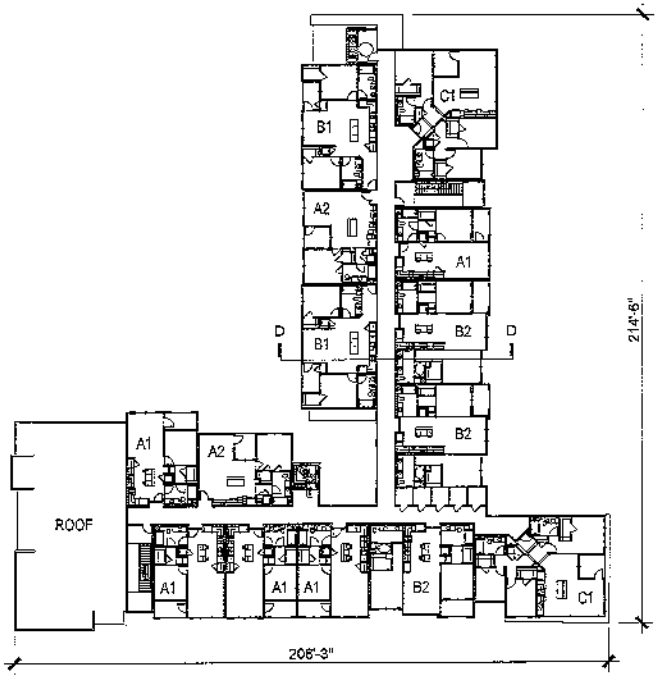
144 NORTH ORANGE ST., ORANGE, CA 92866
(714) 639-9860



SECTION D-D



ROOF PLAN



3rd & 4th LEVEL FLOOR PLAN

CRESTVIEW APARTMENTS

RIVERSIDE, CA

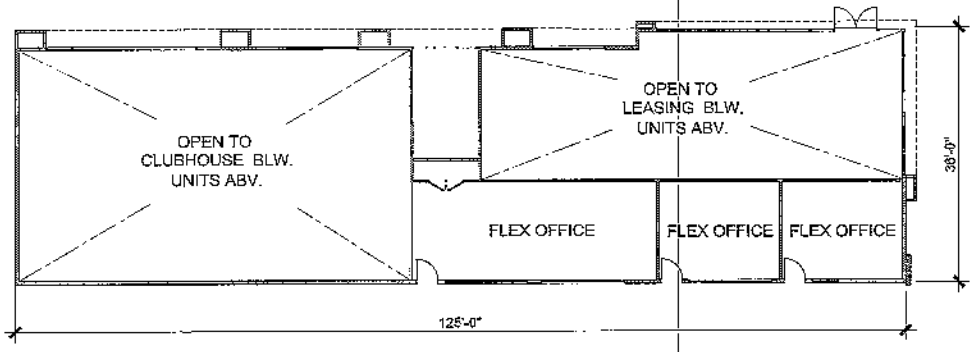
TYPE III - BUILDING COMPOSITE
LEVEL 3, 4 , ROOF & SECTION

SCALE: 1:20
DATE: 02-20-2020
JOB NO.: 2018-549

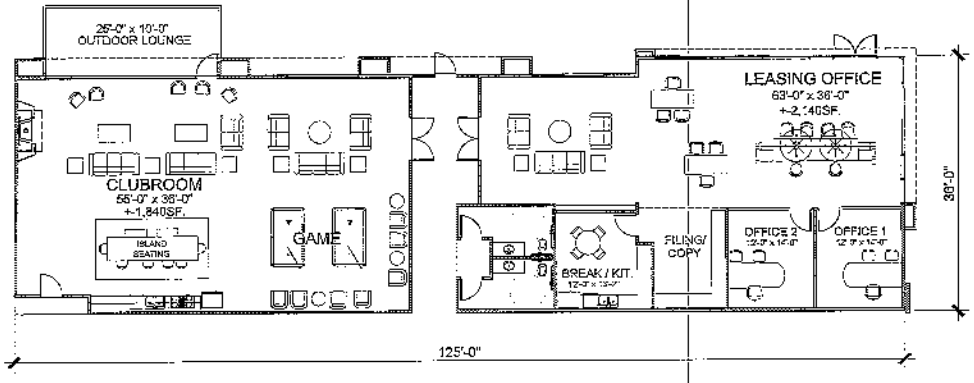
A-20

KA ENTERPRISES
5820 OBERLIN DRIVE SUITE 201, RIVERSIDE CA 92121
(858) 404-6080

ARCHITECTS ORANGE
144 NORTH ORANGE ST., ORANGE, CA 92866
(714) 639-9860



SECOND FLOOR PLAN



FIRST FLOOR PLAN

A-21

SCALE : 1/8"= 1'-0"
DATE: 02-20-2020
JOB NO.: 2018-549

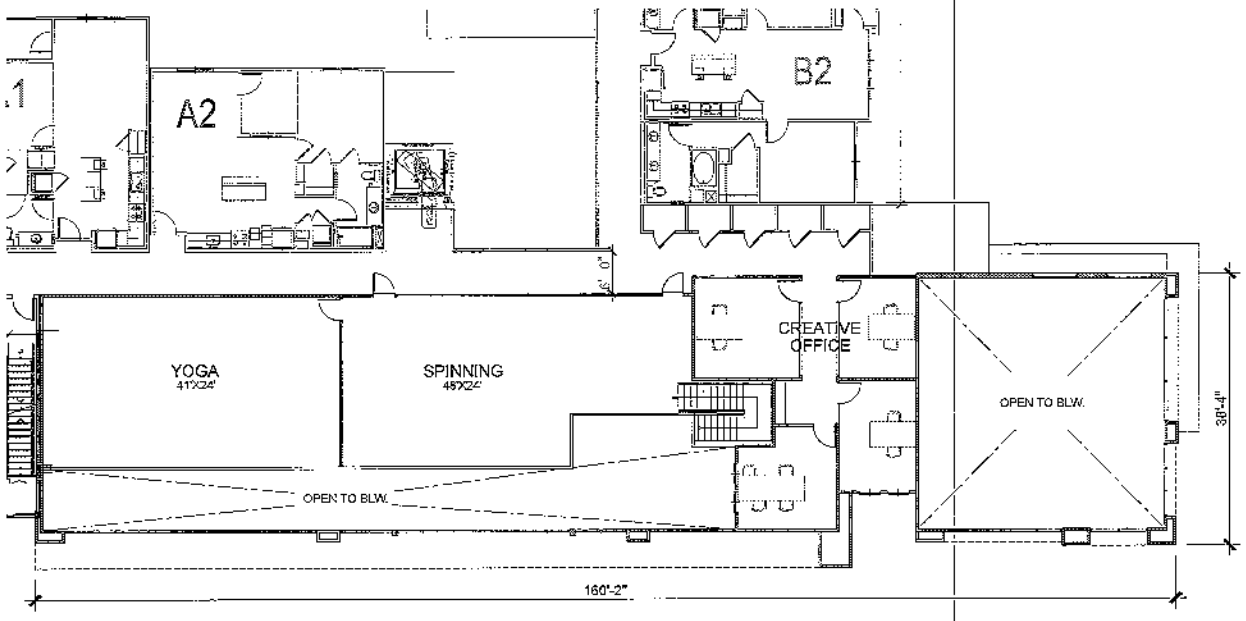
CRESTVIEW APARTMENTS

RIVERSIDE, CA

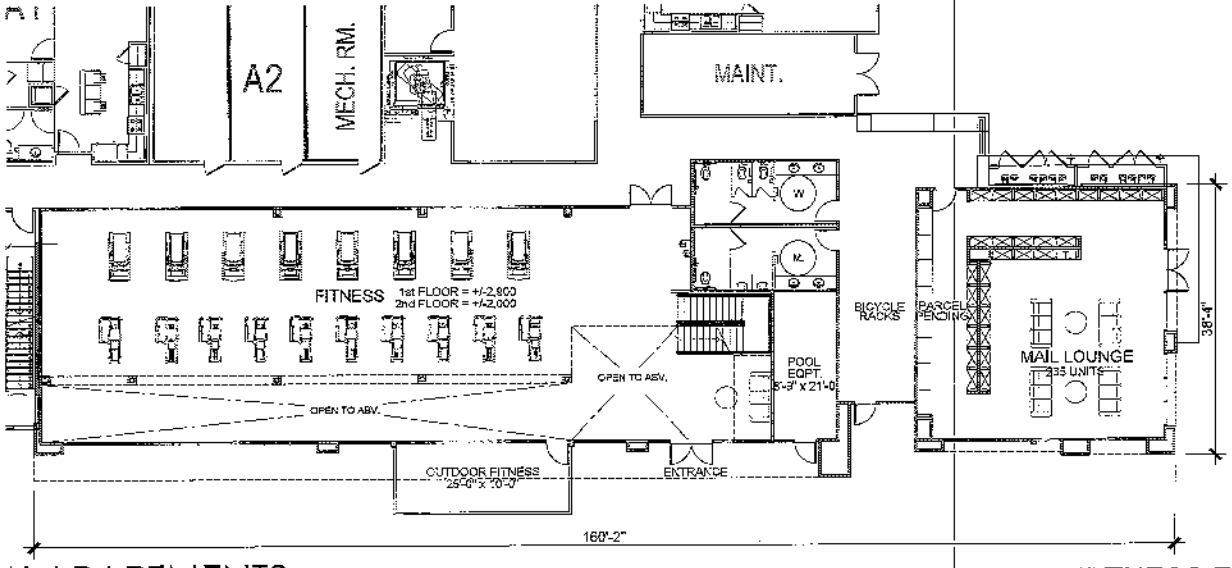
LEASING / CLUBHOUSE FLOOR PLANS

KA ENTERPRISES
5820 OBERLIN DRIVE SUITE 201, RIVERSIDE CA 92121
(858) 404-6080

ARCHITECTS ORANGE
144 NORTH ORANGE ST., ORANGE, CA 92866
(714) 639-9860



SECOND FLOOR PLAN



FIRST FLOOR PLAN

A-22

SCALE: 1/8"= 1'-0"
DATE: 02-20-2020
JOB NO.: 2018-549

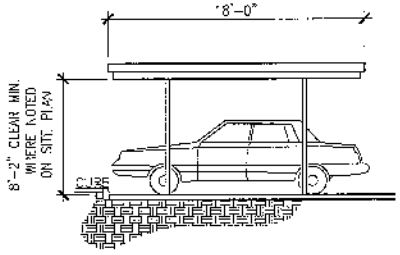
CRESTVIEW APARTMENTS

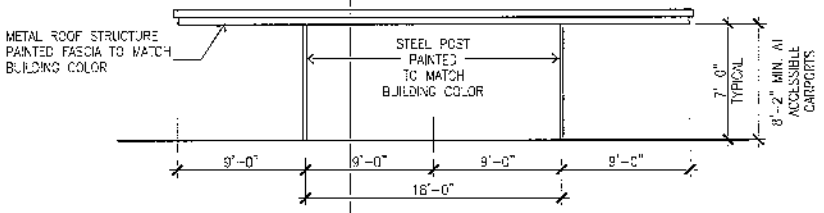
RIVERSIDE, CA

FITNESS FLOOR PLANS

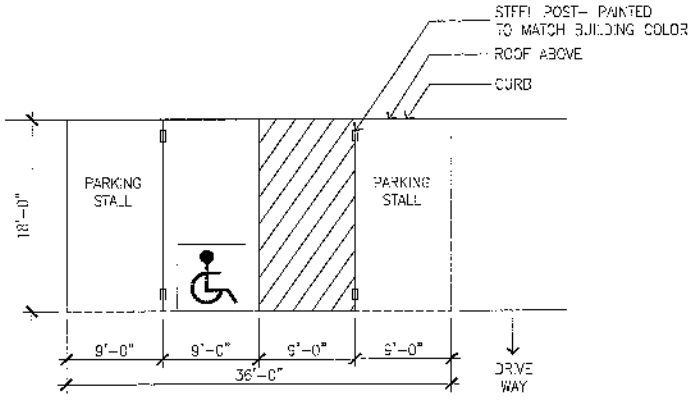
KA ENTERPRISES
5820 OBERLIN DRIVE SUITE 201, RIVERSIDE CA 92121
(858) 404-6080

ARCHITECTS ORANGE
144 NORTH ORANGE ST., ORANGE, CA 92866
(714) 639-9860

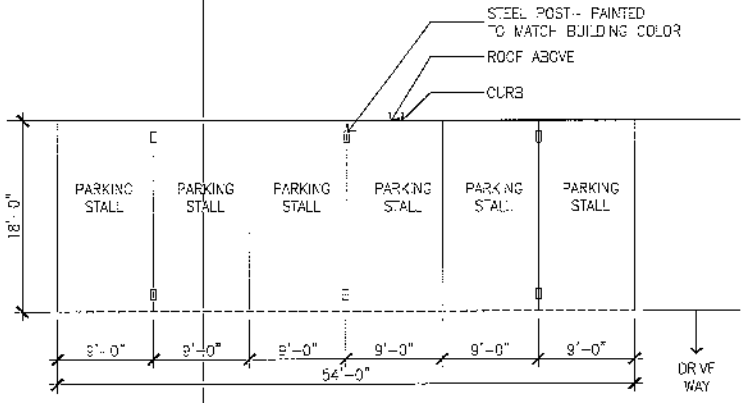




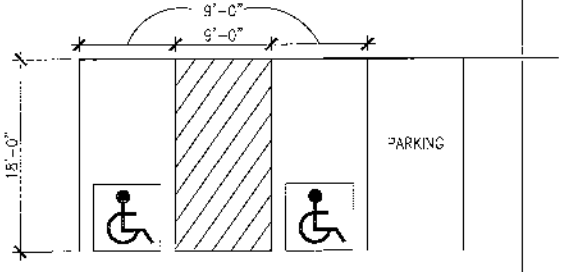
STANDARD CARPORT ELEVATIONS



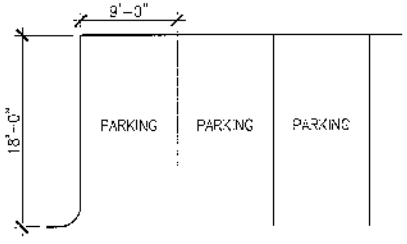
STANDARD HANDICAP CARPORT PLAN



STANDARD CARPORT PLAN



STANDARD HANDICAP PARKING PLAN



STANDARD PARKING PLAN

A-24

CRESTVIEW APARTMENTS

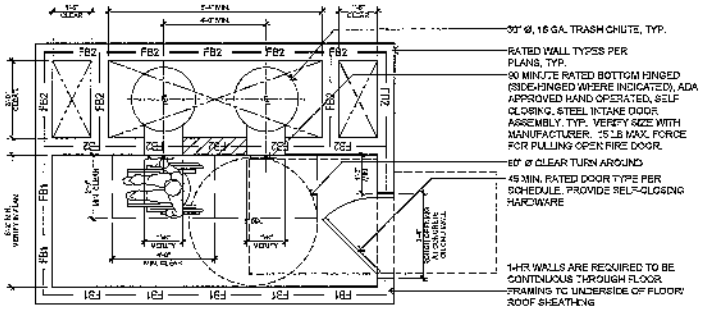
RIVERSIDE, CA

PARKING EXHIBIT

DATE: 02-20-2020
JOB NO.: 2018-549

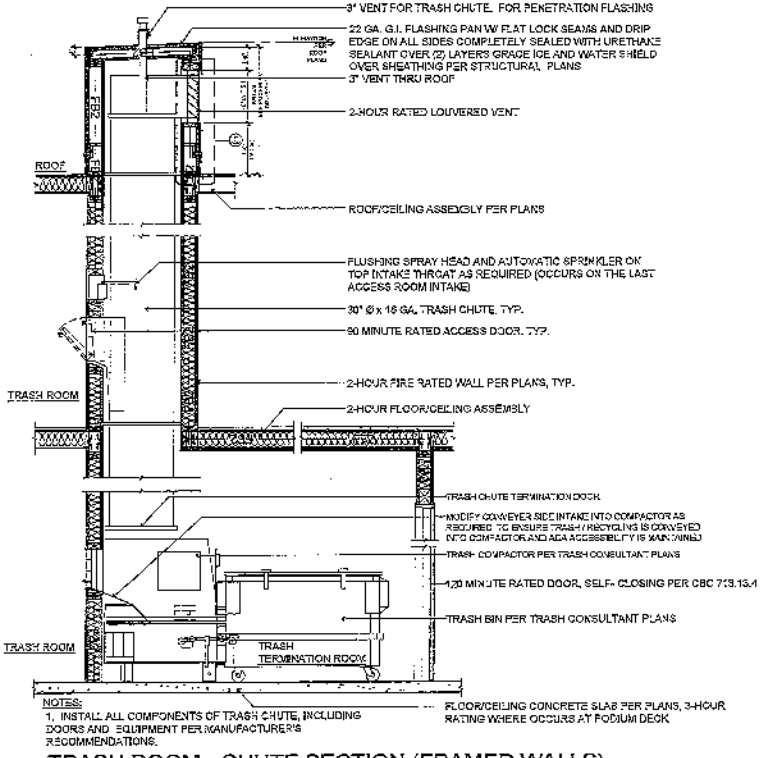
KA ENTERPRISES
5820 OBERLIN DRIVE SUITE 201, RIVERSIDE CA 92121
(858) 404-6080

ARCHITECTS ORANGE
144 NORTH ORANGE ST., ORANGE, CA 92866
(714) 639-9860



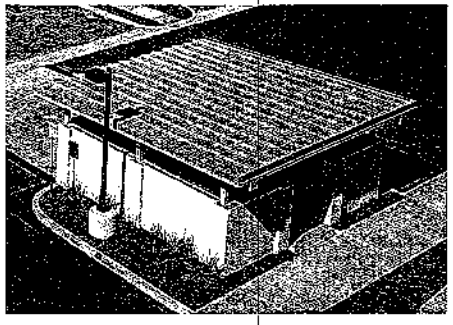
NOTES:
1. ENSURE TRASH CHUTE, HARDWARE, LEVER AND DOORS CONFORM TO ALL CBC AND FHA REQUIREMENTS.
2. VERIFY DOOR ROUGH OPENINGS PRIOR TO MASONRY WALL PLACEMENT, WHERE OCCURS.

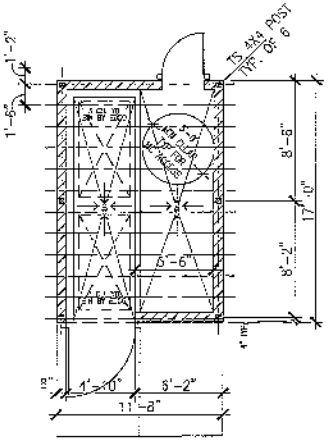
TRASH CHUTE ROOM TYP. CLEARANCES

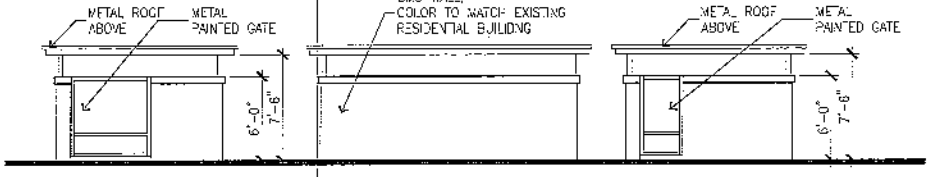


NOTES:
1. INSTALL ALL COMPONENTS OF TRASH CHUTE, INCLUDING DOORS AND EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS.

TRASH ROOM - CHUTE SECTION (FRAMED WALLS)







2 BIN TRASH ENCLOSUSRE

CRESTVIEW APARTMENTS

RIVERSIDE, CA

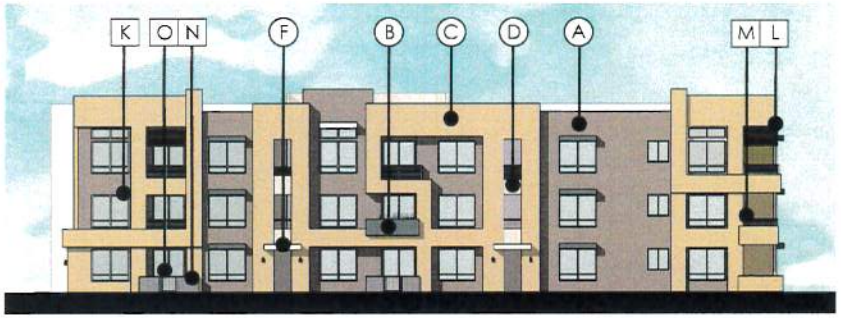
TRASH ENCLOSURE EXHIBIT

DATE: 02-20-2020
JOB NO.: 2018-549

A-25

KA ENTERPRISES
5820 OBERLIN DRIVE SUITE 201, RIVERSIDE CA 92121
(858) 404-6080

ARCHITECTS ORANGE
144 NORTH ORANGE ST., ORANGE, CA 92866
(714) 639-9860



K
VINYL WINDOWS - WHITE

N
EXTERIOR PLASTER

L
ALUMINUM BALCONY LOUVER

O
FABRICATED METAL GATE

M
BALCONY METAL RAILINGS

A
STUCCO.
SHERWIN WILLIAMS
SW 7037 BALANCE BEIGE

B
STUCCO.
SHERWIN WILLIAMS
SW 0016 BILLIARD GREEN

C
STUCCO.
SHERWIN WILLIAMS
SW 6396 DIFFERENT GOLD

D
STUCCO.
SHERWIN WILLIAMS
SW 7042 SHOJI WHITE

E
STUCCO.
SHERWIN WILLIAMS
SW 7530 BARCELONA BEIGE

F
STUCCO.
SHERWIN WILLIAMS
SW 7570 EGRET WHITE

G
STUCCO.
SHERWIN WILLIAMS
SW 0038 LIBRARY PEWTER

H
STUCCO.
SHERWIN WILLIAMS
SW 7635 PALISADE

I
STUCCO.
SHERWIN WILLIAMS
SW 9089 LLAMA WOOL

J
STUCCO.
SHERWIN WILLIAMS
SW 7612 MOUNTAIN STREAM

A-26

CRESTVIEW APARTMENTS

RIVERSIDE, CA

MATERIAL BOARD

DATE: 02-20-2020
JOB NO.: 2018-549

KA ENTERPRISES
5820 OBERLIN DRIVE SUITE 201, RIVERSIDE CA 92121
(858) 404-6080

ARCHITECTS ORANGE
144 NORTH ORANGE ST., ORANGE, CA 92866
(714) 639-9860

Crestview Apartments Initial Study Appendix D – Federal Aviation Administration (FAA) Determination Letters

Planning Cases: P19-0775, P19-0776, P19-0777, P19-0905, P20-0307, P20-0308, P20-0309, P20-0310

Mail Processing Center
Federal Aviation Administration
Southwest Regional Office
Obstruction Evaluation Group
10101 Hillwood Parkway
Fort Worth, TX 76177

Aeronautical Study No.
2020-AWP-3239-OE

Issued Date: 03/25/2020

Eugene Marini
KA Enterprises
55820 Oberlin Drive, Ste. 201
San Diego, CA 92121

**** DETERMINATION OF NO HAZARD TO AIR NAVIGATION ****

The Federal Aviation Administration has conducted an aeronautical study under the provisions of 49 U.S.C., Section 44718 and if applicable Title 14 of the Code of Federal Regulations, part 77, concerning:

Structure:	Building Bldg. 1
Location:	Riverside, CA
Latitude:	33-57-34.53N NAD 83
Longitude:	117-18-46.78W
Heights:	1352 feet site elevation (SE)
	39 feet above ground level (AGL)
	1391 feet above mean sea level (AMSL)

This aeronautical study revealed that the structure does not exceed obstruction standards and would not be a hazard to air navigation provided the following condition(s), if any, is(are) met:

Based on this evaluation, marking and lighting are not necessary for aviation safety. However, if marking/ lighting are accomplished on a voluntary basis, we recommend it be installed in accordance with FAA Advisory circular 70/7460-1 L Change 2.

This determination expires on 09/25/2021 unless:

(a) the construction is started (not necessarily completed) and FAA Form 7460-2, Notice of Actual Construction or Alteration, is received by this office.
(b) extended, revised, or terminated by the issuing office.
(c) the construction is subject to the licensing authority of the Federal Communications Commission (FCC) and an application for a construction permit has been filed, as required by the FCC, within 6 months of the date of this determination. In such case, the determination expires on the date prescribed by the FCC for completion of construction, or the date the FCC denies the application.

NOTE: REQUEST FOR EXTENSION OF THE EFFECTIVE PERIOD OF THIS DETERMINATION MUST BE E-FILED AT LEAST 15 DAYS PRIOR TO THE EXPIRATION DATE. AFTER RE-EVALUATION OF CURRENT OPERATIONS IN THE AREA OF THE STRUCTURE TO DETERMINE THAT NO SIGNIFICANT AERONAUTICAL CHANGES HAVE OCCURRED, YOUR DETERMINATION MAY BE ELIGIBLE FOR ONE EXTENSION OF THE EFFECTIVE PERIOD.

This determination is based, in part, on the foregoing description which includes specific coordinates, heights, frequency(ies) and power. Any changes in coordinates, heights, and frequencies or use of greater power, except those frequencies specified in the Colo Void Clause Coalition; Antenna System Co-Location; Voluntary Best Practices, effective 21 Nov 2007, will void this determination. Any future construction or alteration, including increase to heights, power, or the addition of other transmitters, requires separate notice to the FAA.This determination includes all previously filed frequencies and power for this structure.

If construction or alteration is dismantled or destroyed, you must submit notice to the FAA within 5 days after the construction or alteration is dismantled or destroyed.

This determination does include temporary construction equipment such as cranes, derricks, etc., which may be used during actual construction of the structure. However, this equipment shall not exceed the overall heights as indicated above. Equipment which has a height greater than the studied structure requires separate notice to the FAA.

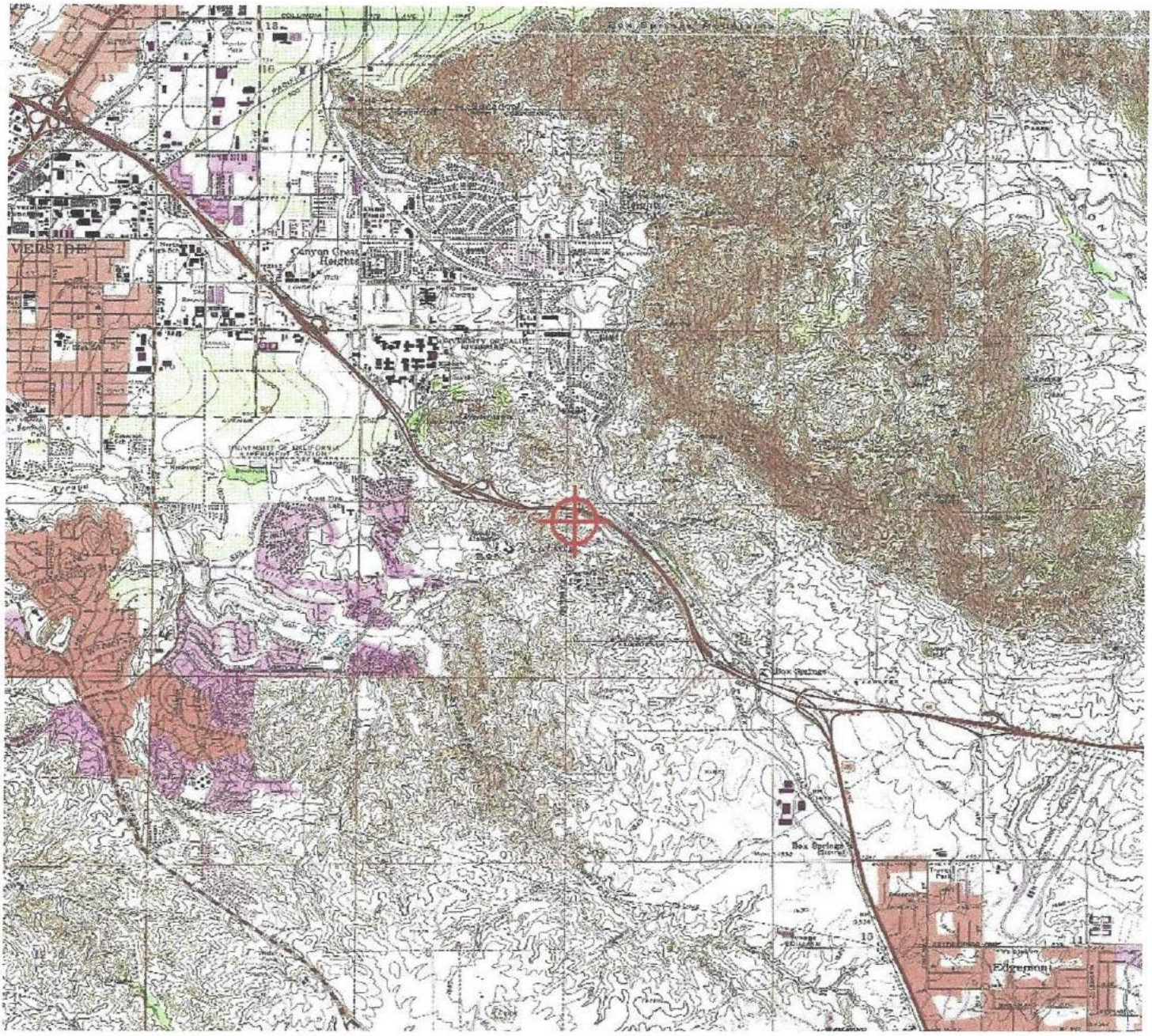
This determination concerns the effect of this structure on the safe and efficient use of navigable airspace by aircraft and does not relieve the sponsor of compliance responsibilities relating to any law, ordinance, or regulation of any Federal, State, or local government body.

If we can be of further assistance, please contact our office at (206) 231-2990, or paul.holmquist@faa.gov. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2020-AWP-3239-OE.

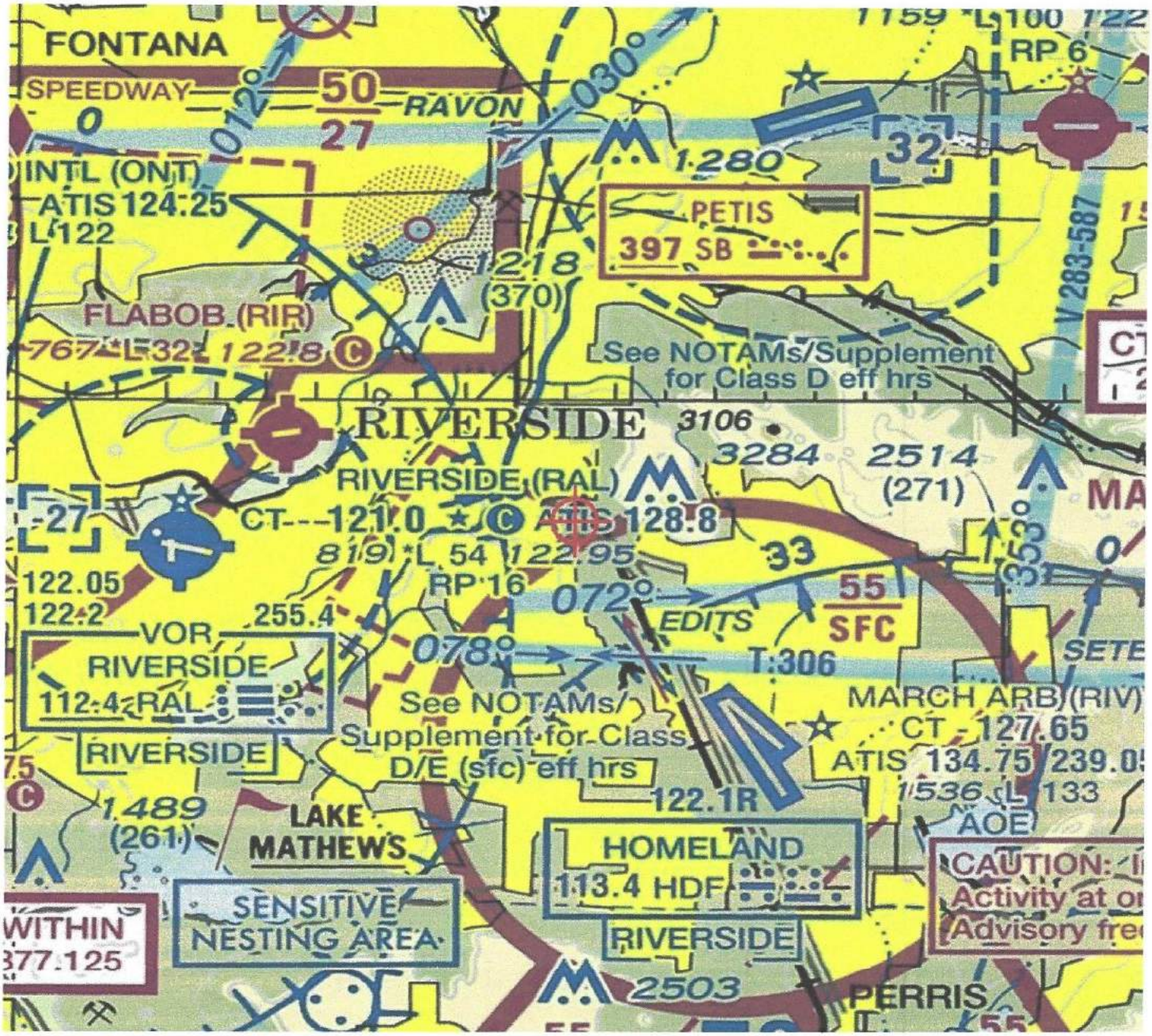
Signature Control No: 433938329-434573034 (DNE)
Paul Holmquist
Specialist

Attachment(s)
Map(s)

TOPO Map for ASN 2020-AWP-3239-OE



Sectional Map for ASN 2020-AWP-3239-OE



Mail Processing Center
Federal Aviation Administration
Southwest Regional Office
Obstruction Evaluation Group
10101 Hillwood Parkway
Fort Worth, TX 76177

Aeronautical Study No.
2020-AWP-3240-OE

Issued Date: 03/25/2020

Eugene Marini
KA Enterprises
55820 Oberlin Drive, Ste. 201
San Diego, CA 92121

**** DETERMINATION OF NO HAZARD TO AIR NAVIGATION ****

The Federal Aviation Administration has conducted an aeronautical study under the provisions of 49 U.S.C., Section 44718 and if applicable Title 14 of the Code of Federal Regulations, part 77, concerning:

Structure:	Building Bldg. 2
Location:	Riverside, CA
Latitude:	33-57-33.56N NAD 83
Longitude:	117-18-46.04W
Heights:	1352 feet site elevation (SE)
	39 feet above ground level (AGL)
	1391 feet above mean sea level (AMSL)

This aeronautical study revealed that the structure does not exceed obstruction standards and would not be a hazard to air navigation provided the following condition(s), if any, is(are) met:

Based on this evaluation, marking and lighting are not necessary for aviation safety. However, if marking/ lighting are accomplished on a voluntary basis, we recommend it be installed in accordance with FAA Advisory circular 70/7460-1 L Change 2.

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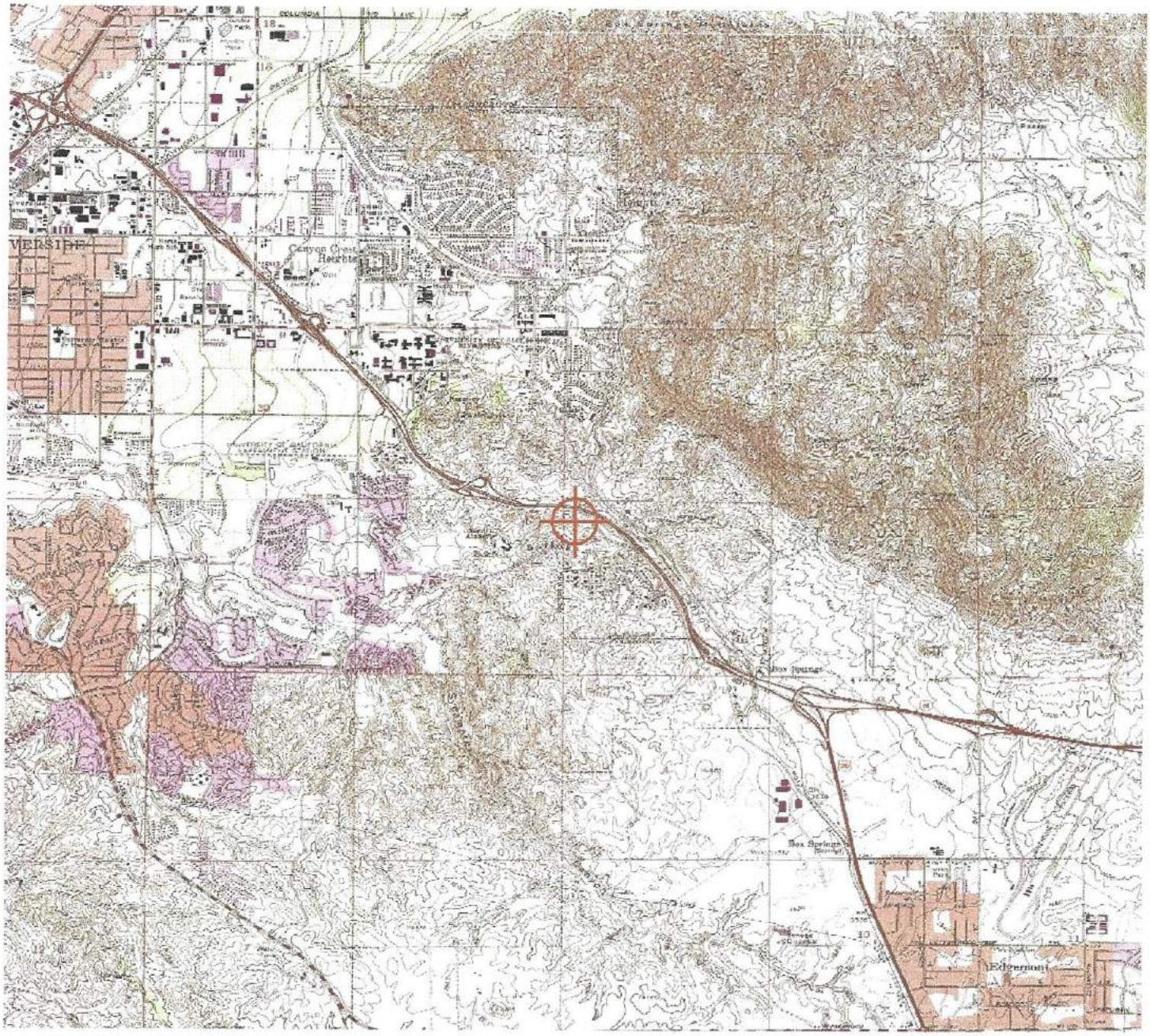
This determination concerns the effect of this structure on the safe and efficient use of navigable airspace by aircraft and does not relieve the sponsor of compliance responsibilities relating to any law, ordinance, or regulation of any Federal, State, or local government body.

If we can be of further assistance, please contact our office at (206) 231-2990, or paul.holmquist@faa.gov. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2020-AWP-3240-OE.

Signature Control No: 433938330-434573033 (DNE)
Paul Holmquist
Specialist

Attachment(s)
Map(s)

TOPO Map for ASN 2020-AWP-3240-OE



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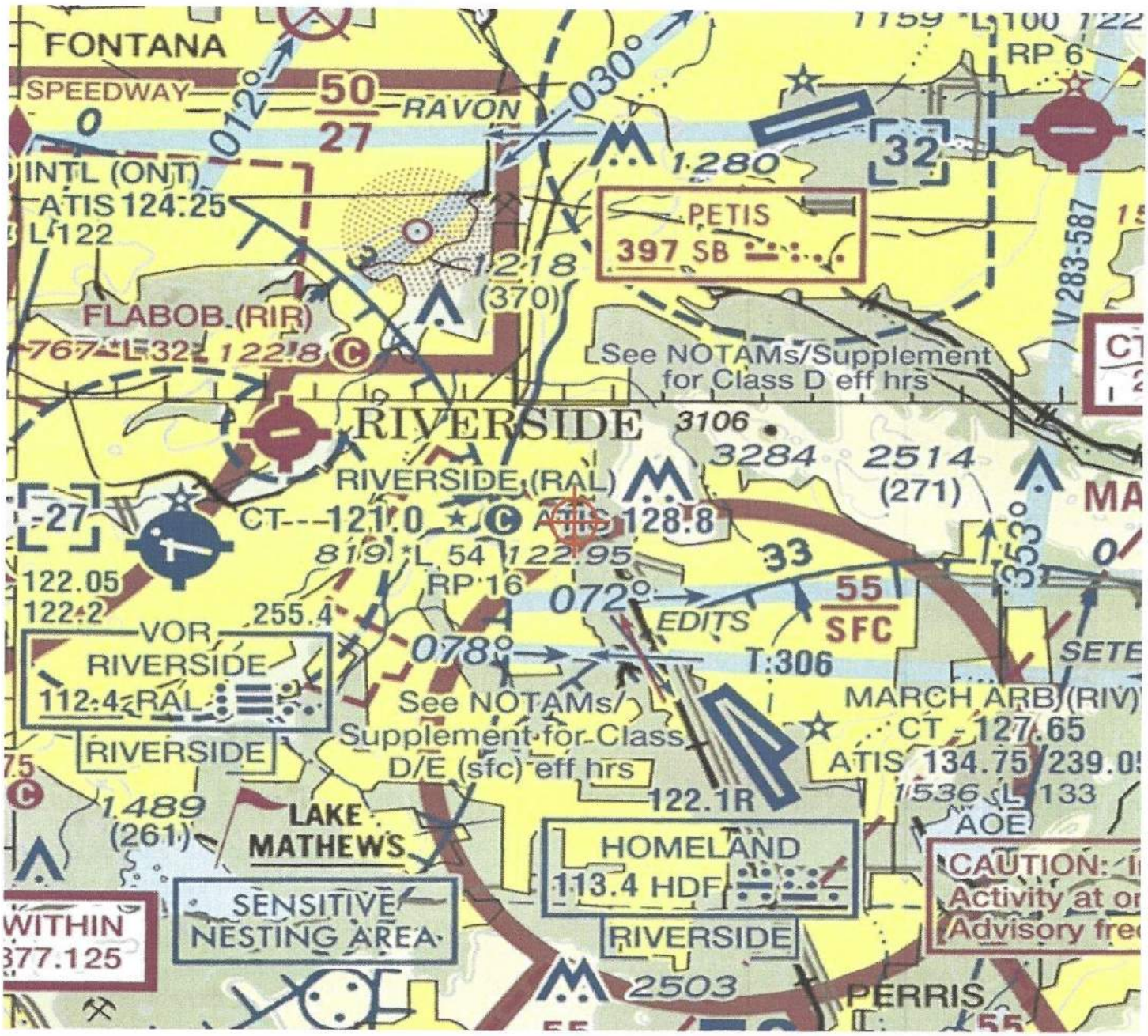

Mail Processing Center
Federal Aviation Administration
Southwest Regional Office
Obstruction Evaluation Group
10101 Hillwood Parkway
Fort Worth, TX 76177

Aeronautical Study No.
2020-AWP-3241-OE

Issued Date: 03/25/2020

Eugene Marini
KA Enterprises
55820 Oberlin Drive, Ste. 201
San Diego, CA 92121

**** DETERMINATION OF NO HAZARD TO AIR NAVIGATION ****

The Federal Aviation Administration has conducted an aeronautical study under the provisions of 49 U.S.C., Section 44718 and if applicable Title 14 of the Code of Federal Regulations, part 77, concerning:

Structure:	Building Bldg. 3
Location:	Riverside, CA
Latitude:	33-57-32.33N NAD 83
Longitude:	117-18-45.51W
Heights:	1352 feet site elevation (SE)
	39 feet above ground level (AGL)
	1391 feet above mean sea level (AMSL)

This aeronautical study revealed that the structure does not exceed obstruction standards and would not be a hazard to air navigation provided the following condition(s), if any, is(are) met:

Based on this evaluation, marking and lighting are not necessary for aviation safety. However, if marking/ lighting are accomplished on a voluntary basis, we recommend it be installed in accordance with FAA Advisory circular 70/7460-1 L Change 2.

This determination expires on 09/25/2021 unless:

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(c) the construction is subject to the licensing authority of the Federal Communications Commission (FCC) and an application for a construction permit has been filed, as required by the FCC, within 6 months of the date of this determination. In such case, the determination expires on the date prescribed by the FCC for completion of construction, or the date the FCC denies the application.

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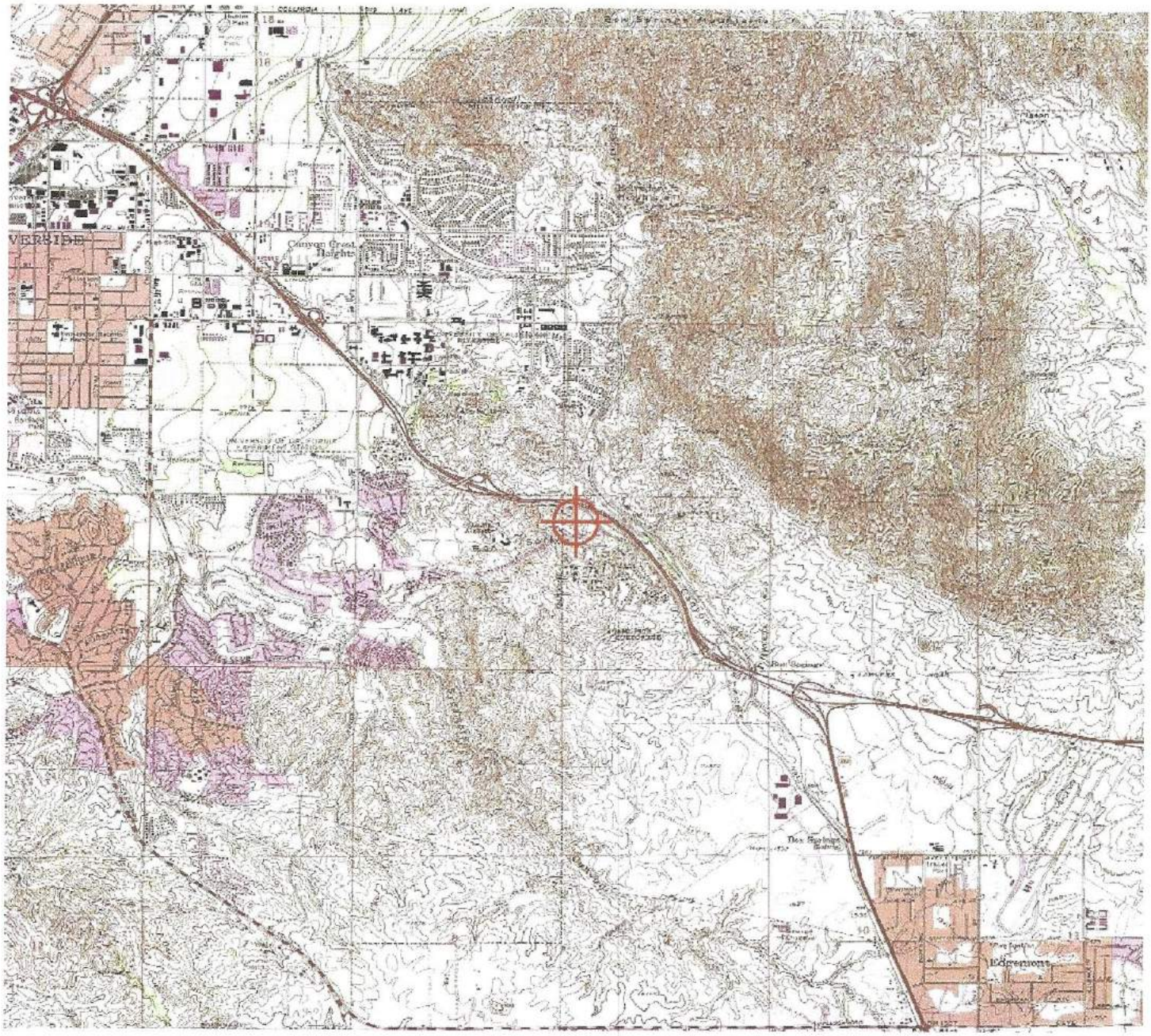
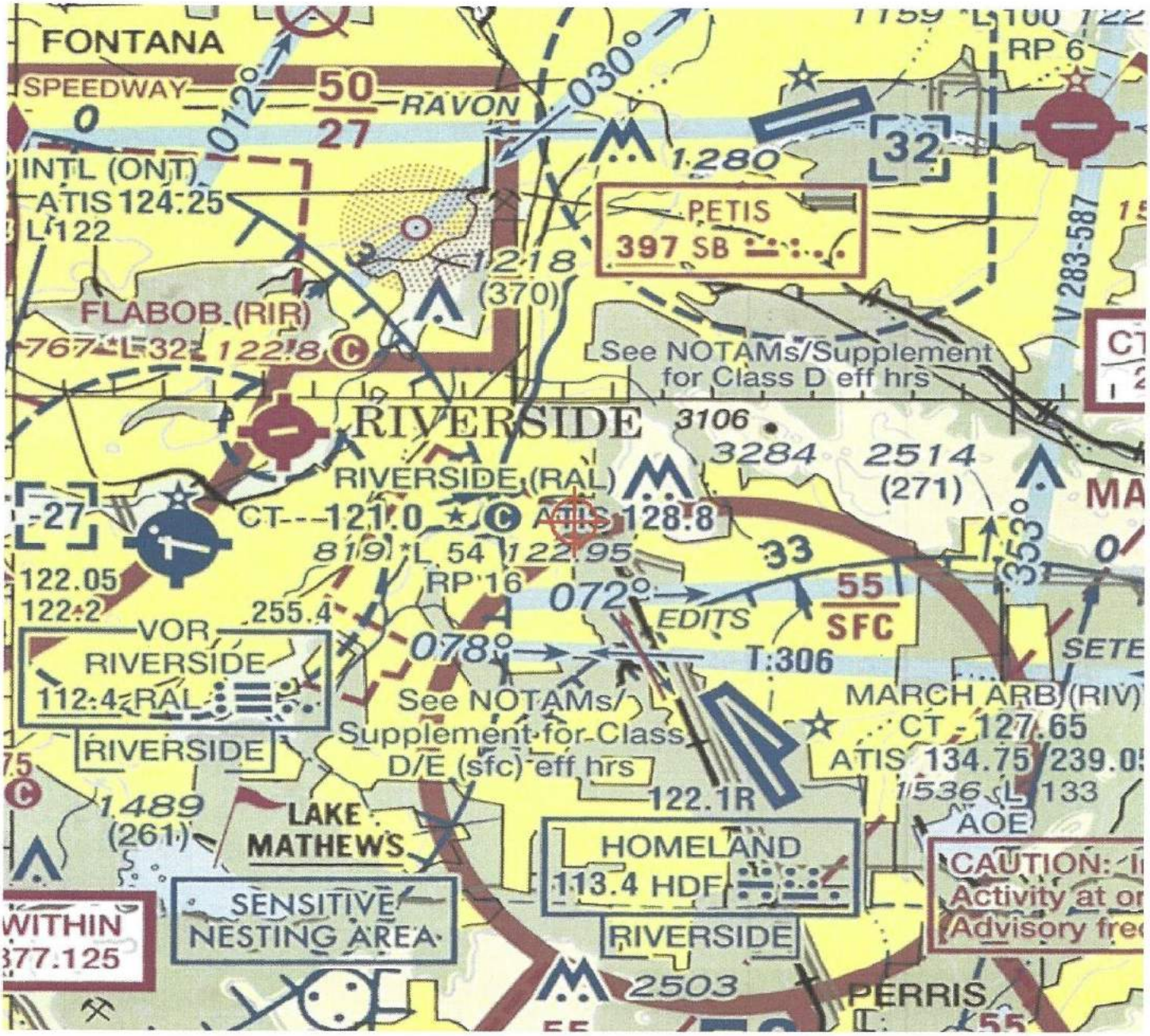
If we can be of further assistance, please contact our office at (206) 231-2990, or paul.holmquist@faa.gov. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2020-AWP-3241-OE.

Signature Control No: 433938331-434573036 (DNE)
Paul Holmquist
Specialist

Attachment(s)
Map(s)

TOPO Map for ASN 2020-AWP-3241-OE




FONTANA
SPEEDWAY
50
27
RAVON
012°
030°
INTL (ONT)
ATIS 124.25
L 122
1280
32
RP 6
PETIS
397 SB
1218
(370)
FLABOB (RIR)
767 L 32 122.8
See NOTAMs/Supplement
for Class D eff hrs
V 283-587
RIVERSIDE
3106
3284
2514
(271)
RIVERSIDE (RAL)
CT 121.0
ATIS 128.8
819 L 54 122.95
RP 16
33
353°
122.05
122.2
255.4
072°
EDITS
55
SFC
VOR
RIVERSIDE
112.4 RAL
078°
T 306
SETE
See NOTAMs/
Supplement for Class
D/E (sfc) eff hrs
MARCH ARB (RIV)
CT 127.65
ATIS 134.75 239.05
RIVERSIDE
1536 L 133
AOE
122.1R
1489
(261)
LAKE
MATHEWS
HOMELAND
113.4 HDF
CAUTION:
Activity at or
Advisory free
SENSITIVE
NESTING AREA
WITHIN
377.125
RIVERSIDE
2503
PERRIS

Mail Processing Center
Federal Aviation Administration
Southwest Regional Office
Obstruction Evaluation Group
10101 Hillwood Parkway
Fort Worth, TX 76177

Aeronautical Study No.
2020-AWP-3242-OE

Issued Date: 03/25/2020

Eugene Marini
KA Enterprises
55820 Oberlin Drive, Ste. 201
San Diego, CA 92121

**** DETERMINATION OF NO HAZARD TO AIR NAVIGATION ****

The Federal Aviation Administration has conducted an aeronautical study under the provisions of 49 U.S.C., Section 44718 and if applicable Title 14 of the Code of Federal Regulations, part 77, concerning:

Structure:	Building Bldg. 4
Location:	Riverside, CA
Latitude:	33-57-30.62N NAD 83
Longitude:	117-18-42.58W
Heights:	1350 feet site elevation (SE)
	39 feet above ground level (AGL)
	1389 feet above mean sea level (AMSL)

This aeronautical study revealed that the structure does not exceed obstruction standards and would not be a hazard to air navigation provided the following condition(s), if any, is(are) met:

Based on this evaluation, marking and lighting are not necessary for aviation safety. However, if marking/ lighting are accomplished on a voluntary basis, we recommend it be installed in accordance with FAA Advisory circular 70/7460-1 L Change 2.

This determination expires on 09/25/2021 unless:

(a) the construction is started (not necessarily completed) and FAA Form 7460-2, Notice of Actual Construction or Alteration, is received by this office.
(b) extended, revised, or terminated by the issuing office.
(c) the construction is subject to the licensing authority of the Federal Communications Commission (FCC) and an application for a construction permit has been filed, as required by the FCC, within 6 months of the date of this determination. In such case, the determination expires on the date prescribed by the FCC for completion of construction, or the date the FCC denies the application.

NOTE: REQUEST FOR EXTENSION OF THE EFFECTIVE PERIOD OF THIS DETERMINATION MUST BE E-FILED AT LEAST 15 DAYS PRIOR TO THE EXPIRATION DATE. AFTER RE-EVALUATION OF CURRENT OPERATIONS IN THE AREA OF THE STRUCTURE TO DETERMINE THAT NO SIGNIFICANT AERONAUTICAL CHANGES HAVE OCCURRED, YOUR DETERMINATION MAY BE ELIGIBLE FOR ONE EXTENSION OF THE EFFECTIVE PERIOD.

This determination is based, in part, on the foregoing description which includes specific coordinates, heights, frequency(ies) and power. Any changes in coordinates, heights, and frequencies or use of greater power, except those frequencies specified in the Colo Void Clause Coalition; Antenna System Co-Location; Voluntary Best Practices, effective 21 Nov 2007, will void this determination. Any future construction or alteration, including increase to heights, power, or the addition of other transmitters, requires separate notice to the FAA.This determination includes all previously filed frequencies and power for this structure.

If construction or alteration is dismantled or destroyed, you must submit notice to the FAA within 5 days after the construction or alteration is dismantled or destroyed.

This determination does include temporary construction equipment such as cranes, derricks, etc., which may be used during actual construction of the structure. However, this equipment shall not exceed the overall heights as indicated above. Equipment which has a height greater than the studied structure requires separate notice to the FAA.

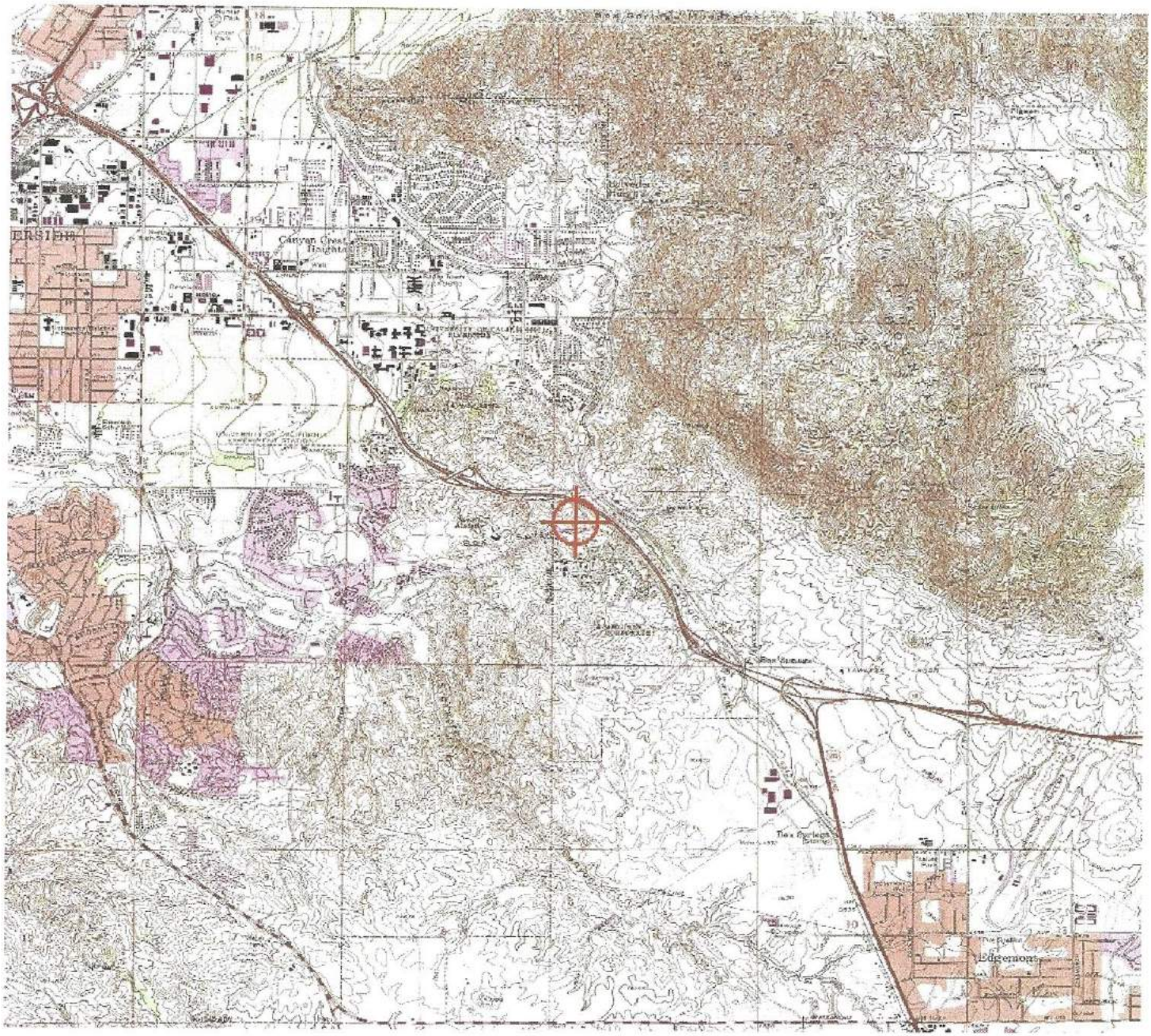
This determination concerns the effect of this structure on the safe and efficient use of navigable airspace by aircraft and does not relieve the sponsor of compliance responsibilities relating to any law, ordinance, or regulation of any Federal, State, or local government body.

If we can be of further assistance, please contact our office at (206) 231-2990, or paul.holmquist@faa.gov. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2020-AWP-3242-OE.

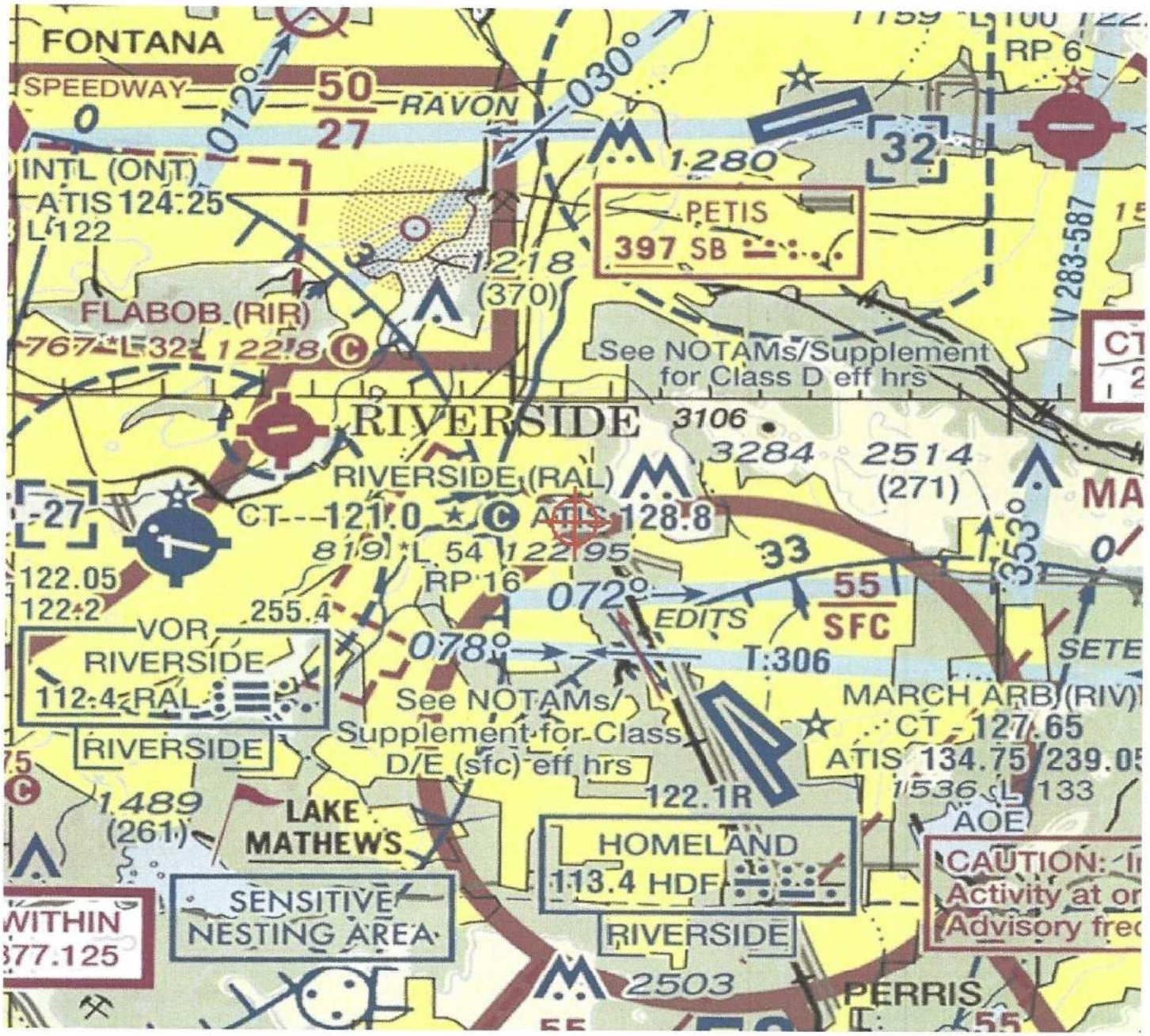
Signature Control No: 433938332-434573032 (DNE)
Paul Holmquist
Specialist

Attachment(s)
Map(s)

TOPO Map for ASN 2020-AWP-3242-OE



Sectional Map for ASN 2020-AWP-3242-OE



Mail Processing Center
Federal Aviation Administration
Southwest Regional Office
Obstruction Evaluation Group
10101 Hillwood Parkway
Fort Worth, TX 76177

Aeronautical Study No.
2020-AWP-3243-OE

Issued Date: 03/25/2020

Eugene Marini
KA Enterprises
55820 Oberlin Drive, Ste. 201
San Diego, CA 92121

**** DETERMINATION OF NO HAZARD TO AIR NAVIGATION ****

The Federal Aviation Administration has conducted an aeronautical study under the provisions of 49 U.S.C., Section 44718 and if applicable Title 14 of the Code of Federal Regulations, part 77, concerning:

Structure:	Building Bldg. 5
Location:	Riverside, CA
Latitude:	33-57-29.58N NAD 83
Longitude:	117-18-42.48W
Heights:	1349 feet site elevation (SE)
	39 feet above ground level (AGL)
	1388 feet above mean sea level (AMSL)

This aeronautical study revealed that the structure does not exceed obstruction standards and would not be a hazard to air navigation provided the following condition(s), if any, is(are) met:

Based on this evaluation, marking and lighting are not necessary for aviation safety. However, if marking/ lighting are accomplished on a voluntary basis, we recommend it be installed in accordance with FAA Advisory circular 70/7460-1 L Change 2.

This determination expires on 09/25/2021 unless:

(a) the construction is started (not necessarily completed) and FAA Form 7460-2, Notice of Actual Construction or Alteration, is received by this office.
(b) extended, revised, or terminated by the issuing office.
(c) the construction is subject to the licensing authority of the Federal Communications Commission (FCC) and an application for a construction permit has been filed, as required by the FCC, within 6 months of the date of this determination. In such case, the determination expires on the date prescribed by the FCC for completion of construction, or the date the FCC denies the application.

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This determination is based, in part, on the foregoing description which includes specific coordinates, heights, frequency(ies) and power. Any changes in coordinates, heights, and frequencies or use of greater power, except those frequencies specified in the Colo Void Clause Coalition; Antenna System Co-Location; Voluntary Best Practices, effective 21 Nov 2007, will void this determination. Any future construction or alteration, including increase to heights, power, or the addition of other transmitters, requires separate notice to the FAA.This determination includes all previously filed frequencies and power for this structure.

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This determination does include temporary construction equipment such as cranes, derricks, etc., which may be used during actual construction of the structure. However, this equipment shall not exceed the overall heights as indicated above. Equipment which has a height greater than the studied structure requires separate notice to the FAA.

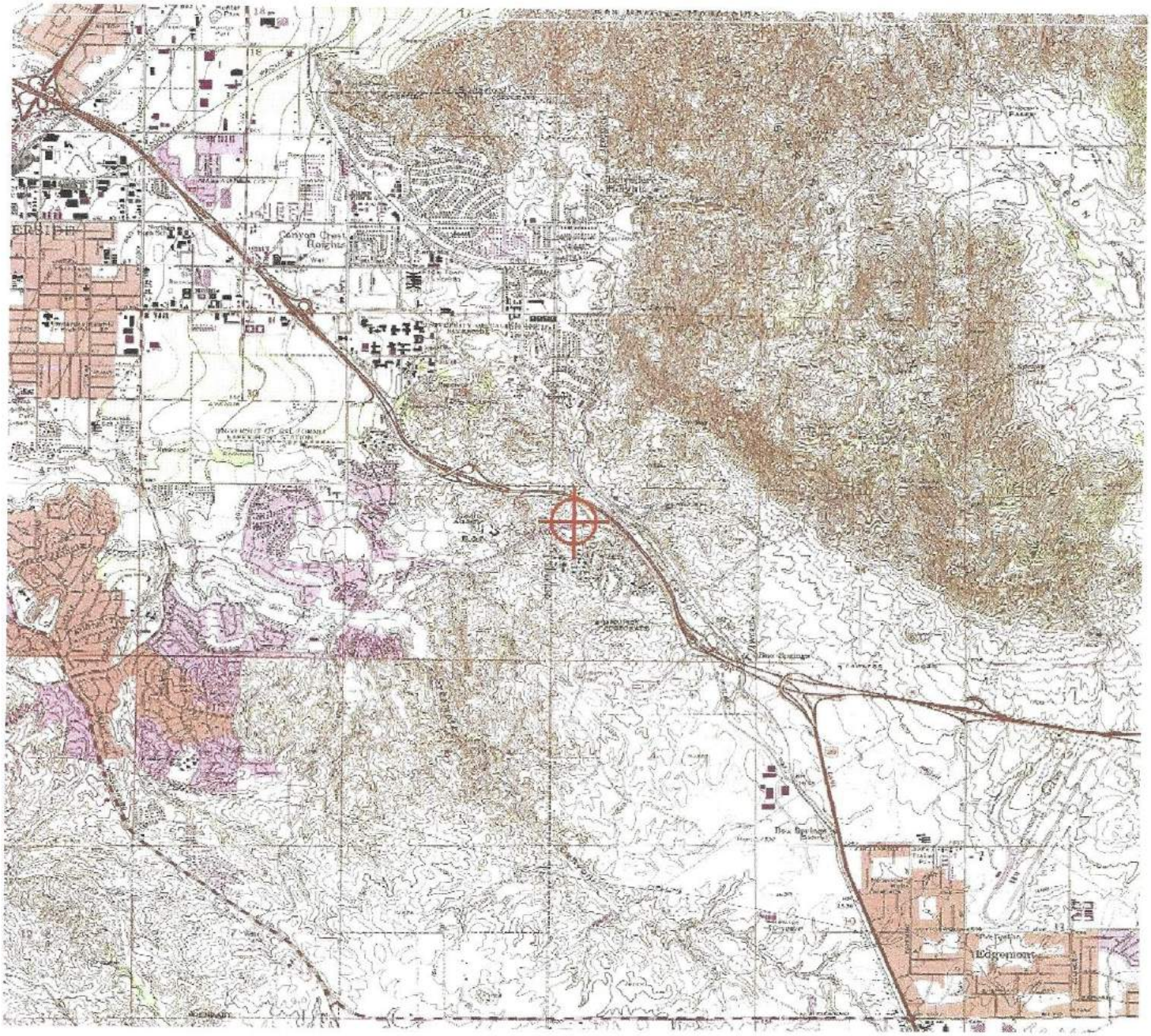
This determination concerns the effect of this structure on the safe and efficient use of navigable airspace by aircraft and does not relieve the sponsor of compliance responsibilities relating to any law, ordinance, or regulation of any Federal, State, or local government body.

If we can be of further assistance, please contact our office at (206) 231-2990, or paul.holmquist@faa.gov. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2020-AWP-3243-OE.

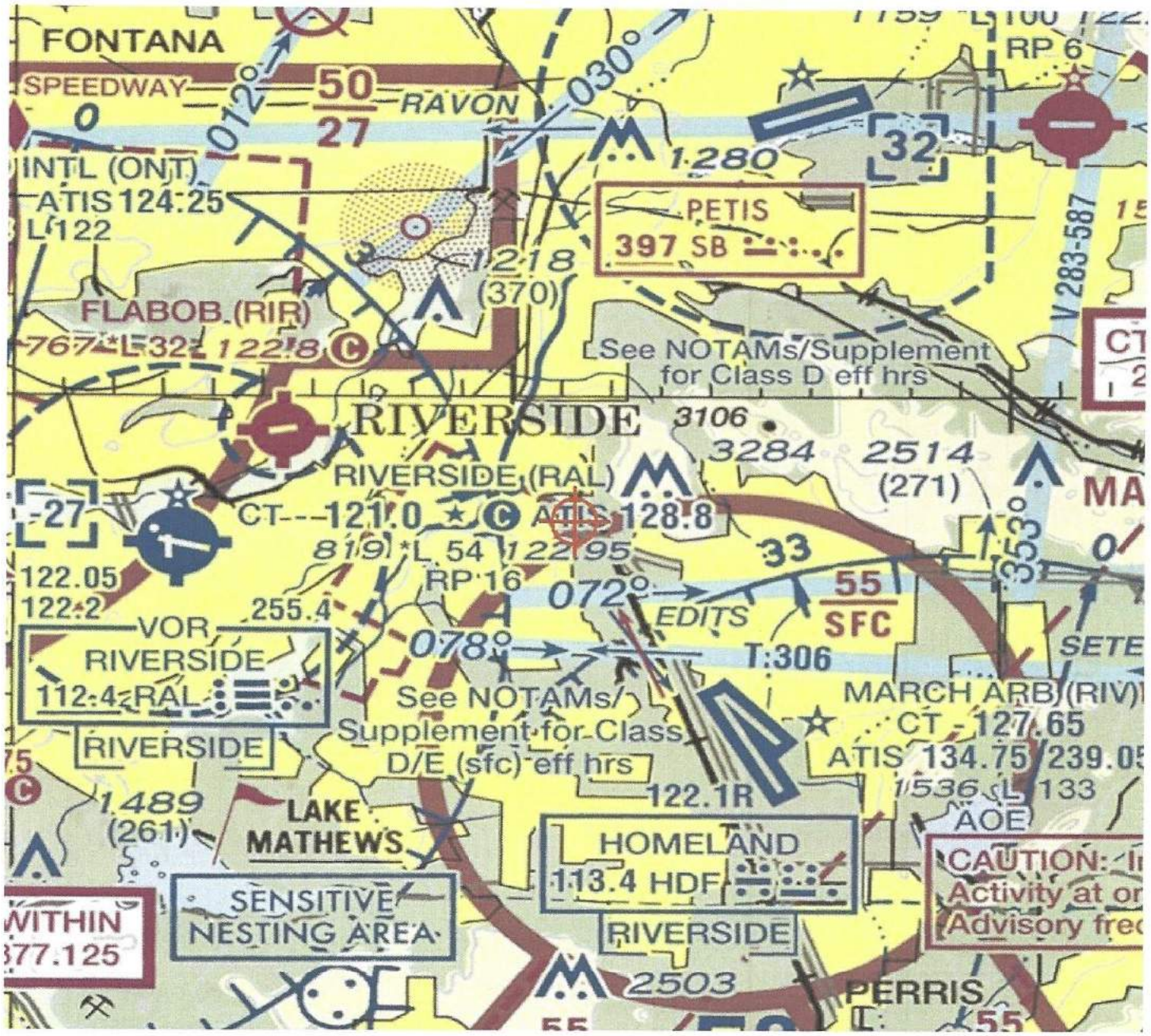
Signature Control No: 433938333-434573030 (DNE)
Paul Holmquist
Specialist

Attachment(s)
Map(s)

TOPO Map for ASN 2020-AWP-3243-OE



Sectional Map for ASN 2020-AWP-3243-OE



Mail Processing Center
Federal Aviation Administration
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Fort Worth, TX 76177

Aeronautical Study No.
2020-AWP-3244-OE

Issued Date: 03/25/2020

Eugene Marini
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55820 Oberlin Drive, Ste. 201
San Diego, CA 92121

**** DETERMINATION OF NO HAZARD TO AIR NAVIGATION ****

The Federal Aviation Administration has conducted an aeronautical study under the provisions of 49 U.S.C., Section 44718 and if applicable Title 14 of the Code of Federal Regulations, part 77, concerning:

Structure:	Building Bldg. 6
Location:	Riverside, CA
Latitude:	33-57-29.39N NAD 83
Longitude:	117-18-45.03W
Heights:	1351 feet site elevation (SE) 50 feet above ground level (AGL) 1401 feet above mean sea level (AMSL)

This aeronautical study revealed that the structure does not exceed obstruction standards and would not be a hazard to air navigation provided the following condition(s), if any, is(are) met:

Based on this evaluation, marking and lighting are not necessary for aviation safety. However, if marking/ lighting are accomplished on a voluntary basis, we recommend it be installed in accordance with FAA Advisory circular 70/7460-1 L Change 2.

This determination expires on 09/25/2021 unless:

(a) the construction is started (not necessarily completed) and FAA Form 7460-2, Notice of Actual Construction or Alteration, is received by this office.
(b) extended, revised, or terminated by the issuing office.
(c) the construction is subject to the licensing authority of the Federal Communications Commission (FCC) and an application for a construction permit has been filed, as required by the FCC, within 6 months of the date of this determination. In such case, the determination expires on the date prescribed by the FCC for completion of construction, or the date the FCC denies the application.

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This determination is based, in part, on the foregoing description which includes specific coordinates, heights, frequency(ies) and power. Any changes in coordinates, heights, and frequencies or use of greater power, except those frequencies specified in the Colo Void Clause Coalition; Antenna System Co-Location; Voluntary Best Practices, effective 21 Nov 2007, will void this determination. Any future construction or alteration, including increase to heights, power, or the addition of other transmitters, requires separate notice to the FAA.This determination includes all previously filed frequencies and power for this structure.

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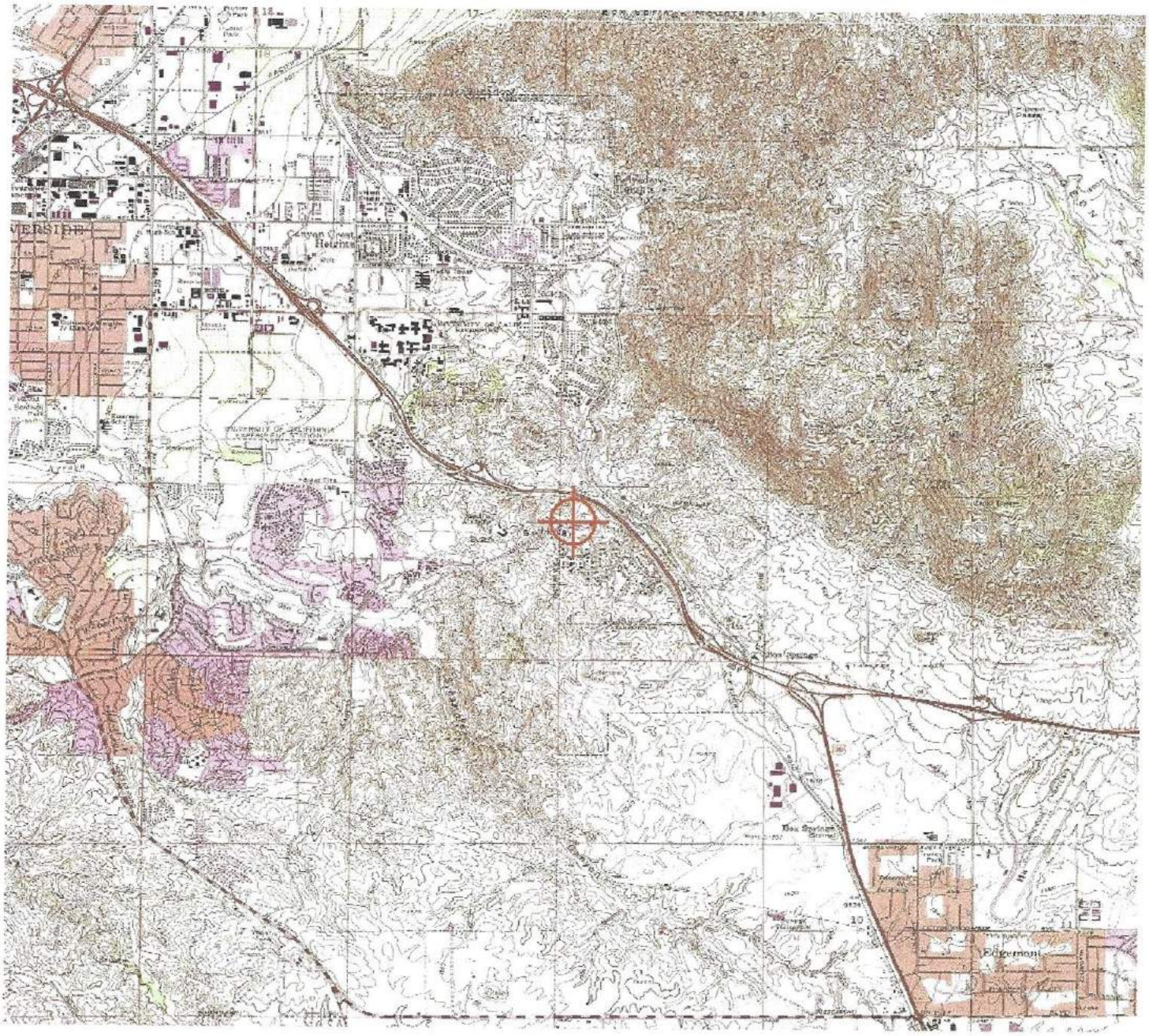
This determination concerns the effect of this structure on the safe and efficient use of navigable airspace by aircraft and does not relieve the sponsor of compliance responsibilities relating to any law, ordinance, or regulation of any Federal, State, or local government body.

If we can be of further assistance, please contact our office at (206) 231-2990, or paul.holmquist@faa.gov. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2020-AWP-3244-OE.

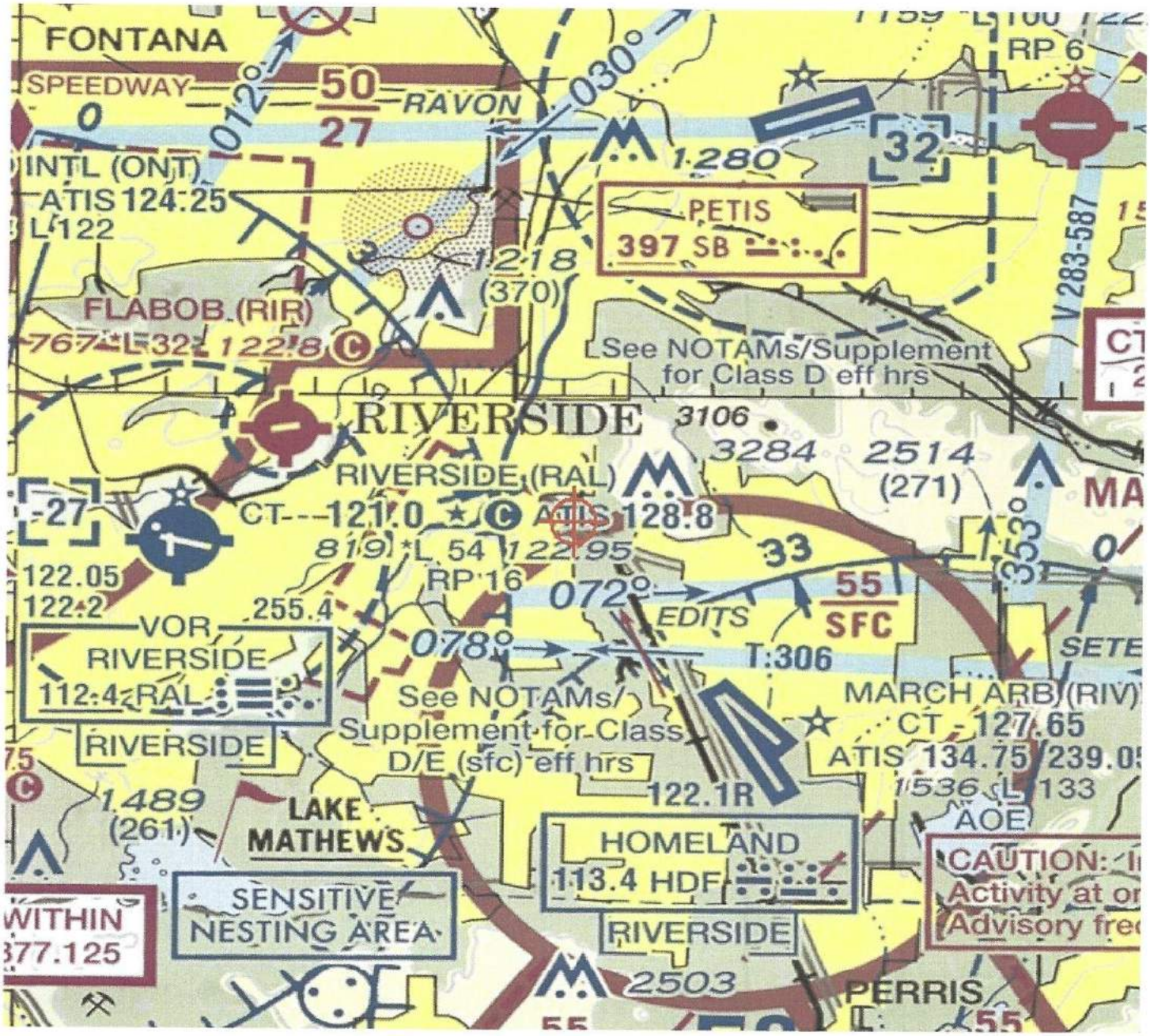
Signature Control No: 433938334-434573031 (DNE)
Paul Holmquist
Specialist

Attachment(s)
Map(s)

TOPO Map for ASN 2020-AWP-3244-OE



Sectional Map for ASN 2020-AWP-3244-OE



Mail Processing Center
Federal Aviation Administration
Southwest Regional Office
Obstruction Evaluation Group
10101 Hillwood Parkway
Fort Worth, TX 76177

Aeronautical Study No.
2020-AWP-3245-OE

Issued Date: 03/25/2020

Eugene Marini
KA Enterprises
55820 Oberlin Drive, Ste. 201
San Diego, CA 92121

**** DETERMINATION OF NO HAZARD TO AIR NAVIGATION ****

The Federal Aviation Administration has conducted an aeronautical study under the provisions of 49 U.S.C., Section 44718 and if applicable Title 14 of the Code of Federal Regulations, part 77, concerning:

Structure:	Building Bldg. 7
Location:	Riverside, CA
Latitude:	33-57-32.85N NAD 83
Longitude:	117-18-47.16W
Heights:	1351 feet site elevation (SE)
	50 feet above ground level (AGL)
	1401 feet above mean sea level (AMSL)

This aeronautical study revealed that the structure does not exceed obstruction standards and would not be a hazard to air navigation provided the following condition(s), if any, is(are) met:

Based on this evaluation, marking and lighting are not necessary for aviation safety. However, if marking/ lighting are accomplished on a voluntary basis, we recommend it be installed in accordance with FAA Advisory circular 70/7460-1 L Change 2.

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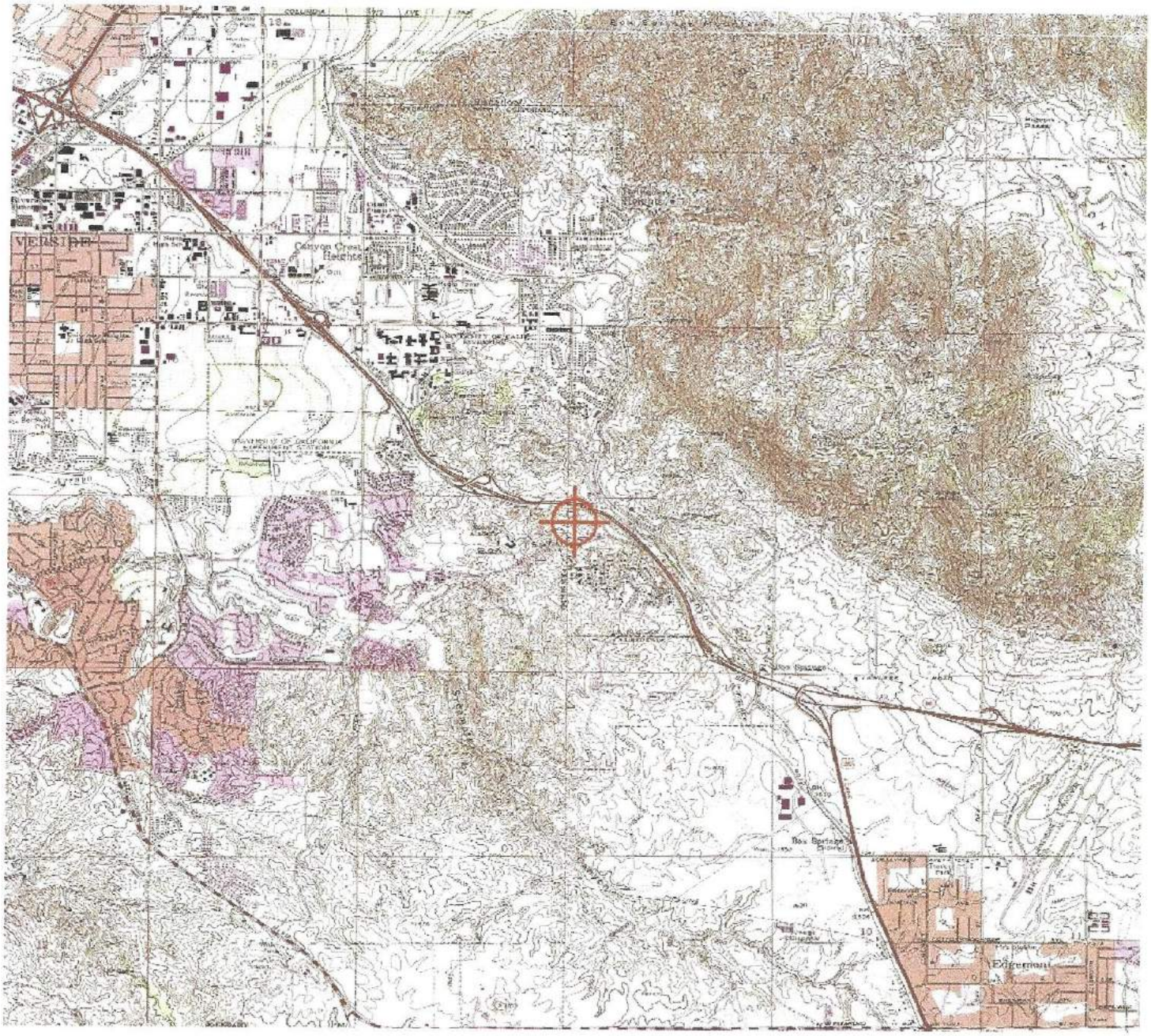
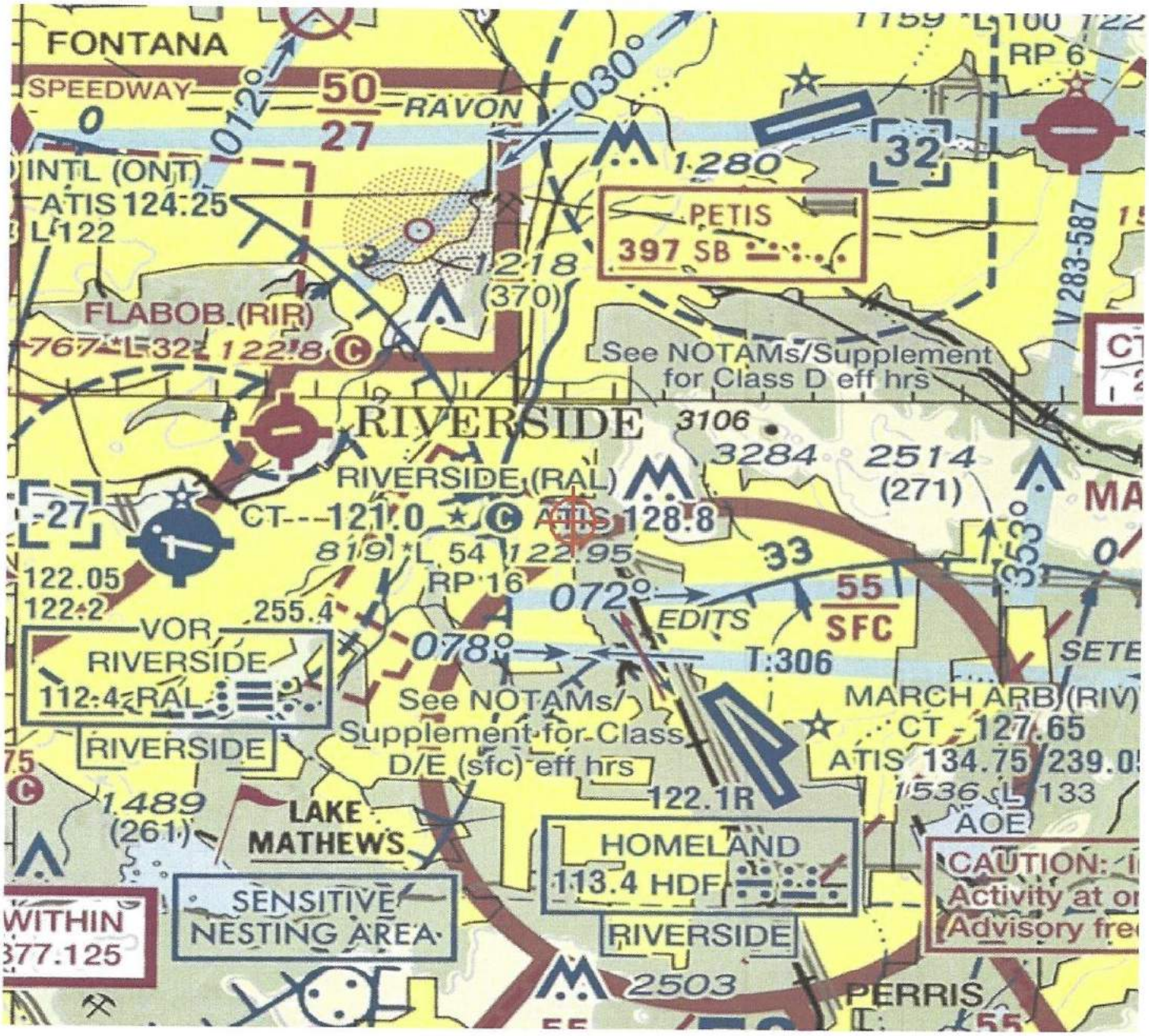
If we can be of further assistance, please contact our office at (206) 231-2990, or paul.holmquist@faa.gov. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2020-AWP-3245-OE.

Signature Control No: 433938335-434573035 (DNE)
Paul Holmquist
Specialist

Attachment(s)
Map(s)

TOPO Map for ASN 2020-AWP-3245-OE



Sectional Map for ASN 2020-AWP-3245-OE