INITIAL STUDY / MITIGATED NEGATIVE DECLARATION

For the Yucca Valley
Animal Shelter Project

Prepared for:
Animal Control Joint Powers Authority
351 North Mountain View Avenue, Third Floor
San Bernardino, CA 92415-0010

Mr. Brian Cronin, Secretary
(909) 387-9152

Prepared by
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(909) 981-5188

October 25, 2011

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INTIAL STUDY OVERVIEW

PROJECT DETAILS

1. Project title: Yucca Valley Animal Shelter

2. Lead agency name and address: Animal Control Joint Powers Authority (JPA, 351 N. Mountain View Avenue, 3rd Floor San Bernardino CA 92415-003

3. Contact person and phone number: Mr. Mark Nuaimi : 760-369-7207

4. Project location: Town of Yucca Valley, San Bernardino County, California, Assessor's Parcel Number, 0597-021-080-000, the south east corner of Malin Way & Paseo Los Ninos

5. Project sponsor's name and address: Animal Control Joint Powers Authority, 351 N. Mountain View Avenue, 3rd Floor San Bernardino CA 92415-003

6. General Plan Designation: Rural Living 7. Zoning: RL-5

8. Description of project: The Animal Control Joint Powers Authority (JPA) proposes to develop a replacement animal shelter on a five acre parcel located directly to the south of the existing Yucca Valley Animal Shelter. The replacement Animal Shelter will serve both the incorporated areas of the Town of Yucca Valley, as well as, the unincorporated areas of the County of San Bernardino. The facility will include three, new single story buildings of approximately 8,838 total square feet of enclosed building area, along with approximately 5,400 square feet of covered animal pens. Total kennel and administrative building areas covered with roofing will be approximately 15,300 square feet. Parking areas will be constructed to accommodate parking for staff, public and shelter vehicles. Other pathways and service roads will be created to facilitate reliable and safe access. Landscaping and hardscaping will be developed throughout the project area, including the parking area. Lighting for the Animal Shelter will be developed to Town standards. The parking lots will be lit using 15-ft pole lights with cut-off fixtures. Walkways and other site areas will be lit with shorter (10 to 15ft tall), pedestrian-scaled poles.

9. Surrounding land uses and setting: The project site consists of a five acre, green field site in the Town of Yucca Valley. The site is located in a Rural Living – 5 acre zoned area. The property directly to the north houses the current Yucca Valley Animal Shelter. The property to the west is vacant. The properties to the south include both a vacant parcel and a developed parcel with a single family residential dwelling unit zoned RL-5. The property to the east is developed with a single family residential dwelling. The property to the northeast is undeveloped and zoned Industrial. The area is rural in nature with primarily low density, single family dwellings on 5 acre lots.

10. Other public agencies whose approval is required (e.g., permits, financing approval, or participation agreement.)
At a minimum, the following permits and approvals will be required:
County of San Bernardino
Town of Yucca Valley Conditional Use Permit
    - Town of Yucca Valley Building and Safety, Building Construction Permits
    - California Region Water Quality Control Board
    - General Construction Activity Storm Water Permit
    - Septic System discharge permit
    - San Bernardino County Fire Department, Fire Safety Requirements
    - Hi Desert Water District, Water Service Requirements
    - San Bernardino County Environmental Health

SUMMARY OF ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

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

☐ Aesthetics	☐ Agriculture Resources	☐ Air Quality
☐ Biological Resources	☐ Cultural Resources	☐ Geology /Soils
☐ Greenhouse Gas Emissions	☐ Hazards & Hazardous Materials	☐ Hydrology / Water Quality
☐ Land Use / Planning	☐ Mineral Resources	☐ Noise
☐ Population / Housing	☐ Public Services	☐ Recreation
☐ Transportation/Traffic	☐ Utilities / Service Systems	☐ None Mandatory Findings of Significance

DETERMINATION

On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☑ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

_____ _____

Signature Date

_____ _____

Printed Name For

SOURCES

The following documents or sources were utilized by this analysis:

1. California Environmental Quality Act (CEQA)
2. Town of Yucca Valley General Plan Environmental Impact Report (EIR),
3. Town of Yucca Valley Comprehensive General Plan, December 14, 1995
4. Town of Yucca Valley Development Code
5. Town of Yucca Valley Zoning District Map.
6. Focused Survey for Desert Tortoise, Habitat Assessment for Western Burrowing Owl, and General Biological Resource Assessment for a 5-acres+/- Site (APN 0597-021-08) in the Town of Yucca Valley, San Bernardino County, California, by Circle Mountain Biological Consultants, Inc., April 2011
7. Hydrology Report for Yucca Valley Animal Shelter, by Encompass Associates, Inc., October 18, 2011
8. Mojave Desert Air Quality Management District Rule Book
9. United States Department of Agriculture, Natural Resources Conservation Service, Web Soil Survey. http://websoilsurvey.nrcs.usda.gov/app/
10. Town of Yucca Valley, Master Plan of Drainage
11. State Planning and Zoning Law
12. Percolation Feasibility Study for Proposed Animal Shelter, by Leighton Consulting, Inc., July 20, 2011
13. Geotechnical Investigation, Proposed Yucca Valley Animal Shelter, APN 0597-021-080-000, by Leighton Consulting, Inc., July 22, 2011
14. Project Plans and Reports
15. Field Inspection
16. Experience with other projects of this size and nature
17. Aerial Photography
18. USGS Data Contribution
19. California Natural Diversity Database, text data for USGS 7.5 minute quadrangle for Yucca Valley North, CA, accessed May 23, 2011
20. Federal Environmental Standards
    a) Water Quality Standards 40 CFR 120
    b) Low-Noise Emission Standards 40 CFR 203
    c) National Primary & Secondary Ambient Air Quality Standards 40 CFR 50
21. State and Federal Environmental Standards
    a) Ambient Air Quality Standards
    b) Noise Levels for Construction Equipment
22. Fault Investigation Report, Proposed Yucca Valley Animal Shelter, by Leighton Consulting, Inc., July 13, 2011
23. California Stormwater Quality Association Construction Handbook
24. Air Quality Management District Fugitive Dust Mitigation Measure Table
25. California Department of Fish and Game 2005 summary animals and plants listed under the California Endangered Species Act, accessed May 2, 2011 http://www.dfg.ca.gov/wildlife/nongame/t_e_spp/new_te_rpt.html
26. California Department of Fish and Game 2007 California's Wildlife Action Plan, accessed May 23, 2011, http://www.dfg.ca.gov/wildlife/wap/report.html
27. California Department of Fish and Game Wildlife Species Matrix, accessed May 24, 2011, http://www.dfg.ca.gov/wildlife/wap/matrix_search.html
28. California Department of Toxic Substances Control, Envirostar Database, Accessed May 31, 2011, http://www.envirostor.dtsc.ca.gov/public/
29. Water Quality Control Plan for the Colorado River Basin, (Region 7), with Amendments Approved through 2006
30. National Flood Insurance Program, Flood Insurance Map, San Bernardino County California and

Incorporated Areas, Map #06071C8120H. August 28, 2008.
31. California Code of Regulations, Title 24 (California Building Standards Code)
32. Protected Native Desert Plant Survey & Site Plan, by Archie Reiser, Native Plant Specialist, May 19, 2011
33. A.L.T.A. Survey by Encompass Associates Inc.
34. Addendum Fault Investigation Report, Response to County Comments, Proposed Yucca Valley Animal Shelter, by Leighton Consulting, Inc., August 30, 2011
35. Air Quality Assessment for Town of Yucca Valley Animal Shelter, by Lilburn Corporation, September 2011

PROJECT DESCRIPTION

PROJECT SETTING

The project site is located approximately half a mile west of Highway 247 and one block north of Skyline Ranch Road in the northern part of Yucca Valley. (Figure 1 Project Location and Site Map). The site is bordered by Paseo Los Ninos to the north and Malin Way to the west. The surrounding lots on the east, south and west are zoned Rural Residential (RL). The lots to the south include both developed and vacant lands, and the parcel to the west is undeveloped. The lot directly to the north of the site is the location of the current Yucca Valley Animal Shelter facility. The lot to the northeast is zoned Industrial. The project site is 5 acres. The terrain of the site is relatively flat to the north, with a low point at the wash, a USGS-designated dotted blue stream (intermittent stream), passing roughly east to west through the center of the site. The southern part of the site is made up of a hillside with rock outcroppings. Soils vary from sandy loom and gravel on the northern part of site, to gravel and cobbles on the rocky southern hillside. The site appears to be in its natural state except for a small concrete slab located toward the northern portion of the site. The plant community on site can best be described as Joshua tree woodland, with an understory of brush and grasses.

PROJECT BACKGROUND

Animal Shelter Operational Overview

The replacement Animal Shelter will be a community-oriented facility in the Town of Yucca Valley. The Animal Care Joint Powers Authority (JPA) was formed by the County of San Bernardino (County) and the Town of Yucca Valley (Town) to provide for the financing, planning, design, construction, operation and maintenance of a replacement animal care and control facility in the Town of Yucca Valley to provide animal services and shelter to both the residents in the incorporated area of the Town and the unincorporated areas of the County. The facility will offer both traditional animal control services and other educational and community service programs. Animal control services will include the following:

- Surrender of unwanted or lost animals
- Humane care of all impounded animals
- Adoption of companion animals
- Redemption of lost animals
- Education relating to responsible pet ownership
- Maximize the adoptability of companion/domestic animals
- Work with other agencies, the press and the public to reduce the number of unwanted pets

The current facility serves approximately 500 visitors and 500 phone calls per month. The monthly volume of impounded cats and dogs averages 278, with approximately 70 of these animals being redeemed by their owners or adopted. The average monthly number of animals being euthanized is 204, and approximately 14 animal per month are found dead or brought in for disposal. The current facility contracts for rendering services, including the lease of a walk-in freezer and the pick-up and disposal of dead animals. It is anticipated that the replacement facility would provide animal care and control services for approximately the same volume of animals and visitors.

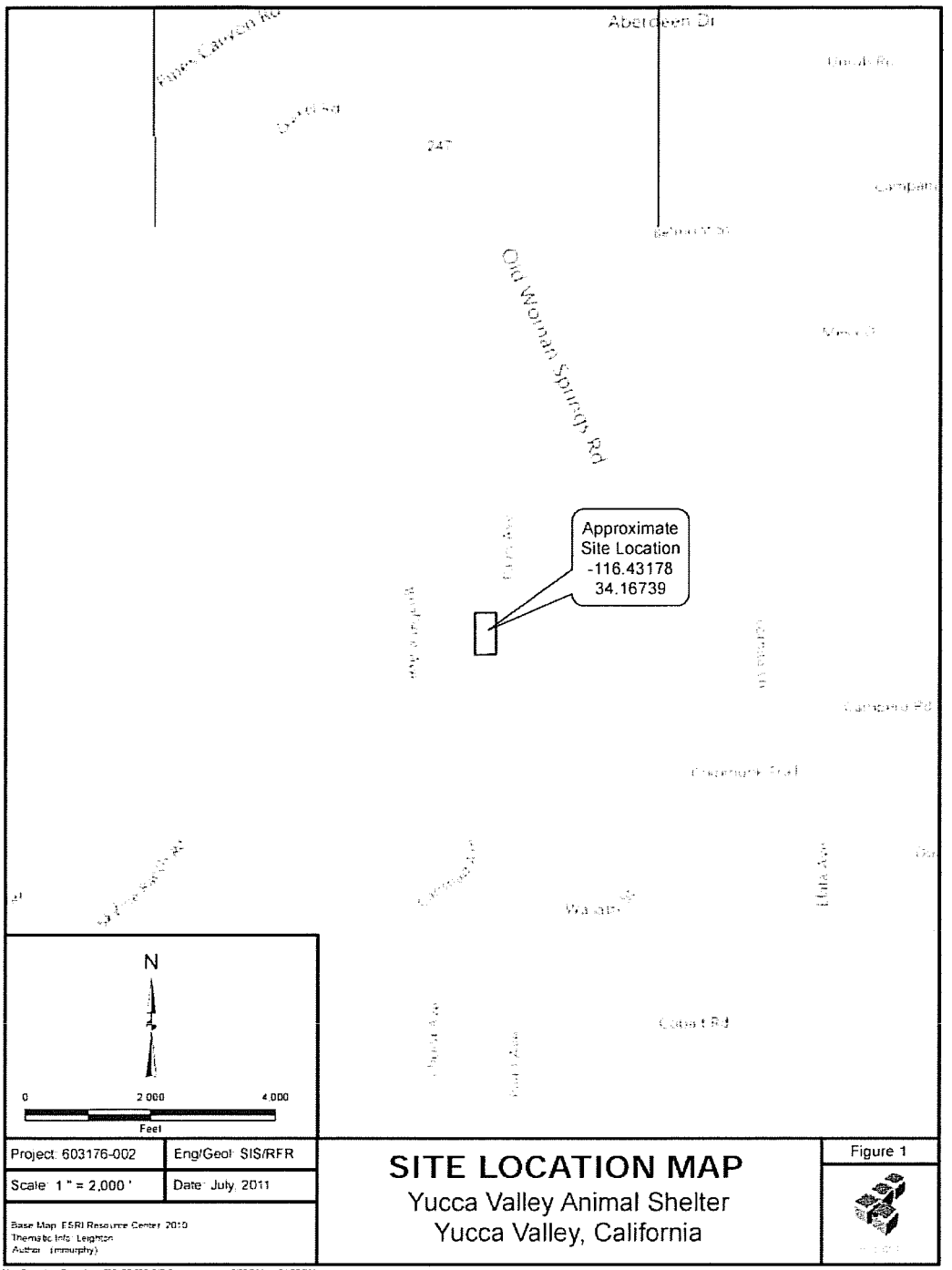
In addition to providing these services, the replacement facility will also offer the opportunity to provide for other services through the inclusion of its educational-oriented spaces/facilities which can be used by the community for a wide range of uses. These multi-purpose facilities include an indoor multi-purpose conference/training room and an assortment of exterior gathering spaces which can be used for both traditional animal training/exercise uses or other community uses (such as dog training classes for the public's dogs, etc.)

Hours of Operation

The replacement facility is ultimately expected to be staffed by 7 full-time and 1 part-time person, as well as, 2 full time County Animal Control Officers and would typically be staffed from 8 a.m. to 5 p.m. Monday through Friday. There would be staff on-call during hours the shelter is closed. The facility is anticipated to be open to the public from 12 p.m. to 5 p.m. Tuesday through Saturday. There may be other events or training that may occur on site, outside of the normal business hours. Business hours are subject to change based upon operational needs. The business hours may return to historical levels, of Monday through Friday, 8:00 am to 5:00 pm, 7:00 am to 4:00 pm, with open business hours from 8:00 am to 5:00 pm on Saturdays. The hours of operation may be modified based upon the needs of the organization. The Shelter is anticipated to be closed to the public on Sunday's, but due to the requirements of housing animals, staff is present on the site on Sundays for cleaning, watering, feeding, vaccinations, and other daily duties not associated with serving the general public.

The Role of Volunteers

Many of the newer shelters in California have been designed in a manner that actively engages community volunteers in the adoption and education programs of the facilities. The design of the replacement Yucca Valley Facility has anticipated such collaboration by developing areas that can be shared between staff and volunteers. Providing a positive working environment for volunteers including such areas as a meeting area, day lockers and work space helps volunteers feel connected and appreciated as valued team members. This has been found to be essential in retaining quality volunteers who assist in providing services which cannot be typically provided within the organization's limited budget.


Aberdeen Dr
Old Woman Springs Rd
Approximate
Site Location
-116.43178
34.16739
N
0
2,000
4,000
Feet
Project: 603176-002
Eng/Geol: SIS/RFR
Scale: 1 " = 2,000 '
Date: July, 2011
Base Map: ESRI Resource Center 2010
Thematic Info: Leighton
Author: tmurphy
SITE LOCATION MAP
Yucca Valley Animal Shelter
Yucca Valley, California
Figure 1

PROJECT OBJECTIVES

The nearly 40 year old existing animal shelter facility located directly across Paseo Los Ninos is inadequate to serve the existing needs of the region. The facility has been added to over the years in a makeshift, adhoc arrangement of small sheds, buildings, and outdoor dog kennels. The existing buildings are in bad repair and are close to their life expectancy without significant renovation and repair. In order to adequately serve the existing need, the JPA proposes to construct a replacement Animal Care Facility that will improve the area's animal control and care functionality. As part of the development three new, single story buildings will be constructed. The buildings will consist of one administration/adoptions/support facilities building of approximately 4,730 square feet, and two dog kennel buildings. The kennel buildings will be approximately 2,593 square feet and 1,515 square feet each. The approximate total square footage of enclosed space will be 8,838 square feet, while the total covered building area will be approximately 15,300 square feet plus an additional 5,400 square feet of covered large animal pens. The buildings will be organized in a manner that creates a courtyard space in the center allowing for a public multi-functional space including dog exercise areas, a covered "get-acquainted" area for pet adoptions and open space. The project will also include the construction of a public parking area to accommodate approximately 12 parking spaces, a staff parking area to accommodate 12 staff parking spaces and Animal Control Officers vehicle parking. A covered, exterior pen area for horses and other large animals and associated sidewalks and landscape areas will also be included.

The JPA estimates the need to house and care for approximately 3,500 animals per year. This figure approximates the number of animals which are currently being housed and cared for at the existing facility. Based on the region's projected growth of 1% for the next 10 years, there is no significant growth impact anticipated in the animal population.

The replacement Animal Shelter will provide the following features and on-site facilities:

- Reception/Lobby Area
- Conference/Education Room
- Laundry/Grooming Rooms
- Unisex staff shower
- Male and female public restrooms
- Food Prep/Storage Rooms
- Freezer
- 30-40 adoptable dog kennels
- 30-40 impound dog kennels
- Cat isolation area
- Cat adoptable area
- Community cat room
- Office Area
- Staff Break Room
- Staff Restrooms
- Electrical room
- Mechanical room
- Circulation / hallways
- Animal Receiving Rooms
- Euthanasia Room
- General Storage
- Exterior covered animal pens
- Exterior dog exercise areas
- Lighted public and staff parking
- Lighted Parking Lot
- On-site landscaping and walkways
- On-site storm water retention
- Site Security Fencing
- Site security and general lighting

ENVIRONMENTAL ANALYSIS

This Initial Study/Mitigated Negative Declaration (IS/MND) was prepared in conformance with the California Environmental Quality Act (CEQA) Statutes and Guidelines. This IS/MND analyzes the potential site-specific and localized impacts of the project with regard to 17 environmental topics, listed below:

- Aesthetics
- Agricultural Resources
- Air Quality
- Biological Resources
- Cultural Resources
- Geology and Soils
- Greenhouse Gas Emissions
- Hazards and Hazardous Materials
- Hydrology/Water Quality
- Mineral Resources
- Noise
- Population/ Housing
- Public Services
- Recreation
- Transportation/ Traffic
- Utilities/ Service Systems
- Land Use/Planning
- Mandatory Findings of Significance

ENVIRONMENTAL CHECKLIST

The following checklist contains the Environmental Checklist form presented in Appendix G of the CEQA Guidelines. The checklist form is used to describe the impacts of the proposed project. A discussion follows each environmental issue identified in the checklist. Included in each discussion are project-specific mitigation measures recommended as appropriate as part of the proposed project. For this checklist, the following designations are used:

Potentially Significant Impact: An impact that could be significant, and for which mitigation has not been identified. If any potentially significant impacts are identified, an Environmental Impact Review must be prepared.

Less Than Significant with Mitigation Incorporation: An impact that requires mitigation to reduce the impact to a less-than-significant level.

Less Than Significant Impact: Any impact that would not be considered significant under CEQA relative to existing standards.

No Impact: The project would not have any impact.

Each section below contains a brief explanation of determinations of impact described in the Environmental Checklist, supported by the information sources cited above in Section 1.4.

I. AESTHETICS Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact	Source
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☑	☐	15
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☑	☐	2,6, 15
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☑	☐	☐	4, 15
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☑	☐	☐	4, 14

DISCUSSION

a) The Town of Yucca Valley is located in the Morongo Basin in the eastern part of San Bernardino County. The Town is bordered on the west by the San Bernardino Mountains and to the south by the Joshua Tree National Park. The mountains provide dramatic and valuable viewsheds. The mountain ranges reach up to 4,673 feet above sea level to the north, south and west. The proposed project will have a less than significant impact on these aesthetic resources since the proposed improvements will be constructed in single story buildings on the lower elevation portion of the site. Given the distance between the project site and the surrounding mountain ranges, and building height limitations, the project would not significantly impact a scenic view; therefore, no mitigation is required.

b) The proposed project site is bordered by Paseo Los Ninos to the north, one undeveloped lot and one developed lot to the south, open land developed with a single family residence to the east, and Malin Way to the west. Skyline Ranch Road is located one parcel removed from the south property line. None of these streets have been identified as a state scenic highway. The proposed project will not impact historic buildings within a state scenic highway. Therefore, the project will have no impact on a state scenic highway and no mitigation is required.

Scenic resources that will be affected by the proposed project include Joshua trees and various desert plant species that occur on site. The construction of the Animal Shelter will involve removal of approximately 52 Joshua Trees. Of the Joshua Trees removed, 43 will be relocated to the southern portion of the site, 9 are not good candidates for transplanting due to disease or other existing damage to the tree. While the proposed project may potentially have a significant impact on the scenic resources of the Joshua Trees, this impact will be mitigated through the relocation of the Joshua Trees to the southern portion of the site in accordance with Ordinance 140 of the Town of Yucca Valley Development Code mitigating the effect to less than significant. The northern portion of the site will be developed with landscaping and pathway improvements that will improve the overall aesthetics of the Animal Shelter and site. The site will also be developed in accordance with the Town's development standards. Additionally, a concerted effort has been made to develop the smallest amount possible of the 5 acre site, while leaving the remainder of the site in its natural state. The developed portion of the site will constitute approximately 2.1 acres, while the remaining 2.9 acres will remain undisturbed. Landscaping associated with the replacement Animal Shelter and parking lots will be developed with plant types appropriate for the desert region and per Town development standards.

c) The existing site is an undeveloped lot surrounded on three sides by undeveloped lots. The north side is developed with the existing Animal Shelter and there are single family residences to the east and south. The proposed project includes removing trees and converting 14,263 ft^2 of dirt to asphalt parking. Tree removal will be mitigated through the relocation of approximately 43 Joshua Trees and the planting of some new trees appropriate to the desert region. Also, the project will include landscaping within and around the new parking lot, which will include the addition of trees and shrubs. Limiting development of the site to a portion of the northern side, while maintaining approximately 57% of the site in its natural state, will significantly limit the degradation of the site's visual quality and character.

All landscaping and proposed project construction aspects will be subject to building, design, landscaping, and lighting requirements found in the Codes of the Town of Yucca Valley which address the aesthetic quality of development within the Town. The Town Council, through Resolution, TC 10-06 has established guidelines for commercial construction. The building has been designed to comply with these guidelines. The proposed project is anticipated to include three, single story buildings, grouped to create a multi-purpose, exterior courtyard arrangement. The building will be pre-engineered metal building construction and clad with metal panels and/or exterior cement plaster. A metal roof with large overhangs to provide sun shading of kennels and walkways will be employed. The buildings will be sited to provide a public, administration/support building fronting onto Malin Way with a public parking lot accessible from Malin Way. The two, dog kennel buildings will be located directly east of the administration/support building. A staff/service parking area will be located along Paseo Los Ninos, directly north of the kennel building. Site landscaping will be provided along Malin Way, Paseo Los Ninos, the courtyard and around buildings, as appropriate for the desert environment. The proposed project will have a less than significant impact on the existing visual chaacter of the site and its surroundings due to implementation of mitigation measures related to new tree plantings and landscaping.

d) The Project will include security lighting at the site. This will include both wall mounted light fixtures and parking lot and area lighting of pathways. This will add a new source of light or glare. To minimize the impacts to any surrounding residential uses, the lighting shall be directed down and screened in such a manner to reduce any spill over lighting or direct lighting. With the incorporation of the mitigation measure below, impacts will be less than significant.

MITIGATION MEASURES

A-1 The removal of approximately 52 Joshua Trees will be mitigated through the relocation on site of approximately 43 of the Joshua Trees and the additional planting of new landscaping appropriate for the desert region around the building and parking lots.

A-2 Limiting development of the site to a portion of the northern side while maintaining approximately 57% of the site in its natural state will significantly limit the degradation of the site's visual quality and character. The southern portion of the site, including an intermittent stream and a rocky outcropping will remain untouched by development. Additionally, any new structures on the site shall be limited to single story construction thereby minimizing the overall visual impact on the existing visual character of the site,

A-3 Any lighting installed on the site shall be designed and installed to minimize adverse fugitive light and/or glare impacts to the adjacent residential properties. Additionally, all lighting on the site will be designed in a way consistent with the requirements of Ordinance 90, Outdoor Lighting, Section 87.0920 of the Town of Yucca Valley Development Code.

Level of Significance after Mitigation Measures: Less than Significant

II. AGRICULTURE AND FOREST RESOURCES Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact	Source
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☑	5
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☑	5
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☑	5
d) Result in the loss of forest land or conversion of forest land to non-forest use.	☐	☐	☐	☑	5
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forestland to non-forest use?	☐	☐	☐	☑	5

DISCUSSION

a-e) There are no Prime Farmlands, Unique Farmland or Farmland of Statewide Importance in proximity to the project site, or within the Town of Yucca Valley, and as such, there are no impacts to these resources. There are no state or federally designated forests in close proximity to the project site or within the Town of Yucca Valley. The proposed project area is not zoned for agricultural use nor is there any Williamson Act contract in effect. The proposed project will not affect land zoned for agricultural use. Development of the project would not result in the premature conversion of other lands designed as farmland to non-agricultural uses as there are no active farmland uses in the vicinity of the project.

Level of Significance: No impact.

III. AIR QUALITY Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact	Source
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☑	☐	8, 21a, 35
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐		☑	☐	8, 21a, 35
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☑	☐	☐	8, 21a, 24, 35
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☑	☐	☐	8, 21a, 35
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☑	☐	21a, 35

DISCUSSION

a-b) An Air Quality and Greenhouse Gas Assessment was prepared for this project in September 2011 by Lilburn Corporation. The report is a study of the potential impacts the project may have on the local and regional air quality in the vicinity during construction and ultimate operational use. The air quality assessment discusses the existing air quality in the vicinity/region and the potential air quality impacts associated with the proposed project. The assessment determined that project emissions during construction and during long-term operation of the project are anticipated to be less than significant. The following discussion is taken from the report.

The site is located within the Mojave Desert Air Basin (MDAB), which is under the jurisdiction of the Mojave Desert Air Quality Management District (MDAQMD). The MDAQMD has jurisdiction over the portion of the MDAB within San Bernardino and Riverside counties.

Air quality is determined primarily by the types and amounts of contaminants emitted into the atmosphere, the size and topography of the air basin and the pollutant-dispersing properties of local weather patterns. As pollutants concentrate in the atmosphere, photochemical reactions occur, producing ozone and other oxidants. Another major factor that influences the MDAB's ambient air quality is its location downwind from the South Coast Air Basin and the San Joaquin Valley Air Basin. Air pollutants from these two air basins are transported into the MDAB and contribute significantly to the ozone violations that occur.

Both the U.S. Environmental Protection Agency (EPA) and the California Air Resources Board (CARB) have established ambient air quality standards for common pollutants. These ambient air quality standards are summarized in Table 1 for important pollutants. The federal and state ambient standards were developed independently with differing methods and purposes. As a result, the federal and state standards differ in certain areas.

Table 1
State and Federal Air Quality
Designations and Classification

Ambient Air Quality Standard	Status
One –hour Ozone (Federal)	Non- attainment; classified Severe-17 (portion of MSAQMD outside of Southeast Desert Modified AQMA is attainment)
Eight-hour Ozone (Federal)	Non-attainment, classified Severe-17 (portion of MDAQMD in Riverside County is attainment)
Ozone (State)	Non-attainment; classified Moderate
PM_{10} (Federal)	Non-attainment; classified Moderate (portion of MDAQMD in Riverside County is attainment)
$PM_{2.5}$ (Federal)	Unclassified/attainment
$PM_{2.5}$ (State)	Non-attainment (portion of MDAQMD outside of Western Mojave Desert Ozone)
PM_{10} (State)	Non-attainment
Carbon Monoxide (State and Federal)	Attainment
Nitrogen Dioxide (State and Federal)	Attainment/unclassified
Sulfur Dioxide (State and Federal)	Attainment/unclassified
Lead (State and Federal)	Attainment
Particulate Sulfate (State)	Attainment
Hydrogen Sulfide (State)	Unclassified (Searles Valley Planning Area is non- attainment)
Visibility Reducing Particles (State)	Unclassified

Source: MDAQMD CEQA and Federal Conformity Guidelines, February 2009. Verified September 20111

Table 2
MDAQMD Attainment Plans

Name of Plan	Date of Adoption	Applicable Area	Pollutant (s) Targeted	Attainment Date
1991 Air Quality Attainment Plan (AQAP)	August 26, 1991	San Bernardino County portion	NO_x and VOC	1994*
Mojave Desert Planning Area Federal Particulate Matter Attainment Plan	July 31, 1995	Mojave Desert Planning Area	PM_{10}	2000*
Triennial Revision to the 1991 Air Quality Attainment Plan	January 22, 1996	Entire District	NO_x and VOC	2005
2004 Ozone Attainment Plan (State and Federal)	April 26, 2004	Entire District	Ozone (NO_x and VOC)	2007
Federal 8-Hour-Ozone Attainment Plan (Western Mojave Desert Non- attainment Area)	June 9, 2008	Western Mojave Desert Non-attainment Area	NO_x and VOC	2021

*Note: a historical attainment date given is an attainment plan does not necessarily mean that the affected area has been re -designed to attainment

Source: MDAQMD and Federal Conformity Guidelines, February 2009. Verified September 2011

Federal and state air quality laws require identification of areas not meeting the ambient air quality standards. These areas must develop regional air quality plans to eventually attain the standards. The USEPA and the CARB have designated portions of the District as non-attainment for a variety of pollutants including ozone and PM_{10}.

a) A project is considered non-conforming if it conflicts with or delays implementation of any applicable attainment or maintenance plan. According to the MDAQMD's California Environmental Quality Act and Federal Conformity Guidelines, dated February 2009, a project is conforming if it complies with all applicable MDAQMD rules and regulations, complies with all proposed control measures that are not yet adopted from the applicable plan(s), and is consistent with the growth forecasts in the applicable plan(s). Conformity with growth forecasts can be established by demonstrating that the project is consistent with the land use plan that was used to generate the growth forecast. As the project is consistent with the land use plan and it will not increase the number of dwelling units, is not anticipated to increase the number of trips, or increase overall vehicle miles traveled in an affected area, the project is conforming.

b) The proposed project was screened using the CalEEMod version 2011.1.1 emission model to establish emissions associated with the proposed project during construction. The model can analyze emissions that occur during different phases of the project, such as building construction and architectural coatings. According to MDAQMD, a project is considered to cause a significant impact to air quality if it would exceed the MDAQMD thresholds of significance for criteria pollutants. The criteria pollutants analyzed in the CalEEMod model included reactive gasses (ROG), nitrous oxide (NO_x), carbon monoxide (CO), particulates (PM_{10} and $PM_{2.5}$), carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O).

The CalEEMod model allows the user to set certain defaults to incorporate Air Quality Management District required rules and regulations. The project site is vacant, therefore, no demolition will occur. The development of the site would include site grading and soil preparation, and construction of the facility. The emissions calculations for the construction phase include fugitive dust from grading and exhaust emissions from on-site equipment and worker travel. Construction emissions are calculated based on emissions per 1,000 square feet. The fugitive dust emissions are based on earthwork activities per day. In order to account for dust suppression controls, it is assumed the contractor will comply with MDAQMA Rules 402 and 403 requiring the application of water to the site twice daily – see Mitigation Measure AQ-1. Construction emissions are considered short-term, temporary impacts. Table 3 shows the construction emissions that would occur from the proposed project.

Table 3
Construction Emission Summary
(Pounds Per Day)

Source/Phase	**ROG**	**NO_X**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
Site Preparation	11.1	90.0	52.3	0.1	13.0	9.0
Grading	7.3	55.6	34.4	0.1	6.4	4.8
Building Construction	6.2	40.9	24.8	0.0	2.9	2.8
Paving	6.3	37.7	22.9	0.0	3.5	3.3
Architectural Coating	20.0	3.2	2.0	0.0	0.3	0.3
Highest Value **(lbs/day)**	**20.2**	**90.0**	**52.03**	**0.1**	**13.0**	**9.1**
MDAQMD threshold	137	137	584	137	82	82
Significant	**No**	**No**	**No**	**No**	**No**	**No**

Source: CalEEMod 2011
Phases don't overlap and represent the highest concentration

As shown in the Table 3, the construction emissions would not exceed MDAQMD's threshold of significance for any of the criteria pollutants and would be considered less than significant.

Operational Emissions: The proposed project will not manufacture or produce any products on-site, therefore, no industrial type emissions will be emitted. Stationary source emissions associated with the

operation of the site are primarily from natural gas consumption from space and water heating and mobile emissions were estimated by the CalEEMod model based on the size of the development. Emissions associated with these operational activities are shown in Table 4

Table 4
Operations Emission Summary
(Pounds Per Day)

Source/Phase	ROG	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
Mobile	0.2	0.8	1.4	0.0	0.2	0.03
Energy	0.0	0.01	0.01	0.0	0.0	0.0
Area	0.42	0.0	0.0	0.0	0.0	0.0
Total Value **(lbs/day)**	0.62	0.81	1.41	0.0	0.2	0.03
MDAQMD threshold	137	137	548	137	82	82
Significant	**No**	**No**	**No**	**No**	**No**	**No**

Source: CalEEMod 2011
Phases don't overlap and represent the highest concentration

As shown in Table 4, operational emissions associated with implementation of the proposed project would not exceed MDAQMD thresholds of significance for any pollutant. Therefore, operational emissions for the proposed project are considered less than significant.

c) The proposed project does not exceed any of the MDAQMD thresholds of significance for any criteria pollutants and is not considered to have a cumulative considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard. The proposed project will have a less than significant impact with respect to cumulative direct or indirect project emissions.

d) The existing sensitive receptors near the proposed project include residences; however the proposed project is not expected to result in substantial pollutant concentration. Any pollutant concentrations would be produced during site preparation and construction by construction equipment. Since any such pollutant concentration would be minor and temporary; impacts would be considered less than significant.

e) Objectionable odors will be generated during a brief period of the asphalt paving for the new parking lot. Paving and associated odors are likely to last no longer than 3-4 days during the construction period. These odors are not expected to persist or have an adverse affect on residents or other sensitive receptors in the proposed project's vicinity.

During the operation of the replacement Animal Facility, any biological waste would be frozen, stored in freezers and picked up on a regular basis. Animal kennels are primarily inside the building. All kennels will be provided with drains and will be hosed down with a high-pressure water system and disinfectant daily to reduce odors. No significant objectionable odors are anticipated; therefore, the proposed project is expected to have a less than significant impact.

MITIGATION MEASURES

AQ-1 All construction contracts will include provisions for a comprehensive dust control plan and be consistent with MDAQMD requirements, including, but limited to Rules 402 and 403. Dust control efforts will include watering dirt surfaces twice daily and removing construction-site mud that has been deposited on roadways during construction.

AQ-2 Limit traffic speeds on unpaved roads on and adjacent to project to 15 mph during construction.

AQ-3 Install sandbags or other erosion control measures to prevent silt runoff on public roadways.

Level of Significance after Mitigation Measures: Less than Significant

IV. BIOLOGICAL RESOURCES Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact	Source
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☑	☐	☐	6,19, 25, 27
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations, or by the California Department of Fish and Game or US Fish and Wildlife Service?	☐	☐	☑	☐	6,15, 18,19, 27
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☑	☐	6, 14,15, 18, 19
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☑	☐	☑	6, 14, 15, 17, 19, 26, 27
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☑	☐	☐	3, 4, 26, 32
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☑	☐	☐	3, 4, 26,

DISCUSSION

a-f) Review of the California Department of Fish and Game's (CDFG), California Natural Diversity Database, (CNDDB) indicates that there are 13 special plants and animals reported from the Yucca Valley North 7.5 – minute U.S. Geological Survey quadrangle. A Focused Survey for Desert Tortoise, Habitat Assessment for Western Burrowing Owl, and General Biological Resource Assessment for the site was conducted by Circle Mountain Biological Consultants, Inc. in April 2011, The following discussion

is taken from the report.

Biological survey conducted on site found 57 plant species, one reptile, 17 birds and 9 mammal species during the survey. The plant community on site is best described as Joshua Tree woodland, with an understory of brush and grasses.(see Biological Report) No tortoise sign was found on site or in adjacent areas during the focused, protocol survey (U.S. Fish and Wildlife Services 1992, 2009) for the species. Based on the absence of desert tortoise sign on the project site, in adjacent areas, and reported from the region, Biologist's survey concludes that the desert tortoise is absent from the project site and adjacent areas. Additionally, the likelihood of tortoise entering the site is very remote given the closest site where desert tortoise have been detected is 2 ½ miles to the east on the east side of Old Woman Springs Road.

U.S. Fish and Wildlife Service (2002), California Department of Fish and Game (2009a, 2010), and California Native Plant Society (CNPS 2010) maintain lists of animals and/or plants considered rare, threatened, or endangered, which are collectively referred to as "special status species". No special status species were detected on-site during the Biologist's survey. Suitable habitat does exist on site for several bird species that are considered a Bird of Conservation Concern by the USFWS (2002) and a Bird Species of Special Concern by the CDFG (2009a). These species include LeConte's thrasher, loggerhead shrike, burrowing owl, northern harrier, and prairie falcon. If the entire site was developed, approximately 5 acres of foraging habitat would be lost, however, only 43% of the site is proposed to be developed. There is potential for loggerhead shrike and LeConte's thrasher to nest on site. Loss of eggs or young could occur during development of the site if construction occurs during the nesting season and involves removal of trees and shrubs. The project will involve the removal/relocation of some Joshua trees and brush. This could disturb the nesting of migratory birds. The Federal Migratory Bird Treaty Act (16 USC Section 703-711), 50 CFR 10, Fish and Game Code Sections 3503, 3503.5, 3513, and 3800 protect migratory and nongame birds, their occupied nests, and their eggs. Nesting or attempted nesting by migratory and nongame birds is anticipated to occur February through September 1. The incorporation of the mitigation listed below will reduce impacts to migratory and nongame birds to less than significant.
No evidence of burrowing owl, a California Species of Special Concern, was found on site during the biologist's survey, however, there is potential for the species to move on site from adjacent areas. With the mitigation incorporated below, impacts will be less than significant.

There is an intermittent USGS-designated blue stream on site. The wash runs roughly east to west through the center of the site. Impacts to washes, such as spoil deposition or alteration are regulated by the CDFG. Impact to wash onsite may require a 1601-03 Streambed Alteration Agreement from CDFG, as well as, review and evaluation through the Town based on Chapter 2 of Ordinance 140 (Riparian Plant Conservation) based on proximity of development to the steam bed.

The project development is planned to stay a minimum of 30 feet away from the managed flood plain of the intermittent stream bed. The buildings will be located approximately 41 feet from the managed flood plain at its closest point. Any paved area will be located approximately 30 feet from the managed flood plain at its closest point. The grading and hydrology of the site will occur in such a way as to not allow storm water from developed (paved) portions of the site to flow into the intermittent stream.

The project will not affect wetlands as defined by Section 404 of the Clean Water Act or interfere with fish and wildlife movements. The project will not be in conflict with any local policies to protect biological resources or provisions of an existing Conservation Plan.

The development of the site is limited to the northern portion of the site. The area adjacent to the intermittent blue stream, as well as, all land to the south of the stream bed will be left in its natural state. This will provide for approximately 2.9 acres of undisturbed foraging habitat. This will lessen the impact of the portion of the site that is being developed.

MITIGATION MEASURES

BR-1 Joshua trees, and any other protected species of plants, affected by the development will be relocated to the southern portion of the site in accordance with state and local regulations and Chapter of Ordinance No. 140 (Desert Native Plant Protection) of the Town of Yucca Valley Development Code, which is intended to preserve native plants unique to Yucca Valley, outlines the regulations and guidelines for the management of plant resources in the Town). A removal permit shall be required for the removal of any native plant or tree, as regulated in Section 89.0107. of Ordinance 140 of the Development Code. In addition, site development will include the planting of trees and other appropriate vegetation as part of re-landscaping of the site.

BR-2 To avoid impacts to migratory and nongame birds, their occupied nests, and their eggs, any trees should not be removed between February and September 1. If trees are to be removed between February and September 1, qualified Biologist shall survey the trees to be removed to determine if there are active nests. If active nests are found, an appropriate no disturbance buffer will be established to avoid disturbance until after the breeding season or after a wildlife biologist determines the young have fledged. If no active nests are found, no additional mitigation is required.

BR-3 A preconstruction survey for burrowing owls shall be conducted by a qualified biologist 30 days prior to the start of construction of the project site. If no burrowing owls are detected, no further mitigation is required. If active burrowing owls are detected then the protocol established by the California Department of Fish and Game shall be followed.

BR-4 A preconstruction survey for desert tortoise shall be conducted by a qualified biologist 30 days prior to the start of construction of the project site. If no desert tortoise is detected, no further mitigation is required. If desert tortoise are detected then the protocol established by the California Department of Fish and Game shall be followed.

BR-5 All site development and construction activities shall maintain a minimum 30 foot buffer zone from any point of the existing bank of the intermittent stream. No construction or land disturbance activity shall occur within this buffer zone.

Level of Significance after Mitigation Measures: Less than Significant

V. CULTURAL RESOURCES Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact	Source
a) Cause a substantial adverse change in the significance of a historical resource as defined in '15064.5?	☐	☐	☐	☑	3
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to '15064.5?	☐	☐	☐	☑	3
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☐	☑	3
d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☐	☑	3

DISCUSSION

a-d) There are no known or documented national or State historic resources that have been designated as landmarks or points of interest on or in the immediate vicinity of the project. The Town's General Plan states it will review and address issues related to cultural resources as set forth in the California Environmental Quality Act. The proposed project would not affect any historical or archaeological resources as defined in the CEQA's Section 15064.5. Additionally, there are no known paleontology resources, unique geologic features, or cemeteries within the project vicinity.

MITIGATION MEASURES

CUL-1 In the event that cultural and/or paleontological resources are discovered during demolition and construction activities, construction shall be halted in the work area until a professional archaeologist and/or paleontologist has been retained and has the opportunity to investigate the resource and assess its significance. Any such resource uncovered during the course of project-related grading or construction shall be recorded and/or removed per standard archaeological or paleontological practices and/or applicable City and/or state regulations. If human remains are discovered, work in the affected area shall cease immediately and the County Coroner shall be notified. If it is determined that the remains might be those of Native Americans, the California Native American Heritage Commission shall be notified and appropriate measures provided by State law shall be implemented.

Level of Significance after Mitigation Measures: Less than Significant

VI. GEOLOGY AND SOILS Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact	Source
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:					
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☑	☐	☐	2,13, 14, 15, 22, 34
ii) Strong seismic ground shaking?	☐	☑	☐	☐	2,13, 22,34
iii) Seismic-related ground failure, including liquefaction?	☐	☑	☐	☐	2, 13, 22,34
iv) Landslides?	☐	☑	☐	☐	2, 13, 22
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☑	☐	13, 22, 23

VI. GEOLOGY AND SOILS Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact	Source
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☑	☐	☐	2, 3, 13, 22,34
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☑	☐	3, 13, 22
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☑	12, 13, 22

DISCUSSION

a) i-iii) According to the Town of Yucca Valley General Plan EIR, the site lies within a seismically active region. Faults within the site planning area include the San Andreas Fault System, Johnson Valley, Burnt Mountain, Eureka Peak, and Pinto mountain Faults. A portion of the site is within the Alquist-Priolo Zone.

Alquist-Priolo Fault Zoning Act: The Alquist-Priolo Earthquake Fault Zoning Act (A-P Act) of 1994 (previously known as the Alquist-Priolo Special Studies Zones Act of 1972) primary purpose is to mitigate the hazard of fault rupture by prohibiting the location of structures for human occupancy across the trace of an active fault. The A-P Act addresses only the hazards associated with surface fault rupture and not other earthquake hazards. The A-P Act requires the State Geologist to delineate the Earthquake Fault Zones along faults that are sufficiently active and well defined. Sufficiently active faults show evidence of Holocene surface displacement along one or more of their segments. Well defined faults are clearly detectable by a trained geologist at, or just below the ground surface. The A-P Act dictates that local jurisdictions withhold permits for development for sites within the A-P Zone until geologic investigations determine that the proposed structures are not threatened by surface displacements from future faulting. This investigation demonstrates that the building would not be placed across an active fault. This site specific evaluation requires a fault evaluation trench to be dug approximately perpendicular to any known fault and across the buildable area. This trench is then evaluated by a licensed geologist and an evaluation report is prepared. If an active fault is identified, a structure intended for human occupancy cannot be placed over the trace of the fault and must be set back, generally no closer than 50 feet from the fault.

A Fault Investigation Report was completed for the project site. (See report dated July 13, 2011 and Addendum to Report dated August 30, 2011 prepared by Leighton Consulting, Inc.) The purpose of the investigation was to evaluate the potential for surface earthquake fault rupture within the project site. To evaluate the fault rupture hazard, an approximately 275-foot long by 10 to 15 foot deep exploratory fault trench across the property was excavated. The trench was located approximately perpendicular to, and crossing, the previously mapped surface trace for the southern Johnson Valley Fault rupture from the 1992 Landers earthquake, provided by California Geological Society (Bryant, 1992). The 1992 ground surface fault rupture was mapped near the northwest corner of the project site. Based on the results of the investigation, no active faulting was observed within the limits of the exploration, however, field mapping after the 1992 Landers earthquake encountered ground cracking at the northwest corner of the

site. Accordingly, there exists a potential for surface rupture within a limited distance of the active fault trace. Therefore, the following conclusions and recommendations have been made by the consulting Geologist, with concurrence from the County Geologist:

- Faulting in the area and along the Johnson Valley fault has produced three events rupturing Holocene aged soils.
- No displaced Holocene-aged soils within the area explored were observed. However, an active fault should be considered to exist at the mapped trace of faulting observed immediately after the 1992 Landers earthquake.
- Fault setback provisions have been prepared based on the assumption of an active fault existing immediately beyond the area explored. The recommended fault setback zone is presented in accompanying Geotechnical Map – Plate 1.
- Structures intended for human occupancy should not be placed within the structure setback zone as shown on Geotechnical Map –Plate 1.
- Strong ground shaking and/or possible ground cracking/rupture along the identified active faults may occur near the site due to local earthquake fault activity. If this occurs, proposed structures and improvements may be damaged. The project design should attempt to anticipate these possibilities and incorporate mitigating measures. Recommendations from geologist for site remedial earthwork and foundation design should be incorporated into ultimate design of the project.
- Any future utilities that would cross the fault zone should be designed to accommodate future ground rupture and displacement. Utilities and associated infrastructure should be designed by a civil engineer with respect to potential ground shaking and possible ground displacement during future earthquakes.

Liquefaction occurs when loose, unconsolidated, water-laden soils are subject to shaking, which causes the soils to lose cohesion. The possibility of liquefaction occurring at the project site is dependent upon the occurrence of a significant seismic event in the vicinity, sufficient ground water (typically within 50 feet of the ground surface) to cause high pore pressure, and conditions relative to plasticity, relative density and confining pressures of the soil. The project's geotechnical investigation did not encounter free ground water at boring locations. The Department of Water Resource data for Wells 01N05E14P001S and 01N05E14Q001S indicate the depth of groundwater in the order of 82 to 100 feet below ground surface in 1958. Due to the absence of shallow groundwater (>50 feet), the geotechnical investigation determined the risk for liquefaction potential at the site to be considered very low. Although the Town of Yucca Valley is subject to the hazards associated with a seismically active region, adherence to the most recent construction and maintenance practices, such as the California Building Code (CBC) and the recommendations of the geotechnical investigation, would reduce impacts from known geologic hazards. Adherence to such practices and state and federal regulations would reduce the potential impacts relating to ground-shaking to a less-than-significant level.

a) iv) In the Town of Yucca Valley area, the potential for landslides to occur increases in the following: areas of high seismic potential, sites with rapid uplift and erosion resulting in steep slopes and deeply incised canyons, areas of rock with inherently weak component such as silt or clay layer, and areas of highly fractured and folded rock. In addition, slope orientation relative to the direction of the seismic wave can contribute to the occurrence of landslides. Although the Town of Yucca Valley may be subject to the hazards associated with landslides, adherence to the most recent construction and maintenance practices, such as the California Building Code (CBC), and implementation of the recommendations of the geotechnical investigation regarding earthwork, grading and foundations, would reduce the potential for landslides to a less than significant level.

b) The Animal Shelter project and associated site improvements will involve the disturbance and relocation of topsoil, rendering earth surfaces susceptible to erosion from wind and water. Soil erosion or the loss of topsoil resulting from the grading and excavation of the project site could result in an adverse impact. During construction activities, there is a potential for sedimentation, erosion, and runoff to occur. However, the project site is relatively flat in the area construction will occur. Construction projects resulting in the disturbance of one acre or more are required to obtain a NPDES permit issued by the

Regional Water Quality Control Board (RWQCB) to control soil erosion due to storm water. Project proponents are also required to prepare a Storm Water Pollution Prevention Plan (SWPPP). Additionally, the project would be required to comply with Mojave Desert Air Quality management District (MDAQMD) rules to control fugitive dust. Implementation of dust suppression techniques required by MDAQMD, along with implementation of Best Management Practices (BMP's) required of all new development projects as specified in the NPDES permit and SWPPP for the project, would reduce potential impacts associated with soil erosion and loss of topsoil to a less than significant impact.

c-d) The project site is generally underlain by Holocene and Pliocene aged alluvium with a thin layer of topsoil (approximately 1 to 3 feet thick). The southern, elevated portion of the site is underlain by highly weathered grand diorite rock and capped with Teriary-aged volcanic basalt. The older alluvium consists of silty fine to coarse grained sand with gravel, cobbles and scarce boulders.

Expansive soils are soils with a significant amount of clay. These soils have the ability to take on and absorb water. When this occurs, the soils swell and exert pressure on the loads imposed on them. Expansive soils are not considered a problem in the Yucca Valley due to the relatively minor amount of clay in the soil. Based on the results of the laboratory testing of the on-site soils in the geotechnical report, the on-site soils are generally considered granular and non-expansive.

e) Per the geotechnical investigation, the subsurface soil conditions on site are generally underlain by Holocene to Pliocene aged alluvium with a thin veneer of topsoil. The top soil is generally loose silty sand to sandy silt with abundant roots and extends to a depth of 3 to 5 feet below ground surface. The alluvial soils below the upper 3 to 5 feet are generally damp to moist and consist of silty to well-graded sand. Based on results of field testing, the upper 5 to 8 feet below ground surface are generally loose to medium dense with approximately 77 to 80 percent relative compaction. The alluvial soils below a depth of 8 feet appear relatively denser.

A percolation feasibility report was performed by Leighton Consulting, Inc. to determine the feasibility of utilizing an on-site septic system/ leach field disposal system. The percolation testing included two shallow boring locations and one deep test pit. Based on the results of the study, the soils encountered were classified as silty sand. Groundwater was not reported in any of the test pits. The on-site soils are considered suitable, and able to support the septic system/leach field using a percolation rate of 3.2 MPI for the design criteria of the system.

MITIGATION MEASURES

GS-1 All project structures will meet applicable standards of the CBC, Structural Engineers Association of California, and recommendations from the geotechnical investigation report for the site.

GS-2 No structures intended for human occupancy (as defined by CCR, Section 3601) shall be located within the "structure setback zone" as defined in the Fault Evaluation Report, Geotechnical Map–Plate 1 dated 07/2011 by Leighton Consulting, Inc.

GS-3 The project shall be designed incorporating mitigating measures for site remediation for earthwork and foundation design as defined in Geotechnical Investigation Report by Leighton Consulting, Inc. dated July 13, 2011.

Level of Significance after Mitigation Measures: Less than Significant

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

a) An Air Quality and Greenhouse Gas Assessment was prepared for this project in September 2011 by Lilburn Corporation. The report is a study of the potential impacts the project may have on greenhouse gases. The assessment determined that the proposed project GHG emissions would be less than significant. The following discussion is taken from the report.

The proposed project consists of the construction of a replacement Animal Shelter on a 5 acre site. GHG emissions were estimated by the CalEEMod model based on the size and proposed use of the project. GHG emissions include Mobile (vehicle trips), Energy (generation and distribution of energy to the facility), Area (facility in use), Water (generation and distribution of water to the facility), and Waste (collecting and hauling waste to the landfill) emissions.

Gases that trap heat in the atmosphere are referred to as greenhouse gases (GHGs) because they capture heat radiated from the sun as it is reflected back into the atmosphere. The accumulation of GHGs has been implicated as a driving force for global climate change. The Town of Yucca Valley does not currently have any policies, regulations, significance thresholds or laws addressing climate change at this time. The MDAQMD does not have an adopted threshold of significance or guidance for evaluating GHGs. However, the MDAQMD allows the use of SCAQMD models and guidance documents as acceptable tools in addressing emissions of GHGs. Where SCAQMD is not the lead agency, they have not yet adopted CEQA GHG significance thresholds for new residential/commercial projects, but have proposed several draft thresholds. To assist in assessing the significance of GHG emissions from new residential/commercial development projects under CEQA, the SCAQMD has been working on developing thresholds. To achieve its policy objective of capturing 90% of GHG emissions from new residential/commercial projects and implementing a "fair share" approach to reducing emissions increases from each residential/commercial development sector, SCAQMD has proposed combining performance standards and screening thresholds. Based on a presentation given on September 28th, 2010 GHG CEQA Significance Working Group meeting, the last Working Group meeting prior to date of GHG assessment report by Lilburn for this project, SCAQMD staff proposed a draft threshold for 2020 of 4.8 MT/SP/YR (metric tons of CO_2EQ per service population per year) for mixed use developments. Since the goal of AB 32 is to return to 1990 GHG emission levels by 2020, the basis for this threshold is the statewide emission inventory for 1990 based on "land use" related sectors divided by the statewide service population. The SCAQMD also developed draft thresholds for commercial and residential projects where it is not the lead agency. The draft thresholds recommend a 3,000 $MTCO_2EQ$ per year screening threshold.

Proposed project GHG emissions for construction are shown in Table 5. An interim threshold of 3,000 $MTCO_2E$ per year has been adopted by SCAQMD as potentially significant to global warming. Based on this threshold, and modeling the construction activity schedule to 13 months or less, the construction of the project would not exceed significance thresholds.

Table 5
Greenhouse Gas Construction Emissions

Source/Phase	CO_2	CH_4	N_{2O}
Site Preparation	18.5	0.0	0.0
Grading	19.5	0.0	0.0
Building Construction	436.3	0.1	0.0
Paving	23.6	0.0	0.0
Architectural Coating	2.4	0.0	0.0
Totals Per Year **(lbs/day)**	500.3	0.1	0.0
TOTAL $MTCO_2e$	**500.0**		
Threshold	**3,000**		
Significant	**No**		

GHG operational emissions were estimated by the CalEEMod model based on the size and proposed use of the project. GHG operational emissions include Mobile (vehicle trips), Energy (generation and distribution of energy to the facility), Area (facility in use), water (generation and distribution of water to the facility), and Waste (collection and hauling waste to landfills) emissions.

Table 6
Greenhouse Gas Operational Emissions
"Tons Per Year"

Source/Phase	CO_2	CH_4	N_{2O}
Mobile	22	0.0	0.0
Energy	3	0.0	0.0
Area	0.0	0.0	0.0
Water	0.02	0.06	0.0
Water	33.5	2.0	0.0
TOTAL $MTCO_2e$	**101.8**		
Threshold	3,000		
Significant	**N/A**		

As shown in Table 6, operational emissions for GHG's for the proposed project would not exceed thresholds and result in a less than significant impact with respect to GHG emissions.

GHG emissions for both construction and operational emissions for the proposed project are significantly lower than thresholds and no mitigation measures are recommended.

Level of Significance after Mitigation Measures: Less than Significant

b) AB 32 is the State of California's primary GHG emissions current regulation. As previously discussed, SCAQMD guidance standards have been used in this analysis. The SCAQMD GHG significance threshold was designed to ensure compliance with AB 32 emissions reductions requirements. Therefore, if a project emits less than the draft significance threshold it can be assumed to comply with AB 32 within the SCAQMD jurisdiction.

In an effort to ensure the project will not have an impact on Greenhouse Gas emissions, the project will incorporate the following strategies.

MITIGATION MEASURES

GCC-1 The project shall minimize waste through construction practices and design features. At least 50% of construction generated waste will be recycled/reused.

GCC-2 The project shall incorporate at least 10 percent locally produced and/or manufactured building materials used for the project.

GCC-3 The project shall meet or exceed California Building Code's most recent Title 24 energy standards including: installing energy efficient lighting, installing light-colored "cool" roofing system, installing energy-efficient heating and cooling systems, increasing the R-Value of the insulation to ensure heat transfer and thermal bridging is minimized, limiting air leakage through structure, installing high-efficiency window assemblies.

Level of Significance after Mitigation Measures: Less than Significant

VIII. HAZARDS AND HAZARDOUS MATERIALS Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact	Source
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☐	☑	2, 3, 15, 16
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☐	☑	2, 3, 15, 16
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☑	2, 3, 15, 16
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☑	28
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☑	2, 3
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☑	2, 3

VIII. HAZARDS AND HAZARDOUS MATERIALS Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact	Source
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☑	3
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wild lands are adjacent to urbanized areas or where residences are intermixed with wild lands?	☐	☐	☑	☐	2, 3, 4

DISCUSSION

a-c) Policy 1 through 7 of the General Plan Hazardous and Toxic Materials Elements were adopted to reduce the potential safety risks associated with hazardous materials and urban development. Additionally, the disposal of all hazardous and/or toxic materials is required to be in compliance with Federal, State and County regulations. Activities associated with hazardous materials would also be subject to compliance with the San Bernardino County Hazardous Waste Management Plan (HWMP). The project does not involve the construction or operation of hazardous materials facilities. Construction activities would involve the standard use of fuels and lubricants for construction equipment, but would not be expected to utilize hazardous materials or generate hazardous waste. Therefore, the proposed project would not be expected to pose risk of accidental explosion or release of hazardous substances.

The proposed project will not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. The proposed project will not create hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste.

d) The Town has identified and listed hazardous materials sites within Town limits pursuant to Government Code Section 65962.5. There are no hazardous materials or wastes known to currently exist on the project property. The project would not create a significant hazard to the public or the environment as a result of being sited on a hazardous waste materials site. Impacts related to hazardous materials sites would be less than significant.

e-f) The Yucca Valley airport is located approximately three miles east of the Town of Yucca Valley. The project site is not within the Airport Influence Area and is not within the vicinity of any private airstrips. It is not anticipated that the Animal Shelter project will result in a safety hazard for people residing or working in the area.

g) The Town of Yucca Valley has an adopted Emergency Preparedness Plan which details planned responses in the event of a natural or man-made disaster. The objective is to coordinate all the facilities and personnel of the Town, county and other jurisdictions into an effective organization capable or responding effectively to any emergency. This plan establishes the emergency organization, assigns tasks, specifies general procedures, and provides for coordination of planning efforts of the various emergency staff and resources. Response plans are identified for specific hazards. Approval of the proposed project and the subsequent construction of the buildings and related improvements will not directly interfere with the Emergency Preparedness Plan or emergency response system.

h) The threat of fire exists in both developed and undeveloped regions of the Town of Yucca Valley. Fires in developed areas are usually building fires, rubbish fires and brush fires on vacant lots. Fires in

undeveloped areas include large brush fires and grass fires. A wild land fire's hazard potential is affected by fuel, climate and topography. The topographical influences related to wild land fires include percentage of slope, configuration and orientation. The steeper the slope, the greater the rate at which the fire spreads. Additionally, steep slopes contribute to the channeling effects of winds which spread fires more rapidly, while restricting the ability of fire fighters to respond.

The General Plan describes strategies for wild land fire protection that include coordination with the San Bernardino County Fire Department (SBCFD) and the California Department of Forestry to assure adequate levels of fire prevention services, construction materials standards, special on-site fire protection requirements for hilly sites, and fire safety education.

The proposed project construction shall comply with all municipal codes for new construction including the 2010 California Fire Code and Town amendments and building construction standards. Incorporation of the appropriate fire protection strategies would reduce the potential for fire hazards. New plantings will be reviewed by applicable agencies for appropriateness. The Animal Shelter building and covered areas will be built with a fire-retardant roof covering as defined in the CBC or some other similarly approved fire-retardant roofing material. There is one fire hydrant within 500 ft of the Animal Shelter and additional fire hydrant(s) will be provided as required by applicable codes to ensure proper suppression in the event of a fire.

Using proper prevention measures such as fire hydrants, sprinklers, fire access and construction per the 2010 California Fire Code, the replacement Animal Shelter will not expose people or structures to a significant risk of loss, injury or death involving wildland fires. The risks to people and buildings associated with hazards and hazardous materials are less than significant with application of appropriate mitigation.

MITIGATION MEASURES

HAZ-1 Project structures will meet applicable standards of the CBC, Structural Engineers Association of California, Town of Yucca Valley Building Code, and will comply with all municipal codes for new construction including the 2010 California Fire Code and Town amendments and building construction standards and SBCFD general requirements.

HAZ-2 Recommendations set forth in the Fault Evaluation Report and Geotechnical Exploration Reports provided by Leighton Consulting, Inc. for the Animal Shelter project shall be incorporated into the design and construction phases of development.

HAZ-3 In the event malodorous or discolored soils, liquids, containers, or other materials known or suspected to contain hazardous materials and/or contaminants are encountered during project grading and/or construction, earthmoving activities in the vicinity of said material shall be halted until the extent and nature of the suspect material is determined by qualified personnel and in consultation with appropriate Town staff. The removal and/or disposal of any such contaminants shall be in accordance with all applicable local, State, and Federal standards to the degree that adequate public health and safety standards are maintained, to the satisfaction of the Town.

Level of Significance after Mitigation Measures: Less than Significant

IX. HYDROLOGY AND WATER QUALITY Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact	Source
a) Violate any water quality standards or waste discharge requirements?	☐	☐	☑	☐	3

IX. HYDROLOGY AND WATER QUALITY Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact	Source
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☑	☐	2
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	☐	☐	☑	☐	3, 14, 15, 17, 18, 29, 33
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	☐	☐	☑	☐	3, 7, 15, 17, 18, 29
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☑	☐	☐	3, 7, 12, 29
f) Otherwise substantially degrade water quality?	☐	☐	☑	☐	23
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☑	30, 34
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☐	☑	3, 30
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☑	☐	3, 10, 30
j) Inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☑	3

DISCUSSION

a, f) The State Water Resources Control Board (SWRCB) and the nine RWQCBs are responsible for the protection and enhancement of the quality of California's waters. The SWRCB sets statewide policy and, together with the RWQCBs, implements state and federal laws and regulations. Water quality for all surface water and groundwater for the Town of Yucca Valley is regulated under the jurisdiction of the Colorado River Basin RWQCB.

Currently, the Town of Yucca Valley does not have specific standards for water quality. TE standards for water quality are established by the Water Quality Control Plan for the Colorado River Basin. During construction, the project would be required to obtain coverage under the State's National Pollutant Discharge Elimination System (NPDES) General Permit for Construction Activities and General Permit for Discharges of Stormwater Runoff Associated with Construction Activity. The Animal Shelter project will include the preparation and implementation of a stormwater pollution prevention plan (SWPPP) to meet the requirements of the General Permit. The implementation of BMPs, as described in the California Stormwater Quality Association Construction Handbook (CASQA Handbook), are required both during and after construction in order to reduce or eliminate adverse water quality impacts resulting from development.

The proposed project construction will comply with all applicable federal, state, and local water quality regulations. A new detention basin will serve to effectively treat pollutants associated with run-off from the new parking lot and site development. The facility will be served by an on-site septic and leach field system design to accommodate the project and meet all applicable codes and standards. The project will not violate water quality standards or waste discharge requirements, nor will it substantially degrade water quality.

b) The source of water supply for the Town of Yucca Valley is the Warren Valley Groundwater Basin (WVGB) which is recharged by the Morongo Basin Pipeline. The General Plan EIR determined sufficient water resources exist for residential and commercial land development without the use of additional water resources.

The project does not include new wells or other means of extracting ground water supplies. The development of the facility will result in increased use, but it is not expected to result in a depletion of groundwater resources.

c-e) There is a USGS-designated intermittent blue line stream passing roughly east to west through the center of the site. The site drains to a low point of the site where the streambed intersects Malin Way. The proposed development of the site is located on the northern, relatively flat portion of the site. Any alteration or impact to the existing stream bed must be approved by the California Department of Fish and Game through a Streambed Alteration Agreement.

The proposed project shows the closest point of development to the managed flood plain of the intermittent stream bed to be 30 feet. Any construction activity must be kept clear of the intermittent stream bed with a designated buffer zone. The distance of the development from the streambed will provide an adequate buffer zone to protect the stream.

The Town of Yucca Valley, Master Plan of Drainage designates the intermittent stream as a Regional Facility. The MPD calls for a 50' wide, 3' deep managed flood plain at the intermittent stream.

After the site has been graded to accommodate the development curbs, gutters, and retention basin will be installed to accommodate the drainage. The retention basin will be designed to hold the developments incremental increase plus 10%. A final Hydrology study will be completed in conjunction with the grading plan which the Town Engineer will review and approve.

The new parking lot and paved areas will result in an increase of 0.8 acres of impervious surface; this new pavement will alter site drainage and increase the rate or amount of surface runoff by less than 1

cubic feet per second (cfs) (100-year storm frequency). The parking lot construction includes the addition of a retention basin within the area to the south to prevent flooding and protect water quality. The detention basin will be approximately 1,430 cubic feet (ft^3), which will be sufficient to contain the predicted increased runoff. The increase in srface runoff will be less than significant with mitigation incorporation of the proposed retention basin. The potential for this project to create a condition that would exceed the capacity of downstream stormwater drainage systems or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site is considered a less-than-significant impact.

g-j) The project does not include housing construction. The project is in Zone X of the FEMA Flood Maps and is not within a 100 year flood zone. There is a blue line stream which traverses the site. It is designated as part of the Yucca Valley Master Plan of Drainage as a regional facility and requires a 50' wide, 3' deep managed flood plain. The developed portion of the site will maintain a minimum buffer from the stream of 30 feet. The project site is not subject to inundation by seiche, tsunami, or mudflow, and there are no nearby dams.

The proposed buildings, and parking will not be constructed in locations where they will impede or redirect flood flows. Grading Plan, Drainage Plan, and Storm Drain Plan will be prepared to reflect designs to prevent flood damage to structures. Design measures will be consistent with the intent of those promulgated under the National Flood Insurance Program. Because mitigation measures will be incorporated, the project will not expose people or structures to a significant risk of loss, injury or death involving flooding.

MITIGATION MEASURES

HYD-1 Prior to the first issuance of a grading permit by the Town, the project proponent shall file a Notice of Intent (NOI) with the Colorado River Regional Water Quality Control Board to be covered under the State National Pollutant Discharge Elimination System (NPDES) General Construction Permit for discharge of stormwater associated with demolition and construction activities.

HYD-2 Prior to the first issuance of a grading permit by the Town, the project applicant shall submit to and receive approval from the Town of Yucca Valley a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP shall include a surface water control plan and erosion control plan citing specific measures to control onsite and off-site erosion during the entire grading and construction period. In addition, the SWPPP shall emphasize structural and nonstructural best management practices (BMPs) to control sediment and non-visible discharges from the site. Some of the BMPs to be implemented may include (but shall not be limited to) the following:

- Sediment discharges from the site may be controlled by the following: necessary), and other discharge control devices. The construction and condition of the BMPs would be periodically inspected during construction, and repairs would be made when necessary as required by the SWPPP.

- All materials that have the potential to contribute non-visible pollutants to stormwater must not be placed in drainage ways and must be contained, elevated, and placed in temporary storage containment areas.

- All loose piles of soil, silt, clay, sand, debris, and other earthen material shall be protected in a reasonable manner to eliminate any discharge from the site. Stockpiles would be surrounded by silt fences and covered with plastic tarps.

- The SWPPP would include inspection forms for routine monitoring of the site during the construction phase to ensure NPDES compliance.

- Additional BMPs and erosion control measures would be documented in the SWPPP and utilized if necessary.

- The SWPPP would be kept on site for the entire duration of project construction and will also be available to the local RWQCB for inspection at any time.

HYD-3 The Construction Contractor shall be responsible for performing and documenting the application of BMPs identified in the SWPPP. Weekly inspections shall be performed on sediment control measures called for in the SWPPP. Monthly reports shall be maintained by the Contractor and available for Town inspection. In addition, the Contractor would also be required to maintain an inspection log and have the log on site available for review by the Town of Yucca Valley and the representatives of the Regional Water Quality Control Board.

HYD-4 The following is a selection of BMP's which should be utilized in order of preference:

1) BMP's that promote storm water infiltration.
2) BMP's that store and beneficially use storm water runoff.
3) BMP's that utilize the runoff for other water conservation uses including but not limited to:
    a) BMP's that incorporate vegetation to promote pollutant removal and runoff volume reduction and to integrate multiple uses; and
    b) BMP's that percolate runoff through engineered soil and allow it to discharge downstream slowly.

HYD-5 The following source control and BMP measures should be applied as applicable to the project site:

1) The incorporation of vegetated swales and landscaped buffer strips throughout the site.
2) Development and implementation of a street sweeping and catch basin cleaning program.
3) Use of native and/or non-invasive vegetation in landscaped areas.
4) Development and implementation of an Integrated Pest Management (IPM) Program for common area landscaping in multifamily residential areas.
5) Development and implementation of an educational program that provides information to residents on water quality issues including:
    a) The use of chemicals (including household type) that should be limited to the property, with no discharge of specified wastes via hosing or other direct discharge to gutters, catch basins, and storm drains;
    b) The proper handling of material such as fertilizers, pesticides, cleaning solutions, paint products, automotive products, and swimming pool chemicals; and
    c) The environmental and legal impacts of illegal dumping of harmful substances into storm drains and sewers.

HYD-6 Applicable Town codes and BMPs specified in the CASQA Handbook will be implemented for grading and erosion control. Other measures, such as siltation fences and filtering dewatering discharges through sediment traps, will be used as necessary to prevent sediment runoff. Areas of ground disturbance will be landscaped as soon as possible to reduce soil loss and sediment runoff.

HYD-7 Project design will include measures for preventing flood damage to structures. Grading Plan, Drainage Plan, and Storm Drain Plan will reflect designs to prevent flood damage to structures.

HYD-8 Project development and any construction activity must maintain a buffer zone of 30' minimum from the existing intermittent stream bed. A 50' wide, 3' deep managed flood plain will be sustained at the location of the existing intermittent stream.

HYD-9 The retention basin will be designed to hold the development's incremental increase plus 10% minimum

Level of Significance after Mitigation Measures: Less than Significant

X. LAND USE AND PLANNING Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact	Source
a) Physically divide an established community?	☐	☐	☐	☑	3, 4, 5
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☑	3, 4, 5
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☑	2

DISCUSSION

a-b) The project site is designated as Rural Living, Single Family Residential 5 acre minimum (RL-5). The Land Use Element for the General Plan intends this designation to provide "intermediate steps in development density between the more typical urban residential densities and "reserve" densities, providing lots sufficient for rural lifestyle, animal keeping and country living". The existing animal shelter is located on the lot directly to the north of the project site and the lot directly to its' east is zoned Industrial, while the majority of remaining lots in the area are zoned Rural Living, 5 acre minimum, which are developed with single family residences or undeveloped. The rural Living, 5 acre minimum land use district permits commercial kennels and catteries on minimum 2 acre lots, subject to the review and approval of a Conditional Use Permit. The Development Code, Ordinance 211 section 84.0401(a) allows for publicly owned or leased government facilities, such as animal shelters to be constructed in any land use district subject to a Conditional Use Permit process. The proposed development would neither disrupt nor violate any applicable land use plan, policy, or regulation.

c) The project would not conflict with any applicable habitat conservation plan or natural community conservation plan as there is no plan in place for the project site. In the absence of an applicable habitat conservation plan, the project would not result in any conflicts and no mitigation is required. The proposed project is consistent with the Town of Yucca Valley General Plan. See Biological Resources for mitigations relative to plant and wildlife communities.

Level of Significance: No impact

XI. MINERAL RESOURCES Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact	Source

XI. MINERAL RESOURCES Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact	Source
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☑	3, 5,13
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☑	3, 4, 5, 13

DISCUSSION

a-b) Within the Town of Yucca Valley, there are relatively few mineral resources, as the majority of the area is made up of alluvial fans, consisting of sand, silty sands, gravel and traces of clay. The project site is not designated as containing mineral resources and the geotechnical investigation verified the composition of the on-site soils as older alluvial on the northern portion and weathered grand diorite rock capped by Tertiary-aged volcanic basalt on the southern portion. The proposed project would not result in the loss of availability of known mineral resources and no mitigation is required.

The proposed project will not result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state. The proposed project will not result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan and no mitigation is required.

Level of Significance: No impact

XII. NOISE Would the project result in:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact	Source
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☑	☐	3, 4
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☐	☑	13, 14
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☑	☐	3, 4
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☑	☐	3, 4

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☑	5
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☑	5, 17

DISCUSSION

a, c, d) In close proximity to the site (within one half mile), sensitive noise receptors include three single family residences. Development Code Section 87.0905(b), states that noise levels in residential areas shall not exceed 55 dBA at any time. (The standard used for maximum outdoor noise levels in residential areas in California and the Town specifically is a Community Noise Equivalency Level (CNEL) of 65 dBA. These noise impacts are characteristically "unmitigated" and represent the worst-case noise impact without any obstruction.

Community noise generation includes that associated with construction activities. Proosed project construction will result in intermittent, short-term noise impacts resulting from construction-related activities. Construction-related activities associated with the proposed project include excavating, grading, and general building construction. Construction-related activities would be limited to the day-time hours; however, the proposed development would be required to comply with the Town of Yucca Valley's Noise Ordinance. After completion of construction activities, ambient noise levels would return to approximate existing levels.

The existing noise environment in the vicinity of the Project is dominated by noise from local street traffic, which is minimal, and the existing Animal Shelter located directly to the north of the project site. Facility-generated noise is expected to be at or below currently prevailing noise levels. Noise from animals housed in the facility is expected to be sufficiently reduced by the building shell such that there will be no increase in the ambient noise levels in the vicinity of the project. The only significant source of animal noise will be dogs in the outdoor exercise areas, adoption yards and outdoor portion of their kennels. The dogs are fed indoors and are able to use the outdoor portion of their kennel at scheduled times.

Dog barking is typically initiated by the animal's exposure to a sensory stimulate, such as, people or other animals walking by their enclosure. The kennels are arranged so as to minimize the public's interaction with animals in exterior spaces, except in the adoption area. The viewing areas for dogs will occur within the building when the dogs are in the indoor portion of their kennels. When someone wants to get better acquainted with the animal, they are led to the adoption area, which is located between the buildings in a courtyard arrangement. Low, solid site walls will be installed to screen the outdoor kennel area from the adoption areas to minimize interaction with dogs, thus minimizing barking. Dogs will be supervised in adoption areas and any dogs barking excessively will be taken inside the facility.

In summary, the proposed project will not expose persons to or generate noise levels in excess of standards established in the Town's General Plan and Ordinances. The project construction and operation will create temporary, periodic increases in ambient noise levels in the vicinity as compared to current noise levels. Construction noise will be a one-time event and ambient noise levels will return to existing conditions. The project construction and operation will not create a substantial permanent increase in ambient noise levels in the vicinity as compared to current noise levels occurring at the existing animal shelter.

b) There will be no underground mining or blasting associated with project construction. The proposed project will not expose persons to or generate excessive ground-borne vibration or ground-borne noise levels.

e-f) The project is not located near an airport of private airstrip and no airborne noise associated with aircraft is anticipated.

MITIGATION MEASURES

N-1 Construction stockpiling, equipment storage and maintenance shall occur at the western boundary of the site, near the intersection of Golden Bee and Church Street.

N-2 All grading equipment shall be mufflered and properly maintained throughout construction of the project.

N-3 Grading and construction activities shall be limited to those hours prescribed in the Municipal Code.

Level of Significance after Mitigation Measures: Less than Significant

XIII. POPULATION AND HOUSING Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact	Source
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☑	14, 16
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☑	14, 16
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☑	14, 16

DISCUSSION

a) The project would not substantially affect population growth or exceed regional or local population projections due to the fact that no housing is proposed as part of the project.

b-c) The project would not induce growth, nor would it displace any housing development.

Level of Significance: No impact

XIV. PUBLIC SERVICES

Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact	Source
a) Fire protection?	☐	☐	☐	☑	3, 14
b) Police protection?	☐	☐	☐	☑	3, 14
c) Schools?	☐	☐	☐	☑	3, 14
d) Parks?	☐	☐	☐	☑	3, 14
e) Other public facilities?	☐	☐	☐	☑	3, 14

DISCUSSION

a-e) The replacement Animal Shelter is not anticipated to induce new growth in the Town of Yucca Valley. Therefore the project is not expected to impact existing public services. The project will not result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the Town's public services.

Level of Significance: No impact

XV. RECREATION Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact	Source
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☑	16
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☑	3

DISCUSSION

a-b) The proposed project. will not result in substantial population growth which would contribute to increased use of existing neighborhood and regional park facilities.

Level of Significance: No impact

XVI. TRANSPORTATION / TRAFFIC Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact	Source
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☐	☑	☐	17
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☐	☐	☑	☐	17
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that result in substantial safety risks?	☐	☐	☐	☑	14
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☑	14
e) Result in inadequate emergency access?	☐	☐	☐	☑	14
f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities	☐	☐	☐	☑	3

DISCUSSION

a-b) The proposed project would incrementally increase vehicle trips during construction. Malin Way has been previously improved from Skyline Ranch Road north to the intersection with Paseo Los Ninos. Paseo Los Ninos will be improved to a modified local street including widening and curbs and gutters along the frontage of the project. There would need to be alternate access provided during construction for residences that use Paseo Los Ninos as their only means of access to their properties. There is one residence that would be impacted. With the exception of this, the surrounding neighborhood would

experience little or no impact from construction-related activities. The proposed project would not create transportation and circulation hazards, barriers or hazards for pedestrians or bicyclists; or result in inadequate emergency access or access to nearby uses as construction activities occur.

The proposed project is not expected to significantly increase traffic in relation to xisting traffic loads. Traffic related to animal shelter activities is not expected to change from what serves the existing animal shelter facility located directly to the north of the proposed project.

c) Constructed features at the Animal Shelter will not exceed height restrictions established by the Federal Aviation Administration (FAA) and the project is not within an Airport Influence Area. The proposed project will not result in a change in air traffic patterns.

d) The proposed project will not take place in a traffic circulation area. The project will not increase hazards due to design features.

e) The proposed project will not be constructed in a way to interfere with emergency access. Service roads leading to the Animal Shelter will be sufficient to support emergency vehicles including police vehicles, ambulances, and fire trucks. Nor will it interfere with emergency access anywhere else as it is not located in a traffic circulation area.

f) The proposed project includes a new parking facility for on-site parking. The proposed project will not result in inadequate parking capacity.

g) The proposed project would not conflict with Town policies, plans, or programs to support alternative modes of transportation.

Level of Significance: Less than Significant

XVII. UTILITIES AND SERVICE SYSTEMS Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact	Source
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☑	☐	3, 29
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☑	☐	3, 29
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☑	☐	7, 23
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	☑	3

XVII. UTILITIES AND SERVICE SYSTEMS Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact	Source
e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☑	☐	3, 29
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☑	☐	3
g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☑	3, 4

DISCUSSION

a, b, e) The Town of Yucca Valley is not served by a centralized wastewater collection system at this time. The California Regional Water Quality Board, Colorado River Region establishes requirements for waste discharge for project within the Town of Yucca Valley. It is anticipated that the project would be required to submit a waste discharge report application to the Board for approval. The project must conform to the requirements of the California Regional Water Quality Board, Colorado River Region, and therefore, no mitigation is required.

c) The proposed project includes 38,693 s.f. of new impervious surface associated with a new parking lot, walkways and building. These features will necessitate the construction of a new storm water detention basin. The detention basin will be constructed using BMPs as described in the CSWQ Handbook. The detention basin will be a rectangular section and will be located at the eastern portion of the site, south of the large animal outdoor area, north of the intermittent stream. The detention basin will be constructed to prevent environmental impacts.

d) The proposed project will have sufficient water supplies available to serve the poject from existing entitlements and resources.

f) Solid waste generated in the Town of Yucca Valley is taken by Burrtec to the Landers Landfill for disposal. The Landers Landfill is owned by the County of San Bernardino. The proposed project will be served by Burrtec and no mitigation is required.

g) The proposed project construction and operations will comply with all applicable federal, state, and local statutes and regulations related to solid waste.

MITIGATION MEASURES

USS-1 A stormwater detention basin will be constructed as part of the project. No new run-off will occur as a result of the proposed project.

Level of Significance after Mitigation Measures: Less than Significant

XVIII. MANDATORY FINDINGS OF SIGNIFICANCE Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact	Source
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☐	☑	☐	3, 19, 25, 26, 27, 29
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☐	☑	☐	4, 19, 27, 29
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☑	☐	

DISCUSSION

The following potentially significant impacts have been mitigated to a level less than significant with application of the identified mitigation measures:

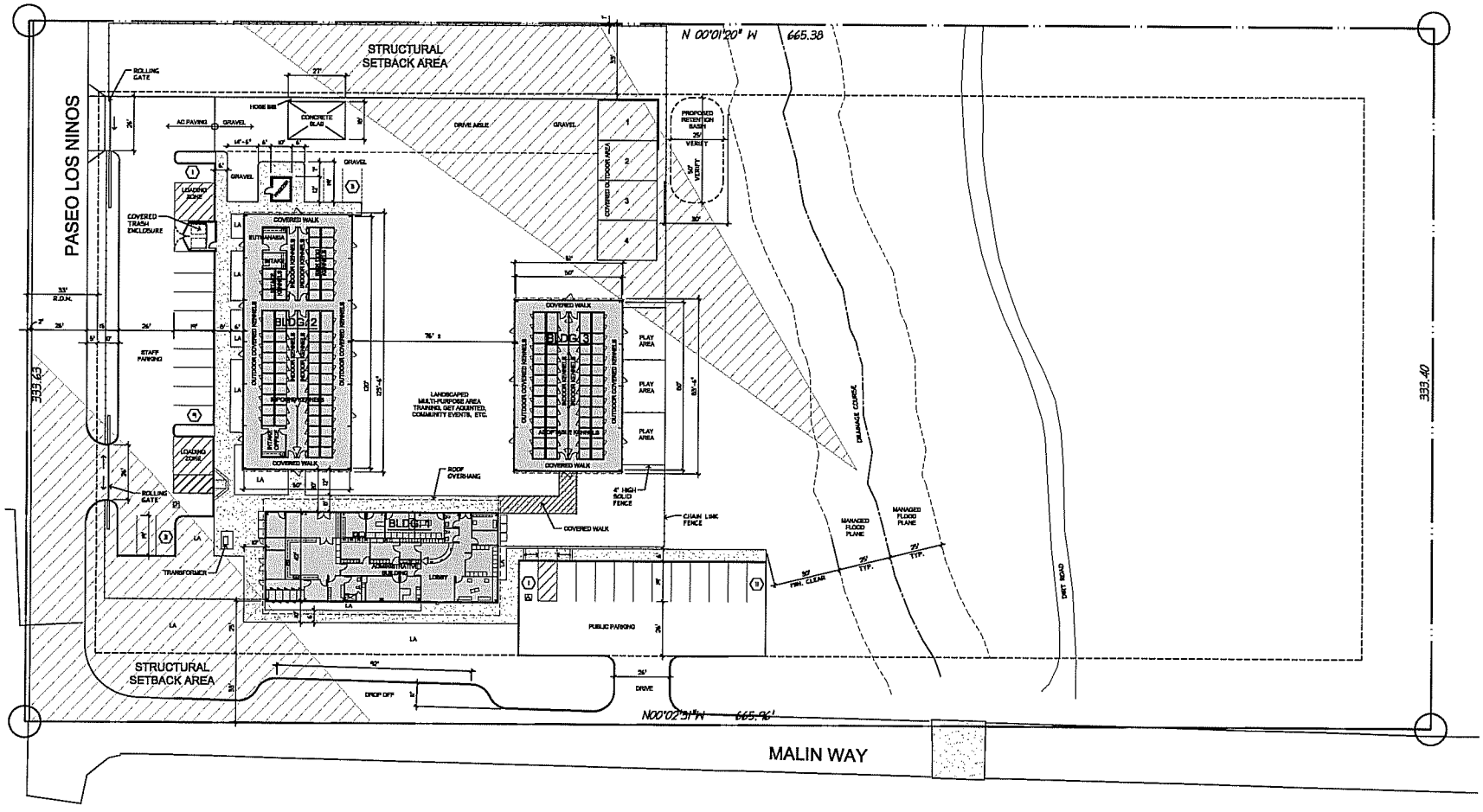
Aesthetics - Mitigation Measures A -1, A-2, and A-3.

Air Quality - Mitigation Measures AQ-1, AQ-2, AQ-3.

Biological Resources - Mitigation Measures BR-1, Br-2, Br-3, Br-4, BR-5.

Geology – Mitigation Measures GS-1, GS-2, GS-3.

With incorporation of the these Mitigation Measures the project's impacts, individually and cumulatively, will be less than significant .



GOVERNMENT LOT 104
RL-5 ZONE

N

0 10' 20' 40'

SCALE: 1" = 20'-0"

REVISIONS △ PRINTS ISSUED ○

NO.	BY	DATE	DESCRIPTION

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CONSULTANT

Williams Architects, Inc.
Architect: Mel E. Williams, AIA, NCP (24402)
276 North Second Avenue
Upland, California 91786-6002
909-981-5168 Fax 909-981-7207

PROJECT
TUCCA VALLEY ANIMAL SHELTER
—

OWNER
ANIMAL CARE JOINT POWERS AUTHORITY
—

DRAWING CONTENTS
CONCEPT SITE DIAGRAM
ALT 12

DRAWN BY: LTB — DATE: 09-20-11
CHECKED BY: MEW/MRG — DATE: 09-20-11
JOB NO.: 09-001-01-11
DRAWING NUMBER
CA-1
OF DRAWINGS

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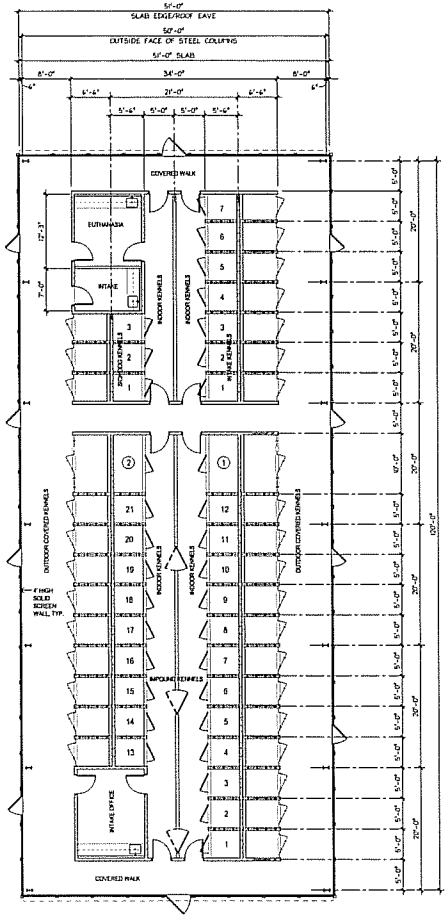
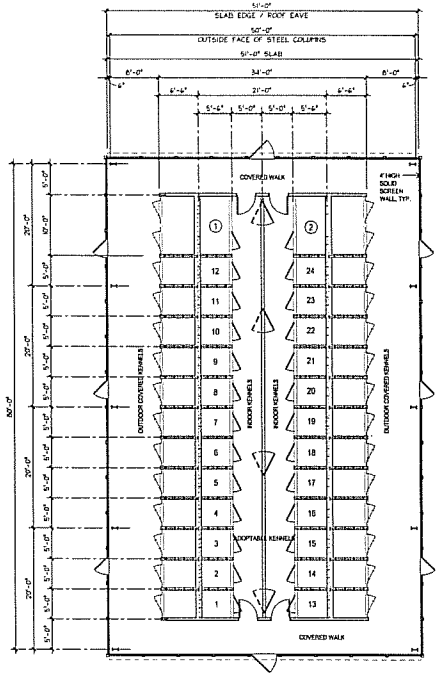


FLOOR PLAN - IMPOUND KENNELS - BUILDING 2 1/8" = 1'-0" (3)



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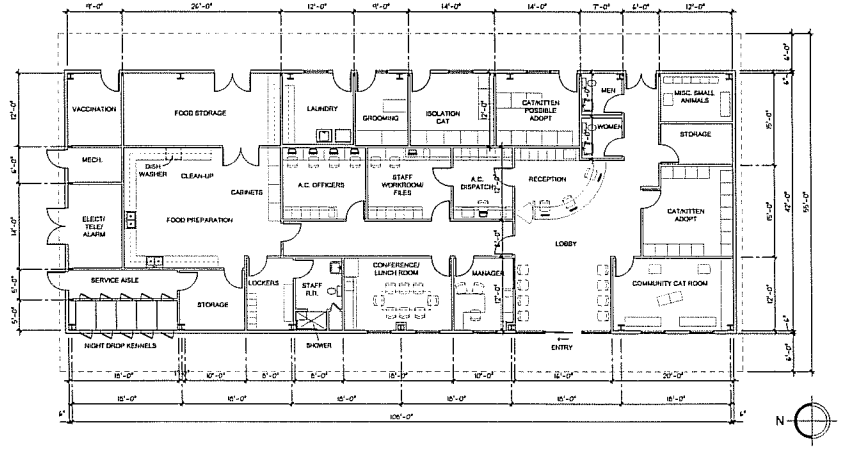

FLOOR PLAN - ADMINISTRATION - BUILDING 1 1/8" = 1'-0" (1)

SCALE: 1/8" = 1'-0"

REVISIONS			
NO.	BY	DATE	DESCRIPTION

PRINTS ISSUED

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CONSULTANT

Williams Architects, Inc.
Architect: Max E. Williams, AIA, AICP (C-8402)
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wmoffice@mepway.net

PROJECT
YUCCA VELLEY ANIMAL SHELTER
--
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OWNER
ANIMAL CARE JOINT POWERS AUTHORITY
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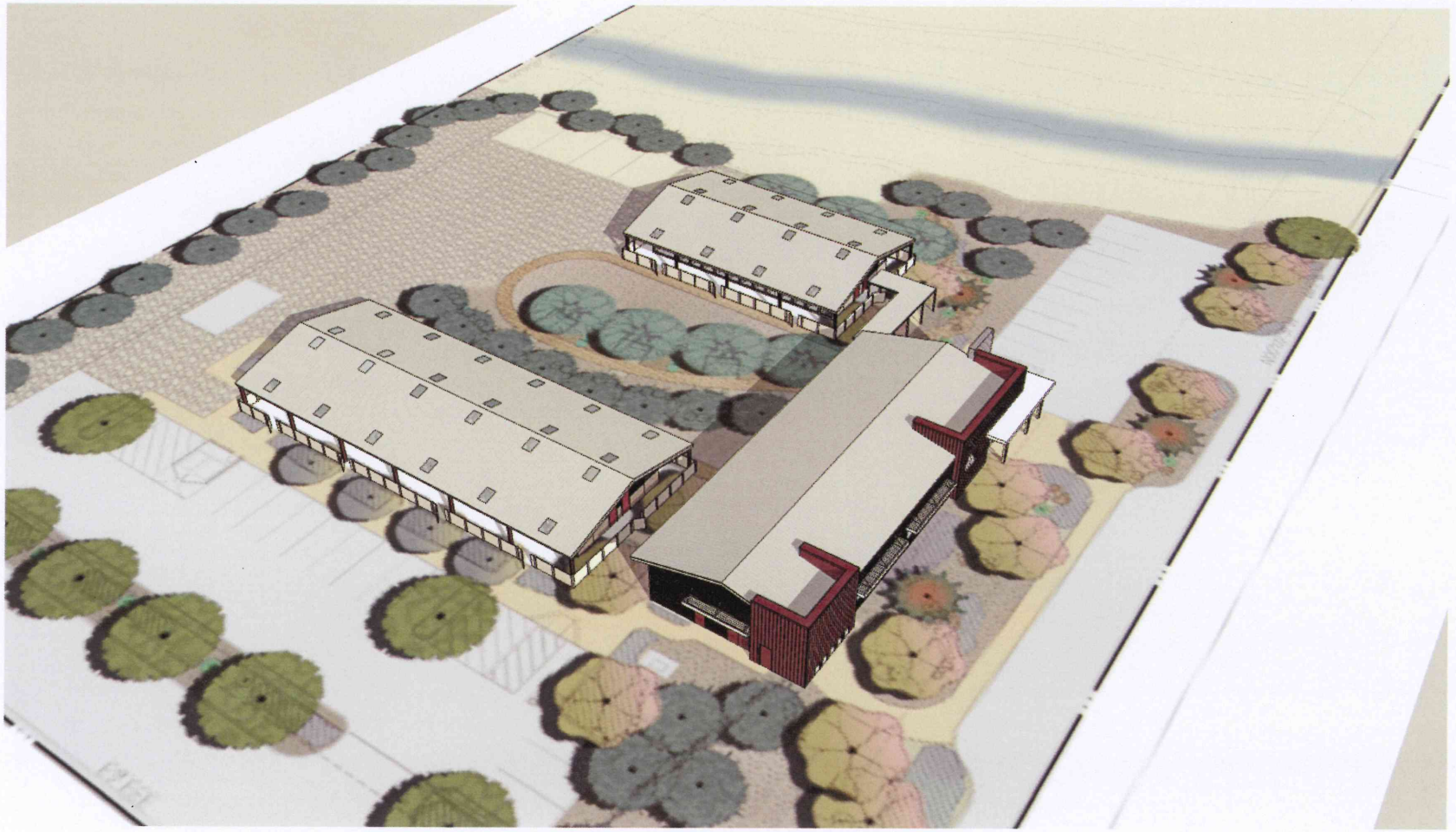
DRAWING CONTENTS
CONCEPT FLOOR PLANS

DRAWN BY LSW
CHECKED BY MEW
DATE 09-20-11
DATE 09-20-11
JOB NO. 08-001-01-R
DRAWING NUMBER
CA-2
OF DRAWINGS


OCCAVALLEY ANIMAL SHELTER



YUCCA VALLEY ANIMAL SHELTER IMAGE BOARD

WILLIAMS ARCHITECTS, Inc.
276 N. Second Avenue
Upland, CA 91786
(909) 981-5188

FAULT INVESTIGATION REPORT
PROPOSED YUCCA VALLEY ANIMAL SHELTER
TOWN OF YUCCA VALLEY, CALIFORNIA

Prepared For:

Williams Architects, Inc
276 North Second Avenue
Upland, California 91786

Project No. 603176-002

July 13, 2011

Leighton Consulting, Inc.
A LEIGHTON GROUP COMPANY

Leighton Consulting, Inc.
A LEIGHTON GROUP COMPANY

July 13, 2011

Project No. 603176-002

To: Williams Architects, Inc.
276 North Second Avenue
Upland, California 91786

Attention: Ms. Rene' Glynn, Vice President

Subject: Fault Investigation Report, Proposed Yucca Valley Animal Shelter, Yucca Valley, California

In accordance with your request and authorization, Leighton Consulting, Inc. (Leighton) has completed a fault investigation for the proposed Yucca Valley Animal Shelter located at the southeast corner of Malin Way and Paseo Los Ninos in the Town of Yucca Valley; see the *Site Location Map* (Figure 1). This property is immediately south of the existing animal shelter facility at 56460 Paseo Los Ninos, Yucca Valley, California.

The subject property is partially located within a State of California Alquist-Priolo Earthquake Fault Hazard Zone (Bryant, 2007), see Figure 3. The purpose of this investigation was to evaluate the potential for surface earthquake fault rupture within the property. To evaluate the fault rupture hazard we excavated an approximately 275-foot long by 10-to 15-foot deep exploratory fault trench across the property (see Geologic Map, Plate 1). Based on our study, active faulting was not encountered within the exploratory trench. However, two ground fractures/faults associated with the June 28, 1992 Landers Earthquake, have been mapped by the California Geologic Survey (Bryant, 1992) within and adjacent to the northwest corner of the property (See Figure 4). Based on our findings and meeting with the San Bernardino County Geologist Mr. Wes Reeder, a structural setback zone has been recommended based on the location of adjacent mapped faults (see *Geotechnical Map*, Plate 1). This report summarizes the findings, conclusions, and recommendations for our Fault Investigation for the subject property.

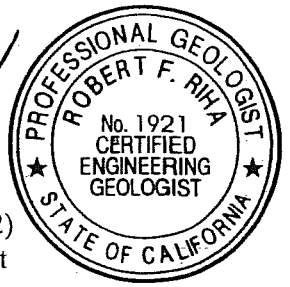
We appreciate this opportunity to be of service to Williams Architects. If you have any questions regarding this report, please contact the undersigned.

Respectfully submitted,

LEIGHTON CONSULTING, INC.

Jeff Deland
Staff Geologist

Robert F. Riha
CEG 1921 (Exp. 02/29/12)
Senior Principal Geologist



JTD/RFR/dlm

Distribution: (3) Addressee, plus CD

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Figures

Plates

Appendices

1.0 INTRODUCTION

This report presents the findings of our fault investigation for the proposed animal shelter facilities in the Town of Yucca Valley, California. The primary purpose of this investigation was to determine the suitability of the site for development from the standpoint of potential surface fault rupture. The exploratory trench excavation FT-1 (this study) was reviewed by the San Bernardino County Geologist, Mr. Wes Reeder, on June 28, 2011 under contract review for the Town of Yucca Valley.

1.1 Scope of Services

Our scope of services for this investigation included the following items:

- Site reconnaissance to observe and document the current surface conditions and geomorphology of the subject site and adjacent areas with respect to the mapped trace of the southern Johnson Valley Fault rupture from the 1992 Landers earthquake;
- Locate and prepare trench dimensions for habitat review and coordination with project biologist/botanist;
- Coordination and direction of trench excavation location based on provided site ALTA survey and site plan and CGS documents (see references);
- Excavation, logging/mapping, and review with San Bernardino County Geologist our exploratory trench FT-1, The trench location is shown on the Geologic Map, Plate 1, the trench log is provided as Plate 2;
- Analysis and review of encountered geologic conditions including, stratified deposits, soils, and features and the determination of past ground rupture within the encountered deposits;
- Preparation of this report, presenting our findings, conclusions and recommendations regarding onsite development.

1.2 Subsurface Field Investigation

Fault trench FT-1 was excavated on June 20 to June 27, 2011 utilizing rubber tired back-hoe with a 3 foot wide bucket. The 275-foot long, 10-to 15-foot deep trench was excavated with 3 to 4 foot wide benches in general accordance with CALOSHA requirements. After excavation, the north trench wall was manually scraped and cleaned to allow to remove "smear" caused by the excavation process and to allow a clear view of the soils and structure

exposed. The relative trench location was determined by tape measure from survey control locations at both the north and east property corners. Additionally, survey control was provided along the western property boundary (delineated within the currently paved Malin Way) and the eastern property boundary with incremental iron posts. Station numbers were marked along the length of the trench using measuring tape, survey lath and spray paint. The trench location is plotted on the accompanying Geologic Map (Plate 1). This map is based on the provided 40-scale ALTA/ACSM Land Survey plan prepared by Kelsoe and Associates, Inc. (Kelsoe, 2011).

Materials encountered in the trench are described and illustrated at a scale of 1 inch equals 5 feet on the Trench Log for FT-1 (Plate 2). Field review and logging of the trench was conducted by a Certified Engineering Geologist from this firm and reviewed by Mr. Reeder on June 28, 2011. This trench was subsequently backfilled with loose soils utilizing skip loader / backhoe and water truck for dust control.

The depth of Trench FT-1 was based on the observed thickness of Holocene-age deposits. Leighton's soil-stratigraphic age assessment suggests buried deposits at the approximately 8-to 10-foot depth are most likely Late Pleistocene in age based on carbonate development combined with the weathering and severe grussification of diorite cobbles contained in the lower unit of alluvium.

1.3 Background and Previous Studies

Surface rupture associated with the Landers earthquake of June 28, 1992 propagated from near the town of Yucca Valley northward, for a total distance of approximately 53 miles, (83 kilometers, SCEC, 2007). Faulting occurred principally across the southern Johnson Valley, Kickapoo and Homestead Valley faults, all part of the eastern California shear zone. Based on studies by Rockwell (Rockwell, 2000) earthquake activity prior to the 1992 event causing ground rupture occurred in the early (8-9ka) to middle (5-6ka) Holocene and possibly latest Pleistocene (~15ka). The property is located at the southern end of a westerly splay of the southern Johnson Valley fault segment (See Figures 3 and 4). The State of California Alquist-Priolo Earthquake Fault Zone (EFZ) has been established along this fault and the property for the proposed animal shelter is located within this EFZ (see figure 3).

Previous studies and mapping completed near this site were reviewed in terms of faulting within the vicinity of the subject site (Bryant, 1992, Murbach, 1994, Rockwell, 2000). The current geologic investigation has utilized standardized methodologies (trenching) for investigating suspected fault splays of the Landers earthquake/Johnson Valley Fault.

Mapping notes of the local surface trace for the southern Johnson Valley Fault rupture from the 1992 Landers earthquake were provided by California Geological Survey (Bryant, 1992). The 1992 ground surface fault rupture was mapped near the northwest corner of the subject property (Figures 3 and 4). However, the notes described the observed features as "shaking cracking", without apparent significant vertical or lateral displacement (Bryant, 1992 Fig. 3a). The nearest documented displacement to the property is located approximately 500 feet northeast of the site where approximately 1-2 cm of extension cracking was noted and at 700 feet northeast, 12 cm of right lateral displacement of a fence was mapped (Figure 4). Maximum lateral displacement along the southern Johnson Valley fault during the Landers earthquake was reported to be roughly 2.9 m, right-lateral at the Hondo Road site approximately 6 miles north of the site. Vertical displacement of up to 40 cm, down to the west, was also reported (Rockwell, 2000).

2.0 SUMMARY OF GEOTECHNICAL FINDINGS

2.1 Proposed Development and Site Description

It is our understanding that the property is to be developed with a community animal shelter facility, parking, associated utilities and street improvements as indicated on the site plans (dated April 28, 2011) provided by your office. We understand the structure will be of steel frame construction with slab on grade flooring and conventional foundation systems. Conventional cut and fill grading is anticipated to create the desired building pad and surrounding parking and access.

2.2 Geologic Units

The project site is generally underlain by Holocene to Pliocene aged alluvium (See Figure 2) with a thin veneer of topsoil. The southerly elevated portion of the site is underlain by highly weathered granodiorite rock and capped by Tertiary-aged volcanic basalt. The units encountered during this trenching study are discussed in the following sections in order of increasing age. Detailed unit descriptions are included in the Log of Trench FT-1 (Plate 2).

2.2.1 Topsoil (not a mapped unit)

A relatively thin veneer of topsoil was encountered near the ground surface within the excavation. The topsoil was on the order of 1 to 3 feet thick, generally loose to locally medium dense, dry, silty sand to sandy silt and contained abundant roots.

2.2.2 Alluvium

Alluvial soil was encountered to the full depth explored. Two predominant alluvial sequences were observed with distinct pedogenic soils which, based on degree of development of the lower units, provide a record of at least several tens of thousands years to possibly several hundred thousand years (Mid to late Pleistocene). The encountered alluvium consisted of thinly bedded to locally massive, silty fine to coarse grained sand with gravel, cobbles and scarce boulders within local scour deposits; and fine to medium grained sandy silt to silty sand with fine gravel common locally. The alluvial soils were generally dry to damp, and loose to medium dense to dense at depth. The alluvium presented relatively thin beds with distinct bedding contacts traceable across the length of trench. Local moderate to strongly developed calcic layers and discontinuous lenses were

encountered. The lower unit was distinctly more difficult to excavate and hard, and is slightly reddened (in moist condition) as compared to the overlying sols. A very distinct dark gray/brown debris flow-ash bed was encountered in the lower alluvial sequence with abundant detrital charcoal fragments up to 1 cm in length. This material is hard/dense with localized light gray/white Stage III/IV calcification development. Several sub-rounded plutonic diorite cobbles (<4-6 inches in diameter) with moderate to severe grussification were encountered offering additional evidence for at least Pleistocene age of the lowest strata of alluvium.

2.3 Faulting

A splay of the roughly north-south trending Johnson Valley Fault is mapped within, and immediately west and north of the subject property, as shown on Figure 3 and 4. The Johnson Valley Fault is roughly 50 miles (80 kilometers) in length and previously ruptured two times during the Holocene, about 5ka and 8ka B.P. (Rockwell, 2000, SCEC, 2007). A State of California designated, EFZ has been established around the southern Johnson Valley Fault, and the site is located within the EFZ (Bryant and Hart, 2007).

No evidence of active faulting was observed within the subject fault trench excavation. However, active faults have been mapped in the immediate vicinity and should be assumed to exist at those mapped locations or at the termination of the excavated fault trench. It is interesting to note that the fence located along Paseo Los Ninos has an approximately 4 to 5 cm (<2inches) offset crack in a right lateral direction near where the State mapped fault trace is located (Figure 4 and Plate 1). However, this crack may also be the result of pallets pushed and stored against the fence and is not conclusive of past faulting.

Our discussion with the existing animal shelter manager disclosed no known cracking or distress to the existing structures of the property that may have been caused by the June 1992 Landers earthquake.

3.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the results of this evaluation, active faulting was not observed within the limits of exploration however, field mapping immediately after the June 28, 1992 Landers earthquake encountered ground cracking at the northwest corner of the site. Accordingly, there exists a potential for surface rupture within a limited distance of the active fault trace. The following summarizes our conclusions and recommendations for the evaluation of fault rupture of the subject property.

- Faulting in the region and the subject southern Johnson Valley fault has produced 3 events rupturing Holocene aged soils;
- Based upon our current evaluation, it is our opinion that the Johnson Valley Fault has not displaced Holocene-aged soils within the area explored. However, an active fault, (as defined by the California Geologic Survey and the CBC) should be considered to exist at the mapped trace of faulting where it was observed immediately after the June 1992 landers earthquake (see Figure 4 and Plate 1).
- Specific fault setback provisions have been prepared based on the assumption that active faulting exists immediately beyond the area explored and our discussions with Mr. Reeder. The recommended fault setback zone is presented on the accompanying *Geotechnical Map* (Plate 1).
- Structures intended for human occupancy should **not** be located within the structure setback zone depicted on Plate 1. California Code of Regulations, Section 3601 states, "A structure for human occupancy is any structure used or intended for supporting or sheltering any use of occupancy, which is expected to have a human occupancy rate of more than 2,000 person-hours per year".
- Strong ground shaking, and/or possible ground cracking/rupture along the identified active faults may occur near this site due to local earthquake fault activity. In this event, the proposed structures and other improvements (landscaping, hardscaping, pavements, etc.) may be damaged. Where possible, the project design should attempt to anticipate these possibilities and incorporate mitigative measures into the ultimate design and location of structures at the site. Recommendations for site remedial earthwork and foundation design in light of nearby active faulting will be presented in a separate geotechnical investigation report.
- Ground rupture and displacement could potentially disrupt future facilities (such as gas, electrical, water mains and aqueducts) crossing fault zone areas during a seismic event along the Johnson Valley Fault. If utilities are required to cross the fault zone they should be

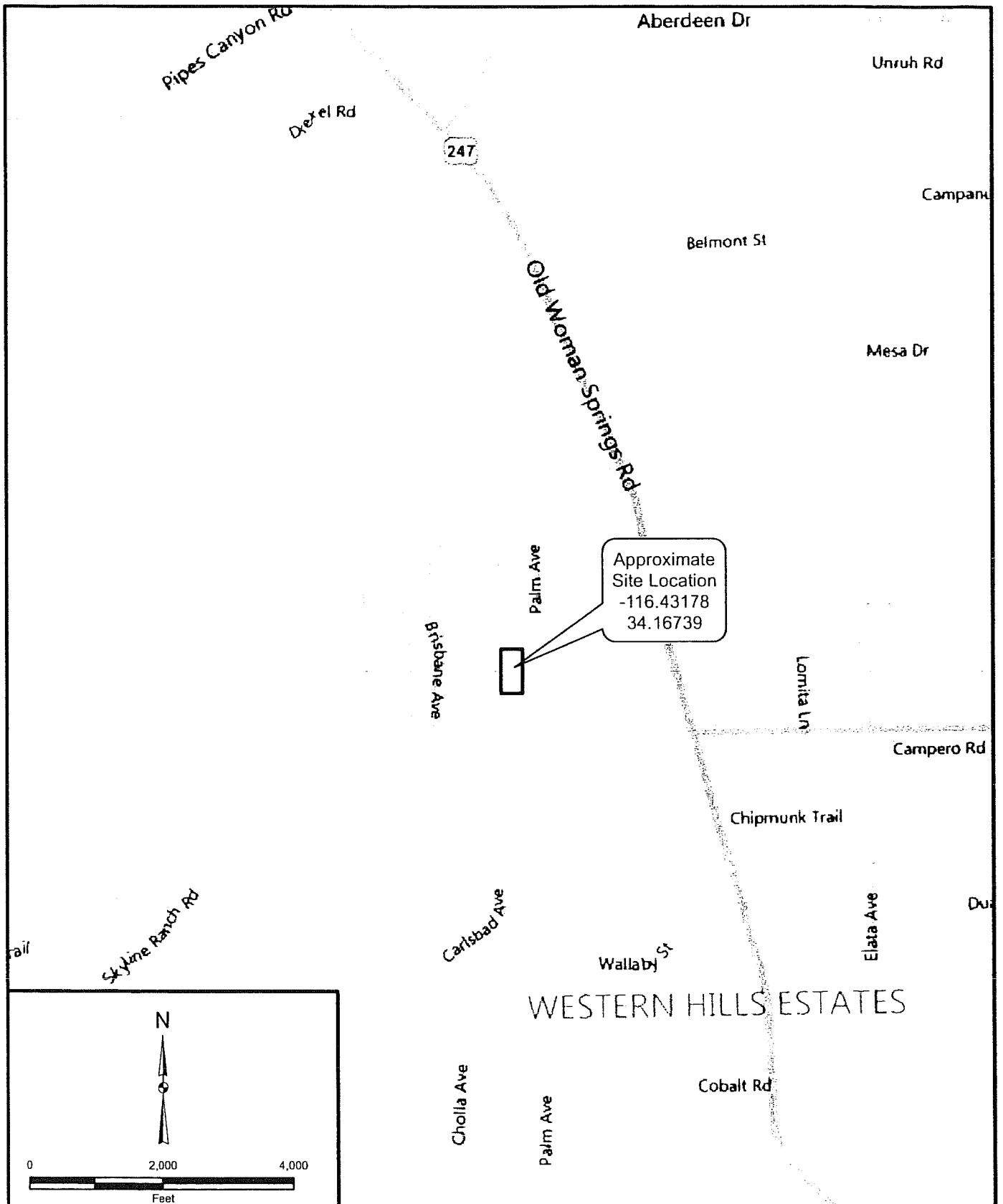
designed to accommodate future ground rupture and displacement. Utilities and associated infrastructure should be designed by the civil engineer and constructed with respect to the potential for strong to severe ground shaking and possible ground displacement during future earthquakes.

- The fault trench excavated as part of this study (FT-1) has been loosely backfilled with soils generated from the excavation. Future site development should include compaction of the trench backfill.

4.0 LIMITATIONS

This report was necessarily based in part upon data obtained from a limited number of observances, site visits, analyses, histories of occurrences, spaced subsurface explorations and limited information on historical events and observations. Such information is necessarily incomplete. The nature of many sites is such that differing characteristics can be experienced within small distances and under various climatic conditions. Changes in subsurface conditions can and do occur over time. This report does not meet the State of California Uniform Building Code requirements for California Public Schools, Hospitals, or Essential Services Buildings.

This report was prepared for Williams Architects based on William's Architect's needs, directions, and requirements. This report is not authorized for use by, and is not to be relied upon by any party except Williams Architects and its successors and assigns as owner of the property, with whom Leighton has contracted for the work. Use of or reliance on this report by any other party is at that party's risk. Unauthorized use of or reliance on this report constitutes an agreement to defend and indemnify Leighton Consulting Inc. from and against any liability which may arise as a result of such use or reliance, regardless of any fault, negligence, or strict liability of Leighton Consulting Inc.



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Scale: 1 " = 2,000 '	Date: July, 2011

Base Map: ESRI Resource Center, 2010
Thematic Info: Leighton
Author: (mmurphy)

SITE LOCATION MAP

Yucca Valley Animal Shelter
Yucca Valley, California

Figure 1

Leighton

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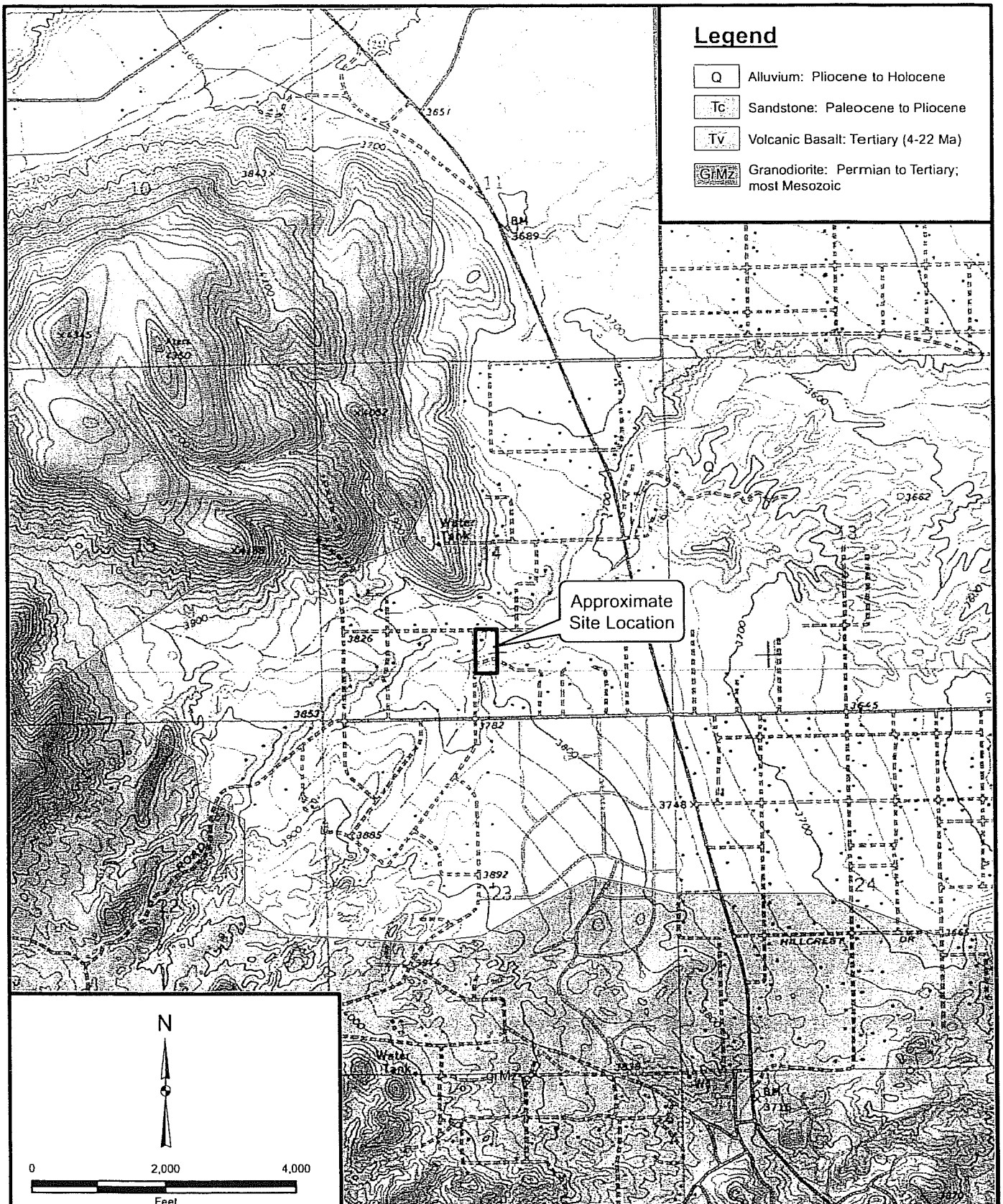

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Scale: 1 " = 2,000 '	Date: July, 2011

Base Map: ESRI Resource Center, 2010
Thematic Info: California Department of Conservation, Division of Mines and Geology, USGS, Original Map 1977, Digital Data 2000
Author: (mmurphy)

REGIONAL GEOLOGIC MAP

Yucca Valley Animal Shelter
Yucca Valley, California

Figure 2

Leighton

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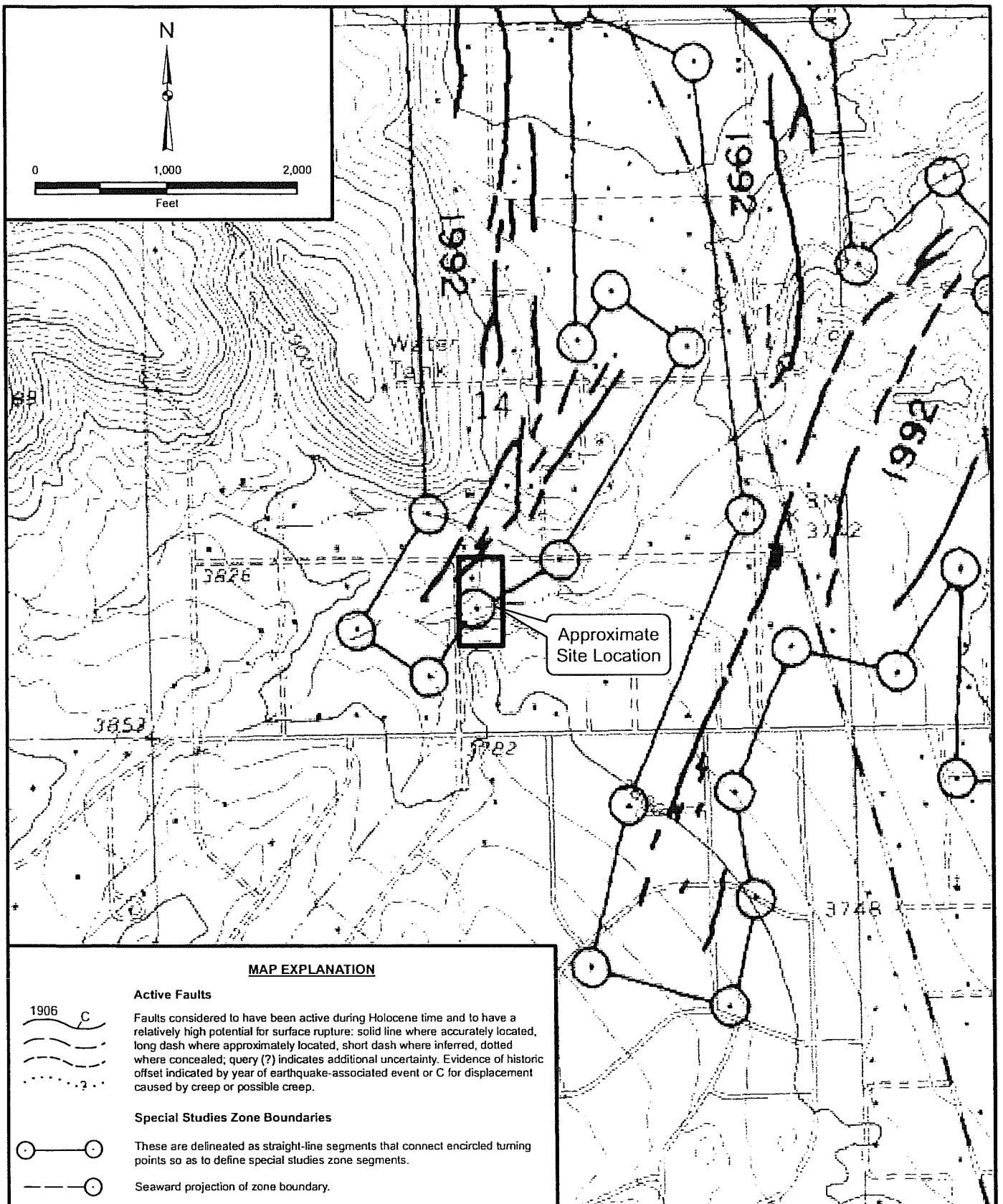

MAP EXPLANATION

Active Faults

1906 C

Faults considered to have been active during Holocene time and to have a relatively high potential for surface rupture: solid line where accurately located, long dash where approximately located, short dash where inferred, dotted where concealed; query (?) indicates additional uncertainty. Evidence of historic offset indicated by year of earthquake-associated event or C for displacement caused by creep or possible creep.

Special Studies Zone Boundaries

These are delineated as straight-line segments that connect encircled turning points so as to define special studies zone segments.

Seaward projection of zone boundary.

Project: 603176-002	Eng/Geol: SIS/RFR
Scale: 1 " = 1,000 '	Date: July, 2011

Topographic Base Map by U.S. Geological Survey 1972, Photorevised 1979.
State of California Special Studies Zones, Yucca Valley North Quadrangle, Revised Official Map, Effective: July 1, 1993.
Author: (mmurphy)

AP FAULT ZONE MAP

Yucca Valley Animal Shelter
Yucca Valley, California

Figure 3

Leighton

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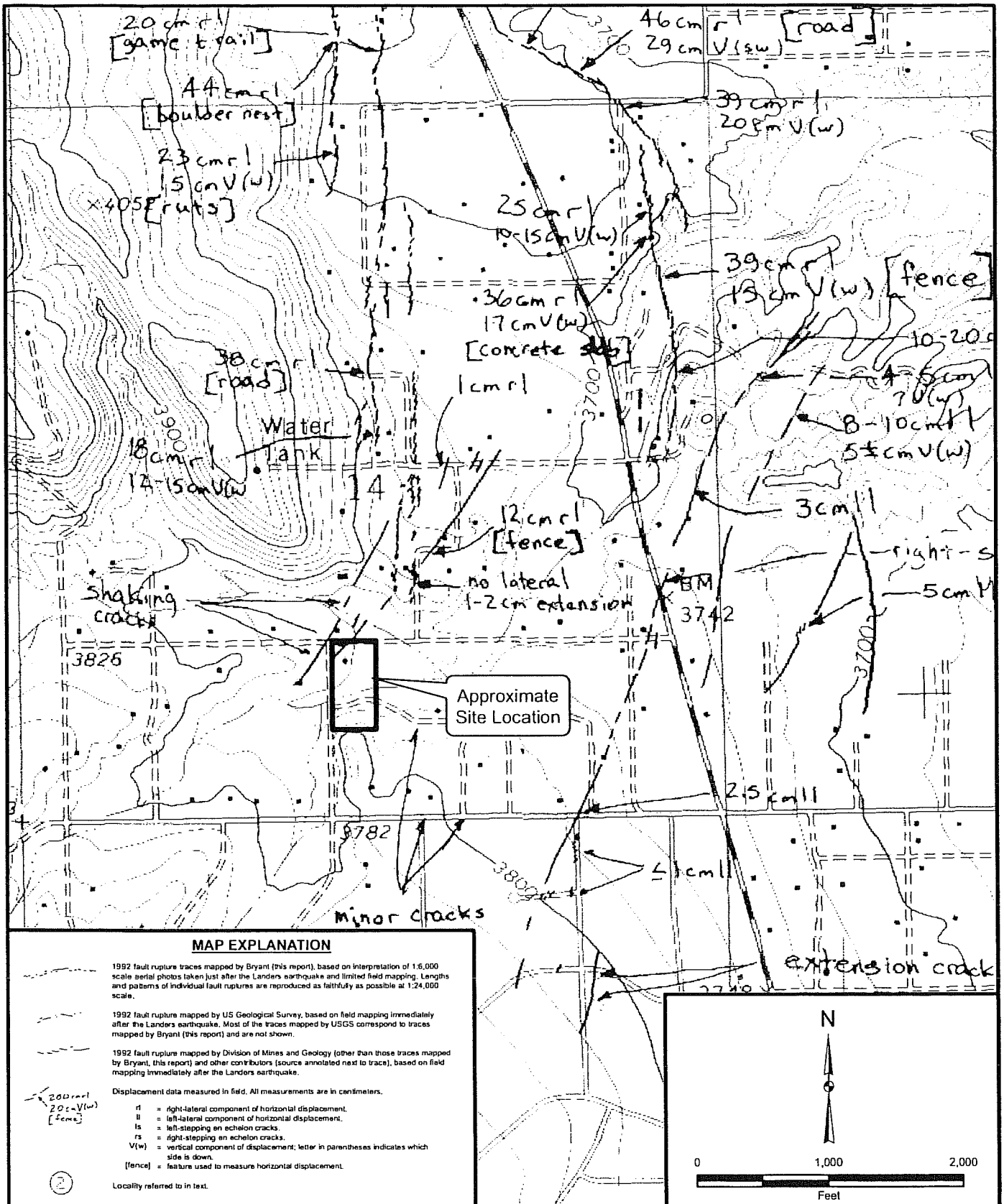

MAP EXPLANATION

1992 fault rupture traces mapped by Bryant (this report), based on interpretation of 1:6,000 scale aerial photos taken just after the Landers earthquake and limited field mapping. Lengths and patterns of individual fault ruptures are reproduced as faithfully as possible at 1:24,000 scale.

1992 fault rupture mapped by US Geological Survey, based on field mapping immediately after the Landers earthquake. Most of the traces mapped by USGS correspond to traces mapped by Bryant (this report) and are not shown.

1992 fault rupture mapped by Division of Mines and Geology (other than those traces mapped by Bryant, this report) and other contributors (source annotated next to trace), based on field mapping immediately after the Landers earthquake.

20 cm rl
20 cm V(w)
[fence]

Displacement data measured in field. All measurements are in centimeters.

- rl = right-lateral component of horizontal displacement.
- ll = left-lateral component of horizontal displacement.
- ls = left-stepping en echelon cracks.
- rs = right-stepping en echelon cracks.
- V(w) = vertical component of displacement; letter in parentheses indicates which side is down.
- [fence] = feature used to measure horizontal displacement.

(2) Locality referred to in text.

Project: 603176-002	Eng/Geol: SIS/RFR
Scale: 1 " = 1,000 '	Date: July, 2011

Figure3a (to FER-234). Surface fault rupture associated with the 28 June 1992 M 7.5 Landers earthquake in the Yucca Valley North 7.5-minute quadrangle. Ruptures are based on mapping by DMG, USGS, and other geologists from 6-28-92 to 7-19-92 and aerial photographic interpretation by Bryant (this report).

MAPPED FAULT LOCATIONS

Yucca Valley Animal Shelter
Yucca Valley, California

Figure 4

Leighton

Map Saved as P:\drafting\603176\002\GIS\Figure4.mxd on 7/5/2011 1:39:33 PM

APPENDIX A

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GEOTECHNICAL EXPLORATION
FOR PROPOSED YUCCA VALLEY ANIMAL SHELTER
APN 0597-021-080-000
SOUTHEAST CORNER OF PASEO LOS NINOS AND MALIN WAY, YUCCA VALLEY, SAN BERNARDINO COUNTY, CALIFORNIA

Prepared for:

WILLIAMS ARCHITECTS
276 North Second Street
Upland, California 91786

Project No. 603176-001

July 22, 2011

Leighton Consulting, Inc.
A LEIGHTON GROUP COMPANY

July 22, 2011

Project No. 603176-001

WILLIAMS ARCHITECTS
276 North Second Street
Upland, California 91786

Attention: Ms. Rene' Glynn, Vice President

Subject: Geotechnical Exploration for Proposed Yucca Valley Animal Shelter, APN 0597-021-080-000, Southeast Corner of Paseo Los Ninos and Malin Way, Yucca Valley, San Bernardino County, California

In accordance with your request and authorization, we have performed a geotechnical exploration for the proposed animal shelter located at southeast corner of Paseo Los Ninos and Malin Way in the Town of Yucca Valley, California. The purpose of our exploration was to evaluate geotechnical and geologic conditions on this site and provide geotechnical recommendations for foundation design and earthwork construction in accordance with our proposal dated May 26, 2010. Based on the results of this exploration, it is our opinion that the site is suitable for the proposed facility provided the recommendations included in this report are implemented during design and construction phases of development. Please note that the results of our fault investigation are submitted under a separate cover dated July 13, 2011.

We appreciate the opportunity to work with you on this project. If you have any questions, or if we can be of further service, please call us at your convenience at 760.834.6520.

Respectfully submitted,
LEIGHTON CONSULTING, INC.

Robert F. Riha
CEG 2316 (Exp. 02/29/12)
Vice President/Sr. Principal Geologist

Simon I. Saiid
GE 2641 (Exp. 9/30/11)
Principal Engineer

Distribution: (4) Addressee (plus CD copy)

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Appendices

1.0 INTRODUCTION

1.1 Site Location and Project Description

As depicted on Figure 1, *Site Location Map*, the site of the proposed animal shelter is located west of Route 247, on the southeastern corner of Paseo Los Ninos and Marlin Way within the community of Yucca Valley, San Bernardino County, California. Based on the site plan provided by Williams Architects, Inc., the proposed animal shelter and associated parking lot will be located in the northern portion of the subject 5-acre parcel. However, recent fault evaluation may cause some shifting of the planned building location to the east and south (Leighton, 2011). The topography of the planned development portion slopes gently to the southeast; and ranges in elevation from approximately 3750 to 3762 feet above mean sea level.

We understand that the proposed building will consist of an animal shelter facility and associated onsite and offsite improvements as indicated on the site plans by Williams Architects, Inc., (dated April 28, 2011). It is also our understanding that the proposed facility will be developed in phases and will ultimately include: 12,040 square foot building; 16,744 square foot covered animal shelter; 60,900 square foot uncovered animal shelter; and associated parking areas. We anticipate that the proposed building will be a one-story lightly loaded steel frame structure founded on typical spread/isolated and/or continuous footings. Structural loads were not known at the time of this report but are not expected to exceed 50 kips per column or 5 kips per lineal foot of continuous wall footings. Although grading plans were not available at the time of this study, minimal cut and fill grading (±5 feet) is anticipated to achieve finish grades for the proposed structure and paved areas due to a relatively flat terrain. If site development significantly differs from the assumptions made herein, the recommendations included in this report should be subject to further review and evaluation.

1.2 Purpose and Scope of Exploration

The purpose of our exploration was to evaluate geotechnical and geologic conditions on this site and provide geotechnical recommendations for design and construction of the proposed improvements. More specifically, the scope of our exploration included:

- Utility Location Coordination –We contacted Underground Service Alert (USA) to have existing registered public underground utilities located and marked onsite prior to our subsurface exploration.

- Field Exploration - Our field exploration consisted of four geotechnical test pits utilizing a backhoe excavated to depths ranging from 12 to 15 feet. Approximate test

pits locations are shown on the *Geotechnical Map*, Figure 2. A more detailed description of our field exploration is presented in Appendix A, *Field Exploration*.

- Geotechnical Laboratory Tests – Geotechnical laboratory tests were conducted on bulk soil samples obtained during our field exploration. Our laboratory-testing program was designed to evaluate engineering characteristics of site soils. Results of these laboratory tests are presented in Appendix A.

- Engineering Analysis - Data obtained from our field exploration was evaluated and analyzed to provide geotechnical conclusions and recommendations.

- Report Preparation - Results of our geotechnical exploration have been summarized and compiled in this report along with our geotechnical conclusions and recommendations for foundation design and construction.

This report does not address the potential for encountering hazardous materials in the soil and/or groundwater. Please also see the attached ASFE insert titled "*Important Information About Your Geotechnical Report*", see Appendix C.

2.0 FINDINGS

A summary of our findings from research, site-specific field exploration, geotechnical laboratory testing and engineering analysis, is discussed in the following sections.

2.1 Regional Geology

The project site is generally underlain by Holocene to Pliocene aged alluvium with a thin veneer of topsoil. The southerly elevated portion of the site is underlain by highly weathered granodiorite rock and capped by Tertiary-aged volcanic basalt.

2.2 Subsurface Soil Conditions

As indicated above, the site is generally underlain by Holocene to Pliocene aged alluvium with a thin veneer of topsoil:

- ***The topsoil*** is generally loose silty sand to sandy silt with abundant roots and extends to a depth of 3 to 5 feet below ground surface (BGS).

- ***The alluvial soils below the upper 3 to 5 foot depth*** are generally damp to moist and consisted of silty to well-graded sand. Based on the results of our field testing, the upper 5 to 8 feet BGS are generally loose to medium dense with an approximately 77 to 80 percent relative compaction per ASTM Test Method 1557. The alluvial soils below a depth of 8 feet appear to be relatively denser. Based on the results of our laboratory testing, the onsite soils are generally granular and considered non-expansive. A detailed geologic description of the onsite alluvium is provided in the fault investigation report (Leighton, 2011).

2.3 Groundwater

Groundwater was not encountered in the exploratory trenches to a maximum depth of 15 feet BGS. Department of Water Resource data for Wells 01N05E14P001S and 01N05E14Q001S indicates the depth to groundwater was on the order of 82 and 100 feet BGS in 1958.

2.4 Regional Faulting and Seismicity

The site is partially located within a State of California Alquist-Priolo Earthquake Fault Hazard Zone (Bryant, 2007). Two ground fractures/faults have been mapped by California Geologic Survey (Bryant, 1992) within and adjacent to the northwest corner as a result of the June 28, 1992 Landers earthquake. To evaluate the fault rupture hazard, we excavated an approximately 275-foot long by 10- to 15-foot deep exploratory fault trench across the property (see Figure 2). Although the results of our fault investigation indicate that no active faulting exists within the exploratory fault trench, a fault setback zone is

recommended as shown on Figure 2. The results of our fault investigation are presented under a separate cover (Leighton, 2011).

The principal seismic hazard that could affect the site is ground shaking resulting from an earthquake occurring along several major active or potentially active faults in southern California. Known regional active and potentially active faults that could produce the most significant ground shaking at the site include the Landers, Pinto Mountain, Burnt Mountain, Eureka Peak, San Jacinto and San Andreas faults. The Landers fault, the most extensive fault in southern California is located approximately 2.1 miles (3.3 kilometers) northeast of the site.

2.5 Site-Specific Seismicity

Our evaluation of site-specific seismicity included a deterministic analysis using EQFAULT Program (Blake, 2000). Based on this analysis, the maximum earthquake magnitude is currently estimated to be 7.3Mw and the maximum associated peak site acceleration is 0.51g. The effect of strong seismic shaking should be considered to prevent failure of the structure by adhering to the 2010 California Building Code and Seismic Design Parameters suggested by the Structural Engineers Association of California. The seismic coefficients based on the 2010 California Building Code (CBC) are as follows:

Table 1. Geotechnical Earthquake Design Parameter (CBC 2010)

Design Parameters	Reference – CBC 2010	Design Value
Site Class	Table 1613.5.2	D
Mapped Spectral Acceleration at Short Period (S_S)	Figure 1613.5(3)	2.00 g
Mapped Spectral Acceleration at 1 Second (S_1)	Figure 1613.5(4)	0.79 g
Design Spectral Acceleration at Short Period (S_{DS})	***Equation 16-39***	***1.33 g***
Design Spectral Acceleration at 1 Second (S_{D1})	***Equation 16-40***	***0.79 g***
Maximum Considered Earthquake Spectral Response Acceleration for Short Periods (S_{ms})	Equation 16-37	2.00 g
Maximum Considered Earthquake Spectral Response Acceleration at 1 Second Period (S_{m1})	Equation 16-38	1.19 g
Mapped Spectral Response Acceleration at Short Period (F_a)	Table 1613.5.3(1)	1.0
Mapped Spectral Response Acceleration at 1-Second Period (F_v)	Table 1613.5.3(2)	1.5

The design values were calculated utilizing a software program published by United States Geological Survey (USGS) which follows the procedures stated in American Society of Civil Engineers (ASCE) Publication ASCE 7-10 and 2010 CBC Chapter 16.

2.6 Other Seismic Hazards

2.6.1 Liquefaction

Liquefaction is the loss of soil strength or stiffness due to a buildup of pore-water pressure during severe ground shaking. Liquefaction is associated primarily with loose (low density), saturated, fine- to medium-grained, cohesionless soils. Due to the absence of shallow groundwater (>50 feet), liquefaction potential at the site is considered very low.

2.6.2 Dry Settlement

Ground accelerations generated from a seismic event can produce settlements above and below ground water table. Settlement above groundwater table (dry sand settlement) occurs in loose dry sands or granular earth materials with relative low density. Based on the recommended remedial grading recommendations presented in this report and relatively homogenous soil condition across the site/building, the dynamic-induced dry settlement is expected to be generally global and uniform. As such, the differential seismic settlement is expected to be less than 0.5 inch in a 30-foot horizontal distance within this site.

2.6.3 Ground Fissuring or Rupture

As indicated in Section 2.4 above, two ground fractures/faults have been mapped by California Geologic Survey report (Bryant, 1992) within and adjacent to the northwest corner of the site as a result of the June 28, 1992 Landers earthquake. However, the report/notes described the observed features as "shaking cracking", without apparent significant vertical or lateral displacement. As such, ground fissuring or rupture cannot be ruled out on this site during future earthquakes. If the presence of buried or filled fissures is observed during remedial grading, specific recommendations for mitigations should be provided.

3.0 CONCLUSIONS AND RECOMMENDATIONS

The proposed development of the site appears feasible from a geotechnical viewpoint provided that the following recommendations are incorporated into the design and construction phases of development. Our detailed geotechnical recommendations are provided in the following sections.

3.1 Geotechnical Review of Grading and Foundation Plans

Leighton Consulting, Inc. should review grading and foundation plans and project specifications, when available, to comment on geotechnical aspects and check for conformance to our recommendations presented in the following sections of this report. Additional analysis and/or exploration may be required based on final plans.

3.2 Earthwork and Grading

All grading should be performed in accordance with the *Earthwork and Grading Guide Specifications* presented in Appendix C, unless specifically revised or amended below or by future recommendations based on final development plans.

3.2.1 Site Preparation

Prior to construction, the site should be cleared of vegetation, trash and debris. Any underground obstructions onsite should be removed. Efforts should be made to locate any existing buried utilities. Those lines should be removed or rerouted where interfering with proposed construction, and resulting cavities should be properly backfilled and compacted. In addition, any undocumented fill, if encountered, should be excavated from proposed building footprints.

3.2.2 Over-excavation / Remedial Grading

To reduce the potential for adverse differential settlement of the proposed structure, we recommend that onsite native soils be over-excavated and recompacted to a minimum depth of 7 feet below existing grades or 5 feet below the bottom of the proposed footings, whichever is deeper. Over-excavation and recompaction should extend a minimum horizontal distance of 5 feet from perimeter edges of proposed footings. Local conditions such as previous fault trench backfill will require deeper over-excavation (up to 10 feet) to remove and recompact this loose backfill. Such areas should be evaluated by Leighton Consulting, Inc. during grading.

Areas outside the over-excavation limits of the proposed structures planned for asphalt or concrete pavement, flatwork, and areas to receive fill should be over excavated to a minimum depth of 3 feet below the existing ground surface or 2 feet below the proposed subgrade, whichever is deeper.

After completion of over-excavation, and prior to fill placement, exposed surfaces should be scarified to a minimum depth of 8 inches and flooded. Fill placement on the removal bottom may commence once moisture conditioning of the bottom yields a moisture content at or near optimum, and the bottom is compacted to a minimum 90 percent relative compaction, relative to the ASTM D 1557 laboratory maximum density.

3.2.3 Fill Placement and Compaction

Onsite soils, free of debris and oversized material (greater-than 3-inches in largest dimension) are suitable for use as compacted structural fill. Soils to be placed as fill, whether onsite or imported material, should be reviewed and tested as necessary by Leighton Consulting, Inc.

All fill soils should be placed in thin, loose lifts, moisture-conditioned, as necessary, to near optimum moisture content, and compacted to a minimum 90 percent relative compaction as determined by ASTM Test Method D 1557. The upper 12-inches of subgrade and all aggregate base for pavement should be compacted to a minimum of 95 percent relative compaction.

3.2.4 Shrinkage and Subsidence

The change in volume of excavated and recompacted soil varies according to soil type and location. This volume change is represented as a percentage increase (bulking) or decrease (shrinkage) in volume of fill after removal and recompaction. Subsidence occurs as natural ground is moisture-conditioned and densified to receive fill. Field and laboratory data used in our calculations included laboratory-measured maximum dry densities for soil types encountered at the subject site and the measured in-place densities of soils encountered. We estimate the following earth volume changes will occur during proper recompaction:

- **Shrinkage:** Shrinkage due to recompaction of soils will vary with depth, with shrinkage decreasing with depth. We suggest an estimated shrinkage ranging from 12 to 18 percent for the upper 7 feet.

- **Subsidence**: Subsidence due solely to scarification, moisture conditioning and recompaction of the exposed bottom of over-excavation, is expected to be on the order of 0.10 foot. This should be added to the above shrinkage value for the recompacted fill zone, to calculate overall recompaction subsidence.

The level of fill compaction, variations in the dry density of the existing soils and other factors influence the amount of volume change. Some adjustments to earthwork volume should be anticipated during grading of the site.

3.2.5 Trench Backfill

Utility trenches should be backfilled with compacted fill in accordance with Sections 306-1.2 and 306-1.3 of the Standard Specifications for Public Works Construction, ("Greenbook"), 2009 Edition. Fill material should be placed in lifts not exceeding 8 inches in uncompacted thickness and should be compacted to at least 90 percent relative compaction (ASTM D 1557) by mechanical means only. The upper 12-inches of backfill in all pavement areas should be compacted to at least 95 percent relative compaction or as required per City standards.

Where granular backfill is used in utility trenches adjacent to moisture sensitive subgrades and foundation soils, we recommend that a cut-off "plug" of impermeable material be placed in these trenches at the perimeter of buildings, and at pavement edges adjacent to irrigated landscaped areas. A "plug" can consist of a 5-foot long section of silty soils with more than 35-percent passing the No. 200 sieve, or a Controlled Low Strength Material (CLSM) consisting of one sack of Portland-cement plus one sack of bentonite per cubic-yard of sand. CLSM should generally conform to Section 201-6 of the Standard Specifications for Public Works Construction, ("Greenbook"), 2009 Edition. This CLSM plug is intended to reduce the likelihood of water migrating from landscaped areas, then seeping along permeable trench backfill into the building and pavement subgrades, resulting in wetting of moisture sensitive (collapsible) subgrade earth materials under buildings and pavements.

3.2.6 Surface Drainage

Surface drainage should be designed to direct runoff away from foundations and toward approved drainage devices. Irrigation of landscaping should be controlled to maintain as much as possible, consistent moisture content sufficient to provide healthy plant growth without over-watering.

3.3 Foundations

Based on the results of our exploration and past experience with similar projects, conventional shallow foundations may be used to support the loads of the proposed structure. Over-excavation and recompaction of footing subgrade soils should be performed as detailed in Section 3.2.2.

3.3.1 Minimum Embedment and Width

Based on our preliminary exploration, footings for the proposed structure should have a minimum embedment of 18 inches, with a minimum width of 24 and 12 inches for isolated and continuous footings, respectively.

3.3.2 Allowable Bearing Capacity

An allowable bearing capacity of 2,500 pounds-per-square-foot (psf) may be used, based on the minimum embedment depth and width, above. This allowable bearing value may be increased by 250 psf per foot increase in embedment-depth or width to a maximum allowable bearing pressure of 3,000 psf. These allowable bearing pressures are for total dead load and sustained live loads, and can be increased by one-third when considering short-duration wind or seismic loads. Footing reinforcement should be designed by the structural engineer.

3.3.3 Lateral Load Resistance

Soil resistance ability to withstand lateral loads on a shallow foundation is a function of the frictional resistance along the base of the footing and the passive resistance that may develop as the face of the structure tends to move into the soil. The frictional resistance between the base of the foundation and the subgrade soil may be computed using a coefficient of friction of 0.35. The passive resistance may be computed using an equivalent fluid pressure of 250 pounds-per-cubic-foot (pcf), assuming there is constant contact between the footing and undisturbed soil. These friction and passive values have already been reduced by a factor-of-safety of 1.5, and can be increased by one-third when considering short-duration wind or seismic loads. For spread footings and slabs-on-grade bearing on properly compacted fill over undisturbed native soils, full friction and passive resistance can be combined to resist lateral loads; although some lateral displacement is required to mobilize full passive resistance.

3.3.4 Settlement Estimates

The above recommended allowable bearing capacity is generally based on a total allowable, post-construction settlement of 1 inch for column loads no-greater-than (≤) 50 kips, with bearing wall loads not exceeding 5 kips-per-foot. Differential settlement is estimated at ½ inch over a horizontal distance of 30 feet. Since settlement is a function of footing sustained load, size and contact bearing pressure, differential settlement can be expected between adjacent columns or walls where a large differential loading condition exists. These settlement estimates should be reevaluated by this firm when foundation plans and actual loads for the proposed structure(s) become available.

3.4 Slab-On-Grade

Concrete slabs subjected to special loads should be designed by the structural engineer. Where conventional light floor loading conditions exist, the following minimum recommendations, which are based on a recompacted, very low expansive subgrade (EI<21), should be used:

- **Subgrade:** Slab-on-grade subgrade soil should be moisture conditioned to at least optimum moisture content prior to placing either a moisture barrier, steel or concrete.

- **Moisture Barrier:** A moisture barrier consisting of 10-mil Visqueen (or equivalent) should then be placed below slabs where moisture-sensitive floor coverings or equipment will be placed. We recommend that vapor retarder system used in the final design be reviewed and approved by the architect or entire design team including concrete subcontractors and manufactures of floor coverings.

- **Reinforced Concrete**: A conventionally reinforced concrete slab-on-grade with a thickness of at least 4 inches should then be placed. We recommend that reinforcement consists of at least No. 3 bars spaced 24-inches on center in two perpendicular directions. As an option, a post-tensioned slab-on-grade can be used. A modulus of subgrade reaction (k) as a linear spring constant, of 150 pounds-per-square-inch per inch deflection (pci) can be used for design of heavily loaded slabs-on-grade, assuming a linear response up to deflections on the order of ¾-inch.

Minor cracking of concrete after curing due to drying and shrinkage, is normal and should be expected. However, cracking is often aggravated by a high water/cement ratio, high concrete temperature at the time of placement, small nominal aggregate size, and rapid moisture loss due to hot, dry, and/or windy weather conditions during placement and curing. Cracking due to temperature and moisture fluctuations can also be expected. The use of low-slump concrete or low water/cement ratios can reduce the potential for shrinkage cracking. Cracking due to ground shaking may also occur.

Moisture barriers can retard, but not eliminate moisture vapor movement from the underlying soils up through the slab. Floor covering manufacturers should be consulted for specific recommendations. If long-term storage of moisture sensitive records (files) or floor coverings (e.g. vinyl tile, etc.) is to be used, additional moisture mitigation measures may be employed within or beneath concrete slab-on-grade floors. Moisture vapor transmission may be additionally reduced by use of concrete additives. Leighton Consulting, Inc. does not practice in the field of moisture vapor transmission evaluation/mitigation. Therefore, we recommend that a qualified person/firm be engaged/consulted with to evaluate the general and specific moisture vapor transmission paths and any impact on the proposed construction. This person/firm should provide recommendations for mitigation of potential adverse impact of moisture vapor transmission on various components of the structure as deemed appropriate.

3.5 Retaining Walls

If retaining walls are to be constructed as part of the development, we recommend that a backdrain be installed in accordance with the recommendations below. Using expansive soil as retaining wall backfill will result in higher lateral earth pressures exerted on the wall. Based on these recommendations for non-expansive backfill, the lateral earth pressure parameters presented in Table 2, *Recommended Lateral Earth Pressures* may be used for the design of conventional retaining walls up to 10 feet tall, with a level backfill:

Table 2. Recommended Lateral Earth Pressures

Conditions	Equivalent Fluid Pressure (pounds-per-cubic-foot)
Active (cantilever)	35 (level backfill)
At-Rest (braced)	55 (level backfill)
Passive	300 (Maximum of 3,500 psf)

Cantilever walls that are designed to yield at least 0.001 multiplied by H, where H is equal to the wall height, may be designed using the active condition. Rigid walls and walls braced at the top should be designed using the at-rest condition. Passive pressure is used to compute soil resistance to lateral structural movement. In addition, for sliding resistance, a frictional resistance coefficient of 0.35 may be used at the concrete and soil interface. The lateral passive resistance should be taken into account only if it is ensured that soil providing passive resistance, embedded against the foundation elements, will remain intact with time.

In addition to the above lateral forces due to retained earth, surcharge due to improvements, such as an adjacent structure or traffic loading, should be considered in the design of the retaining wall. For lateral surcharge conditions, a 2-foot-thick uniform soil surcharge can be used to model light traffic surcharge in the design of the walls. Loads applied within a 1:1 projection from the surcharging structure on the stem of the wall should be considered in the design. A third of uniform vertical surcharge-loads should be applied as a horizontal pressure on cantilever (active) retaining walls, while half of uniform vertical surcharge-loads should be applied as a horizontal pressure on braced (at-rest) retaining walls. For sliding and overturning analyses, soil unit weight of 125 pcf may be assumed for calculating the actual weight of soil over wall footings. Retaining wall footings may be designed in accordance with Section 3.3 of this report.

3.6 Sulfate Attack and Ferrous Corrosion Protection

Based on the 2007 CBC, concrete structures in contact with the onsite soil will have "moderate" exposure to water-soluble sulfates in the soil. Type II cement or similar may be used for design of concrete structures. Import fill soils should be tested for corrosivity and sulfate attack before they are brought on to the site. Additional sulfate content testing should be conducted on the compacted fill soils at or near finished grade, prior to construction, in order to confirm the test results observed during this exploration.

Based on minimum resistivity laboratory test results, tested onsite soil is considered "moderately corrosive" to ferrous metals. Therefore, corrosion protection to ferrous conduit should be considered. Any imported soils should be tested for corrosion prior to being brought on site. In-situ resistivity testing or additional corrosivity testing should be conducted on the compacted fill soils at or near finished grade, prior to construction, in order to confirm the test results observed during this exploration. Corrosion information presented in this report should be provided to your underground utility subcontractors.

3.7 Preliminary Pavement Design

The preliminary pavement design provided in Table 3 is based on an assumed R-value of 35 and Traffic Indices (TIs) ranging from 4 to 7. These pavement sections should be verified based on actual R-value testing performed at the completion of site grading.

Table 3. Asphalt Pavement Sections

Traffic Index	Asphalt Concrete (AC) Thickness (inches)	Class 2 Aggregate Base (AB) Thickness (inches)
4.0 (auto parking)	3.0	4.0
5.0 (auto access)	3.0	4.0
6.0 (main driveways)	3.0	6.0
7.0 (bus lanes)	3.5	8.0

Traffic Indices (TIs) used in our pavement design are considered reasonable values for the proposed pavement, and should provide a pavement life of approximately 20 years with a normal amount of flexible pavement maintenance. Irrigation adjacent to pavements, without a deep curb or other cutoff to separate landscaping from the paving, will result in premature pavement failure. Traffic parameters used for design were selected based on engineering judgment and not on information furnished to us such as an equivalent wheel load analysis or a traffic study.

Asphalt concrete and aggregate base should conform to *Caltrans Standard Specifications* Sections 39 and 26-1.02A, respectively. As an alternative, asphalt concrete can conform to Section 203-6 of the *Standard Specifications for Public Works Construction* (Green Book), 2009 Edition. Crushed aggregate base can conform to Sections 200-2.2 and 200-2.4 of the Green Book, respectively.

4.0 CONSTRUCTION CONSIDERATIONS

4.1 Temporary Excavations and Shoring

All temporary excavations, including utility trenches, retaining wall excavations and other excavations should be performed in accordance with project plans, specifications, all OSHA and Cal-OSHA requirements, and the current edition of the *California Construction Safety Orders*. Contractors should be advised that sandy soils (such as fills generated from the onsite alluvium) could make excavations particularly unsafe. All safety precautions should be properly implemented at all times. Site safety is the responsibility of the contractor. Leighton Consulting, Inc. does not consult in the area of safety engineering.

The contractor must be responsible for providing a "competent person" as defined in Article 6 of the *California Construction Safety Orders*. During construction, exposed soil conditions should be regularly evaluated to verify that conditions are as anticipated.

Spoil piles from the excavation(s) and construction equipment should be kept away from the sides of the trenches. Surcharge loads should not be permitted within a horizontal distance equal to the height of cut or 5 feet, whichever is greater, measured from the top of the cut, unless the cut is shored appropriately. Excavations that extend below an imaginary plane inclined at 45 degrees below the edge of any adjacent existing site foundation should be properly shored to maintain support of the adjacent structures.

Typical cantilever shoring can be designed based on the active equivalent fluid pressure presented in the retaining wall section. If excavations are braced at the top and at specific design intervals, then braced earth pressure may be approximated by a uniform rectangular soil pressure distribution. This uniform pressure expressed in pounds-per-square-foot (psf), may be assumed to be 28 multiplied by H for design, where H is equal to the depth of the excavation being shored, in feet.

4.2 Additional Geotechnical Services

Our geotechnical recommendations presented in this report are based on subsurface conditions as interpreted from five exploratory trenches on this site, and limited geotechnical laboratory testing. Our geotechnical recommendations provided in this report are based on information available at the time the report was prepared and may

change as plans are developed. However, additional geotechnical exploration and analysis may be required based on final development plans. Leighton Consulting, Inc. should review site, grading and foundation plans, when available, and comment further on the geotechnical aspects of the project, if needed. Geotechnical observation and testing should be conducted during excavation and all phases of grading. Geotechnical conclusions and preliminary recommendations should be reviewed and verified by us (Leighton Consulting, Inc.) during construction, and revised accordingly if geotechnical conditions encountered vary from our findings and interpretations. Geotechnical observation and testing should be provided:

- After completion of site clearing,
- During over-excavation of compressible soil,
- During compaction of all fill materials,
- After excavation of all footings and prior to placement of concrete,
- During utility trench backfilling and compaction,
- During pavement subgrade and base and/or subbase preparation, and
- When any unusual conditions are encountered.

5.0 LIMITATIONS

This report was based in part on data obtained from a limited number of observations, site visits, soil excavations, samples and tests. Such information is, by necessity, incomplete. The nature of many sites is such that differing soil or geologic conditions can be present within small distances and under varying climatic conditions. Changes in subsurface conditions can and do occur over time. Therefore, our findings, conclusions and recommendations presented in this report are based on the assumption that Leighton Consulting, Inc. will provide geotechnical observation and testing during construction.

Environmental services were not included as part of this study, nor are they within the scope of this report. This report was prepared for the sole use of Williams Architects and their design team, for application to the design of the proposed facility in accordance with generally accepted geotechnical engineering practices at this time in California.

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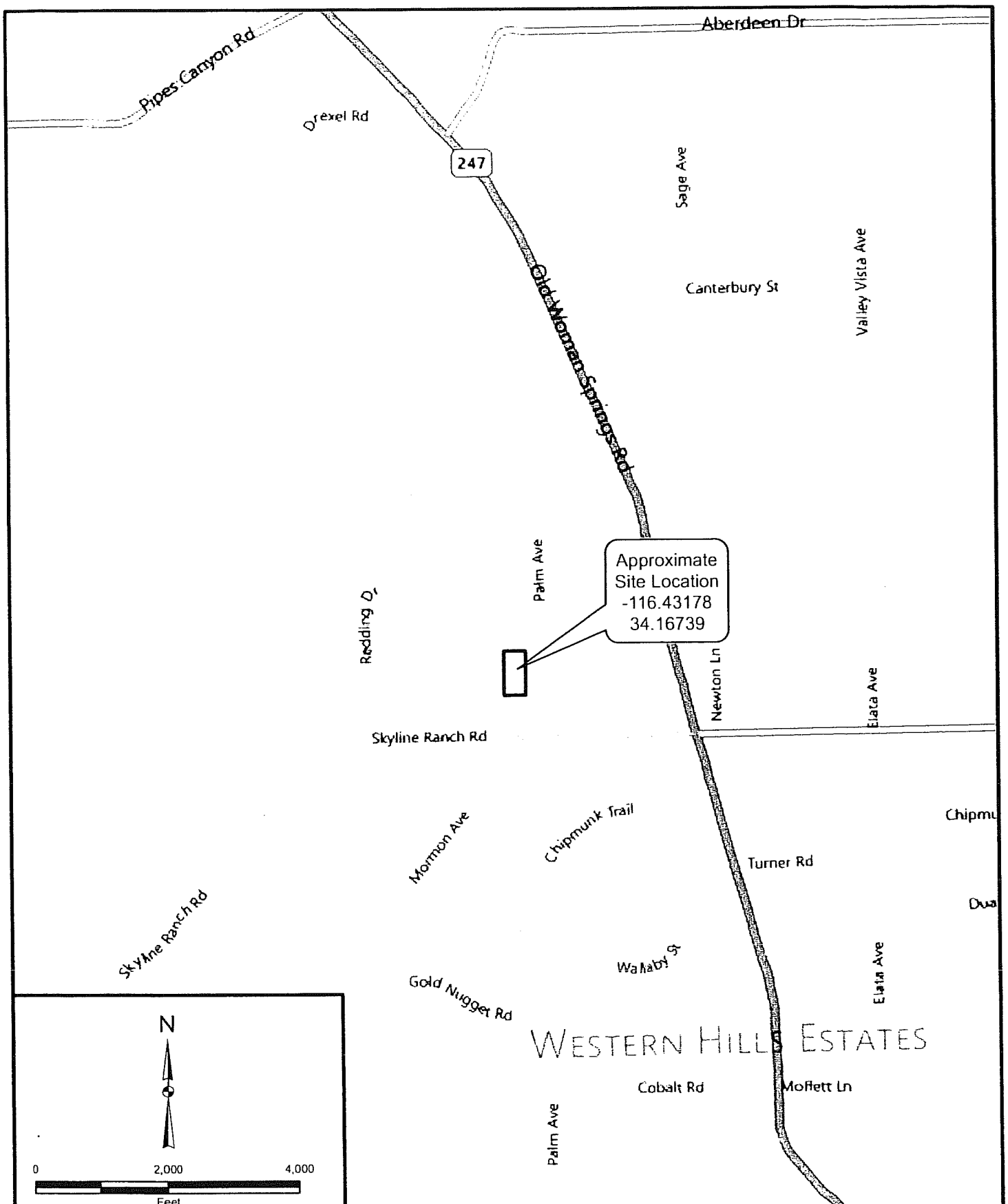


Project: 603176-001	Eng/Geol: SIS/RFR
Scale: 1 " = 2,000 '	Date: July, 2011

Base Map: ESRI Resource Center, 2010
Thematic Info: Leighton
Author: (mmurphy)

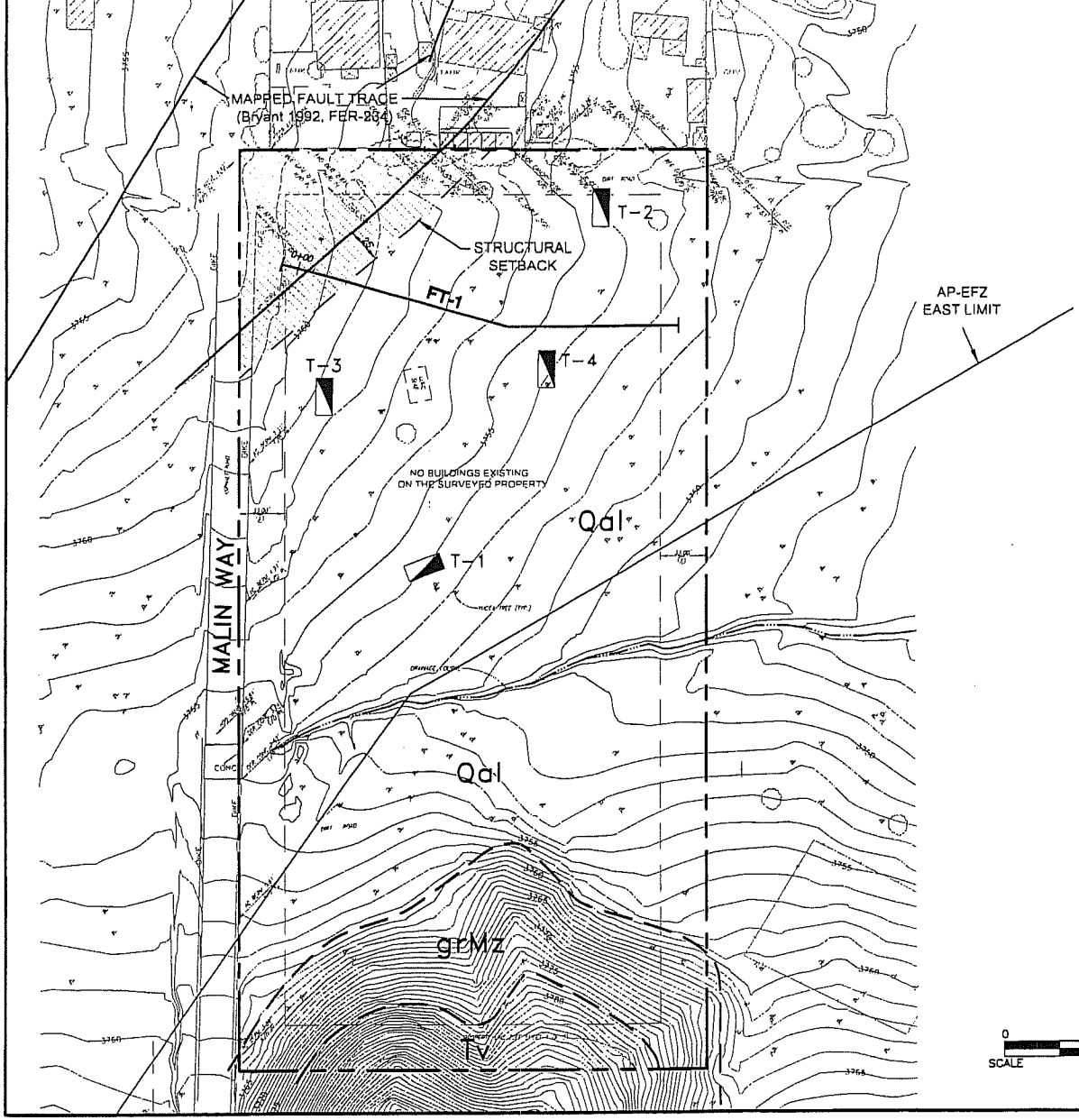
SITE LOCATION MAP

Yucca Valley Animal Shelter
Yucca Valley, California

Figure 1

Leighton

Map Saved as P:\drafting\603176\002\GIS\Figure1.mxd on 7/6/2011 9:10:03 AM



LEGEND

- SITE BOUNDARY
- 0+00 FT-1 — LOCATION OF FAULT EXPLORATION TRENCH (SEPARATE STUDY, LEIGHTON, 2011)
- APPROXIMATE GEOLOGIC CONTACT
- FAULT TRACE, BRYANT 1992
- STRUCTURE SETBACK ZONE
- T-1 — APPROXIMATE TEST PIT LOCATION
- Qal — ALLUVIUM
- Tv — TERTIARY VOLCANICS
- grMz — MESOZOIC UNDIFFERENTIATED GRANITIC BEDROCK

N

0 80 160
SCALE FEET

REFERENCE: KELSOE AND ASSOCIATES, INC., ALTA/ACSM LAND TITLE SURVEY, JOB NO. KA1 11-2093, DATED 05-12-11

GEOTECHNICAL MAP
YUCCA VALLEY ANIMAL SHELTER
YUCCA VALLEY, CALIFORNIA

FIGURE 2

Proj: 603176-001	Eng/Geol: SIS/RFR
Scale: 1"=80'	Date: 07/2011

Leighton

603176-001
July 22, 2011

Results of Geotechnical Laboratory Testing

Leighton

MODIFIED PROCTOR COMPACTION TEST

ASTM D 1557

Project Name:	Yucca Valley Animal Shelter	Tested By :	G. Berdy	Date:	07/07/11
Project No.:	603176-001	Input By :	J. Ward	Date:	07/08/11
Boring No.:	T-2	Depth (ft.)	4-5		
Sample No. :	B-1				
Soil Identification:	Olive silty sand (SM)				

Preparation Method: [X] Moist [ ] Dry

[X] Mechanical Ram [ ] Manual Ram

Mold Volume (ft^3) 0.03340 *Ram Weight = 10 lb.; Drop = 18 in.*

TEST NO.	1	2	3	4	5	6
Wt. Compacted Soil + Mold (g)	3853.0	3972.0	4025.0	3984.0		
Weight of Mold (g)	1880.0	1880.0	1880.0	1880.0		
Net Weight of Soil (g)	1973.0	2092.0	2145.0	2104.0		
Wet Weight of Soil + Cont. (g)	621.20	637.30	575.80	622.00		
Dry Weight of Soil + Cont. (g)	605.30	612.00	546.20	581.30		
Weight of Container (g)	224.60	227.20	233.70	230.70		
Moisture Content (%)	4.18	6.57	9.47	11.61		
Wet Density (pcf)	130.2	138.1	141.6	138.9		
Dry Density (pcf)	125.0	129.6	129.3	124.4		

Maximum Dry Density (pcf) **130.5** **Optimum Moisture Content (%)** **8.0**

PROCEDURE USED

[X] **Procedure A**
Soil Passing No. 4 (4.75 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
May be used if +#4 is 20% or less

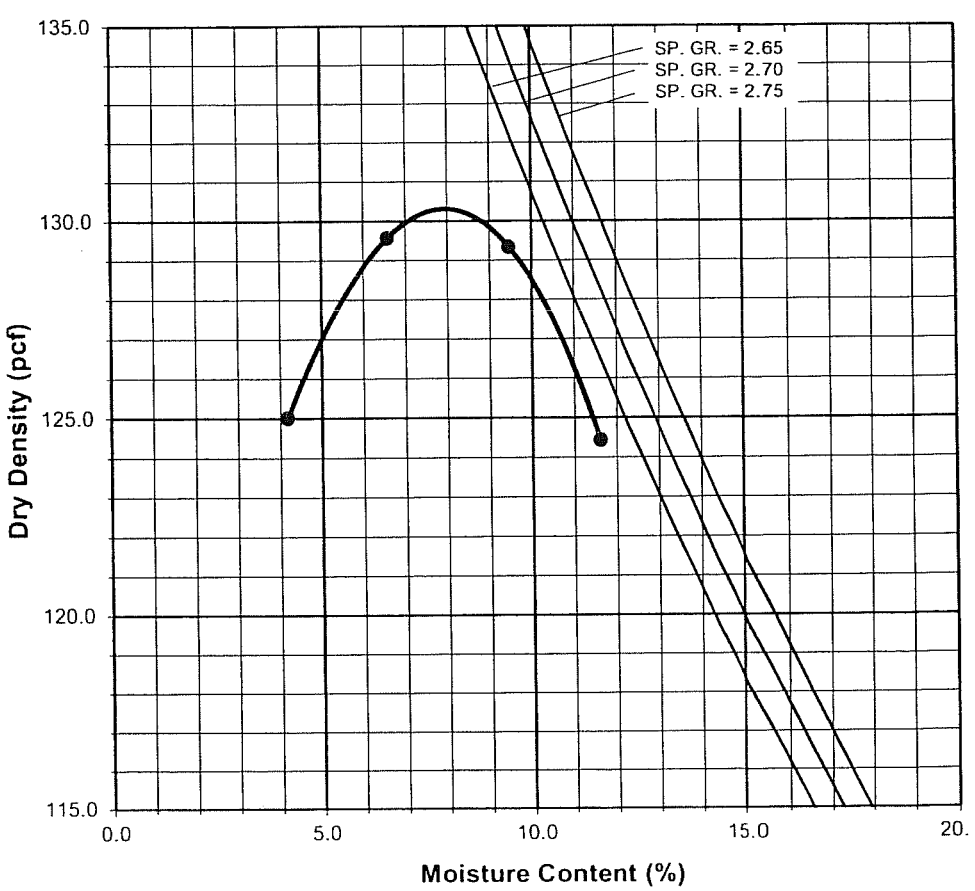
[ ] **Procedure B**
Soil Passing 3/8 in. (9.5 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
Use if +#4 is >20% and +3/8 in. is 20% or less

[ ] **Procedure C**
Soil Passing 3/4 in. (19.0 mm) Sieve
Mold : 6 in. (152.4 mm) diameter
Layers : 5 (Five)
Blows per layer : 56 (fifty-six)
Use if +3/8 in. is >20% and +¾ in. is <30%

Particle-Size Distribution:
2:83:15
GR:SA:FI

Atterberg Limits:

LL,PL,PI



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EXPANSION INDEX of SOILS

ASTM D 4829

Project Name: Yucca Valley Animal Shelter
Project No. : 603176-001
Boring No.: T-2
Sample No. : B-1
Soil Identification: Olive silty sand (SM)

Tested By: S. Felter Date: 07/06/11
Checked By: J. Ward Date: 07/08/11
Depth (ft.) 4-5

Dry Wt. of Soil + Cont. (g)	1000.00
Wt. of Container No. (g)	0.00
Dry Wt. of Soil (g)	1000.00
Weight Soil Retained on #4 Sieve	0.00
Percent Passing # 4	100.00

MOLDED SPECIMEN	Before Test	After Test
Specimen Diameter (in.)	4.01	4.01
Specimen Height (in.)	1.0000	0.9990
Wt. Comp. Soil + Mold (g)	622.40	432.00
Wt. of Mold (g)	205.10	0.00
Specific Gravity (Assumed)	2.70	2.70
Container No.	O	O
Wet Wt. of Soil + Cont. (g)	826.40	637.10
Dry Wt. of Soil + Cont. (g)	760.20	589.00
Wt. of Container (g)	0.00	205.10
Moisture Content (%)	8.71	12.53
Wet Density (pcf)	125.9	130.4
Dry Density (pcf)	115.8	115.9
Void Ratio	0.456	0.454
Total Porosity	0.313	0.312
Pore Volume (cc)	64.8	64.6
Degree of Saturation (%) [S_{meas}]	**51.6**	74.5

SPECIMEN INUNDATION in distilled water for the period of 24 h or expansion rate < 0.0002 in./h

Date	Time	Pressure (psi)	Elapsed Time (min.)	Dial Readings (in.)
07/06/11	11:20	1.0	0	0.0930
07/06/11	11:30	1.0	10	0.0930
Add Distilled Water to the Specimen				
07/06/11	12:55	1.0	85	0.0930
07/07/11	6:45	1.0	1155	0.0920
07/07/11	8:10	1.0	1240	0.0920

Expansion Index (EI_{meas}) = ((Final Rdg - Initial Rdg) / Initial Thick.) x 1000	**0**

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PARTICLE-SIZE DISTRIBUTION (GRADATION) of SOILS USING SIEVE ANALYSIS

ASTM D 6913

Project Name: Yucca Valley Animal Shelter
Project No.: 603176-001
Exploration No.: T-2
Sample No.: B-1
Soil Identification: Olive silty sand (SM)

Tested By: A. Santos Date: 07/05/11
Checked By: J. Ward Date: 07/08/11
Depth (feet): 4-5

Calculation of Dry Weights	Whole Sample	Sample Passing #4	Moisture Contents	Whole Sample	Sample passing #4
Container No.:	N/A	903	Wt. of Air-Dry Soil + Cont.(g)	1232.90	0.00
Wt. Air-Dried Soil + Cont.(g)	16929.60	625.30	Wt. of Dry Soil + Cont. (g)	1184.60	0.00
Wt. of Container (g)	58.20	110.50	Wt. of Container No._____(g)	110.50	1.00
Dry Wt. of Soil (g)	16144.88	514.80	Moisture Content (%)	4.50	0.00

Passing #4 Material After Wet Sieve		
	Container No.	903
	Wt. of Dry Soil + Container (g)	549.20
	Wt. of Container (g)	110.50
	Dry Wt. of Soil Retained on # 200 Sieve (g)	438.70

U. S. Sieve Size		Cumulative Weight of Dry Soil Retained (g)		Percent Passing (%)
	(mm.)	Whole Sample	Sample Passing #4	
6"	152.400			
3"	75.000			
1 1/2	37.500	0.00		100.0
3/4"	19.000	29.04		99.8
3/8"	9.500	92.65		99.4
#4	4.750	265.80		98.4
#8	2.360		52.24	88.4
#16	1.180		151.52	69.4
#30	0.600		240.00	52.5
#50	0.300		321.10	37.0
#100	0.150		391.10	23.6
#200	0.075		435.50	15.2
PAN				

GRAVEL: **2 %**
SAND: **83 %**
FINES: **15 %**
GROUP SYMBOL: **SM**

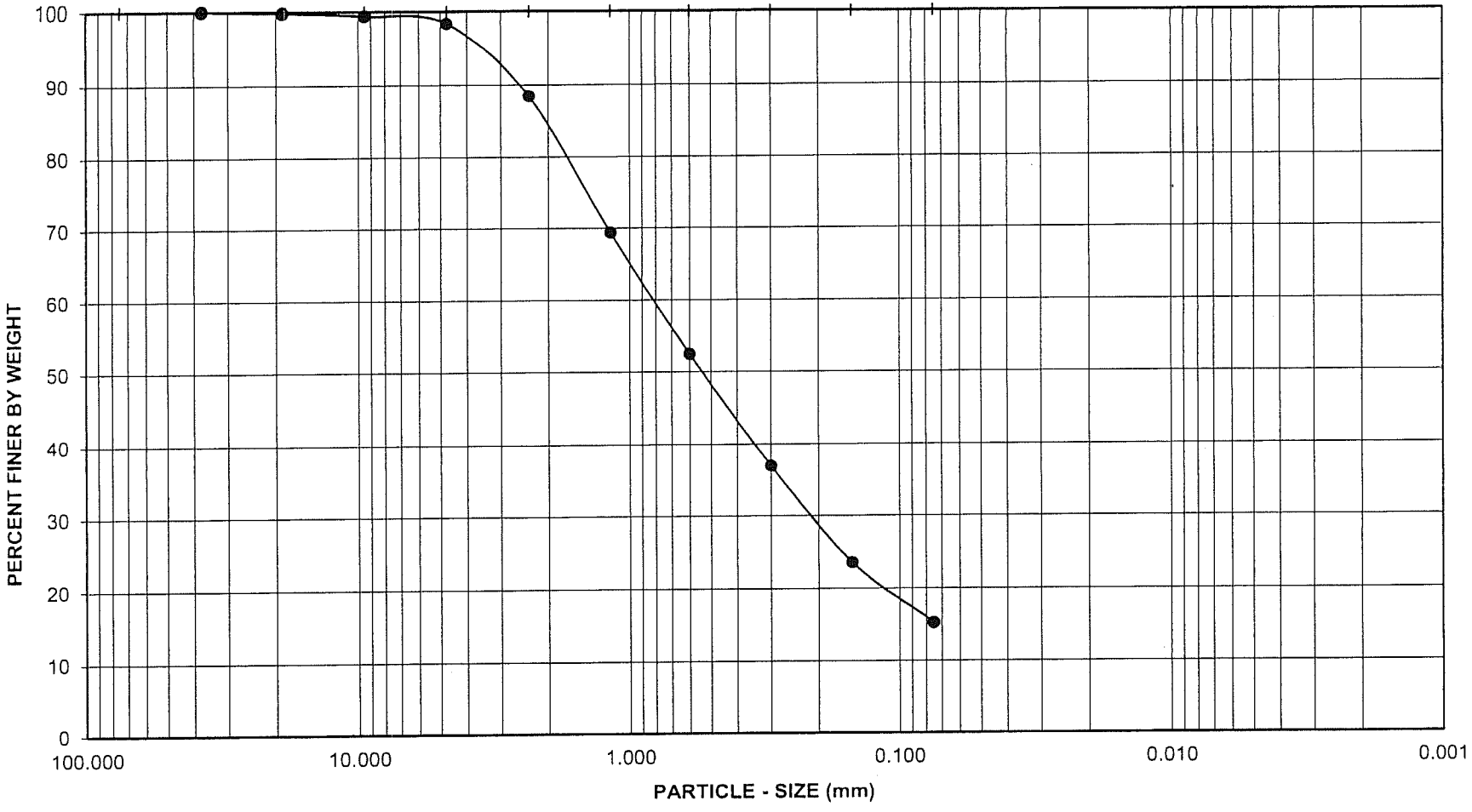
Cu = D60/D10 = _____
Cc = $(D30)^2/(D60*D10)$ = _____

Remarks: _____

GRAVEL		SAND			FINES	
COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY

U.S. STANDARD SIEVE OPENING — U.S. STANDARD SIEVE NUMBER — HYDROMETER

3.0" 1 1/2" 3/4" 3/8" #4 #8 #16 #30 #50 #100 #200



Project Name: Yucca Valley Animal Shelter

Project No.: 603176-001

Exploration No.: T-2 Sample No.: B-1

Depth (feet): 4-5 Soil Type : SM

Soil Identification: Olive silty sand (SM)

GR:SA:FI : (%) 2 : 83 : 15

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PARTICLE - SIZE DISTRIBUTION ASTM D 6913

Jul-11

Leighton

Soluble Sulfates

(Hach Sulfate Test Kit)

Project Name: Yucca Valley Animal Shelter
Project Number: 603176-001
Date: 07/06/11
Technician: A. Santos

Sample Identification		Dilution	Reading (PPM)			% Sulfates
			Tube Reading		H_2O:Soil Ratio	
Boring No.:	T-2	3 :1	50	X	3	**0.0150**
Sample No:	B-1			=	150	
Depth (ft.):	4-5					
Boring No.:						
Sample No:						
Depth (ft.):						
Boring No.:						
Sample No:						
Depth (ft.):						
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Depth (ft.):						

APPENDIX B

General Earthwork and Grading Guidelines

APPENDIX B

LEIGHTON CONSULTING, INC.
EARTHWORK AND GRADING GUIDE SPECIFICATIONS

TABLE OF CONTENTS

B-1.0 GENERAL

B-1.1 Intent

These Earthwork and Grading Guide Specifications are for grading and earthwork shown on the current, approved grading plan(s) and/or indicated in the Leighton Consulting, Inc. geotechnical report(s). These Guide Specifications are a part of the recommendations contained in the geotechnical report(s). In case of conflict, the project-specific recommendations in the geotechnical report shall supersede these Guide Specifications. Leighton Consulting, Inc. shall provide geotechnical observation and testing during earthwork and grading. Based on these observations and tests, Leighton Consulting, Inc. may provide new or revised recommendations that could supersede these specifications or the recommendations in the geotechnical report(s).

B-1.2 Role of Leighton Consulting, Inc.

Prior to commencement of earthwork and grading, Leighton Consulting, Inc. shall meet with the earthwork contractor to review the earthwork contractor's work plan, to schedule sufficient personnel to perform the appropriate level of observation, mapping and compaction testing. During earthwork and grading, Leighton Consulting, Inc. shall observe, map, and document subsurface exposures to verify geotechnical design assumptions. If observed conditions are found to be significantly different than the interpreted assumptions during the design phase, Leighton Consulting, Inc. shall inform the owner, recommend appropriate changes in design to accommodate these observed conditions, and notify the review agency where required. Subsurface areas to be geotechnically observed, mapped, elevations recorded, and/or tested include (1) natural ground after clearing to receiving fill but before fill is placed, (2) bottoms of all "remedial removal" areas, (3) all key bottoms, and (4) benches made on sloping ground to receive fill.

Leighton Consulting, Inc. shall observe moisture-conditioning and processing of the subgrade and fill materials, and perform relative compaction testing of fill to determine the attained relative compaction. Leighton Consulting, Inc. shall provide *Daily Field Reports* to the owner and the Contractor on a routine and frequent basis.

B-1.3 The Earthwork Contractor

The earthwork contractor (Contractor) shall be qualified, experienced and knowledgeable in earthwork logistics, preparation and processing of ground to receive fill, moisture-conditioning and processing of fill, and compacting fill. The Contractor shall review and accept the plans, geotechnical report(s), and these Guide Specifications prior to commencement of grading. The Contractor shall be solely responsible for performing grading and backfilling in accordance with the current, approved plans and specifications.

The Contractor shall inform the owner and Leighton Consulting, Inc. of changes in work schedules at least one working day in advance of such changes so that appropriate observations and tests can be planned and accomplished. The Contractor shall not assume that Leighton Consulting, Inc. is aware of all grading operations.

The Contractor shall have the sole responsibility to provide adequate equipment and methods to accomplish earthwork and grading in accordance with the applicable grading codes and agency ordinances, these Guide Specifications, and recommendations in the approved geotechnical report(s) and grading plan(s). If, in the opinion of Leighton Consulting, Inc., unsatisfactory conditions, such as unsuitable soil, improper moisture condition, inadequate compaction, adverse weather, etc., are resulting in a quality of work less than required in these specifications, Leighton Consulting, Inc. shall reject the work and may recommend to the owner that earthwork and grading be stopped until unsatisfactory condition(s) are rectified.

B-2.0 PREPARATION OF AREAS TO BE FILLED

B-2.1 Clearing and Grubbing

Vegetation, such as brush, grass, roots and other deleterious material shall be sufficiently removed and properly disposed of in a method acceptable to the owner, governing agencies and Leighton Consulting, Inc.. Care should be taken not to encroach upon or otherwise damage native and/or historic trees designated by the Owner or appropriate agencies to remain. Pavements, flatwork or other construction should not extend under the "drip line" of designated trees to remain.

Leighton Consulting, Inc. shall evaluate the extent of these removals depending on specific site conditions. Earth fill material shall not contain more than 3 percent of organic materials (by dry weight: ASTM D 2974-00). Nesting of the organic materials shall not be allowed.

If potentially hazardous materials are encountered, the Contractor shall stop work in the affected area, and a hazardous material specialist shall be informed immediately for proper evaluation and handling of these materials prior to continuing to work in that area. As presently defined by the State of California, most refined petroleum products (gasoline, diesel fuel, motor oil, grease, coolant, etc.) have chemical constituents that are considered to be hazardous waste. As such, the indiscriminate dumping or spillage of these fluids onto the ground may constitute a misdemeanor, punishable by fines and/or imprisonment, and shall not be allowed.

B-2.2 Processing

Existing ground that has been declared satisfactory for support of fill, by Leighton Consulting, Inc., shall be scarified to a minimum depth of 6 inches (15 cm). Existing ground that is not satisfactory shall be overexcavated as specified in the following Section B-2.3. Scarification

shall continue until soils are broken down and free of large clay lumps or clods and the working surface is reasonably uniform, flat, and free of uneven features that would inhibit uniform compaction.

B-2.3 Overexcavation

In addition to removals and overexcavations recommended in the approved geotechnical report(s) and the grading plan, soft, loose, dry, saturated, spongy, organic-rich, highly fractured or otherwise unsuitable ground shall be overexcavated to competent ground as evaluated by Leighton Consulting, Inc. during grading. All undocumented fill soils under proposed structure footprints should be excavated

B-2.4 Benching

Where fills are to be placed on ground with slopes steeper than 5:1 (horizontal to vertical units), (>20 percent grade) the ground shall be stepped or benched. The lowest bench or key shall be a minimum of 15 feet (4.5 m) wide and at least 2 feet (0.6 m) deep, into competent material as evaluated by Leighton Consulting, Inc.. Other benches shall be excavated a minimum height of 4 feet (1.2 m) into competent material or as otherwise recommended by Leighton Consulting, Inc.. Fill placed on ground sloping flatter than 5:1 (horizontal to vertical units), (<20 percent grade) shall also be benched or otherwise overexcavated to provide a flat subgrade for the fill.

B-2.5 Evaluation/Acceptance of Fill Areas

All areas to receive fill, including removal and processed areas, key bottoms, and benches, shall be observed, mapped, elevations recorded, and/or tested prior to being accepted by Leighton Consulting, Inc. as suitable to receive fill. The Contractor shall obtain a written acceptance (*Daily Field Report*) from Leighton Consulting, Inc. prior to fill placement. A licensed surveyor shall provide the survey control for determining elevations of processed areas, keys, and benches.

B-3.0 FILL MATERIAL

B-3.1 Fill Quality

Material to be used as fill shall be essentially free of organic matter and other deleterious substances evaluated and accepted by Leighton Consulting, Inc. prior to placement. Soils of poor quality, such as those with unacceptable gradation, high expansion potential, or low strength shall be placed in areas acceptable to Leighton Consulting, Inc. or mixed with other soils to achieve satisfactory fill material.

B-3.2 Oversize

Oversize material defined as rock, or other irreducible material with a maximum dimension greater than 6 inches (15 cm), shall not be buried or placed in fill unless location, materials and placement methods are specifically accepted by Leighton Consulting, Inc.. Placement operations

shall be such that nesting of oversized material does not occur and such that oversize material is completely surrounded by compacted or densified fill. Oversize material shall not be placed within 10 feet (3 m) measured vertically from finish grade, or within 2 feet (0.61 m) of future utilities or underground construction.

B-3.3 Import

If importing of fill material is required for grading, proposed import material shall meet the requirements of Section B-3.1, and be free of hazardous materials ("contaminants") and rock larger than 3-inches (8 cm) in largest dimension. All import soils shall have an Expansion Index (EI) of 20 or less and a sulfate content no greater than (≤) 500 parts-per-million (ppm). A representative sample of a potential import source shall be given to Leighton Consulting, Inc. at least four full working days before importing begins, so that suitability of this import material can be determined and appropriate tests performed.

B-4.0 FILL PLACEMENT AND COMPACTION

B-4.1 Fill Layers

Approved fill material shall be placed in areas prepared to receive fill, as described in Section B-2.0, above, in near-horizontal layers not exceeding 8 inches (20 cm) in loose thickness. Leighton Consulting, Inc. may accept thicker layers if testing indicates the grading procedures can adequately compact the thicker layers, and only if the building officials with the appropriate jurisdiction approve. Each layer shall be spread evenly and mixed thoroughly to attain relative uniformity of material and moisture throughout.

B-4.2 Fill Moisture Conditioning

Fill soils shall be watered, dried back, blended, and/or mixed, as necessary to attain a relatively uniform moisture content at or slightly over optimum. Maximum density and optimum soil moisture content tests shall be performed in accordance with the American Society of Testing and Materials (ASTM) Test Method D 1557.

B-4.3 Compaction of Fill

After each layer has been moisture-conditioned, mixed, and evenly spread, it shall be uniformly compacted to not less than 90 percent of maximum dry density as determined by ASTM Test Method D 1557. For fills thicker than 15 feet (4.5 m), the portion of the fill deeper than 15 feet below proposed finish grade shall be compacted to 95 percent of the ASTM D 1557 laboratory maximum density. Compaction equipment shall be adequately sized and be either specifically designed for soil compaction or of proven reliability to efficiently achieve the specified level of compaction with uniformity.

B-4.4 Compaction of Fill Slopes

In addition to normal compaction procedures specified above, compaction of slopes shall be accomplished by backrolling of slopes with sheepsfoot rollers at increments of 3 to 4 feet (1 to 1.2 m) in fill elevation, or by other methods producing satisfactory results acceptable to Leighton Consulting, Inc.. Upon completion of grading, relative compaction of the fill, out to the slope face, shall be at least 90 percent of the ASTM D 1557 laboratory maximum density.

B-4.5 Compaction Testing

Field-tests for moisture content and relative compaction of the fill soils shall be performed by Leighton Consulting, Inc.. Location and frequency of tests shall be at our field representative(s) discretion based on field conditions encountered. Compaction test locations will not necessarily be selected on a random basis. Test locations shall be selected to verify adequacy of compaction levels in areas that are judged to be prone to inadequate compaction (such as close to slope faces and at the fill/bedrock benches).

B-4.6 Compaction Test Locations

Leighton Consulting, Inc. shall document the approximate elevation and horizontal coordinates of each density test location. The Contractor shall coordinate with the project surveyor to assure that sufficient grade stakes are established so that Leighton Consulting, Inc. can determine the test locations with sufficient accuracy. Adequate grade stakes shall be provided.

B-5.0 EXCAVATION

Excavations, as well as over-excavation for remedial purposes, shall be evaluated by Leighton Consulting, Inc. during grading. Remedial removal depths shown on geotechnical plans are estimates only. The actual extent of removal shall be determined by Leighton Consulting, Inc. based on the field evaluation of exposed conditions during grading. Where fill-over-cut slopes are to be graded, the cut portion of the slope shall be made, evaluated, and accepted by Leighton Consulting, Inc. prior to placement of materials for construction of the fill portion of the slope, unless otherwise recommended by Leighton Consulting, Inc..

B-6.0 TRENCH BACKFILLS

B-6.1 Safety

The Contractor shall follow all OSHA and Cal/OSHA requirements for safety of trench excavations. Work should be performed in accordance with Article 6 of the *California Construction Safety Orders*, 2003 Edition or more current (see also: http://www.dir.ca.gov/title8/sb4a6.html).

B-6.2 Bedding and Backfill

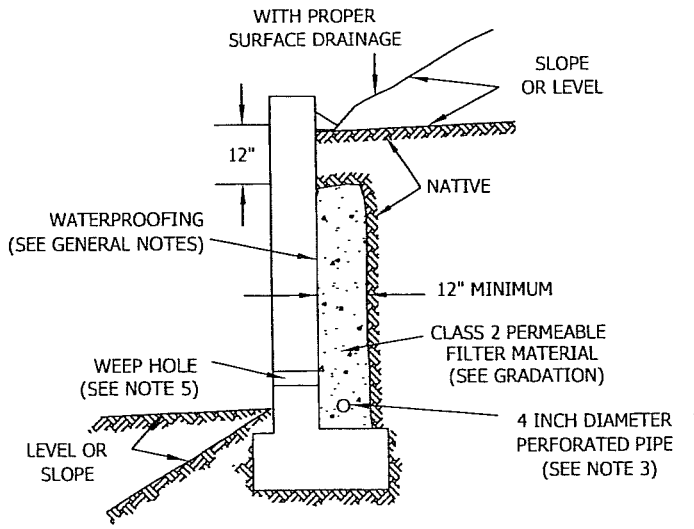
All utility trench bedding and backfill shall be performed in accordance with applicable provisions of the 2009 Edition of the *Standard Specifications for Public Works Construction* (Green Book). Bedding material shall have a Sand Equivalent greater than 30 (SE>30). Bedding shall be placed to 1-foot (0.3 m) over the top of the conduit, and densified by jetting in areas of granular soils, if allowed by the permitting agency. Otherwise the pipe bedding zone should be backfilled with Controlled Low Strength Material (CLSM) consisting of at least one sack of Portland cement per cubic-yard of sand, and conforming to Section 201-6 of the 2009 Edition of the *Standard Specifications for Public Works Construction* (Green Book). Backfill over the bedding zone shall be placed and densified mechanically to a minimum of 90 percent of relative compaction (ASTM D 1557) from 1 foot (0.3 m) above the top of the conduit to the surface. Backfill above the pipe zone shall **not** be jetted. Jetting of the bedding around the conduits shall be observed by Leighton Consulting, Inc. and backfill above the pipe zone (bedding) shall be observed and tested by Leighton Consulting, Inc..

B-6.3 Lift Thickness

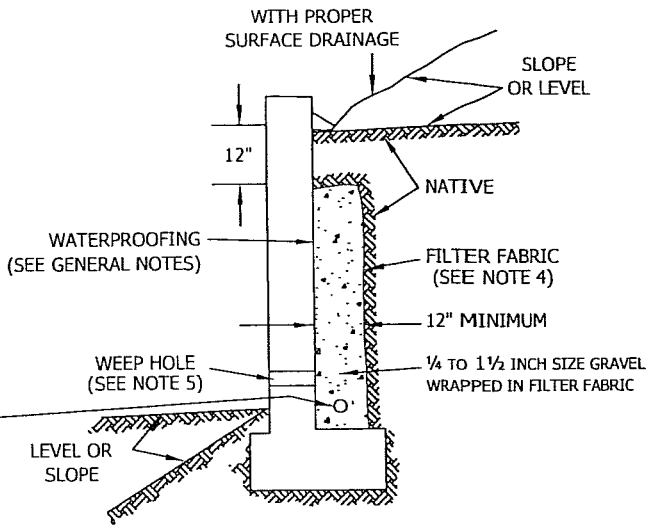
Lift thickness of trench backfill shall not exceed those allowed in the Standard Specifications of Public Works Construction unless the Contractor can demonstrate to Leighton Consulting, Inc. that the fill lift can be compacted to the minimum relative compaction by his alternative equipment and method, and only if the building officials with the appropriate jurisdiction approve.

SUBDRAIN OPTIONS AND BACKFILL WHEN NATIVE MATERIAL HAS EXPANSION INDEX OF ≤50

OPTION 1: PIPE SURROUNDED WITH CLASS 2 PERMEABLE MATERIAL



OPTION 2: GRAVEL WRAPPED IN FILTER FABRIC



Class 2 Filter Permeable Material Gradation
Per Caltrans Specifications

Sieve Size	Percent Passing
1"	100
3/4"	90-100
3/8"	40-100
No. 4	25-40
No. 8	18-33
No. 30	5-15
No. 50	0-7
No. 200	0-3

GENERAL NOTES:

* Waterproofing should be provided where moisture nuisance problem through the wall is undesirable.
* Water proofing of the walls is not under purview of the geotechnical engineer
* All drains should have a gradient of 1 percent minimum
*Outlet portion of the subdrain should have a 4-inch diameter solid pipe discharged into a suitable disposal area designed by the project engineer. The subdrain pipe should be accessible for maintenance (rodding)
*Other subdrain backfill options are subject to the review by the geotechnical engineer and modification of design parameters.

Notes:
1) Sand should have a sand equivalent of 30 or greater and may be densified by water jetting.
2) 1 Cu. ft. per ft. of 1/4- to 1 1/2-inch size gravel wrapped in filter fabric
3) Pipe type should be ASTM D1527 Acrylonitrile Butadiene Styrene (ABS) SDR35 or ASTM D1785 Polyvinyl Chloride plastic (PVC), Schedule 40, Armco A2000 PVC, or approved equivalent. Pipe should be installed with perforations down. Perforations should be 3/8 inch in diameter placed at the ends of a 120-degree arc in two rows at 3-inch on center (staggered)
4) Filter fabric should be Mirafi 140NC or approved equivalent.
5) Weephole should be 3-inch minimum diameter and provided at 10-foot maximum intervals. If exposure is permitted, weepholes should be located 12 inches above finished grade. If exposure is not permitted such as for a wall adjacent to a sidewalk/curb, a pipe under the sidewalk to be discharged through the curb face or equivalent should be provided. For a basement-type wall, a proper subdrain outlet system should be provided.
6) Retaining wall plans should be reviewed and approved by the geotechnical engineer.
7) Walls over six feet in height are subject to a special review by the geotechnical engineer and modifications to the above requirements.

RETAINING WALL BACKFILL AND SUBDRAIN DETAIL FOR WALLS 6 FEET OR LESS IN HEIGHT

WHEN NATIVE MATERIAL HAS EXPANSION INDEX OF ≤50

Leighton

Figure

APPENDIX C

Important Information About Your Geotechnical Report

Important Information About Your

Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

The following information is provided to help you manage your risks.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you* — should apply the report for any purpose or project except the one originally contemplated.

Read the Full Report

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,
- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final,* because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual

subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.*

A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform a *geoenvironmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else.*

Obtain Professional Assistance To Deal with Mold

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, a number of mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; ***none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.***

Rely, on Your ASFE-Member Geotechncial Engineer for Additional Assistance

Membership in ASFE/The Best People on Earth exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with you ASFE-member geotechnical engineer for more information.

ASFE
THE BEST PEOPLE ON EARTH

8811 Colesville Road/Suite G106, Silver Spring, MD 20910
Telephone: 301/565-2733 Facsimile: 301/589-2017
e-mail: info@asfe.org www.asfe.org

IIGER08041.0MRP

PERCOLATION FEASIBILITY PROPOSED ANIMAL SHELTER
APN 0597-021-080-000
SOUTHEAST CORNER OF PASEO LOS NINOS AND MALIN WAY
YUCCA VALLEY, CALIFORNIA

Prepared for:

WILLIAMS ARCHITECTS
276 NORTH SECOND STREET
UPLAND, CA 91786

Project No. 603176-001

July 20, 2011

Leighton Consulting, Inc.
A LEIGHTON GROUP COMPANY

Leighton Consulting, Inc.
A LEIGHTON GROUP COMPANY

July 20, 2011

Project No. 603176-001

WILLIAMS ARCHITECTS
276 North Second Street
Upland, CA 91786

Attention: Ms. Rene' Glynn, Vice President

Subject: Percolation Feasibility Report - DEH Contact Date June 25, 2011, Proposed Animal Shelter, APN 0597-021-080-000, Southeast Corner of Paseo Los Ninos and Malin Way, Yucca Valley, California

Reference: County of San Bernardino *On-Site Waste Water Disposal System* (August, 1992).

In accordance with your request and authorization, Leighton Consulting, Inc. (Leighton) is pleased to present this soils percolation report for the subject development located on the southeastern corner of Paseo Los Ninos and Marlin Way within the community of Yucca Valley, San Bernardino County, California (See Figure 1, Site Location Map).

PURPOSE AND SCOPE OF WORK

The purpose of our testing was to assess the feasibility of utilizing a leach line type disposal system for the proposed single-story structure as depicted on a site plan provided by Williams Architects, Inc. dated April 28, 2011. Services provided for this study consisted of the following:

- Percolation testing of 2 shallow borings in accordance with the procedures outlined in Reference above (County of San Bernardino, 1992);
- Compilation of this report that presents the results of our testing and provides general design and construction recommendations for an onsite septic system/ Leach field.

SITE DESCRIPTION

The site consists of approximately 5-acres of gently to moderately sloping terrain in southeasterly direction. Based on a conceptual site plan provided, the proposed leach lines will be located south of the proposed single-story structure (See Figure 2). The leach line design is based on an assumption that there will be one septic tank with a maximum capacity of 3,000

gallons. Although County procedures recommend minimum 4 tests per one commercial lot, two shallow percolation test holes were performed and considered representative of the overall leach field area.

SUBSURFACE INVESTIGATION

Our field investigation consisted of excavating two shallow percolation test holes (~3.5 feet) and one deep test pit (15 feet) on June 27, 2011 utilizing a rubber-tire backhoe equipped with an 8-inch solid-stem auger. A geologist from our office logged and observed all excavations. The locations of the exploratory deep test pit and percolation test holes are shown on Figure 2. The log of the exploratory deep test pit and percolation test holes is included in Appendix A.

SOILS AND GROUNDWATER CONDITIONS

Based on the results of this study the site is underlain by Quaternary alluvium formation. The soils encountered within the test holes were classified as silty sand (SM). Groundwater was not reported in any of the test pits or percolation test holes during the investigation. Furthermore, our review of available regional ground water well data from the California Department of Water Resources web page (http://wdl.water.ca.gov) indicates the regional water table is in excess of 50 feet. Thus, groundwater is not expected to impact the proposed septic system on this property.

PERCOLATION TEST RESULTS

The percolation tests were performed in general accordance with the procedures suggested by Department of Environmental Health of the County of San Bernardino. Results reported below are the most conservative reading in minutes per inch drop for tests 1 and 2. Field test data are included in Appendix A.

Summary of Percolation Test Results

Test Hole #	Test Hole Depth (ft)	Percolation Rate (MPI)	Soil Description
P-1	3.5	3.21	Silty Sand (SM)
P-2	3.5	1.94	Silty Sand (SM)

PRELIMINARY DESIGN REQUIREMENTS

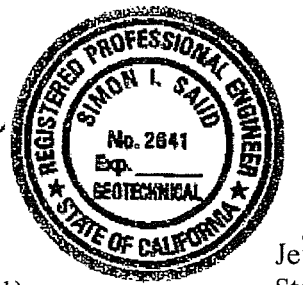
Septic Tank: Based on the above test results, a percolation rate of 3.2 MPI should be used to design the proposed leach field / septic system. The actual design of the proposed septic system should comply with all relevant requirements included in the San Bernardino County, Department of Environmental Health – Technical Guidance Manual referenced above.

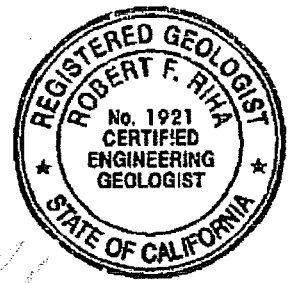
LIMITATIONS

The findings and design recommendations presented in this report are based on a general interpretation of soils conditions between test locations, utilizing contemporary engineering principles and practice. We make no other warranty, either expressed or implied. Please notify the engineer in the event conditions are encountered that are not reflected in this report.

If you have any question, please do not hesitate to contact this office. We appreciate this opportunity to be of service.

Respectfully submitted,
LEIGHTON CONSULTING, INC.





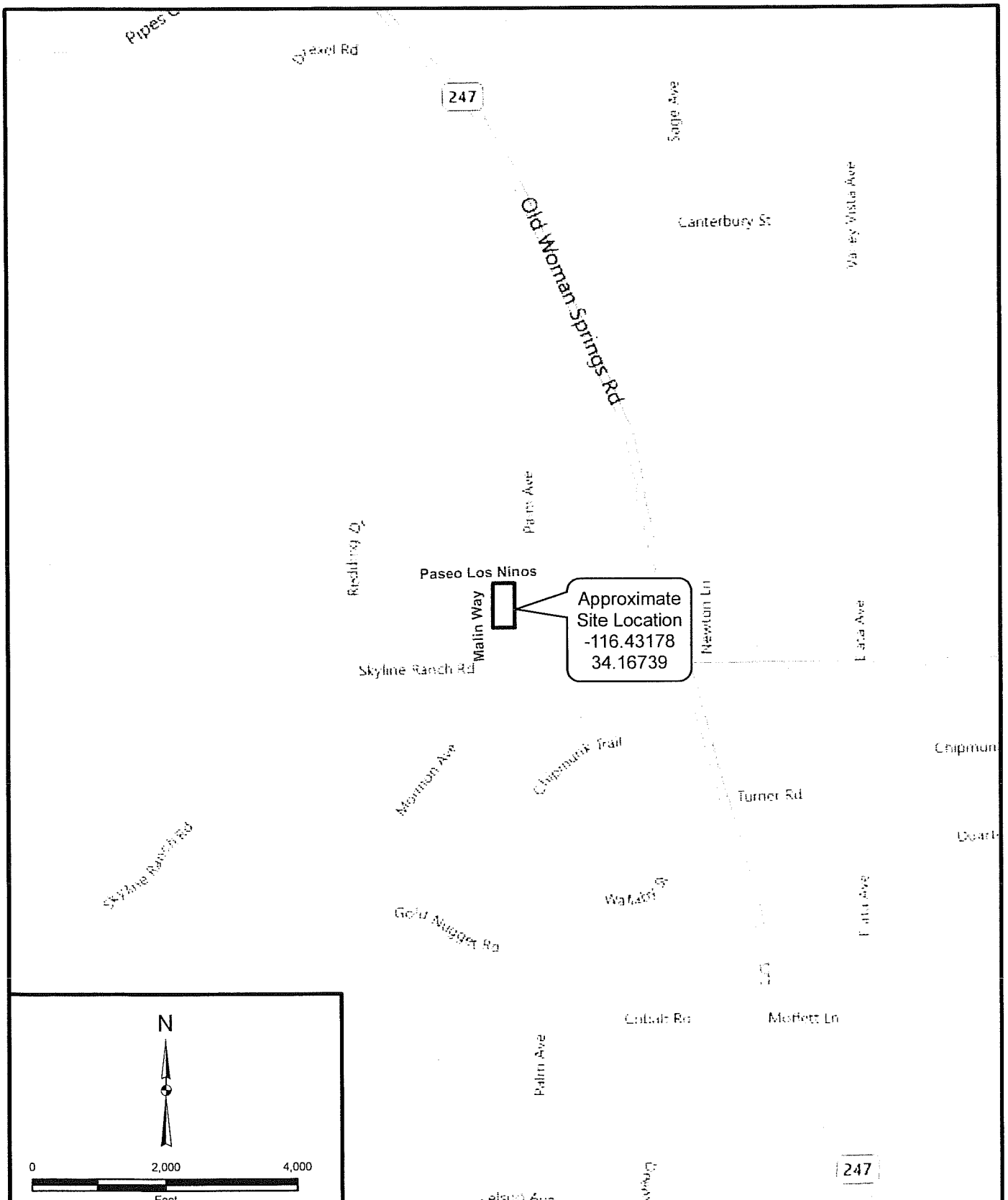
Simon I. Saiid
GE 2641(Exp. 09/30/11)
Principal Engineer

Jeffrey T. Deland
Staff Geologist

Robert F. Riha
CEG 1921 (Exp. 02/29/12)
Senior Principal Geologist

Attachments: Figure 1 – Site Location Map
Figure 2 – Percolation Test Location Plan
Appendix A – Leach Line Percolation Data Sheets, Logs of Exploratory Test Ptis / Trench & Percolation Tests

Distribution: (3) Addressee, only one wet signed copy.



Project: 603176-001	Eng/Geol: SIS/RFR
Scale: 1 " = 2,000 '	Date: July, 2011

Base Map: ESRI Resource Center, 2010
Thematic Info: Leighton
Author: (mmurphy)

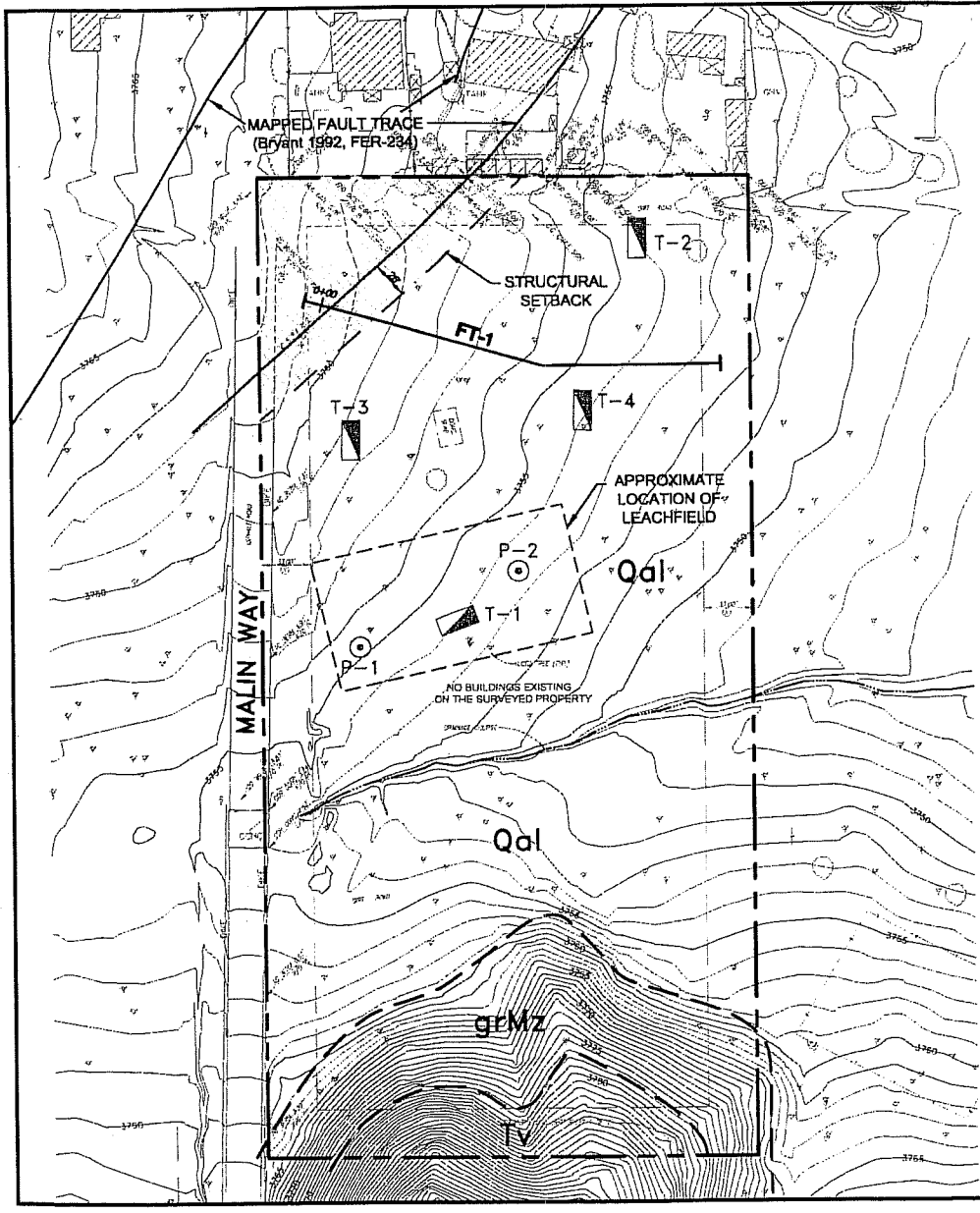
SITE LOCATION MAP

Yucca Valley Animal Shelter
Yucca Valley, California

Figure 1

Leighton

Map Saved as P:\drafting\603176\002\GIS\Figure1.mxd on 7/20/2011 8:19:32 AM



LEGEND

- SITE BOUNDARY
- 0+00 FT-1 — LOCATION OF FAULT EXPLORATION TRENCH (SEPARATE STUDY, LEIGHTON, 2011)
- APPROXIMATE GEOLOGIC CONTACT
- FAULT TRACE, BRYANT 1992
- STRUCTURE SETBACK ZONE
- T-1 — APPROXIMATE TEST PIT LOCATION
- P-2 — APPROXIMATE LOCATION OF PERCOLATOIN TEST
- Qal — ALLUVIUM
- Tv — TERTIARY VOLCANICS
- grMz — MESOZOIC UNDIFFERENTIATED GRANITIC BEDROCK

N

0 80 160
SCALE FEET

REFERENCE: KELSOE AND ASSOCIATES, INC., ALTA/ACSM LAND TITLE SURVEY, JOB NO. KA1 11-2093, DATED 05-12-11

PERCOLATION TEST LOCATION PLAN
YUCCA VALLEY ANIMAL SHELTER
YUCCA VALLEY, CALIFORNIA

FIGURE 2

Proj: 603176-001	Eng/Geol: SIS/RFR
Scale: 1"=80'	Date: 07/2011

Leighton

APPENDIX A

Leach Line Percolation Data Sheet

Log of Exploratory Test Pits / Trench and Percolation Tests

LEACHLINE PERC DATA SHEET / CONTINOUS PRESOAK

PRJOECT NO. 603176-001

TEST NO. / LOCATION: P-1, Yucca Valley Animal Shelter
DEPTH OF TEST HOLE: 3.5 Feet
SOIL DESCRIPTION: Light Gray, silty fine to coarse SAND with fine Gra

DATE: 6/27/2011
TEST HOLE SIZE: 8"

PRESOAK PERIOD

TIME INTERVAL:
START- 6/27/2011 9:00 AM
STOP- 6/27/2011 9:30 AM (no water left in test hole)

AMOUNT OF WATER USED
2.5 Gallons

TEST PERIOD

Time	Time Interval (min)	Initial Water Level (inches)	Final Water Level (inches)	Δ in Water Level (inches)	Percolation Rate (min/inch)
9:33 AM 9:53 AM	20.0	22.8	31.2	8.40	2.38
9:53 AM 10:23 AM	30.0	20.2	32.0	11.80	2.54
10:23 AM 10:43 AM	20.0	25.8	32.0	6.24	3.21
10:43 AM 10:53 AM	10.0	28.9	32.0	3.12	3.21

Engineer/Technician: JTD DATE: 6/27/2011

TEST NO. / LOCATION: P-2, Yucca Valley Animal Shelter
DEPTH OF TEST HOLE: 3.5 Feet
SOIL DESCRIPTION: Light Gray, silty fine to coarse SAND with fine Gra

EXCAVATION DATE: 6/27/2011
TEST HOLE SIZE: 8"

PRESOAK PERIOD

TIME INTERVAL
START- 6/27/2011 9:00 AM
STOP- 6/27/2011 9:30 AM (No water left in test hole)

AMOUNT OF WATER USED
2.5 Gallons

TEST PERIOD

Time	Time Interval (min)	Initial Water Level (inches)	Final Water Level (inches)	Δ in Water Level (inches)	Percolation Rate (min/inch)
9:35 AM 9:55 AM	20.0	17.7	32.0	14.3	1.40
9:55 AM 10:25 AM	30.0	15.2	32.0	16.8	1.79
10:25 AM 10:45 AM	20.0	21.6	32.0	10.4	1.92
10:45 AM 10:55 AM	10.0	26.8	32.0	5.2	1.94

Engineer/Technician: JTD DATE: 6/27/2011

Seal/ Signature

LOG OF TEST PIT

PROJECT NO.:	603176-001	**LOGGED BY:**	JTD
PROJECT NAME:	Yucca Valley Animal Shelter	**EQUIPMENT:**	Cat 460 Backhoe
LOCATION:	See Figure 2	**DATE:**	6/27/2011
ELEVATION:	~3754	**TREND OF TRENCH:**	N 80° W

Depth (ft)	SAMPLES: Sample Type*	SAMPLES: Sample Number	USCS Symbol	TEST PIT NO.: T-1 / MATERIAL DESCRIPTION AND COMMENTS	REMARKS
5			SM	@ Surface: **Quaternary Alluvium (Qal)**; Light Gray-Brown, dry-to-damp, silty fine to coarse grained SAND with fine Gravel, organics @ 0-2.0': Brown, damp-to-moist, Silty fine to coarse grained SAND, abundant roots @ 2.0'-12.0': Gray-Brown, moist, Silty fine to coarse grained SAND, interbedded Sand and Silt layers, few fine gravel and cobble	
10			SW	@ 12.0'-15.0': **Older Alluvium (Qalo)**; Dark Yellow-Brown, moist, fine to coarse grained SAND with fine Gravel, few Silt and Clay	
15				Total Depth = 15.0' Below Ground Surface, Backfilled with Spoils	

LEGEND

Sample Type: ---Small Bulk; ---Large Bulk; ---Chunk

Laboratory Testing: AL = Attiberg Limits; EI = Expansion Index; RV = R-Value Test; SA = Sieve Analysis; SR = Sulfate/Resistivity Test; SH = Shear Testing; MD = Maximum Density

LOG OF TEST PIT

PROJECT NO.:	603176-001	**LOGGED BY:**	JTD
PROJECT NAME:	Yucca Valley Animal Shelter	**EQUIPMENT:**	Cat 630 Backhoe
LOCATION:	See Figure 2	**DATE:**	6/27/2011
ELEVATION:	~3754	**TREND OF TRENCH:**	East/West

TEST PIT NO.: P-1

Depth (ft)	SAMPLES: Sample Type*	SAMPLES: Sample Number	USCS Symbol	MATERIAL DESCRIPTION AND COMMENTS	Dry Density (pcf)	Moisture (%)	Remarks
			SM	@ Surface: **Quaternary Alluvium (Qal)**; Light Gray-Brown, dry-to-damp, fine to coarse silty SAND with fine Gravel, organics			
				@ 0-2.0': Light Gray-Brown, damp-to-moist, fine to coarse silty SAND interbedded with Silt layers, few fine gravel, abundant roots			
		P-1		@ 2.0'-3.5': Light Gray-Brown, damp-to-moist, fine to coarse silty SAND, few Silt, few fine Gravel (22% -200)			
5				Total Depth = 3.5' below ground surface, no groundwater encountered, backfilled with spoils on 06-27-11			
10							
15							

LEGEND

Sample Type: ▒ —Small Bulk ☒ —Large Bulk ▨ —Chunk

Laboratory Testing: AL = Attiberg Limits EI = Expansion Index RV = R-Value Test

SA = Sieve Analysis SR = Sulfate/Resisitivity Test SH = Shear Testing MD = Maximum Density

LOG OF TEST PIT

PROJECT NO.:	603176-001	**LOGGED BY:**	JTD
PROJECT NAME:	Yucca Valley Animal Shelter	**EQUIPMENT:**	Cat 630 Backhoe
LOCATION:	See Figure 2	**DATE:**	6/27/2011
ELEVATION:	~3753	**TREND OF TRENCH:**	East/West

Depth (ft)	SAMPLES: Sample Type*	SAMPLES: Sample Number	USCS Symbol	TEST PIT NO.: P-2 / MATERIAL DESCRIPTION AND COMMENTS	Dry Density (pcf)	Moisture (%)	Remarks
			SM	@ Surface: Quaternary Alluvium (Qal); Light Gray-Brown, dry-to-damp, fine to coarse silty SAND with fine Gravel, organics			
				@ 0-2.0': Light Gray-Brown, damp-to-moist, fine to coarse silty SAND interbedded with Silt layers, few fine gravel, abundant roots			
		P-2		@ 2.0'-3.5': Light Gray-Brown, damp-to-moist, fine to coarse silty SAND, few fine Gravel, trace roots (24% -200)			
5				Total Depth = 3.5' below ground surface, no groundwater encountered, backfilled with spoils on 06-27-11			
10							
15							

LEGEND

Sample Type: ---Small Bulk; ---Large Bulk; ---Chunk

Laboratory Testing: AL = Attiberg Limits; EI = Expansion Index; RV = R-Value Test; SA = Sieve Analysis; SR = Sulfate/Resisitivity Test; SH = Shear Testing; MD = Maximum Density

YUCCA VALLEY ANIMAL SHELTER

Town of Yucca Valley, CA

DRAINAGE STUDY

October 18, 2011

Reference 130-203

PREPARED BY:

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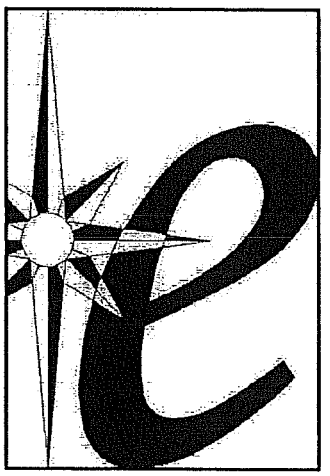
YUCCA VALLEY ANIMAL SHELTER

Town of Yucca Valley, CA

DRAINAGE STUDY

October 18, 2011



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Aaron T. Skeers Date

R.C.E. 62183 Exp. 9/30/13

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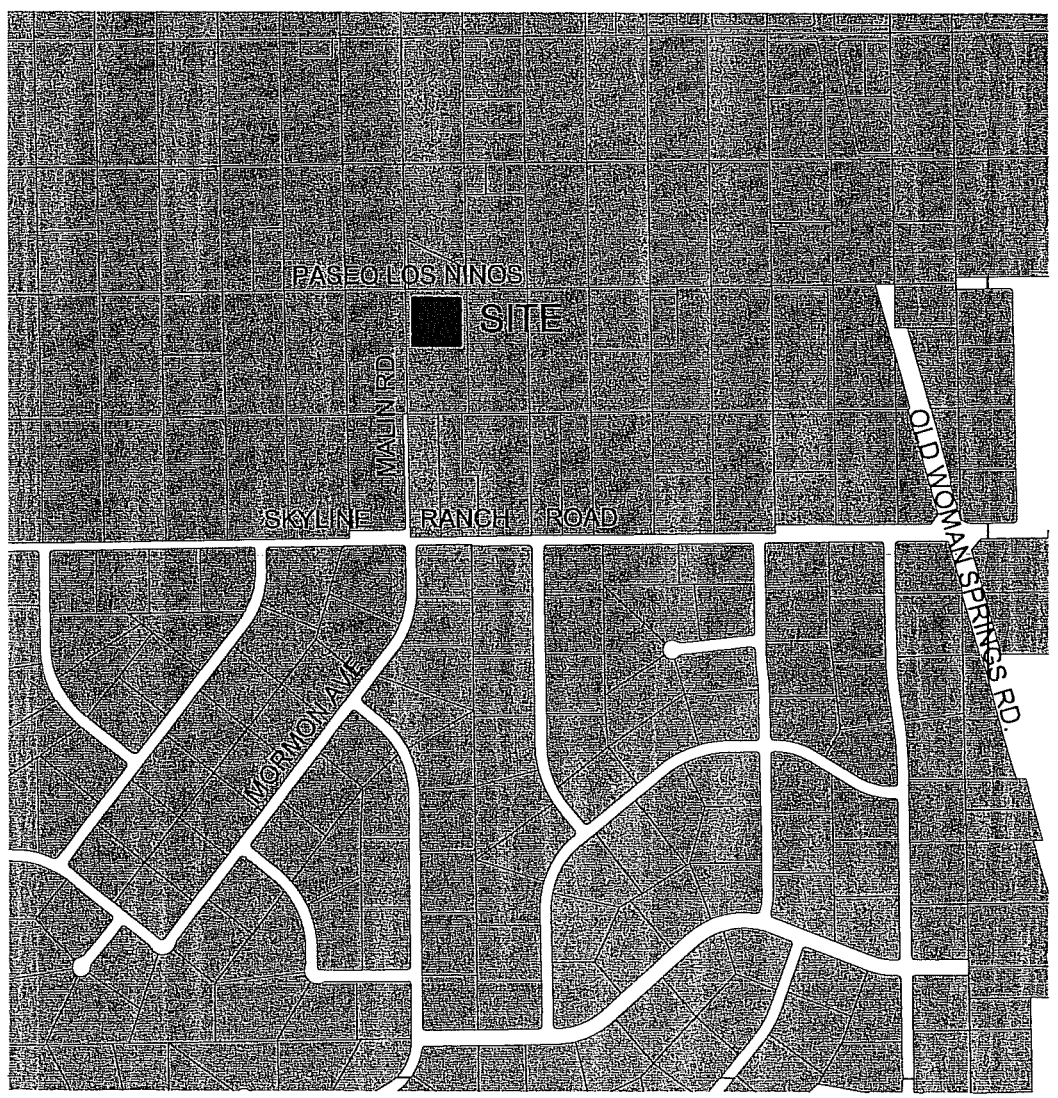
CONTENTS

VICINITY MAP
YUCCA VALLEY ANIMAL SHELTER



ENCOMPASS ASSOCIATES, INC.
CONSULTING CIVIL ENGINEERS
5699 COUSINS PLACE
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(909) 684-0093

DISCUSSION

The purpose of this drainage study is to determine the drainage facility requirements for Yucca Valley Animal Shelter in the Town of Yucca Valley. Specifically, the subject project is located south of an existing animal shelter, and on the other sides by vacant property, at the southeast corner of Malin Road (Mormon Avenue) and Paseo Los Ninos, in the Town of Yucca Valley, County of San Bernardino, California.

The subject site will consist of animal shelter buildings, corrals, and kennels, with an approximate area of 1.9 acres on a 5 acre parcel. Proposed drainage is overland and by sheet flow generally in a south easterly direction.. While the parcel is bisected by an intermittent stream, Skyline Ranch Wash, the site is not subject to off-site runoff where development is proposed.

The 100-year storm event was modeled in the rational method hydrology calculations in this study. Per town and county requirements, the incremental increase in runoff from the existing to the proposed developed condition will be retained in a retention basin proposed on-site. See summary sheet following this page for peak and volume runoff quantities, including basin sizing. The balance of the runoff will continue to drain to the Skyline Ranch Wash.

The Skyline Ranch Wash is designated as town master plan "S02", and per the master plan, is to remain a "managed floodplain", with a width of 50 feet. Site improvements will be limited to a minimum of 25 feet from the centerline of the wash, however proposed improvements will generally be more than 50 feet from the wash.

The rational method and small area unit hydrograph hydrologic models, as defined by Flood Control for San Bernardino County, were followed in the determination of storm runoff. AES software was utilized for rational method hydrology calculations. The county hydrology manual was followed to determine hydrograph runoff and volumetric quantities. Note that in developed hydrology calculations, a pervious cover calculation was conducted in order to accurately classify runoff from this specific site. The closest land use to the pervious area is a residential-type development, and was so selected for use in the calculations.

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Job Yucca Valley Animal Shelter
Sheet No. _____ of _____
Calculated by: ATS Date 10/18/11
Checked by: _____ Date _____
Scale nts

SUMMARY SHEET

100-year Storm

		Existing Condition	Developed Condition
Rational Method Runoff	(cfs)	6.9	7.55
Time of Concentration	(min)	11.47	10
100-yr 24hr Volume	(ac-ft)	0.4266	0.4408
Incremental Volume	(ac-ft)		0.0142
110% of Incremental Volume	(ac-ft)		0.0156
	(cf)		679
Volume of Proposed Basin	(ac-ft)		0.052
	(cf)		2264
Incremental % Provided	%		267%

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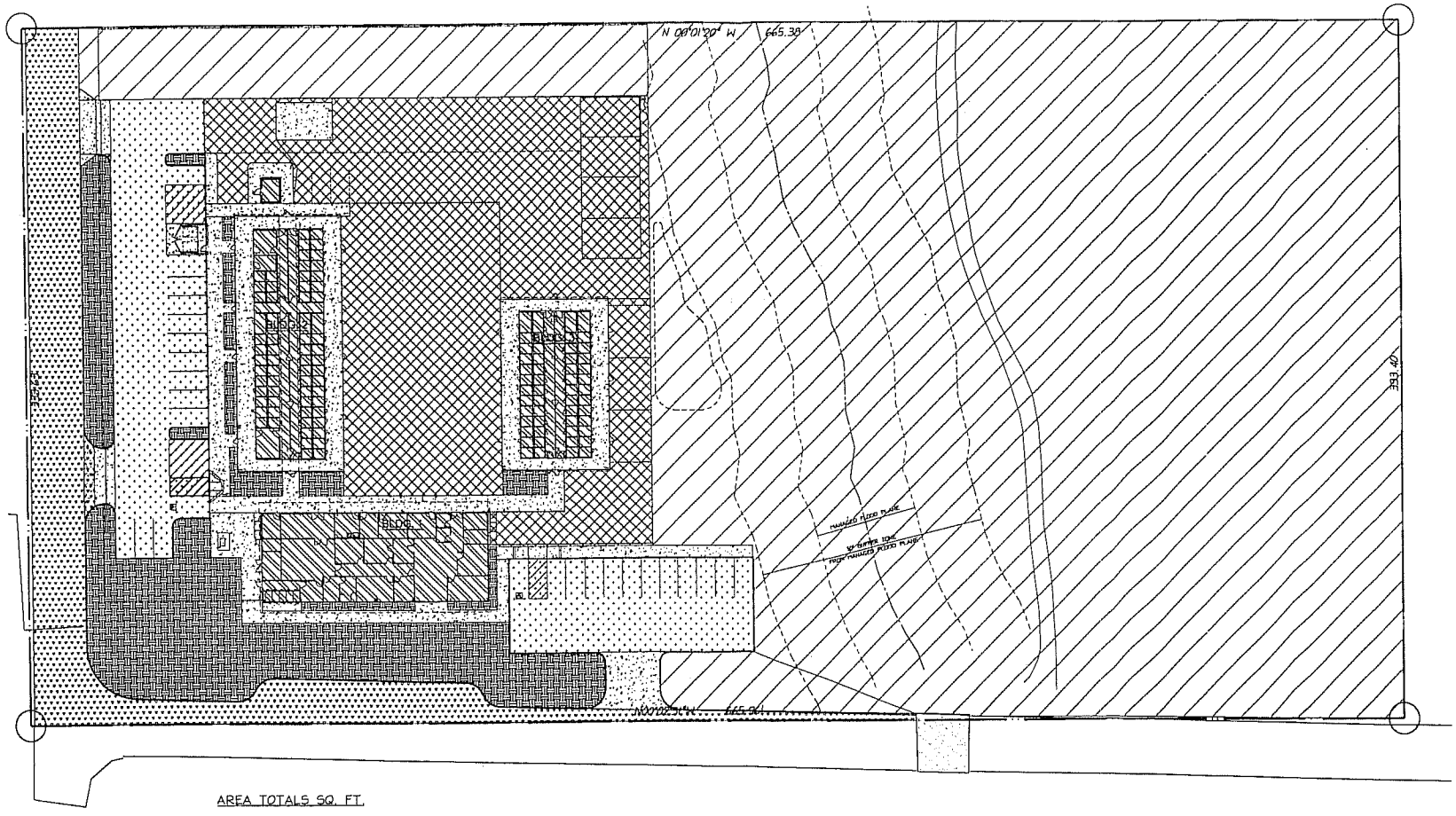
Checked by: _____ Date _____
Scale nts

Developed Pervious Area Determination

Impervious Areas			Pervious Areas		
Asphalt Pavement	14,263		Developed NonPaved	27,426	
Building Areas	10,995		Landscape	14,390	
Concrete/Hardscape	13,435		Undeveloped	0	
Total	38,693	sf	Total	41,816	sf
	0.89	ac		0.96	ac
			1.85 ac		
	48%			**52%**	

Ap= 52%



AREA TOTALS SQ. FT.

- 14,263 (AC Paving)
- 10,995 (Building Area)
- 13,435 (Concrete)
- 27,426 (Developed Non-Paved)
- 14,390 (Landscape)
- 13,128 (Roadway)
- 127,597 (Undeveloped)

REVISIONS / PRINTS ISSUED

NO.	BY	DATE	DESCRIPTION

CONSULTANT

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Architect Mark E. Williams, AIA, NCARB (C-34423)
276 North Second Avenue
Upland, California 91786-6302
909-981-6168 Fax 909-981-7207
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PROJECT
TUCCA KELLEY ANIMAL SHELTER
1 = 1
1 = 1

OWNER
ANIMAL CARE JOINT POWERS AUTHORITY

DRAWING CONTENTS
SITE AREA TAKE OFFS
ALT 12

DRAWN BY LSW — DATE 09-23-11
CHECKED BY MEW/MRD — DATE 09-26-11
JOB NO. 09-001-01-11
DRAWING NUMBER
OF DRAWINGS

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Job Yucca Valley Animal Shelter
Sheet No. _____ of _____
Calculated by: ATS Date 8/11/11
Checked by: _____ Date _____
Scale nts

Rainfall Intensity Data

Slope of Intensity/Duration curve 0.7

Duration	Return Period (year)				
hr	2	5	10	25	100
1					1.33
3					1.86
6					2.3
24					4.2

slope 0.31

=values taken from Isohyetals, County Hydrology Manual

All other values "interpolated" using logarithmic equations as follows:

--> Exp(+/- Slope x Ln(T des) + Ln(ref I) -/+ Slope x Ln(ref T))

--> I100 - I10 / Ln(100/10) x Ln(des Period / 10) + I10

RATIONAL METHOD

HYDROLOGY

- Existing Condition
- Developed Condition

```
**************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
        (c) Copyright 1983-2010 Advanced Engineering Software (aes)
            Ver. 17.0  Release Date: 07/01/2010  License ID 1584

                              Analysis prepared by:

                           ENCOMPASS ASSOCIATES, INC.
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                           RANCHO CUCAMONGA CA 91737
                             www.encompasscivil.com

 ************************** DESCRIPTION OF STUDY **************************
* YUCCA VALLEY ANIMAL SHELTER                                             *
* PRELIMINARY HYDROLOGY                                                   *
* 100-YEAR EXISTING & DEVELOPED CONDITIONS                                *
 *************************************************************************

  FILE NAME: YVASRH00.DAT
  TIME/DATE OF STUDY: 07:59 10/18/2011
==========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==========================================================================
                     --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.7000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 1.3300

  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *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 0.0312 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.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

 +------------------------------------------------------------------------+
 |                                                                        |
 |                                                                        |
 | BEGIN EXISTING CONDITION                                               |
```

```
+----------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE       0.10 TO NODE       0.20 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   380.00
  ELEVATION DATA: UPSTREAM(FEET) =   3761.00  DOWNSTREAM(FEET) =   3750.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.475
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.234
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL POOR COVER
  "GRASS"                    D        1.90      0.22      1.000    89   11.47
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.22
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      6.87
  TOTAL AREA(ACRES) =      1.90   PEAK FLOW RATE(CFS) =      6.87

+----------------------------------------------------------------------------+
| END EXISTING CONDITION                                                     |
|                                                                            |
| BEGIN DEVELOPED CONDITION (USING 8-10DU/AC DUE TO PROJECT Ap)              |
+----------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE       1.00 TO NODE       2.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   515.00
  ELEVATION DATA: UPSTREAM(FEET) =   3762.00  DOWNSTREAM(FEET) =   3750.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.028
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.653
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       D        0.95      0.47      0.500    75   10.03
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.47
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.500
  SUBAREA RUNOFF(CFS) =      3.78
  TOTAL AREA(ACRES) =      0.95   PEAK FLOW RATE(CFS) =      3.78

****************************************************************************
  FLOW PROCESS FROM NODE       2.00 TO NODE       2.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
```

```
 MAINLINE Tc(MIN.) =   10.03
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.653
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        D        0.95      0.47      0.500    75
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.47
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.500
 SUBAREA AREA(ACRES) =    0.95      SUBAREA RUNOFF(CFS) =    3.78
 EFFECTIVE AREA(ACRES) =      1.90   AREA-AVERAGED Fm(INCH/HR) =  0.23
 AREA-AVERAGED Fp(INCH/HR) =  0.47  AREA-AVERAGED Ap =  0.50
 TOTAL AREA(ACRES) =        1.9       PEAK FLOW RATE(CFS) =       7.55
==============================================================================
 END OF STUDY SUMMARY:
 TOTAL AREA(ACRES)     =        1.9  TC(MIN.) =     10.03
 EFFECTIVE AREA(ACRES) =      1.90  AREA-AVERAGED Fm(INCH/HR)=  0.23
 AREA-AVERAGED Fp(INCH/HR) =  0.47  AREA-AVERAGED Ap = 0.500
 PEAK FLOW RATE(CFS)   =       7.55
==============================================================================
==============================================================================
 END OF RATIONAL METHOD ANALYSIS
```

SYNTHETIC UNIT HYDROGRAPH

CALCULATIONS

- Existing Condition
- Developed Condition

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Yucca Valley Animal Shelter
Town of Yucca Valley

130-203
10/18/11

AMC Type II (I,II or III)

Maximum Loss Rate **Existing Condition** Set # 1

Cover	Area	%	Soil type	Area	%	CN-II	CN-III	Ap	%	S	Fp (F.C-6)	Fm	Fm (wt)
Desert grass	1.9	1.00	D	1.9	1.00	89	98	1	1.00	1.24	0.4	0.4	0.40
(AutoCalc: Impervious)				(0)	(0)		98	0	0.00	0.2			
	1.9			1.9								Fm=	0.40

Low Loss Fraction

Return Period	**2**	0.00 in		**10**	1.73 in		**25**	2.71 in		**100**	4.20 in	
Cover	Ia	Y	Y (wt)	Ia	Y	Y (wt)	Ia	Y	Y (wt)	Ia	Y	Y (wt)
Desert grass	0.25	####	####	0.25	0.47	0.47	0.25	0.6	0.60	0.25	0.72	0.72
(AutoCalc: Impervious)	0.04	####	####	0.04	0.87	0.00	0.04	0.92	0.00	0.04	0.95	0.00
		Y=	####		Y=	0.47		Y=	0.60		Y=	0.72
Low Loss Fraction,Y-bar =			####			0.53			0.40			0.28
Est Vol (ac-ft)=			####			0			0			0.5

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Yucca Valley Animal Shelter — 130-203
Town of Yucca Valley — 10/18/11

1	Design Storm		yr	2	10	25	100
2	Catchment Lag time		hrs	0.00	0.00	0.00	0.15
			Tc (min)	0	0	0	11.47
3	Catchment Area	acres 1.9					
4	Base flow	cfs/sq mi 0					
5	S-graph	ValleyDeveloped					
6	Maximum loss rate, Fm	in/hr 0.40					
7	Low loss fraction, Y-bar			#####	0.53	0.40	0.28
8	Watershed area-averaged 5-minute point rainfall		inches	#####	######	0.25	0.63
	Watershed area-averaged 30-minute point rainfall		inches	#####	######	0.43	1.08
	Watershed area-averaged 1-hour point rainfall		inches	#####	######	0.53	1.33
	Watershed area-averaged 3-hour point rainfall		inches	#####	######	0.99	1.86
	Watershed area-averaged 6-hour point rainfall		inches	#####	######	1.48	2.30
	Watershed area-averaged 24-hour point rainfall		inches	0.00	1.73	2.71	4.20
9	24-hour storm unit interval (use TC for Small UH)		minutes	5			

Yucca Valley Animal Shelter

Existing Condition
10/18/11
Small Area Unit Hydrograph
Per Chapter J, SBCo Hyd. Man.

Storm	100	year
I-5min	0.63	
I-30min	1.08	
I-60min	1.33	
I-3hr	1.86	
I-6hr	2.30	
1-24hr	4.20	
Ac	1.9	ac
TC	11.47	min
Calibration	0.95	
fm	0.40	in/hr
	0.00667	in/min
Y-bar	0.28	
	Peak	Total
	6.23	0.4266

T	Q	V
(hrs)	(cfs)	(ac-ft)
0	0	0
0.13	0.09	0.0005
0.32	0.09	0.0019
0.52	0.09	0.0033
0.71	0.09	0.0047
0.90	0.09	0.0062
1.09	0.09	0.0076
1.28	0.09	0.0091
1.47	0.09	0.0106
1.66	0.09	0.0120
1.85	0.09	0.0135
2.04	0.10	0.0150
2.24	0.10	0.0165
2.43	0.10	0.0181
2.62	0.10	0.0196
2.81	0.10	0.0212
3.00	0.10	0.0227
3.19	0.10	0.0243
3.38	0.10	0.0259
3.57	0.10	0.0275

T (hrs)	Q (cfs)	V (ac-ft)
3.77	0.10	0.0291
3.96	0.10	0.0307
4.15	0.10	0.0324
4.34	0.11	0.0340
4.53	0.11	0.0357
4.72	0.11	0.0374
4.91	0.11	0.0391
5.10	0.11	0.0408
5.29	0.11	0.0426
5.49	0.11	0.0443
5.68	0.11	0.0461
5.87	0.11	0.0479
6.06	0.12	0.0497
6.25	0.12	0.0515
6.44	0.12	0.0534
6.63	0.12	0.0553
6.82	0.12	0.0572
7.02	0.12	0.0591
7.21	0.12	0.0610
7.40	0.13	0.0630
7.59	0.13	0.0650
7.78	0.13	0.0670
7.97	0.13	0.0690
8.16	0.13	0.0711
8.35	0.13	0.0732
8.54	0.14	0.0753
8.74	0.14	0.0775
8.93	0.14	0.0796
9.12	0.14	0.0819
9.31	0.14	0.0841
9.50	0.15	0.0864
9.69	0.15	0.0887
9.88	0.15	0.0911
10.07	0.15	0.0935
10.27	0.16	0.0959
10.46	0.16	0.0984
10.65	0.16	0.1010
10.84	0.17	0.1036
11.03	0.17	0.1062
11.22	0.17	0.1089
11.41	0.18	0.1117
11.60	0.18	0.1145

T (hrs)	Q (cfs)	V (ac-ft)
11.79	0.18	0.1174
11.99	0.19	0.1204
12.18	0.17	0.1232
12.37	0.14	0.1257
12.56	0.15	0.1280
12.75	0.15	0.1304
12.94	0.16	0.1329
13.13	0.17	0.1354
13.32	0.17	0.1381
13.51	0.18	0.1409
13.71	0.19	0.1439
13.90	0.21	0.1470
14.09	0.21	0.1503
14.28	0.23	0.1539
14.47	0.25	0.1577
14.66	0.28	0.1618
14.85	0.29	0.1663
15.04	0.34	0.1713
15.24	0.37	0.1769
15.43	0.46	0.1835
15.62	0.52	0.1912
15.81	0.79	0.2015
16.00	1.14	0.2168
16.19	6.23	0.2751
16.38	0.62	0.3292
16.57	0.41	0.3373
16.76	0.31	0.3430
16.96	0.26	0.3476
17.15	0.22	0.3514
17.34	0.20	0.3547
17.53	0.18	0.3577
17.72	0.16	0.3604
17.91	0.15	0.3629
18.10	0.14	0.3651
18.29	0.19	0.3677
18.49	0.18	0.3706
18.68	0.17	0.3734
18.87	0.16	0.3760
19.06	0.16	0.3786
19.25	0.15	0.3810
19.44	0.15	0.3834
19.63	0.14	0.3857

T (hrs)	Q (cfs)	V (ac-ft)
19.82	0.14	0.3879
20.01	0.13	0.3901
20.21	0.13	0.3922
20.40	0.13	0.3942
20.59	0.12	0.3962
20.78	0.12	0.3981
20.97	0.12	0.4000
21.16	0.12	0.4019
21.35	0.11	0.4037
21.54	0.11	0.4055
21.74	0.11	0.4072
21.93	0.11	0.4089
22.12	0.11	0.4106
22.31	0.10	0.4122
22.50	0.10	0.4138
22.69	0.10	0.4154
22.88	0.10	0.4170
23.07	0.10	0.4185
23.26	0.10	0.4200
23.46	0.09	0.4215
23.65	0.09	0.4230
23.84	0.09	0.4244
24.03	0.09	0.4259
24.22	0.00	0.4266
24.41	0.00	0.4266

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Yucca Valley Animal Shelter
Town of Yucca Valley

130-203
10/18/11

AMC Type II (I,II or III)

Maximum Loss Rate — **Developed Condition** Set # 1

Cover	Area	%	Soil type	Area	%	CN-II	CN-III	Ap	%	S	Fp (F.C-6)	Fm	Fm (wt)
Animal Shelter	1.9	1.00	D	1.9	1.00	75	91	0.5	0.50	3.33	0.47	0.24	0.24
(AutoCalc: Impervious)				(1)	(0.53)		98	0	0.50	0.2			
	1.9			1.9								Fm=	0.24

Low Loss Fraction

Return Period	2	0.00 in		10	1.73 in		25	2.71 in		100	4.20 in	
Cover	Ia	Y	Y (wt)	Ia	Y	Y (wt)	Ia	Y	Y (wt)	Ia	Y	Y (wt)
Animal Shelter	0.67			0.67	0.15	0.08	0.67	0.29	0.15	0.67	0.43	0.22
(AutoCalc: Impervious)	0.04			0.04	0.87	0.44	0.04	0.92	0.46	0.04	0.95	0.48
					Y=	0.51		Y=	0.61		Y=	0.69
Low Loss Fraction,Y-bar =						0.49			0.40			0.31
Est Vol (ac-ft)=						0			0			0.46

Encompass Associates, Inc.
5699 Cousins Place
Rancho Cucamonga, CA 91737
909-684-0093

Yucca Valley Animal Shelter
Town of Yucca Valley

130-203
10/18/11

1	Design Storm		yr	2	10	25	100
2	Catchment Lag time		hrs	0.00	0.00	0.00	0.13
			Tc (min)	0	0	0	10
3	Catchment Area	acres 1.9					
4	Base flow	cfs/sq mi 0					
5	S-graph	ValleyDeveloped					
6	Maximum loss rate, Fm	in/hr 0.24					
7	Low loss fraction, Y-bar			0.00	0.49	0.40	0.31
8	Watershed area-averaged 5-minute point rainfall		inches				0.63
	Watershed area-averaged 30-minute point rainfall		inches				1.08
	Watershed area-averaged 1-hour point rainfall		inches				1.33
	Watershed area-averaged 3-hour point rainfall		inches				1.86
	Watershed area-averaged 6-hour point rainfall		inches				2.30
	Watershed area-averaged 24-hour point rainfall		inches				4.20
9	24-hour storm unit interval (use TC for Small UH)		minutes	5			

Yucca Valley Animal Shelter

Developed Condition

10/18/11

Small Area Unit Hydrograph

Per Chapter J, SBCo Hyd. Man.

Storm	100	year
I-5min	0.63	
I-30min	1.08	
I-60min	1.33	
I-3hr	1.86	
I-6hr	2.30	
1-24hr	4.20	
Ac	1.9	ac
TC	10	min
Calibration	1	
fm	0.24	in/hr
	0.004	in/min
Y-bar	0.31	
	Peak	Total
	7.56	0.4408

T	Q	V
(hrs)	(cfs)	(ac-ft)
0	0	0
0.00	0.00	0.0000
0.17	0.09	0.0006
0.33	0.09	0.0019
0.50	0.09	0.0031
0.67	0.09	0.0044
0.83	0.09	0.0056
1.00	0.09	0.0069
1.17	0.09	0.0082
1.33	0.09	0.0095
1.50	0.09	0.0108
1.67	0.09	0.0121
1.83	0.10	0.0134
2.00	0.10	0.0147
2.17	0.10	0.0160
2.33	0.10	0.0174
2.50	0.10	0.0187
2.67	0.10	0.0201
2.83	0.10	0.0214
3.00	0.10	0.0228

T (hrs)	Q (cfs)	V (ac-ft)
3.17	0.10	0.0242
3.33	0.10	0.0256
3.50	0.10	0.0270
3.67	0.10	0.0284
3.83	0.10	0.0298
4.00	0.10	0.0313
4.17	0.11	0.0327
4.33	0.11	0.0342
4.50	0.11	0.0357
4.67	0.11	0.0371
4.83	0.11	0.0386
5.00	0.11	0.0402
5.17	0.11	0.0417
5.33	0.11	0.0432
5.50	0.11	0.0448
5.67	0.11	0.0463
5.83	0.12	0.0479
6.00	0.12	0.0495
6.17	0.12	0.0511
6.33	0.12	0.0527
6.50	0.12	0.0544
6.67	0.12	0.0560
6.83	0.12	0.0577
7.00	0.12	0.0594
7.17	0.12	0.0611
7.33	0.13	0.0628
7.50	0.13	0.0645
7.67	0.13	0.0663
7.83	0.13	0.0681
8.00	0.13	0.0699
8.17	0.13	0.0717
8.33	0.13	0.0735
8.50	0.14	0.0754
8.67	0.14	0.0773
8.83	0.14	0.0792
9.00	0.14	0.0812
9.17	0.14	0.0831
9.33	0.15	0.0851
9.50	0.15	0.0871
9.67	0.15	0.0892
9.83	0.15	0.0912
10.00	0.15	0.0934

T (hrs)	Q (cfs)	V (ac-ft)
10.17	0.16	0.0955
10.33	0.16	0.0977
10.50	0.16	0.0999
10.67	0.16	0.1021
10.83	0.17	0.1044
11.00	0.17	0.1067
11.17	0.17	0.1091
11.33	0.18	0.1115
11.50	0.18	0.1140
11.67	0.18	0.1165
11.83	0.19	0.1191
12.00	0.19	0.1217
12.17	0.14	0.1240
12.33	0.14	0.1259
12.50	0.15	0.1279
12.67	0.15	0.1300
12.83	0.16	0.1321
13.00	0.16	0.1343
13.17	0.17	0.1366
13.33	0.18	0.1390
13.50	0.19	0.1415
13.67	0.19	0.1441
13.83	0.20	0.1469
14.00	0.21	0.1497
14.17	0.23	0.1527
14.33	0.24	0.1560
14.50	0.26	0.1594
14.67	0.27	0.1631
14.83	0.31	0.1670
15.00	0.33	0.1714
15.17	0.38	0.1762
15.33	0.41	0.1817
15.50	0.50	0.1879
15.67	0.58	0.1954
15.83	0.88	0.2054
16.00	1.43	0.2213
16.17	7.56	0.2832
16.33	0.69	0.3400
16.50	0.45	0.3479
16.67	0.35	0.3534
16.83	0.29	0.3578
17.00	0.25	0.3615

T (hrs)	Q (cfs)	V (ac-ft)
17.17	0.22	0.3647
17.33	0.20	0.3676
17.50	0.18	0.3702
17.67	0.17	0.3726
17.83	0.16	0.3748
18.00	0.15	0.3769
18.17	0.19	0.3792
18.33	0.19	0.3819
18.50	0.18	0.3844
18.67	0.17	0.3868
18.83	0.17	0.3891
19.00	0.16	0.3914
19.17	0.16	0.3936
19.33	0.15	0.3957
19.50	0.15	0.3977
19.67	0.14	0.3997
19.83	0.14	0.4016
20.00	0.14	0.4035
20.17	0.13	0.4054
20.33	0.13	0.4072
20.50	0.13	0.4089
20.67	0.12	0.4107
20.83	0.12	0.4123
21.00	0.12	0.4140
21.17	0.12	0.4156
21.33	0.11	0.4172
21.50	0.11	0.4188
21.67	0.11	0.4203
21.83	0.11	0.4218
22.00	0.11	0.4233
22.17	0.11	0.4248
22.33	0.10	0.4262
22.50	0.10	0.4276
22.67	0.10	0.4290
22.83	0.10	0.4304
23.00	0.10	0.4318
23.17	0.10	0.4331
23.33	0.10	0.4344
23.50	0.09	0.4357
23.67	0.09	0.4370
23.83	0.09	0.4383
24.00	0.09	0.4395

T	Q	V
(hrs)	(cfs)	(ac-ft)
24.17	0.09	0.4408

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Civil Engineers
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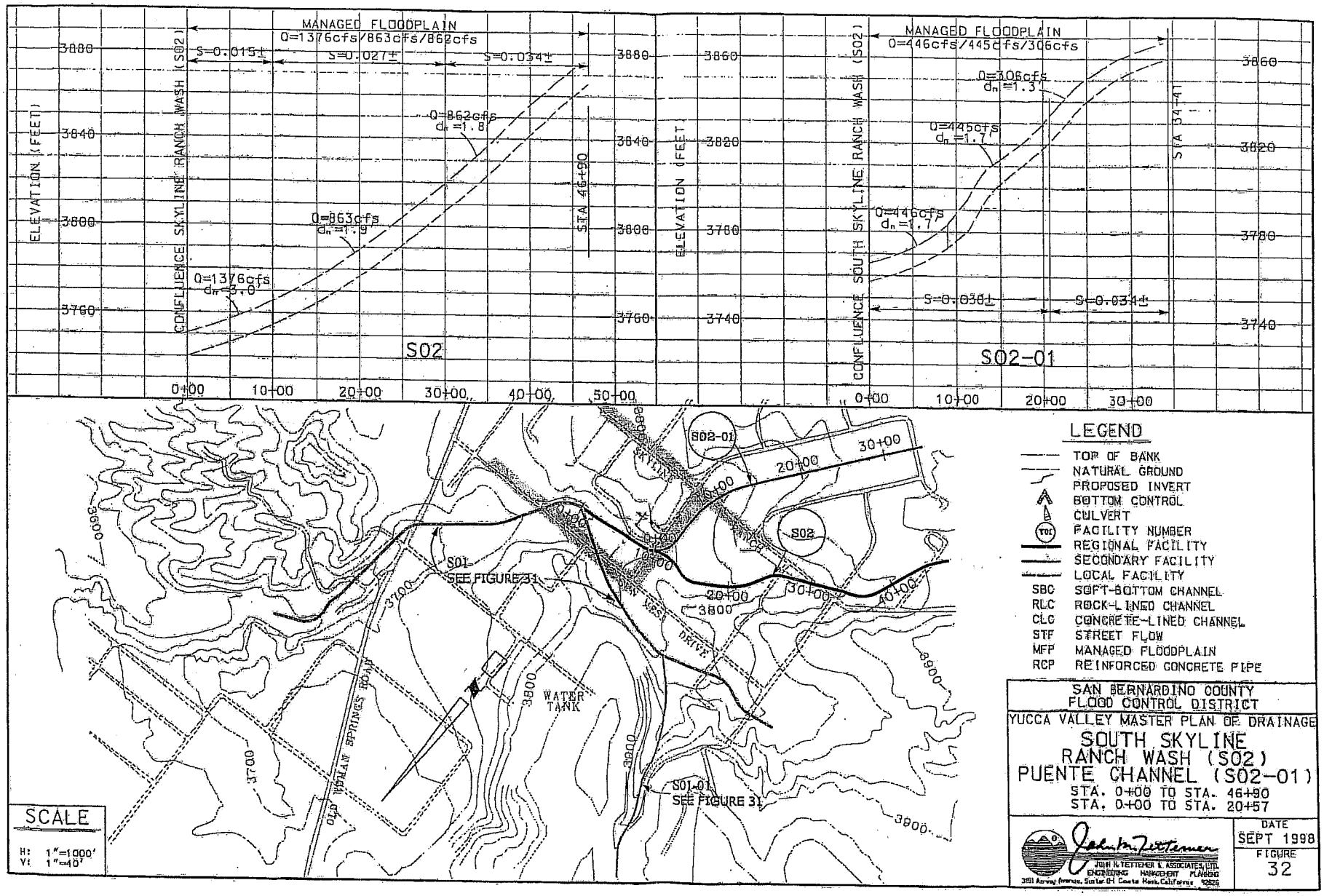
Job Yucca Valley Animal S **130-203**
Sheet No. _____ of _____
Calculated by: ATS Date 10/18/11
Checked by: _____ Date _____
Scale nts

Yucca Valley Animal Shelter
Town of Yucca Valley

Table 1: Basin Geometries

Depth	Elevation	Area	ΔVol	Total V	
ft	ft	sq ft	cf	cf	ac-ft
Basin 1					
0	0	**634**	0	0	0.000
1	1	**1113**	862	862	0.020
2	2	**1711**	1401	2264	0.052

REFERENCES & MAPS



SAN BERNARDINO COUNTY
FLOOD CONTROL DISTRICT

YUCCA VALLEY MASTER PLAN OF DRAINAGE

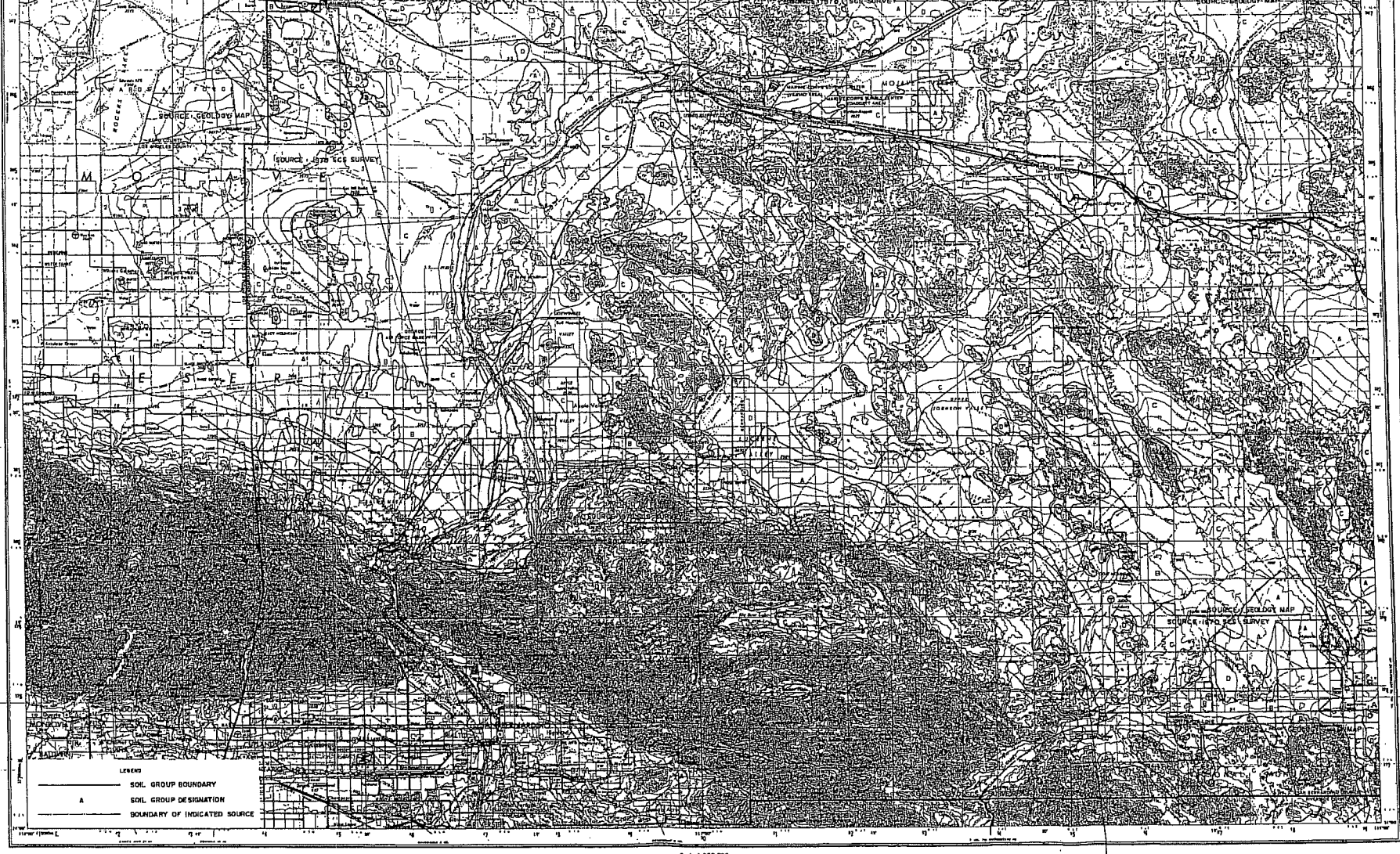
SOUTH SKYLINE RANCH WASH (S02) PUENTE CHANNEL (S02-01)

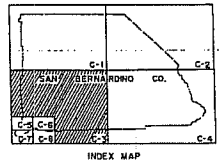
STA. 0+00 TO STA. 46+90
STA. 0+00 TO STA. 20+57

JOHN H. TETTEMER & ASSOCIATES, LTD.
ENGINEERING MANAGEMENT PLANNING
3511 Airway Avenue, Suite H Costa Mesa, California 92626

DATE
SEPT 1998

FIGURE
32





INDEX MAP

Scale 1:250,000

CONTOUR INTERVAL 200 FEET
WITH SUPPLEMENTARY CONTOURS AT 100 FOOT INTERVALS
TRANSVERSE MERCATOR PROJECTION

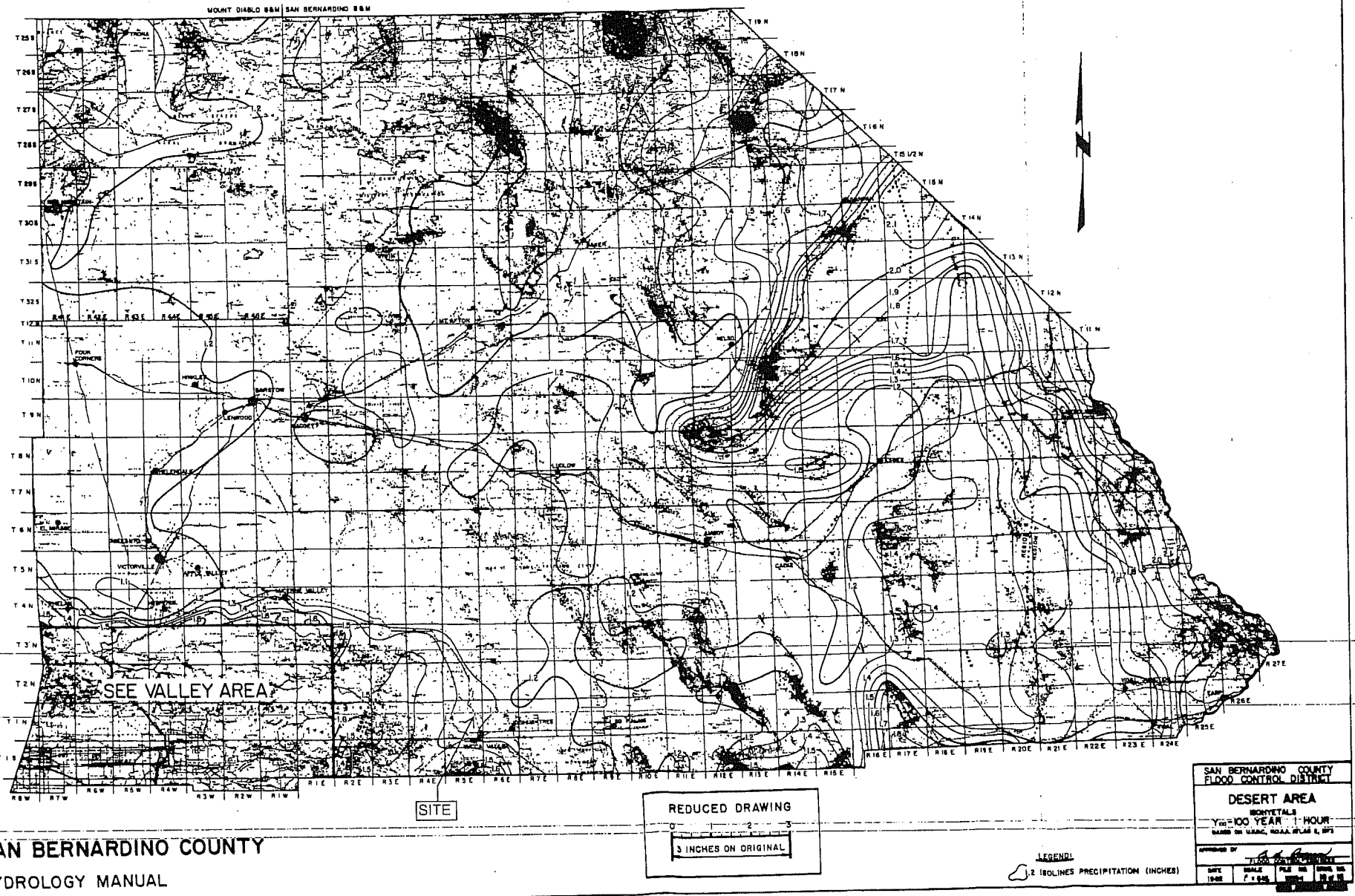
BASE MAP REPRODUCED FROM U.S.G.S. "SAN BERNARDINO" TOPOGRAPHIC MAP

SCALE REDUCED BY 1/2

SAN BERNARDINO COUNTY
HYDROLOGY MANUAL

HYDROLOGIC SOILS GROUP MAP
FOR
SOUTHCENTRAL AREA

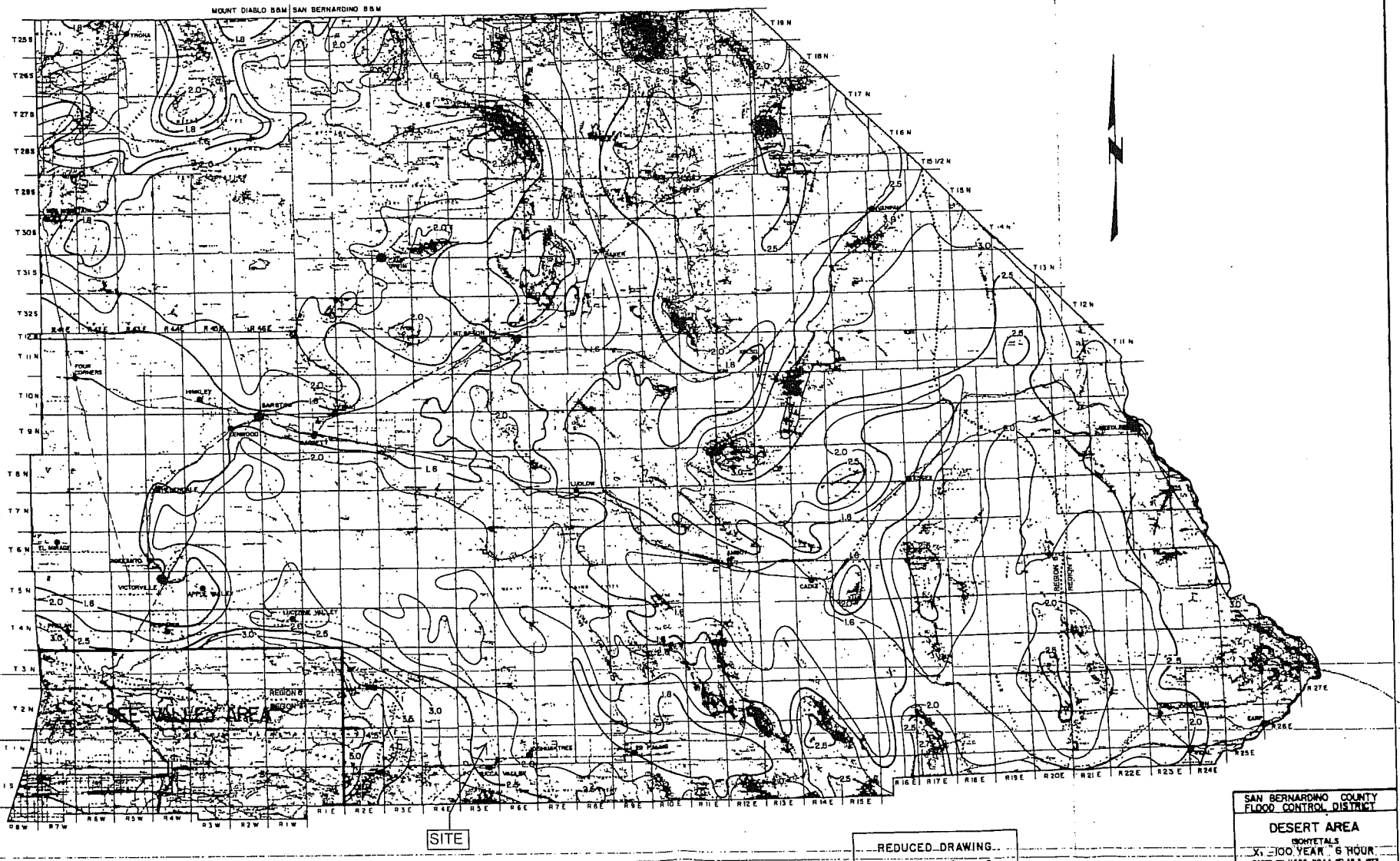
FIGURE C-11



SAN BERNARDINO COUNTY

HYDROLOGY MANUAL

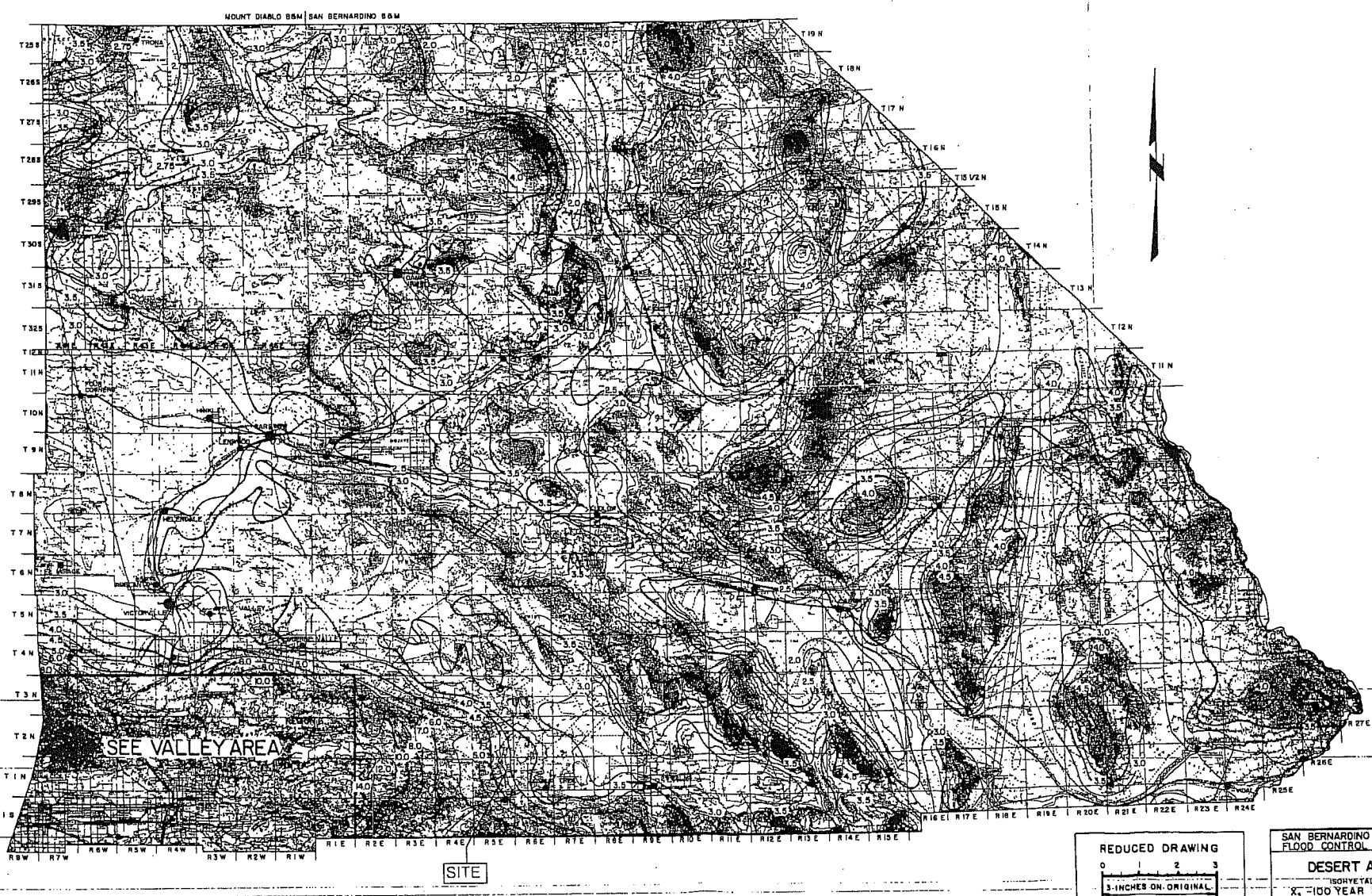
FIGURE B-10



SAN BERNARDINO COUNTY

HYDROLOGY MANUAL

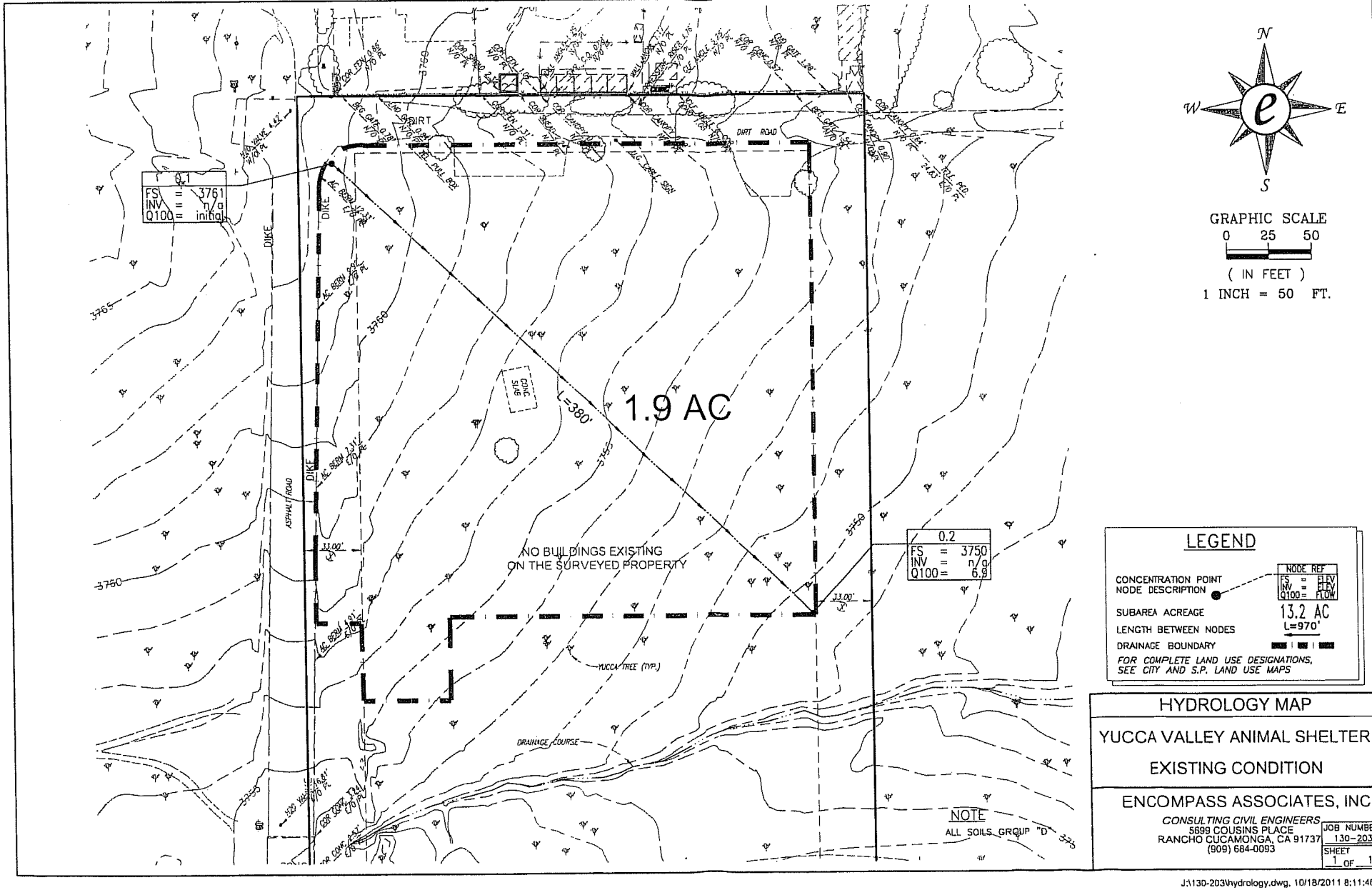
FIGURE B-11



SAN BERNARDINO COUNTY

HYDROLOGY MANUAL

FIGURE B-12



HYDROLOGY MAP

YUCCA VALLEY ANIMAL SHELTER

EXISTING CONDITION

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CONSULTING CIVIL ENGINEERS
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RANCHO CUCAMONGA, CA 91737
(909) 684-0093

JOB NUMBER 130-203
SHEET 1 OF 1

YUCCA VALLEY ANIMAL SHELTER - HYDROLOGY MAP

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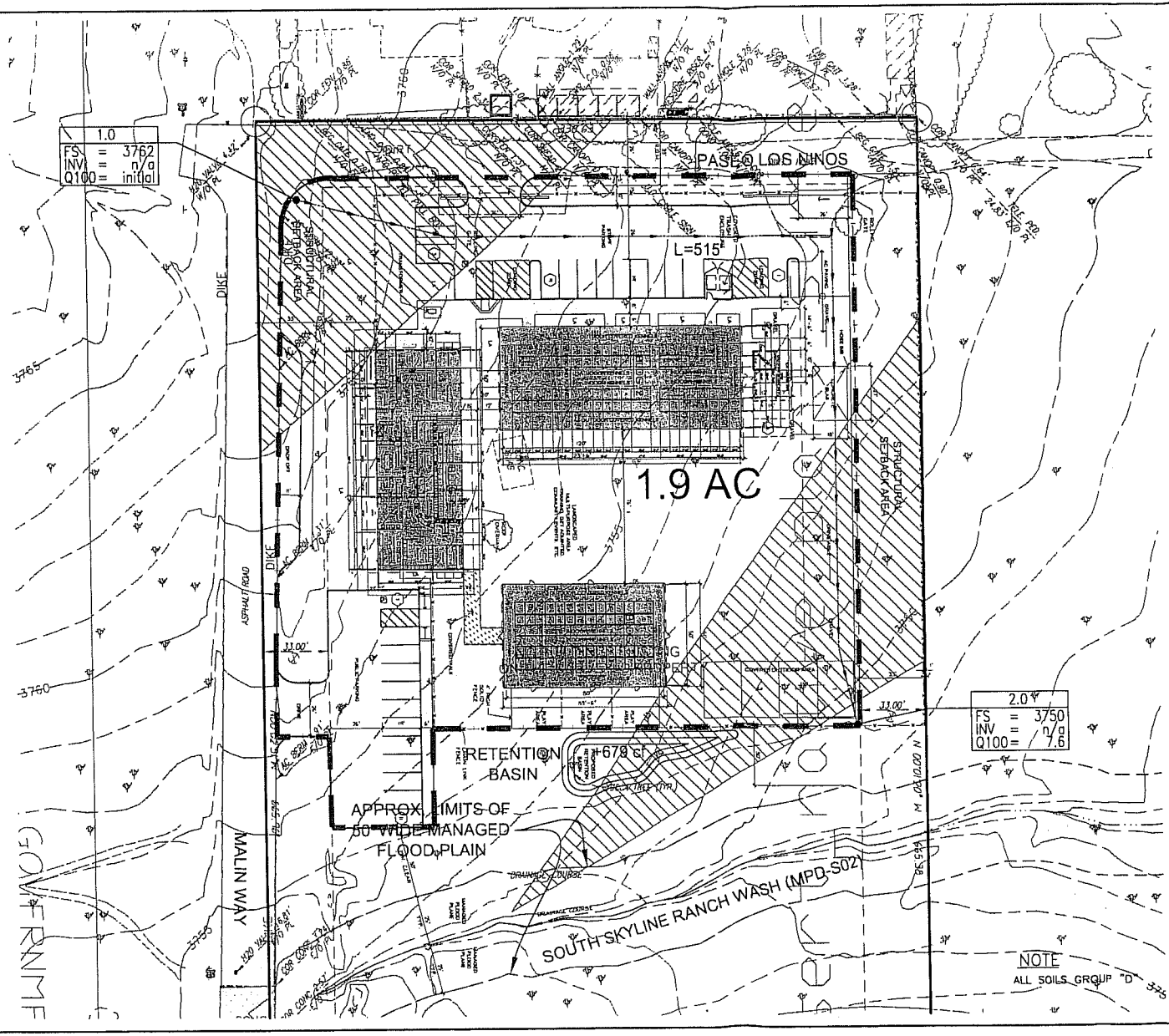

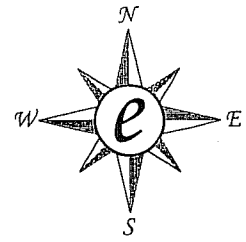

GRAPHIC SCALE

0 25 50

(IN FEET)

1 INCH = 50 FT.

LEGEND

CONCENTRATION POINT NODE DESCRIPTION — NODE REF: FS = ELEV, INV = ELEV, Q100 = FLOW

SUBAREA ACREAGE — 13.2 AC

LENGTH BETWEEN NODES — L=970'

DRAINAGE BOUNDARY

FOR COMPLETE LAND USE DESIGNATIONS, SEE CITY AND S.P. LAND USE MAPS

HYDROLOGY MAP

YUCCA VALLEY ANIMAL SHELTER

DEVELOPED CONDITION

ENCOMPASS ASSOCIATES, INC.

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(909) 684-0093

JOB NUMBER 130-203

SHEET 1 OF 1

YUCCA VALLEY ANIMAL SHELTER - HYDROLOGY MAP

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AIR QUALITY ASSESSMENT
FOR
TOWN OF YUCCA VALLEY
"ANIMAL SHELTER"

Prepared for:

Williams Architects, Inc.
276 North Second Avenue
Upland, CA 91786

Prepared by:

Lilburn Corporation
1905 Business Center Drive
San Bernardino, California 92408

September 2011

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LIST OF FIGURES

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APPENDIX

1.0 INTRODUCTION

The applicant (Animal Care Joint Powers Authority) has submitted an application for an Animal Shelter on approximately 5 acres located approximately half a mile west of Highway 247 and one block north of Skyline Ranch Road, in the Town of Yucca Valley. This Shelter will ultimately replace the existing Shelter located adjacent to the north. Refer to Figures 1, 2, and 3 for a regional location map, project vicinity map and site plan, respectively.

This report is a study of the potential impacts the project may have on the local and regional air quality in the vicinity during construction and ultimate operational use. This air quality assessment discusses the existing air quality in the vicinity/region and the potential air quality impacts associated with the planned project. Background material, including air quality emissions data output, is included in Appendix A.

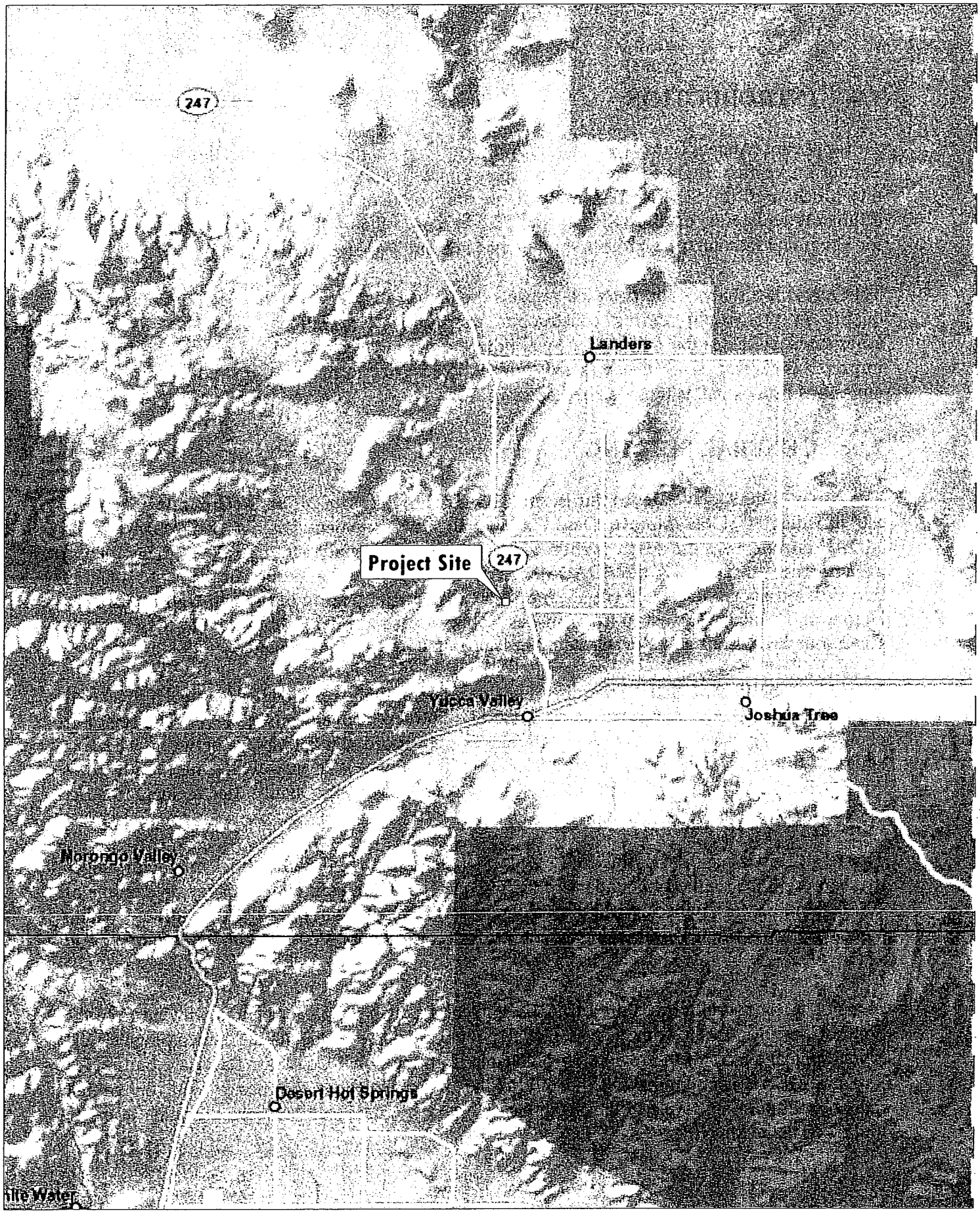
2.0 GENERAL SETTING

The site is in the Mojave Desert Air Basin (MDAB), approximate 21,000 square mile area under the jurisdiction of the Mojave Desert Air Quality Management District (MDAQMD). The MDAB encompasses the desert portion of San Bernardino County and the Palo Verde Valley in eastern Riverside County. The MDAQMD has jurisdiction over that portion of the MDAB within San Bernardino and Riverside counties. This area is generally north of the San Gabriel and San Bernardino mountains, west to Los Angeles County, north to Inyo County, east to the Colorado River and the Arizona and Nevada state lines and south to Riverside County.

The desert portion of San Bernardino County is commonly referred to as the High Desert because of its altitude at approximately 1,000 to 4,500 feet above mean sea level. The region is characterized by a series of low mountain ranges with broad alluvial valleys between. The area south of the mountains including the San Bernardino Valley is located within the South Coast Air Basin (SCAB) under the jurisdiction of the South Coast Air Quality Management District (SCAQMD).

The High Desert region is influenced by the San Bernardino and San Gabriel mountain ranges that represent the southerly boundary of the region. These mountain ranges rise to an average of 7,500 feet and are divided by the Cajon Pass at 4,260 feet. The project site is located within Yucca Valley north of Palm Springs at elevations ranging from 3,000 to 8,000 feet above mean sea level.

A major factor that influences the MDAB's ambient air quality is its location downwind from the South Coast Air Basin with its substantial pollution sources. Due to the meteorological and topographical factors of the region, air pollutants from the South Coast Air Basin are transported into the MDAB contributing significantly to the ozone violations that occur. With the overall reduction in pollutant levels in the South Coast Air Basin, the result has been a decline in ozone violations in the MDAB.



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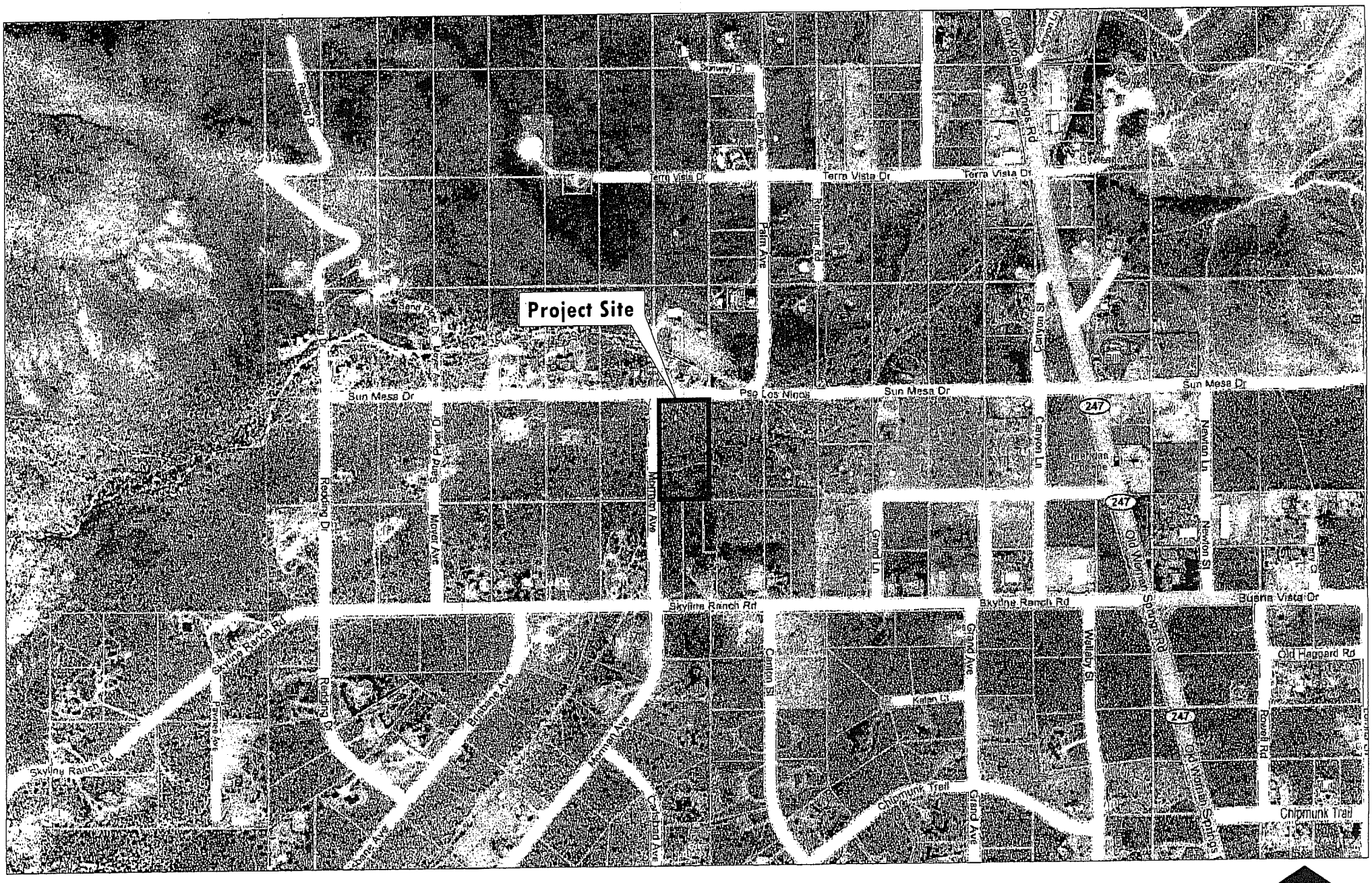
LILBURN CORPORATION

Regional Location

Yucca Valley Animal Shelter - AG
Yucca Valley, California

Figure 1



Project Vicinity

Yucca Valley Animal Shelter - AQ
Yucca Valley, California

Figure 2

N

0 40
Feet

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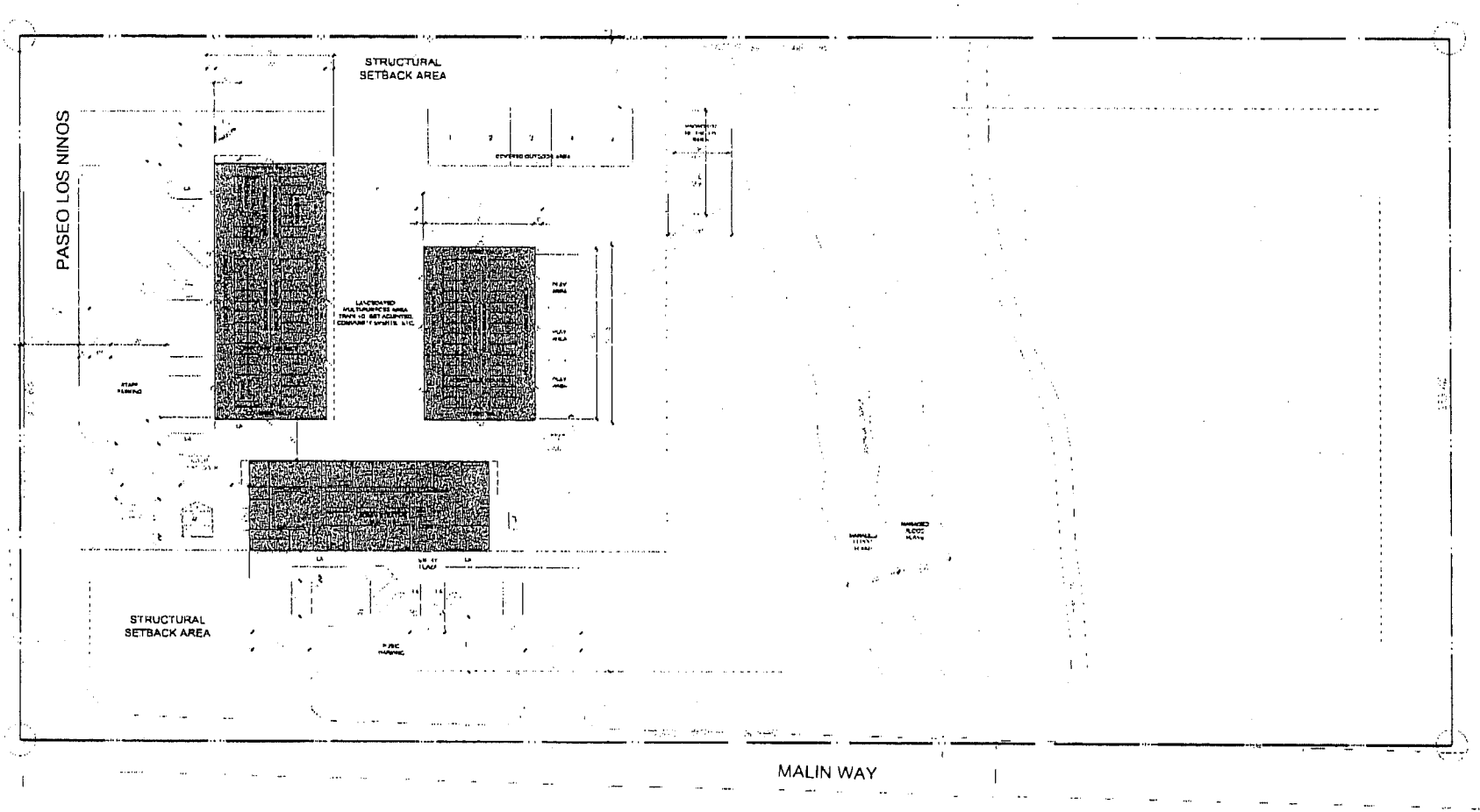
CORPORATION



Project Site Plan

Yucca Valley Animal Shelter - AQ
Yucca Valley, California

Figure 2

CONCEPT SITE DIAGRAM
ALT 7

CA-1

LILBURN

2.1 CLIMATE

The High Desert is classified as an arid desert climate. In the Mojave Desert, this is modified by the San Bernardino Mountains forming barriers to precipitation. The rain shadow causes the aridity of the High Desert climate, while leaving the summers hot and the winters generally mild.

For most of summer, the region is under the northern edge of the Pacific Subtropical Ridge that limits cloud formation and allows strong daytime heating. This is a zone with no dominant winds, which allows more local effects such as the sea breeze passing through the Banning Pass to control the local weather. The high pressure systems also contribute to the presence of persistent inversion layers that trap pollutants by preventing their dispersion through vertical mixing. In late summer, the ridge can move far enough north to allow humid air from the Gulf of California, and even as far east as the Gulf of Mexico, into the High Desert. When this happens, thunderstorms may form, causing isolated flash floods and high wind gusts.

Average high temperatures in summer are in the mid 90s to 100° Fahrenheit (F). Average low temperatures are in the mid 60s to 70s. During winter, the Polar Front Jet stream steers pressure systems from west to east across the region. Mild rains result from systems steered in from the southwest and northwest. Winter storm systems are often followed by periods of clear skies and strong westerly or northerly winds. Average high temperatures in winter are in the mid 50s and average low temperatures are in the mid 30s.

Three weather factors have significant impacts on air quality; wind, precipitation and inversion layers. Each of these are discussed below.

Wind

Although the High Desert is 80 miles from the ocean, the sea breeze can be a dominant weather feature. The sea breeze is caused by differential heating of land and water. Land heats faster than the ocean, and because hot air rises, air warmed over land during the day rises, and cooler denser air from the ocean moves in to replace it. Normally limited to within a few miles of a coastline, the extreme differences in temperature between the desert and the Pacific Ocean make the sea breeze a regional phenomenon in southern California. The combination of extreme temperature differences and physical restraint on the air movements means there is a consistent source for strong wind blowing through Banning Pass and across the High Desert. The sea breeze is a primary transportation medium, bringing pollutants out of the coastal valleys and into the desert.

Precipitation

The High Desert receives precipitation from winter cold fronts and moist southerly air masses during the late summer. Precipitation at Yucca Valley averages less than 5.23 inches a year. Summer thunderstorms bring highly variable amounts of localized rain. The rain from these storms falling into the dry air often evaporates before reaching the surface. However, if the storm lasts long enough, the area beneath the storm may get several inches of rain over a short time leading to flash floods and rapid erosion in washes and gullies. Due to its higher elevation, the project site experiences higher precipitation and occasional winter snow.

Inversions

Inversions are layers in the atmosphere where the temperature increases with height instead of decreasing as is normal. Inversions trap pollutants by limiting the vertical mixing which normally disperses pollutants into the upper atmosphere. There are two types of inversions affecting the High Desert. The first is the regional inversions caused by subsiding air within the high-pressure systems that dominate the summer weather. These subsidence inversions can occur at varying altitudes, with corresponding variable effects on the pollution levels. The lower the inversion level, the greater the concentration of pollutants between it and the ground. The second type is the radiation inversion that forms when the ground cools rapidly after sunset, cooling the air immediately above it at the same time. Due to the project's mountain slope location, inversions would have little effect on its air quality.

2.2 APPLICABLE POLICIES AND REGULATIONS

Air Quality in the MDAB

Air quality is determined primarily by the types and amounts of contaminants emitted into the atmosphere, the size and topography of the local air basin and the pollutant-dispersing properties of local weather patterns. When airborne pollutants are produced in such volume that they are not dispersed by local meteorological conditions, air quality problems result. Dispersion of pollutants in the MDAB is influenced by periodic temperature inversions, persistent meteorological conditions and the local topography. As pollutants become more concentrated in the atmosphere, photochemical reactions occur, producing ozone and other oxidants.

Another major factor that influences the MDAB's ambient air quality is its location downwind from two air basins with substantial pollution sources. Due to the meteorological and topographical factors of the region, air pollutants from the SCAB and the San Joaquin Valley Air Basin are transported into the MDAB contributing significantly to the ozone violations that occur. With the overall reduction in pollutant levels in the SCAB, the result has been a substantial decline in ozone violations in the Mojave Desert. However, with urban growth in the San Joaquin Valley rapidly increasing, and agriculture continuing to dominate that valley's economy, pollutant levels are increasing.

Air emissions from the project are subject to federal, State and local rules and regulations implemented through provisions of the federal Clean Air Act, California Clean Air Act and the rules and regulations of the California Air Resources Board (CARB) and MDAQMD. Under the provisions of the federal and California Clean Air Acts, air quality management districts with air basins not in attainment of the air quality standards are required to prepare an Air Quality Management Plan (AQMP). An AQMP establishes an area-specific program to control existing and proposed sources of air emissions so that the air quality standards may be attained by an applicable target date. The following is an overview of these rules and regulations.

Federal Clean Air Act

The federal Clean Air Act was established in an effort to assure that acceptable levels of air quality are maintained in all areas of the United States. These levels are based upon health-

related exposure limits and are referred to as National Ambient Air Quality Standards (NAAQS). The NAAQS establish maximum allowable concentrations of specific pollutants in the atmosphere and characterize the amount of exposure deemed safe for the public. The NAAQS are established for carbon monoxide (CO); sulfur dioxide (SO_2); particulate matter less than 10 microns, aerodynamic diameter (PM_{10}); particulate matter less than 2.5 microns ($PM_{2.5}$); ozone (O_3); and lead (Pb).

Primary and secondary NAAQS have been established and are shown in Table 1. The table also lists California air quality standards. Primary federal standards reflect levels of air quality deemed necessary by the federal EPA to provide an adequate margin of safety to protect public health. Areas that meet the standards are designated attainment and if found to be in violation of primary standards are designated as nonattainment areas. Secondary standards reflect levels of air quality necessary to protect public welfare from known or anticipated adverse effects of a pollutant.

NAAQS have been set for a number of criteria pollutants. Following is a brief description, their health effects and whether the MDAB is in attainment for these pollutants:

Ozone (O3) is a toxic gas that irritates the lungs and damages materials and vegetation. Data summarized in Table 2 indicate that levels of ozone periodically exceed the 1-hour state standard and the 8-hour Federal standard in the project area. Data is from the Joshua Tree Air Monitoring Station. The MDAB is designated as a non-attainment basin for ozone and an AQMP was prepared in 1991.

Coarse Particulate Matter (PM_{10}) consists of extremely small-suspended particles or droplets 10 microns or smaller in diameter that can lodge in lungs contributing to respiratory problems. PM_{10} arises from such sources as road dust, diesel soot, combustion products, abrasion of tires and brakes, construction operations and windstorms. PM_{10} scatters light and significantly reduces visibility. PM_{10} poses a health hazard, alone or in combination with other pollutants. Table 3 shows data gathered during the last five years from the Victorville Air Monitoring Station. PM_{10} levels infrequently exceed the state ambient air quality standards and exceeded the Federal standard once over the past 5 years.

Fine Particulate Matter ($PM_{2.5}$) consists of extremely small-suspended particles 2.5 microns in diameter and arises primarily from combustion sources. The MDAQMD currently monitors $PM_{2.5}$ in the urban areas of the SCAB such as Victorville. Table 4 shows data gathered during the last five years from the Victorville Air Monitoring Station (nearest available station with data) and shows $PM_{2.5}$ is not a concern at the project site.

Carbon monoxide (CO) is a gas produced almost entirely from automobiles that interferes with the transfer of oxygen to the brain. Peak levels of CO occur in winter and are highest where there is heavy traffic. AAQS have not been exceeded in the area.

Nitrogen dioxide (NO_2) is a gas that can cause breathing difficulties at high levels. Peak readings of NO_2 occur in areas that have a high concentration of combustion sources (e.g., motor vehicle engines, power plants, refineries and other industrial operations). AAQS for NO_2 have not been violated since 1991.

Table 1
State and Federal
Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[1]		Federal Standards[2]		
		Concentration[3]	Method[4]	Primary[2,5]	Secondary[3,6]	Method[7]
Ozone (O_3)	1-Hour	0.09 ppm (180 µg/m³)	Ultraviolet Photometry	—	Same as Primary Standard	Ultraviolet Photometry
	8-Hour	0.07 ppm (137 µg/m³)		0.075 ppm (147 µg/m³)		
Respirable Particulate Matter (PM_{10})	24-Hour	50 µg/m³	Gravimetric or Beta Attenuation[8]	150 µg/m³	Same as Primary Standard	Inertial Separation and Gravimetic Analysis
	Annual Arithmetic Mean	20 µg/m³		—		
Fine Particulate Matter ($PM_{2.5}$)	24-Hour	No Separate State Standard		35 µg/m³	Same as Primary Standard	Inertial Separation and Gravimetic Analysis
	Annual Arithmetic Mean	12 µg/m³	Gravimetric or Beta Attenuation[8]	15 µg/m³		
Carbon Monoxide (CO)	8-Hour	9.0 ppm (10 mg/m³)	Nondispersive Infrared Photometry (NDIR)	9 ppm (10 mg/m³)	None	Nondispersive Infrared Photometry (NDIR)
	1-Hour	20 ppm (23 mg/m³)		35 ppm (40 mg/m³)		
	8-Hour (Lake Tahoe)	6 ppm (7 mg/m³)		-		
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	0.030 ppm (57 µg/m³)	Gas Phase Chemiluminescence	53 ppb (100 µg/m³)[8]	Same as Primary Standard	Gas Phase Chemiluminescence
	1-Hour	0.18 ppm (339 µg/m³)		100 ppb (188 µg/m³)[8]		
Lead[10]	30-day average	1.5 µg/m³	Atomic Absorption	-	-	High Volume Sampler and Atomic Absorption
	Rolling 3-Month Average[11]	–		0.15 µg/m³	Same as Primary Standard	
	Calendar Quarter	–		1.5 µg/m³		
Sulfur Dioxide (SO_2)	24-Hour	0.04 ppm (105 µg/m³)	Ultraviolet Fluorescence		-	Spectrophotometry (Pararosaniline Method)
	3-Hour	–		-	0.5 ppm (1300 µg/m³)	
	1-Hour	0.25 ppm (655 µg/m³)		75 ppd (196 µg/m³)[9]	-	
Visibility-Reducing Particles	8-Hour	Extinction coefficient of 0.23 per kilometer — visibility of ten miles or more (0.07 — 30 miles or more for Lake Tahoe) due to particles when relative humidity is less than 70 percent. Method: Beta Attenuation and Transmittance through Filter Tape.		No Federal Standards		
Sulfates	24-Hour	25 µg/m³	Ion Chromatography			
Hydrogen Sulfide	1-Hour	0.03 ppm (42 µg/m³)	Ultraviolet Fluorescence			
Vinyl Chloride[10]	24-Hour	0.01 ppm (26 µg/m³)	Gas Chromatography			

Source: ARB, September 8, 2010.

1. California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, suspended particulate matter—PM10, PM2.5, and visibility reducing particles, are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

2. National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest eight hour concentration in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m3 is equal to or less than one. For PM2.5, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact U.S. EPA for further clarification and current federal policies.

3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

4. Any equivalent procedure which can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.

5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

7. Reference method as described by the EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the EPA.

8. To attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 0.100 ppm (effective January 22, 2010). Note that the (ppm). To directly compare the national standards to the California standards the units can be converted from ppb to ppm. In this case, the national standards of 53 ppb and 100 ppb are identical to 0.053 ppm and 0.100 ppm, respectively.

9. On June 2, 2010, the U.S. EPA established a new 1-hour SO2 standard, effective August 23, 2010. The secondary SO2 standard was not revised at that time; however, the secondary standard is undergoing a separate review by EPA. Note that the new standard is in units of parts per billion (ppb). California permeated State monitoring networks. The EPA also revoked both the existing 24-hour SO2 standard concentrations. EPA also proposed a new automated Federal Reference Method (FRM) using ultraviolet technology, but will retain the older pararosaniline methods until the new FRM have adequately EPA standards are in units of parts per billion (ppb). California standards are in units of parts per million which is based on the 3-year average of the annual 99th percentile of 1-hour daily maximum of 0.14 ppm and the annual primary SO2 standard of 0.030 ppm, effective August 23, 2010. standards are in units of parts per million (ppm). To directly compare the new primary national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.

10. The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

11. National lead standard, rolling 3-month average: final rule signed October 15, 2008.

Table 2
Ozone Data from the Joshua Tree Air Monitoring Site
2006 – 2010

Year	Days Exceeding One Hour State Standard	Days Exceeding 8-Hour Fed. Standard	Days Exceeding 8-Hour State Standard	Maximum One Hour Reading (ppm)
2006	37	66	99	125
2007	37	81	108	129
2008	36	72	108	140
2009	24	59	90	121
2010	19	53	90	119

Source: CARB, 2011
State Standard – 0.09 ppm based on one-hour average. No Federal one-hour standard (removed in 2006).
State 8-Hour Standard 0.070ppm; Federal 8-Hour standard is 0.075 ppm.

Table 3
Particulate Matter (PM_{10}) Data from the Victorville Air Monitoring Site
2006 – 2010

Year	Days Exceeding State Standard	Days Exceeding Federal Standard	Maximum 24-Hour Reading (μ/m^3)
2006	2	0	62
2007	4	1	358
2008	2	0	77
2009	1	0	53
2010	0	0	44

State Standard – 50 μ/m^3 based on 24-hour average
Federal Standard – 150 μ/m^3 based on 24-hour average
μ/m^3 = micrograms per cubic meter
Measurements taken every 6 days.
Source: CARB, 2011

Table 4
Fine Particulate Matter ($PM_{2.5}$) Data from the Victorville Air Monitoring Site
2006 – 2010

Year	Days Exceeding State Standard	Days Exceeding Federal Standard	Maximum 24-Hour Reading (μ/m^3)
2006	N/A	0	22
2007	N/A	0	28
2008	N/A	0	17
2009	N/A	0	20
2010	N/A	0	18

No 24-hour State Standard for PM2.5.
Federal Standard – lowered to 35 μ/m^3 in 2006; based on 24 hour average.
μ/m^3 = micrograms per cubic meter
Source: CARB, 2011

Sulfur dioxide (SO_2) is a gas produced when fossil fuels are burned. SO_2 is the main pollutant contributing to the formation of acid rain. This pollutant does not exceed AAQS in the area.

Lead (Pb) is a heavy metal used in industry and for years was a component in gasoline. Since the elimination of lead as a gasoline additive lead in the atmosphere in southern California has been virtually eliminated.

California Clean Air Act

Under the federal Clean Air Act, state and local authorities have primary responsibility for assuring that their respective regions are in attainment of, or have a verifiable plan to attain, the NAAQS. The federal Clean Air Act also provides state and local agencies authority to promulgate more stringent ambient air quality standards, which is the case in California. The California Ambient Air Quality Standards (CAAQS) for the above criteria pollutants and the following pollutants are also included in Table 1:

Nitrogen dioxide (NO_2)
Hydrogen sulfide (H_2S)
Sulfates
Visibility-reducing particles

Hydrogen sulfide (H_2S). This pollutant is not commonly found in the ambient atmosphere but can originate from natural sources such as volcanoes, sulfur hot springs, or oil refineries. The state ambient air quality standard for H_2S is not health-based but rather an aesthetic one, because the compound smells like rotten eggs.

Visibility-reducing particles are common in the MDAB due to the vast open desert area, especially during windy conditions. Particles reduce visibility, obscuring the desert scenery, including views of the mountains.

Reactive Organic Gases (ROG) In addition to these pollutants ROG is also considered in the air quality analysis of projects in the state. Ozone is a secondary pollutant that is the result of chemical reactions between other pollutants, most importantly reactive hydrocarbons (also referred to as ROG), and NO_2, which occurs only in the presence of bright sunlight. The result is the formation of smog. There are no federal or state air quality standards for hydrocarbons or ROG as there are for other pollutants; however the MDAQMD does have thresholds for determining the severity of emissions of several criteria pollutants including ROG.

2.3 AIR QUALITY ATTAINMENT PLANS

The MDAQMD has local regulatory review and primary permitting and enforcement authority over potential stationary sources of air pollution within the Mojave Desert portions of San Bernardino County, including all cities and towns. The EPA and California Air Resources Board (CARB) serve as technical review and advisory agencies, providing technical advice and guidance when necessary.

Air Quality Attainment Plans

The MDAB is a designated nonattainment basin for ozone. In 1991 San Bernardino County Air Pollution Control District (APCD) prepared the Air Quality Attainment Plan (AQAP) for ozone. This plan established programs and control strategies to achieve the ozone standards and to maintain attainment of the other criteria pollutants. Measures in the 1991 AQAP include an updated permitting program for stationary pollution sources, reasonable control technology for all existing and future sources, provisions to develop area and indirect control programs such as land use and transportation measures and public education programs. In 1993 the APCD was separated from the County under State Assembly Bill 2522, and an autonomous agency – the MDAQMD – was created that encompassed the High Desert region of San Bernardino County.

In 1994, the EPA designated most of the Mojave Desert as nonattainment for PM_{10} based on violations of standards between 1989 and 1991. The MDAQMD prepared the Mojave Desert Planning Area (MDPA) Federal PM_{10} Attainment Plan in 1995 to provide dust control programs to meet federal PM_{10} standards by the year 2000. The MDPA covers only the southwestern portions of the Mojave Desert (Victor Valley and Lucerne Valley areas) because most of the controllable sources and receptors of PM_{10} and recording instrumentation are located in the Victor Valley. The plan outlines a program for implementation and enforcement of dust control measures. These measures are generally reflected through MDAQMD Rules 401 - Visible Emissions, 402 - Nuisance, and 403 - Fugitive Dust Control. The federal standard for PM_{10} has been met within the area for the past eight years and a change of status to attainment is currently being evaluated.

Nonattainment Designations and Classification Status

The USEPA and the CARB have designated portions of the District as nonattainment for a variety of pollutants, and some of those designations have an associated classification. Table 5 lists these designations and classifications.

The MDAQMD has adopted attainment plans for a variety of nonattainment pollutants. Table 6 lists the attainment plans applicable to the project area.

MDAQMD regulates emissions from stationary sources through the permitting process and requires permits to Construct/Operate for all stationary equipment with the potential to release air contaminants. There is no stationary equipment operating at the site, therefore no individual air quality permits are required.

Table 5
State and Federal Air Quality
Designations and Classifications

Ambient Air Quality Standard	Status
One-hour Ozone (Federal)	Non-attainment; classified Severe-17 (portion of MDAQMD outside of Southeast Desert Modified AQMA is attainment)
Eight-hour Ozone (Federal)	Non-attainment, classified Severe-17 (portion of MDAQMD in Riverside County is attainment)
Ozone (State)	Non-attainment; classified Moderate
PM_{10} (Federal)	Non-attainment; classified Moderate (portion of MDAQMD in Riverside County is attainment)
$PM_{2.5}$ (Federal)	Unclassified/attainment
$PM_{2.5}$ (State)	Non-attainment (portion of MDAQMD outside of Western Mojave Desert Ozone)
PM_{10} (State)	Non-attainment
Carbon Monoxide (State and Federal)	Attainment
Nitrogen Dioxide (State and Federal)	Attainment/unclassified
Sulfur Dioxide (State and Federal)	Attainment/unclassified
Lead (State and Federal)	Attainment
Particulate Sulfate (State)	Attainment
Hydrogen Sulfide (State)	Unclassified (Searles Valley Planning Area is non-attainment)
Visibility Reducing Particles (State)	Unclassified

Source: MDAQMD CEQA and Federal Conformity Guidelines, February 2009. Verified September 2011

Table 6
MDAQMD Attainment Plans

Name of Plan	Date of Adoption	Applicable Area	Pollutant(s) Targeted	Attainment Date
1991 Air Quality Attainment Plan (AQAP)	August 26, 1991	San Bernardino County portion	NO_x and VOC	1994*
Mojave Desert Planning Area Federal Particulate Matter Attainment Plan	July 31, 1995	Mojave Desert Planning Area	PM_{10}	2000*
Triennial Revision to the 1991 Air Quality Attainment Plan	January 22, 1996	Entire District	NO_x and VOC	2005
2004 Ozone Attainment Plan (State and Federal)	April 26, 2004	Entire District	Ozone (NO_x and VOC)	2007
Federal 8-Hour Ozone Attainment Plan (Western Mojave Desert Non-attainment Area)	9-Jun-08	Western Mojave Desert Non-attainment Area	NOx and VOC	2021

*Note: A historical attainment date given in an attainment plan does not necessarily mean that the affected area has been re-designated to attainment.
Source: MDAQMD CEQA and Federal Conformity Guidelines, February 2009. Verified September 2011

Climate Change and Greenhouse Gases

Gases that trap heat in the atmosphere are often called GHG, analogous to a greenhouse. GHG are emitted by natural processes and human activities. The accumulation of GHG in the atmosphere regulates the earth's temperature. Without these natural GHG, the Earth's surface would be approximately 61°F cooler (CA 2006). Emissions from human activities such as electricity production and vehicles have elevated the concentration of these gases in the atmosphere.

GHG have varying global warming potential (GWP). The GWP is the potential of a gas or aerosol to trap heat in the atmosphere; it is the "cumulative radiative forcing effects of a gas over a specified time horizon resulting from the emission of a unit mass of gas relative to a reference gas" (EPA 2006a). The reference gas for GWP is carbon dioxide; carbon dioxide has a GWP of one. For example, methane has a GWP of 21, which means that it has a greater global warming effect than carbon dioxide on a molecule per molecule basis. One teragram of carbon dioxide equivalent (Tg CO2 Eq.) is the emissions of the gas multiplied by the GWP. One teragram is equal to one million metric tons. The carbon dioxide equivalent is a good way to assess emissions because it gives weight to the GWP of the gas. The atmospheric lifetime and GWP of selected GHG are summarized in Table 7. As shown in the table, GWP ranges from 1 (carbon dioxide) to 23,900 (sulfur hexafluoride).

Table 7
Global Warming Potentials and Atmospheric Lifetimes of Select Greenhouse Gases

Gas	Atmospheric Lifetime (years)	Global Warming Potential (100 year time horizon)
Carbon Dioxide	50 – 200	1
Methane	12 ± 3	21
Nitrous Oxide	120	310
HFC-23	264	11700
HFC-134a	14.6	1,300
HFC-152a	1.5	140
PFC: Tetrafluoromethane (CF4)	50000	6,500
PFC: Hexafluoroethane (C2F6)	10000	9,200
Sulfur Hexafluoride (SF6)	3200	23,900

Source: EPA 2006b

Water vapor is the most abundant, important, and variable GHG in the atmosphere. It is not considered a pollutant; in the atmosphere it maintains a climate necessary for life. The main source of water vapor is evaporation from the oceans (approximately 85 percent). Other sources include evaporation from other water bodies, sublimation (change from solid to gas) from ice and snow, and transpiration from plant leaves.

Carbon dioxide (CO2) is an odorless, colorless natural GHG. Natural sources include the following: decomposition of dead organic matter; respiration of bacteria, plants, animals, and fungus; evaporation from oceans; and volcanic outgassing. Anthropogenic sources of carbon dioxide are from burning coal, oil, natural gas, and wood. Concentrations are currently around 370 ppm; some say that concentrations may increase to 540 ppm by 2100 as a direct result of anthropogenic sources (IPCC 2001). Some predict that this will result in an average global temperature rise of at least 2° Celsius (IPCC 2001).

Methane is a flammable gas and is the main component of natural gas. When one molecule of methane is burned in the presence of oxygen, one molecule of carbon dioxide and two molecules of water are released. There are no health effects from methane. A natural source of methane is from the anaerobic decay of organic matter. Geological deposits known as natural gas fields contain methane, which is extracted for fuel. Other sources are from landfills, fermentation of manure, and cattle.

Nitrous oxide (N2O), also known as laughing gas, is a colorless GHG. Higher concentrations can cause dizziness, euphoria, and sometimes slight hallucinations. Nitrous oxide is produced by microbial processes in soil and water, including those reactions which occur in fertilizer containing nitrogen. In addition to agricultural sources, some industrial processes (fossil fuel-fired power plants, nylon production, nitric acid production, and vehicle emissions) also contribute to its atmospheric load. It is used in rocket engines, as an aerosol spray propellant, and in race cars.

Chlorofluorocarbons (CFCs) are gases formed synthetically by replacing all hydrogen atoms in methane or ethane with chlorine and/or fluorine atoms. CFCs are nontoxic, nonflammable, insoluble, and chemically unreactive in the troposphere (the level of air at the earth's surface). CFCs were first synthesized in 1928 for use as refrigerants, aerosol propellants, and cleaning solvents. They destroy stratospheric ozone; therefore their production was stopped as required by the Montreal Protocol.

Hydrofluorocarbons (HFCs) are synthetic man-made chemicals that are used as a substitute for CFCs for automobile air conditioners and refrigerants.

Perfluorocarbons (PFCs) have stable molecular structures and do not break down though the chemical processes in the lower atmosphere. High-energy ultraviolet rays about 60 kilometers above Earth's surface are able to destroy the compounds. PFCs have very long lifetimes, between 10,000 and 50,000 years. Two common PFCs are tetrafluoromethane and hexafluoroethane. Concentrations of tetrafluoromethane in the atmosphere are over 70 ppt (EPA 2006b). The two main sources of PFCs are primary aluminum production and semiconductor manufacture.

Sulfur hexafluoride (SF6) is an inorganic, odorless, colorless, nontoxic, nonflammable gas. It also has the highest GWP of any gas evaluated, 23,900. Concentrations in the 1990s were about 4 ppt (EPA 2006b). Sulfur hexafluoride is used for insulation in electric power transmission and distribution equipment, in the magnesium industry, in semiconductor manufacturing, and as a tracer gas for leak detection.

Ozone is a GHG; however, unlike the other GHG, ozone in the troposphere is relatively short-lived and therefore is not global in nature. According to CARB, it is difficult to make an accurate determination of the contribution of ozone precursors (NO_x and VOCs) to global warming (CARB 2004). Therefore, project emissions of ozone precursors would not significantly contribute to global climate change.

Aerosols are particles emitted into the air through burning biomass (plant material) and fossil fuels. Aerosols can warm the atmosphere by absorbing and emitting heat and can cool the atmosphere by reflecting light. Cloud formation can also be affected by aerosols. Sulfate aerosols are emitted when fuel with sulfur in it is burned. Black carbon (or soot) is emitted during bio mass burning incomplete combustion of fossil fuels. Particulate matter regulation has been lowering aerosol concentrations in the United States; however, global concentrations are likely increasing.

Health and Other Effects

The potential health effects from global climate change may arise from temperature increases, climate-sensitive diseases, extreme events, and air quality. There may be direct temperature effects through increases in average temperature leading to more extreme heat waves and less extreme cold spells. Those living in warmer climates are likely to experience more stress and heat-related problems (i.e., heat rash and heat stroke). In addition, climate sensitive diseases may increase, such as those spread by mosquitoes and other disease carrying insects. Those diseases include malaria, dengue fever, yellow fever, and encephalitis. Extreme events such as flooding and hurricanes can displace people and agriculture, which would have negative consequences. Drought in some areas may increase, which would decrease water and food availability. Global warming may also contribute to air quality problems from increased frequency of smog and particulate air pollution (EPA 2006c).

3.0 AIR QUALITY IMPACT EVALUATION

To determine if a potential project may significantly impact the ambient air quality, the MDAQMD utilizes the following net daily emissions increase as CEQA thresholds of significance. If the potential emissions exceed these thresholds, then the project may have a significant air quality impact and requires additional analysis.

- Carbon Monoxide (CO) 548 lbs/day
- Nitrogen Dioxide (NO_2) 137 lbs/day
- Reactive Organic Gasses (ROG) 137 lbs/day
- Sulfur Dioxide (SO_2) 137 lbs/day
- Particulate Matter (PM_{10}) 82 lbs/day
- Particulate Matter ($PM_{2.5}$) 82 lbs/day
- Greenhouse Gas Emissions 3,000 $MTCO_2E$ (Interim Threshold for Residential and Commercial Land use project, SCAQMD)

3.1 PROJECT DESCRIPTION

The proposed project is an Animal Shelter to be constructed on approximately 5 acres located approximately half a mile west of Highway 247 and one block north of Skyline Ranch Road, in the Town of Yucca Valley, County of San Bernardino. Emissions on-site would be from short-term construction emissions and from operational end use.

3.2 CONSTRUCTION AIR QUALITY EVALUATION

The proposed project was screened using the CalEEMod version 2011.1.1 emissions model. The criteria pollutants analyzed included reactive organic gases (ROG), nitrous oxides (NO_x), carbon monoxide (CO), particulates (PM_{10} and $PM_{2.5}$), carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). Construction emissions are screened and quantified to document the effectiveness of control measures.

The CalEEMod model allows the user to set certain defaults and run the model to incorporate Air Quality Management District required rules and regulations. Therefore, per MDAQMD Rules 402 and 403, the mitigation requiring that exposed surfaces during construction be watered twice per day was "turned on". The Town and its contractor will be required to comply with mandated MDAQMD rules and regulations, including but not limited to, Rules 402 and 403. Therefore, the following dust control conditions applicable to the site activities as recommended by Rules 402 and 403 shall also be implemented:

1. The project proponent shall ensure that any portion of the site to be graded shall be pre-watered prior to the onset of grading activities.

    (a) The project proponent shall ensure that watering of the site or other soil stabilization method shall be employed on an on-going basis after the initiation of any grading activity on the site at least 2x per day. Portions of the site that are actively being graded shall be watered regularly to ensure that a crust is formed on the ground surface, and shall be watered at the end of each workday.

    (b) The project proponent shall ensure that all disturbed areas are treated to prevent erosion until the site is constructed upon.

    (c) The project proponent shall ensure that landscaped areas are installed as soon as possible to reduce the potential for wind erosion.

    (d) The project proponent shall ensure that all grading activities are suspended during first and second stage ozone episodes or when winds exceed 25 miles per hour.

    During construction, exhaust emissions from construction vehicles and equipment and fugitive dust generated by equipment traveling over exposed surfaces, would

increase NO_X and PM_{10} levels in the area. The following mitigation measures shall be implemented to reduce impacts.

2. To reduce emissions, all equipment used in grading and construction must be tuned and maintained to the manufacturer's specification to maximize efficient burning of vehicle fuel. Site development will be limited to one acre disturbed per day.

3. The contractor shall utilize (as much as possible) pre-coated building materials and coating transfer or spray equipment with high transfer efficiency, such as high volume, low pressure (HVLP) spray method, or manual coatings application such as paint brush, hand roller, trowel, dauber, rag, or sponge.

4. The contractor shall utilize water-based or low VOC coating per MDAQMD Rule 1113. The following measures shall also be implemented:

   - Use Super-Compliant VOC paints whenever possible.
   - If feasible, avoid painting during peak smog season: July, August, and September.
   - Recycle leftover paint. Take any left-over paint to a household hazardous waste center; do not mix leftover water-based and oil-based paints.
   - Keep lids closed on all paint containers when not in use to prevent VOC emissions and excessive odors.
   - For water-based paints, clean up with water only. Whenever possible, do not rinse the clean-up water down the drain or pour it directly into the ground or the storm drain. Set aside the can of clean-up water and take it to a hazardous waste center (www.cleanup.org).
   - Recycle the empty paint can.
   - Look for non-solvent containing stripping products.
   - Use Compliant Low-VOC cleaning solvents to clean paint application equipment.
   - Keep all paint and solvent laden rags in sealed containers to prevent VOC emissions.

5. The project proponent shall ensure that existing power sources are utilized where feasible via temporary power poles to avoid on-site power generation.

6. The project proponent shall ensure that construction personnel are informed of ride sharing and transit opportunities.

7. All buildings on the project site shall conform to energy use guidelines in Title 24 of the California Administrative Code as updated to reduce energy consumption and reduce GHG emissions.

8. The operator shall maintain and effectively utilize and schedule on site equipment and delivery trucks in order to minimize exhaust emissions from truck idling.

Modeled Analysis

Development of the site would include site grading and soil preparation, and construction of the facility. These emissions are considered short-term, temporary emissions; the quantities modeled are shown in Table 8. Once construction is complete and the facility is in use, emissions will be generated by energy utilized for on-site space heating and cooling, and vehicle traffic. Refer to the CalEEMod emissions model output data in Appendix A for additional detail.

Table 8
Construction Emissions Summary
(Pounds Per Day)

Source/Phase	ROG	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
Site Preparation	11.1	90.0	52.3	0.1	13.0	9.1
Grading	7.3	55.6	34.4	0.1	6.4	4.8
Building Construction	6.2	40.9	24.8	0.0	2.9	2.8
Paving	6.3	37.7	22.9	0.0	3.5	3.3
Architectural Coating	20.2	3.2	2.0	0.0	0.3	0.3
Highest Value (lbs/day)	**20.2**	**90.0**	**52.3**	**0.1**	**13.0**	**9.1**
MDAQMD Threshold	137	137	548	137	82	82
Significant	**No**	**No**	**No**	**No**	**No**	**No**

Source: CalEEMod 2011
Phases don't overlap and represent the highest concentration

The emissions calculations for the construction phase include fugitive dust from grading and exhaust emissions from on-site equipment and worker travel. Construction emissions are calculated based on emissions per 1,000 square feet. The fugitive dust emissions are based on earthwork activities per day. The proposed construction activities will include implementation of the "best available fugitive dust control requirements" listed above and the Town will comply with MDAQMD rules and regulations particularly Rules 402 and 403 that require controls for fugitive dust. These standard conditions will reduce emissions to the lowest amounts feasible. Construction emissions were screened and quantified to document the effectiveness of control measures. Construction impacts are considered short-term, temporary impacts and are not anticipated to occur over a period exceeding 13 months. Construction emissions as shown in Table 8 are less than the MDAQMD thresholds and would be considered less than significant.

Greenhouse Gas Emissions

The Town of Yucca Valley does not have any plans, policies, regulations, significance thresholds or laws addressing climate change at this time. The MDAQMD does not have an adopted threshold of significance or guidance for evaluating GHGs. However, the MDAQMD allows the use of SCAQMD models and guidance documents as acceptable tools in addressing GHGs.

On December 5, 2008, the SCAQMD Governing Board adopted its staff proposal for an interim CEQA GHG significance threshold for projects where the SCAQMD is the lead agency. As to all other projects, where the SCAQMD is not the lead agency, the Board has, to date, adopted thresholds only for industrial (stationary source) projects. The SCAQMD has not yet adopted any significance thresholds for new residential/commercial development projects, but has over the last few years proposed several draft thresholds. To assist interested parties in assessing the significance of GHG emissions from new residential/commercial development projects under CEQA, SCAQMD staff has been working on developing thresholds together with the SCAQMD's GHG CEQA Significance Thresholds Working Group. To achieve its policy objective of capturing 90% of GHG emissions from new residential/commercial development projects and implementing a "fair share" approach to reducing emission increases from each new residential/commercial development sector, SCAQMD staff has proposed combining performance standards and screening thresholds. According to the presentation given at the September 28th, 2010 GHG CEQA Significance Working Group meeting, the last Working Group meeting prior to the date of this report, SCAQMD staff proposed a draft threshold for 2020 of 4.8 MT/SP/YR (metric tons of CO2EQ per service population per year) for mixed use developments. Since the goal of AB 32 is to return to 1990 GHG emission levels by 2020, the basis for this threshold is the statewide emission inventory for 1990 based on "land use" related sectors divided by the statewide service population. The SCAQMD has also developed draft thresholds for commercial and residential projects, where it is not the lead. The draft recommends a 3,000 MTCO2EQ per year screening threshold.

Project GHG emissions are shown in Tables 9. An interim threshold of 3,000 $MTCO_2E$ per year has been adopted by SCAQMD as potentially significant to global warming. Utilizing this threshold, construction of the proposed project would not exceed the significance threshold with a construction schedule of 13 months or less.

Table 9
Greenhouse Gas Construction Emissions

Source/Phase	CO_2	CH_4	N_20
Site Preparation	18.5	0.0	0.0
Grading	19.5	0.0	0.0
Building Construction	436.3	0.1	0.0
Paving	23.6	0.0	0.0
Architectural Coating	2.4	0.0	0.0
Total Per Year (lbs)	500.3	0.1	0.0
Total $MTCO_2e$	**500.6**		
Threshold	3,000		
Significant	**No**		

Source: CalEEMod

3.3 OPERATIONS AIR QUALITY EVALUATION

The proposed project is the development of 15,300 square feet Animal Shelter on approximately 5 acres. It will not manufacture or produce any products on-site; therefore, no industrial type emissions will be emitted. Stationary source emissions associated with the operation of the site

are primarily from natural gas consumption for space heating, water heating and mobile emissions estimated by the CalEEMod model based on the size of the development. It is anticipated that the proposed project would generate approximately 17 trips a day (given information from the Town of Yucca Valley). Emissions associated with these operational activities, including vehicle trips are listed in Table 10.

Table 10
Operations Emissions Summary
(Pounds Per Day)

Source	ROG	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
Mobile	0.2	0.8	1.4	0.0	0.2	0.03
Energy	0.0	0.01	0.01	0.0	0.0	0.0
Area	0.42	0.0	0.0	0.0	0.0	0.0
Total Value (lbs/day)	**0.62**	**0.81**	**1.41**	**0.0**	**0.2**	**0.03**
MDAQMD Threshold	137	137	548	137	82	82
Significant	**No**	**No**	**No**	**No**	**No**	**No**

Source: CalEEMod 2011
Phases don't overlap and represent the highest concentration

GHG emissions were estimated by the CalEEMod model based on the size and proposed use of the development. GHG emissions include Mobile (vehicle trips), Energy (generation and distribution of energy to the facility), Area (facility in use), water (generation and distribution of water to the facility), and waste (collecting and hauling waste to the landfill) emissions.

Table 11
Greenhouse Gas Operational Emissions
"Tons Per Year"

Source	CO_2	CH_4	N_2O
Mobile	22	0.0	0.0
Energy	3	0.0	0.0
Area	0.0	0.0	0.0
Water	0.02	0.06	0.0
Waste	33.5	2.0	0.0
Total Per Year	58.5	2.1	0.0
Total MTCO2e	**101.8**		
Threshold	3,000		
Significant	**N/A**		

Source: CalEEMod

As shown in Tables 10 and 11, operational emissions of the proposed project would not exceed thresholds.

3.4 AIR QUALITY IMPACTS

The proposed project's estimated construction emissions are listed and compared to regional thresholds in Tables 8 and 9. As shown in Table 8 and 9, project emissions during construction are anticipated to be less than significant.

The proposed project's operational emissions are summarized and compared to regional thresholds in Tables 10 and 11. As shown in Tables 10 and 11, emissions during long-term operation of the project are anticipated to be less than significant.

3.5 PROJECT CUMULATIVE IMPACT

The planned land use is required to comply with current MDAQMD regulations and will incorporate District Rules and regulations to minimize impacts as discussed above. The site is zoned for residential (RL-5, 9.57 trips per dwelling unit) which has been previously assessed and approved for per the Town's General Plan and has been included in the AQMP, and is part of the anticipated growth in the MDAB. Development of the proposed Animal Shelter will increase daily trips within the vicinity by 8.43 trips per day. However, the Shelter is anticipated to replace the existing Shelter located north of the project site and as shown in Tables 10 and 11 impacts are anticipated to be less than significant. Cumulative impacts are anticipated to be less than significant.

Compliance with GHG Global Strategies

GHG emissions are understood to be global in nature and should therefore be considered cumulative. To reduce California's GHG emissions to the levels proposed in Executive Order S-3-05, the California EPA Climate Action Team developed a report that outlines strategies for meeting the Governor's targets. Use of the strategies to determine consistency are the most appropriate to use at this time as the report "proposes a path to achieve the Governor's targets that will build on voluntary actions of California businesses, local government and community actions, and State incentive and regulatory programs" (CA 2007). AB 32 requires that a list of emission reduction strategies be published to achieve the goals set out in AB 32. However, until those reduction strategies are published, emission reduction strategies to meet Executive Order S-3-05 will be relied upon.

Compliance with GHG voluntary reduction strategies, shown in Table 12 would allow the operation to be in compliance to reduce global climate change and further reduce cumulative impacts from GHGs.

Table 12
Greenhouse Gas Emission
Reduction Strategies

Strategy	Project Compliance
Vehicle Climate Change Standards AB 1493 (Pavley) required the state to develop and adopt regulations that achieve the maximum feasible and cost-effective reduction of climate change emissions emitted by passenger vehicles and light duty trucks. Regulations were adopted	**Compliant.** These are CARB enforced standards; vehicles that access the project that are required to comply with the standards will comply with the strategy.

Strategy	Project Compliance
by the ARB in September 2004.	
Other Light Duty Vehicle Technology New standards would be adopted to phase in beginning in the 2017 model year	
Diesel Anti-Idling In July 2004, the CARB adopted a measure to limit diesel-fueled commercial motor vehicle idling.	**Compliant.** These are CARB enforced standards; heavy duty construction equipment/vehicles that are used for site grading/construction on the project site that are required to comply with the standards, will comply with the strategy.
Achieve 50% Statewide Recycling Goal Achieving the State's 50 percent waste diversion mandate as established by the Integrated Waste Management Act of 1989, (AB 939, Sher, Chapter 1095, Statutes of 1989), will reduce climate change emissions associated with energy intensive material extraction and production as well as methane emission from landfills. A diversion rate of 48% has been achieved on a statewide basis. Therefore, a 2% additional reduction is needed.	**Compliant.** The project proposes to minimize waste through construction practices and design features. Construction generated waste will have to adhere to a Waste Management Plan. This usually means that lumber, cardboard, and concrete waste is hauled off site and recycled, and only the remaining non-recycled trash is disposed of.
Building Energy Efficiency Standards in Place and in Progress Public Resources Code 25402 authorizes the CEC to adopt and periodically update its building energy efficiency standards (that apply to newly constructed buildings and additions to and alterations to existing buildings).	**Compliant.** The project will comply with the most recent Title 24 standards.
California Solar Initiative The solar initiative includes installation of 1 million solar roofs or an equivalent 3,000 MW by 2017 on homes and businesses, increased use of solar thermal systems to offset the increasing demand for natural gas, use of advanced metering in solar applications, and creation of a funding source that can provide rebates over 10 years through a declining incentive schedule.	**Compliant.** Photovoltaic cells are not feasible for this project because of the area's propensity for high Santa Ana winds.
Green Buildings Initiative Green Building Executive Order, S-20-04 (CA 2004), sets a goal of reducing energy use in public and private buildings by 20 percent by the year 2015, as compared with 2003 levels. The Executive Order and related action plan spell out specific actions state agencies are to take with state-owned and -leased buildings. The order and plan also discuss various strategies and incentives to encourage private building owners and operators to achieve the 20 percent target.	**Compliant.** The applicant would use thicker insulation when feasible to reduce heating and cooling demand.

Strategy	Project Compliance
Smart Land Use and Intelligent Transportation Systems (ITS) Smart land use strategies encourage jobs/housing proximity, promote transit-oriented development, and encourage high-density residential/commercial development along transit corridors. ITS is the application of advanced technology systems and management strategies to improve operational efficiency of transportation systems and movement of people, goods and services. Governor Schwarzenegger is finalizing a comprehensive 10-year strategic growth plan with the intent of developing ways to promote, through state investments, incentives and technical assistance, land use, and technology strategies that provide for a prosperous economy, social equity, and a quality environment. Smart land use, demand management, ITS, and value pricing are critical elements in this plan for improving mobility and transportation efficiency. Specific strategies include: promoting jobs/housing proximity and transit-oriented development; encouraging high density residential/commercial development along transit/rail corridor; valuing and congestion pricing; implementing intelligent transportation systems, traveler information/traffic control, incident management; accelerating the development of broadband infrastructure; and comprehensive, integrated, multimodal/intermodal transportation planning.	**Compliant.** The project would provide a service to the local community.

Source: As applicable via CA 2007.

4.0 REPORT SUMMARY

Construction emissions from the proposed project will not exceed the CEQA thresholds of significance. Construction emissions are considered short-term (less than 13 months). Potential dust emissions would be further reduced by implementation of standard dust control measures (water exposed surfaces twice per day) as required for all projects within the MDAB. Therefore, potential impacts from construction activities are determined to be less than significant and no further analysis is required.

The operational emissions from the proposed project would not exceed MDAQMD regional thresholds of significance. No impacts to local or regional air quality are anticipated during project operations. The proposed project as well as all projects within the MDAB will be required to comply with current MDAQMD regulations and dust control measures. Therefore, potential impacts from operational activities are determined to be less than significant and no further analysis is required.

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APPENDIX A
CALEEMOD 2011 MODEL OUTPUT

Yucca Valley Animal Shelter

San Bernardino-Mojave Desert County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Medical Office Building	15.3	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.6	Utility Company	
Climate Zone	10	Precipitation Freq (Days)	32		

1.3 User Entered Comments

Project Characteristics -

Land Use - Acreage scaled up to be consistent with project description.

Construction Phase -

Vehicle Trips - Trip rate adjustment to be consistent with the Town of Yucca Valley anticipated trip rate associated with exisiting animal shelters in the Town and County (500 trips a month or 17 trips per day).

Construction Off-road Equipment Mitigation -

Area Mitigation -

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2011	11.13	89.95	52.34	0.07	18.30	4.62	22.92	9.94	4.62	14.56	0.00	8,167.55	0.00	1.00	0.00	8,188.59
2012	20.21	35.79	22.50	0.03	0.20	3.14	3.33	0.01	3.14	3.14	0.00	3,055.93	0.00	0.54	0.00	3,067.23
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2011	11.13	89.95	52.34	0.07	8.36	4.62	12.98	4.48	4.62	9.10	0.00	8,167.55	0.00	1.00	0.00	8,188.59
2012	20.21	35.79	22.50	0.03	0.20	3.14	3.33	0.01	3.14	3.14	0.00	3,055.93	0.00	0.54	0.00	3,067.23
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day											lb/day				
Area	0.42	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Energy	0.00	0.01	0.01	0.00		0.00	0.00		0.00	0.00		18.00		0.00	0.00	18.11
Mobile	0.15	0.82	1.35	0.00	0.12	0.03	0.15	0.00	0.03	0.03		151.03		0.01		151.22
Total	**0.57**	**0.83**	**1.36**	**0.00**	**0.12**	**0.03**	**0.15**	**0.00**	**0.03**	**0.03**		**169.03**		**0.01**	**0.00**	**169.33**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day											lb/day				
Area	0.42	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Energy	0.00	0.01	0.01	0.00		0.00	0.00		0.00	0.00		18.00		0.00	0.00	18.11
Mobile	0.15	0.82	1.35	0.00	0.12	0.03	0.15	0.00	0.03	0.03		151.03		0.01		151.22
Total	**0.57**	**0.83**	**1.36**	**0.00**	**0.12**	**0.03**	**0.15**	**0.00**	**0.03**	**0.03**		**169.03**		**0.01**	**0.00**	**169.33**

3.0 Construction Detail

3.4 Building Construction - 2011

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	6.11	40.22	24.03	0.04		2.80	2.80		2.80	2.80		4,040.62		0.55		4,052.11
Total	**6.11**	**40.22**	**24.03**	**0.04**		**2.80**	**2.80**		**2.80**	**2.80**		**4,040.62**		**0.55**		**4,052.11**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.05	0.65	0.27	0.00	0.03	0.02	0.05	0.00	0.02	0.02		82.01		0.00		82.06
Worker	0.04	0.06	0.52	0.00	0.07	0.00	0.07	0.00	0.00	0.01		47.18		0.00		47.27
Total	**0.09**	**0.71**	**0.79**	**0.00**	**0.10**	**0.02**	**0.12**	**0.00**	**0.02**	**0.03**		**129.19**		**0.00**		**129.33**

3.4 Building Construction - 2011

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	6.11	40.22	24.03	0.04		2.80	2.80		2.80	2.80	0.00	4,040.62		0.55		4,052.11
Total	**6.11**	**40.22**	**24.03**	**0.04**		**2.80**	**2.80**		**2.80**	**2.80**	**0.00**	**4,040.62**		**0.55**		**4,052.11**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.05	0.65	0.27	0.00	0.03	0.02	0.05	0.00	0.02	0.02		82.01		0.00		82.06
Worker	0.04	0.06	0.52	0.00	0.07	0.00	0.07	0.00	0.00	0.01		47.18		0.00		47.27
Total	**0.09**	**0.71**	**0.79**	**0.00**	**0.10**	**0.02**	**0.12**	**0.00**	**0.02**	**0.03**		**129.19**		**0.00**		**129.33**

3.5 Paving - 2011

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	6.21	37.52	21.30	0.03		3.31	3.31		3.31	3.31		2,917.64		0.56		2,929.34
Paving	0.00					0.00	0.00		0.00	0.00						0.00
Total	**6.21**	**37.52**	**21.30**	**0.03**		**3.31**	**3.31**		**3.31**	**3.31**		**2,917.64**		**0.56**		**2,929.34**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.12	0.18	1.57	0.00	0.20	0.01	0.20	0.01	0.01	0.02		141.54		0.01		141.81
Total	**0.12**	**0.18**	**1.57**	**0.00**	**0.20**	**0.01**	**0.20**	**0.01**	**0.01**	**0.02**		**141.54**		**0.01**		**141.81**

3.5 Paving - 2011

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	6.21	37.52	21.30	0.03		3.31	3.31		3.31	3.31	0.00	2,917.64		0.56		2,929.34
Paving	0.00					0.00	0.00		0.00	0.00						0.00
Total	6.21	37.52	21.30	0.03		3.31	3.31		3.31	3.31	0.00	2,917.64		0.56		2,929.34

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.12	0.18	1.57	0.00	0.20	0.01	0.20	0.01	0.01	0.02		141.54		0.01		141.81
Total	0.12	0.18	1.57	0.00	0.20	0.01	0.20	0.01	0.01	0.02		141.54		0.01		141.81

3.5 Paving - 2012

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	5.86	35.62	21.08	0.03		3.13	3.13		3.13	3.13		2,917.64		0.53		2,928.70
Paving	0.00					0.00	0.00		0.00	0.00						0.00
Total	**5.86**	**35.62**	**21.08**	**0.03**		**3.13**	**3.13**		**3.13**	**3.13**		**2,917.64**		**0.53**		**2,928.70**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.11	0.16	1.41	0.00	0.20	0.01	0.20	0.01	0.01	0.02		138.29		0.01		138.53
Total	**0.11**	**0.16**	**1.41**	**0.00**	**0.20**	**0.01**	**0.20**	**0.01**	**0.01**	**0.02**		**138.29**		**0.01**		**138.53**

3.5 Paving - 2012

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	5.86	35.62	21.08	0.03		3.13	3.13		3.13	3.13	0.00	2,917.64		0.53		2,928.70
Paving	0.00					0.00	0.00		0.00	0.00						0.00
Total	5.86	35.62	21.08	0.03		3.13	3.13		3.13	3.13	0.00	2,917.64		0.53		2,928.70

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.11	0.16	1.41	0.00	0.20	0.01	0.20	0.01	0.01	0.02		138.29		0.01		138.53
Total	0.11	0.16	1.41	0.00	0.20	0.01	0.20	0.01	0.01	0.02		138.29		0.01		138.53

3.6 Architectural Coating - 2012

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	19.68					0.00	0.00		0.00	0.00						0.00
Off-Road	0.52	3.16	1.96	0.00		0.29	0.29		0.29	0.29		281.19		0.05		282.18
Total	**20.20**	**3.16**	**1.96**	**0.00**		**0.29**	**0.29**		**0.29**	**0.29**		**281.19**		**0.05**		**282.18**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.01	0.01	0.09	0.00	0.01	0.00	0.01	0.00	0.00	0.00		9.22		0.00		9.24
Total	**0.01**	**0.01**	**0.09**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**		**9.22**		**0.00**		**9.24**

3.6 Architectural Coating - 2012

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	19.68					0.00	0.00		0.00	0.00						0.00
Off-Road	0.52	3.16	1.96	0.00		0.29	0.29		0.29	0.29	0.00	281.19		0.05		282.18
Total	20.20	3.16	1.96	0.00		0.29	0.29		0.29	0.29	0.00	281.19		0.05		282.18

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.01	0.01	0.09	0.00	0.01	0.00	0.01	0.00	0.00	0.00		9.22		0.00		9.24
Total	0.01	0.01	0.09	0.00	0.01	0.00	0.01	0.00	0.00	0.00		9.22		0.00		9.24

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.15	0.82	1.35	0.00	0.12	0.03	0.15	0.00	0.03	0.03		151.03		0.01		151.22
Unmitigated	0.15	0.82	1.35	0.00	0.12	0.03	0.15	0.00	0.03	0.03		151.03		0.01		151.22
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Medical Office Building	18.36	18.36	0.00	30,802	30,802
Total	18.36	18.36	0.00	30,802	30,802

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Medical Office Building	9.50	7.30	7.30	29.60	51.40	19.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.00	0.01	0.01	0.00		0.00	0.00		0.00	0.00		18.00		0.00	0.00	18.11
NaturalGas Unmitigated	0.00	0.01	0.01	0.00		0.00	0.00		0.00	0.00		18.00		0.00	0.00	18.11
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Medical Office Building	153	0.00	0.01	0.01	0.00		0.00	0.00		0.00	0.00		18.00		0.00	0.00	18.11
Total		0.00	0.01	0.01	0.00		0.00	0.00		0.00	0.00		18.00		0.00	0.00	18.11

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Medical Office Building	0.153	0.00	0.01	0.01	0.00		0.00	0.00		0.00	0.00		18.00		0.00	0.00	18.11
Total		0.00	0.01	0.01	0.00		0.00	0.00		0.00	0.00		18.00		0.00	0.00	18.11

6.0 Area Detail

6.1 Mitigation Measures Area

Use only Natural Gas Hearths

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.42	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Unmitigated	0.42	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.10					0.00	0.00		0.00	0.00						0.00
Consumer Products	0.33					0.00	0.00		0.00	0.00						0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	0.43	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.10					0.00	0.00		0.00	0.00						0.00
Consumer Products	0.33					0.00	0.00		0.00	0.00						0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	0.43	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Vegetation

Yucca Valley Animal Shelter

San Bernardino-Mojave Desert County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Medical Office Building	15.3	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.6	Utility Company	
Climate Zone	10	Precipitation Freq (Days)	32		

1.3 User Entered Comments

Project Characteristics -

Land Use - Acreage scaled up to be consistent with project description.

Construction Phase -

Vehicle Trips - Trip rate adjustment to be consistent with the Town of Yucca Valley anticipated trip rate associated with exisiting animal shelters in the Town and County (500 trips a month or 17 trips per day).

Construction Off-road Equipment Mitigation -

Area Mitigation -

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2011	0.82	5.47	3.32	0.01	0.08	0.38	0.46	0.04	0.38	0.42	0.00	496.84	496.84	0.07	0.00	498.24
2012	0.18	0.05	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.76	3.76	0.00	0.00	3.77
Total	**1.00**	**5.52**	**3.35**	**0.01**	**0.08**	**0.38**	**0.46**	**0.04**	**0.38**	**0.42**	**0.00**	**500.60**	**500.60**	**0.07**	**0.00**	**502.01**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2011	0.82	5.47	3.32	0.01	0.04	0.38	0.42	0.02	0.38	0.40	0.00	496.84	496.84	0.07	0.00	498.24
2012	0.18	0.05	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.76	3.76	0.00	0.00	3.77
Total	**1.00**	**5.52**	**3.35**	**0.01**	**0.04**	**0.38**	**0.42**	**0.02**	**0.38**	**0.40**	**0.00**	**500.60**	**500.60**	**0.07**	**0.00**	**502.01**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.08	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Energy	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	2.98	2.98	0.00	0.00	3.00
Mobile	0.02	0.12	0.21	0.00	0.02	0.00	0.02	0.00	0.00	0.01	0.00	21.88	21.88	0.00	0.00	21.91
Waste						0.00	0.00		0.00	0.00	33.54	0.00	33.54	1.98	0.00	75.17
Water						0.00	0.00		0.00	0.00	0.00	0.02	0.02	0.06	0.00	1.70
Total	0.10	0.12	0.21	0.00	0.02	0.00	0.02	0.00	0.00	0.01	33.54	24.88	58.42	2.04	0.00	101.78

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.08	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Energy	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	2.98	2.98	0.00	0.00	3.00
Mobile	0.02	0.12	0.21	0.00	0.02	0.00	0.02	0.00	0.00	0.01	0.00	21.88	21.88	0.00	0.00	21.91
Waste						0.00	0.00		0.00	0.00	33.54	0.00	33.54	1.98	0.00	75.17
Water						0.00	0.00		0.00	0.00	0.00	0.02	0.02	0.06	0.00	1.70
Total	0.10	0.12	0.21	0.00	0.02	0.00	0.02	0.00	0.00	0.01	33.54	24.88	58.42	2.04	0.00	101.78

3.0 Construction Detail

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2011

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.05	0.00	0.05	0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.03	0.22	0.13	0.00		0.01	0.01		0.01	0.01	0.00	18.13	18.13	0.00	0.00	18.18
Total	**0.03**	**0.22**	**0.13**	**0.00**	**0.05**	**0.01**	**0.06**	**0.02**	**0.01**	**0.03**	**0.00**	**18.13**	**18.13**	**0.00**	**0.00**	**18.18**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.40	0.40	0.00	0.00	0.40
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.40**	**0.40**	**0.00**	**0.00**	**0.40**

3.2 Site Preparation - 2011

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.02	0.00	0.02	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.03	0.22	0.13	0.00		0.01	0.01		0.01	0.01	0.00	18.13	18.13	0.00	0.00	18.18
Total	**0.03**	**0.22**	**0.13**	**0.00**	**0.02**	**0.01**	**0.03**	**0.01**	**0.01**	**0.02**	**0.00**	**18.13**	**18.13**	**0.00**	**0.00**	**18.18**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.40	0.40	0.00	0.00	0.40
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.40**	**0.40**	**0.00**	**0.00**	**0.40**

3.3 Grading - 2011

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.03	0.00	0.03	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.03	0.22	0.13	0.00		0.01	0.01		0.01	0.01	0.00	19.01	19.01	0.00	0.00	19.06
Total	**0.03**	**0.22**	**0.13**	**0.00**	**0.03**	**0.01**	**0.04**	**0.01**	**0.01**	**0.02**	**0.00**	**19.01**	**19.01**	**0.00**	**0.00**	**19.06**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.53	0.53	0.00	0.00	0.53
Total	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.53**	**0.53**	**0.00**	**0.00**	**0.53**

3.3 Grading - 2011

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.01	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.03	0.22	0.13	0.00		0.01	0.01		0.01	0.01	0.00	19.01	19.01	0.00	0.00	19.06
Total	**0.03**	**0.22**	**0.13**	**0.00**	**0.01**	**0.01**	**0.02**	**0.01**	**0.01**	**0.02**	**0.00**	**19.01**	**19.01**	**0.00**	**0.00**	**19.06**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.53	0.53	0.00	0.00	0.53
Total	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.53**	**0.53**	**0.00**	**0.00**	**0.53**

3.4 Building Construction - 2011

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.70	4.62	2.76	0.00		0.32	0.32		0.32	0.32	0.00	421.43	421.43	0.06	0.00	422.63
Total	0.70	4.62	2.76	0.00		0.32	0.32		0.32	0.32	0.00	421.43	421.43	0.06	0.00	422.63

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.01	0.07	0.03	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	8.61	8.61	0.00	0.00	8.62
Worker	0.00	0.01	0.06	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	5.10	5.10	0.00	0.00	5.11
Total	0.01	0.08	0.09	0.00	0.01	0.00	0.02	0.00	0.00	0.00	0.00	13.71	13.71	0.00	0.00	13.73

3.4 Building Construction - 2011

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.70	4.62	2.76	0.00		0.32	0.32		0.32	0.32	0.00	421.43	421.43	0.06	0.00	422.63
Total	**0.70**	**4.62**	**2.76**	**0.00**		**0.32**	**0.32**		**0.32**	**0.32**	**0.00**	**421.43**	**421.43**	**0.06**	**0.00**	**422.63**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.01	0.07	0.03	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	8.61	8.61	0.00	0.00	8.62
Worker	0.00	0.01	0.06	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	5.10	5.10	0.00	0.00	5.11
Total	**0.01**	**0.08**	**0.09**	**0.00**	**0.01**	**0.00**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**13.71**	**13.71**	**0.00**	**0.00**	**13.73**

3.5 Paving - 2011

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.05	0.32	0.18	0.00		0.03	0.03		0.03	0.03	0.00	22.49	22.49	0.00	0.00	22.58
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.05	0.32	0.18	0.00		0.03	0.03		0.03	0.03	0.00	22.49	22.49	0.00	0.00	22.58

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.13	1.13	0.00	0.00	1.13
Total	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.13	1.13	0.00	0.00	1.13

3.5 Paving - 2011

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.05	0.32	0.18	0.00		0.03	0.03		0.03	0.03	0.00	22.49	22.49	0.00	0.00	22.58
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.05**	**0.32**	**0.18**	**0.00**		**0.03**	**0.03**		**0.03**	**0.03**	**0.00**	**22.49**	**22.49**	**0.00**	**0.00**	**22.58**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.13	1.13	0.00	0.00	1.13
Total	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.13**	**1.13**	**0.00**	**0.00**	**1.13**

3.5 Paving - 2012

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.00	0.02	0.01	0.00		0.00	0.00		0.00	0.00	0.00	1.32	1.32	0.00	0.00	1.33
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.02	0.01	0.00		0.00	0.00		0.00	0.00	0.00	1.32	1.32	0.00	0.00	1.33

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.07	0.00	0.00	0.07
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.07	0.00	0.00	0.07

3.5 Paving - 2012

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.00	0.02	0.01	0.00		0.00	0.00		0.00	0.00	0.00	1.32	1.32	0.00	0.00	1.33
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.02**	**0.01**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**1.32**	**1.32**	**0.00**	**0.00**	**1.33**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.07	0.00	0.00	0.07
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.07**	**0.07**	**0.00**	**0.00**	**0.07**

3.6 Architectural Coating - 2012

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.18					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.00	0.03	0.02	0.00		0.00	0.00		0.00	0.00	0.00	2.30	2.30	0.00	0.00	2.30
Total	0.18	0.03	0.02	0.00		0.00	0.00		0.00	0.00	0.00	2.30	2.30	0.00	0.00	2.30

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.08	0.00	0.00	0.08
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.08	0.00	0.00	0.08

3.6 Architectural Coating - 2012

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.18					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.00	0.03	0.02	0.00		0.00	0.00		0.00	0.00	0.00	2.30	2.30	0.00	0.00	2.30
Total	**0.18**	**0.03**	**0.02**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**2.30**	**2.30**	**0.00**	**0.00**	**2.30**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.08	0.00	0.00	0.08
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.08**	**0.08**	**0.00**	**0.00**	**0.08**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.02	0.12	0.21	0.00	0.02	0.00	0.02	0.00	0.00	0.01	0.00	21.88	21.88	0.00	0.00	21.91
Unmitigated	0.02	0.12	0.21	0.00	0.02	0.00	0.02	0.00	0.00	0.01	0.00	21.88	21.88	0.00	0.00	21.91
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Medical Office Building	18.36	18.36	0.00	30,802	30,802
Total	18.36	18.36	0.00	30,802	30,802

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Medical Office Building	9.50	7.30	7.30	29.60	51.40	19.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electricity Unmitigated						0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NaturalGas Mitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	2.98	2.98	0.00	0.00	3.00
NaturalGas Unmitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	2.98	2.98	0.00	0.00	3.00
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Medical Office Building	55845	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	2.98	2.98	0.00	0.00	3.00
Total		0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	2.98	2.98	0.00	0.00	3.00

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Medical Office Building	55845	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	2.98	2.98	0.00	0.00	3.00
Total		0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	2.98	2.98	0.00	0.00	3.00

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Medical Office Building	163557					0.00	0.00	0.00	0.00
Total						0.00	0.00	0.00	0.00

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Medical Office Building	163557					0.00	0.00	0.00	0.00
Total						0.00	0.00	0.00	0.00

6.0 Area Detail

6.1 Mitigation Measures Area

Use only Natural Gas Hearths

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.08	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unmitigated	0.08	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.02					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.06					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.08**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.02					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.06					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.08**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

7.0 Water Detail

7.1 Mitigation Measures Water

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr				MT/yr			
Mitigated					0.02	0.06	0.00	1.70
Unmitigated					0.02	0.06	0.00	1.70
Total	NA	NA	NA	NA	NA	NA	NA	NA

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Medical Office Building	1.91985 / 0.365686					0.02	0.06	0.00	1.70
Total						0.02	0.06	0.00	1.70

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Medical Office Building	1.91985 / 0.365686					0.02	0.06	0.00	1.70
Total						0.02	0.06	0.00	1.70

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
	tons/yr				MT/yr			
Mitigated					33.54	1.98	0.00	75.17
Unmitigated					33.54	1.98	0.00	75.17
Total	NA	NA	NA	NA	NA	NA	NA	NA

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Medical Office Building	165.24					33.54	1.98	0.00	75.17
Total						**33.54**	**1.98**	**0.00**	**75.17**

Mitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Medical Office Building	165.24					33.54	1.98	0.00	75.17
Total						**33.54**	**1.98**	**0.00**	**75.17**

9.0 Vegetation