Appendix G:
Hydrology Supporting Information

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G.1 - Hydrology and Hydraulic Study

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HYDROLOGY AND HYDRAULIC STUDY FOR TRACT MAP 38625

CITY OF MENIFEE
CALIFORNIA

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DATE PREPARED:
DECEMBER 21, 2022

DATE REVISED:
APRIL 19, 2023

This report has been prepared by or under the direction of the following registered civil engineer who attests to the technical information contained herein. The registered civil engineer has also judged the qualifications of any technical specialists providing engineering data upon which recommendations, conclusions, and decisions are based.

4/19/2023

Joseph L. Castaneda RCE 59835 Registered Civil Engineer	Date	Seal

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I. INTRODUCTION

Tract 38625 is a proposed residential development in the City of Menifee that will be constructing single family detached homes on 329 lots on 56 acres of land. The lots will consist of sizes that range from 2,000 square feet to 7,000 square feet. The project is located at the intersection of Simpson Road and Briggs Road.

The scope of this report will include the following:

- Determine the peak 100-year flow rates for the proposed development project condition using the Riverside County Flood Control and Water Conservation District (RCFC & WCD) Rational Method.
- Develop storm drain alignments required to flood protect the project site from offsite and onsite flows.
- Ensure that the project is treating runoff from the developed area to meet the WQMP requirements and policies enforced by the City of Menifee.
- Preparation of a preliminary hydrology and hydraulic report, which consists of hydrological and analytical results and exhibits.

II. PROJECT SITE AND DRAINAGE OVERVIEW

Tract 38625 is a proposed single family detached residential development in the City of Menifee, County of Riverside. The project proposes to construct a combination of lots that range from 2,000 square feet to 7,000 square feet. The project site is bounded by Simpson Road to the north, Briggs Road to the northeast, Mahogany Trail Way to the west and Salt Creek Channel to the south. Briggs Road does not currently extend across Simpson Road along the eastern end of the project site. The western border of the project site are residential homes.

The project site is approximately 56 acres large and includes the drainage area of Simpson Road and Briggs Road. The project contains three watershed areas which have been labeled as Area A, B and C. Area A makes up the eastern half of the project site and consists of 21.62 acres. Area A is tributary to Bioretention Basin A. Similarly, Area B makes up the western half of the project site along with the adjacent street area along Simpson and Briggs Rd. Area B consists of 29.38 acres and drains into Bioretention Basin B. The bioretention basins have been designed with a modular wetland unit (MWS) for water quality treatment. The modular wetland units have been designed by converting the water quality volume for Area A and B into a flow rate over a 48 hour drawdown time. A pump will connect the modular wetland units to the basin outlet. The bioretention basins will outlet into the Salt Creek Channel. Area C is made up of 5.02 acres of open space area that will also drain into the Salt Creek Channel. The drainage systems have been identified in the Exhibit B, Drainage Facilities Map. Since the Salt Creek Channel is classified as a large enough water body, the project does not call for the mitigation of onsite flows.

III. HYDROLOGY ANALYSIS

The RCFC & WCD Hydrology Manual (Reference 1) was used to develop the hydrological parameters for the rational method. The calculations were performed using the computer program developed by Civil Cadd/Civil Design.

The existing soil classification for the area consists of Soil "A", "C" and Soil "D", as shown on Excerpt A. Excerpt A is a hydrologic soils map that was obtained from the United States Department of Agriculture, Natural Resources Conservation Service (NRCS). For the hydrology analysis the project site was assumed to be 75% Soil C and 25% Soil D. As recommended by the County of Riverside, an Antecedent Moisture Condition II was utilized for the 10-year and 100-year storm events.

The rainfall depths, shown on Table 1, were obtained from the RCFC & WCD Hydrology Manual's Isohyetal Maps. These rainfall values were used to perform the hydrology analyses.

Table 1

Storm Event	1-hour (in)
2-Year	0.48
100-Year	1.20

The slope value used for the rational method value is 0.53. The rainfall maps have been included as Exhibit C, and the slope of intensity duration curves have been included as Exhibit D.

To model the residential land cover of Area A, the Condominium land cover type which has an impervious ratio of 0.65 was used. For Area C the Undeveloped Fair Cover with an impervious ratio of 0 was used.

The project is not required to study the offsite hydrology. The flows along Simpson and Briggs Road are representative of the runoff from the project site and that of an existing high point within the road.

The Post Project Hydrology Map has been included as Exhibit A and the calculations for the 100 year and 10 year storms have been included in Appendix A.

IV. STORM DRAIN SYSTEMS

The Salt Creek Channel is defined as an adequate outlet since it was designed to convey the 100 year flow rate for the watershed area. The project is proposing to connect to Salt Creek which can accept the 100 year flows from the project site without any onsite basin mitigation. Moreover, the project is exempted from hydromodifications as identified in the Riverside Stormwater Tracking Tool.

The project proposes to construct a storm drain system with catch basins for each respective area, A through C. Area A of the project site will discharge into Bioretention Basin A where it will be treated for water quality. Similarly, Area B will discharge into Bioretention Basin B. The bioretention basins contains an overflow inlet to discharge excess flows through Line A for Area A and Line B for Area B into the Salt Creek Channel. Area C will discharge into Salt Creek through Line C.

Basin A contains a bottom elevation of 1438 and top elevation of 1445 to 1449. The overflow inlet for Bioretention Basin A contains a weir with a length of 8 ft at an elevation of 1441. Basin B contains a bottom elevation of 1438 and top elevation of 1443 to 1446. The overflow inlet for Bioretention Basin B contains two weirs at a length of 24 ft to total a length of 48 ft. The weirs have been designed to convey the 100 year flow rate and calculations have been included in Appendix B.3.

The storm drains have been sized to flow at approximately 75% capacity using Manning's Equation and have been included in Appendix B.1.

Table 2 – Storm Drain Peak Flow Rates

Storm Drain System	"Q_{100}" (ft^3/s)	Pipe Size
Line A	45.6	42"
Line B	50.7	48"
Line C	7.3	Existing 24"

The 100 year flow rates and storm drain sizes have been included in Exhibit B, Drainage Facilities Map.

V. CONCLUSIONS

Hydrology and Hydraulic analyses were prepared for the project site in order to determine the drainage patterns and storm drain systems. The following conclusions were derived from the analyses:

1. The project site will discharge into the Salt Creek Channel which is a large enough water body to receive all onsite flows.

2. The proposed storm drain alignments will provide flood protection to the project site for the 100-year storm event.

3. The project will ensure that water quality standards per the MS4 Permit are met by implementing a bioretention basin and modular wetland systems.

4. The proposed storm drain systems are sized to adequately convey the 100 year flow rates.

VI. REFERENCES

1. Riverside County Flood Control and Water Conservation District Hydrology Manual, April 1978.
2. County of Riverside 2012 WQMP for the Santa Ana Region
3. County of Riverside Design Handbook for LID BMPs, September 2018

FIGURES

FIGURE 1: VICINITY MAP

TRACT 38625 VICINITY MAP

N

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FIGURE 1

Drawing Name: O:\313.01.22\Engineering\WQMP\Appendix 1 - Maps & Site Plan\VICINITY MAP.dwg
Last Opened: Dec 21, 2022 - 10:17pm by joe

APPENDICES

APPENDIX A.1: RATIONAL METHOD HYDROLOGY ANALYSIS: 100 YR STORM

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2014 Version 9.0
Rational Hydrology Study Date: 04/17/23 File:ARA100.out

TENTATIVE TRACT MAP NO. 38625
100-YEAR RATIONAL TABLING METHOD FOR AREA A
POST CONSTRUCTION BMP SITE
FN: ARA100.RRV

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 6279

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 100.00 Antecedent Moisture Condition = 2

2 year, 1 hour precipitation = 0.480(In.)
100 year, 1 hour precipitation = 1.200(In.)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity = 1.200(In/Hr)
Slope of intensity duration curve = 0.5300

++
Process from Point/Station 101.000 to Point/Station 102.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 1000.000(Ft.)
Top (of initial area) elevation = 1453.400(Ft.)
Bottom (of initial area) elevation = 1446.500(Ft.)
Difference in elevation = 6.900(Ft.)
Slope = 0.00690 s(percent)= 0.69
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 15.865 min.
Rainfall intensity = 2.429(In/Hr) for a 100.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.841
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.750
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2) = 70.50
Pervious area fraction = 0.350; Impervious fraction = 0.650
Initial subarea runoff = 14.178(CFS)

```
Total initial stream area =        6.940(Ac.)
Pervious area fraction = 0.350


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      102.000 to Point/Station      106.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------
Upstream point/station elevation =  1441.500(Ft.)
Downstream point/station elevation =  1441.000(Ft.)
Pipe length  =    65.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    14.178(CFS)
Nearest computed pipe diameter  =     21.00(In.)
Calculated individual pipe flow  =    14.178(CFS)
Normal flow depth in pipe =   17.63(In.)
Flow top width inside pipe =   15.43(In.)
Critical Depth =   16.78(In.)
Pipe flow velocity =      6.58(Ft/s)
Travel time through pipe =    0.16 min.
Time of concentration (TC) =    16.03 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      106.000 to Point/Station      106.000
**** CONFLUENCE OF MAIN STREAMS ****
----------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      6.940(Ac.)
Runoff from this stream =     14.178(CFS)
Time of concentration =   16.03 min.
Rainfall intensity =     2.415(In/Hr)
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      103.000 to Point/Station      104.000
**** INITIAL AREA EVALUATION ****
----------------------------------------------------------------------
Initial area flow distance =   781.000(Ft.)
Top (of initial area) elevation =  1453.400(Ft.)
Bottom (of initial area) elevation =  1448.000(Ft.)
Difference in elevation =     5.400(Ft.)
Slope =    0.00691  s(percent)=       0.69
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   14.365 min.
Rainfall intensity =      2.560(In/Hr) for a   100.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.844
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.750
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  70.50
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      5.723(CFS)
Total initial stream area =        2.650(Ac.)
Pervious area fraction = 0.350
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++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      104.000 to Point/Station      105.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------------
Top of street segment elevation =  1448.000(Ft.)
End of street segment elevation =  1446.500(Ft.)
Length of street segment  =   301.000(Ft.)
Height of curb above gutter flowline  =    8.0(In.)
Width of half street (curb to crown)  =  20.000(Ft.)
Distance from crown to crossfall grade break  =  18.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.025
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      6.812(CFS)
Depth of flow =   0.472(Ft.), Average velocity =   2.190(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  17.275(Ft.)
Flow velocity =   2.19(Ft/s)
Travel time =    2.29 min.     TC =   16.66  min.
 Adding area flow to street
CONDOMINIUM subarea type
Runoff Coefficient = 0.840
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.750
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  70.50
Pervious area fraction =  0.350; Impervious fraction =  0.650
Rainfall intensity =      2.367(In/Hr) for a   100.0 year storm
Subarea runoff =      2.087(CFS) for      1.050(Ac.)
Total runoff =      7.810(CFS)      Total area =       3.700(Ac.)
Street flow at end of street =      7.810(CFS)
Half street flow at end of street =      7.810(CFS)
Depth of flow =   0.491(Ft.), Average velocity =   2.264(Ft/s)
Flow width (from curb towards crown)=  18.230(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      105.000 to Point/Station      106.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  1441.500(Ft.)
Downstream point/station elevation =  1441.000(Ft.)
Pipe length  =    75.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     7.810(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =     7.810(CFS)
Normal flow depth in pipe =   13.48(In.)
Flow top width inside pipe =   15.62(In.)
Critical Depth =   12.99(In.)
Pipe flow velocity =      5.50(Ft/s)
Travel time through pipe =    0.23 min.
Time of concentration (TC) =    16.88 min.
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Process from Point/Station      105.000 to Point/Station      106.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      3.700(Ac.)
Runoff from this stream =      7.810(CFS)
Time of concentration =   16.88 min.
Rainfall intensity =     2.350(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       14.178     16.03               2.415
2        7.810     16.88               2.350
Largest stream flow has longer or shorter time of concentration
Qp =     14.178 + sum of
        Qa          Tb/Ta
         7.810 *    0.949 =      7.415
Qp =     21.593

Total of 2 main streams to confluence:
Flow rates before confluence point:
      14.178       7.810
Area of streams before confluence:
        6.940        3.700


Results of confluence:
Total flow rate =     21.593(CFS)
Time of concentration =    16.029 min.
Effective stream area after confluence  =     10.640(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      106.000 to Point/Station      109.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------
Upstream point/station elevation =  1441.000(Ft.)
Downstream point/station elevation =  1440.100(Ft.)
Pipe length  =    90.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    21.593(CFS)
Nearest computed pipe diameter  =     24.00(In.)
Calculated individual pipe flow  =    21.593(CFS)
Normal flow depth in pipe =   18.75(In.)
Flow top width inside pipe =   19.84(In.)
Critical Depth =   19.93(In.)
Pipe flow velocity =      8.20(Ft/s)
Travel time through pipe =    0.18 min.
Time of concentration (TC) =    16.21 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      106.000 to Point/Station      109.000
**** CONFLUENCE OF MAIN STREAMS ****
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```
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     10.640(Ac.)
Runoff from this stream =     21.593(CFS)
Time of concentration =   16.21 min.
Rainfall intensity =     2.401(In/Hr)
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      107.000 to Point/Station      108.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------
Initial area flow distance =   631.000(Ft.)
Top (of initial area) elevation =  1449.100(Ft.)
Bottom (of initial area) elevation =  1445.100(Ft.)
Difference in elevation =     4.000(Ft.)
Slope =    0.00634  s(percent)=       0.63
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   13.422 min.
Rainfall intensity =      2.654(In/Hr) for a   100.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.845
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.750
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  70.50
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      3.230(CFS)
Total initial stream area =        1.440(Ac.)
Pervious area fraction = 0.350


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      108.000 to Point/Station      109.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------
Upstream point/station elevation =  1440.200(Ft.)
Downstream point/station elevation =  1440.100(Ft.)
Pipe length  =    30.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     3.230(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     3.230(CFS)
Normal flow depth in pipe =   10.78(In.)
Flow top width inside pipe =   13.49(In.)
Critical Depth =    8.68(In.)
Pipe flow velocity =      3.42(Ft/s)
Travel time through pipe =    0.15 min.
Time of concentration (TC) =    13.57 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      108.000 to Point/Station      109.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      1.440(Ac.)
```

```
Runoff from this stream =      3.230(CFS)
Time of concentration =   13.57 min.
Rainfall intensity =     2.639(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       21.593     16.21               2.401
2        3.230     13.57               2.639
Largest stream flow has longer time of concentration
Qp =     21.593 + sum of
        Qb         Ia/Ib
         3.230 *    0.910 =      2.939
Qp =     24.532

Total of 2 main streams to confluence:
Flow rates before confluence point:
      21.593       3.230
Area of streams before confluence:
       10.640        1.440


Results of confluence:
Total flow rate =     24.532(CFS)
Time of concentration =    16.212 min.
Effective stream area after confluence  =     12.080(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      109.000 to Point/Station      111.100
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1440.100(Ft.)
Downstream point/station elevation =  1439.500(Ft.)
Pipe length  =    85.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    24.532(CFS)
Nearest computed pipe diameter  =     27.00(In.)
Calculated individual pipe flow  =    24.532(CFS)
Normal flow depth in pipe =   20.86(In.)
Flow top width inside pipe =   22.64(In.)
Critical Depth =   20.78(In.)
Pipe flow velocity =      7.44(Ft/s)
Travel time through pipe =    0.19 min.
Time of concentration (TC) =    16.40 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      109.000 to Point/Station      111.100
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     12.080(Ac.)
Runoff from this stream =     24.532(CFS)
Time of concentration =   16.40 min.
Rainfall intensity =     2.386(In/Hr)
Program is now starting with Main Stream No. 2
```

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++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      110.000 to Point/Station      111.000
**** INITIAL AREA EVALUATION ****
----------------------------------------------------------------------
Initial area flow distance =   521.000(Ft.)
Top (of initial area) elevation =  1449.000(Ft.)
Bottom (of initial area) elevation =  1445.000(Ft.)
Difference in elevation =     4.000(Ft.)
Slope =    0.00768  s(percent)=       0.77
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   11.964 min.
Rainfall intensity =      2.820(In/Hr) for a   100.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.848
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.750
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  70.50
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      6.338(CFS)
Total initial stream area =        2.650(Ac.)
Pervious area fraction = 0.350


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      111.000 to Point/Station      111.100
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------
Upstream point/station elevation =  1440.000(Ft.)
Downstream point/station elevation =  1439.500(Ft.)
Pipe length  =    23.00(Ft.)   Manning's N = 0.015
No. of pipes = 1  Required pipe flow  =     6.338(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     6.338(CFS)
Normal flow depth in pipe =    9.86(In.)
Flow top width inside pipe =   14.24(In.)
Critical Depth =   12.19(In.)
Pipe flow velocity =      7.42(Ft/s)
Travel time through pipe =    0.05 min.
Time of concentration (TC) =    12.02 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      111.000 to Point/Station      111.100
**** CONFLUENCE OF MAIN STREAMS ****
----------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      2.650(Ac.)
Runoff from this stream =      6.338(CFS)
Time of concentration =   12.02 min.
Rainfall intensity =     2.814(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)
```

```
1       24.532     16.40               2.386
2        6.338     12.02               2.814
Largest stream flow has longer time of concentration
Qp =     24.532 + sum of
        Qb         Ia/Ib
         6.338 *    0.848 =      5.374
Qp =     29.906

Total of 2 main streams to confluence:
Flow rates before confluence point:
      24.532       6.338
Area of streams before confluence:
       12.080        2.650


Results of confluence:
Total flow rate =     29.906(CFS)
Time of concentration =    16.403 min.
Effective stream area after confluence  =     14.730(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      111.100 to Point/Station      116.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1439.500(Ft.)
Downstream point/station elevation =  1438.000(Ft.)
Pipe length  =   151.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    29.906(CFS)
Nearest computed pipe diameter  =     27.00(In.)
Calculated individual pipe flow  =    29.906(CFS)
Normal flow depth in pipe =   21.42(In.)
Flow top width inside pipe =   21.86(In.)
Critical Depth =   22.72(In.)
Pipe flow velocity =      8.85(Ft/s)
Travel time through pipe =    0.28 min.
Time of concentration (TC) =    16.69 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      116.000 to Point/Station      116.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     14.730(Ac.)
Runoff from this stream =     29.906(CFS)
Time of concentration =   16.69 min.
Rainfall intensity =     2.364(In/Hr)
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      112.000 to Point/Station      113.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Initial area flow distance =   843.000(Ft.)
Top (of initial area) elevation =  1450.500(Ft.)
Bottom (of initial area) elevation =  1445.400(Ft.)
Difference in elevation =     5.100(Ft.)
```

```
Slope =    0.00605  s(percent)=       0.60
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   15.212 min.
Rainfall intensity =      2.483(In/Hr) for a   100.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.842
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.750
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  70.50
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      7.571(CFS)
Total initial stream area =        3.620(Ac.)
Pervious area fraction = 0.350


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      113.000 to Point/Station      115.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1440.200(Ft.)
Downstream point/station elevation =  1440.100(Ft.)
Pipe length  =    80.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     7.571(CFS)
Nearest computed pipe diameter  =     24.00(In.)
Calculated individual pipe flow  =     7.571(CFS)
Normal flow depth in pipe =   18.61(In.)
Flow top width inside pipe =   20.03(In.)
Critical Depth =   11.74(In.)
Pipe flow velocity =      2.90(Ft/s)
Travel time through pipe =    0.46 min.
Time of concentration (TC) =    15.67 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      115.000 to Point/Station      115.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 2 in normal stream number 1
Stream flow area =      3.620(Ac.)
Runoff from this stream =      7.571(CFS)
Time of concentration =   15.67 min.
Rainfall intensity =     2.444(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      114.000 to Point/Station      115.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Initial area flow distance =   902.000(Ft.)
Top (of initial area) elevation =  1450.200(Ft.)
Bottom (of initial area) elevation =  1445.100(Ft.)
Difference in elevation =     5.100(Ft.)
Slope =    0.00565  s(percent)=       0.57
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   15.842 min.
Rainfall intensity =      2.431(In/Hr) for a   100.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.841
```

```
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.750
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  70.50
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      5.357(CFS)
Total initial stream area =        2.620(Ac.)
Pervious area fraction = 0.350


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      114.000 to Point/Station      115.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------
Along Main Stream number: 2 in normal stream number 2
Stream flow area =      2.620(Ac.)
Runoff from this stream =      5.357(CFS)
Time of concentration =   15.84 min.
Rainfall intensity =     2.431(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        7.571     15.67                2.444
2        5.357     15.84                2.431
Largest stream flow has longer or shorter time of concentration
Qp =      7.571 + sum of
        Qa          Tb/Ta
         5.357 *    0.989 =      5.299
Qp =     12.871

Total of 2 streams to confluence:
Flow rates before confluence point:
       7.571       5.357
Area of streams before confluence:
        3.620        2.620
Results of confluence:
Total flow rate =     12.871(CFS)
Time of concentration =    15.672 min.
Effective stream area after confluence =      6.240(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      115.000 to Point/Station      116.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------
Upstream point/station elevation =  1440.100(Ft.)
Downstream point/station elevation =  1438.000(Ft.)
Pipe length  =    38.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    12.871(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =    12.871(CFS)
Normal flow depth in pipe =   10.59(In.)
Flow top width inside pipe =   13.66(In.)
Critical depth could not be calculated.
Pipe flow velocity =     13.88(Ft/s)
Travel time through pipe =    0.05 min.
```

```
Time of concentration (TC) =    15.72 min.


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Process from Point/Station      115.000 to Point/Station      116.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      6.240(Ac.)
Runoff from this stream =     12.871(CFS)
Time of concentration =   15.72 min.
Rainfall intensity =     2.441(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       29.906     16.69               2.364
2       12.871     15.72               2.441
Largest stream flow has longer time of concentration
Qp =     29.906 + sum of
        Qb         Ia/Ib
        12.871 *    0.969 =     12.469
Qp =     42.375

Total of 2 main streams to confluence:
Flow rates before confluence point:
      29.906      12.871
Area of streams before confluence:
       14.730        6.240


Results of confluence:
Total flow rate =     42.375(CFS)
Time of concentration =    16.687 min.
Effective stream area after confluence  =     20.970(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      116.000 to Point/Station      116.000
**** SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------
UNDEVELOPED (fair cover) subarea
Runoff Coefficient = 0.790
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.750
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  80.25
Pervious area fraction =  1.000; Impervious fraction =  0.000
Time of concentration =    16.69 min.
Rainfall intensity =      2.364(In/Hr) for a   100.0 year storm
Subarea runoff =      1.215(CFS) for      0.650(Ac.)
Total runoff =     43.590(CFS)      Total area =      21.620(Ac.)
End of computations, total study area =           21.62 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
```

```
Area averaged pervious area fraction(Ap) = 0.370
Area averaged RI index number =  70.8
```

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2014 Version 9.0
Rational Hydrology Study Date: 04/13/23 File:ARB100.out

TENTATIVE TRACT MAP NO. 38625
100-YEAR RATIONAL TABLING METHOD FOR AREA B
POST CONSTRUCTION BMP SITE
FN: ARB100.RRV

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 6279

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 100.00 Antecedent Moisture Condition = 2

2 year, 1 hour precipitation = 0.480(In.)
100 year, 1 hour precipitation = 1.200(In.)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity = 1.200(In/Hr)
Slope of intensity duration curve = 0.5300

++
Process from Point/Station 201.000 to Point/Station 202.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 811.000(Ft.)
Top (of initial area) elevation = 1451.300(Ft.)
Bottom (of initial area) elevation = 1449.000(Ft.)
Difference in elevation = 2.300(Ft.)
Slope = 0.00284 s(percent)= 0.28
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 14.131 min.
Rainfall intensity = 2.582(In/Hr) for a 100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.884
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.750
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2) = 70.50
Pervious area fraction = 0.100; Impervious fraction = 0.900
Initial subarea runoff = 3.082(CFS)

```
Total initial stream area =        1.350(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      202.000 to Point/Station      203.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------------
Top of street segment elevation =  1449.000(Ft.)
End of street segment elevation =  1446.700(Ft.)
Length of street segment  =   662.000(Ft.)
Height of curb above gutter flowline  =    8.0(In.)
Width of half street (curb to crown)  =  32.000(Ft.)
Distance from crown to crossfall grade break  =  16.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  18.000(Ft.)
Slope from curb to property line (v/hz) =   0.025
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      4.164(CFS)
Depth of flow =   0.432(Ft.), Average velocity =   1.695(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  15.263(Ft.)
Flow velocity =   1.70(Ft/s)
Travel time =    6.51 min.     TC =   20.64  min.
 Adding area flow to street
COMMERCIAL subarea type
Runoff Coefficient = 0.881
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.750
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  70.50
Pervious area fraction =  0.100; Impervious fraction =  0.900
Rainfall intensity =      2.113(In/Hr) for a   100.0 year storm
Subarea runoff =      2.104(CFS) for      1.130(Ac.)
Total runoff =      5.185(CFS)      Total area =       2.480(Ac.)
Street flow at end of street =      5.185(CFS)
Half street flow at end of street =      5.185(CFS)
Depth of flow =   0.460(Ft.), Average velocity =   1.788(Ft/s)
Flow width (from curb towards crown)=  16.655(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      203.000 to Point/Station      204.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------------
Top of street segment elevation =  1446.700(Ft.)
End of street segment elevation =  1444.500(Ft.)
Length of street segment  =   494.000(Ft.)
Height of curb above gutter flowline  =    8.0(In.)
Width of half street (curb to crown)  =  45.000(Ft.)
Distance from crown to crossfall grade break  =  43.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
```

```
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  14.000(Ft.)
Slope from curb to property line (v/hz) =   0.025
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      6.000(CFS)
Depth of flow =   0.463(Ft.), Average velocity =   2.035(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  16.800(Ft.)
Flow velocity =   2.03(Ft/s)
Travel time =    4.05 min.     TC =   24.69  min.
 Adding area flow to street
COMMERCIAL subarea type
Runoff Coefficient = 0.880
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.750
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  70.50
Pervious area fraction =  0.100; Impervious fraction =  0.900
Rainfall intensity =      1.921(In/Hr) for a   100.0 year storm
Subarea runoff =      1.538(CFS) for      0.910(Ac.)
Total runoff =      6.723(CFS)      Total area =       3.390(Ac.)
Street flow at end of street =      6.723(CFS)
Half street flow at end of street =      6.723(CFS)
Depth of flow =   0.478(Ft.), Average velocity =   2.092(Ft/s)
Flow width (from curb towards crown)=  17.571(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      204.000 to Point/Station      204.000
**** SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------------
CONDOMINIUM subarea type
Runoff Coefficient = 0.829
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.750
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  70.50
Pervious area fraction =  0.350; Impervious fraction =  0.650
Time of concentration =    24.69 min.
Rainfall intensity =      1.921(In/Hr) for a   100.0 year storm
Subarea runoff =      4.142(CFS) for      2.600(Ac.)
Total runoff =     10.865(CFS)      Total area =       5.990(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      204.000 to Point/Station      205.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------------
Top of street segment elevation =  1444.500(Ft.)
End of street segment elevation =  1442.700(Ft.)
Length of street segment  =   426.000(Ft.)
Height of curb above gutter flowline  =    8.0(In.)
Width of half street (curb to crown)  =  38.000(Ft.)
Distance from crown to crossfall grade break  =  36.000(Ft.)
```

```
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [2] side(s) of the street
Distance from curb to property line  =  21.000(Ft.)
Slope from curb to property line (v/hz) =   0.025
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =     11.563(CFS)
Depth of flow =   0.461(Ft.), Average velocity =   1.977(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  16.728(Ft.)
Flow velocity =   1.98(Ft/s)
Travel time =    3.59 min.     TC =   28.28  min.
 Adding area flow to street
COMMERCIAL subarea type
Runoff Coefficient = 0.879
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.750
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  70.50
Pervious area fraction =  0.100; Impervious fraction =  0.900
Rainfall intensity =      1.788(In/Hr) for a   100.0 year storm
Subarea runoff =      1.209(CFS) for      0.770(Ac.)
Total runoff =     12.075(CFS)      Total area =       6.760(Ac.)
Street flow at end of street =     12.075(CFS)
Half street flow at end of street =      6.037(CFS)
Depth of flow =   0.467(Ft.), Average velocity =   1.998(Ft/s)
Flow width (from curb towards crown)=  17.017(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      205.000 to Point/Station      205.000
**** SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------
COMMERCIAL subarea type
Runoff Coefficient = 0.879
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.750
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  70.50
Pervious area fraction =  0.100; Impervious fraction =  0.900
Time of concentration =    28.28 min.
Rainfall intensity =      1.788(In/Hr) for a   100.0 year storm
Subarea runoff =      2.529(CFS) for      1.610(Ac.)
Total runoff =     14.604(CFS)      Total area =       8.370(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      205.000 to Point/Station      215.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------
Upstream point/station elevation =  1440.000(Ft.)
Downstream point/station elevation =  1437.000(Ft.)
Pipe length  =    53.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    14.604(CFS)
```

```
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =    14.604(CFS)
Normal flow depth in pipe =   11.67(In.)
Flow top width inside pipe =   12.47(In.)
Critical depth could not be calculated.
Pipe flow velocity =     14.25(Ft/s)
Travel time through pipe =    0.06 min.
Time of concentration (TC) =    28.34 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      205.000 to Point/Station      215.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      8.370(Ac.)
Runoff from this stream =     14.604(CFS)
Time of concentration =   28.34 min.
Rainfall intensity =     1.786(In/Hr)
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      206.000 to Point/Station      207.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------
Initial area flow distance =   874.000(Ft.)
Top (of initial area) elevation =  1453.300(Ft.)
Bottom (of initial area) elevation =  1447.200(Ft.)
Difference in elevation =     6.100(Ft.)
Slope =    0.00698  s(percent)=       0.70
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   14.998 min.
Rainfall intensity =      2.502(In/Hr) for a   100.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.843
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.750
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  70.50
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      9.192(CFS)
Total initial stream area =        4.360(Ac.)
Pervious area fraction = 0.350


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      207.000 to Point/Station      208.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------
Top of street segment elevation =  1447.200(Ft.)
End of street segment elevation =  1445.300(Ft.)
Length of street segment  =   330.000(Ft.)
Height of curb above gutter flowline  =    8.0(In.)
Width of half street (curb to crown)  =  20.000(Ft.)
Distance from crown to crossfall grade break  =  18.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
```

```
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.025
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =     12.125(CFS)
Depth of flow =   0.544(Ft.), Average velocity =   2.716(Ft/s)
Note:  depth of flow exceeds top of street crown.
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  20.000(Ft.)
Flow velocity =   2.72(Ft/s)
Travel time =    2.02 min.     TC =   17.02  min.
 Adding area flow to street
CONDOMINIUM subarea type
Runoff Coefficient = 0.839
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.750
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  70.50
Pervious area fraction =  0.350; Impervious fraction =  0.650
Rainfall intensity =      2.340(In/Hr) for a   100.0 year storm
Subarea runoff =      5.813(CFS) for      2.960(Ac.)
Total runoff =     15.004(CFS)      Total area =       7.320(Ac.)
Street flow at end of street =     15.004(CFS)
Half street flow at end of street =     15.004(CFS)
Depth of flow =   0.574(Ft.), Average velocity =   2.956(Ft/s)
Note:  depth of flow exceeds top of street crown.
Flow width (from curb towards crown)=  20.000(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      208.000 to Point/Station      208.000
**** SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------------
CONDOMINIUM subarea type
Runoff Coefficient = 0.839
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.750
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  70.50
Pervious area fraction =  0.350; Impervious fraction =  0.650
Time of concentration =    17.02 min.
Rainfall intensity =      2.340(In/Hr) for a   100.0 year storm
Subarea runoff =      2.749(CFS) for      1.400(Ac.)
Total runoff =     17.754(CFS)      Total area =       8.720(Ac.)


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Process from Point/Station      208.000 to Point/Station      210.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  1440.300(Ft.)
Downstream point/station elevation =  1440.000(Ft.)
Pipe length  =    70.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    17.754(CFS)
```

```
Nearest computed pipe diameter  =     27.00(In.)
Calculated individual pipe flow  =    17.754(CFS)
Normal flow depth in pipe =   19.57(In.)
Flow top width inside pipe =   24.12(In.)
Critical Depth =   17.66(In.)
Pipe flow velocity =      5.75(Ft/s)
Travel time through pipe =    0.20 min.
Time of concentration (TC) =    17.23 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      208.000 to Point/Station      210.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------
Along Main Stream number: 2 in normal stream number 1
Stream flow area =      8.720(Ac.)
Runoff from this stream =     17.754(CFS)
Time of concentration =   17.23 min.
Rainfall intensity =     2.325(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      209.000 to Point/Station      210.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------
Initial area flow distance =   547.000(Ft.)
Top (of initial area) elevation =  1449.000(Ft.)
Bottom (of initial area) elevation =  1445.300(Ft.)
Difference in elevation =     3.700(Ft.)
Slope =    0.00676  s(percent)=       0.68
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   12.513 min.
Rainfall intensity =      2.754(In/Hr) for a   100.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.847
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.750
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  70.50
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      5.925(CFS)
Total initial stream area =        2.540(Ac.)
Pervious area fraction = 0.350


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      209.000 to Point/Station      210.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------
Along Main Stream number: 2 in normal stream number 2
Stream flow area =      2.540(Ac.)
Runoff from this stream =      5.925(CFS)
Time of concentration =   12.51 min.
Rainfall intensity =     2.754(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)
```

```
1       17.754     17.23                 2.325
2        5.925     12.51                 2.754
Largest stream flow has longer time of concentration
Qp =     17.754 + sum of
        Qb         Ia/Ib
         5.925 *    0.844 =      5.002
Qp =     22.755

Total of 2 streams to confluence:
Flow rates before confluence point:
      17.754       5.925
Area of streams before confluence:
        8.720        2.540
Results of confluence:
Total flow rate =     22.755(CFS)
Time of concentration =    17.226 min.
Effective stream area after confluence =     11.260(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      210.000 to Point/Station      215.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1440.000(Ft.)
Downstream point/station elevation =  1437.000(Ft.)
Pipe length  =    39.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    22.755(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =    22.755(CFS)
Normal flow depth in pipe =   11.98(In.)
Flow top width inside pipe =   16.99(In.)
Critical depth could not be calculated.
Pipe flow velocity =     18.24(Ft/s)
Travel time through pipe =    0.04 min.
Time of concentration (TC) =    17.26 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      210.000 to Point/Station      215.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =     11.260(Ac.)
Runoff from this stream =     22.755(CFS)
Time of concentration =   17.26 min.
Rainfall intensity =     2.322(In/Hr)
Program is now starting with Main Stream No. 3


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      211.000 to Point/Station      212.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Initial area flow distance =   869.000(Ft.)
Top (of initial area) elevation =  1450.400(Ft.)
Bottom (of initial area) elevation =  1445.400(Ft.)
Difference in elevation =     5.000(Ft.)
Slope =    0.00575  s(percent)=       0.58
```

```
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   15.553 min.
Rainfall intensity =      2.454(In/Hr) for a   100.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.842
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.750
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  70.50
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =     13.179(CFS)
Total initial stream area =        6.380(Ac.)
Pervious area fraction = 0.350


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      212.000 to Point/Station      214.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1440.300(Ft.)
Downstream point/station elevation =  1440.000(Ft.)
Pipe length  =    60.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    13.179(CFS)
Nearest computed pipe diameter  =     24.00(In.)
Calculated individual pipe flow  =    13.179(CFS)
Normal flow depth in pipe =   16.59(In.)
Flow top width inside pipe =   22.17(In.)
Critical Depth =   15.68(In.)
Pipe flow velocity =      5.69(Ft/s)
Travel time through pipe =    0.18 min.
Time of concentration (TC) =    15.73 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      212.000 to Point/Station      214.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 3 in normal stream number 1
Stream flow area =      6.380(Ac.)
Runoff from this stream =     13.179(CFS)
Time of concentration =   15.73 min.
Rainfall intensity =     2.440(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      213.000 to Point/Station      214.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Initial area flow distance =   708.000(Ft.)
Top (of initial area) elevation =  1449.400(Ft.)
Bottom (of initial area) elevation =  1445.400(Ft.)
Difference in elevation =     4.000(Ft.)
Slope =    0.00565  s(percent)=       0.56
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   14.382 min.
Rainfall intensity =      2.558(In/Hr) for a   100.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.844
Decimal fraction soil group A = 0.000
```

```
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.750
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  70.50
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      5.784(CFS)
Total initial stream area =        2.680(Ac.)
Pervious area fraction = 0.350


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      213.000 to Point/Station      214.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------
Along Main Stream number: 3 in normal stream number 2
Stream flow area =      2.680(Ac.)
Runoff from this stream =      5.784(CFS)
Time of concentration =   14.38 min.
Rainfall intensity =     2.558(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       13.179     15.73                2.440
2        5.784     14.38                2.558
Largest stream flow has longer time of concentration
Qp =     13.179 + sum of
        Qb         Ia/Ib
         5.784 *    0.954 =      5.516
Qp =     18.695

Total of 2 streams to confluence:
Flow rates before confluence point:
      13.179       5.784
Area of streams before confluence:
        6.380        2.680
Results of confluence:
Total flow rate =     18.695(CFS)
Time of concentration =    15.729 min.
Effective stream area after confluence =      9.060(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      214.000 to Point/Station      215.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------
Upstream point/station elevation =  1440.000(Ft.)
Downstream point/station elevation =  1437.000(Ft.)
Pipe length  =    40.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    18.695(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =    18.695(CFS)
Normal flow depth in pipe =   10.57(In.)
Flow top width inside pipe =   17.72(In.)
Critical depth could not be calculated.
Pipe flow velocity =     17.33(Ft/s)
Travel time through pipe =    0.04 min.
Time of concentration (TC) =    15.77 min.
```

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++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      214.000 to Point/Station      215.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 3
Stream flow area =      9.060(Ac.)
Runoff from this stream =     18.695(CFS)
Time of concentration =   15.77 min.
Rainfall intensity =     2.437(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       14.604     28.34               1.786
2       22.755     17.26               2.322
3       18.695     15.77               2.437
Largest stream flow has longer or shorter time of concentration
Qp =     22.755 + sum of
        Qa          Tb/Ta
        14.604 *    0.609 =      8.895
        Qb         Ia/Ib
        18.695 *    0.953 =     17.819
Qp =     49.469

Total of 3 main streams to confluence:
Flow rates before confluence point:
      14.604      22.755      18.695
Area of streams before confluence:
        8.370       11.260        9.060


Results of confluence:
Total flow rate =     49.469(CFS)
Time of concentration =    17.262 min.
Effective stream area after confluence  =     28.690(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      215.000 to Point/Station      215.000
**** SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------
UNDEVELOPED (fair cover) subarea
Runoff Coefficient = 0.789
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.750
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  80.25
Pervious area fraction =  1.000; Impervious fraction =  0.000
Time of concentration =    17.26 min.
Rainfall intensity =      2.322(In/Hr) for a   100.0 year storm
Subarea runoff =      1.264(CFS) for      0.690(Ac.)
Total runoff =     50.733(CFS)      Total area =      29.380(Ac.)
End of computations, total study area =           29.38 (Ac.)
The following figures may
```

be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.316
Area averaged RI index number = 70.7

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2014 Version 9.0
Rational Hydrology Study Date: 04/17/23 File:ARC100.out

TENTATIVE TRACT MAP NO. 38625
100-YEAR RATIONAL TABLING METHOD FOR AREA C
POST CONSTRUCTION BMP SITE
FN: ARC100.RRV

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 6279

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 100.00 Antecedent Moisture Condition = 2

2 year, 1 hour precipitation = 0.480(In.)
100 year, 1 hour precipitation = 1.200(In.)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity = 1.200(In/Hr)
Slope of intensity duration curve = 0.5300

++
Process from Point/Station 301.000 to Point/Station 302.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 388.000(Ft.)
Top (of initial area) elevation = 1450.500(Ft.)
Bottom (of initial area) elevation = 1441.000(Ft.)
Difference in elevation = 9.500(Ft.)
Slope = 0.02448 s(percent)= 2.45
TC = k(0.710)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 16.181 min.
Rainfall intensity = 2.403(In/Hr) for a 100.0 year storm
UNDEVELOPED (fair cover) subarea
Runoff Coefficient = 0.792
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.750
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2) = 80.25
Pervious area fraction = 1.000; Impervious fraction = 0.000
Initial subarea runoff = 2.684(CFS)

```
Total initial stream area =        1.410(Ac.)
Pervious area fraction = 1.000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      302.000 to Point/Station      305.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------
Upstream point/station elevation =  1437.000(Ft.)
Downstream point/station elevation =  1436.500(Ft.)
Pipe length  =   166.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     2.684(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     2.684(CFS)
Normal flow depth in pipe =    9.75(In.)
Flow top width inside pipe =   14.31(In.)
Critical Depth =    7.89(In.)
Pipe flow velocity =      3.18(Ft/s)
Travel time through pipe =    0.87 min.
Time of concentration (TC) =    17.05 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      305.000 to Point/Station      305.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      1.410(Ac.)
Runoff from this stream =      2.684(CFS)
Time of concentration =   17.05 min.
Rainfall intensity =     2.338(In/Hr)
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      303.000 to Point/Station      304.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------
Initial area flow distance =   731.000(Ft.)
Top (of initial area) elevation =  1447.000(Ft.)
Bottom (of initial area) elevation =  1441.000(Ft.)
Difference in elevation =     6.000(Ft.)
Slope =    0.00821  s(percent)=       0.82
TC = k(0.710)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   25.941 min.
Rainfall intensity =      1.872(In/Hr) for a   100.0 year storm
UNDEVELOPED (fair cover) subarea
Runoff Coefficient = 0.766
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.750
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  80.25
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      5.173(CFS)
Total initial stream area =        3.610(Ac.)
Pervious area fraction = 1.000
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      304.000 to Point/Station      305.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------------
Upstream point/station elevation =  1437.000(Ft.)
Downstream point/station elevation =  1436.500(Ft.)
Pipe length  =   255.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     5.173(CFS)
Nearest computed pipe diameter  =     21.00(In.)
Calculated individual pipe flow  =     5.173(CFS)
Normal flow depth in pipe =   13.41(In.)
Flow top width inside pipe =   20.18(In.)
Critical Depth =   10.02(In.)
Pipe flow velocity =      3.19(Ft/s)
Travel time through pipe =    1.33 min.
Time of concentration (TC) =    27.27 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      304.000 to Point/Station      305.000
**** CONFLUENCE OF MAIN STREAMS ****
----------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      3.610(Ac.)
Runoff from this stream =      5.173(CFS)
Time of concentration =   27.27 min.
Rainfall intensity =     1.822(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        2.684     17.05               2.338
2        5.173     27.27               1.822
Largest stream flow has longer time of concentration
Qp =      5.173 + sum of
        Qb         Ia/Ib
         2.684 *    0.780 =      2.092
Qp =      7.266

Total of 2 main streams to confluence:
Flow rates before confluence point:
       2.684       5.173
Area of streams before confluence:
        1.410        3.610


Results of confluence:
Total flow rate =      7.266(CFS)
Time of concentration =    27.273 min.
Effective stream area after confluence  =      5.020(Ac.)
End of computations, total study area =            5.02 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged RI index number =  80.3
```

APPENDIX A.2: RATIONAL METHOD HYDROLOGY ANALYSIS: 10 YR STORM

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2014 Version 9.0
Rational Hydrology Study Date: 04/17/23 File:ARA10.out

TENTATIVE TRACT MAP NO. 38625
10 YEAR RATIONAL METHOD AREA A
POST CONSTRUCTION BMP SITE
FN: ARA10

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 6279

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 10.00 Antecedent Moisture Condition = 2

2 year, 1 hour precipitation = 0.480(In.)
100 year, 1 hour precipitation = 1.200(In.)

Storm event year = 10.0
Calculated rainfall intensity data:
1 hour intensity = 0.776(In/Hr)
Slope of intensity duration curve = 0.5300

++
Process from Point/Station 101.000 to Point/Station 102.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 1000.000(Ft.)
Top (of initial area) elevation = 1453.400(Ft.)
Bottom (of initial area) elevation = 1446.500(Ft.)
Difference in elevation = 6.900(Ft.)
Slope = 0.00690 s(percent)= 0.69
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 15.865 min.
Rainfall intensity = 1.571(In/Hr) for a 10.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.817
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.750
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2) = 70.50
Pervious area fraction = 0.350; Impervious fraction = 0.650
Initial subarea runoff = 8.912(CFS)

```
Total initial stream area =        6.940(Ac.)
Pervious area fraction = 0.350


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      102.000 to Point/Station      106.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------
Upstream point/station elevation =  1441.500(Ft.)
Downstream point/station elevation =  1441.000(Ft.)
Pipe length  =    65.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     8.912(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =     8.912(CFS)
Normal flow depth in pipe =   14.25(In.)
Flow top width inside pipe =   14.62(In.)
Critical Depth =   13.85(In.)
Pipe flow velocity =      5.94(Ft/s)
Travel time through pipe =    0.18 min.
Time of concentration (TC) =    16.05 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      106.000 to Point/Station      106.000
**** CONFLUENCE OF MAIN STREAMS ****
----------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      6.940(Ac.)
Runoff from this stream =      8.912(CFS)
Time of concentration =   16.05 min.
Rainfall intensity =     1.561(In/Hr)
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      103.000 to Point/Station      104.000
**** INITIAL AREA EVALUATION ****
----------------------------------------------------------------------
Initial area flow distance =   781.000(Ft.)
Top (of initial area) elevation =  1453.400(Ft.)
Bottom (of initial area) elevation =  1448.000(Ft.)
Difference in elevation =     5.400(Ft.)
Slope =    0.00691  s(percent)=       0.69
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   14.365 min.
Rainfall intensity =      1.656(In/Hr) for a    10.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.821
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.750
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  70.50
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      3.601(CFS)
Total initial stream area =        2.650(Ac.)
Pervious area fraction = 0.350
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      104.000 to Point/Station      105.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
----------------------------------------------------------------------------
Top of street segment elevation =  1448.000(Ft.)
End of street segment elevation =  1446.500(Ft.)
Length of street segment  =   301.000(Ft.)
Height of curb above gutter flowline  =    8.0(In.)
Width of half street (curb to crown)  =  20.000(Ft.)
Distance from crown to crossfall grade break  =  18.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.025
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      4.282(CFS)
Depth of flow =   0.414(Ft.), Average velocity =   1.957(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  14.358(Ft.)
Flow velocity =   1.96(Ft/s)
Travel time =    2.56 min.     TC =   16.93  min.
 Adding area flow to street
CONDOMINIUM subarea type
Runoff Coefficient = 0.815
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.750
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  70.50
Pervious area fraction =  0.350; Impervious fraction =  0.650
Rainfall intensity =      1.518(In/Hr) for a    10.0 year storm
Subarea runoff =      1.299(CFS) for      1.050(Ac.)
Total runoff =      4.900(CFS)      Total area =       3.700(Ac.)
Street flow at end of street =      4.900(CFS)
Half street flow at end of street =      4.900(CFS)
Depth of flow =   0.430(Ft.), Average velocity =   2.022(Ft/s)
Flow width (from curb towards crown)=  15.157(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      105.000 to Point/Station      106.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------------
Upstream point/station elevation =  1441.500(Ft.)
Downstream point/station elevation =  1441.000(Ft.)
Pipe length  =    75.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     4.900(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     4.900(CFS)
Normal flow depth in pipe =   11.44(In.)
Flow top width inside pipe =   12.77(In.)
Critical Depth =   10.77(In.)
Pipe flow velocity =      4.88(Ft/s)
Travel time through pipe =    0.26 min.
Time of concentration (TC) =    17.18 min.
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      105.000 to Point/Station      106.000
**** CONFLUENCE OF MAIN STREAMS ****
----------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      3.700(Ac.)
Runoff from this stream =      4.900(CFS)
Time of concentration =   17.18 min.
Rainfall intensity =     1.506(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        8.912     16.05               1.561
2        4.900     17.18               1.506
Largest stream flow has longer or shorter time of concentration
Qp =      8.912 + sum of
        Qa          Tb/Ta
         4.900 *    0.934 =      4.576
Qp =     13.488

Total of 2 main streams to confluence:
Flow rates before confluence point:
       8.912       4.900
Area of streams before confluence:
        6.940        3.700


Results of confluence:
Total flow rate =     13.488(CFS)
Time of concentration =    16.047 min.
Effective stream area after confluence  =     10.640(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      106.000 to Point/Station      109.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------
Upstream point/station elevation =  1441.000(Ft.)
Downstream point/station elevation =  1440.100(Ft.)
Pipe length  =    90.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    13.488(CFS)
Nearest computed pipe diameter  =     21.00(In.)
Calculated individual pipe flow  =    13.488(CFS)
Normal flow depth in pipe =   14.88(In.)
Flow top width inside pipe =   19.08(In.)
Critical Depth =   16.39(In.)
Pipe flow velocity =      7.40(Ft/s)
Travel time through pipe =    0.20 min.
Time of concentration (TC) =    16.25 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      106.000 to Point/Station      109.000
**** CONFLUENCE OF MAIN STREAMS ****
```

```
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     10.640(Ac.)
Runoff from this stream =     13.488(CFS)
Time of concentration =   16.25 min.
Rainfall intensity =     1.551(In/Hr)
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      107.000 to Point/Station      108.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------
Initial area flow distance =   631.000(Ft.)
Top (of initial area) elevation =  1449.100(Ft.)
Bottom (of initial area) elevation =  1445.100(Ft.)
Difference in elevation =     4.000(Ft.)
Slope =    0.00634  s(percent)=       0.63
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   13.422 min.
Rainfall intensity =      1.717(In/Hr) for a    10.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.823
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.750
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  70.50
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      2.034(CFS)
Total initial stream area =        1.440(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station      108.000 to Point/Station      109.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------
Upstream point/station elevation =  1440.200(Ft.)
Downstream point/station elevation =  1440.100(Ft.)
Pipe length  =    30.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     2.034(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     2.034(CFS)
Normal flow depth in pipe =    9.71(In.)
Flow top width inside pipe =    9.42(In.)
Critical Depth =    7.30(In.)
Pipe flow velocity =      2.99(Ft/s)
Travel time through pipe =    0.17 min.
Time of concentration (TC) =    13.59 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      108.000 to Point/Station      109.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      1.440(Ac.)
```

```
Runoff from this stream =      2.034(CFS)
Time of concentration =   13.59 min.
Rainfall intensity =     1.705(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       13.488     16.25               1.551
2        2.034     13.59               1.705
Largest stream flow has longer time of concentration
Qp =     13.488 + sum of
        Qb         Ia/Ib
         2.034 *    0.910 =      1.850
Qp =     15.338

Total of 2 main streams to confluence:
Flow rates before confluence point:
      13.488       2.034
Area of streams before confluence:
       10.640        1.440


Results of confluence:
Total flow rate =     15.338(CFS)
Time of concentration =    16.250 min.
Effective stream area after confluence  =     12.080(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      109.000 to Point/Station      111.100
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1440.100(Ft.)
Downstream point/station elevation =  1439.500(Ft.)
Pipe length  =    85.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    15.338(CFS)
Nearest computed pipe diameter  =     24.00(In.)
Calculated individual pipe flow  =    15.338(CFS)
Normal flow depth in pipe =   16.34(In.)
Flow top width inside pipe =   22.38(In.)
Critical Depth =   16.93(In.)
Pipe flow velocity =      6.73(Ft/s)
Travel time through pipe =    0.21 min.
Time of concentration (TC) =    16.46 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      109.000 to Point/Station      111.100
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     12.080(Ac.)
Runoff from this stream =     15.338(CFS)
Time of concentration =   16.46 min.
Rainfall intensity =     1.541(In/Hr)
Program is now starting with Main Stream No. 2
```

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++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      110.000 to Point/Station      111.000
**** INITIAL AREA EVALUATION ****
----------------------------------------------------------------------
Initial area flow distance =   521.000(Ft.)
Top (of initial area) elevation =  1449.000(Ft.)
Bottom (of initial area) elevation =  1445.000(Ft.)
Difference in elevation =     4.000(Ft.)
Slope =    0.00768  s(percent)=       0.77
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   11.964 min.
Rainfall intensity =      1.824(In/Hr) for a    10.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.826
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.750
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  70.50
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      3.995(CFS)
Total initial stream area =        2.650(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station      111.000 to Point/Station      111.100
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------
Upstream point/station elevation =  1440.000(Ft.)
Downstream point/station elevation =  1439.500(Ft.)
Pipe length  =    23.00(Ft.)   Manning's N = 0.015
No. of pipes = 1  Required pipe flow  =     3.995(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     3.995(CFS)
Normal flow depth in pipe =    8.72(In.)
Flow top width inside pipe =   10.70(In.)
Critical Depth =   10.16(In.)
Pipe flow velocity =      6.54(Ft/s)
Travel time through pipe =    0.06 min.
Time of concentration (TC) =    12.02 min.


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Process from Point/Station      111.000 to Point/Station      111.100
**** CONFLUENCE OF MAIN STREAMS ****
----------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      2.650(Ac.)
Runoff from this stream =      3.995(CFS)
Time of concentration =   12.02 min.
Rainfall intensity =     1.820(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)
```

```
1       15.338     16.46               1.541
2        3.995     12.02               1.820
Largest stream flow has longer time of concentration
Qp =     15.338 + sum of
        Qb         Ia/Ib
         3.995 *    0.847 =      3.382
Qp =     18.720

Total of 2 main streams to confluence:
Flow rates before confluence point:
      15.338       3.995
Area of streams before confluence:
       12.080        2.650


Results of confluence:
Total flow rate =     18.720(CFS)
Time of concentration =    16.460 min.
Effective stream area after confluence  =     14.730(Ac.)


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Process from Point/Station      111.100 to Point/Station      116.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1439.500(Ft.)
Downstream point/station elevation =  1438.000(Ft.)
Pipe length  =   151.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    18.720(CFS)
Nearest computed pipe diameter  =     24.00(In.)
Calculated individual pipe flow  =    18.720(CFS)
Normal flow depth in pipe =   16.69(In.)
Flow top width inside pipe =   22.09(In.)
Critical Depth =   18.69(In.)
Pipe flow velocity =      8.02(Ft/s)
Travel time through pipe =    0.31 min.
Time of concentration (TC) =    16.77 min.


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Process from Point/Station      116.000 to Point/Station      116.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     14.730(Ac.)
Runoff from this stream =     18.720(CFS)
Time of concentration =   16.77 min.
Rainfall intensity =     1.525(In/Hr)
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      112.000 to Point/Station      113.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Initial area flow distance =   843.000(Ft.)
Top (of initial area) elevation =  1450.500(Ft.)
Bottom (of initial area) elevation =  1445.400(Ft.)
Difference in elevation =     5.100(Ft.)
```

```
Slope =    0.00605  s(percent)=       0.60
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   15.212 min.
Rainfall intensity =      1.606(In/Hr) for a    10.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.819
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.750
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  70.50
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      4.761(CFS)
Total initial stream area =        3.620(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station      113.000 to Point/Station      115.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1440.200(Ft.)
Downstream point/station elevation =  1440.100(Ft.)
Pipe length  =    80.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     4.761(CFS)
Nearest computed pipe diameter  =     21.00(In.)
Calculated individual pipe flow  =     4.761(CFS)
Normal flow depth in pipe =   14.88(In.)
Flow top width inside pipe =   19.08(In.)
Critical Depth =    9.60(In.)
Pipe flow velocity =      2.61(Ft/s)
Travel time through pipe =    0.51 min.
Time of concentration (TC) =    15.72 min.


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Process from Point/Station      115.000 to Point/Station      115.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 2 in normal stream number 1
Stream flow area =      3.620(Ac.)
Runoff from this stream =      4.761(CFS)
Time of concentration =   15.72 min.
Rainfall intensity =     1.579(In/Hr)


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Process from Point/Station      114.000 to Point/Station      115.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Initial area flow distance =   902.000(Ft.)
Top (of initial area) elevation =  1450.200(Ft.)
Bottom (of initial area) elevation =  1445.100(Ft.)
Difference in elevation =     5.100(Ft.)
Slope =    0.00565  s(percent)=       0.57
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   15.842 min.
Rainfall intensity =      1.572(In/Hr) for a    10.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.817
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```
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.750
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  70.50
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      3.367(CFS)
Total initial stream area =        2.620(Ac.)
Pervious area fraction = 0.350


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Process from Point/Station      114.000 to Point/Station      115.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------
Along Main Stream number: 2 in normal stream number 2
Stream flow area =      2.620(Ac.)
Runoff from this stream =      3.367(CFS)
Time of concentration =   15.84 min.
Rainfall intensity =     1.572(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                  (In/Hr)


1        4.761     15.72                 1.579
2        3.367     15.84                 1.572
Largest stream flow has longer or shorter time of concentration
Qp =      4.761 + sum of
        Qa          Tb/Ta
         3.367 *    0.992 =      3.342
Qp =      8.103

Total of 2 streams to confluence:
Flow rates before confluence point:
       4.761       3.367
Area of streams before confluence:
        3.620        2.620
Results of confluence:
Total flow rate =      8.103(CFS)
Time of concentration =    15.722 min.
Effective stream area after confluence =      6.240(Ac.)


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Process from Point/Station      115.000 to Point/Station      116.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------
Upstream point/station elevation =  1440.100(Ft.)
Downstream point/station elevation =  1438.000(Ft.)
Pipe length  =    38.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     8.103(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     8.103(CFS)
Normal flow depth in pipe =    9.50(In.)
Flow top width inside pipe =    9.74(In.)
Critical depth could not be calculated.
Pipe flow velocity =     12.15(Ft/s)
Travel time through pipe =    0.05 min.
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Time of concentration (TC) =    15.77 min.


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Process from Point/Station      115.000 to Point/Station      116.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      6.240(Ac.)
Runoff from this stream =      8.103(CFS)
Time of concentration =   15.77 min.
Rainfall intensity =     1.576(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       18.720     16.77               1.525
2        8.103     15.77               1.576
Largest stream flow has longer time of concentration
Qp =     18.720 + sum of
        Qb          Ia/Ib
         8.103 *    0.968 =      7.843
Qp =     26.563

Total of 2 main streams to confluence:
Flow rates before confluence point:
      18.720       8.103
Area of streams before confluence:
       14.730        6.240


Results of confluence:
Total flow rate =     26.563(CFS)
Time of concentration =    16.774 min.
Effective stream area after confluence  =     20.970(Ac.)


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Process from Point/Station      116.000 to Point/Station      116.000
**** SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------
UNDEVELOPED (fair cover) subarea
Runoff Coefficient = 0.741
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.750
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  80.25
Pervious area fraction =  1.000; Impervious fraction =  0.000
Time of concentration =    16.77 min.
Rainfall intensity =      1.525(In/Hr) for a    10.0 year storm
Subarea runoff =      0.734(CFS) for      0.650(Ac.)
Total runoff =     27.298(CFS)      Total area =      21.620(Ac.)
End of computations, total study area =           21.62 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
```

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Area averaged pervious area fraction(Ap) = 0.370
Area averaged RI index number =  70.8
```

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2014 Version 9.0
Rational Hydrology Study Date: 04/17/23 File:ARB10.out

TENTATIVE TRACT MAP NO. 38625
10-YEAR RATIONAL TABLING METHOD FOR AREA B
POST CONSTRUCTION BMP SITE
FN: ARB10.RRV

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 6279

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 10.00 Antecedent Moisture Condition = 2

2 year, 1 hour precipitation = 0.480(In.)
100 year, 1 hour precipitation = 1.200(In.)

Storm event year = 10.0
Calculated rainfall intensity data:
1 hour intensity = 0.776(In/Hr)
Slope of intensity duration curve = 0.5300

++
Process from Point/Station 201.000 to Point/Station 202.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 811.000(Ft.)
Top (of initial area) elevation = 1451.300(Ft.)
Bottom (of initial area) elevation = 1449.000(Ft.)
Difference in elevation = 2.300(Ft.)
Slope = 0.00284 s(percent)= 0.28
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 14.131 min.
Rainfall intensity = 1.670(In/Hr) for a 10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.877
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.750
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2) = 70.50
Pervious area fraction = 0.100; Impervious fraction = 0.900
Initial subarea runoff = 1.979(CFS)

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Total initial stream area =        1.350(Ac.)
Pervious area fraction = 0.100


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Process from Point/Station      202.000 to Point/Station      203.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------------
Top of street segment elevation =  1449.000(Ft.)
End of street segment elevation =  1446.700(Ft.)
Length of street segment  =   662.000(Ft.)
Height of curb above gutter flowline  =    8.0(In.)
Width of half street (curb to crown)  =  32.000(Ft.)
Distance from crown to crossfall grade break  =  16.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  18.000(Ft.)
Slope from curb to property line (v/hz) =   0.025
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      2.683(CFS)
Depth of flow =   0.382(Ft.), Average velocity =   1.526(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  12.774(Ft.)
Flow velocity =   1.53(Ft/s)
Travel time =    7.23 min.     TC =   21.36  min.
 Adding area flow to street
COMMERCIAL subarea type
Runoff Coefficient = 0.874
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.750
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  70.50
Pervious area fraction =  0.100; Impervious fraction =  0.900
Rainfall intensity =      1.342(In/Hr) for a    10.0 year storm
Subarea runoff =      1.325(CFS) for      1.130(Ac.)
Total runoff =      3.303(CFS)      Total area =       2.480(Ac.)
Street flow at end of street =      3.303(CFS)
Half street flow at end of street =      3.303(CFS)
Depth of flow =   0.405(Ft.), Average velocity =   1.603(Ft/s)
Flow width (from curb towards crown)=  13.905(Ft.)


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Process from Point/Station      203.000 to Point/Station      204.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------------
Top of street segment elevation =  1446.700(Ft.)
End of street segment elevation =  1444.500(Ft.)
Length of street segment  =   494.000(Ft.)
Height of curb above gutter flowline  =    8.0(In.)
Width of half street (curb to crown)  =  45.000(Ft.)
Distance from crown to crossfall grade break  =  43.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
```

```
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  14.000(Ft.)
Slope from curb to property line (v/hz) =   0.025
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      3.815(CFS)
Depth of flow =   0.407(Ft.), Average velocity =   1.824(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  14.018(Ft.)
Flow velocity =   1.82(Ft/s)
Travel time =    4.51 min.     TC =   25.88  min.
 Adding area flow to street
COMMERCIAL subarea type
Runoff Coefficient = 0.872
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.750
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  70.50
Pervious area fraction =  0.100; Impervious fraction =  0.900
Rainfall intensity =      1.212(In/Hr) for a    10.0 year storm
Subarea runoff =      0.961(CFS) for      0.910(Ac.)
Total runoff =      4.265(CFS)      Total area =       3.390(Ac.)
Street flow at end of street =      4.265(CFS)
Half street flow at end of street =      4.265(CFS)
Depth of flow =   0.420(Ft.), Average velocity =   1.873(Ft/s)
Flow width (from curb towards crown)=  14.662(Ft.)


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Process from Point/Station      204.000 to Point/Station      204.000
**** SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------------
CONDOMINIUM subarea type
Runoff Coefficient = 0.801
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.750
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  70.50
Pervious area fraction =  0.350; Impervious fraction =  0.650
Time of concentration =    25.88 min.
Rainfall intensity =      1.212(In/Hr) for a    10.0 year storm
Subarea runoff =      2.524(CFS) for      2.600(Ac.)
Total runoff =      6.788(CFS)      Total area =       5.990(Ac.)


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Process from Point/Station      204.000 to Point/Station      205.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------------
Top of street segment elevation =  1444.500(Ft.)
End of street segment elevation =  1442.700(Ft.)
Length of street segment  =   426.000(Ft.)
Height of curb above gutter flowline  =    8.0(In.)
Width of half street (curb to crown)  =  38.000(Ft.)
Distance from crown to crossfall grade break  =  36.000(Ft.)
```

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Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [2] side(s) of the street
Distance from curb to property line  =  21.000(Ft.)
Slope from curb to property line (v/hz) =   0.025
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      7.224(CFS)
Depth of flow =   0.404(Ft.), Average velocity =   1.765(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  13.858(Ft.)
Flow velocity =   1.76(Ft/s)
Travel time =    4.02 min.     TC =   29.90  min.
 Adding area flow to street
COMMERCIAL subarea type
Runoff Coefficient = 0.870
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.750
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  70.50
Pervious area fraction =  0.100; Impervious fraction =  0.900
Rainfall intensity =      1.123(In/Hr) for a    10.0 year storm
Subarea runoff =      0.752(CFS) for      0.770(Ac.)
Total runoff =      7.540(CFS)      Total area =       6.760(Ac.)
Street flow at end of street =      7.540(CFS)
Half street flow at end of street =      3.770(CFS)
Depth of flow =   0.409(Ft.), Average velocity =   1.783(Ft/s)
Flow width (from curb towards crown)=  14.100(Ft.)


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Process from Point/Station      205.000 to Point/Station      205.000
**** SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------
COMMERCIAL subarea type
Runoff Coefficient = 0.870
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.750
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  70.50
Pervious area fraction =  0.100; Impervious fraction =  0.900
Time of concentration =    29.90 min.
Rainfall intensity =      1.123(In/Hr) for a    10.0 year storm
Subarea runoff =      1.573(CFS) for      1.610(Ac.)
Total runoff =      9.113(CFS)      Total area =       8.370(Ac.)


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Process from Point/Station      205.000 to Point/Station      215.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------
Upstream point/station elevation =  1440.000(Ft.)
Downstream point/station elevation =  1437.000(Ft.)
Pipe length  =    53.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     9.113(CFS)
```

```
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     9.113(CFS)
Normal flow depth in pipe =    8.31(In.)
Flow top width inside pipe =   14.91(In.)
Critical Depth =   13.91(In.)
Pipe flow velocity =     13.05(Ft/s)
Travel time through pipe =    0.07 min.
Time of concentration (TC) =    29.97 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      205.000 to Point/Station      215.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      8.370(Ac.)
Runoff from this stream =      9.113(CFS)
Time of concentration =   29.97 min.
Rainfall intensity =     1.121(In/Hr)
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      206.000 to Point/Station      207.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
Initial area flow distance =   874.000(Ft.)
Top (of initial area) elevation =  1453.300(Ft.)
Bottom (of initial area) elevation =  1447.200(Ft.)
Difference in elevation =     6.100(Ft.)
Slope =    0.00698  s(percent)=       0.70
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   14.998 min.
Rainfall intensity =      1.618(In/Hr) for a    10.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.819
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.750
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  70.50
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      5.781(CFS)
Total initial stream area =        4.360(Ac.)
Pervious area fraction = 0.350


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      207.000 to Point/Station      208.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------------
Top of street segment elevation =  1447.200(Ft.)
End of street segment elevation =  1445.300(Ft.)
Length of street segment  =   330.000(Ft.)
Height of curb above gutter flowline  =    8.0(In.)
Width of half street (curb to crown)  =  20.000(Ft.)
Distance from crown to crossfall grade break  =  18.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
```

```
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.025
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      7.628(CFS)
Depth of flow =   0.478(Ft.), Average velocity =   2.377(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  17.556(Ft.)
Flow velocity =   2.38(Ft/s)
Travel time =    2.31 min.     TC =   17.31  min.
 Adding area flow to street
CONDOMINIUM subarea type
Runoff Coefficient = 0.815
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.750
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  70.50
Pervious area fraction =  0.350; Impervious fraction =  0.650
Rainfall intensity =      1.500(In/Hr) for a    10.0 year storm
Subarea runoff =      3.617(CFS) for      2.960(Ac.)
Total runoff =      9.398(CFS)      Total area =       7.320(Ac.)
Street flow at end of street =      9.398(CFS)
Half street flow at end of street =      9.398(CFS)
Depth of flow =   0.508(Ft.), Average velocity =   2.501(Ft/s)
Flow width (from curb towards crown)=  19.053(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      208.000 to Point/Station      208.000
**** SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------------
CONDOMINIUM subarea type
Runoff Coefficient = 0.815
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.750
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  70.50
Pervious area fraction =  0.350; Impervious fraction =  0.650
Time of concentration =    17.31 min.
Rainfall intensity =      1.500(In/Hr) for a    10.0 year storm
Subarea runoff =      1.711(CFS) for      1.400(Ac.)
Total runoff =     11.108(CFS)      Total area =       8.720(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      208.000 to Point/Station      210.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  1440.300(Ft.)
Downstream point/station elevation =  1440.000(Ft.)
Pipe length  =    70.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    11.108(CFS)
Nearest computed pipe diameter  =     24.00(In.)
Calculated individual pipe flow  =    11.108(CFS)
```

```
Normal flow depth in pipe =   15.52(In.)
Flow top width inside pipe =   22.95(In.)
Critical Depth =   14.34(In.)
Pipe flow velocity =      5.17(Ft/s)
Travel time through pipe =    0.23 min.
Time of concentration (TC) =    17.54 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      208.000 to Point/Station      210.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------
Along Main Stream number: 2 in normal stream number 1
Stream flow area =      8.720(Ac.)
Runoff from this stream =     11.108(CFS)
Time of concentration =   17.54 min.
Rainfall intensity =     1.490(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      209.000 to Point/Station      210.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------
Initial area flow distance =   547.000(Ft.)
Top (of initial area) elevation =  1449.000(Ft.)
Bottom (of initial area) elevation =  1445.300(Ft.)
Difference in elevation =     3.700(Ft.)
Slope =    0.00676  s(percent)=       0.68
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   12.513 min.
Rainfall intensity =      1.782(In/Hr) for a    10.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.825
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.750
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  70.50
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      3.733(CFS)
Total initial stream area =        2.540(Ac.)
Pervious area fraction = 0.350


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      209.000 to Point/Station      210.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------
Along Main Stream number: 2 in normal stream number 2
Stream flow area =      2.540(Ac.)
Runoff from this stream =      3.733(CFS)
Time of concentration =   12.51 min.
Rainfall intensity =     1.782(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       11.108     17.54                1.490
```

```
2        3.733     12.51                 1.782
Largest stream flow has longer time of concentration
Qp =     11.108 + sum of
        Qb         Ia/Ib
         3.733 *    0.836 =      3.121
Qp =     14.229

Total of 2 streams to confluence:
Flow rates before confluence point:
      11.108       3.733
Area of streams before confluence:
        8.720        2.540
Results of confluence:
Total flow rate =     14.229(CFS)
Time of concentration =    17.537 min.
Effective stream area after confluence =     11.260(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      210.000 to Point/Station      215.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1440.000(Ft.)
Downstream point/station elevation =  1437.000(Ft.)
Pipe length  =    39.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    14.229(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =    14.229(CFS)
Normal flow depth in pipe =   10.10(In.)
Flow top width inside pipe =   14.07(In.)
Critical depth could not be calculated.
Pipe flow velocity =     16.20(Ft/s)
Travel time through pipe =    0.04 min.
Time of concentration (TC) =    17.58 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      210.000 to Point/Station      215.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =     11.260(Ac.)
Runoff from this stream =     14.229(CFS)
Time of concentration =   17.58 min.
Rainfall intensity =     1.488(In/Hr)
Program is now starting with Main Stream No. 3


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      211.000 to Point/Station      212.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Initial area flow distance =   869.000(Ft.)
Top (of initial area) elevation =  1450.400(Ft.)
Bottom (of initial area) elevation =  1445.400(Ft.)
Difference in elevation =     5.000(Ft.)
Slope =    0.00575  s(percent)=       0.58
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   15.553 min.
```

```
Rainfall intensity =      1.588(In/Hr) for a    10.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.818
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.750
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  70.50
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      8.286(CFS)
Total initial stream area =        6.380(Ac.)
Pervious area fraction = 0.350


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      212.000 to Point/Station      214.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------
Upstream point/station elevation =  1440.300(Ft.)
Downstream point/station elevation =  1440.000(Ft.)
Pipe length  =    60.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     8.286(CFS)
Nearest computed pipe diameter  =     21.00(In.)
Calculated individual pipe flow  =     8.286(CFS)
Normal flow depth in pipe =   13.43(In.)
Flow top width inside pipe =   20.17(In.)
Critical Depth =   12.81(In.)
Pipe flow velocity =      5.10(Ft/s)
Travel time through pipe =    0.20 min.
Time of concentration (TC) =    15.75 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      212.000 to Point/Station      214.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------
Along Main Stream number: 3 in normal stream number 1
Stream flow area =      6.380(Ac.)
Runoff from this stream =      8.286(CFS)
Time of concentration =   15.75 min.
Rainfall intensity =     1.577(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      213.000 to Point/Station      214.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------
Initial area flow distance =   708.000(Ft.)
Top (of initial area) elevation =  1449.400(Ft.)
Bottom (of initial area) elevation =  1445.400(Ft.)
Difference in elevation =     4.000(Ft.)
Slope =    0.00565  s(percent)=       0.56
TC = k(0.370)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   14.382 min.
Rainfall intensity =      1.655(In/Hr) for a    10.0 year storm
CONDOMINIUM subarea type
Runoff Coefficient = 0.821
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.750
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Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  70.50
Pervious area fraction =  0.350; Impervious fraction =  0.650
Initial subarea runoff =      3.639(CFS)
Total initial stream area =        2.680(Ac.)
Pervious area fraction = 0.350


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      213.000 to Point/Station      214.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------
Along Main Stream number: 3 in normal stream number 2
Stream flow area =      2.680(Ac.)
Runoff from this stream =      3.639(CFS)
Time of concentration =   14.38 min.
Rainfall intensity =     1.655(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        8.286     15.75                 1.577
2        3.639     14.38                 1.655
Largest stream flow has longer time of concentration
Qp =      8.286 + sum of
        Qb         Ia/Ib
         3.639 *    0.953 =      3.468
Qp =     11.754

Total of 2 streams to confluence:
Flow rates before confluence point:
       8.286       3.639
Area of streams before confluence:
        6.380        2.680
Results of confluence:
Total flow rate =     11.754(CFS)
Time of concentration =    15.749 min.
Effective stream area after confluence =      9.060(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      214.000 to Point/Station      215.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------
Upstream point/station elevation =  1440.000(Ft.)
Downstream point/station elevation =  1437.000(Ft.)
Pipe length  =    40.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    11.754(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =    11.754(CFS)
Normal flow depth in pipe =    8.93(In.)
Flow top width inside pipe =   14.72(In.)
Critical depth could not be calculated.
Pipe flow velocity =     15.42(Ft/s)
Travel time through pipe =    0.04 min.
Time of concentration (TC) =    15.79 min.
```

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++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      214.000 to Point/Station      215.000
**** CONFLUENCE OF MAIN STREAMS ****
----------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 3
Stream flow area =      9.060(Ac.)
Runoff from this stream =     11.754(CFS)
Time of concentration =   15.79 min.
Rainfall intensity =     1.575(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        9.113     29.97               1.121
2       14.229     17.58               1.488
3       11.754     15.79               1.575
Largest stream flow has longer or shorter time of concentration
Qp =     14.229 + sum of
        Qa          Tb/Ta
         9.113 *    0.587 =      5.345
        Qb          Ia/Ib
        11.754 *    0.945 =     11.106
Qp =     30.681

Total of 3 main streams to confluence:
Flow rates before confluence point:
       9.113      14.229      11.754
Area of streams before confluence:
        8.370       11.260        9.060


Results of confluence:
Total flow rate =     30.681(CFS)
Time of concentration =    17.578 min.
Effective stream area after confluence  =     28.690(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      215.000 to Point/Station      215.000
**** SUBAREA FLOW ADDITION ****
----------------------------------------------------------------------
UNDEVELOPED (fair cover) subarea
Runoff Coefficient = 0.737
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.750
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  80.25
Pervious area fraction =  1.000; Impervious fraction =  0.000
Time of concentration =    17.58 min.
Rainfall intensity =      1.488(In/Hr) for a    10.0 year storm
Subarea runoff =      0.757(CFS) for      0.690(Ac.)
Total runoff =     31.438(CFS)      Total area =      29.380(Ac.)
End of computations, total study area =           29.38 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
```

```
Area averaged pervious area fraction(Ap) = 0.316
Area averaged RI index number =  70.7
```

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2014 Version 9.0
Rational Hydrology Study Date: 04/17/23 File:ARC10.out

TENTATIVE TRACT MAP NO. 38625
10 YEAR RATIONAL METHOD AREA C
POST CONSTRUCTION BMP SITE
FN: ARC10

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 6279

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 10.00 Antecedent Moisture Condition = 2

2 year, 1 hour precipitation = 0.480(In.)
100 year, 1 hour precipitation = 1.200(In.)

Storm event year = 10.0
Calculated rainfall intensity data:
1 hour intensity = 0.776(In/Hr)
Slope of intensity duration curve = 0.5300

++
Process from Point/Station 301.000 to Point/Station 302.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 388.000(Ft.)
Top (of initial area) elevation = 1450.500(Ft.)
Bottom (of initial area) elevation = 1441.000(Ft.)
Difference in elevation = 9.500(Ft.)
Slope = 0.02448 s(percent)= 2.45
TC = k(0.710)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 16.181 min.
Rainfall intensity = 1.555(In/Hr) for a 10.0 year storm
UNDEVELOPED (fair cover) subarea
Runoff Coefficient = 0.743
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.750
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2) = 80.25
Pervious area fraction = 1.000; Impervious fraction = 0.000
Initial subarea runoff = 1.629(CFS)

```
Total initial stream area =        1.410(Ac.)
Pervious area fraction = 1.000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      302.000 to Point/Station      305.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------
Upstream point/station elevation =  1437.000(Ft.)
Downstream point/station elevation =  1436.500(Ft.)
Pipe length  =   166.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.629(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     1.629(CFS)
Normal flow depth in pipe =    8.37(In.)
Flow top width inside pipe =   11.03(In.)
Critical Depth =    6.50(In.)
Pipe flow velocity =      2.79(Ft/s)
Travel time through pipe =    0.99 min.
Time of concentration (TC) =    17.17 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      305.000 to Point/Station      305.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      1.410(Ac.)
Runoff from this stream =      1.629(CFS)
Time of concentration =   17.17 min.
Rainfall intensity =     1.506(In/Hr)
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      303.000 to Point/Station      304.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------
Initial area flow distance =   731.000(Ft.)
Top (of initial area) elevation =  1447.000(Ft.)
Bottom (of initial area) elevation =  1441.000(Ft.)
Difference in elevation =     6.000(Ft.)
Slope =    0.00821  s(percent)=       0.82
TC = k(0.710)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   25.941 min.
Rainfall intensity =      1.211(In/Hr) for a    10.0 year storm
UNDEVELOPED (fair cover) subarea
Runoff Coefficient = 0.708
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.750
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  80.25
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      3.094(CFS)
Total initial stream area =        3.610(Ac.)
Pervious area fraction = 1.000
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      304.000 to Point/Station      305.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------------
Upstream point/station elevation =  1437.000(Ft.)
Downstream point/station elevation =  1436.500(Ft.)
Pipe length  =   255.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     3.094(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =     3.094(CFS)
Normal flow depth in pipe =   10.73(In.)
Flow top width inside pipe =   17.66(In.)
Critical Depth =    8.03(In.)
Pipe flow velocity =      2.82(Ft/s)
Travel time through pipe =    1.51 min.
Time of concentration (TC) =    27.45 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      304.000 to Point/Station      305.000
**** CONFLUENCE OF MAIN STREAMS ****
----------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      3.610(Ac.)
Runoff from this stream =      3.094(CFS)
Time of concentration =   27.45 min.
Rainfall intensity =     1.175(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        1.629     17.17               1.506
2        3.094     27.45               1.175
Largest stream flow has longer time of concentration
Qp =      3.094 + sum of
        Qb         Ia/Ib
         1.629 *    0.780 =      1.271
Qp =      4.365

Total of 2 main streams to confluence:
Flow rates before confluence point:
       1.629       3.094
Area of streams before confluence:
        1.410        3.610


Results of confluence:
Total flow rate =      4.365(CFS)
Time of concentration =    27.449 min.
Effective stream area after confluence  =      5.020(Ac.)
End of computations, total study area =            5.02 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged RI index number =  80.3
```

APPENDIX B.1: Storm Drain Pipe Sizing Calculations

STORM DRAIN SIZING USING MANNING'S EQUATION AND FLOW CONDITION AT +/- 75% OF DIAMETER			
STORM DRAIN SYSTEM	Q100 (ft^3/s)	STORM DRAIN DIAMETER (IN)	ASSUME MINIMUM PIPE SLOPE
LINE A1 (R1)	29.9	36	0.003
LINE A1 (R2)	24.5	36	0.003
LINE A1 (R3)	21.6	30	0.003
LINE A1 (R4)	7.8	24	0.003
LATERAL A1-1	6.3	24	0.003
LATERAL A1-2	3.2	18	0.003
LATERAL A1-3	14.2	30	0.003
LINE A2 (R1)	12.9	30	0.003
LINE A2 (R2)	7.6	24	0.003
LINE A	43.6	42	0.003
LINE B1	14.6	30	0.003
LINE B2 (R1)	22.8	36	0.003
LINE B2 (R2)	17.8	30	0.003
LINE B3 (R1)	18.7	30	0.003
LINE B3 (R2)	13.2	30	0.003
LINE B	50.7	48	0.003
LINE C1	2.7	18	0.003
LINE C2	5.2	18	0.003
LINE C	7.3	24	0.003

DESIGN NOTES: STORM DRAIN SIZING IS BASED ON MANNING'S EQUATION WITH A MANNING'S n VALUE OF 0.013 TO ACCOUNT FOR THE USE OF RCP. THE CALCULATIONS IS BASED ON A DEPTH TO BE APPROXIMATELY 75% OF THE DIAMETER AND A MINIMUM SLOPE OF 0.3%.

GOAL SEEK SOLVER (SET Q100-QDESIGN TO ZERO BY CHANGING STORM DRAIN DIAMETER IN GRAY

STORM DRAIN DIAMETER	Q DESIGN	FLOW AREA	WETTED PERIMETER	HYDRAULIC RADIUS	THETA @ 0.75 DIAMETER	Q100-QDESIGN=0
3.007104471	29.90004832	5.713633288	7.51	0.761096813	4.1887902	-4.83165E-05
2.818279915	24.49992232	5.018611547	7.32	0.685763814	4.1887902	7.76827E-05
2.705313112	21.59960918	4.624346895	7.21	0.641796799	4.1887902	0.000390817
1.99604061	7.800027064	2.517410713	6.50	0.387530015	4.1887902	-2.7064E-05
1.864565522	6.300504608	2.196699386	6.36	0.345145223	4.1887902	-0.000504608
1.244937377	3.200141568	0.979287796	2.61	0.375581527	4.1887902	-0.000141568
2.176770115	14.19986148	2.993921873	4.56	0.656703428	4.1887902	0.000138519
2.099765628	12.89948194	2.785845163	4.40	0.633472169	4.1887902	0.000518065
1.721917455	7.599996863	1.873440855	3.61	0.519480256	4.1887902	3.13663E-06
3.3152188	43.60027329	6.944479869	6.94	1.000158692	4.1887902	-0.000273287
2.19957225	14.59999476	3.056974345	4.61	0.663582538	4.1887902	5.23832E-06
2.599744329	22.8000014	4.270479186	5.44	0.784309286	4.1887902	-1.3976E-06
2.369257325	17.79990876	3.546825272	4.96	0.714774333	4.1887902	9.1242E-05
2.413492979	18.69999677	3.680504982	5.05	0.728119659	4.1887902	3.23278E-06
2.117977601	13.19999709	2.834379877	4.44	0.638966486	4.1887902	2.91024E-06
3.508177913	50.70005919	7.776399259	7.35	1.058371964	4.1887902	-5.91864E-05
1.168094799	2.700120588	0.862127525	2.45	0.352399114	4.1887902	-0.000120588
1.493512438	5.199984642	1.409395946	3.13	0.450573412	4.1887902	1.53582E-05
1.696098594	7.299894263	1.817680375	3.55	0.511691039	4.1887902	0.000105737

APPENDIX B.2: Basin Storage Calculations

BASIN A

Contour Elevation	Contour Area (sf)	Contour Area (ac)	Contour Interval Volume (ac-ft)	Total Basin Volume (ac-ft)	Total Basin Volume (ft^3)
1438.0	9684.2	0.222		0	0
			0.242		
1439.0	11388.78	0.261		0.242	10524.97
			0.282		
1440.0	13188.03	0.303		0.523	22802.38
			0.324		
1441.0	15081.95	0.346		0.848	36926.78
			0.369		
1442.0	17070.57	0.392		1.217	52992.78

WQ Volume (ft^3)	WQ Volume (Ac-ft)	WQ Ponded Elev.	Drawdown Time (hr)	WQ Drawdown Flow Rate (CFS)
27,282.20	0.626	1440.32	48	0.1579

BASIN B

Contour Elevation	Contour Area (sf)	Contour Area (ac)	Contour Interval Volume (ac-ft)	Total Basin Volume (ac-ft)	Total Basin Volume (ft^3)
1438.0	17759.5	0.408		0	0
			0.422		
1439.0	19028.4	0.437		0.422	18390.28
			0.452		
1440.0	20329.6	0.467		0.874	38065.70
			0.497		
1441.0	23029.5	0.529		1.371	59731.22
			0.545		
1442.0	24428.7	0.561		1.916	83456.88

WQ Volume (ft^3)	WQ Volume (Ac-ft)	WQ Ponded Elev.	Drawdown Time (hr)	WQ Drawdown Flow Rate (CFS)
37,074.50	0.851	1439.95	48	0.2146

APPENDIX B.3: Basin Outlet Weir Calculations

BASIN A STRUCTURE

Weir Calculation

$$Q=CLH^{3/2}$$

Q_{100}= Discharge from On-site 100 Year Rational Method Study

C= Discharge Coefficent

L = Weir Length

H=Hydraulic Head

Storm Drain System	Q (cfs)	C	L (ft)	H (ft)	Weir Opening Elevation (ft)	WSE
BASIN A SRUCTURE	43.60	3.1	8	1.46	1441.00	1442.5

BASIN B STRUCTURE

Weir Calculation

$$Q=CLH^{3/2}$$

Q_{100}= Discharge from On-site 100 Year Rational Method Study

C= Discharge Coefficent

L = Weir Length

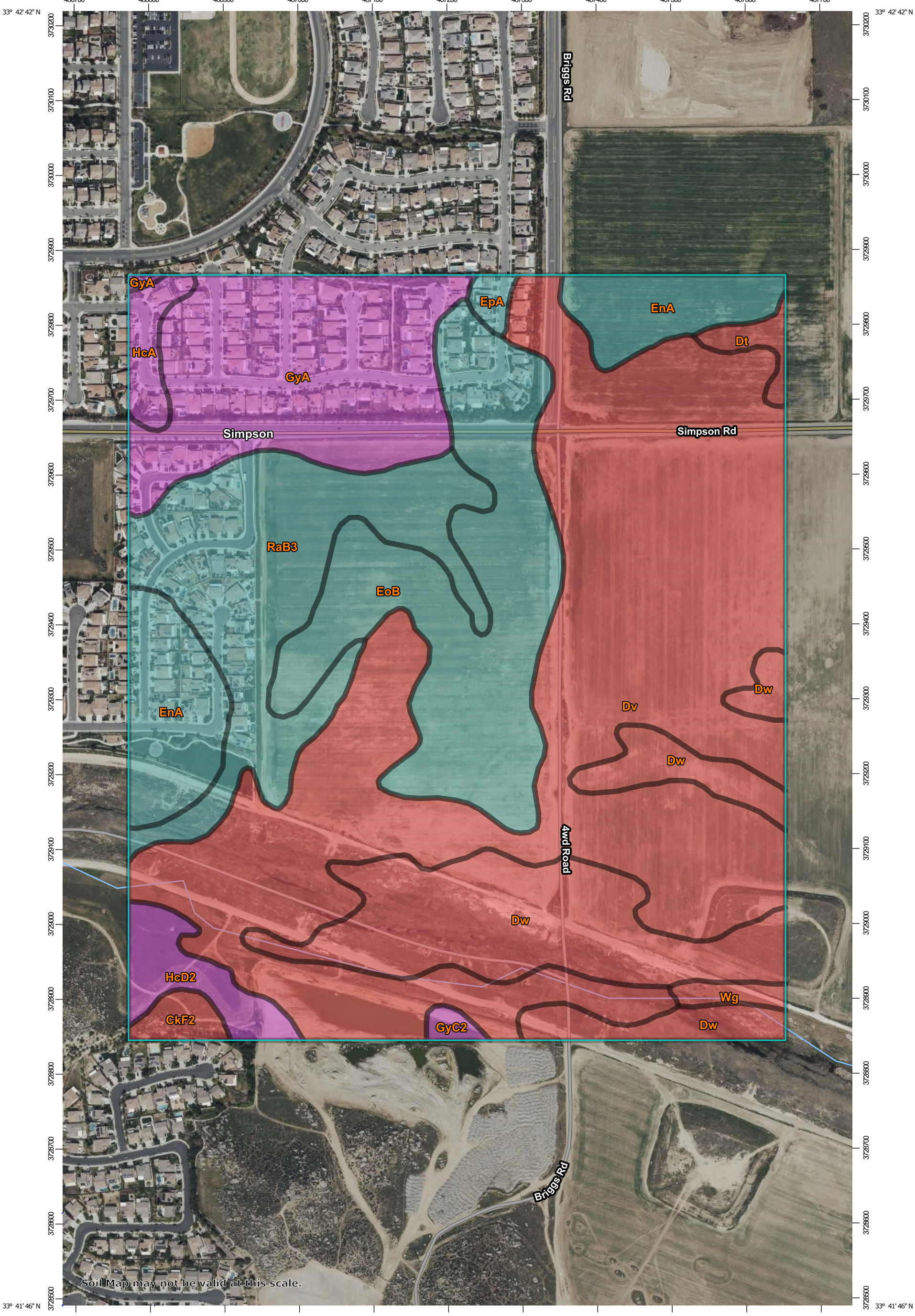
H=Hydraulic Head

Storm Drain System	Q (cfs)	C	L (ft)	H (ft)	Weir Opening Elevation (ft)	WSE
BASIN A SRUCTURE	50.70	3.1	46.23899	0.50	1440.50	1441.0

EXCERPTS

EXCERPT 1: NRCS HYDROLOGICAL SOILS MAP

Hydrologic Soil Group—Western Riverside Area, California



Map Scale: 1:4,840 if printed on B portrait (11" x 17") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 200 400 800 1200

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Lines

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Points

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Western Riverside Area, California
Survey Area Data: Version 15, Sep 6, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 14, 2022—Mar 17, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
CkF2	Cieneba rocky sandy loam, 15 to 50 percent slopes, eroded	D	1.6	0.7%
Dt	Domino fine sandy loam, saline-alkali	D	1.4	0.6%
Dv	Domino silt loam, saline-alkali	D	88.1	39.5%
Dw	Domino silt loam, strongly saline-alkali	D	28.0	12.5%
EnA	Exeter sandy loam, 0 to 2 percent slopes	C	14.4	6.4%
EoB	Exeter sandy loam, slightly saline-alkali, 0 to 5 perce nt slopes	C	29.3	13.1%
EpA	Exeter sandy loam, deep, 0 to 2 percent slopes	C	0.9	0.4%
GyA	Greenfield sandy loam, 0 to 2 percent slopes	A	25.0	11.2%
GyC2	Greenfield sandy loam, 2 to 8 percent slopes, eroded	A	0.7	0.3%
HcA	Hanford coarse sandy loam, 0 to 2 percent slopes	A	2.5	1.1%
HcD2	Hanford coarse sandy loam, 8 to 15 percent slopes, eroded	A	4.6	2.0%
RaB3	Ramona sandy loam, 0 to 5 percent slopes, severely eroded	C	25.6	11.4%
Wg	Willows silty clay, saline-alkali	D	1.2	0.5%
Totals for Area of Interest			**223.3**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

EXCERPT 2: CONCEPTUAL GRADING TTM 38625

TRACT 34180-4

SIMPSON AVE

STREET A

STREET B

STREET C

STREET D

STREET E

STREET F

STREET G

STREET H

STREET I

STREET J

STREET K

STREET L

STREET M

STREET N

STREET O

MAHOGANY TRAIL WAY

BRIGGS ROAD

OPEN SPACE

EXISTING FEMA FLOODZONE A 06065C2060H

WQ BASIN 1 BTM=1438.0

WQ BASIN 2 BTM=1438.0

TRACT 32818

SALT CREEK CHANNEL - STAGE 6 PER RCFCD&WCD DWG NO. 4-786

CITY OF MENIFEE

COUNTY OF RIVERSIDE

GRAPHIC SCALE IN FEET
0 30 60 120

NORTH

REVISIONS	DATE	BY

SCALE: 1"=60'
DATE: 4/4/2023
DESIGNED: MB
CHECKED: CTM
PLN CK REF:
F.B.

Kimley»Horn
3880 LEMON STREET, SUITE 420, RIVERSIDE, CA 92501
PHONE: (951) 543-9868 WWW.KIMLEY-HORN.COM

CONCEPTUAL GRADING PLAN
SALT CREEK
TENTATIVE TRACT MAP NO. 38625

PROJ. # 195261011
SHEET 2
OF 2 SHEETS
DWG. NO.

K:\RIV_LDEV\195261011 - MLC SALT CREEK\CAD\PRELIMINARY\GRADING & DRAINAGE\2-CONCEPTUAL GRADING-195261011.DWG 4/4/2023 4:57:59 PM

EXCERPT 3: BIO CLEAN MODULAR WETLANDS BROCHURE

Bio Clean

A Forterra Company

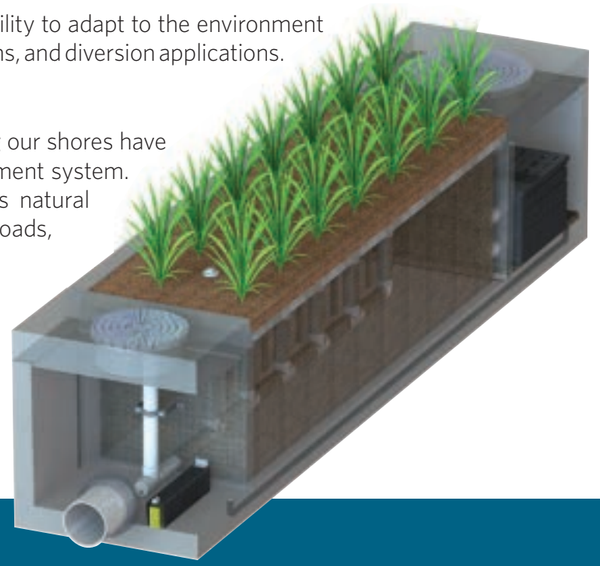
Modular Wetlands® System Linear

A Stormwater Biofiltration Solution

OVERVIEW

The Bio Clean Modular Wetlands® System Linear represents a pioneering breakthrough in stormwater technology as the only biofiltration system to utilize patented horizontal flow, allowing for a smaller footprint, higher treatment capacity, and a wide range of versatility. While most biofilters use little or no pretreatment, the Modular Wetlands® incorporates an advanced pretreatment chamber that includes separation and pre-filter cartridges. In this chamber, sediment and hydrocarbons are removed from runoff before entering the biofiltration chamber, reducing maintenance costs and improving performance.

Horizontal flow also gives the system the unique ability to adapt to the environment through a variety of configurations, bypass orientations, and diversion applications.



The Urban Impact

For hundreds of years, natural wetlands surrounding our shores have played an integral role as nature's stormwater treatment system. But as cities grow and develop, our environment's natural filtration systems are blanketed with impervious roads, rooftops, and parking lots.

Bio Clean understands this loss and has spent years re-establishing nature's presence in urban areas, and rejuvenating waterways with the Modular Wetlands® System Linear.

PERFORMANCE

The Modular Wetlands® continues to outperform other treatment methods with superior pollutant removal for TSS, heavy metals, nutrients, hydrocarbons, and bacteria. Since 2007 the Modular Wetlands® has been field tested on numerous sites across the country and is proven to effectively remove pollutants through a combination of physical, chemical, and biological filtration processes. In fact, the Modular Wetlands® harnesses some of the same biological processes found in natural wetlands in order to collect, transform, and remove even the most harmful pollutants.

66% REMOVAL OF DISSOLVED ZINC	**69%** REMOVAL OF TOTAL ZINC	**38%** REMOVAL OF DISSOLVED COPPER	**64%** REMOVAL OF TOTAL PHOSPHORUS	
45% REMOVAL OF NITROGEN	**50%** REMOVAL OF TOTAL COPPER	**95%** REMOVAL OF MOTOR OIL	**67%** REMOVAL OF ORTHO PHOSPHORUS	**85%** REMOVAL OF TSS

APPROVALS

The Modular Wetlands® System Linear has successfully met years of challenging technical reviews and testing from some of the most prestigious and demanding agencies in the nation and perhaps the world. Here is a list of some of the most high-profile approvals, certifications, and verifications from around the country.

Washington State Department of Ecology TAPE Approved
The MWS Linear is approved for General Use Level Designation (GULD) for Basic, Enhanced, and Phosphorus treatment at 1 gpm/ft² loading rate. The highest performing BMP on the market for all main pollutant categories.

California Water Resources Control Board, Full Capture Certification
The Modular Wetlands® System is the first biofiltration system to receive certification as a full capture trash treatment control device.

Virginia Department of Environmental Quality, Assignment
The Virginia Department of Environmental Quality assigned the MWS Linear the highest phosphorus removal rating for manufactured treatment devices to meet the new Virginia Stormwater Management Program (VSMP) regulation technical criteria.

Maryland Department of the Environment, Approved ESD
Granted Environmental Site Design (ESD) status for new construction, redevelopment, and retrofitting when designed in accordance with the design manual.

MASTEP Evaluation
The University of Massachusetts at Amherst – Water Resources Research Center issued a technical evaluation report noting removal rates up to 84% TSS, 70% total phosphorus, 68.5% total zinc, and more.

Rhode Island Department of Environmental Management, Approved BMP
Approved as an authorized BMP and noted to achieve the following minimum removal efficiencies: 85% TSS, 60% pathogens, 30% total phosphorus, and 30% total nitrogen.

ADVANTAGES

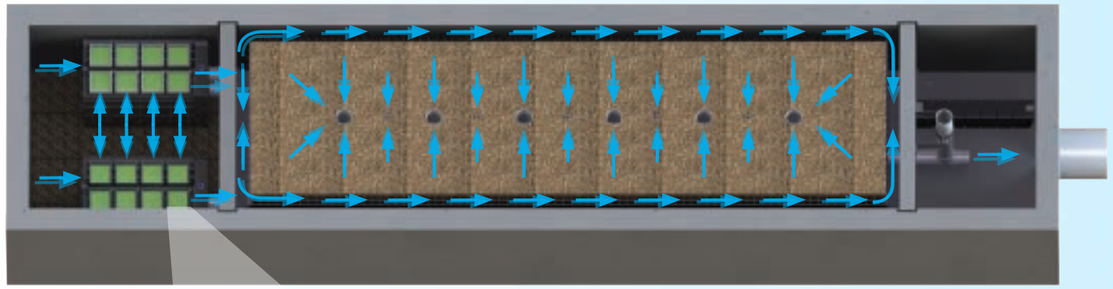
- HORIZONTAL FLOW BIOFILTRATION
- GREATER FILTER SURFACE AREA
- PRETREATMENT CHAMBER
- PATENTED PERIMETER VOID AREA
- FLOW CONTROL
- NO DEPRESSED PLANTER AREA
- AUTO DRAINDOWN MEANS NO MOSQUITO VECTOR

OPERATION

The Modular Wetlands® System Linear is the most efficient and versatile biofiltration system on the market, and it is the only system with horizontal flow which:

- Improves performance
- Reduces footprint
- Minimizes maintenance

Figure 1 & Figure 2 illustrate the invaluable benefits of horizontal flow and the multiple treatment stages.



2x to 3x more surface area than traditional downward flow bioretention systems.

Figure 2, Top View

1 PRETREATMENT

SEPARATION

- Trash, sediment, and debris are separated before entering the pre-filter cartridges
- Designed for easy maintenance access

PRE-FILTER CARTRIDGES

- Over 25 sq. ft. of surface area per cartridge
- Utilizes BioMediaGREEN™ filter material
- Removes over 80% of TSS and 90% of hydrocarbons
- Prevents pollutants that cause clogging from migrating to the biofiltration chamber

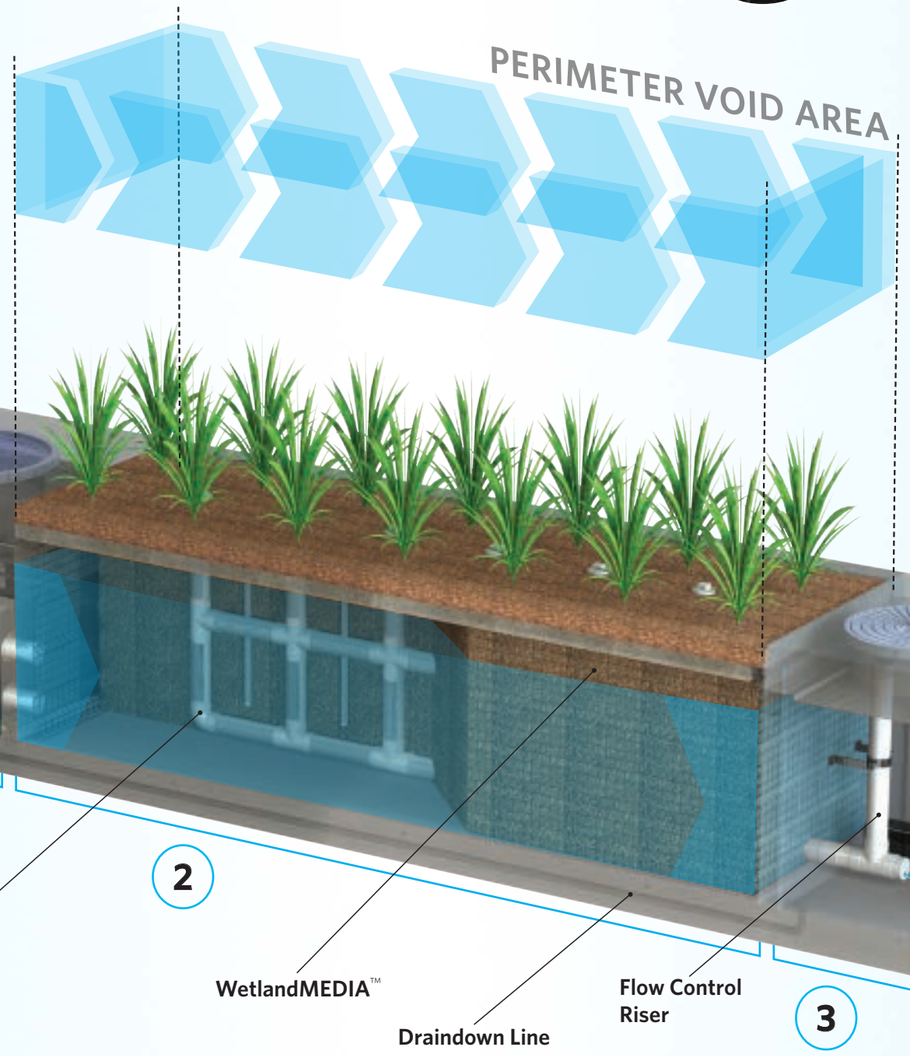


Figure 1

2 BIOFILTRATION

HORIZONTAL FLOW

- Less clogging than downward flow biofilters
- Water flow is subsurface
- Improves biological filtration

PATENTED PERIMETER VOID AREA

- Vertically extends void area between the walls and the WetlandMEDIA™ on all four sides
- Maximizes surface area of the media for higher treatment capacity

WETLANDMEDIA

- Contains no organics and removes phosphorus
- Greater surface area and 48% void space
- Maximum evapotranspiration
- High ion exchange capacity and lightweight

3 DISCHARGE

FLOW CONTROL

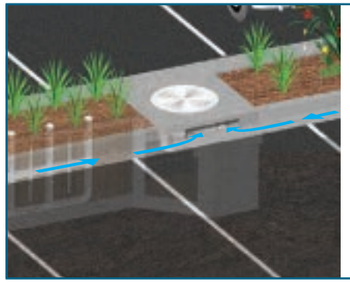
- Orifice plate controls flow of water through WetlandMEDIA™ to a level lower than the media's capacity
- Extends the life of the media and improves performance

DRAINDOWN FILTER

- The draindown is an optional feature that completely drains the pretreatment chamber
- Water that drains from the pretreatment chamber between storm events will be treated

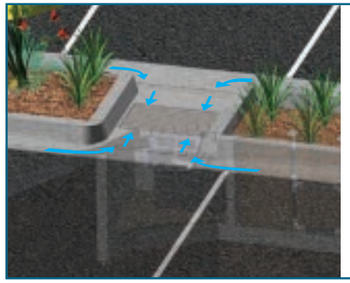
CONFIGURATIONS

The Modular Wetlands® System Linear is the preferred biofiltration system of civil engineers across the country due to its versatile design. This highly versatile system has available "pipe-in" options on most models, along with built-in curb or grated inlets for simple integration into your storm drain design.



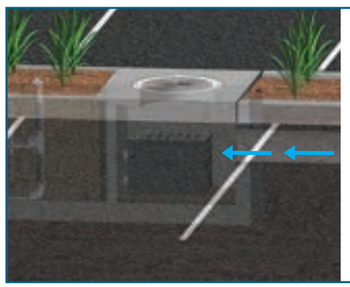
CURB TYPE

The Curb Type configuration accepts sheet flow through a curb opening and is commonly used along roadways and parking lots. It can be used in sump or flow-by conditions. Length of curb opening varies based on model and size.



GRATE TYPE

The Grate Type configuration offers the same features and benefits as the Curb Type but with a grated/drop inlet above the systems pretreatment chamber. It has the added benefit of allowing pedestrian access over the inlet. ADA-compliant grates are available to assure easy and safe access. The Grate Type can also be used in scenarios where runoff needs to be intercepted on both sides of landscape islands.



VAULT TYPE

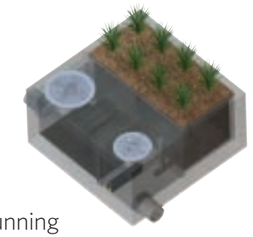
The system's patented horizontal flow biofilter is able to accept inflow pipes directly into the pretreatment chamber, meaning the Modular Wetlands® can be used in end-of-the-line installations. This greatly improves feasibility over typical decentralized designs that are required with other biofiltration/ bioretention systems. Another benefit of the "pipe-in" design is the ability to install the system downstream of underground detention systems to meet water quality volume requirements.

DOWNSPOUT TYPE

The Downspout Type is a variation of the Vault Type and is designed to accept a vertical downspout pipe from rooftop and podium areas. Some models have the option of utilizing an internal bypass, simplifying the overall design. The system can be installed as a raised planter, and the exterior can be stuccoed or covered with other finishes to match the look of adjacent buildings.

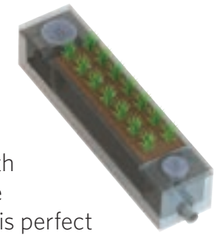
ORIENTATIONS

SIDE-BY-SIDE



The Side-By-Side orientation places the pretreatment and discharge chamber adjacent to one another with the biofiltration chamber running parallel on either side. This minimizes the system length, providing a highly compact footprint. It has been proven useful in situations such as streets with directly adjacent sidewalks, as half of the system can be placed under that sidewalk. This orientation also offers internal bypass options as discussed below.

END-TO-END



The End-To-End orientation places the pretreatment and discharge chambers on opposite ends of the biofiltration chamber, therefore minimizing the width of the system to 5 ft. (outside dimension). This orientation is perfect for linear projects and street retrofits where existing utilities and sidewalks limit the amount of space available for installation. One limitation of this orientation is that bypass must be external.

BYPASS

INTERNAL BYPASS WEIR (SIDE-BY-SIDE ONLY)

The Side-By-Side orientation places the pretreatment and discharge chambers adjacent to one another allowing for integration of internal bypass. The wall between these chambers can act as a bypass weir when flows exceed the system's treatment capacity, thus allowing bypass from the pretreatment chamber directly to the discharge chamber.

EXTERNAL DIVERSION WEIR STRUCTURE

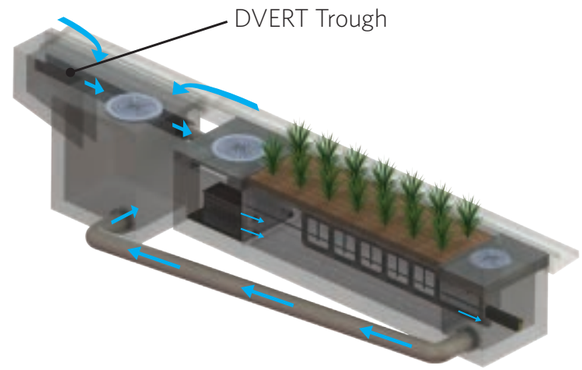
This traditional offline diversion method can be used with the Modular Wetlands® in scenarios where runoff is being piped to the system. These simple and effective structures are generally configured with two outflow pipes. The first is a smaller pipe on the upstream side of the diversion weir - to divert low flows over to the Modular Wetlands® for treatment. The second is the main pipe that receives water once the system has exceeded treatment capacity and water flows over the weir.

FLOW-BY-DESIGN

This method is one in which the system is placed just upstream of a standard curb or grate inlet to intercept the first flush. Higher flows simply pass by the Modular Wetlands® and into the standard inlet downstream.

DVERT LOW FLOW DIVERSION

This simple yet innovative diversion trough can be installed in existing or new curb and grate inlets to divert the first flush to the Modular Wetlands® via pipe. It works similar to a rain gutter and is installed just below the opening into the inlet. It captures the low flows and channels them over



to a connecting pipe exiting out the wall of the inlet and leading to the MWS Linear. The DVERT is perfect for retrofit and green street applications that allow the Modular Wetlands® to be installed anywhere space is available.

SPECIFICATIONS

FLOW-BASED DESIGNS

The Modular Wetlands® System Linear can be used in stand-alone applications to meet treatment flow requirements. Since the Modular Wetlands® is the only biofiltration system that can accept inflow pipes several feet below the surface, it can be used not only in decentralized design applications but also as a large central end-of-the-line application for maximum feasibility.

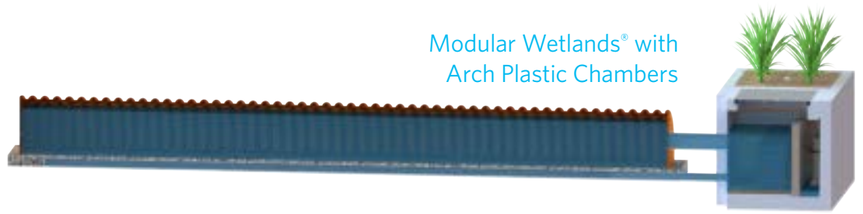
MODEL #	DIMENSIONS	WETLANDMEDIA SURFACE AREA (sq. ft.)	TREATMENT FLOW RATE (cfs)
MWS-L-4-4	4′ x 4′	23	0.052
MWS-L-4-6	4′ x 6′	32	0.073
MWS-L-4-8	4′ x 8′	50	0.115
MWS-L-4-13	4′ x 13′	63	0.144
MWS-L-4-15	4′ x 15′	76	0.175
MWS-L-4-17	4′ x 17′	90	0.206
MWS-L-4-19	4′ x 19′	103	0.237
MWS-L-4-21	4′ x 21′	117	0.268
MWS-L-6-8	7′ x 9′	64	0.147
MWS-L-8-8	8′ x 8′	100	0.230
MWS-L-8-12	8′ x 12′	151	0.346
MWS-L-8-16	8′ x 16′	201	0.462
MWS-L-8-20	9′ x 21′	252	0.577
MWS-L-8-24	9′ x 25′	302	0.693
MWS-L-10-20	10' x 20'	302	0.693

VOLUME-BASED DESIGNS

HORIZONTAL FLOW BIOFILTRATION ADVANTAGE

Modular Wetlands® with
Box Culvert Prestorage

The Modular Wetlands® System Linear offers a unique advantage in the world of biofiltration due to its exclusive horizontal flow design: Volume-Based Design. No other biofilter has the ability to be placed downstream of detention ponds, extended dry detention basins, underground storage systems and permeable paver reservoirs. The systems horizontal flow configuration and built-in orifice control allows it to be installed with just 6" of fall between inlet and outlet pipe for a simple connection to projects with shallow downstream tie-in points. In the example above, the Modular Wetlands® is installed downstream of underground box culvert storage. Designed for the water quality volume, the Modular Wetlands® will treat and discharge the required volume within local draindown time requirements.



Modular Wetlands® with
Arch Plastic Chambers

DESIGN SUPPORT

Bio Clean engineers are trained to provide you with superior support for all volume sizing configurations throughout the country. Our vast knowledge of state and local regulations allow us to quickly and efficiently size a system to maximize feasibility. Volume control and hydromodification regulations are expanding the need to decrease the cost and size of your biofiltration system. Bio Clean will help you realize these cost savings with the Modular Wetlands®, the only biofilter than can be used downstream of storage BMPs.

ADVANTAGES

- LOWER COST THAN FLOW-BASED DESIGN
- MEETS LID REQUIREMENTS
- BUILT-IN ORIFICE CONTROL STRUCTURE
- WORKS WITH DEEP INSTALLATIONS

APPLICATIONS

The Modular Wetlands® System Linear has been successfully used on numerous new construction and retrofit projects. The system's superior versatility makes it beneficial for a wide range of stormwater and waste water applications - treating rooftops, streetscapes, parking lots, and industrial sites.

INDUSTRIAL

Many states enforce strict regulations for discharges from industrial sites. The Modular Wetlands® has helped various sites meet difficult EPA-mandated effluent limits for dissolved metals and other pollutants.

RESIDENTIAL

Low to high density developments can benefit from the versatile design of the Modular Wetlands®. The system can be used in both decentralized LID design and cost-effective end-of-the-line configurations.

STREETS

Street applications can be challenging due to limited space. The Modular Wetlands® is very adaptable, and it offers the smallest footprint to work around the constraints of existing utilities on retrofit projects.

PARKING LOTS

Parking lots are designed to maximize space and the Modular Wetlands'® 4 ft. standard planter width allows for easy integration into parking lot islands and other landscape medians.

COMMERCIAL

Compared to bioretention systems, the Modular Wetlands® can treat far more area in less space, meeting treatment and volume control requirements.

MIXED USE

The Modular Wetlands® can be installed as a raised planter to treat runoff from rooftops or patios, making it perfect for sustainable "live-work" spaces.

More applications include:

• Agriculture • Reuse • Low Impact Development • Waste Water

PLANT SELECTION

Abundant plants, trees, and grasses bring value and an aesthetic benefit to any urban setting, but those in the Modular Wetlands® System Linear do even more - they increase pollutant removal. What's not seen, but very important, is that below grade, the stormwater runoff/flow is being subjected to nature's secret weapon: a dynamic physical, chemical, and biological process working to break down and remove non-point source pollutants. The flow rate is controlled in the Modular Wetlands®, giving the plants more contact time so that pollutants are more successfully decomposed, volatilized, and incorporated into the biomass of the Modular Wetlands'® micro/macro flora and fauna.

A wide range of plants are suitable for use in the Modular Wetlands®, but selections vary by location and climate. View suitable plants by visiting biocleanenvironmental.com/plants.

INSTALLATION

The Modular Wetlands® is simple, easy to install, and has a space-efficient design that offers lower excavation and installation costs compared to traditional tree-box type systems. The structure of the system resembles precast catch basin or utility vaults and is installed in a similar fashion.

The system is delivered fully assembled for quick installation. Generally, the structure can be unloaded and set in place in 15 minutes. Our experienced team of field technicians is available to supervise installations and provide technical support.

MAINTENANCE

Reduce your maintenance costs, man hours, and materials with the Modular Wetlands®. Unlike other biofiltration systems that provide no pretreatment, the Modular Wetlands® is a self-contained treatment train which incorporates simple and effective pretreatment.

Maintenance requirements for the biofilter itself are almost completely eliminated, as the pretreatment chamber removes and isolates trash, sediments, and hydrocarbons. What's left is the simple maintenance of an easily accessible pretreatment chamber that can be cleaned by hand or with a standard vac truck. Only periodic replacement of low-cost media in the pre-filter cartridges is required for long-term operation, and there is absolutely no need to replace expensive biofiltration media.

Bio Clean
A Forterra Company

5796 Armada Drive Suite 250
Carlsbad, CA 92008
855.566.3938
stormwater@forterrabp.com
biocleanenvironmental.com

010419R1A

EXHIBITS

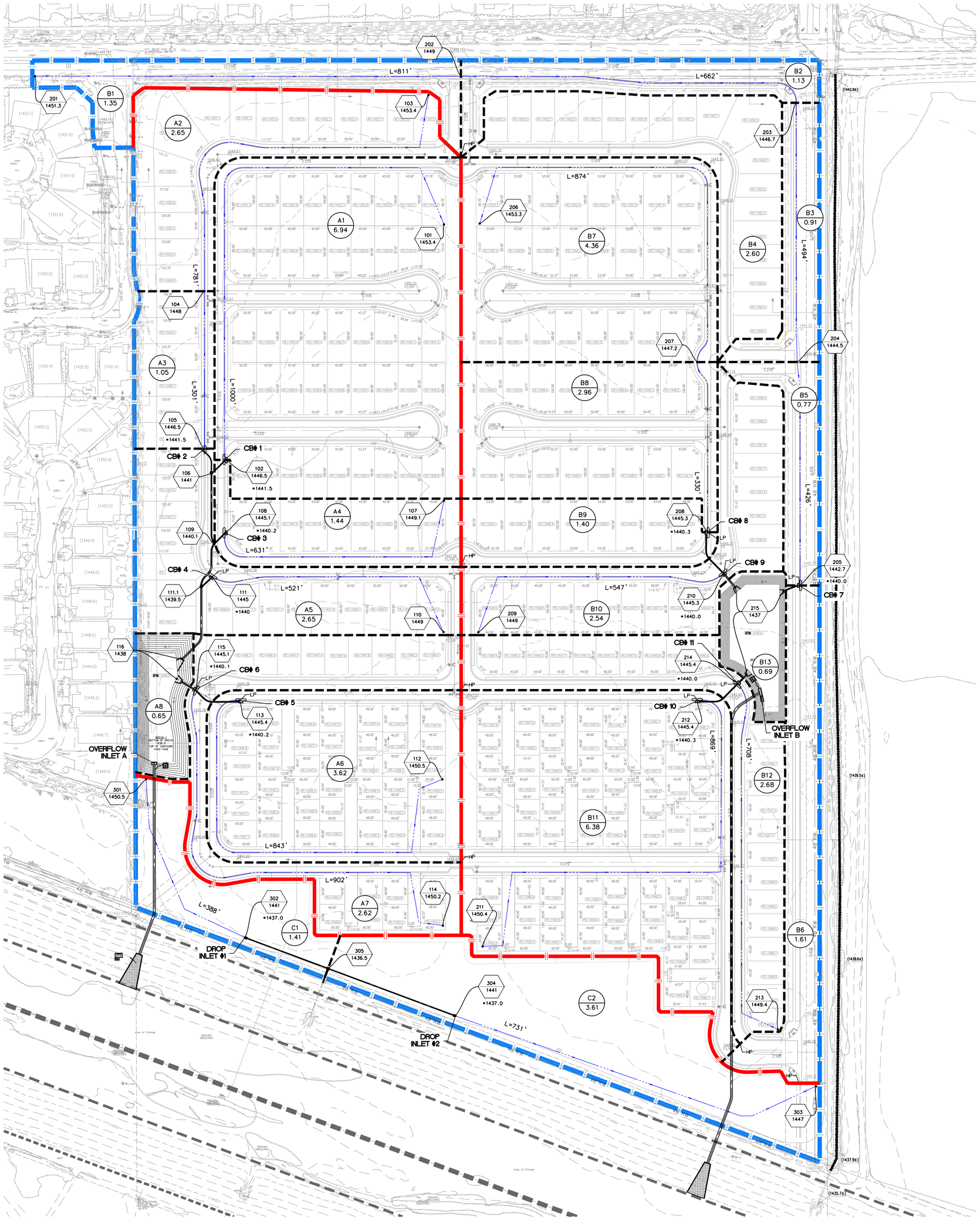
EXHIBIT A: POST PROJECT HYDROLOGY MAP

SHEET 1 OF 1

TRACT MAP NO. 38625

IN THE CITY OF MENIFEE, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA

POST PROJECT HYDROLOGY MAP



RATIONAL METHOD RESULTS				
NODE TO NODE	Q_{100} (CFS)	T_C (MIN)	Q_{10} (CFS)	T_C (MIN)
101–102	14.18	15.86	8.91	15.86
102–106	14.18	16.03	8.91	16.05
103–104	5.72	14.36	3.60	14.36
104–105	7.81	16.66	4.90	16.93
105–106	7.81	16.88	4.90	17.18
*105–106	21.59	16.03	13.49	16.05
106–109	21.59	16.21	13.49	16.25
107–108	3.23	13.42	2.03	13.42
108–109	3.23	13.57	2.03	13.59
*108–109	24.53	16.21	15.34	16.25
109–111.1	24.53	16.40	15.34	16.46
110–111	6.34	11.96	4.0	11.96
111–111.1	6.34	12.02	4.0	12.02
*111–111.1	29.91	16.40	18.72	16.46
111.1–116	29.91	16.69	18.72	16.77
112–113	7.57	15.21	4.76	15.21
113–115	7.57	15.67	4.76	15.72
114–115	5.36	15.84	3.37	15.84
*114–115	12.87	15.67	8.10	15.72
115–116	12.87	15.72	8.10	15.77
*115–116	42.38	16.69	26.56	16.77
116–116	43.59	16.69	27.30	16.77
201–202	3.08	14.13	1.98	14.13
202–203	5.18	20.64	3.30	21.36
203–204	6.72	24.69	4.26	25.88
204–204	10.86	24.69	6.79	25.88
204–205	12.08	28.28	7.54	29.90
205–205	14.60	28.28	9.11	29.90
205–215	14.60	28.34	9.11	30.0
206–207	9.19	15.0	5.78	15.0
207–208	15.0	17.02	9.40	17.31
208–208	17.75	17.02	11.11	17.31
208–210	17.75	17.23	11.11	17.54
209–210	5.92	12.51	3.73	12.51
*209–210	22.76	17.23	14.23	17.54
210–215	22.76	17.26	14.23	17.58
211–212	13.18	15.55	8.29	15.55
212–214	13.18	15.73	8.29	15.75
213–214	5.78	14.38	3.64	14.38
*213–214	18.70	15.73	11.75	15.75
214–215	18.70	15.77	11.75	15.79
*214–215	49.47	17.26	30.68	17.58
215–215	50.73	17.26	31.44	17.58
301–302	2.68	16.18	1.63	16.18
302–305	2.68	17.05	1.63	17.17
303–304	5.17	25.94	3.09	25.94
304–305	5.17	27.27	3.09	27.45
*304–305	7.27	27.27	4.36	27.45

* DENOTES CONFLUENCE POINT

N

GRAPHIC SCALE
80' 0 40' 80' 160'
1" = 80'

LEGEND:

A2 / 0.14 — SUBAREA / ACRES

103 / 101.8 — NODE # / ELEV

OVERALL STUDY BOUNDARY

DRAINAGE AREA BOUNDARY

SUBAREA BOUNDARY

FLOW PATH

JLC Engineering & Consulting, Inc.
41660 IVY STREET, SUITE A
MURRIETA, CA 92562
PH. 951.304.9552 FAX 951.304.3568

EXHIBIT "A"

TRACT MAP NO. 38625

POST PROJECT HYDROLOGY MAP

EXHIBIT B: DRAINAGE FACILITIES MAP

SHEET 1 OF 1

TRACT MAP NO. 38625

IN THE CITY OF MENIFEE, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA

DRAINAGE FACILITIES MAP

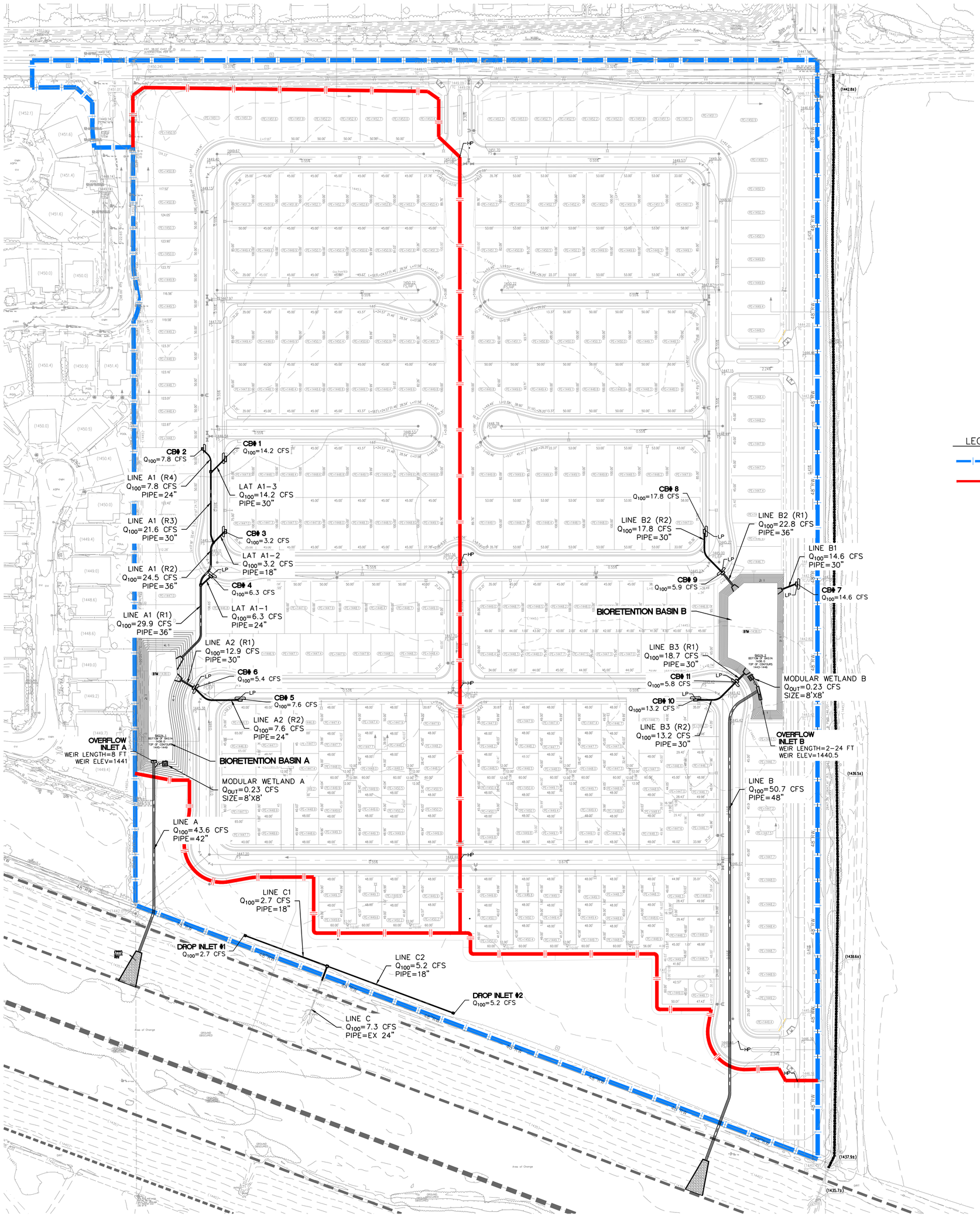


EXHIBIT "B"

TRACT MAP NO. 38625

DRAINAGE FACILITIES MAP

JLC Engineering & Consulting, Inc.

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MURRIETA, CA 92562
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EXHIBIT C: RAINFALL MAPS

2 YEAR, 1 HOUR

TRACT MAP 38625
RAINFALL VALUE = 0.48

JLC Engineering & Consulting, Inc.

36263 CALLE DE LOBO
MURRIETA, CA 92562
PH. 951.304.9552 FAX 951.304.3568

NOTES:
1. Isohyetals based on NOAA Atlas 2, Volume XI - California, 1973.

RCFC & WCD
HYDROLOGY MANUAL

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

2-YEAR — 1-HOUR PRECIPITATION

APPROVED CHIEF ENGINEER R E NO 8888
DATE
DRAWN BY R.L.S.
PLATE D-4.3
SHEET NO
DR NO
REVISED

100 YEAR, 1 HOUR

TRACT MAP 38625
RAINFALL VALUE = 1.2

JLC Engineering & Consulting, Inc.

36263 CALLE DE LOBO
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PH. 951.304.9552 FAX 951.304.3568

NOTES
1. Isohyetals based on NOAA Atlas 2, Volume XI - California, 1973.

RCFC & WCD
HYDROLOGY MANUAL

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

100-YEAR — 1-HOUR PRECIPITATION

DRAWN BY:

SHEET NO

EXHIBIT D: SLOPE OF INTENSITY DURATION CURVE

SLOPE INTENSITY CURVE

TRACT MAP 38625
RAINFALL VALUE = 0.53

JLC Engineering & Consulting, Inc.

36263 CALLE DE LOBO
MURRIETA, CA 92562
PH. 951.304.9552 FAX 951.304.3568

NOTES:
1. Slope of Intensity Duration Curve based on District analysis of automatic recording rain gage records

RCFC & WCD

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

SLOPE OF INTENSITY DURATION CURVE

APPROVED | DRAWN BY R.A.S. | SHEET No

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G.2 - Water Quality Management Plan

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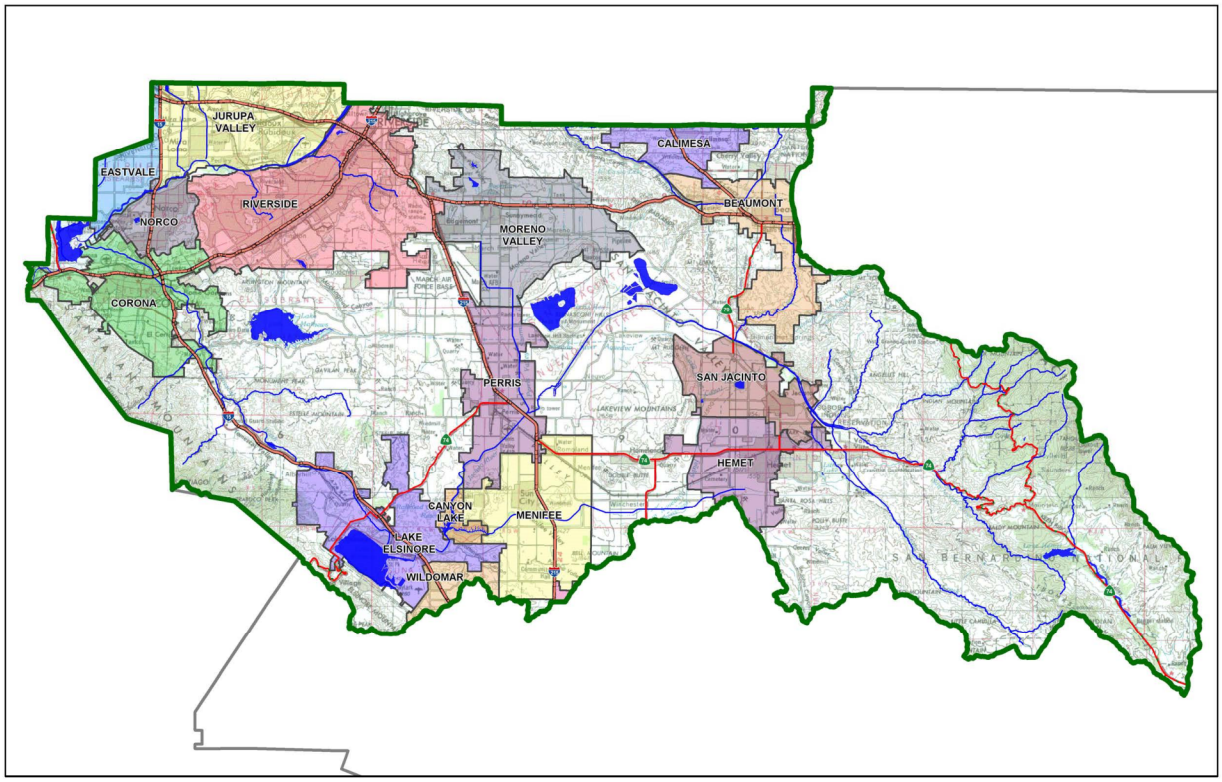
Project Specific Water Quality Management Plan

*A Template for Projects located within the **Santa Ana Watershed** Region of Riverside County*

Project Title: Tract Map 38625

Development No: Tr 38625

Design Review/Case No: WQ-0315



☒ **Preliminary**
☐ **Final**

Original Date Prepared: December 21, 2022

Revision Date(s): April 19, 2023

Prepared for Compliance with
Regional Board Order No. **R8-2010-0033**
Template revised June 30, 2016

Contact Information:

Prepared for:
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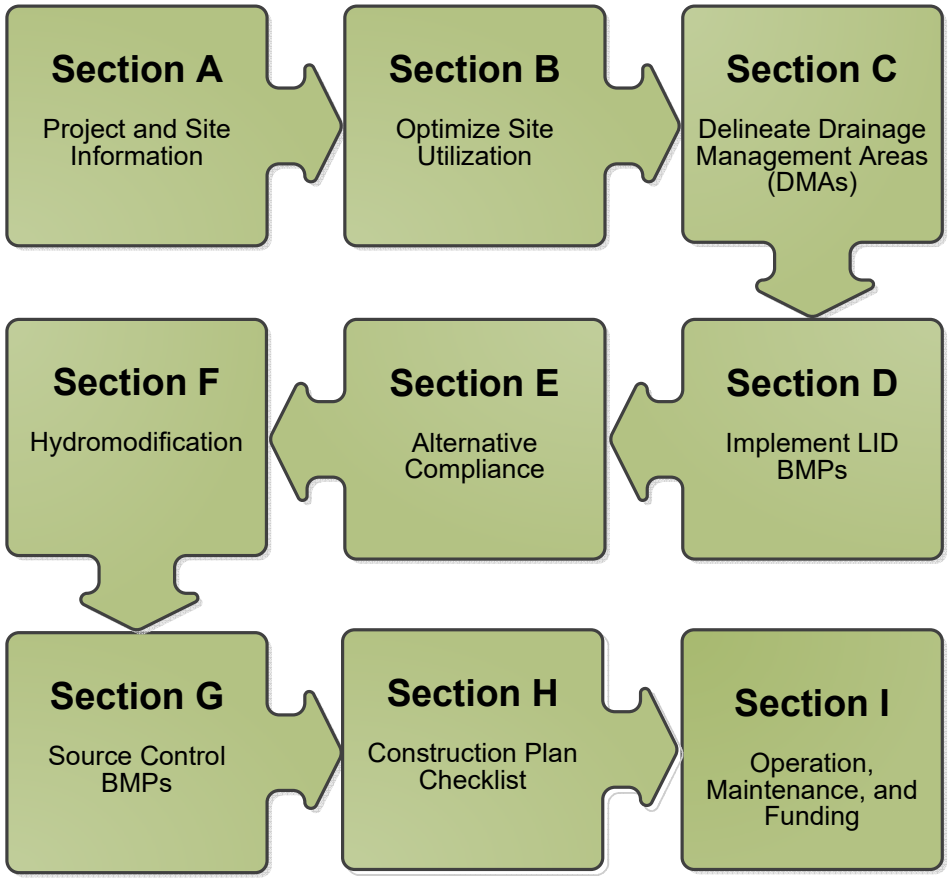
(951) 543-9868

Prepared by: JLC Engineering & Consulting Inc.
41660 Ivy Street, Suite A
Murrieta, Ca 92562
951.304.9552

A Brief Introduction

This Project-Specific WQMP Template for the **Santa Ana Region** has been prepared to help guide you in documenting compliance for your project. Because this document has been designed to specifically document compliance, you will need to utilize the WQMP Guidance Document as your "how-to" manual to help guide you through this process. Both the Template and Guidance Document go hand-in-hand, and will help facilitate a well prepared Project-Specific WQMP. Below is a flowchart for the layout of this Template that will provide the steps required to document compliance.



OWNER'S CERTIFICATION

This Project-Specific Water Quality Management Plan (WQMP) has been prepared for KIMLEY HORN by JLC Engineering & Consulting for the Tentative Tract Map 38625 project.

This WQMP is intended to comply with the requirements of City of Menifee for Municipal Code Section 15.01.060 which includes the requirement for the preparation and implementation of a Project-Specific WQMP.

The undersigned, while owning the property/project described in the preceding paragraph, shall be responsible for the implementation and funding of this WQMP and will ensure that this WQMP is amended as appropriate to reflect up-to-date conditions on the site. In addition, the property owner accepts responsibility for interim operation and maintenance of Stormwater BMPs until such time as this responsibility is formally transferred to a subsequent owner. This WQMP will be reviewed with the facility operator, facility supervisors, employees, tenants, maintenance and service contractors, or any other party (or parties) having responsibility for implementing portions of this WQMP. At least one copy of this WQMP will be maintained at the project site or project office in perpetuity. The undersigned is authorized to certify and to approve implementation of this WQMP. The undersigned is aware that implementation of this WQMP is enforceable under City of Menifee Water Quality Ordinance (Municipal Code Section 2009-32).

"I, the undersigned, certify under penalty of law that the provisions of this WQMP have been reviewed and accepted and that the WQMP will be transferred to future successors in interest."

Owner's Signature

4/25/23

Date

Tracy Polley Rancho de los Cazadores Corp

Owner's Printed Name

President

Owner's Title/Position

PREPARER'S CERTIFICATION

"The selection, sizing and design of stormwater treatment and other stormwater quality and quantity control measures in this plan meet the requirements of Regional Water Quality Control Board Order No. **R8-2010-0033** and any subsequent amendments thereto."

Preparer's Signature

April 19, 2023

Date

Joseph L Castaneda

Preparer's Printed Name

Principal

Preparer's Title/Position

Preparer's Licensure:

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Section A: Project and Site Information °°

PROJECT INFORMATION	
Type of Project:	Single Family Residential
Planning Area:	N/A
Community Name:	City of Menifee
Development Name:	Tract Map 38625
PROJECT LOCATION	
Latitude & Longitude (DMS): 33° 43’ 20” & 117° 09’ 19”	
Project Watershed and Sub-Watershed: Santa Ana Watershed & San Jacinto Sub Watershed	
Gross Acres: +/- 56.02 (Based on DMA Areas) APN(s): 333-200-062 Map Book and Page No.: Map Book 15, Page No. 29	
PROJECT CHARACTERISTICS	
Proposed or Potential Land Use(s)	Residential
Proposed or Potential SIC Code(s)	N/A
Area of Impervious Project Footprint (SF)	1,332,936 SF
Total Area of proposed Impervious Surfaces within the Project Footprint (SF)/or Replacement	1,332,936 SF
Does the project consist of offsite road improvements?	☒ Y ☐ N
Does the project propose to construct unpaved roads?	☐ Y ☒ N
Is the project part of a larger common plan of development (phased project)?	☒ Y ☐ N
EXISTING SITE CHARACTERISTICS	
Total area of existing Impervious Surfaces within the Project limits Footprint (SF)	0 SF
Is the project located within any MSHCP Criteria Cell?	☐ Y ☒ N
If so, identify the Cell number:	N/A
Are there any natural hydrologic features on the project site?	☐ Y ☒ N
Is a Geotechnical Report attached?	☒ Y ☐ N
If no Geotech. Report, list the NRCS soils type(s) present on the site (A, B, C and/or D)	SoilsType A, C and D
What is the Water Quality Design Storm Depth for the project?	0.60 Inches

A.1 Maps and Site Plans

When completing your Project-Specific WQMP, include a map of the local vicinity and existing site. In addition, include all grading, drainage, landscape/plant palette and other pertinent construction plans in Appendix 2. At a **minimum**, your WQMP Site Plan should include the following:

- Drainage Management Areas
- Proposed Structural BMPs
- Drainage Path
- Drainage Infrastructure, Inlets, Overflows
- Source Control BMPs
- Buildings, Roof Lines, Downspouts
- Impervious Surfaces
- Standard Labeling
- BMP Locations (Lat/Long)

Use your discretion on whether or not you may need to create multiple sheets or can appropriately accommodate these features on one or two sheets. Keep in mind that the Co-Permittee plan reviewer must be able to easily analyze your project utilizing this template and its associated site plans and maps.

Tract 38625 is a proposed single family residential development project that is proposing a total of 329 lots in the City of Menifee, County of Riverside. The project proposes to construct single family homes that have lots sizes that range from 2,000 square feet to approximately 7,000 square feet. The project site is bounded by Simpson Road to the north, Briggs Road to the northeast, Mahogany Trail Way to the west and Salt Creek Channel to the south. The Briggs Road roadway south of Simpson does not currently extend across Simpson Road along the eastern end of the project site. The western border of the project site are residential homes. The project site is approximately 56 acres large and includes the drainage area of Simpson Road and Briggs Road that the project border drains with into the street DMA A and DMA B consist of 21.62 and 29.38 acres respectively. DMA A and DMA B drain into Basins A and B which are bioretention basins designed with a mechanical pump that pumps water into a modular wetland unit for each basin. The basins will then discharge into the Salt Creek Channel below to the south. DMA C is an open space area that is self treating and will also drain into Salt Creek.

A.2 Identify Receiving Waters

Using Table A.1 below, list in order of upstream to downstream, the receiving waters that the project site is tributary to. Continue to fill each row with the Receiving Water's 303(d) listed impairments (if any), designated beneficial uses, and proximity, if any, to a RARE beneficial use. Include a map of the receiving waters in Appendix 1.

Table A.1 Identification of Receiving Waters

Receiving Waters	EPA Approved 303(d) List Impairments	Designated Beneficial Uses	Proximity to RARE Beneficial Use
Salt Creek	N/A	N/A	N/A
Canyon Lake (San Jacinto River – Reach 2)	Nutrients, Pathogens	MUN, AGR, GWR, REC1, REC2, WAR, WILD	Not a RARE-designated water body
San Jacinto River – Reach 1	N/A	MUN, AGR, GWR, REC1, REC2, WARM, WILD	Not a RARE-designated water body
Lake Elsinore	Metals (Mercury), Nutrients, Organic Enrichment/Low Dissolved Oxygen, Polychlorinated biphenyls, Sediment Toxicity, Sedimentation/Siltation, Unknown Toxicity	REC1, REC2, WARM, WILD	Not a RARE-designated water body

A.3 Additional Permits/Approvals required for the Project:

Table A.2 Other Applicable Permits

Agency	Permit Required	
State Department of Fish and Game, 1602 Streambed Alteration Agreement	☐ Y	☒ N
State Water Resources Control Board, Clean Water Act (CWA) Section 401 Water Quality Cert.	☐ Y	☒ N
US Army Corps of Engineers, CWA Section 404 Permit	☐ Y	☒ N
US Fish and Wildlife, Endangered Species Act Section 7 Biological Opinion	☐ Y	☒ N
Statewide Construction General Permit Coverage	☒ Y	☐ N
Statewide Industrial General Permit Coverage	☐ Y	☒ N
Western Riverside MSHCP Consistency Approval (e.g., JPR, DBESP)	☐ Y	☒ N
Other *(please list in the space below as required)* Grading Permit and Encroachment Permit	☒ Y	☐ N

If yes is answered to any of the questions above, the Co-Permittee may require proof of approval/coverage from those agencies as applicable including documentation of any associated requirements that may affect this Project-Specific WQMP.

Section B: Optimize Site Utilization (LID Principles)

Review of the information collected in Section 'A' will aid in identifying the principal constraints on site design and selection of LID BMPs as well as opportunities to reduce imperviousness and incorporate LID Principles into the site and landscape design. For example, **constraints** might include impermeable soils, high groundwater, groundwater pollution or contaminated soils, steep slopes, geotechnical instability, high-intensity land use, heavy pedestrian or vehicular traffic, utility locations or safety concerns. **Opportunities** might include existing natural areas, low areas, oddly configured or otherwise unbuildable parcels, easements and landscape amenities including open space and buffers (which can double as locations for bioretention BMPs), and differences in elevation (which can provide hydraulic head). Prepare a brief narrative for each of the site optimization strategies described below. This narrative will help you as you proceed with your LID design and explain your design decisions to others.

The 2010 Santa Ana MS4 Permit further requires that LID Retention BMPs (Infiltration Only or Harvest and Use) be used unless it can be shown that those BMPs are infeasible. Therefore, it is important that your narrative identify and justify if there are any constraints that would prevent the use of those categories of LID BMPs. Similarly, you should also note opportunities that exist which will be utilized during project design. Upon completion of identifying Constraints and Opportunities, include these on your WQMP Site plan in Appendix 1.

Consideration of "highest and best use" of the discharge should also be considered. For example, Lake Elsinore is evaporating faster than runoff from natural precipitation can recharge it. Requiring infiltration of 85% of runoff events for projects tributary to Lake Elsinore would only exacerbate current water quality problems associated with Pollutant concentration due to lake water evaporation. In cases where rainfall events have low potential to recharge Lake Elsinore (i.e. no hydraulic connection between groundwater to Lake Elsinore, or other factors), requiring infiltration of Urban Runoff from projects is counterproductive to the overall watershed goals. Project proponents, in these cases, would be allowed to discharge Urban Runoff, provided they used equally effective filtration-based BMPs.

Site Optimization

The following questions are based upon Section 3.2 of the WQMP Guidance Document. Review of the WQMP Guidance Document will help you determine how best to optimize your site and subsequently identify opportunities and/or constraints, and document compliance.

Did you identify and preserve existing drainage patterns? If so, how? If not, why?

The existing drainage pattern of the project site is a sheet flow condition that flows towards Salt Creek Channel. This project condition drainage pattern will collect onsite flows and discharge into Salt Creek Channel. The runoff emanating from the project will be treated for water quality prior to being discharged into Salt Creek Channel.

Did you identify and protect existing vegetation? If so, how? If not, why?

The project site is actively farmed and the site does not consist of existing vegetation.

Did you identify and preserve natural infiltration capacity? If so, how? If not, why?

The project will implement the use of open space and park area that will promote natural infiltration. Additionally, DMA A and B will be treated with the use of bio-retention basins. The bio-retention basins

will utilize a modular wetland unit to provide water quality treatment. Please note an active infiltration type BMP is strongly discouraged by the geotechnical report due to the groundwater level.

Did you identify and minimize impervious area? If so, how? If not, why?

The impervious area was designed to meet street and general plan land uses identified by the City of Menifee ordinances and design policies. The project will include landscaped areas and bio-retention basins within the project site.

Did you identify and disperse runoff to adjacent pervious areas? If so, how? If not, why?

The residential unit will include landscape areas. The runoff from the roof areas will be allowed to be dispersed into adjacent pervious areas within DMA A and DMA B. DMA C will be designed as open space area that will be considered self-treated areas.

Section C: Delineate Drainage Management Areas (DMAs)

Utilizing the procedure in Section 3.3 of the WQMP Guidance Document which discusses the methods of delineating and mapping your project site into individual DMAs, complete Table C.1 below to appropriately categorize the types of classification (e.g., Type A, Type B, etc.) per DMA for your project site. Upon completion of this table, this information will then be used to populate and tabulate the corresponding tables for their respective DMA classifications.

Table C.1 DMA Classifications

DMA Name or ID	Surface Type(s)[1][2]	Area (Sq. Ft.)	DMA Type
DMA A	Roof, Concrete, Asphalt, Landscaping	941,767.2	Type D
DMA B	Concrete, Asphalt, Landscaping,	1,279,792.8	Type D
DMA C	Landscaping	218,671.2	Type A

[1]Reference Table 2-1 in the WQMP Guidance Document to populate this column, [2]If multi-surface provide back-up

Table C.2 Type 'A', Self-Treating Areas

DMA Name or ID	Area (Sq. Ft.)	Stabilization Type	Irrigation Type (if any)
DMA C	218,671.2	Drought Tolerant Plants	Drip Irrigation

Table C.3 Type 'B', Self-Retaining Areas

Self-Retaining Area				**Type 'C' DMAs that are draining to the Self-Retaining Area**		
DMA Name/ ID	Post-project surface type	Area (square feet) [A]	Storm Depth (inches) [B]	DMA Name / ID	[C] from Table C.4 = [C]	Required Retention Depth (inches) [D]

$$[D] = [B] + \frac{[B] \cdot [C]}{[A]}$$

Table C.4 Type 'C', Areas that Drain to Self-Retaining Areas

DMA					Receiving Self-Retaining DMA		
DMA Name/ ID	Area (square feet)	Post-project surface type	Impervious fraction	Product		Area (square feet)	Ratio
	[A]		[B]	[C] = [A] x [B]	DMA name /ID	[D]	[C]/[D]

Table C.5 Type 'D', Areas Draining to BMPs

DMA Name or ID	BMP Name or ID
DMA A	Basin A - Bioclean Modular Wetland System (Bioretention System) (1)
DMA B	Basin B - Bioclean Modular Wetland System (Bioretention System) (1)

Note: More than one drainage management area can drain to a single LID BMP, however, one drainage management area may not drain to more than one BMP.

Design Notes:

1. Basin A and Basin B have been designed to store the water quality volume. The volume will be released over a 48 hour time period. The water quality volume will be treated with the Bioclean Modular Wetland System (MWS) which is a proprietary bio-retention treatment system with TAPE/Guld Certification. The water quality volume will be processed through the MWS Unit for water quality treatment and the outflow will be regulated by a pump system. Please note that the basin is designed for the Design Capture Volume (D_{CV})and not the Design Capture Flow Rate (Q_{WQ}).

Section D: Implement LID BMPs

D.1 Infiltration Applicability

Is there an approved downstream 'Highest and Best Use' for stormwater runoff (see discussion in Chapter 2.4.4 of the WQMP Guidance Document for further details)? ☐ Y ☒ N

If yes has been checked, Infiltration BMPs shall not be used for the site; proceed to section D.3

If no, continue working through this section to implement your LID BMPs. It is recommended that you contact your Co-Permittee to verify whether or not your project discharges to an approved downstream 'Highest and Best Use' feature.

Geotechnical Report

A Geotechnical Report or Phase I Environmental Site Assessment may be required by the Copermittee to confirm present and past site characteristics that may affect the use of Infiltration BMPs. In addition, the Co-Permittee, at their discretion, may not require a geotechnical report for small projects as described in Chapter 2 of the WQMP Guidance Document. If a geotechnical report has been prepared, include it in Appendix 3. In addition, if a Phase I Environmental Site Assessment has been prepared, include it in Appendix 4.

Is this project classified as a small project consistent with the requirements of Chapter 2 of the WQMP Guidance Document? ☐ Y ☒ N

Infiltration Feasibility

Table D.1 below is meant to provide a simple means of assessing which DMAs on your site support Infiltration BMPs and is discussed in the WQMP Guidance Document in Chapter 2.4.5. Check the appropriate box for each question and then list affected DMAs as applicable. If additional space is needed, add a row below the corresponding answer.

Table D.1 Infiltration Feasibility

Does the project site…	YES	NO
…have any DMAs with a seasonal high groundwater mark shallower than 10 feet? (See Note 1)	X	
If Yes, list affected DMAs:		
…have any DMAs located within 100 feet of a water supply well?		X
If Yes, list affected DMAs:		
…have any areas identified by the geotechnical report as posing a public safety risk where infiltration of stormwater could have a negative impact?		X
If Yes, list affected DMAs: Geotechnical Engineer discourages the use of infiltration due to groundwater levels.		
…have measured in-situ infiltration rates of less than 1.6 inches / hour?		X
If Yes, list affected DMAs:		
…have significant cut and/or fill conditions that would preclude in-situ testing of infiltration rates at the final infiltration surface?		X
If Yes, list affected DMAs:		
…geotechnical report identify other site-specific factors that would preclude effective and safe infiltration?		X
Describe here: Geotechnical Engineer discourages the use of infiltration due to groundwater levels.		

If you answered "Yes" to any of the questions above for any DMA, Infiltration BMPs should not be used for those DMAs and you should proceed to the assessment for Harvest and Use below.

Note 1: To provide a positive outfall the basin must be 6 feet in depth. This results in the basin bottom being less than 10 feet from the groundwater levels as identified in Boring HS-2 & HS-5.

The project site has an infiltration rate of 1.9 in/hr. The project considered the use of an infiltration basin. However, when the site design was being developed it was determined that a storm drain system would be required to collect runoff to provide flood protection for the proposed street areas to meet City design policies. To outlet the storm drain a basin with a depth of 6 feet is required to ensure storm drain has adequate cover. The basin depth of 6 feet places the bottom of the basin to be less than 10 feet vertical clearance from the ground water levels identified in the geotechnical report. The bottom of the basin has an elevation of 1438 feet which is controlled by the storm drain outlet invert of 1438 feet. The storm drain outlet elevation of 1438 feet is needed for gravity flow storm drain system. Per the WQMP standards and geotechnical report, it is recommended that infiltration basins not be used when ground water levels are less than 10 feet below the bottom of the basin. Borings HS-2 and HS-4 provide the soil data and groundwater levels for the in-situ soil condition. Therefore, the project proposes a two bioretention basins designed with a mechanical pump and modular wetland to treat DMA A and DMA B for water quality. The volume will be released over a 48 hour time period. The water quality volume will be treated with the Bioclean Modular Wetland System (MWS) which is a proprietary bio-retention treatment system with TAPE/Guld Certification. The water quality volume will be processed through the MWS Unit for water quality treatment and the outflow will be regulated by a pump system. Please note that the basin is designed for the Design Capture Volume (DCV) and not the Design Capture Flow Rate (QWQ). The water will then discharge into Salt Creek.

D.2 Harvest and Use Assessment

Please check what applies*:*

☒ Reclaimed water will be used for the non-potable water demands for the project.

☐Downstream water rights may be impacted by Harvest and Use as approved by the Regional Board (verify with the Copermittee).

☐The Design Capture Volume will be addressed using Infiltration Only BMPs. In such a case, Harvest and Use BMPs are still encouraged, but it would not be required if the Design Capture Volume will be infiltrated or evapotranspired.

If any of the above boxes have been checked, Harvest and Use BMPs need not be assessed for the site. If none of the above criteria applies, follow the steps below to assess the feasibility of irrigation use, toilet use and other non-potable uses (e.g., industrial use).

Irrigation Use Feasibility

Complete the following steps to determine the feasibility of harvesting stormwater runoff for Irrigation Use BMPs on your site:

Step 1: Identify the total area of irrigated landscape on the site, and the type of landscaping used.

Total Area of Irrigated Landscape: Insert Area (Acres)

Type of Landscaping (Conservation Design or Active Turf): List Landscaping Type

Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for irrigation use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.

Total Area of Impervious Surfaces: Insert Area (Acres)

Step 3: Cross reference the Design Storm depth for the project site (see Exhibit A of the WQMP Guidance Document) with the left column of Table 2-3 in Chapter 2 to determine the minimum area of Effective Irrigated Area per Tributary Impervious Area (EIATIA).

Enter your EIATIA factor: EIATIA Factor

Step 4: Multiply the unit value obtained from Step 3 by the total of impervious areas from Step 2 to develop the minimum irrigated area that would be required.

Minimum required irrigated area: Insert Area (Acres)

Step 5: Determine if harvesting stormwater runoff for irrigation use is feasible for the project by comparing the total area of irrigated landscape (Step 1) to the minimum required irrigated area (Step 4).

Minimum required irrigated area (Step 4)	Available Irrigated Landscape (Step 1)
Insert Area (Acres)	Insert Area (Acres)

Toilet Use Feasibility

Complete the following steps to determine the feasibility of harvesting stormwater runoff for toilet flushing uses on your site:

Step 1: Identify the projected total number of daily toilet users during the wet season, and account for any periodic shut downs or other lapses in occupancy:

Projected Number of Daily Toilet Users: Number of daily Toilet Users

Project Type: Enter 'Residential', 'Commercial', 'Industrial' or 'Schools'

Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for toilet use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.

Total Area of Impervious Surfaces: Insert Area (Acres)

Step 3: Enter the Design Storm depth for the project site (see Exhibit A) into the left column of Table 2-2 in Chapter 2 to determine the minimum number or toilet users per tributary impervious acre (TUTIA).

Enter your TUTIA factor: TUTIA Factor

Step 4: Multiply the unit value obtained from Step 3 by the total of impervious areas from Step 2 to develop the minimum number of toilet users that would be required.

Minimum number of toilet users: Required number of toilet users

Step 5: Determine if harvesting stormwater runoff for toilet flushing use is feasible for the project by comparing the Number of Daily Toilet Users (Step 1) to the minimum required number of toilet users (Step 4).

Minimum required Toilet Users (Step 4)	**Projected number of toilet users (Step 1)**
Insert Area (Acres)	Insert Area (Acres)

Other Non-Potable Use Feasibility

Are there other non-potable uses for stormwater runoff on the site (e.g. industrial use)? See Chapter 2 of the Guidance for further information. If yes, describe below. If no, write N/A.

Insert narrative description here.

Step 1: Identify the projected average daily non-potable demand, in gallons per day, during the wet season and accounting for any periodic shut downs or other lapses in occupancy or operation.

Average Daily Demand: Projected Average Daily Use (gpd)

Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for the identified non-potable use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.

Total Area of Impervious Surfaces: Insert Area (Acres)

Step 3: Enter the Design Storm depth for the project site (see Exhibit A) into the left column of Table 2-4 in Chapter 2 to determine the minimum demand for non-potable uses per tributary impervious acre.

Enter the factor from Table 2-4: Enter Value

Step 4: Multiply the unit value obtained from Step 3 by the total of impervious areas from Step 2 to develop the minimum number of gallons per day of non-potable use that would be required.

Minimum required use: Minimum use required (gpd)

Step 5: Determine if harvesting stormwater runoff for other non-potable use is feasible for the project by comparing the projected average daily use (Step 1) to the minimum required non-potable use (Step 4).

Minimum required non-potable use (Step 4)	**Projected average daily use (Step 1)**
Minimum use required (gpd)	Projected Average Daily Use (gpd)

If Irrigation, Toilet and Other Use feasibility anticipated demands are less than the applicable minimum values, Harvest and Use BMPs are not required and you should proceed to utilize LID Bioretention and Biotreatment per Section 3.4.2 of the WQMP Guidance Document.

D.3 Bioretention and Biotreatment Assessment

Other LID Bioretention and Biotreatment BMPs as described in Chapter 2.4.7 of the WQMP Guidance Document are feasible on nearly all development sites with sufficient advance planning.

Select one of the following:

☒ LID Bioretention/Biotreatment BMPs will be used for some or all DMAs of the project as noted below in Section D.4 (note the requirements of Section 3.4.2 in the WQMP Guidance Document).

☐ A site-specific analysis demonstrating the technical infeasibility of all LID BMPs has been performed and is included in Appendix 5. If you plan to submit an analysis demonstrating the technical infeasibility of LID BMPs, request a pre-submittal meeting with the Copermittee to discuss this option. Proceed to Section E to document your alternative compliance measures.

D.4 Feasibility Assessment Summaries

From the Infiltration, Harvest and Use, Bioretention and Biotreatment Sections above, complete Table D.2 below to summarize which LID BMPs are technically feasible, and which are not, based upon the established hierarchy.

Table D.2 LID Prioritization Summary Matrix

DMA Name/ID	LID BMP Hierarchy				No LID (Alternative Compliance)
	1. Infiltration	2. Harvest and use	3. Bioretention	4. Biotreatment	
DMA A	☐	☐	☒	☐	☐
DMA B	☐	☐	☒	☐	☒
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐

For those DMAs where LID BMPs are not feasible, provide a brief narrative below summarizing why they are not feasible, include your technical infeasibility criteria in Appendix 5, and proceed to Section E below to document Alternative Compliance measures for those DMAs. Recall that each proposed DMA must pass through the LID BMP hierarchy before alternative compliance measures may be considered.

D.5 LID BMP Sizing

Each LID BMP must be designed to ensure that the Design Capture Volume will be addressed by the selected BMPs. First**,** calculate the Design Capture Volume for each LID BMP using the V_{BMP} worksheet in Appendix F of the LID BMP Design Handbook. Second**,** design the LID BMP to meet the required V_{BMP} using a method approved by the Copermittee. Utilize the worksheets found in the LID BMP Design Handbook or consult with your Copermittee to assist you in correctly sizing your LID BMPs. Complete Table D.3, D.4, and D.5 below to document the Design Capture Volume and the Proposed Volume for each LID BMP. Provide the completed design procedure sheets for each LID BMP in Appendix 6. You may add additional rows to the table below as needed.

Table D.3 DCV Calculations for LID BMPs

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Bioretention Basin A*		
	[A]		[B]	[C]	[A] x [C]			
A	*565,060.32*	*Concrete or Asphalt*	*1*	*0.89*	*504,033.8*	*Design Storm Depth (in)*	*Design Capture Volume,* V_{BMP} *(cubic feet)*	***Proposed Volume on Plans (cubic feet)***
A	*376,706.88*	*Ornamental Landscaping*	*0.1*	*0.11*	*41,610.3*			
	941,767.2				545,644.1	0.60	27,282.2	***52,993***

[B], [C] is obtained as described in Section 2.3.1 of the WQMP Guidance Document

[E] is obtained from Exhibit A in the WQMP Guidance Document

[G] is obtained from a design procedure sheet, such as in LID BMP Design Handbook and placed in Appendix 6

Table D.4 DCV Calculations for LID BMPs

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Bioretention Basin B*		
	[A]		[B]	[C]	[A] x [C]			
B	*767,875.68*	*Concrete or Asphalt*	*1*	*0.89*	*684,945.1*	*Design Storm Depth (in)*	*Design Capture Volume,* V_{BMP} *(cubic feet)*	***Proposed Volume on Plans (cubic feet)***
B	*511,917.12*	*Ornamental Landscaping*	*0.1*	*0.11*	*56,545.3*			
	1,279,792.8				741,490.4	0.60	37,074.5	***83,456.9***

[B], [C] is obtained as described in Section 2.3.1 of the WQMP Guidance Document

[E] is obtained from Exhibit A in the WQMP Guidance Document

[G] is obtained from a design procedure sheet, such as in LID BMP Design Handbook and placed in Appendix 6

Basin A and Basin B have been designed to store the water quality volume. The volume will be released over a 48 hour time period. The water quality volume will be treated with the Bioclean Modular Wetland System (MWS) which is a proprietary bio-retention treatment system with TAPE/Guld Certification. The water quality volume will be processed through the MWS Unit for water quality treatment and the outflow will be regulated by a pump system. Please note that the basin is designed for the Design Capture Volume (D_{CV})and not the Design Capture Flow Rate (Q_{WQ}).

Section E: Alternative Compliance (LID Waiver Program)

LID BMPs are expected to be feasible on virtually all projects. Where LID BMPs have been demonstrated to be infeasible as documented in Section D, other Treatment Control BMPs must be used (subject to LID waiver approval by the Copermittee). Check one of the following Boxes:

☐ LID Principles and LID BMPs have been incorporated into the site design to fully address all Drainage Management Areas. No alternative compliance measures are required for this project and thus this Section is not required to be completed.

- *Or* -

☒ The following Drainage Management Areas are unable to be addressed using LID BMPs. A site-specific analysis demonstrating technical infeasibility of LID BMPs has been approved by the Co-Permittee and included in Appendix 5. Additionally, no downstream regional and/or sub-regional LID BMPs exist or are available for use by the project. The following alternative compliance measures on the following pages are being implemented to ensure that any pollutant loads expected to be discharged by not incorporating LID BMPs, are fully mitigated.

E.1 Identify Pollutants of Concern

Utilizing Table A.1 from Section A above which noted your project's receiving waters and their associated EPA approved 303(d) listed impairments, cross reference this information with that of your selected Priority Development Project Category in Table E.1 below. If the identified General Pollutant Categories are the same as those listed for your receiving waters, then these will be your Pollutants of Concern and the appropriate box or boxes will be checked on the last row. The purpose of this is to document compliance and to help you appropriately plan for mitigating your Pollutants of Concern in lieu of implementing LID BMPs.

Table E.1 Potential Pollutants by Land Use Type

Priority Development Project Categories and/or Project Features (check those that apply)	General Pollutant Categories							
	Bacterial Indicators	Metals	Nutrients	Pesticides	Toxic Organic Compounds	Sediments	Trash & Debris	Oil & Grease
☒ Detached Residential Development	P	N	P	P	N	P	P	P
☐ Attached Residential Development	P	N	P	P	N	P	P	P(2)
☐ Commercial/Industrial Development	P(3)	P	P(1)	P(1)	P(5)	P(1)	P	P
☐ Automotive Repair Shops	N	P	N	N	P(4, 5)	N	P	P
☐ Restaurants (>5,000 ft^2)	P	N	N	N	N	N	P	P
☐ Hillside Development (>5,000 ft^2)	P	N	P	P	N	P	P	P
☐ Parking Lots (>5,000 ft^2)	P(6)	P	P(1)	P(1)	P(4)	P(1)	P	P
☐ Retail Gasoline Outlets	N	P	N	N	P	N	P	P
Project Priority Pollutant(s) of Concern	☒	☐	☒	☒	☐	☒	☒	☒

P = Potential

N = Not Potential

(1) A potential Pollutant if non-native landscaping exists or is proposed onsite; otherwise not expected

(2) A potential Pollutant if the project includes uncovered parking areas; otherwise not expected

(3) A potential Pollutant is land use involving animal waste

(4) Specifically petroleum hydrocarbons

(5) Specifically solvents

(6) Bacterial indicators are routinely detected in pavement runoff

E.2 Stormwater Credits

Projects that cannot implement LID BMPs but nevertheless implement smart growth principles are potentially eligible for Stormwater Credits. Utilize Table 3-8 within the WQMP Guidance Document to identify your Project Category and its associated Water Quality Credit. If not applicable, write N/A.

Table E.2 Water Quality Credits

Qualifying Project Categories	Credit Percentage[2]
Total Credit Percentage[1]	

[1]Cannot Exceed 50%

[2]Obtain corresponding data from Table 3-8 in the WQMP Guidance Document

E.3 Sizing Criteria

After you appropriately considered Stormwater Credits for your project, utilize Table E.3 below to appropriately size them to the DCV, or Design Flow Rate, as applicable. Please reference Chapter 3.5.2 of the WQMP Guidance Document for further information.

Table E.3 Design Flow Rate Calculations for Alternative LID BMPs

DMA Type/ID	**DMA Area (square feet)**	**Post-Project Surface Type**	**Effective Impervious Fraction, I_f**	**DMA Runoff Factor**	**DMA Areas x Runoff Factor**	***Modular Wetland B***		
	[A]		[B]	[C]	[A] x [C]			
						Design Rainfall Intensity (in/hr)	*Design Flow Rate, Q_{BMP} (cfs)*	***Proposed Flow on Plans (cfs)***

[B], [C] is obtained as described in Section 2.3.1 from the WQMP Guidance Document

[E] is for Flow-Based Treatment Control BMPs [E] = .2, for Volume-Based Control Treatment BMPs, [E] obtained from Exhibit A in the WQMP Guidance Document

[G] is for Flow-Based Treatment Control BMPs [G] = 43,560, for Volume-Based Control Treatment BMPs, [G] = 12

[H] is from the Total Credit Percentage as Calculated from Table E.2 above

[I] as obtained from a design procedure sheet from the BMP manufacturer and should be included in Appendix 6

Table E.4 Design Flow Rate Calculations for Alternative LID BMPs

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Modular Wetland C*		
	[A]		[B]	[C]	[A] x [C]			
						Design Rainfall Intensity (in/hr)	*Design Flow Rate, Q_{BMP} (cfs)*	***Proposed Flow on Plans (cfs)***

[B], [C] is obtained as described in Section 2.3.1 from the WQMP Guidance Document

[E] is for Flow-Based Treatment Control BMPs [E] = .2, for Volume-Based Control Treatment BMPs, [E] obtained from Exhibit A in the WQMP Guidance Document

[G] is for Flow-Based Treatment Control BMPs [G] = 43,560, for Volume-Based Control Treatment BMPs, [G] = 12

[H] is from the Total Credit Percentage as Calculated from Table E.2 above

[I] as obtained from a design procedure sheet from the BMP manufacturer and should be included in Appendix 6

E.4 Treatment Control BMP Selection

Treatment Control BMPs typically provide proprietary treatment mechanisms to treat potential pollutants in runoff, but do not sustain significant biological processes. Treatment Control BMPs must have a removal efficiency of a medium or high effectiveness as quantified below:

- **High**: equal to or greater than 80% removal efficiency
- **Medium**: between 40% and 80% removal efficiency

Such removal efficiency documentation (e.g., studies, reports, etc.) as further discussed in Chapter 3.5.2 of the WQMP Guidance Document, must be included in Appendix 6. In addition, ensure that proposed Treatment Control BMPs are properly identified on the WQMP Site Plan in Appendix 1.

Table E.3 Treatment Control BMP Selection

Selected Treatment Control BMP Name or ID[1]	Priority Pollutant(s) of Concern to Mitigate[2]	Removal Efficiency Percentage[3]

[1] Treatment Control BMPs must not be constructed within Receiving Waters. In addition, a proposed Treatment Control BMP may be listed more than once if they possess more than one qualifying pollutant removal efficiency.
[2] Cross Reference Table E.1 above to populate this column.
[3] As documented in a Co-Permittee Approved Study and provided in Appendix 6.

Section F: Hydromodification

F.1 Hydrologic Conditions of Concern (HCOC) Analysis

Once you have determined that the LID design is adequate to address water quality requirements, you will need to assess if the proposed LID Design may still create a HCOC. Review Chapters 2 and 3 (including Figure 3-7) of the WQMP Guidance Document to determine if your project must mitigate for Hydromodification impacts. If your project meets one of the following criteria which will be indicated by the check boxes below, you do not need to address Hydromodification at this time. However, if the project does not qualify for Exemptions 1, 2 or 3, then additional measures must be added to the design to comply with HCOC criteria. This is discussed in further detail below in Section F.2.

HCOC EXEMPTION 1: The Priority Development Project disturbs less than one acre. The Copermittee has the discretion to require a Project-Specific WQMP to address HCOCs on projects less than one acre on a case by case basis. The disturbed area calculation should include all disturbances associated with larger common plans of development.

Does the project qualify for this HCOC Exemption? ☐ Y ☒ N

If Yes, HCOC criteria do not apply.

HCOC EXEMPTION 2: The volume and time of concentration[1] of storm water runoff for the post-development condition is not significantly different from the pre-development condition for a 2-year return frequency storm (a difference of 5% or less is considered insignificant) using one of the following methods to calculate:

- Riverside County Hydrology Manual
- Technical Release 55 (TR-55): Urban Hydrology for Small Watersheds (NRCS 1986), or derivatives thereof, such as the Santa Barbara Urban Hydrograph Method
- Other methods acceptable to the Co-Permittee

Does the project qualify for this HCOC Exemption? ☐ Y ☒ N

If Yes, report results in Table F.1 below and provide your substantiated hydrologic analysis in Appendix 7.

Table F.1 Hydrologic Conditions of Concern Summary

	2 year – 24 hour		
	Pre-condition	**Post-condition**	**% Difference**
Time of Concentration	INSERT VALUE	INSERT VALUE	INSERT VALUE
Volume (Cubic Feet)	INSERT VALUE	INSERT VALUE	INSERT VALUE

[1] Time of concentration is defined as the time after the beginning of the rainfall when all portions of the drainage basin are contributing to flow at the outlet.

HCOC EXEMPTION 3: All downstream conveyance channels to an adequate sump (for example, Prado Dam, Lake Elsinore, Canyon Lake, Santa Ana River, or other lake, reservoir or naturally erosion resistant feature) that will receive runoff from the project are engineered and regularly maintained to ensure design flow capacity; no sensitive stream habitat areas will be adversely affected; or are not identified on the Co-Permittees Hydromodification Susceptibility Maps.

Does the project qualify for this HCOC Exemption? ☒ Y ☐ N

If Yes, HCOC criteria do not apply and note below which adequate sump applies to this HCOC qualifier:

Project discharges into the Salt Creek Channel which is exempt from hydromodifications according to the Riverside County Storm Water and Conservation Tracking Tool (SWCTT).

F.2 HCOC Mitigation

If none of the above HCOC Exemption Criteria are applicable, HCOC criteria is considered mitigated if they meet one of the following conditions:

a. Additional LID BMPS are implemented onsite or offsite to mitigate potential erosion or habitat impacts as a result of HCOCs. This can be conducted by an evaluation of site-specific conditions utilizing accepted professional methodologies published by entities such as the California Stormwater Quality Association (CASQA), the Southern California Coastal Water Research Project (SCCRWP), or other Co-Permittee approved methodologies for site-specific HCOC analysis.

b. The project is developed consistent with an approved Watershed Action Plan that addresses HCOC in Receiving Waters.

c. Mimicking the pre-development hydrograph with the post-development hydrograph, for a 2-year return frequency storm. Generally, the hydrologic conditions of concern are not significant, if the post-development hydrograph is no more than 10% greater than pre-development hydrograph. In cases where excess volume cannot be infiltrated or captured and reused, discharge from the site must be limited to a flow rate no greater than 110% of the pre-development 2-year peak flow.

Be sure to include all pertinent documentation used in your analysis of the items a, b or c in Appendix 7.

Section G: Source Control BMPs

Source control BMPs include permanent, structural features that may be required in your project plans — such as roofs over and berms around trash and recycling areas — and Operational BMPs, such as regular sweeping and "housekeeping", that must be implemented by the site's occupant or user. The MEP standard typically requires both types of BMPs. In general, Operational BMPs cannot be substituted for a feasible and effective permanent BMP. Using the Pollutant Sources/Source Control Checklist in Appendix 8, review the following procedure to specify Source Control BMPs for your site:

1. ***Identify Pollutant Sources*:** Review Column 1 in the Pollutant Sources/Source Control Checklist. Check off the potential sources of Pollutants that apply to your site.

2. ***Note Locations on Project-Specific WQMP Exhibit*:** Note the corresponding requirements listed in Column 2 of the Pollutant Sources/Source Control Checklist. Show the location of each Pollutant source and each permanent Source Control BMP in your Project-Specific WQMP Exhibit located in Appendix 1.

3. ***Prepare a Table and Narrative*:** Check off the corresponding requirements listed in Column 3 in the Pollutant Sources/Source Control Checklist. In the left column of Table G.1 below, list each potential source of runoff Pollutants on your site (from those that you checked in the Pollutant Sources/Source Control Checklist). In the middle column, list the corresponding permanent, Structural Source Control BMPs (from Columns 2 and 3 of the Pollutant Sources/Source Control Checklist) used to prevent Pollutants from entering runoff. **Add additional narrative** in this column that explains any special features, materials or methods of construction that will be used to implement these permanent, Structural Source Control BMPs.

4. ***Identify Operational Source Control BMPs:*** To complete your table, refer once again to the Pollutant Sources/Source Control Checklist. List in the right column of your table the Operational BMPs that should be implemented as long as the anticipated activities continue at the site. Copermittee stormwater ordinances require that applicable Source Control BMPs be implemented; the same BMPs may also be required as a condition of a use permit or other revocable Discretionary Approval for use of the site.

Table G.1 Permanent and Operational Source Control Measures

Potential Sources of Runoff pollutants	Permanent Structural Source Control BMPs	Operational Source Control BMPs
On-site storm drain inlets	Mark all inlets with the words "Only Rain Down the Storm Drain" or similar. Catch Basin Markers may be available from the Riverside County Flood Control and Water Conservation District, call 951.955.1200 to verify.	• Maintain and periodically repaint or replace inlet markings • Provide Stormwater pollution prevention information to new site owners, lessees, or operators. • See applicable optional BMPs in Fact Sheet SC-44, "Drainage System Maintenance," in the CASQA Stormwater Quality Handbooks at www. cabmphandbooks.com Include the following in lease agreements: "Tenant shall not allow anyone to discharge anything to storm drains or to store or deposit materials so as to create a potential discharge to storm drains."

Need for future indoor & structural pest control	Residents typically contract with pest control service. Therefore, residents must be informed about pest control standard practices.	• Provide homeowners educational materials related to pest control standard practices. .
Landscape/Outdoor Pesticide Use	State that final landscape plans will accomplish all of the following. • Preserve existing native trees, shrubs, and ground cover to the maximum extent possible. • Design landscaping to minimize irrigation and runoff, to promote surface infiltration where appropriate, and to minimize the use of fertilizers and pesticides that can contribute to stormwater pollution. • Where landscaped areas are used to retain or detain stormwater, specify plants that are tolerant to saturated soil conditions. • Consider using pest-resistant plants, especially adjacent to hardscape. To ensure successful establishment, select plants appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions.	• Maintain landscaping using minimum or no pesticides. • See applicable operational BMPs in "What you should know for…. Landscape and Gardening" at http://rcflood.org/stormwater/.
Refuse Areas	Educational materials will be provided to homeowners related to trash collection and trash management.	Provide trash receptacles with covers. Prohibit/prevent dumping of liquid or hazardous wastes. Provide educational material about waste Handling and Disposal" per the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com
Fire Sprinkler Water test		See the note in Fact Sheet "Building and Grounds Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com
Roofing, gutters and trim	Avoid roofing, gutters, and trim made of copper or other unprotected metals that may leach into runoff.	
Sidewalks & Streets		Sweep sidewalks and streets regularly to prevent accumulation of litter and debris. This will be done as part of City street sweeping program

Section H: Construction Plan Checklist

Populate Table H.1 below to assist the plan checker in an expeditious review of your project. The first two columns will contain information that was prepared in previous steps, while the last column will be populated with the corresponding plan sheets. This table is to be completed with the submittal of your final Project-Specific WQMP.

Table H.1 Construction Plan Cross-reference

BMP No. or ID	BMP Identifier and Description	Corresponding Plan Sheet(s)	BMP Location (Lat/Long)

Note that the updated table — or Construction Plan WQMP Checklist — is **only a reference tool** to facilitate an easy comparison of the construction plans to your Project-Specific WQMP. Co-Permittee staff can advise you regarding the process required to propose changes to the approved Project-Specific WQMP.

Section I: Operation, Maintenance and Funding

The Copermittee will periodically verify that Stormwater BMPs on your site are maintained and continue to operate as designed. To make this possible, your Copermittee will require that you include in Appendix 9 of this Project-Specific WQMP:

1. A means to finance and implement facility maintenance in perpetuity, including replacement cost.
2. Acceptance of responsibility for maintenance from the time the BMPs are constructed until responsibility for operation and maintenance is legally transferred. A warranty covering a period following construction may also be required.
3. An outline of general maintenance requirements for the Stormwater BMPs you have selected.
4. Figures delineating and designating pervious and impervious areas, location, and type of Stormwater BMP, and tables of pervious and impervious areas served by each facility. Geo-locating the BMPs using a coordinate system of latitude and longitude is recommended to help facilitate a future statewide database system.
5. A separate list and location of self-retaining areas or areas addressed by LID Principles that do not require specialized O&M or inspections but will require typical landscape maintenance as noted in Chapter 5, pages 85-86, in the WQMP Guidance. Include a brief description of typical landscape maintenance for these areas.

Your local Co-Permittee will also require that you prepare and submit a detailed Stormwater BMP Operation and Maintenance Plan that sets forth a maintenance schedule for each of the Stormwater BMPs built on your site. An agreement assigning responsibility for maintenance and providing for inspections and certification may also be required.

Details of these requirements and instructions for preparing a Stormwater BMP Operation and Maintenance Plan are in Chapter 5 of the WQMP Guidance Document.

Maintenance Mechanism: City of Menifee, City CFD and Homeowner's Association

Will the proposed BMPs be maintained by a Home Owners' Association (HOA) or Property Owners Association (POA)?

☒ Y ☐ N

The Bioclean Modular Wetland Systems that are part of DMA B and DMA C will be maintained by City of Menifee or City CFD. Bioretention basin will be maintained by Homeowner Association.

Include your Operation and Maintenance Plan and Maintenance Mechanism in Appendix 9. Additionally, include all pertinent forms of educational materials for those personnel that will be maintaining the proposed BMPs within this Project-Specific WQMP in Appendix 10.

Appendix 1: Maps and Site Plans

Location Map, WQMP Site Plan and Receiving Waters Map

Figure 1 – Vicinity Map

TRACT 38625 VICINITY MAP

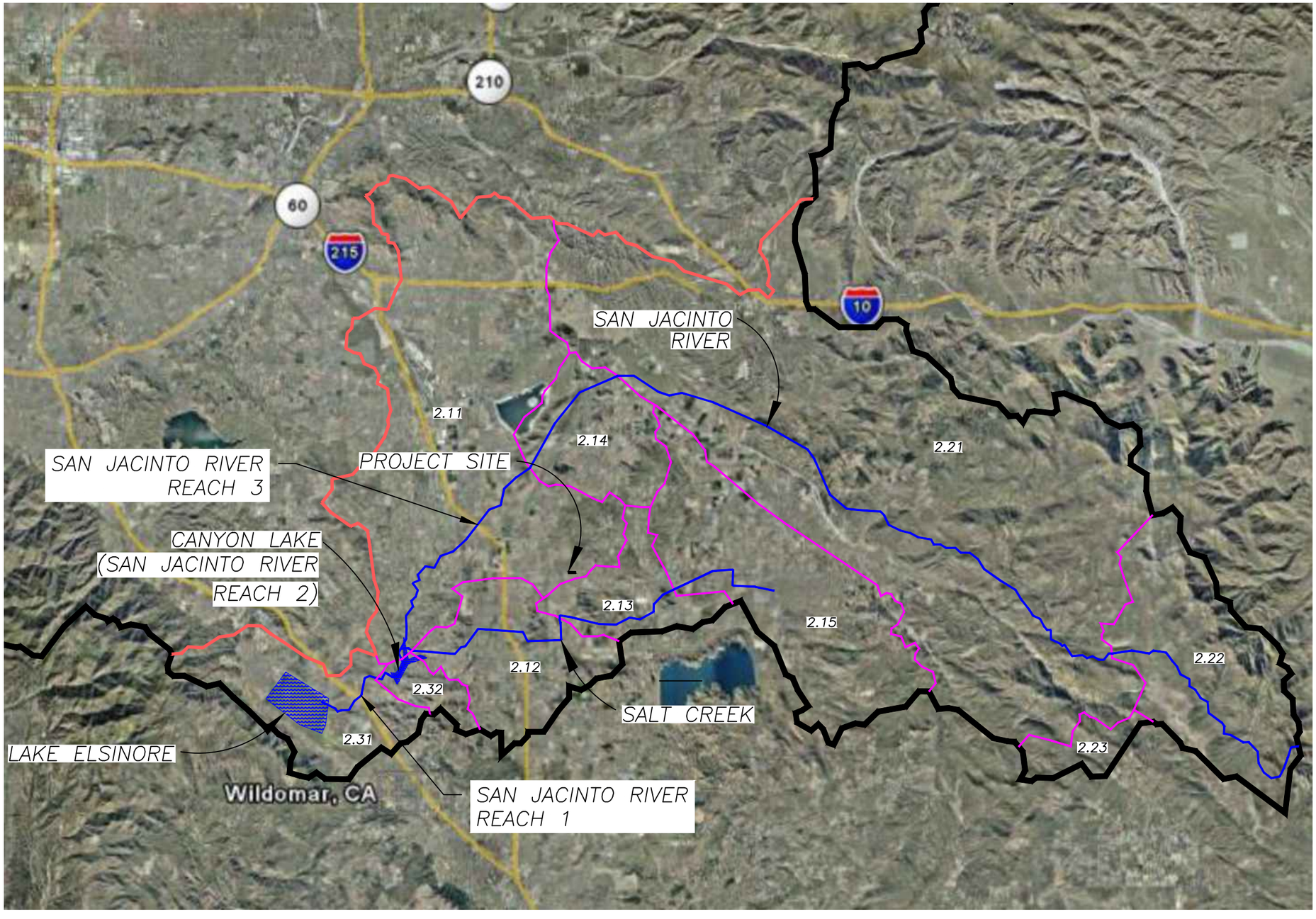
N

JLC Engineering & Consulting, Inc.
41660 IVY STREET, SUITE A
MURRIETA, CA 92562
PH. 951.304.9552 FAX 951.304.3568

FIGURE 1

Drawing Name: O:\313.01.22\Engineering\WQMP\Appendix 1 - Maps & Site Plan\VICINITY MAP.dwg
Last Opened: Dec 05, 2022 - 4:54pm by mhunt

Figure 2 – Receiving Waters Map



LEGEND

- Regional Boundary
- Hydrologic Unit Boundary (HU)
- Hydrologic Subarea Boundary (SA)
- FLOW PATH

PARCEL MAP 34998-1
RECEIVING WATERS MAP

N

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FIGURE 2

Drawing Name: O:\313.01.22\Engineering\WQMP\Appendix 1 - Maps & Site Plan\Figure 2-Receiving Waters map.dwg
Last Opened: Dec 05, 2022 - 2:11pm by mhunt

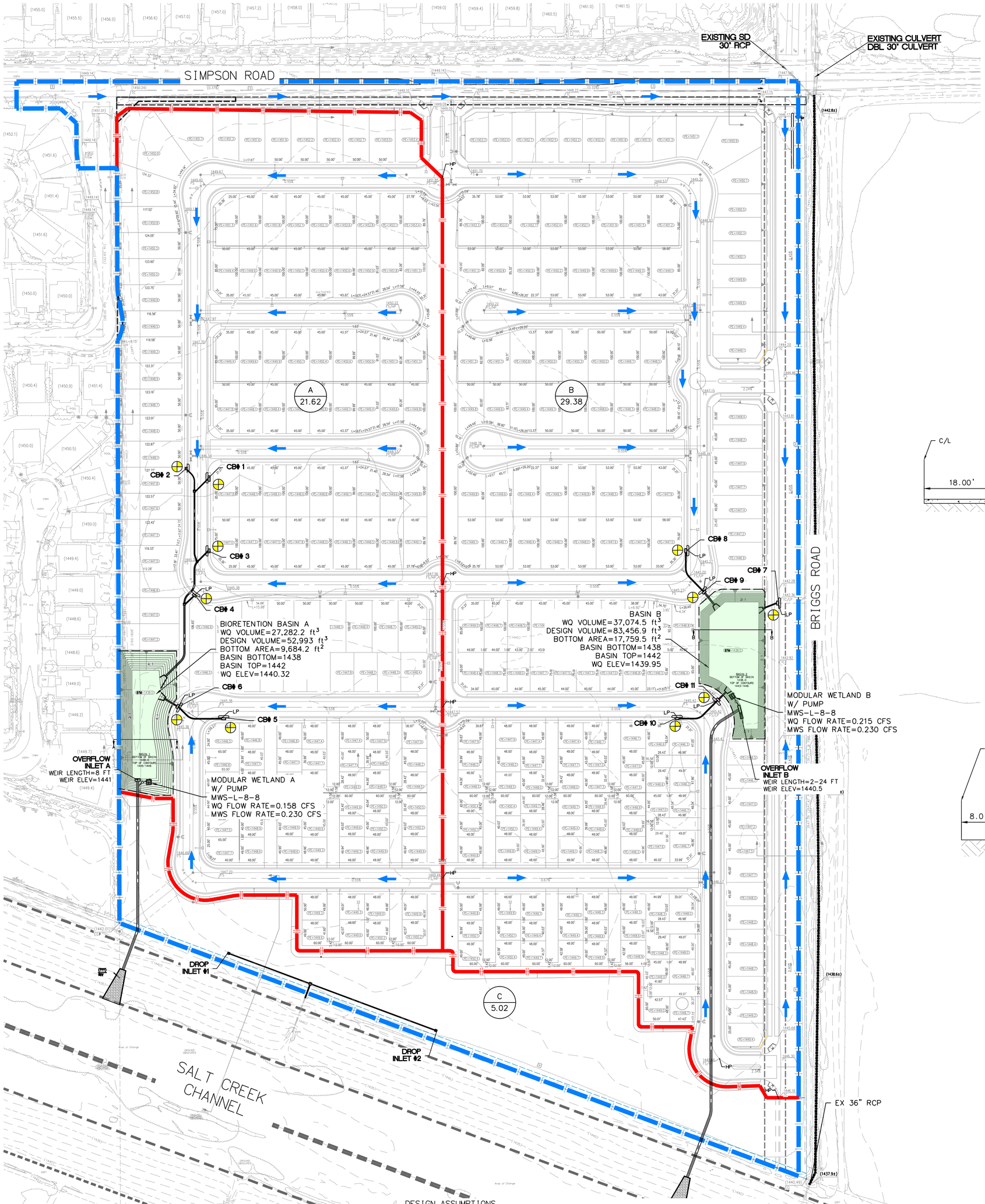
Figure 3 – WQMP Site Plan

SHEET 1 OF 1

TRACT 38625

IN THE CITY OF MENIFEE, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA

POST CONSTRUCTION BMP SITE PLAN



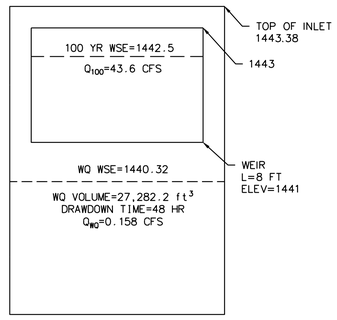
SOURCE CONTROL

- LANDSCAPED AREAS WITHIN THE RESIDENTIAL LOTS AND RIGHT-OF-WAY SHALL BE MAINTAINED USING MINIMUM TO NO PESTICIDES.
- POOLS SHALL BE PLUMBED TO THE SANITARY SEWER IF REQUIRED BY THE CO-PERMITTEE.
- PROPERTY OWNERS SHALL KEEP TRASH RECEPTACLES CLOSED AT ALL TIMES.
- CAR WASHING AND MAINTENANCE SHALL BE PROHIBITED ONSITE.
- FIRE SPRINKLER TEST WATER SHALL DRAIN TO THE SANITARY SEWER.
- CONDENSATE DRAIN LINES MAY DISCHARGE TO LANDSCAPED AREAS IF THE FLOW IS SMALL ENOUGH THAT RUNOFF WILL NOT OCCUR. CONDENSATE DRAIN LINES MAY NOT DISCHARGE TO THE STORM DRAIN SYSTEM.
- AVOID ROOFING, GUTTERS, AND TRIM MADE OF COPPER OR OTHER UNPROTECTED METALS THAT MAY LEACH INTO RUNOFF.
- STREETS SHALL BE SWEPT BY USING CITY OF MENIFEE SERVICES
- SEE SETNCILING DETAIL HEREON FOR STENCILING LABEL TO BE PROVIDED ON CATCH BASIN AND INLETS.

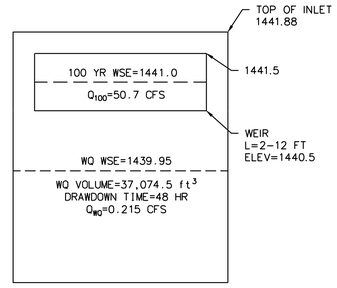
SOURCE CONTROL BMPS

DESIGN NOTES:

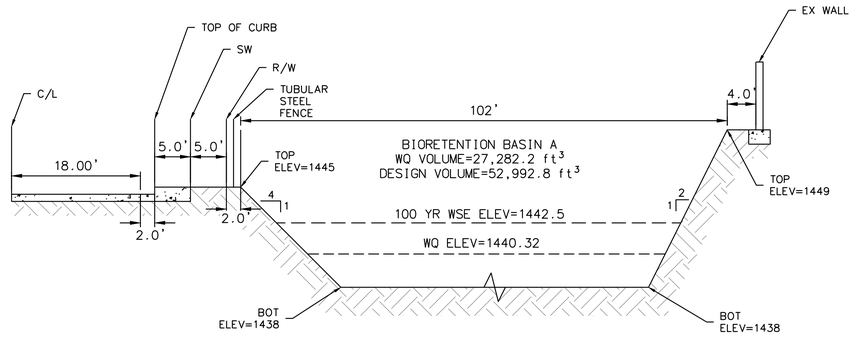
1. "ANY LANDSCAPE IRRIGATION, PLANTING AND OHER ELEMENTS WITHIN THE BMP SHALL BE VALIDATED WITH THE LANDSCAPE PLANS. LANDSCAPE PLANS ARE INCLUDED IN APPENDIX 2."
2. SEE SETNCILING DETAIL HEREON FOR STENCILING LABEL TO BE PROVIDED ON CATCH BASIN AND INLETS.



OVERFLOW INLET A



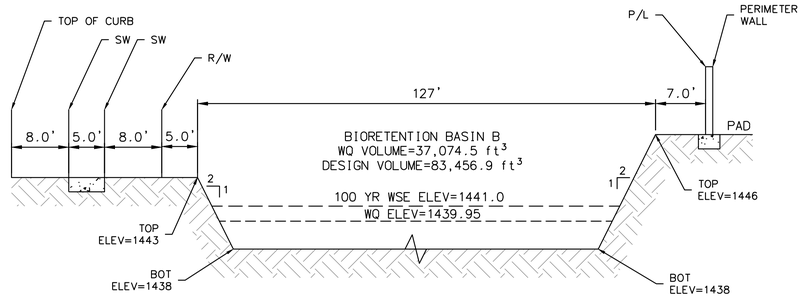
OVERFLOW INLET B



GROUNDWATER ±1430.0

BIORETENTION BASIN TYPICAL SECTION A-A

SCALE: HORIZ.=1"=20'
VERT=1"=2'



GROUNDWATER ±1430.0

BIORETENTION BASIN TYPICAL SECTION B-B

SCALE: HORIZ.=1"=20'
VERT=1"=2'

LAND COVER					
DMA	ACRES	SQUARE FEET	IMPERVIOUS RATIO	IMPERVIOUS AREA (SF)	PERVIOUS AREA (SF)
DMA A	21.62	941,767.2	0.60	565,060.32	376,706.88
DMA B	29.38	1,279,792.8	0.60	767,875.68	511,917.12
DMA D	5.02	218,671.2	0	0	218,671.20

LEGEND:

XXX / X.X — DMA / ACRES
OVERALL BOUNDARY
DMA BOUNDARY
DRAINAGE FLOW
STREET CENTERLINE
STORM DRAIN
PROPERTY LINE
RIGHT-OF-WAY
BASIN AREA

DESIGN ASSUMPTIONS

1. BASIN A AND BASIN B ARE BIORETENTION BASINS THAT WILL PROVIDE WATER QUALITY TREATMENT THROUGH A PUMP SYSTEM THAT IS CONNECTED TO A MODULAR WETLAND. A 48 HOUR DRAWDOWN TIME WAS INCORPORATED TO OBTAIN A WATER QUALITY FLOW RATE OVER THE 48 HOURS WHICH WAS USED TO SIZE THE MODULAR WETLANDS.
2. WATER QUALITY VOLUME CALCULATIONS ARE BASED ON AN IMPERVIOUS AREA OF 60% FOR DMA A AND DMA B.
3. DMA C TO BE PLANTED WITH DROUGHT TOLERANT PLANTS AND WILL IMPLEMENT DRIP IRRIGATION. THIS WILL BE DEFINED AS A SELF-TREATMENT AREA.
4. PROJECT IS EXEMPTED FROM HYDROMODIFICATIONS.

GRAPHIC SCALE
80' 0 40' 80' 160'
1" = 80'

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EXHIBIT "A"

TRACT 38625

POST CONSTRUCTION BMP SITE PLAN
TM 38625

Drawing Name: O:\313.01.22\Engineering\WQMP\Appendix 1 - Maps & Site Plan\Figure 3 - WQMP Site Plan.dwg
Last Opened: Apr 19, 2023 - 7:43am by mhunt

BIORETENTION BASIN A
CONCEPTUAL BASIN OUTLET DESIGN

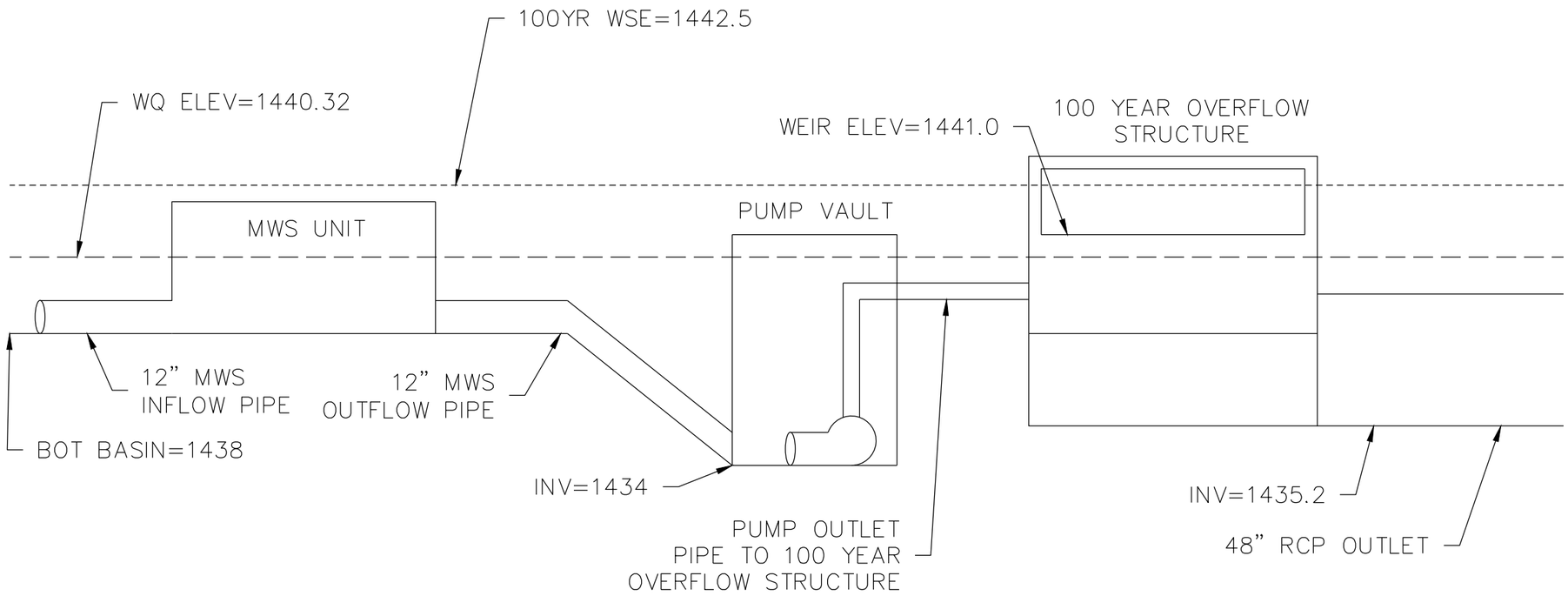

FIGURE 4

TRACT 38625

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BASIN DESIGN DETAIL

Drawing Name: O:\313.01.22\Engineering\WQMP\Appendix 1 - Maps & Site Plan\Figure 4 - Basin Design Detail.dwg
Last Opened: Apr 25, 2023 - 8:25am by mhunt

BIORETENTION BASIN B
CONCEPTUAL BASIN OUTLET DESIGN

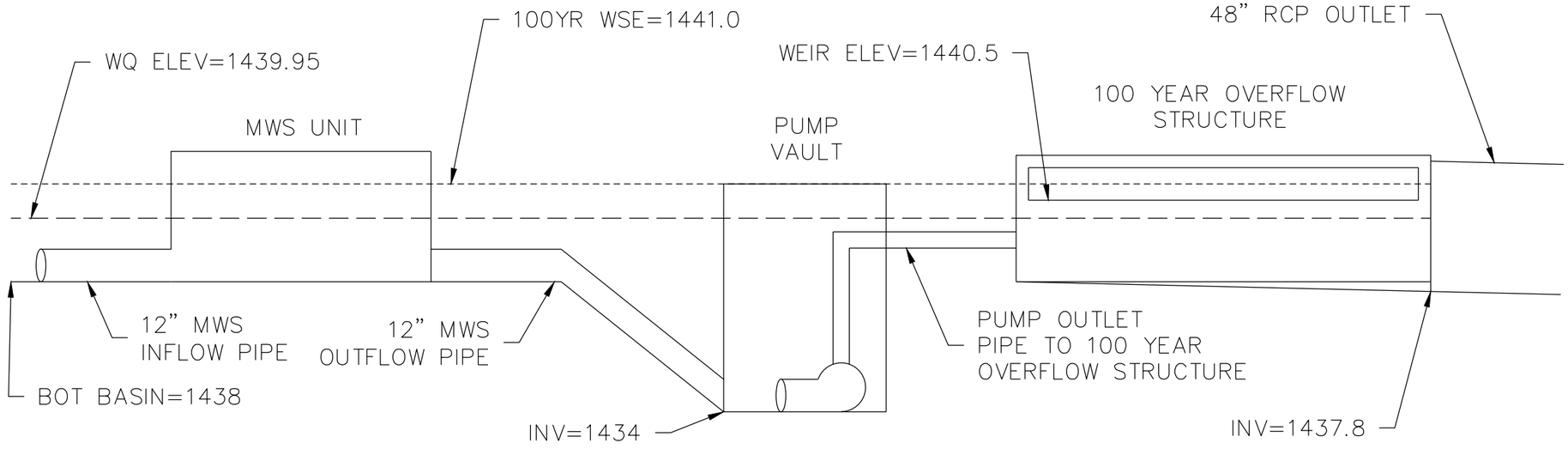

FIGURE 4

TRACT 38625

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MURRIETA, CA 92562
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BASIN DESIGN DETAIL

Drawing Name: O:\313.01.22\Engineering\WQMP\Appendix 1 - Maps & Site Plan\Figure 4 - Basin Design Detail.dwg
Last Opened: Apr 25, 2023 - 8:25am by mhunt

Appendix 2: Construction Plans

Grading and Drainage Plans

TRACT 34180-4

SIMPSON AVE

STREET A

STREET B

STREET C

STREET D

STREET E

STREET F

STREET G

STREET H

STREET I

STREET J

STREET K

STREET L

STREET M

STREET N

STREET O

MAHOGANY TRAIL WAY

BRIGGS ROAD

OPEN SPACE

EXISTING FEMA FLOODZONE A 06065C2060H

WQ BASIN 1 BTM=1438.0

WQ BASIN 2 BTM=1438.0

TRACT 32818

SALT CREEK CHANNEL - STAGE 6 PER RCFCD&WCD DWG NO. 4-786

CITY OF MENIFEE

COUNTY OF RIVERSIDE

GRAPHIC SCALE IN FEET
0 30 60 120

NORTH

REVISIONS	DATE	BY

SCALE: 1"=60'
DATE: 4/4/2023
DESIGNED: MB
CHECKED: CTM
PLN CK REF:
F.B.

Kimley»Horn
3880 LEMON STREET, SUITE 420, RIVERSIDE, CA 92501
PHONE: (951) 543-9868 WWW.KIMLEY-HORN.COM

CONCEPTUAL GRADING PLAN
SALT CREEK
TENTATIVE TRACT MAP NO. 38625

PROJ. # 195261011
SHEET 2
OF 2 SHEETS
DWG. NO.

K:\RIV_LDEV\195261011 - MLC SALT CREEK\CAD\PRELIMINARY\GRADING & DRAINAGE\2-CONCEPTUAL GRADING-195261011.DWG 4/4/2023 4:57:59 PM

Appendix 3: Soils Information

Geotechnical Study and Other Infiltration Testing Data

August 19, 2022 Project No. 22057-01

Ms. Johanna Crooker
Meritage Homes
5 Peters Canyon, Suite 310
Irvine, CA 92606

Subject: ***Geotechnical Subsurface Evaluation and Preliminary Design Recommendations, Proposed Approximately 58-Acre "Salt Creek" Residential Development, Southwest Corner of Simpson Road and Briggs Road, APN 333-200-062 in the City of Menifee, Riverside County, California***

In accordance with your request, LGC Geotechnical, Inc. has performed a subsurface geotechnical evaluation and provided the following preliminary design recommendations for the proposed approximately 58-acre "Salt Creek" residential development, located in the City of Menifee, Riverside County, California. The purpose of our study was to evaluate the existing onsite geotechnical conditions and to provide preliminary geotechnical recommendations relative to the proposed development.

Should you have any questions regarding this report, please do not hesitate to contact our office. We appreciate this opportunity to be of service.

Respectfully,

LGC Geotechnical, Inc.

Dennis Boratynec, GE 2770
Vice President

REGISTERED PROFESSIONAL ENGINEER
DENNIS BORATYNEC
No. 2770
GEOTECHNICAL
STATE OF CALIFORNIA

Colby Matthews, CEG 2460
Project Geologist

CERTIFIED ENGINEERING GEOLOGIST
COLBY MATTHEWS
No. 2460
STATE OF CALIFORNIA

DJB/CPM/RLD/amm

Distribution: (1) Addressee (electronic copy)

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1.0 INTRODUCTION

LGC Geotechnical has performed a geotechnical evaluation for the proposed "Salt Creek" residential development, located in the City of Menifee, Riverside County, California (Figure 1). This report summarizes our findings, conclusions, and preliminary geotechnical design recommendations relative to the proposed development of the site.

1.1 Site and Project Description

The subject site consists of a vacant parcel of land in the City of Menifee, Riverside County, California. The evaluation of the subject site was initially part of a larger evaluation of approximately 312-acres that included the site as well as the adjacent parcels to the east and southeast in the unincorporated Winchester area of Riverside County.

The subject site is identified as APN 333-200-062 which consists of approximately 58 acres of farmland that is located within the City of Menifee, on the north side of the Salt Creek channel. The subject site is bound on the north by Simpson Road, on the south by the Salt Creek channel, on the west by an existing residential development, and on the east by vacant farmland that was part of a larger evaluation by LGC Geotechnical.

Topography: The subject site is relatively flat with about 10 feet of topographic relief. Surface drainage is via sheet flow to the south toward the Salt Creek channel.

Historical Land Use: Based on a review of historical aerial photographs the subject site has historically been used for dry farming of crops. Based on a review of historical aerial photographs it appears that sometime after the mid-1980's grading in order to straighten and channelize the naturally sinuous Salt Creek began in the Winchester area, and completion of the channelization in the vicinity of the site had occurred by December of 2005. Also, in December of 2005 it appears that construction of Domenigoni Parkway had begun, which was completed by January of 2007.

Site Conditions: At the time of our recent field work the site had been recently planted with a crop of wheat and the wheat plants were about 12 inches tall.

A north-south dirt road that appears to be a southern extension of Briggs Road was observed along the eastern side of the subject site, and a drainage ditch was observed along the dirt road. What appears to be a large diameter water pipe was observed extending up from the ground surface on the east side of the site, adjacent to the north-south dirt road, about 1,200 feet south of Simpson Road. The large diameter water pipe appears to be the irrigation supply for the wheat fields at the site and adjacent farmland; however, it is unclear if this pipe is connected to an on-site water well or if it is connected to underground municipal water pipes. Tall steel transmission poles were observed along the north-south dirt road. The steel transmission poles allow the power lines which they support to cross over the Salt Creek channel, where they transition away from the site further to the south. A set of shorter wooden power poles were observed to trend east-west along the northern side of the Salt Creek channel, from the southeast corner of the subject site, crossing through the adjacent eastern parcels where they are located along a dirt road with an adjacent ditch. The wooden power poles extend toward an Eastern Municipal Water

District sewer lift station on the east side of the gravel La Ventana Road, approximately 0.5 miles east of the site.

The Salt Creek has been channelized. The channel trends roughly southeast-northwest, with flow toward the northwest. The total width at the top of the channel is approximately 450 feet, with dirt access roads running along each side of the channel at the tops of the banks. The banks slope at about 5 to 10 percent to a flat channel bottom which is approximately 350 feet wide and an estimated 7 to 10 feet below the adjacent land surface. Vegetation within the channel consisted of a moderate to dense growth of grasses and weeds, and ponded water was observed at scattered locations along the channel bottom.

Project Description: Based on the preliminary plans by K&A Engineering, Inc., (K&A, 2021) the site will be developed with residences. Typical street, other hardscape, utility, and open space improvements are proposed in conjunction with the construction of the residences. Minor cuts and fills on the order of approximately 2 to 3 feet (not including remedial grading) are proposed. We anticipate that the residences will consist of typical one- or two-story wood-framed homes with slab on grade foundations. Preliminary building (dead plus live) loads were not provided at the time of this report. However, we have estimated the maximum wall and column (dead plus live) structural loads for the single-family residences at 2 kips per lineal foot and 25 kips, respectively.

The recommendations given in this report are based on the layout and estimated structural loads and grading information as indicated above. LGC Geotechnical should be provided with any updated project information, plans and/or any structural loads when they become available, in order to either confirm or modify the recommendations provided herein.

1.2 Previous Reports

No previous reports were available for review. If previous reports that address the site exist, they should be made available for our review so that the data from those reports can be incorporated into the characterization of the site.

1.3 Subsurface Exploration

Our recent subsurface evaluation was conducted over a large area consisting of 8 parcels of vacant land comprising approximately 312-acres, of which the subject site, consisting of 1 parcel comprising approximately 58-acres, is a part. The data obtained from the subsurface exploration of the larger area are incorporated into the evaluation of the subject site, and therefore the data from the borings, cone penetration tests, and test pits from the larger evaluation are presented herein.

Our subsurface exploration for the large area consisted of advancing 14 hollow stem auger borings (HS-1 through HS-11 and I-1 through I-3), 9 Cone Penetration Test (CPT) soundings (CPT-1 through CPT-8 and one adjacent to the location of test pit TP-5), and the excavation of 11 test pits (TP-1 through TP-11) in April and May of 2022, in order to evaluate geotechnical conditions. Personnel from LGC Geotechnical observed the trenching and drilling operations, logged the trenches and borings, and collected soil samples for laboratory testing.

The portion of the subsurface evaluation of the larger area that was performed within the limits of the subject site include Borings HS-1, HS-2 and I-1, Cone Penetration Test sounding CPT-1, and test pits TP-1 and TP-2.

Test pits TP-1 through TP-11 were excavated on April 10 and 15, 2022, utilizing a John Deere 410 wheel-mounted backhoe equipped with 18-inch and 36-inch buckets to depths ranging from approximately 9 to 13.5 feet below the ground surface. The trenches were logged, and bulk samples of the near-surface soils were collected for laboratory testing. The bulk samples represent a mixture of soils within a given depth range, as indicated. At completion of the excavation the test pits were backfilled, some settlement of the backfill soils may occur over time.

Cone Penetration Test soundings were advanced by Kehoe Testing & Engineering on April 11, 2022, to depths ranging from approximately 27 to 50 feet below the ground surface. The CPT soundings were advanced using an electronic cone penetrometer in general accordance with the current ASTM standards (ASTM D5778 and ASTM D3441). The CPT equipment consisted of a cone penetrometer assembly mounted at the end of a series of hollow sounding rods. The interior of the cone penetrometer is instrumented with strain gauges that allow the simultaneous measurement of cone tip and friction sleeve resistance during penetration. The cone penetration assembly is continuously pushed into the soil by a set of hydraulic rams at a standard rate of 0.8 inches per second while the cone tip resistance and sleeve friction resistance are recorded at approximately every 2 inches and stored in digital form. All CPTs were performed by Kehoe Testing and Engineering using a 30-ton truck mounted CPT rig.

Borings HS-1 through HS-5 and I-1 through I-3 were excavated by Cal-Pac Drilling on April 11 and 12, 2022, using a truck-mounted drill rig, borings HS-1 through HS-5 were excavated to depths of approximately 26.5 to 45 feet and borings I-1 through I-3 were excavated to depths of approximately 5 to 10 feet below the ground surface. Borings HS-6 through HS-11 were excavated by Martini Drilling on May 5, 2022, using a truck-mounted drill rig to depths of approximately 7.5 to 51 feet below the ground surface. The drill rigs were equipped with 8-inch diameter hollow-stem augers. Driven soil samples were collected by means of the Standard Penetration Test (SPT) and Modified California Drive (MCD) sampler generally obtained at 2.5 to 5-foot vertical increments. The MCD is a split-barrel sampler with a tapered cutting tip and lined with a series of 1-inch-tall brass rings. The SPT sampler (1.4-inch ID) and MCD sampler (2.4-inch ID, 3.0-inch OD) were driven using a 140-pound automatic hammer falling 30 inches to advance the sampler a total depth of 18 inches. The raw blow counts for each 6-inch increment of penetration were recorded on the boring logs. Bulk samples of the near-surface soils were also collected and logged at select borings for laboratory testing. At the completion of drilling and testing, the borings were backfilled and tamped. Some settlement of the backfill soils may occur over time.

Infiltration testing was performed on April 13, 2022, at I-1 through I-3. PVC pipe was installed in the infiltration borings for the testing, and after infiltration testing was completed the PVC pipe was removed. At the completion of drilling and testing, the borings were backfilled and tamped. Some settlement of the backfill soils may occur over time.

The approximate locations of our subsurface explorations are provided on Sheet 1. The boring, CPT, and trench logs are provided in Appendix B.

1.4 Laboratory Testing

Representative bulk, and driven, relatively undisturbed, samples were obtained for laboratory testing during our field evaluation. Laboratory testing included in-situ moisture content and in-situ dry density, organic content, expansion index, collapse/swell, consolidation, Atterberg limits, laboratory maximum compaction, R-value, and corrosion (sulfate, chloride, pH, and minimum resistivity). A summary of the laboratory test results is presented below.

- Field moisture content ranged from approximately 2 percent to 54 percent, with an average of 16 percent. Dry density values ranged from approximately 72 pounds per cubic foot (pcf) to 127 pcf, with an average of 109 pcf.
- Thirty organic content tests indicate that the organic content of the upper approximately 2 to 3 feet of soil ranged from approximately 1 to 5 percent with an average of approximately 2 percent.
- Six Expansion Index (EI) tests indicated EI values ranging from 0 to 26, corresponding to "Very Low" to "Low" expansion potential.
- Four collapse tests were performed on select samples. The collapse versus vertical stress plots are provided in Appendix C.
- Three consolidation tests were performed on select samples. The deformation versus vertical stress plots are provided in Appendix C.
- Two Atterberg limit tests indicated soils with Plasticity Indices of 10 and 12.
- Four laboratory maximum compaction tests indicated maximum dry densities of 97.0 to 133.5 pcf and optimum moisture contents ranging from 7.5 to 22.0 percent.
- R-value testing of near surface soils indicated an R-value of 21.
- Six Corrosion tests indicated soluble sulfate content ranging from approximately 0.01 to 0.94 percent, chloride contents ranging from 100 to 540 parts per million (ppm), a pH value of 8.16, and a resistivity value of 246 ohm-centimeters.

A summary of the results is presented in Appendix C. The moisture and dry density results are presented on the boring and test pit logs in Appendix B.

1.5 Field Infiltration Testing

Three falling head field percolation tests (I-1 through I-3) were performed in the approximate locations indicated on our Geotechnical Map (Sheet 1). Estimation of infiltration rates for the site was accomplished in general accordance with the guidelines set forth by the set forth by the County of Riverside (2011). A 3-inch diameter perforated PVC pipe with filter sock was placed in the borehole, and the annulus was backfilled with gravel. The percolation wells were pre-soaked prior to testing. The test interval was determined to be 10 minutes at I-1 and I-2, and 30 minutes at I-3. Successive percolation tests were performed starting at approximately the initial testing water level. The observed infiltration rates are considered representative of the site soils where tested. Observed infiltration rates have been normalized to correct the 3-Dimensional flow that occurs within the field test to 1-Dimensional flow out of the bottom of the boring. These measured infiltration rates include an estimated factor of safety of 3. The

approximate infiltration test locations are shown on the Geotechnical Map (Sheet 1) and the results of the field infiltration tests are summarized in Table 1 on the following page. Infiltration test results are provided in Appendix D.

TABLE 1

Summary of Field Infiltration Testing

Infiltration Test No.	Approx. Depth Below Existing Grade (ft)	Observed Infiltration Rate* (in./hr.)	Measured Infiltration Rate** (in./hr.)
I-1	5	1.9	0.6
I-2	5	2.7	0.9
I-3	10	0.0	0.0

*Observed Infiltration Rates Do Not Include Factor of Safety.
**Measured Infiltration Rates Based on Factor of Safety of 3.

The measured infiltration rates provided in this report are considered a general representation of the infiltration rate at the test locations. Please note, the testing of infiltration rates is highly dependent upon the materials encountered at the point of testing (i.e., location and depth of testing). Varying subsurface conditions may exist outside of the test location which could alter the measured infiltration rates presented above. Please refer to Section 4.11 for preliminary subsurface water infiltration recommendations.

2.0 GEOTECHNICAL CONDITIONS

2.1 Regional Geology

The site is located in the Northern Peninsular Range on the southern sector of the structural unit known as the Perris Block. The Perris Block is bounded on the northeast by the San Jacinto Fault Zone, on the southwest by the Elsinore Fault Zone, and the north by the Cucamonga Fault Zone. The southern boundary of the Perris Block is not as distinct but is believed to coincide with a complex group of faults trending southeast from the Murrieta, California area (Kennedy, 1977). The Peninsular Range is characterized by large Mesozoic age intrusive rock masses flanked by volcanic, metasedimentary, and sedimentary rocks. Various thicknesses of colluvial and alluvial sediments derived from the erosion of the elevated portions of the region fill the low-lying areas.

2.2 Site-Specific Geology

Based on the Geologic Map of the Romoland Quadrangle (Morton, 2003), and our geologic field mapping, the subject site is underlain by undocumented agricultural fill, young alluvium, and old alluvium. The geologic units are summarized below, and their approximate lateral limits are depicted on the Geotechnical Map (Sheet 1). It should be noted that the relatively thin agricultural fill is not shown on the site plan and therefore there are areas delineated on the site plan that indicate young and old alluvium exposed at the surface that are overlain by approximately 1 foot of undocumented agricultural fill.

It should be noted that the excavated borings and trenches are only representative of the locations where they were excavated at the time in which they were performed, and varying subsurface conditions may exist outside of those location. In addition, subsurface conditions can change over time. The soil descriptions provided should not be construed to indicate that the subsurface profile is uniform, and that soil is homogeneous within the project area.

2.2.1 Undocumented Artificial Fill (not mapped on-site)

Relatively thin undocumented agricultural fill associated with tilling for crop cultivation was found to mantle the site, and it is not shown on the site plan, as described above. Minor undocumented fill is also likely associated with the dirt roads and associated drainage ditches along the eastern and southern perimeters of the site. During our evaluation, the agricultural fill was found to range up to approximately 1 foot thick. The agricultural fill was found to consist of silty fine-grained sand with scattered clayey sand, and fine roots from the crops were commonly encountered. The agricultural fill was found to be dry to moist and loose in place, and excavation was easy.

2.2.3 Quaternary Young Alluvium (Qal)

Young alluvial deposits were exposed across approximately the southeastern 2/3 of the site to depths of up to approximately 20 feet below the ground surface, where it was found to be underlain by old alluvium. The young alluvium was found to consist mostly

of silty fine-grained sand and sandy silt, with scattered discontinuous lenses of poorly graded sand, and clayey sand. The young alluvium was generally found to be dry to wet and loose to dense or medium stiff to very stiff in-place. The near surface portions of the young alluvium were generally found to be porous, with scattered root hairs in the upper approximately 1 to 2 feet. Excavation of the young alluvium is anticipated to be easy.

2.2.4 Quaternary Old Alluvium (Qoa)

Old alluvial deposits were exposed across approximately the northwest 1/3 of the site, and they were encountered beneath the young alluvium across the site. The old alluvium was found to consist of silty fine-grained sand, clayey sand, sandy silt, clay, and scattered discontinuous beds of poorly graded sand. It was found to be moist to wet, and loose to very dense or soft to hard in-place. The upper approximately 3 feet was commonly found to be porous, with a blocky structure and carbonate deposits (caliche). Excavation was easy to moderately difficult with a backhoe, but excavation with heavy earth moving equipment is anticipated to be relatively easy.

2.2.5 Cretaceous Domenigoni Valley Granodiorite (not mapped on-site)

Granitic bedrock consisting of granodiorite was exposed on the rocky hillsides approximately 1 mile northeast, 0.75 mile west, and 0.25 mile southwest of the subject site. The old alluvial deposits at the site are underlain by granitic bedrock at depths beyond the maximum depth explored at the subject site, approximately 26.5 feet below the ground surface, and therefore encountering bedrock at the site is not anticipated.

2.3 Geologic Structure

The bedding within the young and old alluvium is generally horizontal.

2.4 Landslides

Our research and field observations do not indicate the presence of landslides on the subject site or in the immediate vicinity, which is consistent with the low topographic relief at the site. Review of regional geologic maps of the area do not indicate the presence of known or suspected landslides in the vicinity of the site.

2.5 Groundwater

What appears to be groundwater recharge ponds are located approximately 2,800 feet to the northeast of the subject site. The ponds cover an area of approximately 100 acres, and the recharge ponds appear to be affecting the groundwater elevations in the vicinity of the subject site. The groundwater levels on the site are shallowest near the northeastern corner of the site in the area nearest to the ponds, and generally the depth to groundwater increases toward the

south and west. Groundwater was encountered at approximately 12 to 15 feet below the ground surface at the subject site, however, in conjunction with the larger evaluation of which the subject site is a part, groundwater was encountered at approximately 6 to 18 feet below the ground surface in the parcels adjacent to the eastern side of the subject site. Historic high groundwater was conservatively estimated to be approximately 5 feet below existing grades for the purpose of liquefaction analysis.

Groundwater is not expected to be a concern during grading of the subject site; however, it may be a challenge during utility construction if the proposed utilities are deep. Dewatering and/or other special techniques may be necessary. Where utilities are at or below the water table, installing those utilities may require special techniques for shoring, stabilization, and design. The potential impact of groundwater on grading and utility installation is discussed in more detail in Section 4.1, the Earthwork Recommendations section, and associated subsections.

Groundwater and/or groundwater seepage conditions may occur in the future due to changes in land use and/or following periods of heavy rain, or due to irrigation. Seasonal fluctuations of groundwater elevations should be expected over time. In general, groundwater levels fluctuate with the seasons and local zones of perched groundwater may be present within the near-surface deposits due to local landscape irrigation or precipitation, especially during rainy seasons and/or near the Salt Creek channel.

2.6 Faulting and Seismic Hazards

Prompted by damaging earthquakes in Northern and Southern California, State legislation and policies concerning the classification and land-use criteria associated with faults have been developed. Their purpose was to prevent the construction of urban developments across the trace of active faults, resulting in the Alquist-Priolo Earthquake Fault Zoning Act. Earthquake Fault Zones have been delineated along the traces of active faults within California. Where developments for human occupation are proposed within these zones, the State requires detailed fault evaluations be performed so that engineering geologists can mitigate the hazards associated with active faulting by identifying the location of active faults and allowing for a setback from the zone of previous ground rupture.

The subject site is not located within a State of California Earthquake Fault Zone (formerly known as an Alquist-Priolo Special Studies Zone, or simply A-P Zone), nor is it located within a Riverside County Fault Zone, and no faults were identified on the site during our site evaluation. The possibility of damage due to ground rupture is considered low since no active faults are known to cross the site or trend toward the site.

Secondary effects of seismic shaking resulting from large earthquakes on the major faults in the Southern California region, which may affect the site, include ground lurching, shallow ground rupture, soil liquefaction and dynamic settlement. These secondary effects of seismic shaking are a possibility throughout the Southern California region and are dependent on the distance between the site and causative fault and the onsite geology. The closest active faults are the Elsinore Fault and the San Jacinto Fault; active, right-lateral, strike-slip faults, located approximately 9 miles to the southwest and to the northeast of the site, respectively. The trends of the Elsinore Fault and San Jacinto Fault are northwest-southeast, oblique to the site. Therefore, there are no active faults on the site or trending toward the site. Some major active

nearby faults that could produce secondary effects include the Cucamonga, Elsinore, San Jacinto, and San Andreas Fault Zones, among others (CGS, 2018). A discussion of these secondary effects is provided in the following sections.

2.6.1 Lurching and Shallow Ground Rupture

Soil lurching refers to the rolling motion on the ground surface by the passage of seismic surface waves. Effects of this nature are not likely to be significant where the thickness of soft sediments do not vary appreciably under structures. Ground rupture due to active faulting is not likely to occur onsite due to the absence of known active fault traces. Ground cracking due to shaking from distant seismic events is not considered a significant hazard, although it is a possibility at any site.

2.6.2 Liquefaction and Dynamic Settlement

Liquefaction is a seismic phenomenon in which loose, saturated, granular soils behave similarly to a fluid when subject to high-intensity ground shaking. Liquefaction occurs when three general conditions coexist: 1) shallow groundwater; 2) low density non-cohesive (granular) soils; and 3) high-intensity ground motion. Studies indicate that saturated, loose near surface cohesionless soils exhibit the highest liquefaction potential, while dry, dense, cohesionless soils and cohesive soils exhibit low to negligible liquefaction potential. In general, cohesive soils are not considered susceptible to liquefaction, depending on their plasticity and moisture content (Bray & Sancio, 2006). Effects of liquefaction on level ground include settlement, sand boils, and bearing capacity failures below structures. Dynamic settlement of dry loose sands can occur as the sand particles tend to settle and densify as a result of a seismic event.

Based on the Riverside County maps (Riverside County, 2022), the potential for liquefaction varies across the site: the potential for liquefaction at the subject site is High to Very High. It is likely that these determinations were made based on assumed shallow groundwater and thick young alluvial deposits. However, during our site-specific evaluation we have determined that the density and relative shallow depths of the old alluvium, as well as the fine-grained nature of the soils interspersed within the old alluvium indicates that only relatively minor seismic settlements due to liquefaction are anticipated.

Groundwater levels described in Section 2.5, along with the conservatively estimated historic high groundwater levels were used in the liquefaction analysis. Preliminary liquefaction analysis was performed using CPT data along with liquefaction analysis software (GeoLogismiki, 2021). Furthermore, isolated layers may be susceptible to dry sand seismic settlement which was analyzed based on the procedures outlined by Pradel (Pradel, 1998). Preliminary liquefaction potential was evaluated using the procedures outlined by Special Publication 117A (SCEC, 1999 & CGS, 2008) and the applicable seismic criteria (e.g., 2019 CBC). Liquefaction analysis was estimated using the PGA_M per the 2019 CBC and a moment magnitude of 6.93 (USGS, 2014). Liquefaction analysis is presented in Appendix E.

The liquefaction analysis incorporated the preliminary recommended earthwork removal and recompaction depths (see Sheet 1) into estimated seismic settlement. Estimated total and differential seismic settlement due to liquefaction and dry sand settlement is provided in Table 2 below. We anticipate that the recommended earthwork and foundation design will mitigate for the minor seismic settlement due to liquefaction.

TABLE 2

Estimated Seismic Settlement

Approximate Total Seismic Settlement	Approximate Differential Seismic Settlement
1-inch	½-inch over 40 feet

2.6.3 Lateral Spreading

Lateral spreading is a type of liquefaction-induced ground failure associated with the lateral displacement of surficial blocks of sediment resulting from liquefaction in a subsurface layer. Once liquefaction transforms the subsurface layer into a fluid mass, gravity plus the earthquake inertial forces may cause the mass to move downslope towards a free face (such as a river channel or an embankment). Lateral spreading may cause large horizontal displacements and such movement typically damages pipelines, utilities, bridges, and structures.

The sandy soils anticipated to be left in place (below the recommended removal and recompaction depths presented on the Geotechnical Map Sheet 1) generally have a normalized clean sand tip resistance well above 70. A normalized clean sand tip resistance of 70 corresponds to a blow count $(N_1)_{60}$ of at least 15. Soils with a corrected SPT $(N_1)_{60}$ blow count of 15 or greater are generally not considered susceptible to lateral spreading (Youd, Hansen, Bartlett, 2002). Furthermore, isolated sandy layers susceptible to liquefaction were generally found not to be laterally continuous.

Due to the depth of proposed earthwork removals, presence of dense sandy soils interfingered with non-liquefiable fine-grained soils below the recommended earthwork removals, and limited nature of potentially liquefiable soils, the potential for lateral spreading is considered low.

2.7 Seismic Design Parameters

The site seismic characteristics were evaluated per the guidelines set forth in Chapter 16, Section 1613 of the 2019 California Building Code (CBC) and applicable portions of ASCE 7-16 which has been adopted by the CBC. Please note that the following seismic parameters are only applicable for code-based acceleration response spectra and are not applicable for where site-specific ground motion procedures are required by ASCE 7-16. Representative site coordinates of latitude 33.7035 degrees north and longitude -117.1331 degrees west were utilized in our analyses. Please note that these coordinates are considered representative of the site for

preliminary planning purposes, however their applicability must be verified with respect to a desired specific location within the site. The maximum considered earthquake (MCE) spectral response accelerations (S_{MS} and S_{M1}) and adjusted design spectral response acceleration parameters (S_{DS} and S_{D1}) for Site Class D are provided in Table 3 on the following page. The structural designer should contact the geotechnical consultant if structural conditions (e.g., number of stories, seismically isolated structures, etc.) require site-specific ground motions.

Section 1803.5.12 of the 2019 CBC (per Section 11.8.3 of ASCE 7) states that the maximum considered earthquake geometric mean (MCE_G) Peak Ground Acceleration (PGA) should be used for liquefaction potential. The PGA_M for the site is equal to 0.55g (SEAOC, 2022). The design PGA is equal to 0.367g (2/3 of PGA_M).

A deaggregation of the PGA based on a 2,475-year average return period (MCE) indicates that an earthquake magnitude of 6.93 at a distance of approximately 15.62 km from the site would contribute the most to this ground motion. A deaggregation of the PGA based on a 475-year average return period (Design Earthquake) indicates that an earthquake magnitude of 6.83 at a distance of approximately 19.41 km from the site would contribute the most to this ground motion (USGS, 2014).

TABLE 3

Seismic Design Parameters

Selected Parameters from 2019 CBC, Section 1613 - Earthquake Loads	Seismic Design Values	Notes/Exceptions
Distance to applicable faults classifies the site as a "Near-Fault" site.		Section 11.4.1 of ASCE 7
Site Class	D*	Chapter 20 of ASCE 7
Ss (Risk-Targeted Spectral Acceleration for Short Periods)	1.405g	From SEAOC, 2022
S_1 (Risk-Targeted Spectral Accelerations for 1-Second Periods)	0.523g	From SEAOC, 2022
F_a (per Table 1613.2.3(1))	1.000	For Simplified Design Procedure of Section 12.14 of ASCE 7, F_a shall be taken as 1.4 (Section 12.14.8.1)
F_v (per Table 1613.2.3(2))	1.777	Value is only applicable per requirements/exceptions per Section 11.4.8 of ASCE 7
S_{MS} for Site Class D [Note: $S_{MS} = F_aS_S$]	1.405g	-
S_{M1} for Site Class D [Note: $S_{M1} = F_vS_1$]	0.929g	Value is only applicable per requirements/exceptions per Section 11.4.8 of ASCE 7
S_{DS} for Site Class D [Note: $S_{DS} = (^2/_3)$ SMS]	1.937g	-
S_{D1} for Site Class D [Note: $S_{D1} = (^2/_3)$ SM_1]	0.620g	Value is only applicable per requirements/exceptions per Section 11.4.8 of ASCE 7
C_{RS} (Mapped Risk Coefficient at 0.2 sec)	0.931	ASCE 7 Chapter 22
C_{R1} (Mapped Risk Coefficient at 1 sec)	0.914	ASCE 7 Chapter 22
*Since site soils are Site Class D and S_1 is greater than or equal to 0.2, the seismic response coefficient Cs is determined by Eq. 12.8-2 for values of $T \leq 1.5T_s$ and taken equal to 1.5 times the value calculated in accordance with either Eq. 12.8-3 for $T_L \geq T > T_s$, or Eq. 12.8-4 for $T > T_L$. Refer to ASCE 7-16.		

2.8 Rippability

A rippability survey was not within the scope of this report, however, we have provided some preliminary guidance concerning the rippability characteristics of the on-site materials based on our observations and experience in the vicinity of the site. We anticipate that excavation of the undocumented agricultural fill, and young alluvium (shown as Qal on the Geotechnical Site Plan) will be easy. Excavation of the old alluvium (shown as Qoa on the Geotechnical Site Plan)

was easy to moderately difficult using a backhoe, but excavation with heavy earth moving equipment is anticipated to be relatively easy.

2.9 Oversized Material

Based on visual observations, encountering oversized material (material larger than 8 inches in maximum dimension) is not anticipated during the excavation at the subject site.

2.10 Expansive Soil Characteristics

Expansion Index (EI) test results indicated EI values ranging from 0 to 26, corresponding to "Very Low" to "Low" Expansion Indices. Some deep soils have significant amounts of clay which could potentially be expansive. Final expansion potential of site soils should be determined at the completion of grading. Results of expansion testing at finish grades will be utilized to confirm final foundation design.

3.0 FINDINGS AND CONCLUSIONS

Based on the results of our geotechnical evaluation, it is our opinion that the proposed site development is feasible from a geotechnical standpoint, provided the following conclusions and recommendations are incorporated into the site design, grading, and construction.

The following is a summary of the primary geotechnical factors, which may affect future development of the site.

- The site has been utilized for dry farming. The upper approximately 1 foot consists of agricultural fill that has slightly elevated organic content with an average organic content of 2 percent. The surficial organic soils should be blended with underlying soils that are lower in organic content in order to achieve soils that have an overall low organic content. Additionally, the near surface loose, dry, and potentially compressible soils are not suitable for the planned improvements in their present condition.
- During our recent evaluation groundwater was encountered at depths of approximately 12 to 15 feet below the ground surface at the subject site, and approximately 6 to 18 feet below the ground surface in the offsite parcels adjacent to the east side of the site. Historic high groundwater was conservatively estimated to be approximately 5 feet below existing grades for the purpose of liquefaction analysis. Groundwater elevations fluctuate, especially seasonally or near the creek channel, and groundwater could be encountered at shallower elevations.
- Groundwater is not expected to be a concern during grading when achieving the proposed 5- to 6-foot removal bottoms for the remedial grading at the subject site.
- It is possible that deep utilities such as sewer and storm drain may be installed at or below the water table in portions of the site. The depths of the utilities are unknown; however, a sewer lift station is located approximately 0.5 miles east of the site which may indicate the sewer is especially deep. Special excavating techniques will likely be necessary, such as dewatering, for the installation of utilities below the groundwater. Utilities at or below groundwater should be designed for buoyancy. Special shoring techniques, such as use of shields, flatter temporary side slopes, etc., may be necessary for utility installation below the groundwater in conjunction with other mitigation.
- The proposed development will likely be subjected to strong seismic ground shaking during its design life from one of the regional faults. The subject site is not located within a State of California Earthquake Fault Zone, nor is it within a Riverside County Fault Zone. No active earthquake faults were identified on the site or trending toward the site during our evaluation.
- Riverside County mapping indicates the site has a High to Very High potential for liquefaction. Based on a site-specific liquefaction evaluation, on the order of 1-inch of seismic settlement was estimated. This minor settlement can be mitigated with the recommended remedial grading and foundation design.
- Soils encountered at the site are anticipated to have “Very Low” to “Low” Expansion Potential. Some deep soils have significant amounts of clay which could potentially be expansive.
- Corrosion tests indicated that the site soils are corrosive.
- Excavation for foundations and underground improvements should be achievable with the appropriate equipment.

- Field percolation testing indicated low infiltration rates; therefore, stormwater infiltration is not feasible.
- The site contains some clayey soils that are not suitable for backfill of retaining walls due to high fines content and Low Expansion potential. Therefore, select grading and stockpiling of suitable select sandy soils, or import of select sandy soils meeting project recommendations will be required.

4.0 RECOMMENDATIONS

The following recommendations are to be considered preliminary and should be confirmed upon completion of earthwork operations. In addition, they should be considered minimal from a geotechnical viewpoint, as there may be more restrictive requirements from the architect, structural engineer, building codes, governing agencies, or the City and County. It is the responsibility of the builder to ensure these recommendations are provided to the appropriate parties.

It should be noted that the following geotechnical recommendations are intended to provide sufficient information to develop the site in general accordance with the 2019 California Building Code (CBC) requirements. With regard to the potential occurrence of potentially catastrophic geotechnical hazards such as fault rupture, earthquake-induced landslides, liquefaction, etc. the following geotechnical recommendations should provide adequate protection for the proposed development to the extent required to reduce seismic risk to an "acceptable level." The "acceptable level" of risk is defined by the California Code of Regulations as "the level that provides reasonable protection of the public safety, though it does not necessarily ensure continued structural integrity and functionality of the project" [Section 3721(a)]. Therefore, repair and remedial work of the proposed improvement may be required after a significant seismic event. With regards to the potential for less significant geologic hazards to the proposed development, the recommendations contained herein are intended as a reasonable protection against the potential damaging effects of geotechnical phenomena such as expansive soils, fill settlement, groundwater seepage, etc. It should be understood, however, that although our recommendations are intended to maintain the structural integrity of the proposed development and structures given the site geotechnical conditions, they cannot preclude the potential for some cosmetic distress or nuisance issues to develop as a result of the site geotechnical conditions.

The geotechnical recommendations contained herein must be confirmed to be suitable or modified based on the actual exposed conditions.

4.1 Site Earthwork

We anticipate that earthwork at the subject site will consist of typical cut and fill grading in order to construct the proposed building pads, slopes, roads, and utility installation. We recommend that earthwork onsite be performed in accordance with the following recommendations and the City of Menifee and County of Riverside Grading Requirements. In case of conflict, the following recommendations shall supersede all previous geotechnical recommendations. The following recommendations should be considered preliminary and may be revised based on the actual as-graded conditions of the site.

4.1.1 Site Preparation

All vegetation, trees, roots, etc., and any man-made materials should be removed from the site and not used as fill material. Any water wells should be properly abandoned in accordance with County and State regulatory guidelines. Holes resulting from the removal of buried obstructions, which extend below proposed finish grades, should be replaced with suitable compacted fill material.

All agricultural/undocumented fill, including any stockpiles and test pit backfill, should be removed, and may be stockpiled for reuse as engineered fill. At the conclusion of the clearing operations, a representative of LGC Geotechnical should observe and accept the site prior to further grading.

4.1.2 Remedial Grading Recommendations

In order to provide a relatively uniform bearing condition for the planned structures remedial grading is required. Agricultural fill, and loose, compressible, dry alluvial soils are considered unsuitable for support of the planned structures and should be temporarily removed and recompacted to suitable young alluvium, or old alluvium per the project recommendations. For preliminary planning purposes, the depth of required remedial grading removals may be estimated as indicated below and shown on the Geotechnical Map (Sheet 1).

The undocumented agricultural fill should be completely removed during remedial grading. The agricultural fill is anticipated to be on the order of 1 foot thick. The agricultural fill has slightly elevated organic content, with an average of approximately 2 percent based on the recent testing. In order to reuse the agricultural fill as engineered fill, it must be properly blended with deeper natural soils that have low organic content. No nesting of organic soils is permitted.

Dry, loose, or compressible alluvium (both young alluvium and old alluvium) should be removed to competent soils. In general, remedial grading depths are estimated to be 5 feet below existing grade where young alluvium (Qal) is located in the southeastern approximately 2/3 of the site, and 6 feet below existing grade where old alluvium (Qoa) is located in the northwestern approximately 1/3 of the site (refer to Sheet 1). Remedial grading should be performed to the minimum depth recommended below existing grades (Sheet 1) or a minimum of 3 feet below finished pad grades, whichever is deeper, so that all pads are underlain by a minimum of 3 feet of compacted fill.

Groundwater is not expected to be a concern during grading when achieving the proposed 5- to 6-foot removal bottoms for the remedial grading. If shallow groundwater is encountered refer to Section 4.1.4 for subgrade stabilization recommendations.

Local conditions may be encountered during excavation that could require additional remedial grading/over-excavation beyond the above-noted minimum in order to obtain an acceptable removal bottom. The actual depths and lateral extents of grading will be determined by the geotechnical consultant, based on subsurface conditions encountered during grading. Removal areas should be accurately staked in the field by the Project Surveyor.

4.1.3 Cut-Fill Transition

Structures must not straddle a cut-fill transition. Where a cut-fill transition occurs, the cut and shallow fill portions of the lot must be over excavated. The overexcavation should be

performed so that the minimum fill thickness beneath the pad is at least one-half of the maximum fill thickness, but not less than 3 feet below finish pad grade or 2 feet below footing bottoms, which ever results in the deeper excavation. The overexcavation should extend laterally beyond the perimeter of the proposed building a distance equal to the minimum overexcavation depth, but not less than 5 feet, so that a 1:1 plane may be projected from the building perimeter to the edge of the overexcavation.

4.1.4 Removal Bottoms and Preparation

In general, removal bottom areas and any areas to receive compacted fill should be scarified to a minimum depth of 6 to 8 inches, brought to a near-optimum moisture condition, and re-compacted per project recommendations. Shallow groundwater is not anticipated within or immediately below the proposed removal bottom depths.

If shallow groundwater is encountered the removal bottoms will likely be saturated. Scarification/processing of removal bottoms is generally not required when the removal bottom is within approximately 3 feet of groundwater. "Pumping" removal bottoms should be anticipated for bottoms excavated at or near groundwater. For these conditions, stabilization will likely be required prior to placing compacted fill. In general, stabilization should be anticipated to consist of a minimum of 12 to 18 inches of clean crushed rock ranging in size from approximately 1 to 3 inches; however, the actual thickness and size of stabilization rock will have to be determined during earthwork based on field conditions. Stabilization rock should be placed in layers and compacted. It should be anticipated that the first lift of crushed rock will be worked into the pumping removal bottom. Subsequent lifts will help bridge the pumping conditions. Thickness of required crushed rock stabilization may be reduced by placing a layer of triaxial geogrid reinforcement (Tensar InterAx or acceptable equivalent) directly on the removal bottom prior to crushed rock placement. The contractor may have to minimize construction traffic on the removal bottom to reduce disturbance. Soft and yielding removal bottom soils should be evaluated on a case-by-case basis during earthwork operations.

Removal bottoms should be observed and accepted by the geotechnical consultant prior to fill placement or construction.

4.1.5 Subdrains

Subdrains are not anticipated in conjunction with the remedial site grading. The need for (and location) of subdrains shall be determined in the field based on exposed conditions. The subdrains must be deeper than or beyond the limits of proposed utilities, retaining wall foundations, and swimming pools.

4.1.6 Temporary Excavations

Temporary excavations should be performed in accordance with project plans, specifications, and all Occupational Safety and Health Administration (OSHA) requirements. Excavations should be laid back or shored in accordance with OSHA

requirements before personnel or equipment are allowed to enter. Based on our field evaluation, site soils upper approximate 10 feet are anticipated to be OSHA Type "B" soils (refer to the attached boring logs). Soil conditions should be regularly evaluated during construction to verify conditions are as anticipated. The contractor shall be responsible for providing the "competent person," required by OSHA standards, to evaluate soil conditions. Sandy soils are present and should be considered susceptible to caving. The contractor shall be responsible for providing the "competent person," required by OSHA standards, to evaluate soil conditions. Close coordination with the geotechnical consultant should be maintained to facilitate construction while providing safe excavations. Excavation safety is the sole responsibility of the contractor.

Vehicular traffic, stockpiles, and equipment storage should be set back from the perimeter of excavations a distance equivalent to a 1:1 projection from the bottom of the excavation, or 5 feet whichever is greater. Once an excavation has been initiated, it should be backfilled as soon as practical. Prolonged exposure of temporary excavations may result in some localized instability. Excavations should be planned so that they are not initiated without sufficient time to shore/fill them prior to weekends, holidays, or forecasted rain.

If shallow groundwater is encountered, special shoring techniques, such as use of shields, flatter temporary side slopes, etc., may be necessary for utility installation below the groundwater in conjunction with other mitigation such as dewatering.

4.1.7 Material for Fill

From a geotechnical perspective, the onsite soils are generally considered suitable for use as general compacted fill (i.e., non-retaining wall backfill), provided they are screened of organic materials, construction debris and any oversized material (8 inches in greatest dimension). Moisture conditioning of site soils should be anticipated as outlined in the section below.

From a geotechnical viewpoint, any required import soils should consist of clean, relatively granular soils of Very Low to Low expansion potential (expansion index 50 or less based on ASTM D4829) and no particles larger than 4 inches in greatest dimension. Source samples of planned importation should be provided to the geotechnical consultant for laboratory testing a minimum of 3 working days prior to any planned importation for required laboratory testing.

Any required retaining wall backfill should consist of sandy soils with a maximum of 35 percent fines (passing the No. 200 sieve) per American Society for Testing and Materials (ASTM) Test Method D1140 (or ASTM D6913/ ASTM D422) and a Very Low expansion potential (EI of 20 or less per ASTM D4829). Soils should also be screened of organic materials, construction debris and any material greater than 3 inches in maximum dimension. The site contains some soils that are not suitable for retaining wall backfill due to their fines content and expansion potential, therefore select grading and stockpiling and/or import of select sandy soils will be required by the contractor for obtaining suitable retaining wall backfill soil.

Aggregate base (crushed aggregate base or crushed miscellaneous base) should conform to the requirements of Section 200-2 of the Standard Specifications for Public Works Construction ("Greenbook") for untreated base materials (except processed miscellaneous base) or Caltrans Class 2 aggregate base.

4.1.8 Fill Placement and Compaction

Material to be placed as fill should be brought to near-optimum moisture content (generally at about 2 percent above optimum moisture content) and recompacted to at least 90 percent relative compaction (per ASTM D1557). Moisture conditioning of site soils should be anticipated in order to achieve the required degree of compaction.

The optimum lift thickness to produce a uniformly compacted fill will depend on the type and size of compaction equipment used. In general, fill should be placed in uniform lifts not exceeding 8 inches in compacted thickness. Each lift should be thoroughly compacted and accepted prior to subsequent lifts. Generally, placement and compaction of fill should be performed in accordance with local grading ordinances and with observation and testing by the geotechnical consultant. Oversized material as previously defined should be removed from site fills.

Fill placed on any slopes greater than 5:1 (horizontal to vertical) should be properly keyed and benched into firm and competent soils as it is placed in lifts. During backfill of excavations, the fill should be properly benched into firm and competent soils of temporary backcut slopes as it is placed in lifts.

Aggregate base material should be compacted to a minimum of 95 percent relative compaction at or slightly above-optimum moisture content per ASTM D1557. Subgrade below aggregate base should be compacted to a minimum of 90 percent relative compaction (or 95 percent relative compaction if dictated by City or County standards) per ASTM D1557 at or slightly above-optimum moisture content.

If gap-graded ¾-inch rock is used for backfill (around storm drain storage chambers, retaining wall backfill, etc.) it will require compaction. Rock shall be placed in thin lifts (typically not exceeding 6 inches) and mechanically compacted with observation by geotechnical consultant. Backfill rock shall meet the requirements of ASTM D2321. Gap-graded rock is required to be wrapped in filter fabric (Mirafi 140N or approved alternative) to prevent the migration of fines into the rock backfill.

4.1.9 Slopes

Design cut and fill slopes at the site are anticipated to be both grossly and surficially stable as designed, as long as they are constructed in accordance with the Standard Earthwork and Grading Specifications included in Appendix F. Slopes should be constructed with a maximum slope ratio of 2:1 (horizontal to vertical). Fill slope faces should also be compacted to minimum project specifications. This may require overbuilding of the slope face and trimming back to design grades. To improve surficial stability, vegetation specified by the landscape architect should be established on the

slope face as soon as it is practical.

Fill slopes should be constructed at least equipment width wide (approximately 10 horizontal feet). In the case of conflict, the recommendations provided herein shall supersede those provided in Appendix F. Keyway widths should be a minimum of one-half of the total height of the slope or no less than 10 feet wide, whichever is greater. Keyways should be a minimum of 2 feet deep, determined from the lowest toe-of-slope elevation, and tilt back to the heel a minimum of 1-foot or 2 percent (whichever is greater). In general, backcuts should be excavated at 2:1 (horizontal to vertical) inclinations. If grading limits do not allow sufficient room for maintaining 10-foot widths at 2:1 backcut inclinations, then portions of the backcut may be cut steeper to accommodate the stability fill slopes at the appropriate widths at the discretion of the geotechnical consultant.

4.1.10 Trench and Retaining Wall Backfill and Compaction

Bedding material used within the pipe zone should conform to the requirements of the current Greenbook and the pipe manufacturer. Where applicable, sand having a sand equivalent (SE) of 20 or greater (per Caltrans Test Method [CTM] 217) may be used to bed and shade the pipes within the bedding zone. Sand backfill should be densified by jetting or flooding and then tamped to ensure adequate compaction. Bedding sand should be from a natural source, manufactured sand from recycled material is not suitable for jetting. The onsite soils may generally be considered suitable as trench backfill (zone defined as 12 inches above the pipe to subgrade), provided the soils are screened of rocks greater than 6 inches in maximum dimension, construction debris and organic material. Trench backfill should be compacted in uniform lifts (as outlined in the "Material for Fill" Section 4.1.7) by mechanical means to at least 90 percent relative compaction (per ASTM D1557). If gap-graded rock is used for trench backfill, refer to Section 4.1.8 above. City and/or County standards may require 95 percent relative compaction of the soils at subgrade elevation.

Deep utilities in areas of relatively shallow groundwater may necessitate special excavation techniques, and saturated soils from the excavation will require drying or mixing with dry soils in order to obtain near-optimum soil moisture content for use as backfill material. Utilities at or below the water table should be designed for buoyancy.

Any required retaining wall backfill should consist of predominately granular, sandy soils outlined in Section 4.1.7. The limits of select sandy backfill should extend at minimum ½ the height of the retaining wall or the width of the heel (if applicable), whichever is greater (Refer to Figure 2). Retaining wall backfill soils should be compacted in relatively uniform thin lifts to a minimum of 90 percent relative compaction (per ASTM D1557). Jetting or flooding of retaining wall backfill materials should not be permitted. If gap-graded rock is used for retaining wall backfill, refer to Section 4.1.8 above.

A representative from LGC Geotechnical should observe, probe, and test the backfill to verify compliance with the project recommendations.

4.1.11 Preliminary Shrinkage and Bulking

Volumetric changes in earth quantities will occur when excavated onsite earth materials are replaced as properly compacted fill. The following is an estimate of shrinkage and bulking factors for the various geologic units found onsite. These estimates are based on in-place densities of the various materials and on the estimated average degree of relative compaction achieved during grading.

Due to the combined variability in topographic surveys, inability to precisely model the removals and variability in on-site near-surface conditions, it is our opinion that the site will not balance at the end of grading. If importing/exporting a large volume of soils is not considered feasible or economical, we recommend a balance area be designated onsite that can fluctuate up or down based on the actual volume of soil. We recommend the site plan include a "balance area" that can accommodate on the order of 5 percent of the total grading volume.

TABLE 4

Estimated Shrinkage & Bulking

Soil Type	Allowance	Estimated Range
Undocumented/Agricultural Fill (Afu)	Shrink	15% to 20%
Young Alluvium (Qal)	Shrink	7.5% to 17.5%
Old Alluvium (Qoa)	Shrink	0% to 10%

Subsidence due to earthwork equipment is expected to be on the order of 0.1 feet. It should be stressed that these values are only estimates and that actual shrinkage factors are extremely difficult to predict. The effective shrinkage of onsite soils will depend primarily on the type of compaction equipment and method of compaction used onsite by the contractor. Additionally, the onsite geology is very complex; the above estimates are generalized groupings of similar lithologies and should be expected to vary across the site and with depth.

The above shrinkage estimates are intended as an aid for others in determining preliminary earthwork quantities. However, these estimates should be used with some caution since they are not absolute values. Shrinkage and bulking are also expected to vary with variations in survey accuracy during rough grading.

4.2 Preliminary Foundation Recommendations

Site soils are anticipated to be "Very Low" to "Low" expansion potential (EI of 50 or less per ASTM D4829) and special design considerations from a geotechnical perspective are required. The site may be considered suitable for the support of the proposed structures using a rigid slab-on-grade conventionally reinforced or post-tensioned slab foundation designed in accordance with Chapter 18 of the 2019 CBC. It should be noted that, as with many structures in Southern California, risk does remain that the proposed structures could suffer some damage as a result of an earthquake. Repair and remedial work may be required after a seismic event. Post-

tensioned foundation recommendations for "Low" expansion potential categories have been provided in the following sections. Please note that the following foundation recommendations are preliminary and must be confirmed by LGC Geotechnical at the completion of grading. If soils with a different expansion potential are encountered at the completion of grading, updated geotechnical foundation recommendations will be provided.

The following recommendations may be superseded by the requirements of the foundation engineer, structural engineer and/or local jurisdictions. Proposed foundations should be designed to accommodate estimated site settlements. Recommendations for seismic settlement are provided in Section 2.6.2. Recommended soil bearing and estimated settlement due to structural loads are provided in Section 4.3.

4.2.1 Provisional Post-Tensioned Foundation Design Parameters

The geotechnical parameters provided in Table 5 may be used for post-tensioned slab foundations. These parameters have been determined in general accordance with the Post-Tensioning Institute (PTI) Standard Requirements for Design of Shallow Post-Tensioned Concrete Foundations on Expansive Soils referenced in Chapter 18 of the 2019 CBC. In utilizing these parameters, the foundation engineer should design the foundation system in accordance with the allowable deflection criteria of applicable codes and the requirements of the structural designer/architect. Other types of stiff slabs may be used in place of the CBC post-tensioned slab design provided that, in the opinion of the foundation structural designer, the alternative type of slab is at least as stiff and strong as that designed by the CBC/PTI method to resist expansive soils.

Our design parameters are based on our experience with similar residential projects and the anticipated nature of the soil (with respect to expansion potential). Please note that implementation of our recommendations will not eliminate foundation movement (and related distress) should the moisture content of the subgrade soils fluctuate. It is the intent of these recommendations to help maintain the integrity of the proposed structures and reduce (not eliminate) movement, based upon the anticipated site soil conditions. Should future owners not properly maintain the areas surrounding the foundation, for example by overwatering, then we anticipate for expansive soils the maximum differential movement of the perimeter of the foundation to the center of the foundation to be on the order of a few inches. Soils of lower expansion potential are anticipated to show less movement.

Based on preliminary corrosion testing, soils corrosive to concrete were encountered at the site, as indicated in Section 4.7. Therefore, per ACI 318, Type V cement should be utilized, with a maximum water/cement ratio of 0.45, and a minimum compressive strength of 4,500 psi.

TABLE 5

Provisional Geotechnical Parameters for Post-Tensioned Foundation Slab Design for "Very Low" to "Low" Expansion Potential Subgrade Soils

Parameter	PT Slab with Perimeter Footing	PT Mat with Thickened Edge
Expansion Index	Low[1]	Low[1]
Thornthwaite Moisture Index	-20	-20
Constant Soil Suction	PF 3.9	PF 3.9
Center Lift Edge moisture variation distance, e_m Center lift, y_m	 9.0 feet 0.25 inch	 9.0 feet 0.30 inch
Edge Lift Edge moisture variation distance, e_m Edge lift, y_m	 5.5 feet 0.55 inch	 5.5 feet 0.66 inch
Modulus of Subgrade Reaction, k (assuming presoaking as indicated below)	200 pci	200 pci
Minimum perimeter footing/thickened edge embedment below finish grade	12 inches	6 inches
Presoak (moisture conditioning)	100% of Optimum 12 inches	100% of Optimum 12 inches

1. Assumed for preliminary design purposes. Further evaluation is needed at the completion of grading.
2. Recommendations for foundation reinforcement and slab thickness are ultimately the purview of the foundation engineer/structural engineer based upon geotechnical criteria and structural engineering considerations.
3. The sand layer requirements are the purview of the foundation engineer/structural engineer and should be provided in accordance with ACI Publication 302 "Guide for Concrete Floor and Slab Construction".
4. Recommendations for vapor retarders below slabs are also the purview of the foundation engineer/structural engineer and should be provided in accordance with applicable code requirements.

4.2.2 Foundation Subgrade Preparation and Maintenance

Moisture conditioning of the subgrade soils is recommended prior to trenching the foundation. The recommendations specific to the anticipated site soil conditions are presented herein. The subgrade moisture condition of the building pad soils should be maintained at the recommended moisture content up to the time of concrete placement. This moisture content should be maintained around the immediate perimeter of the slab during construction and up to occupancy of the homes.

The geotechnical parameters provided herein assume that if the areas adjacent to the

foundation are planted and irrigated, these areas will be designed with proper drainage and adequately maintained so that ponding, which causes significant moisture changes below the foundation, does not occur. Our recommendations do not account for excessive irrigation and/or incorrect landscape design. Plants should only be provided with sufficient irrigation for life and not overwatered to saturate subgrade soils. Sunken planters placed adjacent to the foundation, should either be designed with an efficient drainage system or liners to prevent moisture infiltration below the foundation. Some lifting of the perimeter foundation beam should be expected even with properly constructed planters.

In addition to the factors mentioned above, future homeowners should be made aware of the potential negative influences of trees and/or other large vegetation. Roots that extend near the vicinity of foundations can cause distress to foundations. Future homeowners (and the owner's landscape architect) should not plant trees/large shrubs closer to the foundations than a distance equal to half the mature height of the tree or 20 feet, whichever is more conservative unless specifically provided with root barriers to prevent root growth below the house foundation.

It is the homeowner's responsibility to perform periodic maintenance during hot and dry periods to ensure that adequate watering has been provided to keep soils from separating or pulling back from the foundation. Future homeowners should be informed and educated regarding the importance of maintaining a constant level of soil-moisture. The homeowners should be made aware of the potential negative consequences of both excessive watering, as well as allowing potentially expansive soils to become too dry. Expansive soils can undergo shrinkage during drying and swelling during the rainy winter season or when irrigation is resumed. This can result in distress to building structures and hardscape improvements. The builder should provide these recommendations to future homeowners.

4.2.3 Slab Underlayment Guidelines

The following is for informational purposes only since slab underlayment (e.g., moisture retarder, sand, or gravel layers for concrete curing and/or capillary break) is unrelated to the geotechnical performance of the foundation and thereby not the purview of the geotechnical consultant. Post-construction moisture migration should be expected below the foundation. The foundation engineer/architect should determine whether the use of a capillary break (sand or gravel layer), in conjunction with the vapor retarder, is necessary or required by code. Sand layer thickness and location (above and/or below vapor retarder) should also be determined by the foundation engineer/architect.

4.3 Soil Bearing and Lateral Resistance

Provided our earthwork recommendations are implemented, an allowable soil bearing pressure of 1,500 pounds per square foot (psf) may be used for the design of footings having a minimum width of 12 inches and minimum embedment of 12 inches below lowest adjacent ground surface. This value may be increased by 300 psf for each additional foot of embedment or 150 psf for each additional foot of foundation width to a maximum value of 2,500 psf. A mat

foundation a minimum of 6 inches below lowest adjacent grade may be designed for an allowable soil bearing pressure of 1,200 psf. These allowable bearing pressures are applicable for level (ground slope equal to or flatter than 5H:1V) conditions only. Bearing values indicated are for total dead loads and frequently applied live loads and may be increased by ⅓ for short duration loading (i.e., wind or seismic loads).

In utilizing the above-mentioned allowable bearing capacity and provided our earthwork recommendations are implemented, foundation settlement due to structural loads is anticipated to be 1-inch or less. Differential settlement may be taken as half of the total settlement (i.e., ½-inch over a horizontal span of 40 feet).

Resistance to lateral loads can be provided by friction acting at the base of foundations and by passive earth pressure. For concrete/soil frictional resistance, an allowable coefficient of friction of 0.30 may be assumed with dead-load forces. An allowable passive lateral earth pressure of 250 psf per foot of depth (or pcf) to a maximum of 2,500 psf may be used for lateral resistance. Allowable passive pressure may be increased to 340 pcf to a maximum of 3,400 psf for short duration seismic loading. This passive pressure is applicable for level (ground slope equal to or flatter than 5 horizontal feet to 1-foot vertical) conditions only. Frictional resistance and passive pressure may be used in combination without reduction. We recommend that the upper foot of passive resistance be neglected if finished grade will not be covered with concrete or asphalt concrete. Frictional resistance and passive pressure may be used in combination without reduction. The provided allowable passive pressures are based on a factor of safety of 1.5 and 1.1 for static and seismic loading conditions, respectively. The structural designer should incorporate appropriate factors of safety and/or load factors in their design.

4.4 Foundation Setbacks

Foundations should have adequate setback from top and bottom of slopes in accordance with the 2019 CBC. For footings located above a descending slope, footing setbacks should be at least one-third of the slope height with a maximum required horizontal setback of 40 feet. As an alternative to moving the building footprint, setback requirements may be accomplished by deepened footings or deep foundations. For buildings located below an ascending slope, the edge of the building should be at least of one-half of the slope height with a maximum required setback of 15 feet. Refer to Chapter 18 of the 2019 CBC.

The project civil engineer must review, survey, and confirm that building setbacks are in accordance with governing codes. The precise grading plan should depict required foundation setbacks.

4.5 Lateral Earth Pressures for Retaining Walls

Lateral earth pressures are provided as equivalent fluid unit weights, in psf/ft of depth or pcf. These values do not contain an appreciable factor of safety, so the retaining wall designer should apply the applicable factors of safety and/or load factors during design. A soil unit weight of 120 pcf may be assumed for calculating the actual weight of soil over the wall footing.

The following lateral earth pressures are presented in Table 6 for approved granular soils a

maximum of 35 percent fines (passing the No. 200 sieve per ASTM D1140) and Very Low expansion potential (EI of 20 or less per ASTM D4829). Retaining wall backfill should also be limited to fill material not exceeding 3 inches in greatest dimension. Portions of the site soils are not suitable for retaining wall backfill due to their fines content (i.e., silt and clay content) and expansion potential; therefore, select grading/stockpiling of approved sandy soils or import of select sandy soils meeting the criteria outlined above will be required by the contractor for obtaining suitable retaining wall backfill soil. The retaining wall designer should clearly indicate on the retaining wall plans the required sandy backfill.

TABLE 6

Lateral Earth Pressures – Approved On-Site or Imported Select Sandy Backfill

Conditions	Equivalent Fluid Unit Weight (pcf)	
	Level Backfill	2:1 Backfill Sloping Upwards
	Approved Sandy Soils	Approved Sandy Soils
Active	35	55
At-Rest	55	75

If the wall can yield enough to mobilize the full shear strength of the soil, it can be designed for "active" pressure. If the wall cannot yield under the applied load, the earth pressure will be higher. This would include 90-degree corners of retaining walls. Such walls should be designed for "at-rest." The equivalent fluid pressure values assume free-draining conditions and a drainage system will be installed and maintained to prevent the build-up of hydrostatic pressures. If conditions other than those assumed above are anticipated, the equivalent fluid pressure values should be provided on an individual-case basis by the geotechnical engineer.

Retaining wall structures should be provided with appropriate drainage and appropriately waterproofed. To reduce, but not eliminate, saturation of near surface (upper approximate 1-foot) soils in front of the retaining walls, the perforated subdrain pipe should be located as low as possible behind the retaining wall. The outlet pipe should be sloped to drain to a suitable outlet. In general, we do not recommend retaining wall outlet pipes be connected to area drains. If subdrains are connected to area drains, special care and information should be provided to homeowners to maintain these drains. Typical retaining wall drainage is illustrated in Figure 2. It should be noted that the recommended subdrain does not provide protection against seepage through the face of the wall and/or efflorescence. Efflorescence is generally a white crystalline powder (discoloration) that results when water containing soluble salts migrates over a period of time through the face of a retaining wall and evaporates. If such seepage or efflorescence is undesirable, retaining walls should be waterproofed to reduce this potential.

Surcharge loading effects from any adjacent structures should be evaluated by the retaining wall designer. In general, structural loads within a 1:1 (horizontal to vertical) upward

projection from the bottom of the proposed retaining wall footing will surcharge the proposed retaining wall. In addition to the recommended earth pressure, retaining walls adjacent to streets should be designed to resist vehicular traffic if applicable. For a level backfill, a factor of 0.33 and 0.5 may be used for the active and at-rest conditions, respectively. The vertical traffic surcharge may be determined by the structural designer. The retaining wall designer should contact the geotechnical consultant for any required geotechnical input in estimating any applicable surcharge loads.

If required, the retaining wall designer may use a seismic lateral earth pressure increment of 5 pcf and 10 pcf for level and 2:1 (horizontal to vertical) sloping backfill conditions, respectively. This increment should be applied in addition to the provided static lateral earth pressure using a triangular distribution with the resultant acting at H/3 in relation to the base of the retaining structure (where H is the retained height). Per Section 1803.5.12 of the 2019 CBC, the seismic lateral earth pressure is applicable to structures assigned to Seismic Design Category D through F for retaining wall structures supporting more than 6 feet of backfill height. The provided seismic lateral earth pressure should not be used for retaining walls and/or a sloping backfill condition exceeding 10 feet in height. If a retaining wall and/or sloping backfill condition greater than 10 feet in height is proposed, the retaining wall designer should contact the geotechnical consultant for specific seismic lateral earth pressure increments based on the configuration of the planned retaining wall structures. This seismic lateral earth pressure is estimated using the procedure outlined by the Structural Engineers Association of California (Lew, et al, 2010).

Soil bearing and lateral resistance (friction coefficient and passive resistance) are provided in Section 4.3 (Soil Bearing and Lateral Resistance). Earthwork considerations (temporary back cuts, backfill, compaction, etc.) for retaining walls are provided in Section 4.1 (Site Earthwork) and the subsequent earthwork related sub-sections.

4.6 Preliminary Asphalt Concrete Pavement Sections

The following provisional minimum asphalt concrete (AC) pavement sections are provided in Table 7 based on a preliminary R-value of 21 for Traffic Indices (TI) of 5.5, 6.5 and 7.0. Per the Riverside County Road Improvement Standards & Specifications, TI of 5.5 is assigned to "Local Streets," 6.5 to "Enhanced Local Streets, and 7.0 to "Collector Streets." Pavement sections are based on Caltrans Highway Design Manual (Caltrans, 2020). These recommendations must be confirmed with R-value testing of representative near-surface soils at the completion of grading and after underground utilities have been installed and backfilled. Final pavement sections should be confirmed by the project civil engineer based upon the final design Traffic Index. Determination of the TI is not the purview of the geotechnical consultant If requested, LGC Geotechnical will provide sections for alternate TI values.

TABLE 7

Preliminary Asphalt Concrete Pavement Section Options

Assumed Traffic Index	5.5	6.5	7.0
R -Value Subgrade	21	21	21
AC Thickness	4.0 inches	4.0 inches	5.0 inches
Aggregate Base Thickness	7.0 inches	10.0 inches	10.0 inches

The pavement section thicknesses provided above are considered minimum thicknesses. Increasing the thickness of any or all of the above layers will reduce the likelihood of the pavement experiencing distress during its service life. The above recommendations are based on the assumption that proper maintenance and irrigation of the areas adjacent to the roadway will occur throughout the design life of the pavement. Failure to maintain a proper maintenance and/or irrigation program may jeopardize the integrity of the pavement.

Earthwork recommendations regarding underlying aggregate base and subgrade are provided in Section 4.1 ("Site Earthwork") and the related sub-sections of this report.

4.7 Soil Corrosivity

LGC Geotechnical is not a corrosion consultant; however, several governing agencies in Southern California require the geotechnical consultant to determine the corrosion potential of soils to buried concrete and metal facilities. We therefore present the results of our testing with regard to corrosion for the use of the client and other consultants, as they determine necessary.

Corrosion testing indicated a soluble sulfate content ranging from approximately 0.01 to 0.94 percent, chloride contents ranging from 100 to 540 parts per million (ppm), a pH value of 8.16, and a resistivity value of 246-ohm-centimeters. Based on Caltrans Corrosion Guidelines (2021), soils are considered corrosive if the pH is 5.5 or less, or the chloride concentration is 500 ppm or greater, or the sulfate concentration is 1,500 ppm (0.15 percent) or greater. Based on the test results, soils are considered corrosive using Caltrans criteria.

Based on laboratory sulfate test results, the near surface soils are designated to a class "S2" per ACI 318, Table 19.3.1.1 with respect to sulfates. Concrete in direct contact with the onsite soils can be designed according to ACI 318, Table 19.3.2.1 using the "S2" sulfate classification.

Laboratory testing may need to be performed at the completion of grading by the Project Corrosion Engineer to further evaluate the as-graded soil corrosivity characteristics. Accordingly, revision of the corrosion potential may be needed, should future test results differ substantially from the conditions reported herein. The client and/or other members of the development team should consider this during the design and planning phase of the project and formulate an appropriate course of action.

4.8 Slope Maintenance Guidelines

Slopes must not be overwatered. Irrigation levels should be kept to the minimum level necessary to establish a healthy plant growth. If automatic sprinklers are used, they must be adjusted during periods of rainfall. Continuous erosion control, rodent control, and maintenance are essential to the long-term stability of slopes. A program for the elimination of burrowing animals in slope areas must be established to protect slope stability by reducing the potential for surface water to penetrate into the slope face. Trenches excavated on a slope face for utility or irrigation lines and/or for any purpose must be properly backfilled and compacted (as outlined in Section 4.1.10) to the slope face. Observation/testing and acceptance by the

geotechnical consultant during trench backfill are recommended. V-ditches should be inspected and cleared of loose soil and/or debris on a routine basis, especially prior to and during the rainy season.

4.9 Nonstructural Concrete Flatwork

Nonstructural concrete (such as flatwork, sidewalks, patios, bicycle trails, etc.) has a potential for cracking due to changes in soil volume related to soil-moisture fluctuations. To reduce the potential for excessive cracking and lifting, concrete should be designed in accordance with the minimum guidelines outlined in Table 8. These guidelines will reduce the potential for irregular cracking and promote cracking along control joints but will not eliminate all cracking or lifting. Thickening the concrete and/or adding additional reinforcement will further reduce cosmetic distress. Please note that these are preliminary recommendations that will need to be confirmed and/or modified based on as-graded conditions at the completion of grading. The concrete flatwork will move over time, the architect and builder must make provisions for this movement in both design and construction.

TABLE 8

Preliminary Geotechnical Guidelines for Nonstructural Concrete Flatwork Placed on Very Low to Low Expansion Potential Subgrade

	Homeowner Sidewalks	**Private Drives**	**Flatwork/Patios /Entryways**	**City Sidewalk Curb and Gutters**
Minimum Thickness (in.)	4 (nominal)	4 (full)	4 (full)	City/Agency Standard
Presoaking	Wet down prior to placing	Wet down prior to placing	Wet down prior to placing	City/Agency Standard
Reinforcement	—	No. 3 at 36 inches on centers	No. 3 at 36 inches on centers	City/Agency Standard
Thickened Edge	—	8" wide x 8" total thickness	—	City/Agency Standard
Crack Control Joints	Saw cut or deep open tool joint to a minimum of $^1/_3$ the concrete thickness	Saw cut or deep open tool joint to a minimum of $^1/_3$ the concrete thickness	Saw cut or deep open tool joint to a minimum of $^1/_3$ the concrete thickness	City/Agency Standard
Maximum Joint Spacing	5 feet	10 feet or quarter cut whichever is closer	6 feet	City/Agency Standard
Aggregate Base Thickness (in.)	—	—	—	City/Agency Standard

To reduce the potential for driveways to separate from the garage slab, the builder may elect to install dowels to tie these two elements together. Similarly, future homeowners should consider the use of dowels to connect flatwork to the foundation.

4.10 Surface Drainage and Landscaping

4.10.1 Precise Grading

From a geotechnical perspective, we recommend that compacted finished grade soils adjacent to proposed residences be sloped away from the proposed building structures and towards an approved drainage device or unobstructed swale. Drainage swales, wherever feasible, should not be constructed within 5 feet of buildings. Where lot and

building geometry necessitates that drainage swales be routed closer than 5 feet to structural foundations, we recommend the use of area drains together with drainage swales. Drainage swales used in conjunction with area drains should be designed by the project civil engineer so that a properly constructed and maintained system will prevent ponding within 5 feet of the foundation. Code compliance of grades is not the purview of the geotechnical consultant.

Planters with open bottoms adjacent to buildings should be avoided. Planters should not be designed adjacent to buildings unless provisions for drainage, such as catch basins, liners, and/or area drains, are made. Overwatering must be avoided.

4.10.2 Landscaping

Planters adjacent to a building or structure should be avoided wherever possible or be properly designed (e.g., lined with a membrane), to reduce the penetration of water into the adjacent footing subgrades and thereby reduce moisture-related damage to the foundation. Planting areas at grade should be provided with appropriate positive drainage. Wherever possible, exposed soil areas should be above adjacent paved grades to facilitate drainage. Planters should not be depressed below adjacent paved grades unless provisions for drainage, such as multiple depressed area drains, are constructed. Adequate drainage gradients, devices, and curbing should be provided to prevent runoff from adjacent pavement or walks into the planting areas. Irrigation methods should promote uniformity of moisture in planters and beneath adjacent concrete flatwork. Overwatering and underwatering of landscape areas must be avoided. Irrigation levels should be kept to the absolute minimum level necessary to maintain healthy plant life.

Area drain inlets should be maintained and kept clear of debris in order to properly function. Owners and property management personnel should also be made aware that excessive irrigation of neighboring properties can cause seepage and moisture conditions. Owners and property management personnel should be furnished with these recommendations communicating the importance of maintaining positive drainage away from structures, towards streets, when they design their improvements.

The impact of heavy irrigation or inadequate runoff gradients can create perched water conditions. This may result in seepage or shallow groundwater conditions where previously none existed. Maintaining adequate surface drainage and controlled irrigation will significantly reduce the potential for nuisance-type moisture problems. To reduce differential earth movements such as heaving and shrinkage due to the change in moisture content of foundation soils, which may cause distress to a structure and associated improvements, moisture content of the soils surrounding the structure should be kept as relatively constant as possible.

4.11 Subsurface Water Infiltration

Recent regulatory changes have occurred that mandate that storm water be infiltrated below grade rather than collected in a conventional storm drain system. Typically, a combination of methods is implemented to reduce surface water runoff and increase infiltration including;

permeable pavements/pavers for roadways and walkways, directing surface water runoff to grass-lined swales, retention areas, and/or drywells, etc.
It should be noted that collecting and concentrating surface water for the purpose of intentional infiltration below grade conflicts with the geotechnical engineering objectives of directing surface water away from slopes, structures, and other improvements. The geotechnical stability and integrity of a site is reliant upon appropriately handling surface water. In general, the vast majority of geotechnical distress issues are directly related to improper drainage. In general, distress in the form of movement of improvements could occur as a result of soil saturation and loss of soil support, expansion, internal soil erosion, collapse and/or settlement. Infiltrated water may enter underground utility pipe zones and migrate along the pipe backfill, potentially impacting other improvements located far away from the point of infiltration.

Geotechnical stability and integrity of the project site is reliant upon appropriate handling of surface water. Due to the low measured infiltration rates, low permeability fine-grained soil layers encountered, and shallow groundwater encountered across the site, we strongly recommend against the intentional infiltration of storm water into subsurface soils.

4.12 Geotechnical Plan Review

When available, the project plans (e.g., rough grading, precise grading, retaining wall, foundation, etc.) should be reviewed by LGC Geotechnical in order to verify our geotechnical recommendations are implemented. Updated recommendations and/or additional field work may be necessary.

4.13 Geotechnical Observation and Testing During Construction

The recommendations provided in this report are based on limited subsurface observations and geotechnical analysis. The interpolated subsurface conditions should be checked in the field during construction by a representative of LGC Geotechnical. Geotechnical observation and testing are required per Section 1705 of the 2019 California Building Code (CBC).

Geotechnical observation and/or testing should be performed by LGC Geotechnical at the following stages:

- During rough grading (removal/over-excavation bottoms, fill placement, etc.);
- Geologic mapping of temporary backcuts;
- During utility trench backfill and compaction;
- During precise grading;
- After presoaking building pads and other concrete-flatwork subgrades, and prior to placement of aggregate base or concrete;
- Preparation of pavement subgrade and placement of aggregate base;
- After building and wall footing excavation and prior to placement of steel reinforcement and/or concrete; and
- When any unusual soil conditions are encountered during any construction operation subsequent to issuance of this report.

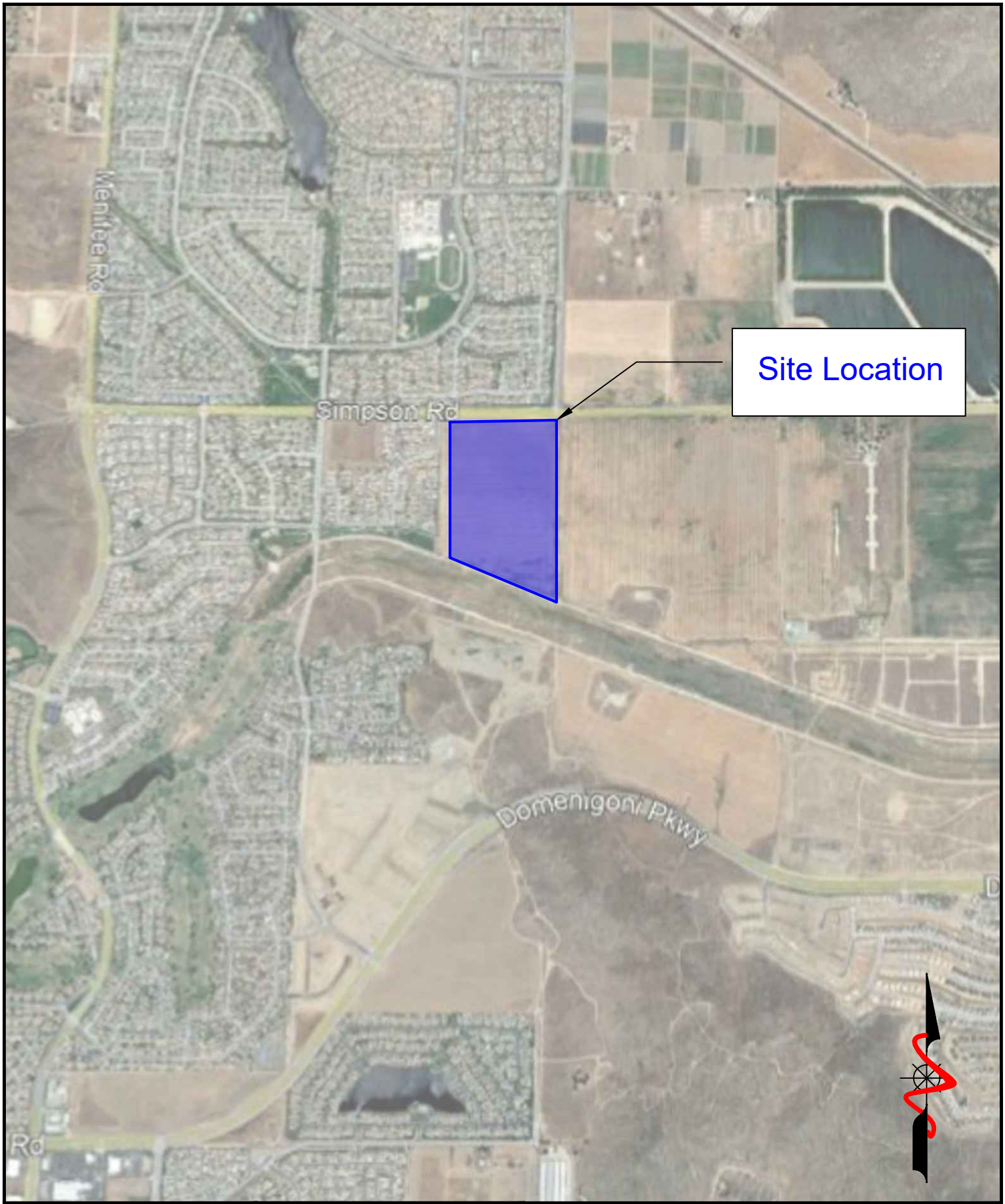
5.0 LIMITATIONS

Our services were performed using the degree of care and skill ordinarily exercised, under similar circumstances, by reputable engineers and geologists practicing in this or similar localities. No other warranty, expressed or implied, is made as to the conclusions and professional advice included in this report. The samples taken and submitted for laboratory testing, the observations made, and the in-situ field testing performed are believed representative of the entire project; however, soil and geologic conditions revealed by excavation may be different than our preliminary findings. If this occurs, the changed conditions must be evaluated by the project soils engineer and geologist and design(s) adjusted as required or alternate design(s) recommended.

This report is issued with the understanding that it is the responsibility of the owner, or of his/her representative, to ensure that the information and recommendations contained herein are brought to the attention of the architect and/or project engineer and incorporated into the plans, and the necessary steps are taken to see that the contractor and/or subcontractor properly implements the recommendations in the field. The contractor and/or subcontractor should notify the owner if they consider any of the recommendations presented herein to be unsafe.

The findings of this report are valid as of the present date. However, changes in the conditions of a property can and do occur with the passage of time, whether they be due to natural processes or the works of man on this or adjacent properties. Therefore, the findings, conclusions, and recommendations presented in this report can be re lied upon only if LGC Geotechnical has the opportunity to observe the subsurface conditions during grading and construction of the project, in order to confirm that our preliminary findings are representative for the site.

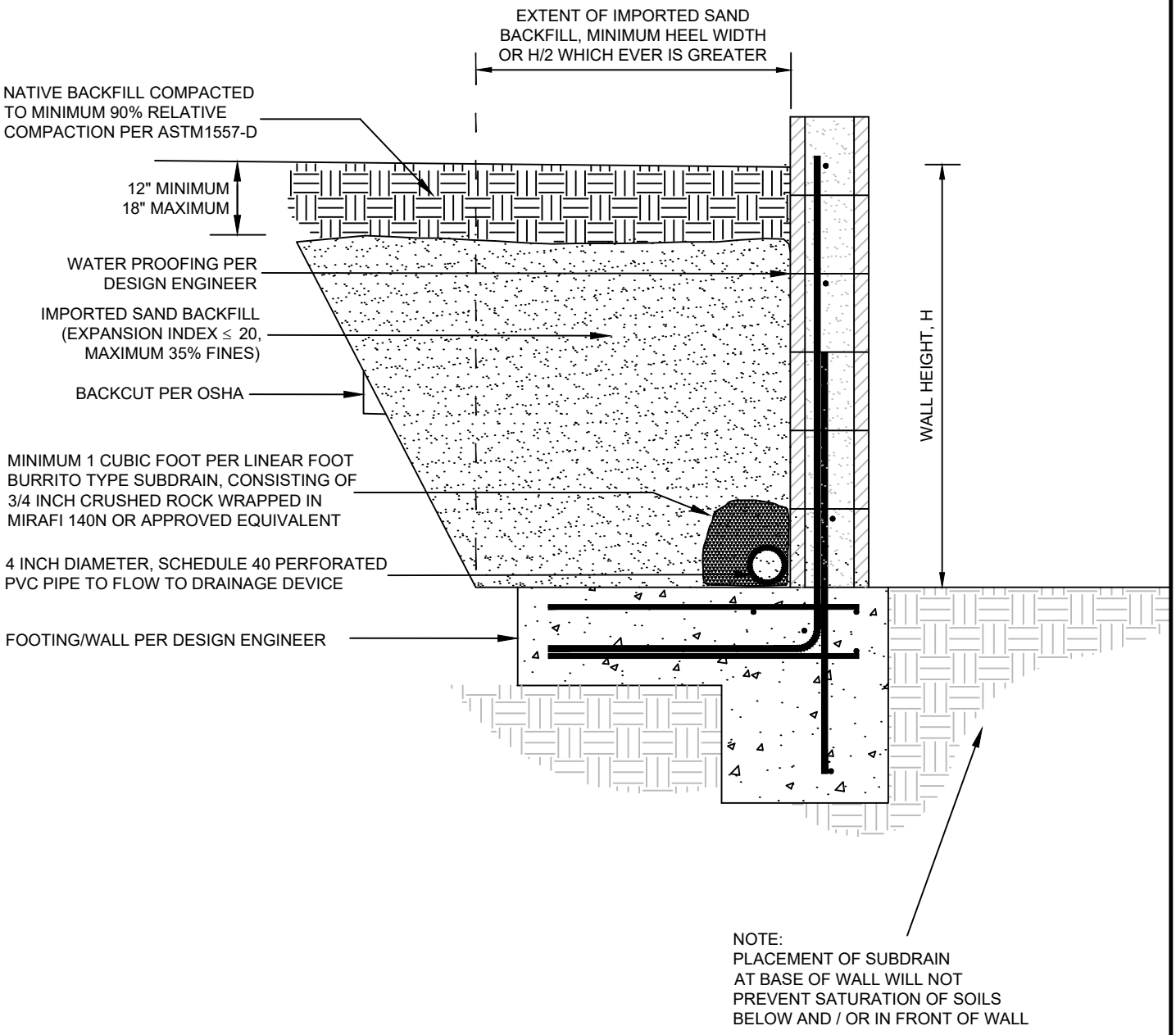
In addition, changes in applicable or appropriate standards may occur, whether they result from legislation or the broadening of knowledge. Accordingly, the findings of this report may be invalidated wholly or partially by changes outside our control. Therefore, this report is subject to review and modification, and should not be relied upon after a period of 3 years.



LGC Geotechnical, Inc.

FIGURE 1
Site Location Map

PROJECT NAME	Meritage - Salt Creek, Riverside
PROJECT NO.	22057-01
ENG. / GEOL.	DJB/CPM
SCALE	Not to Scale
DATE	August 2022



LGC Geotechnical, Inc.

FIGURE 2

Retaining Wall Backfill and Subdrain Detail

PROJECT NAME	Meritage - Salt Creek, Riverside
PROJECT NO.	22057-01
ENG. / GEOL.	DJB/CPM
SCALE	Not to Scale
DATE	August 2022

Appendix A
References

APPENDIX A

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Appendix B
Exploratory Boring and Trench Logs

Geotechnical Boring Log Borehole HS-1

Date: 4/11/2022	**Drilling Company:** Cal Pac Drilling
Project Name: Meritage - Salt Creek	**Type of Rig:** Mobile B61
Project Number: 22057-01	**Drop:** 30" **Hole Diameter:** 8"
Elevation of Top of Hole: ~1446' MSL	**Drive Weight:** 140 pounds
Hole Location: See Geotechnical Map	Page 1 of 1

Logged By JMN
Sampled By JMN
Checked By CPM

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
1445	0	B-1	R-1	12 12 11	121.6	8.6	SM	**@0' to T.D. - <u>Old Alluvium (Qoa):</u>** @1' - Silty SAND: reddish to yellowish brown, moist, medium dense	
			R-2	4 7 8	115.5	12.0	ML	@2.5' - Sandy SILT: reddish brown, moist, stiff	
1440	5		R-3	5 5 7	113.8	11.3	SM	@5' - Silty SAND: dark brown, moist, loose, scattered pebbles	
			R-4	5 8 11	118.3	10.3		@7.5' - Silty SAND: light brown to reddish brown, moist, medium dense	
1435	10		R-5	7 8 7				@10' - No Recovery	
1430	15	▽	R-6	2 2 3	94.6	18.0	ML	@15' - Sandy SILT: brown, wet soft	
1425	20		SPT-1	8 11 15		17.3	SC	@20' - Clayey SAND: orange to olive brown, wet, dense	
1420	25		R-7	8 12 13	120.2	15.0		@25' - Clayey SAND: reddish brown, wet, dense	
	30							Total Depth = 26.5' Groundwater Encountered at Approximately 15' Backfilled with Cuttings on 4/11/2022	

LGC Geotechnical, Inc.

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED. THE DESCRIPTIONS PROVIDED ARE QUALITATIVE FIELD DESCRIPTIONS AND ARE NOT BASED ON QUANTITATIVE ENGINEERING ANALYSIS.

SAMPLE TYPES:

B	BULK SAMPLE
R	RING SAMPLE (CA Modified Sampler)
G	GRAB SAMPLE
SPT	STANDARD PENETRATION TEST SAMPLE
▽	GROUNDWATER TABLE

TEST TYPES:

DS	DIRECT SHEAR
MD	MAXIMUM DENSITY
SA	SIEVE ANALYSIS
S&H	SIEVE AND HYDROMETER
EI	EXPANSION INDEX
CN	CONSOLIDATION
CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE
-#200	% PASSING # 200 SIEVE

Last Edited: 5/23/2022

Geotechnical Boring Log Borehole HS-2

Date: 4/11/2022 | **Drilling Company:** Cal Pac Drilling

Project Name: Meritage - Salt Creek | **Type of Rig:** Mobile B61

Project Number: 22057-01 | **Drop:** 30" | **Hole Diameter:** 8"

Elevation of Top of Hole: ~1444' MSL | **Drive Weight:** 140 pounds

Hole Location: See Geotechnical Map |

Logged By JMN
Sampled By JMN
Checked By CPM

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
	0	B-1	R-1	13 13 13				**@0' to 20' - Young Alluvium (Qal):** @1' - No Recovery	EI CR
			R-2	6 10 12	98.4	12.3	SM	@2.5' - Silty SAND: pale brown, moist, medium dense	
1440	5		R-3	6 11 16	95.2	12.6		@5' - Silty SAND: reddish brown, moist, medium dense	
			R-4	2 6 10	86.5	32.3	ML	@7.5' - Sandy SILT: yellowish brown, very moist, stiff	CD
1435	10		R-5	2 5 8	110.2	17.9	SM	@10' - Silty SAND: yellowish brown, very moist, medium dense	CN
1430	15	▽	SPT-1	3 6 6		22.2		@15' - Silty SAND: pale grayish brown, wet, medium dense	
1425								**@20' to T.D. - Old Alluvium (Qoa):**	
	20		R-6	1 2 3	74.9	42.7	CL	@20' - CLAY: light brown, wet, soft	CN
1420	25		SPT-2	2 2 3		25.4	ML	@25' - Sandy SILT: olive brown, very moist, medium stiff	
1415	30							Total Depth = 26.5' Groundwater Encountered at Approximately 14' Backfilled with Cuttings on 4/11/2022	

LGC Geotechnical, Inc.

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SAMPLE TYPES:

B	BULK SAMPLE
R	RING SAMPLE (CA Modified Sampler)
G	GRAB SAMPLE
SPT	STANDARD PENETRATION TEST SAMPLE
▽	GROUNDWATER TABLE

TEST TYPES:

DS	DIRECT SHEAR
MD	MAXIMUM DENSITY
SA	SIEVE ANALYSIS
S&H	SIEVE AND HYDROMETER
EI	EXPANSION INDEX
CN	CONSOLIDATION
CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE
-#200	% PASSING # 200 SIEVE

Last Edited: 5/23/2022

Geotechnical Boring Log Borehole HS-3

Date: 4/11/2022	**Drilling Company:** Cal Pac Drilling
Project Name: Meritage - Salt Creek	**Type of Rig:** Mobile B61
Project Number: 22057-01	**Drop:** 30" **Hole Diameter:** 8"
Elevation of Top of Hole: ~1444' MSL	**Drive Weight:** 140 pounds
Hole Location: See Geotechnical Map	Page 1 of 2

Logged By JMN
Sampled By JMN
Checked By CPM

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
	0	B-1						**@0' to 20' - Young Alluvium (Qal):**	
			R-1	7 7 8	97.5	17.0	ML	@1' - Sandy SILT: dark brown, moist, stiff	RV
			R-2	4 14 19	97.8	15.5	SM	@2.5' - Silty SAND: reddish brown, very moist, medium dense	
1440	5		R-3	9 11 10	105.1	13.3	SM-ML	@5' - Silty SAND to Sandy SILT: yellowish brown to olive brown, moist, medium dense to very stiff, scattered pebbles	
			R-4	8 16 24	112.9	13.3	SM	@7.5' - Silty SAND: yellowish brown to pale olive brown, moist, dense, scattered pebbles	
1435	10	▽	R-5	7 12 14	101.7	23.5	ML	@10' - Sandy SILT: pale brown to olive brown, very moist, very stiff, rock fragments in sampler	
1430	15		SPT-1	2 3 5		24.7	SM	@15' - Silty SAND with Gravel: light brown to olive brown, wet, loose	
1425	20		R-6	3 5 6	101.6	23.2	ML	**@20' to T.D. - Old Alluvium (Qoa):** @20' - Sandy SILT: olive brown, wet, stiff	
1420	25		SPT-2	3 5 5		24.2	CL	@25' - Sandy CLAY: olive brown, wet, stiff	
1415	30								

LGC Geotechnical, Inc.

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SAMPLE TYPES:

B	BULK SAMPLE
R	RING SAMPLE (CA Modified Sampler)
G	GRAB SAMPLE
SPT	STANDARD PENETRATION TEST SAMPLE
▽	GROUNDWATER TABLE

TEST TYPES:

DS	DIRECT SHEAR
MD	MAXIMUM DENSITY
SA	SIEVE ANALYSIS
S&H	SIEVE AND HYDROMETER
EI	EXPANSION INDEX
CN	CONSOLIDATION
CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE
-#200	% PASSING # 200 SIEVE

Last Edited: 5/23/2022

Geotechnical Boring Log Borehole HS-3

Date: 4/11/2022 | **Drilling Company:** Cal Pac Drilling

Project Name: Meritage - Salt Creek | **Type of Rig:** Mobile B61

Project Number: 22057-01 | **Drop:** 30" | **Hole Diameter:** 8"

Elevation of Top of Hole: ~1444' MSL | **Drive Weight:** 140 pounds

Hole Location: See Geotechnical Map

Logged By JMN
Sampled By JMN
Checked By CPM

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
1410	30		R-7	4 9 15	115.2	14.7	SM	@30' - Silty SAND: light brown to reddish brown, wet, medium dense	
	35		SPT-3	2 4 5		24.1		@35' - Silty SAND: light brown to olive brown, wet, medium dense	
1405									
1400	40		R-8	6 12 20	106.0	21.5		@40' - Silty SAND: pale brown to olive brown, wet, medium dense	
1395	45							Total Depth = 45' (Due to heaving sand) Groundwater Encountered at Approximately 11' Backfilled with Cuttings on 4/11/2022	
1390	50								
1385	55								
	60								

LGC Geotechnical, Inc.

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▽	GROUNDWATER TABLE

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SA	SIEVE ANALYSIS
S&H	SIEVE AND HYDROMETER
EI	EXPANSION INDEX
CN	CONSOLIDATION
CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE
-#200	% PASSING # 200 SIEVE

Geotechnical Boring Log Borehole HS-4

Date: 4/12/2022	**Drilling Company:** Cal Pac Drilling
Project Name: Meritage - Salt Creek	**Type of Rig:** Mobile B61
Project Number: 22057-01	**Drop:** 30" **Hole Diameter:** 8"
Elevation of Top of Hole: ~1445' MSL	**Drive Weight:** 140 pounds
Hole Location: See Geotechnical Map	Page 1 of 1

Logged By JMN
Sampled By JMN
Checked By CPM

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
	0	B-1	R-1	19 29 34	117.4	9.0	SM	**@0' to 5' - Young Alluvium (Qal):** @1' - Silty SAND: light brown to orange brown, moist, dense	CR
			R-2	14 17 18	109.1	16.8	SC	@2.5' - Clayey SAND: orange brown, moist, medium dense	
1440	5		R-3	6 9 11	104.6	22.6	CL	**@5' to T.D. - Old Alluvium (Qoa):** @5' - Sandy CLAY: light brown to orange brown, very moist, very stiff	
			R-4	4 5 7	110.7	20.2	SC	@7.5' - Clayey SAND: brown, wet, loose	CO
1435	10		R-5	5 8 18	106.0	26.5	CL	@10' - Sandy CLAY: pale brown to olive brown, wet, very stiff	
1430	15		SPT-1	2 3 5		26.3	ML	@15' - Sandy SILT: brown to dark brown, wet, stiff	
1425	20		R-6	11 13 14	126.6	11.6	SC	@20' - Clayey SAND: reddish brown, moist, medium dense	
1420	25		SPT-2	5 10 11		15.9	SM	@25' - Silty SAND: brown, wet, medium dense	
	30							Total Depth = 26.5' Groundwater Encountered at Approximately 6' Backfilled with Cuttings on 4/12/2022	

LGC Geotechnical, Inc.

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED. THE DESCRIPTIONS PROVIDED ARE QUALITATIVE FIELD DESCRIPTIONS AND ARE NOT BASED ON QUANTITATIVE ENGINEERING ANALYSIS.

SAMPLE TYPES:

B	BULK SAMPLE
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▽	GROUNDWATER TABLE

TEST TYPES:

DS	DIRECT SHEAR
MD	MAXIMUM DENSITY
SA	SIEVE ANALYSIS
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EI	EXPANSION INDEX
CN	CONSOLIDATION
CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE
-#200	% PASSING # 200 SIEVE

Last Edited: 5/23/2022

Geotechnical Boring Log Borehole HS-5

Date: 4/12/2022 | **Drilling Company:** Cal Pac Drilling

Project Name: Meritage - Salt Creek | **Type of Rig:** Mobile B61

Project Number: 22057-01 | **Drop:** 30" | **Hole Diameter:** 8"

Elevation of Top of Hole: ~1445' MSL | **Drive Weight:** 140 pounds

Hole Location: See Geotechnical Map |

Logged By JMN
Sampled By JMN
Checked By CPM

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
	0	B-1	R-1	5 4 4	98.7	18.4	SC-CL	**@0' to 15' - Young Alluvium (Qal):** @1' - Clayey SAND to Sandy CLAY: brown, moist, loose to medium stiff, rootlets	MD EI CR AL
			R-2	10 12 7	93.8	21.3	SM	@2.5' - Silty SAND: yellowish to reddish brown, very moist, medium dense	
1440	5		R-3	4 5 9	114.7	10.0		@5' - Silty SAND: yellowish to reddish brown, moist, medium dense	
		▽	R-4	6 11 17	115.3	7.4	SP	@7.5' - SAND: gray to yellowish brown, moist, medium dense, scattered gravel	
1435	10		R-5	12 18 25	118.8	9.8		@10' - SAND: gray to pale brown, wet, dense, scattered gravel	
1430	15		SPT-1	3 8 10		14.1	SP	**@15' to T.D. - Old Alluvium (Qoa):** @15' - SAND: reddish to grayish brown, wet, medium dense	
1425	20		R-6	4 5 6	75.4	45.5	CL-ML	@20' - Silty CLAY: light yellow brown to olive brown, wet, stiff	CN
1420	25		SPT-2	1 2 2		26.2	CL	@25' - Sandy CLAY: yellowish orange brown to light brown, wet, medium stiff	
	30							Total Depth = 26.5' Groundwater Encountered at Approximately 8.5' Backfilled with Cuttings on 4/12/2022	

LGC Geotechnical, Inc.

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SAMPLE TYPES:

B	BULK SAMPLE
R	RING SAMPLE (CA Modified Sampler)
G	GRAB SAMPLE
SPT	STANDARD PENETRATION TEST SAMPLE
▽	GROUNDWATER TABLE

TEST TYPES:

DS	DIRECT SHEAR
MD	MAXIMUM DENSITY
SA	SIEVE ANALYSIS
S&H	SIEVE AND HYDROMETER
EI	EXPANSION INDEX
CN	CONSOLIDATION
CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE
-#200	% PASSING # 200 SIEVE

Last Edited: 5/23/2022

Geotechnical Boring Log Borehole HS-6

Date: 5/5/2022	**Drilling Company:** Martini Drilling
Project Name: Meritage - Salt Creek	**Type of Rig:** CME 75
Project Number: 22057-01	**Drop:** 30" **Hole Diameter:** 8"
Elevation of Top of Hole: ~1447' MSL	**Drive Weight:** 140 pounds
Hole Location: See Geotechnical Map	Page 1 of 2

Logged By JMN
Sampled By JMN
Checked By CPM

Elevation (ft)	Depth (ft)	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
	0	R-1	11 12 19	105.4	5.9	ML	**@0' to 7.5' - <u>Young Alluvium (Qal):</u>** @1' - Sandy SILT: brown to olive brown, dry, very stiff	
1445		SPT-1	5 5 3		8.6		@2.5' - Sandy SILT: light yellowish brown, slightly moist, stiff	
	5	R-2	19 21 26	99.0	14.1	SM	@5' - Silty SAND: brown, moist, medium dense	
1440		SPT-2	6 8 11		15.6	SM	**@7.5' to T.D. - <u>Old Alluvium (Qoa):</u>** @7.5' - Silty SAND: brown to reddish brown, moist, medium dense	
	10	R-3	14 19 28	120.3	14.0	SC	@10' - Clayey SAND: brown, moist, dense	
1435								
	15	SPT-3	4 11 20		14.7	CL	@15' - Sandy CLAY: light brown to reddish brown, moist, hard	
1430								
	20	R-4	14 41 50/4"	122.0	12.4	SC	@20' - Clayey SAND, brown to reddish brown, moist, very dense	
1425								
	25	SPT-4	4 6 10		15.1		@25' - Clayey SAND: dark brown to reddish brown, moist, medium dense	
1420								
	30							

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SAMPLE TYPES:

B	BULK SAMPLE
R	RING SAMPLE (CA Modified Sampler)
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SPT	STANDARD PENETRATION TEST SAMPLE
	GROUNDWATER TABLE

TEST TYPES:

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MD	MAXIMUM DENSITY
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EI	EXPANSION INDEX
CN	CONSOLIDATION
CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE
-#200	% PASSING # 200 SIEVE

Last Edited: 5/23/2022

Geotechnical Boring Log Borehole HS-6

Date: 5/5/2022	**Drilling Company:** Martini Drilling
Project Name: Meritage - Salt Creek	**Type of Rig:** CME 75
Project Number: 22057-01	**Drop:** 30" **Hole Diameter:** 8"
Elevation of Top of Hole: ~1447' MSL	**Drive Weight:** 140 pounds
Hole Location: See Geotechnical Map	Page 2 of 2

Logged By JMN
Sampled By JMN
Checked By CPM

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
1415	30		R-5	20 37 47	126.9	11.9	SM	@30' - Silty SAND: brown to dark brown, moist, very dense	
1410	35		SPT-5	16 18 27		17.0	SP-SM	@35' - SAND with Silt: brown to dark brown, wet, very dense	
1405	40		R-6	18 35 50/4"	123.6	13.3	SC	@40' - Clayey SAND: dark brown, to reddish brown, very moist, very dense	
1400	45		SPT-6	5 19 22		15.1	CL	@45' - Sandy CLAY: brown to dark brown, very moist, hard	
1395	50		R-7	42 50/4"	122.2	8.8	SP	@50' - SAND: gray to brown, very moist, very dense	
1390	55							Total Depth = 51' Groundwater Encountered at Approximately 28' Backfilled with Cuttings on 5/5/2022	
	60								

LGC Geotechnical, Inc.

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SAMPLE TYPES:

B	BULK SAMPLE
R	RING SAMPLE (CA Modified Sampler)
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▽	GROUNDWATER TABLE

TEST TYPES:

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CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE
-#200	% PASSING # 200 SIEVE

Geotechnical Boring Log Borehole HS-7

Date: 5/5/2022 | **Drilling Company:** Martini Drilling

Project Name: Meritage - Salt Creek | **Type of Rig:** CME 75

Project Number: 22057-01 | **Drop:** 30" | **Hole Diameter:** 8"

Elevation of Top of Hole: ~1462' MSL | **Drive Weight:** 140 pounds

Hole Location: See Geotechnical Map

Logged By JMN
Sampled By JMN
Checked By CPM

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
	0							**@0' to 20' - Old Alluvium (Qoa):**	
1460			R-1	8 15 26	119.1	5.5	SM	@2.5' - Silty SAND: light reddish brown to light gray, slightly moist, dense	
	5		R-2	22 50/3"	116.6	5.9		@5' - Silty SAND: yellowish brown to light brown, slightly moist, very dense	
1455			R-3	38 50/3"	118.5	8.0		@7.5' - Silty SAND: light brown to orange brown, moist, very dense	
	10		R-4	30 48 50/5"	121.5	7.6		@10' - Silty SAND: yellowish brown to brown, moist, very dense	
1450									
	15		SPT-1	4 4 4		10.0		@15' - Silty SAND: brown to orange brown, moist, loose	
1445									
	20		R-5	33 50/5"	118.9	7.9	SP-SM	**@20' to T.D. - Bedrock - Domenigoni Valley Granodiorite (Kdvg):** @20' - SAND with Silt: brown to orange brown, moist, very dense, highly weathered	
1440									
	25		SPT-2	50/5"		5.6		@25' - SAND with Silt: light brown to orange brown, slightly moist, very dense	
1435								Total Depth = 25.5' Groundwater Not Encountered Backfilled with Cuttings on 5/5/2022	
	30								

LGC Geotechnical, Inc.

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SAMPLE TYPES:

B	BULK SAMPLE
R	RING SAMPLE (CA Modified Sampler)
G	GRAB SAMPLE
SPT	STANDARD PENETRATION TEST SAMPLE
▽	GROUNDWATER TABLE

TEST TYPES:

DS	DIRECT SHEAR
MD	MAXIMUM DENSITY
SA	SIEVE ANALYSIS
S&H	SIEVE AND HYDROMETER
EI	EXPANSION INDEX
CN	CONSOLIDATION
CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE
-#200	% PASSING # 200 SIEVE

Last Edited: 5/23/2022

Geotechnical Boring Log Borehole HS-8

Date: 5/5/2022	**Drilling Company:** Martini Drilling
Project Name: Meritage - Salt Creek	**Type of Rig:** CME 75
Project Number: 22057-01	**Drop:** 30" **Hole Diameter:** 8"
Elevation of Top of Hole: ~1466' MSL	**Drive Weight:** 140 pounds
Hole Location: See Geotechnical Map	Page 1 of 1

Logged By JMN
Sampled By JMN
Checked By CPM

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
1465	0		R-1	3 4 11	114.7	6.1	SM	**@0' to 5' - <u>Young Alluvium (Qal):</u>** @2.5' - Silty SAND: light reddish brown to light gray, slightly moist, medium dense	
1460	5		R-2	50/3"	108.0	2.4	SM	**@5' to T.D. - <u>Old Alluvium (Qoa):</u>** @5' - Silty SAND: yellowish brown to light brown, slightly moist, very dense	
1455	10							Total Depth = 7.5' Refusal on Bedrock Groundwater Not Encountered Backfilled with Cuttings on 5/5/2022	
1450	15								
1445	20								
1440	25								
	30								

LGC Geotechnical, Inc.

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SAMPLE TYPES:

B	BULK SAMPLE
R	RING SAMPLE (CA Modified Sampler)
G	GRAB SAMPLE
SPT	STANDARD PENETRATION TEST SAMPLE
⏚	GROUNDWATER TABLE

TEST TYPES:

DS	DIRECT SHEAR
MD	MAXIMUM DENSITY
SA	SIEVE ANALYSIS
S&H	SIEVE AND HYDROMETER
EI	EXPANSION INDEX
CN	CONSOLIDATION
CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE
-#200	% PASSING # 200 SIEVE

Last Edited: 5/23/2022

Geotechnical Boring Log Borehole HS-9

Date: 5/5/2022 | **Drilling Company:** Martini Drilling

Project Name: Meritage - Salt Creek | **Type of Rig:** CME 75

Project Number: 22057-01 | **Drop:** 30" | **Hole Diameter:** 8"

Elevation of Top of Hole: ~1448' MSL | **Drive Weight:** 140 pounds

Hole Location: See Geotechnical Map

Logged By JMN
Sampled By JMN
Checked By CPM

Elevation (ft)	Depth (ft)	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
	0	R-1	14 18 40	121.3	4.1	SM	**@0' to 7.5' - <u>Young Alluvium (Qal):</u>** @1' - Silty SAND: yellowish brown to light brown, slightly moist, dense	
1445		R-2	12 35 50/3"	118.0	3.5		@2.5' - Silty SAND: yellowish brown to brown, dry, very dense	
	5	R-3	36 50/4"	120.1	8.8		@5' - Silty SAND: brown to dark brown, moist, very dense	
1440		R-4	20 33 49	127.0	10.1	SM	**@7.5' to T.D. - <u>Old Alluvium (Qoa):</u>** @7.5' - Silty SAND: light brown to orange brown, moist, very dense	CO
	10	R-5	14 24 28	125.2	12.6		@10' - Silty SAND: brown to dark brown, moist, dense	
1435								
	15	R-6	5 7 12	121.5	14.9		@15' - Silty SAND: brown to dark brown, very moist, medium dense	CO
1430								
	20	SPT-1	5 13 20		13.6	SC	@20' - Clayey SAND: brown to reddish brown, moist, dense	
1425		R-7	50/3"	105.0	16.4		@23' - Clayey SAND: pale brown, very moist, very dense	
	25						Total Depth = 23.5' Refusal on Bedrock Groundwater Not Encountered Backfilled with Cuttings on 5/5/2022	
1420								
	30							

LGC Geotechnical, Inc.

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SAMPLE TYPES:

B	BULK SAMPLE
R	RING SAMPLE (CA Modified Sampler)
G	GRAB SAMPLE
SPT	STANDARD PENETRATION TEST SAMPLE
⏚	GROUNDWATER TABLE

TEST TYPES:

DS	DIRECT SHEAR
MD	MAXIMUM DENSITY
SA	SIEVE ANALYSIS
S&H	SIEVE AND HYDROMETER
EI	EXPANSION INDEX
CN	CONSOLIDATION
CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE
-#200	% PASSING # 200 SIEVE

Last Edited: 5/23/2022

Geotechnical Boring Log Borehole HS-10

Date: 5/5/2022	**Drilling Company:** Martini Drilling
Project Name: Meritage - Salt Creek	**Type of Rig:** CME 75
Project Number: 22057-01	**Drop:** 30" **Hole Diameter:** 8"
Elevation of Top of Hole: ~1445' MSL	**Drive Weight:** 140 pounds
Hole Location: See Geotechnical Map	Page 1 of 1

Logged By JMN
Sampled By JMN
Checked By CPM

Elevation (ft)	Depth (ft)	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
	0	R-1	4 5 5	98.2	9.4	ML	**@0' to 15' - Young Alluvium (Qal):** @1' - Sandy SILT: brown to dark brown, moist, medium stiff	
		R-2	4 5 8	108.4	13.7		@2.5' - Sandy SILT: brown to dark brown, moist, stiff, rootlets	
1440	5	R-3	14 25 32	109.3	16.4		@5' - Sandy SILT: yellowish brown to brown, very moist, hard	
		R-4	15 27 47	100.4	6.0	SP	@7.5' - SAND: light gray to brown, moist, very dense, sample disturbed	
1435	10	R-5	20 38 34	121.0	9.0		@10' - SAND: reddish brown, moist, very dense	
1430	15	SPT-1	6 7 11		18.8	ML	**@15' to T.D. Old Alluvium (Qoa):** @15' - Sandy SILT: brown to reddish brown, very moist, very stiff	
1425	20	R-6	4 5 7	93.9	27.4		@20' - Clayey SILT: brown to gray, wet, stiff	
1420	25	SPT-2	2 3 4		29.3	CL	@25' - Sandy CLAY: light brown to dark gray, wet, stiff	
	30						Total Depth = 26.5' Groundwater Encountered at Approximately 18' Backfilled with Cuttings on 5/5/2022	

LGC Geotechnical, Inc.

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SAMPLE TYPES:

B	BULK SAMPLE
R	RING SAMPLE (CA Modified Sampler)
G	GRAB SAMPLE
SPT	STANDARD PENETRATION TEST SAMPLE
▽	GROUNDWATER TABLE

TEST TYPES:

DS	DIRECT SHEAR
MD	MAXIMUM DENSITY
SA	SIEVE ANALYSIS
S&H	SIEVE AND HYDROMETER
EI	EXPANSION INDEX
CN	CONSOLIDATION
CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE
-#200	% PASSING # 200 SIEVE

Last Edited: 5/23/2022

Geotechnical Boring Log Borehole HS-11

Date: 5/5/2022 | **Drilling Company:** Martini Drilling

Project Name: Meritage - Salt Creek | **Type of Rig:** CME 75

Project Number: 22057-01 | **Drop:** 30" | **Hole Diameter:** 8"

Elevation of Top of Hole: ~1445' MSL | **Drive Weight:** 140 pounds

Hole Location: See Geotechnical Map

Logged By JMN
Sampled By JMN
Checked By CPM

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
	0	B-1						**@0' to 10' - Young Alluvium (Qal):**	
			R-1	10 10 14	97.2	23.1	ML	@2.5' - Sandy SILT: brown to yellowish brown, very moist, very stiff	
1440	5		R-2	8 19 27	88.8	31.4		@5' - Sandy SILT: yellowish brown to light brown, wet, hard	
			R-3	4 6 8	71.7	48.7		@7.5' - SILT: light brown to reddish brown, wet, stiff	
								@10' to T.D. - Old Alluvium (Qoa):	
1435	10		R-4	5 8 10	94.9	26.0	ML	@10' Sandy SILT: brown to orange brown, wet, stiff	
1430	15		SPT-1	8 22 28		54.2		@15' - Clayey SILT: light brown to yellowish brown, wet, hard	
1425	20		R-5	2 2 2	103.9	22.5	ML-SM	@20' - Sandy SILT to Silty SAND: light brown to brown, wet, soft to loose	
1420	25		R-6	17 34 50/5"	121.6	12.6	SM	@25' - Silty SAND: brown to orange brown, very moist, very dense	
	30							Total Depth = 26.5' Groundwater Encountered at Approximately 7' Backfilled with Cuttings on 5/5/2022	

LGC Geotechnical, Inc.

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SAMPLE TYPES:

B	BULK SAMPLE
R	RING SAMPLE (CA Modified Sampler)
G	GRAB SAMPLE
SPT	STANDARD PENETRATION TEST SAMPLE
▽	GROUNDWATER TABLE

TEST TYPES:

DS	DIRECT SHEAR
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CO	COLLAPSE/SWELL
RV	R-VALUE
-#200	% PASSING # 200 SIEVE

Last Edited: 5/23/2022

Geotechnical Boring Log Borehole I-1

Date: 4/11/2022	**Drilling Company:** Cal Pac Drilling
Project Name: Meritage - Salt Creek	**Type of Rig:** Mobile B61
Project Number: 22057-01	**Drop:** 30" **Hole Diameter:** 8"
Elevation of Top of Hole: ~1444' MSL	**Drive Weight:** 140 pounds
Hole Location: See Geotechnical Map	Page 1 of 1

Logged By JMN
Sampled By JMN
Checked By CPM

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
1440	0		SPT-1	2 2 4		22.3	ML	**@0' to T.D. - <u>Young Alluvium (Qal):</u>** @2.5' - Sandy SILT: yellowish brown to orange brown, very moist, medium stiff	
1435	5							Total Depth = 5' Installed 3" pipe and gravel No Groundwater Encountered Backfilled with Cuttings on 4/13/2022	
1430	10								
1425	15								
1420	20								
1415	25								
	30								

LGC Geotechnical, Inc.

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SAMPLE TYPES:

B	BULK SAMPLE
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SPT	STANDARD PENETRATION TEST SAMPLE
▽	GROUNDWATER TABLE

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AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE
-#200	% PASSING # 200 SIEVE

Last Edited: 5/23/2022

Geotechnical Boring Log Borehole I-2

Date: 4/12/2022	**Drilling Company:** Cal Pac Drilling
Project Name: Meritage - Salt Creek	**Type of Rig:** Mobile B61
Project Number: 22057-01	**Drop:** 30" **Hole Diameter:** 8"
Elevation of Top of Hole: ~1447' MSL	**Drive Weight:** 140 pounds
Hole Location: See Geotechnical Map	Page 1 of 1

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	Logged By JMN Sampled By JMN Checked By CPM DESCRIPTION	Type of Test
1445	0		SPT-1	2 2 4		22.3	ML	**@0' to T.D. - <u>Young Alluvium (Qal):</u>** @2.5' - Sandy SILT: yellowish brown to orange brown, very moist, medium stiff	
1440	5							Total Depth = 5' Installed 3" pipe and gravel No Groundwater Encountered Backfilled with Cuttings on 4/13/2022	
1435	10								
1430	15								
1425	20								
1420	25								
	30								

LGC Geotechnical, Inc.

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SAMPLE TYPES:

B	BULK SAMPLE
R	RING SAMPLE (CA Modified Sampler)
G	GRAB SAMPLE
SPT	STANDARD PENETRATION TEST SAMPLE
▽	GROUNDWATER TABLE

TEST TYPES:

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MD	MAXIMUM DENSITY
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AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE
-#200	% PASSING # 200 SIEVE

Last Edited: 5/23/2022

Geotechnical Boring Log Borehole I-3

Date: 4/12/2022	**Drilling Company:** Cal Pac Drilling
Project Name: Meritage - Salt Creek	**Type of Rig:** Mobile B61
Project Number: 22057-01	**Drop:** 30" **Hole Diameter:** 8"
Elevation of Top of Hole: ~1450' MSL	**Drive Weight:** 140 pounds
Hole Location: See Geotechnical Map	Page 1 of 1

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	Logged By JMN Sampled By JMN Checked By CPM DESCRIPTION	Type of Test
	0							**@0' to T.D. - <u>Old Alluvium (Qoa):</u>**	
			SPT-1	7 16 22		6.3	SM	@2.5' - Silty SAND: orange brown to reddish brown, slightly moist, dense	
1445	5								
			SPT-2	5 7 13		11.4		@7.5' - Silty SAND: orange brown to reddish brown, moist, medium dense	
1440	10								
								Total Depth = 10' Installed 3" pipe and gravel No Groundwater Encountered Backfilled with Cuttings on 4/13/2022	
1435	15								
1430	20								
1425	25								
1430	30								

LGC Geotechnical, Inc.

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED. THE DESCRIPTIONS PROVIDED ARE QUALITATIVE FIELD DESCRIPTIONS AND ARE NOT BASED ON QUANTITATIVE ENGINEERING ANALYSIS.

SAMPLE TYPES:

B	BULK SAMPLE
R	RING SAMPLE (CA Modified Sampler)
G	GRAB SAMPLE
SPT	STANDARD PENETRATION TEST SAMPLE
	GROUNDWATER TABLE

TEST TYPES:

DS	DIRECT SHEAR
MD	MAXIMUM DENSITY
SA	SIEVE ANALYSIS
S&H	SIEVE AND HYDROMETER
EI	EXPANSION INDEX
CN	CONSOLIDATION
CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE
-#200	% PASSING # 200 SIEVE

Last Edited: 5/23/2022

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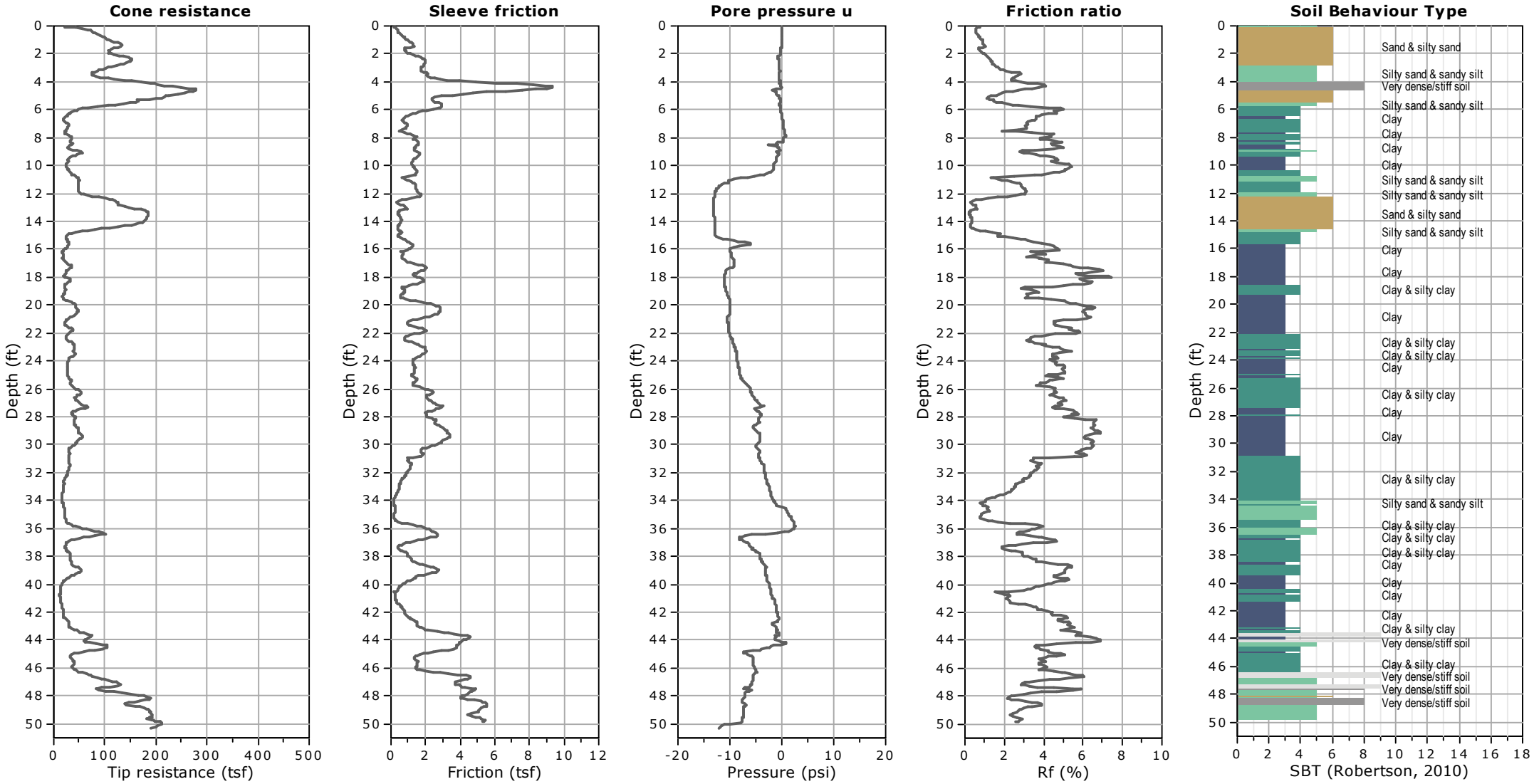
Project: **LGC Geotechnical / Salt Creek**
Location: **Menifee, CA**

CPT-1
Total depth: 50.28 ft, Date: 4/11/2022



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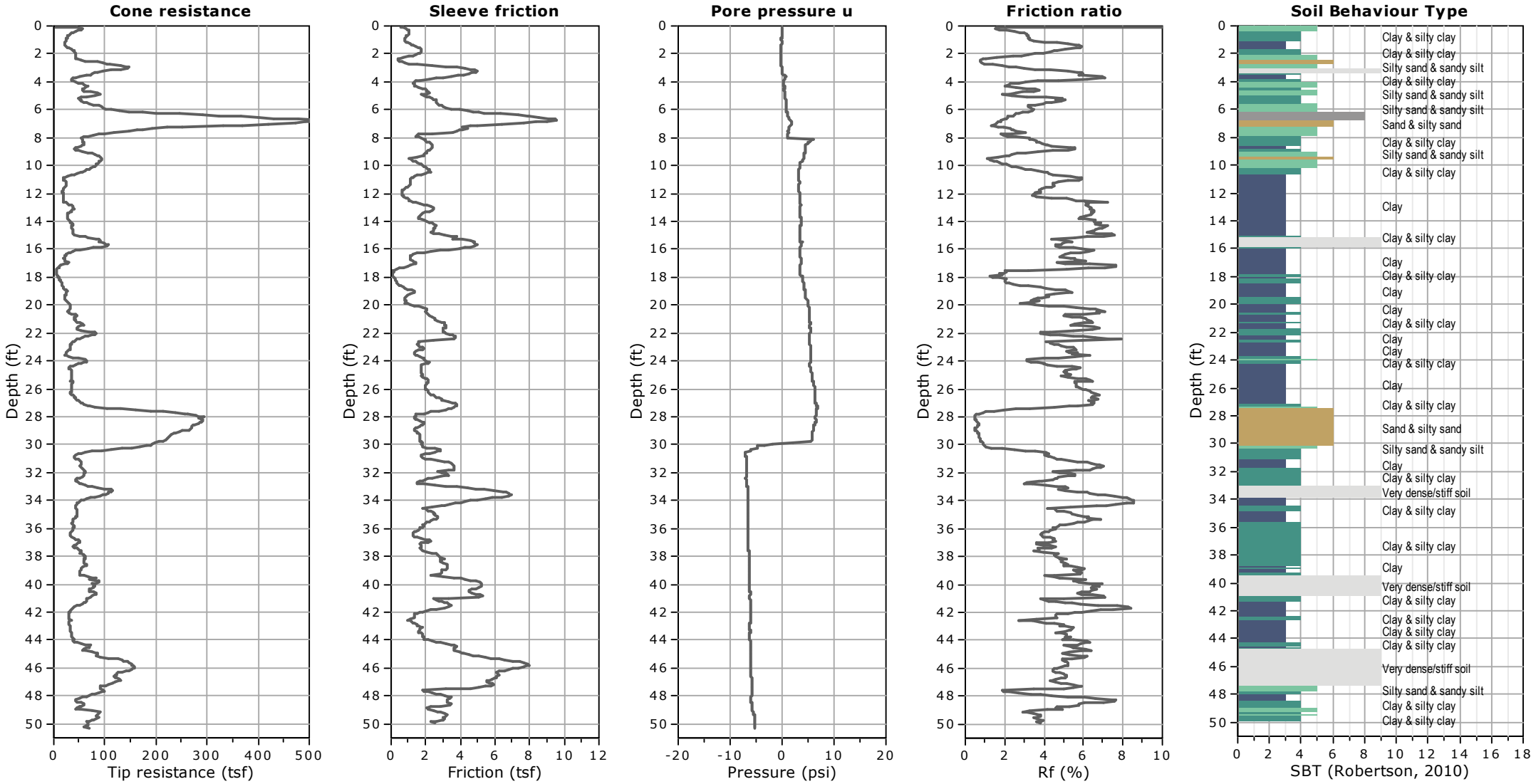
Project: **LGC Geotechnical / Salt Creek**
Location: **Menifee, CA**

CPT-2
Total depth: 50.33 ft, Date: 4/11/2022



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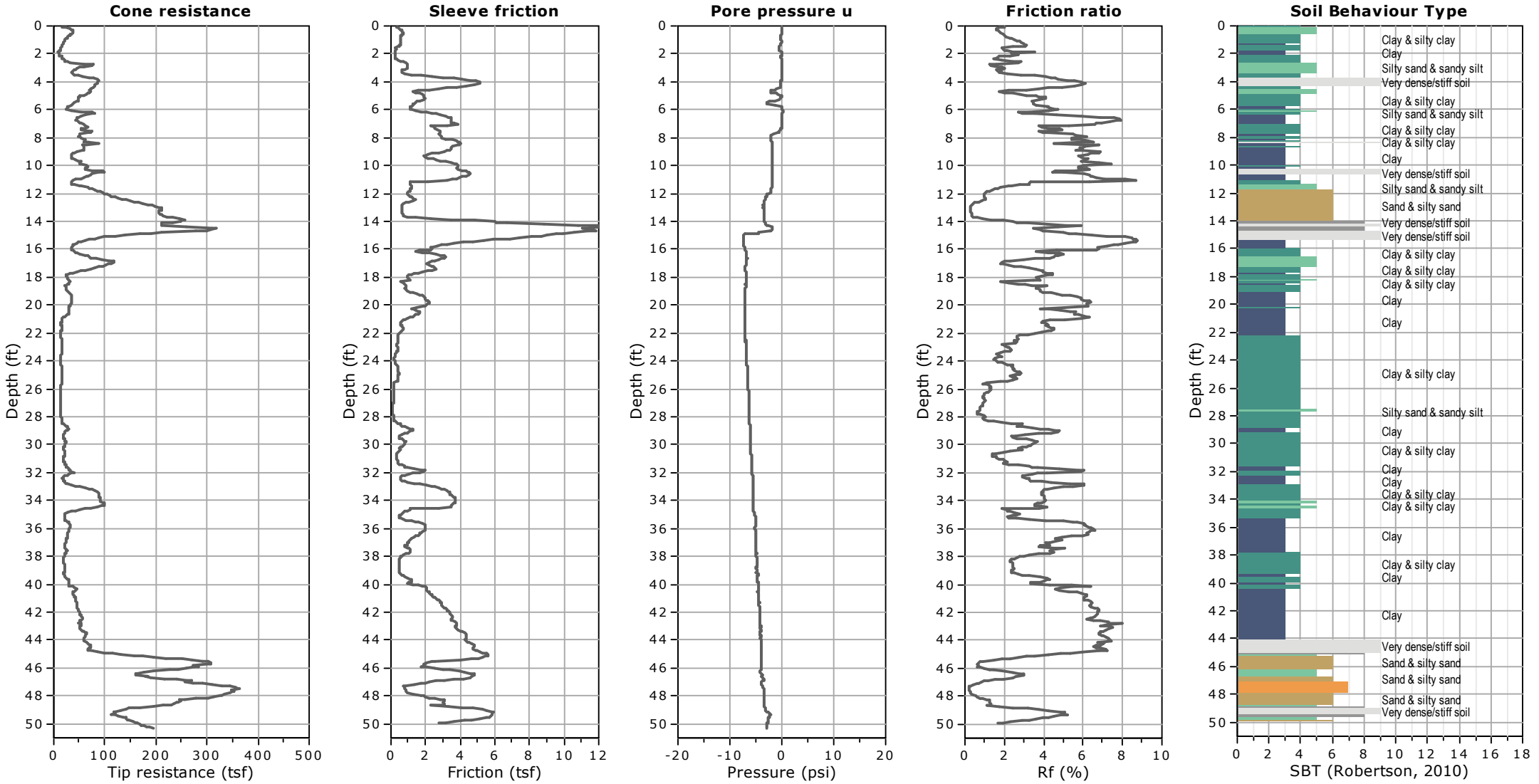
Project: **LGC Geotechnical / Salt Creek**
Location: **Menifee, CA**

CPT-3
Total depth: 50.34 ft, Date: 4/11/2022



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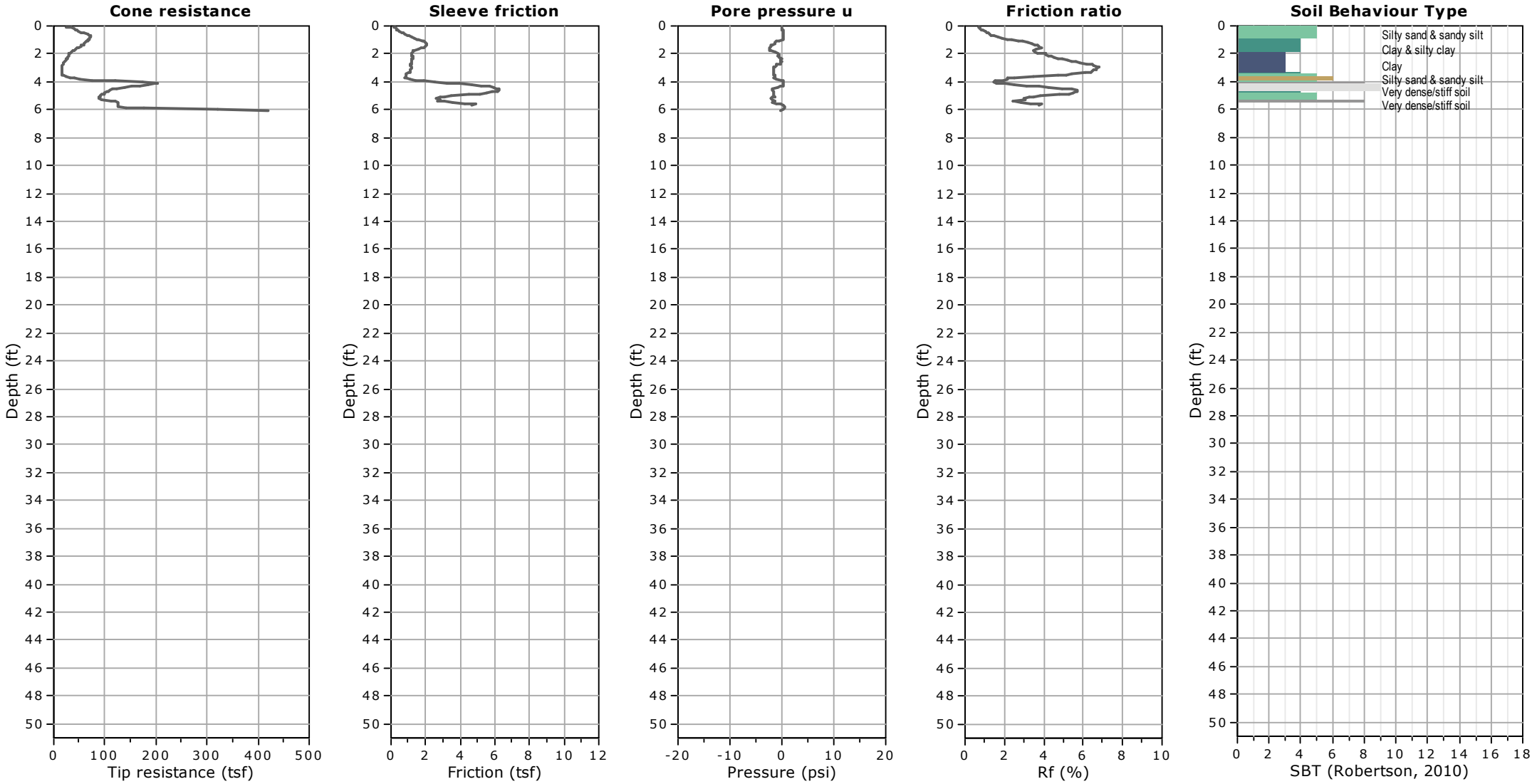
Project: **LGC Geotechnical / Salt Creek**
Location: **Menifee, CA**

CPT-4
Total depth: 6.04 ft, Date: 4/11/2022



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714-901-7270
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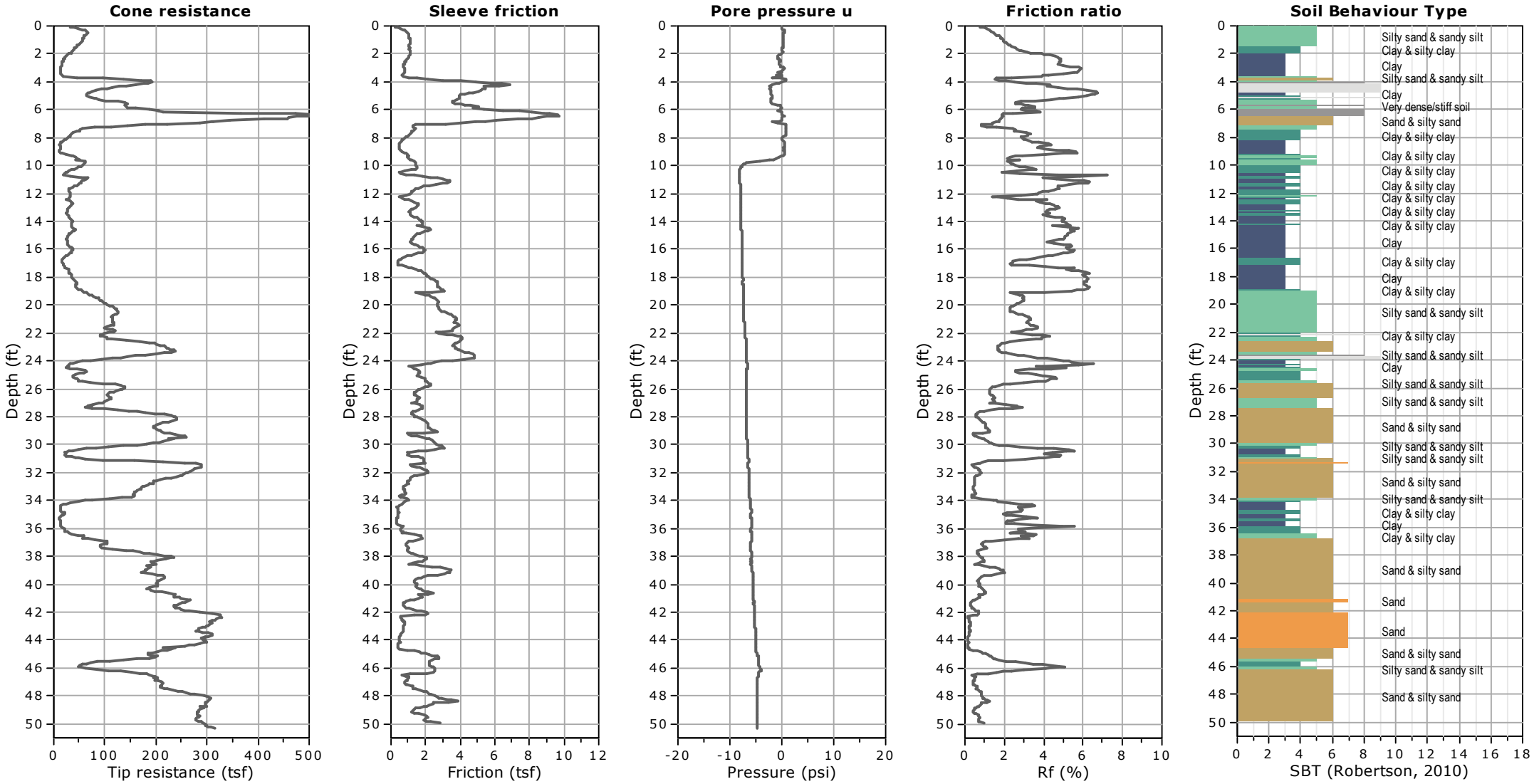
Project: **LGC Geotechnical / Salt Creek**
Location: **Menifee, CA**

CPT-4A
Total depth: 50.34 ft, Date: 4/11/2022



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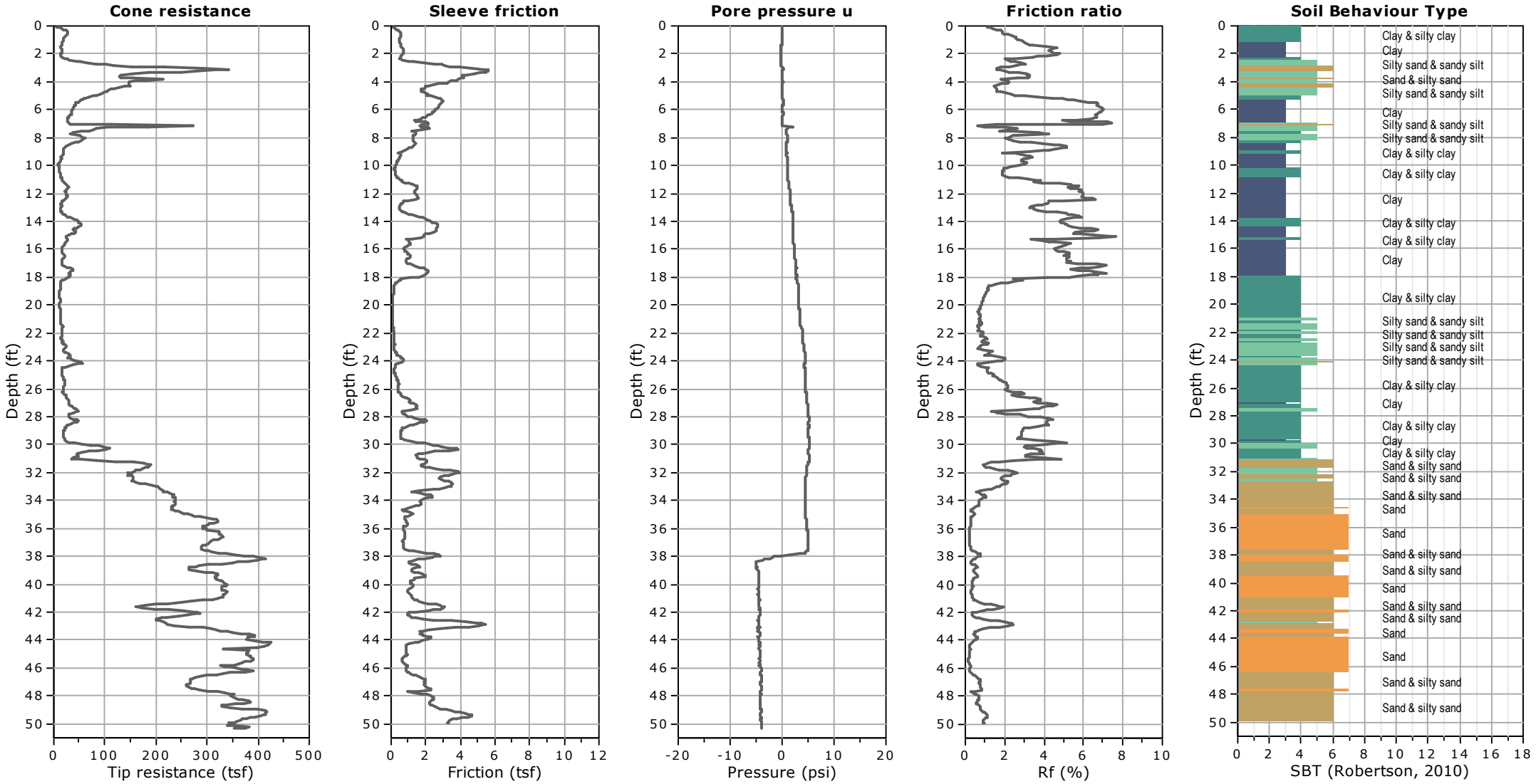
Project: **LGC Geotechnical / Salt Creek**
Location: **Menifee, CA**

CPT-5
Total depth: 50.34 ft, Date: 4/11/2022



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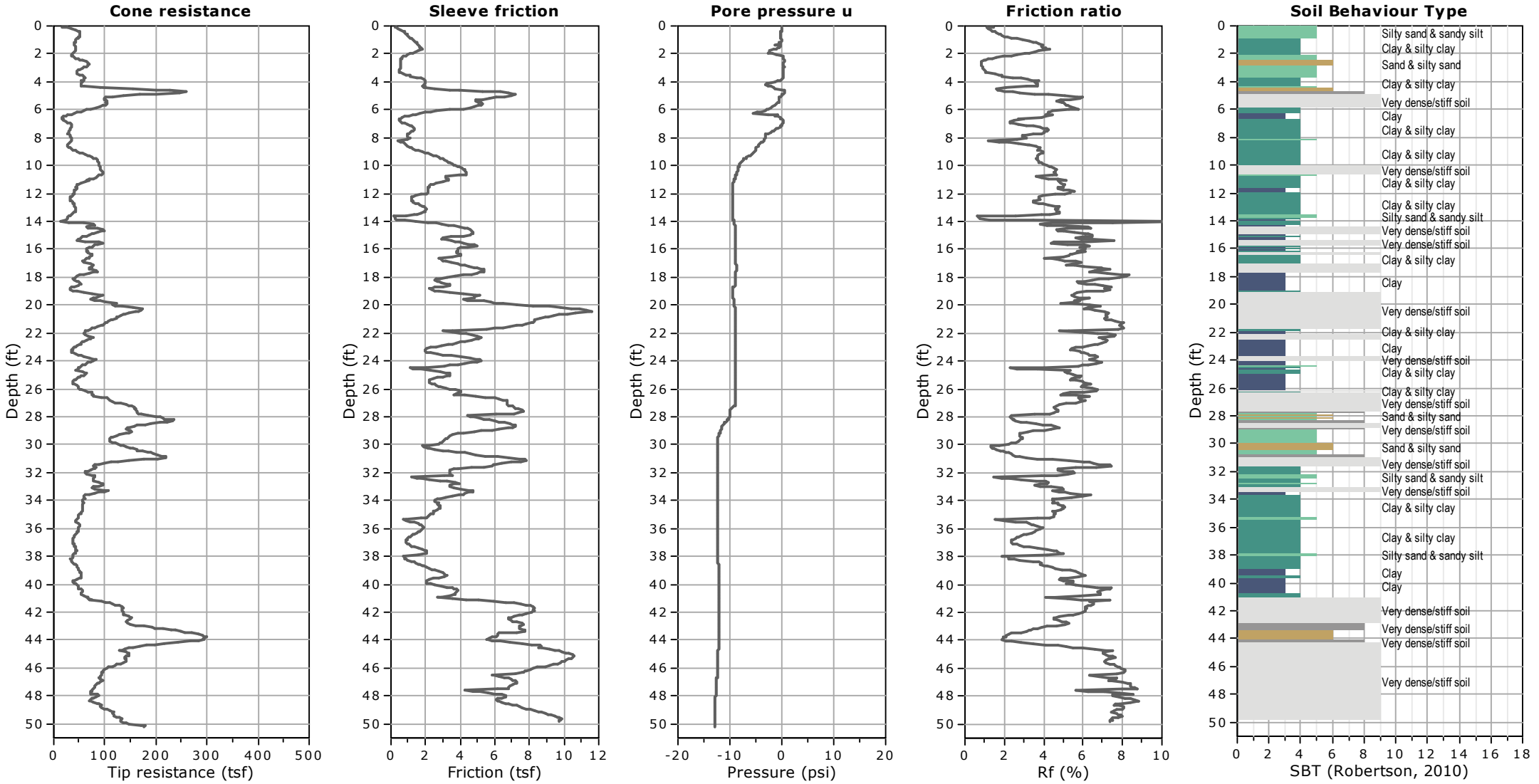
Project: **LGC Geotechnical / Salt Creek**
Location: **Menifee, CA**

CPT-6
Total depth: 50.22 ft, Date: 4/11/2022



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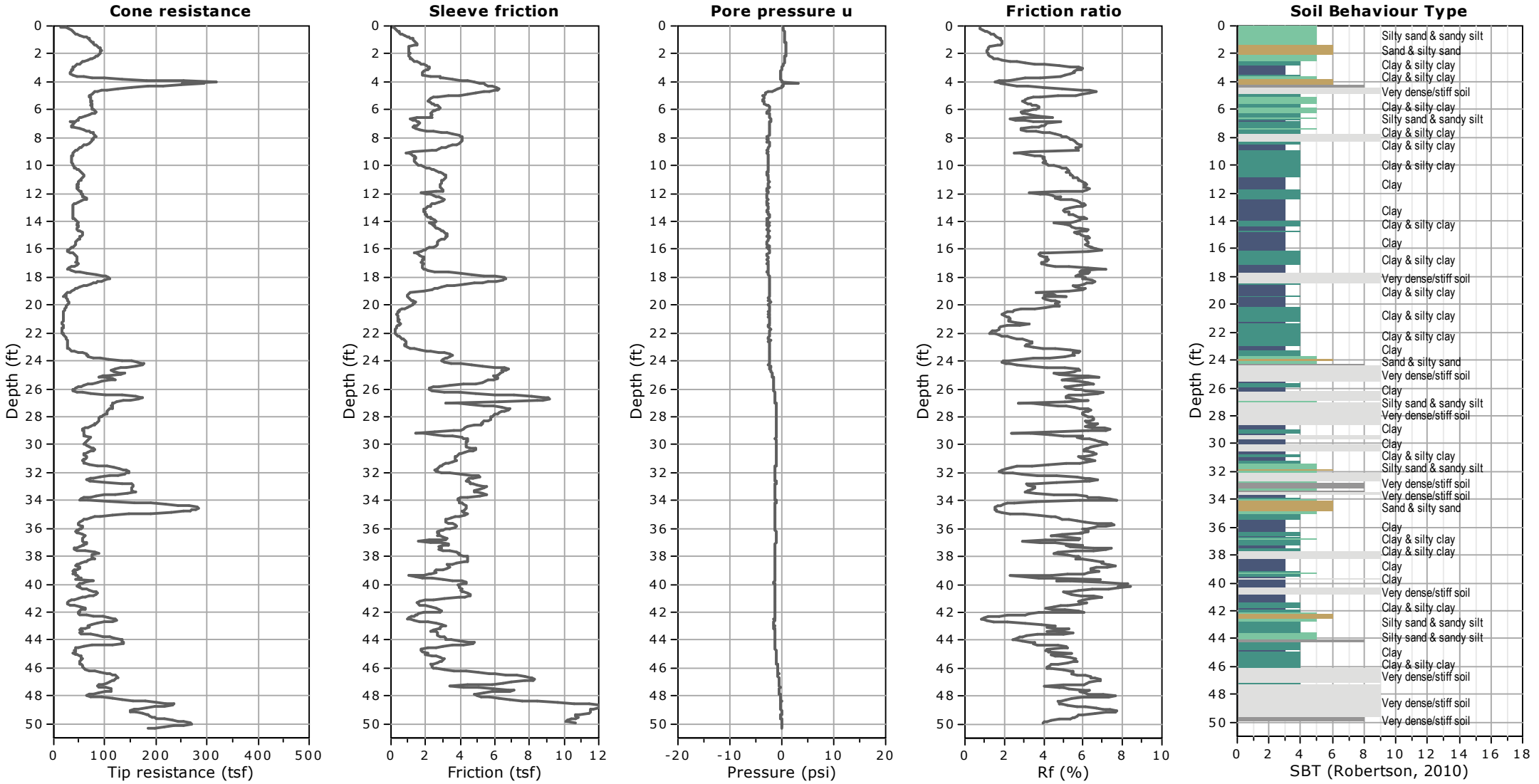
Project: **LGC Geotechnical / Salt Creek**
Location: **Menifee, CA**

CPT-7
Total depth: 50.33 ft, Date: 4/11/2022



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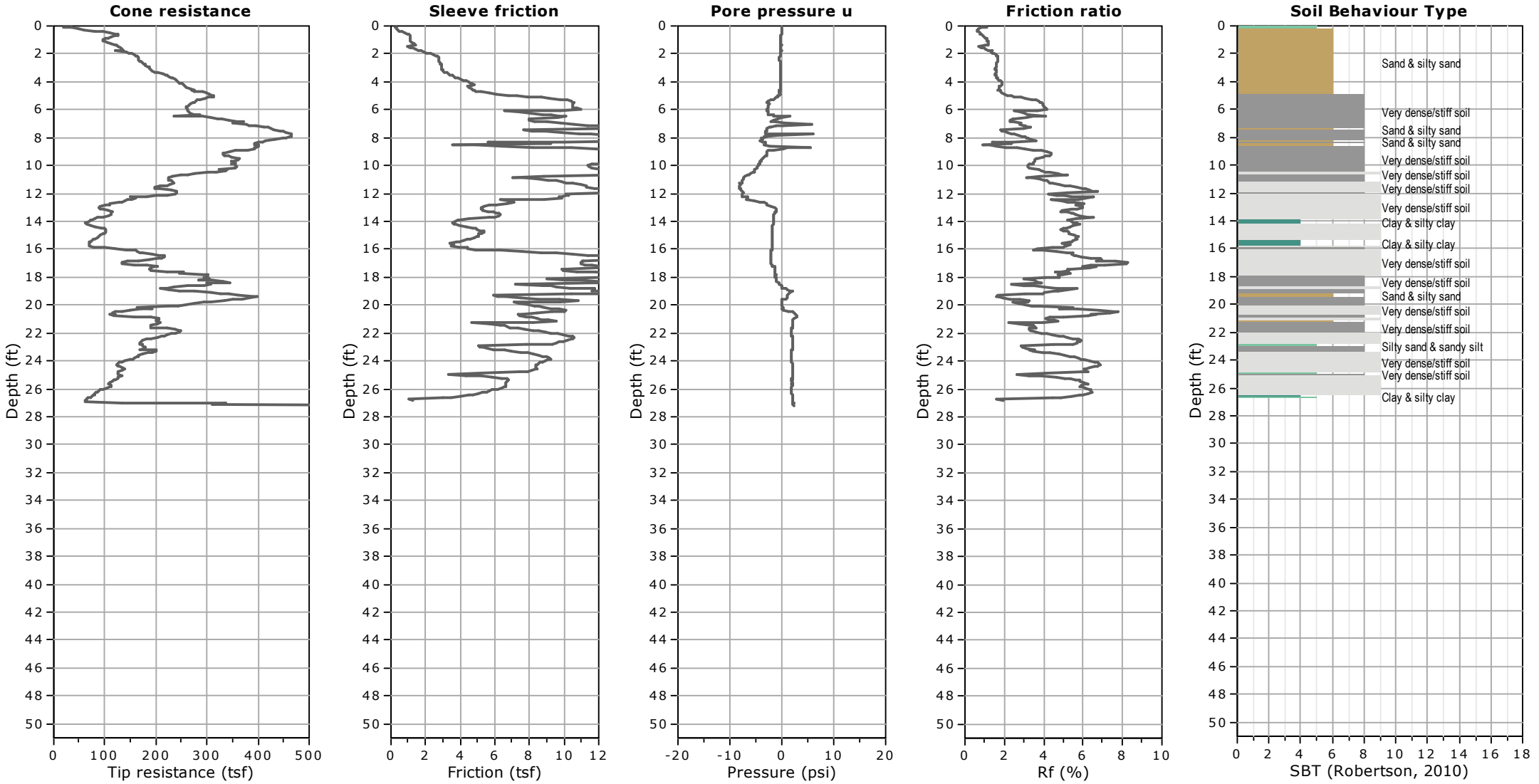
www.kehoetesting.com

Project: **LGC Geotechnical / Salt Creek**
Location: **Menifee, CA**

CPT-8
Total depth: 27.17 ft, Date: 4/11/2022



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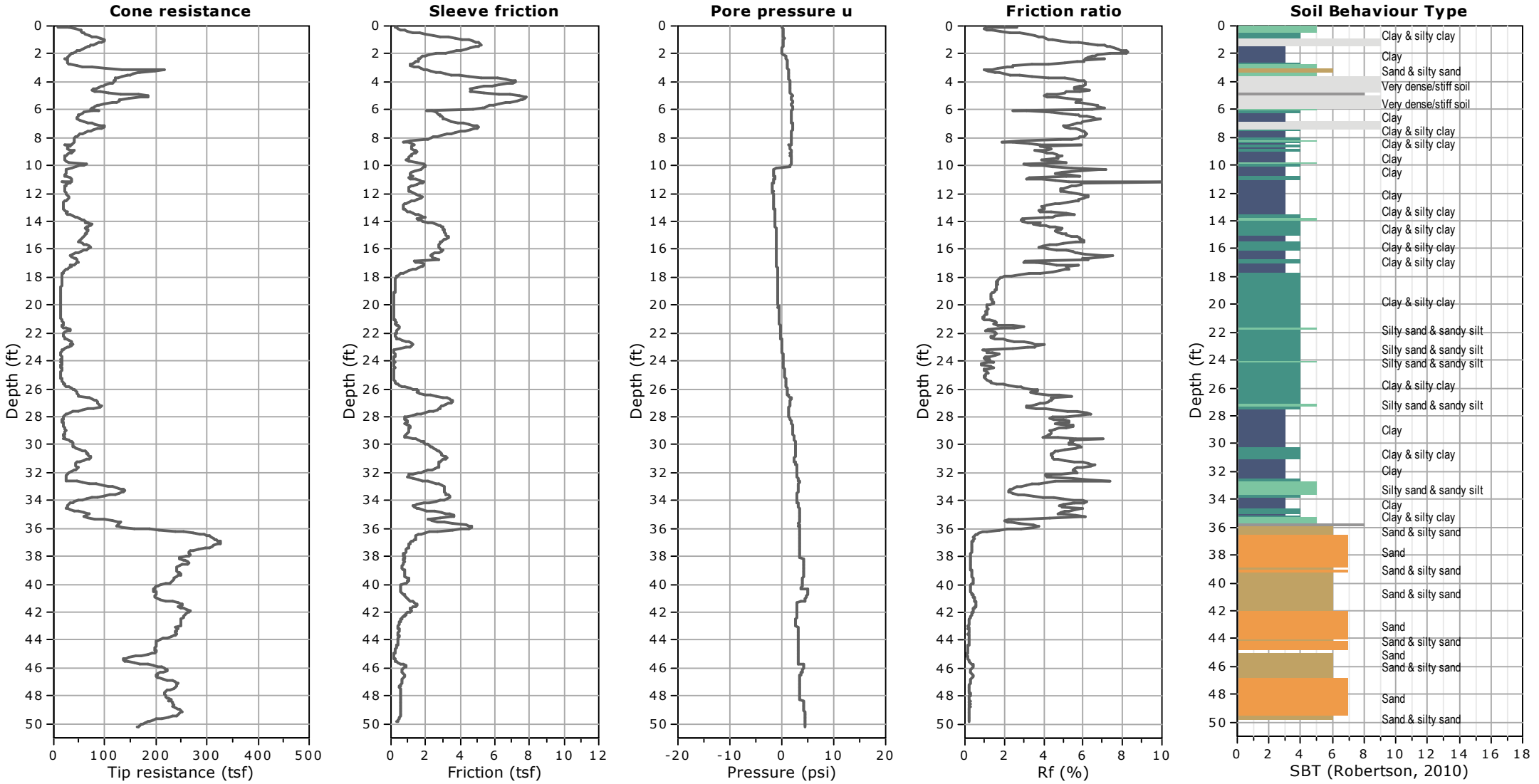
Project: **LGC Geotechnical / Salt Creek**
Location: **Menifee, CA**

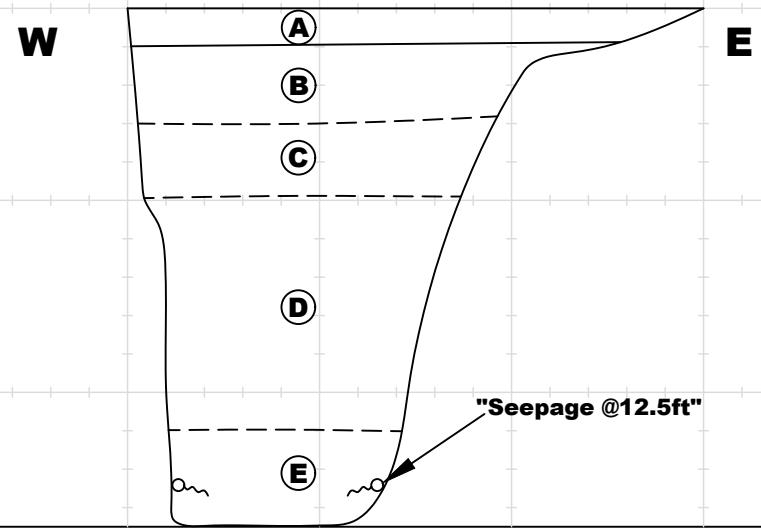
TP-5
Total depth: 50.26 ft, Date: 4/11/2022



Project Name: Meritage - Salt Creek	Logged By: CPM	Trench No: TP-1	
Project Number : 22057-01	Date : 4/12/2022	Engineering Properties:	
Equipment: John Deer Backhoe 410 (18"/36")	Location: See Geotechnical Map		

Geologic Attitudes	Unit	SOIL DESCRIPTION:	GEOLOGIC UNIT	USCS	SAMPLE No	MOISTURE (%)	Organic Content (%)
	A	***Agricultural Fill*** @ 0' to 1' - Silty Fine SAND: pale yellowish brown (10YR 6/2), slightly moist, loose, rootlets	afu	SM	TP1@1'	8.8	1.4
	B	***Young Alluvium*** @ 1' to 3' - Silty Fine SAND: medium yellowish brown (10YR 5/4), moist, loose, porous	Qal	SM	TP1@2'	38.3	1.8
	C	@ 3' to 5' - Sandy SILT: pale yellowish brown (10YR 6/2), moist, medium stiff, porous, carbonate deposits @3'	Qal	ML	TP1@3'		
	D	@ 5' to 11' - Sandy SILT: pale yellowish brown (18YR 6/2), moist, stiff	Qal	ML			
	E	@ 11' to 13.5' - Silty SAND to Sandy SILT: pale yellowish brown (10YR 6/2), very moist to wet, medium stiff to soft, seepage @12.5'	Qal	ML			

GRAPHICAL REPRESENTATION BELOW: **Elevation : 1444 ' MSL** **Surface Slope: 1 deg.** **Trend: E-W**



Total Depth: 13.5'
Groundwater: 12.5'
Backfilled: 4/12/22

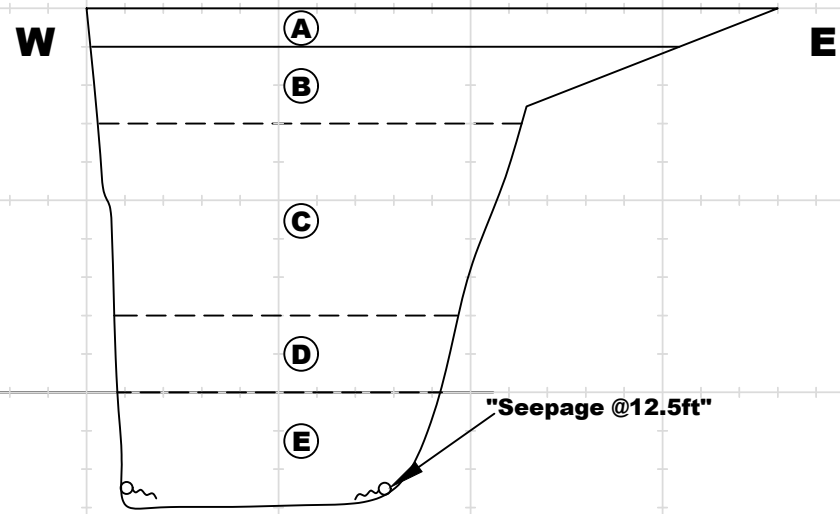
scale : 1 in = 5 ft

Last Edited: 4/20/2021

Project Name: Meritage - Salt Creek	Logged By: CPM	Trench No: TP-2	
Project Number : 22057-01	Date : 4/12/2022	Engineering Properties:	
Equipment: John Deer Backhoe 410 (18"/36")	Location: See Geotechnical Map		

Geologic Attitudes	Unit	SOIL DESCRIPTION:	GEOLOGIC UNIT	USCS	SAMPLE No	MOISTURE (%)	Organic Content (%)
	A	***Agricultural Fill*** @ 0' to 1' - Silty Fine SAND: pale yellowish brown (10YR 6/2), slightly moist, loose	Afu	SM	Grab@1'	4.2	0.7
	B	***Old Alluvium*** @ 1' to 3' - Silty Fine SAND: medium brown (5YR 4/4), slightly moist, medium dense to dense, porous, indurated	Qoa	SM	Grab@2'	8.7	1.1
	C	@ 3' to 8' - Silty Fine SAND: medium yellowish brown (10YR 5/4), moist, medium dense	Qoa	SM	Grab@3'		
	D	@ 8' to 10' - Silty Fine SAND to Sandy SILT: medium yellowish brown (10YR 5/4), moist, medium dense	Qoa	SM-ML			
	E	@ 10' to 13' - Very moist to wet, seepage at 12.5'	Qoa	SM-ML			

GRAPHICAL REPRESENTATION BELOW: **Elevation : 1445 ' MSL** **Surface Slope: 1 deg.** **Trend: E-W**



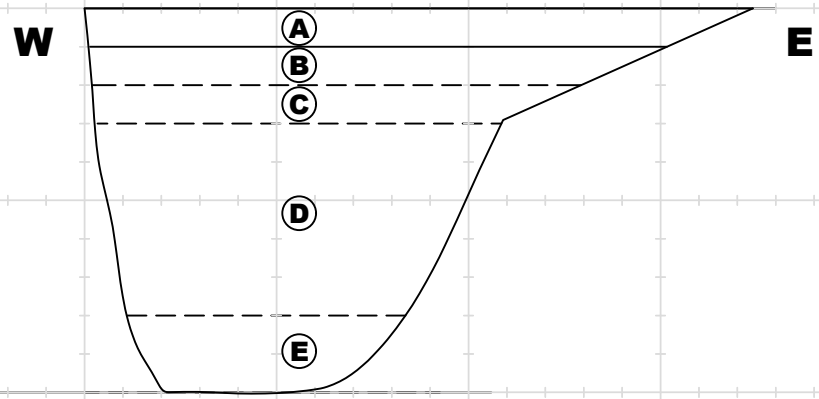
Total Depth: 13'
Groundwater: 12.5'
Backfilled: 4/12/22

scale : 1 in = 5 ft

Project Name: Meritage - Salt Creek	Logged By: CPM	Trench No: TP-3	
Project Number : 22057-01	Date : 4/12/2022	Engineering Properties:	
Equipment: John Deer Backhoe 410 (18"/36")	Location: See Geotechnical Map		

Geologic Attitudes	Unit	SOIL DESCRIPTION:	GEOLOGIC UNIT	USCS	SAMPLE No	MOISTURE (%)	Organic Content (%)
	A	***Agricultural Fill*** @ 0' to 1' - Silty Fine SAND: pale yellowish brown (10YR 6/2), moist, loose, roots	Afu	SM	Grab@1'	10.1	2.8
	B	***Young Alluvium*** @ 1' to 2' - Sandy SILT: medium yellowish brown (10YR 5/4), moist, soft, porous	Qal	ML	Grab@2'	18.6	2.3
	C	@ 2' to 3' - Silty SAND: dark yellowish brown (10YR 4/2) to white, slightly moist, medium dense, cemented, with abundant carbonates	Qal	SM	Grab@3'	23.0	2.0
	D	@ 3' to 8' - Silty Fine SAND to Sandy SILT: medium yellowish brown (10YR 5/4), moist, medium dense, porous	Qal	SM-ML			
	E	@ 8' to 10' - medium dense to dense	Qal	SM-ML			

GRAPHICAL REPRESENTATION BELOW: **Elevation : 1443 ' MSL** **Surface Slope: 1 deg.** **Trend: E-W**



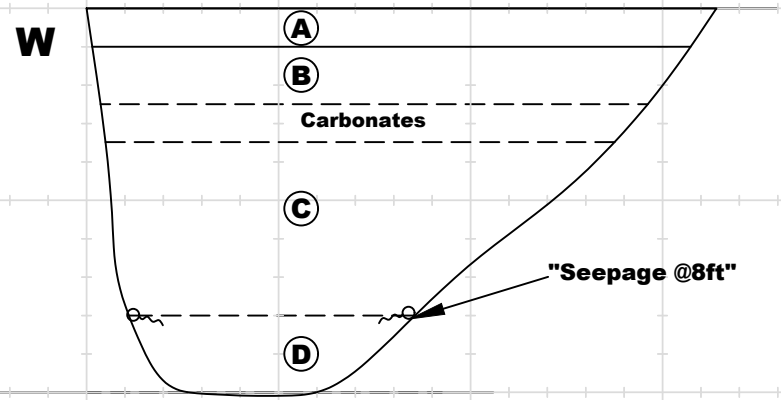
Total Depth: 10'
Groundwater: None
Backfilled: 4/12/22

scale : 1 in = 5 ft

Project Name: Meritage - Salt Creek	Logged By: CPM	Trench No: TP-4	
Project Number : 22057-01	Date : 4/12/2022	Engineering Properties:	
Equipment: John Deer Backhoe 410 (18"/36")	Location: See Geotechnical Map		

Geologic Attitudes	Unit	SOIL DESCRIPTION:	GEOLOGIC UNIT	USCS	SAMPLE No	MOISTURE (%)	Organic Content (%)
	A	***Agricultural Fill*** @0' to 1' - Silty Fine SAND: dark yellowish brown (10YR 4/2), moist, loose, roots	Afu	SM	Grab@1'	14.8	4.6
	B	***Young Alluvium*** @ 1' to 3.5' - Sandy SILT: dark yellowish brown (10YR 4/2), moist, soft, slightly blocky, porous, roots	Qal	ML	Grab@2' Grab@3'	23.2 22.8	3.3 4.2
	C	@ 3.5' to 8' - 8-12" thick layer of poorly cemented carbonates overlying Sandy SILT: medium yellowish brown (10YR 5/4), moist, medium stiff	Qal	ML	Grab@4'	30.1	2.4
	D	@ 8' to 10' - Sandy SILT: medium yellowish brown (10YR 5/4), wet, soft, seepage @8'	Qal	ML			

GRAPHICAL REPRESENTATION BELOW: **Elevation : 1444 ' MSL** **Surface Slope: 1 deg.** **Trend: E-W**



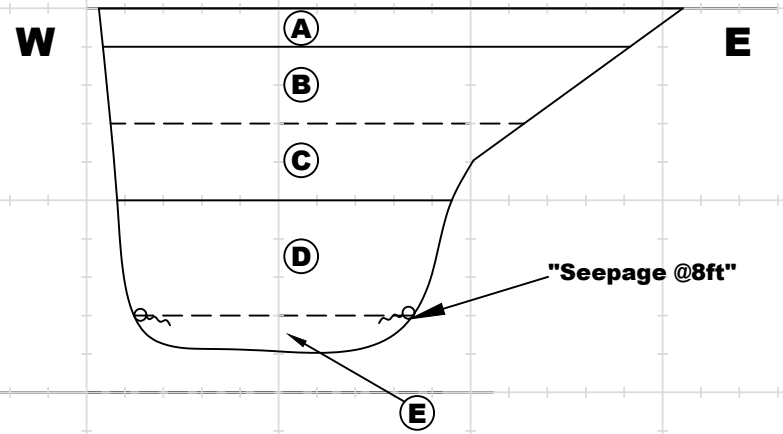
Total Depth: 10'
Groundwater: 8'
Backfilled: 4/12/22

scale : 1 in = 5 ft

Project Name: Meritage - Salt Creek	Logged By: CMP	Trench No: TP-5	LGC Geotechnical, Inc.
Project Number : 22057-01	Date : 4/12/2022	Engineering Properties:	
Equipment: John Deer Backhoe 410 (18"/36")	Location: See Geotechnical Map		

Geologic Attitudes	Unit	SOIL DESCRIPTION:	GEOLOGIC UNIT	USCS	SAMPLE No	MOISTURE (%)	Organic Content (%)
	A	***Agricultural Fill*** @0' to 1' - Silty Fine SAND: dark yellowish brown (10YR 6/2), slightly moist, loose, roots	Afu	SM	Grab@1'	2.5	1.0
	B	***Young Alluvium*** @ 1' to 3' - Fine SAND: medium yellowish brown (10YR 5/4), slightly moist, medium dense to dense, indurated, porous	Qal	SP	Grab@2'	8.6	1.2
	C	@ 3' to 5' - Silty Fine SAND: medium yellowish brown (10YR 5/4), moist, medium dense, porous	Qal	SM	Grab@3'		
	D	***Old Alluvium*** @ 5' to 8' - Clayey SILT: very pale orange (10YR 8/2), very moist, medium stiff	Qoa	ML-CL			
	E	@ 8' to 9' - Clayey SILT: very pale orange (10YR 8/2), very moist, medium stiff, seepage @8'	Qoa	ML-CL			

GRAPHICAL REPRESENTATION BELOW: **Elevation : 1446 ' MSL** **Surface Slope: 1 deg.** **Trend: E-W**



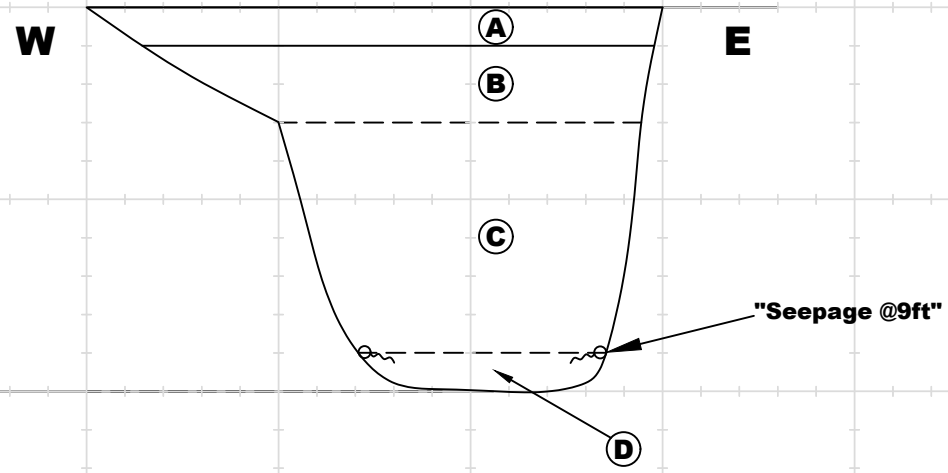
Total Depth: 9'
Groundwater: 8'
Backfilled: 4/12/22

scale : 1 in = 5 ft

Project Name: Meritage - Salt Creek	Logged By: CPM	Trench No: TP-6	LGC Geotechnical, Inc.
Project Number : 22057-01	Date : 4/12/2022	Engineering Properties:	
Equipment: John Deer Backhoe 410 (18"/36")	Location: See Geotechnical Map		

Geologic Attitudes	Unit	SOIL DESCRIPTION:	GEOLOGIC UNIT	USCS	SAMPLE No	MOISTURE (%)	Organic Content (%)
	A	***Agricultural Fill*** @0' to 1' - Silty Fine SAND: very pale orange (10YR 6/2), dry to slightly moist, loose, roots	Afu	SM	Grab@1'	3.1	0.8
	B	***Young Alluvium*** @ 1' to 3' - Silty Fine SAND: dark yellowish brown (10YR 4/2), slightly moist, medium dense, indurated, porous, trace roots	Qal	SM	Grab@2'	8.0	1.2
	C	@ 3' to 9' - Sandy SILT: medium yellowish brown (10YR 5/4), moist, medium stiff	Qal	ML	Grab@3'	31.3	2.5
	D	@ 9' to 10' - Sandy SILT: medium yellowish brown (10YR 5/4), moist, medium stiff, seepage @9'	Qal	ML			

GRAPHICAL REPRESENTATION BELOW: **Elevation : 1446 ' MSL** **Surface Slope: 1 deg.** **Trend: E-W**



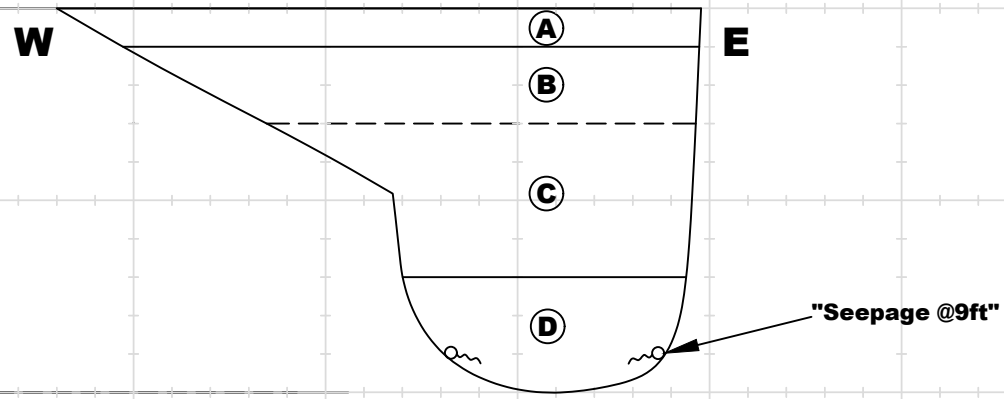
Total Depth: 10'
Groundwater: 9'
Backfilled: 4/12/22

scale : 1 in = 5 ft

Project Name: Meritage - Salt Creek	Logged By: CPM	Trench No: TP-7	LGC Geotechnical, Inc.
Project Number : 22057-01	Date : 4/12/2022	Engineering Properties:	
Equipment: John Deer Backhoe 410 (18"/36")	Location: See Geotechnical Map		

Geologic Attitudes	Unit	SOIL DESCRIPTION:	GEOLOGIC UNIT	USCS	SAMPLE No	MOISTURE (%)	Organic Content (%)
	A	***Agricultural Fill*** @0' to 1' - Sandy CLAY: dark yellowish brown (10YR 4/2), slightly moist, soft, roots	Afu	CL	Grab@1'	12.5	2.9
	B	***Young Alluvium*** @ 1' to 3' - Sandy CLAY to Sandy SILT: dark yellowish brown (10YR 4/2), moist, soft porous, scattered rootlets	Qal	CL-ML	Grab@2'	21.5	2.3
	C	@ 3' to 7' - Fine SAND: medium yellowish brown (10YR 5/4), moist, medium dense, indurated, trace carbonates	Qal	SP	Grab@3'	14.7	1.2
	D	***Old Alluvium*** @ 7' to 10' - Medium SAND: dark yellowish orange (10YR 6/6), moist to wet, medium dense, seepage @9'	Qoa	SP			

GRAPHICAL REPRESENTATION BELOW: **Elevation : 1446 ' MSL** **Surface Slope: 1 deg.** **Trend: E-W**



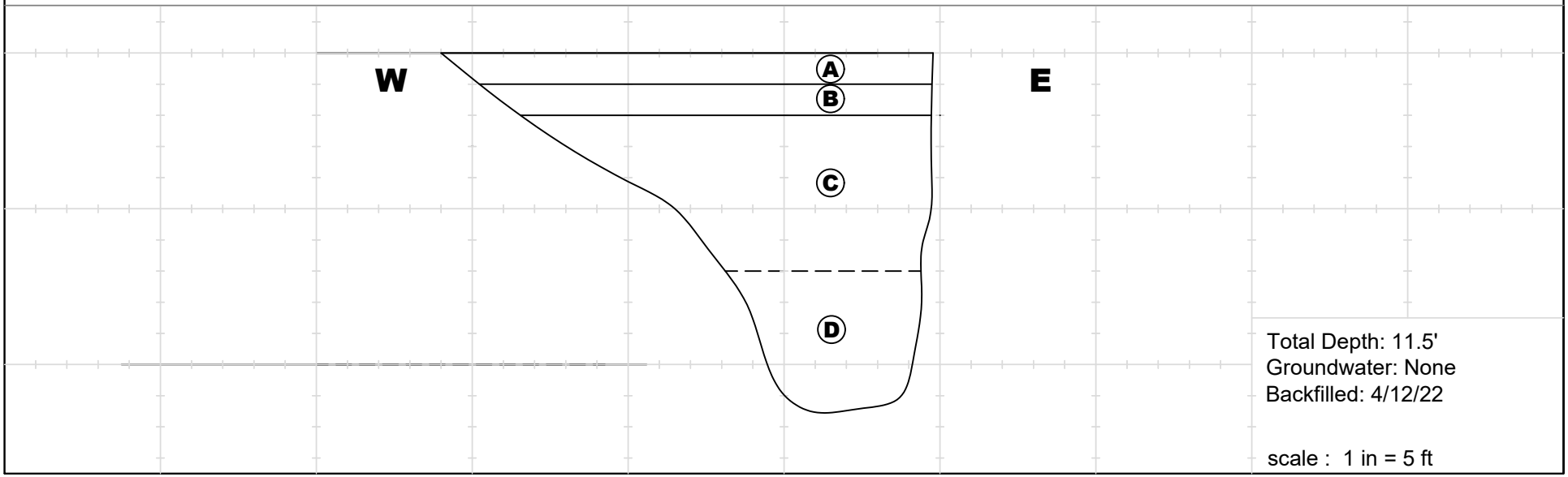
Total Depth: 10'
Groundwater: 9'
Backfilled: 4/12/22

scale : 1 in = 5 ft

Project Name: Meritage - Salt Creek	Logged By: CPM	Trench No: TP-8	LGC Geotechnical, Inc.
Project Number : 22057-01	Date : 4/12/2022	Engineering Properties:	
Equipment: John Deer Backhoe 410 (18"/36")	Location: See Geotechnical Map		

Geologic Attitudes	Unit	SOIL DESCRIPTION:	GEOLOGIC UNIT	USCS	SAMPLE No	MOISTURE (%)	Organic Content (%)
	A	***Agricultural Fill*** @0' to 1' - Silty Fine SAND: grayish orange (10YR 7/4), dry to slightly moist, loose, roots	Afu	SM	Grab@1'	2.3	1.4
	B	***Young Alluvium*** @ 1' to 2' - Silty Fine SAND: grayish orange (10YR 7/4), slightly moist, loose, porous, scattered rootlets	Qal	SM	Grab@2'	6.0	1.2
	C	***Old Alluvium*** @ 2' to 7' - Clayey Fine SAND: dark yellowish orange (10YR 6/6), moist, medium dense to dense, indurated	Qoa	SC	Grab@3'	6.5	1.1
	D	@ 7' to 11' - dense, low production	Qoa	SC			

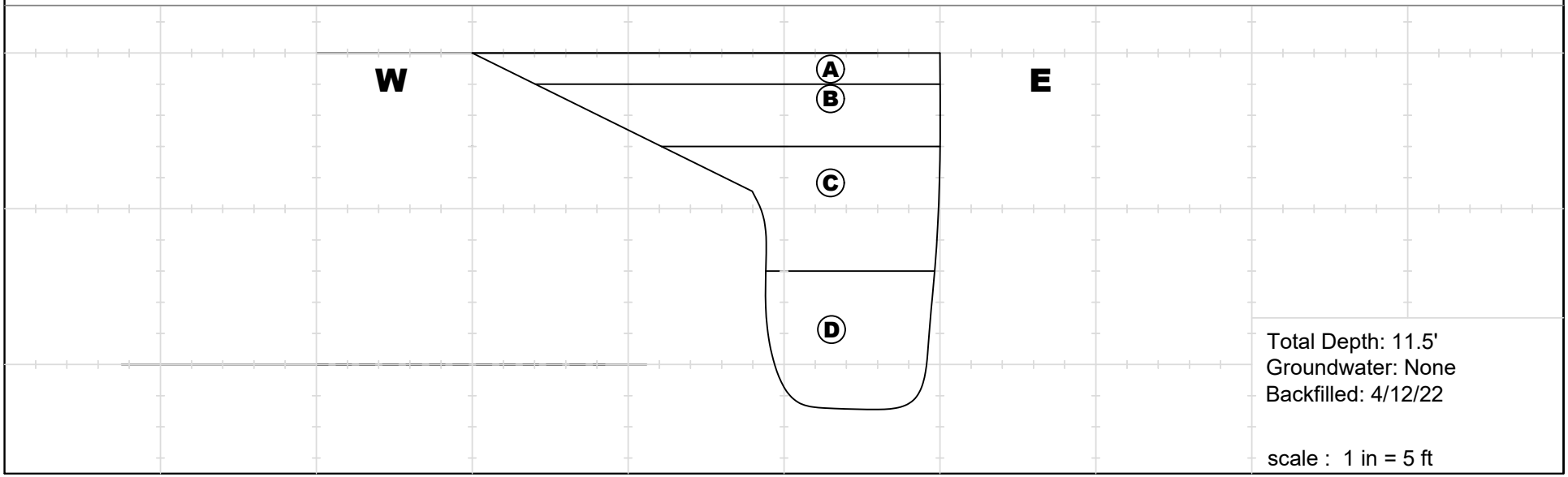
GRAPHICAL REPRESENTATION BELOW: **Elevation : 1460 ' MSL** **Surface Slope: 2 deg.** **Trend: E-W**



Project Name: Meritage - Salt Creek	Logged By: CPM	Trench No: TP-9	LGC Geotechnical, Inc.
Project Number : 22057-01	Date : 4/12/2022	Engineering Properties:	
Equipment: John Deer Backhoe 410 (18"/36")	Location: See Geotechnical Map		

Geologic Attitudes	Unit	SOIL DESCRIPTION:	GEOLOGIC UNIT	USCS	SAMPLE No	MOISTURE (%)	Organic Content (%)
	A	***Agricultural Fill*** @0' to 1' - Silty Fine SAND: pale yellowish brown (10YR 6/2), slightly moist, loose, roots	Afu	SM	Grab@1'	13.6	2.7
	B	***Young Alluvium*** @ 1' to 3' - Silty Fine SAND: medium yellowish brown (10YR 5/4), moist, medium dense	Qal	SM	Grab@2'	7.4	1.1
	C	***Old Alluvium*** @ 3' to 7' - Sandy CLAY: dark yellowish brown (10YR 4/2), moist, medium stiff to stiff, indurated	Qoa	CL	Grab@3'	9.6	1.6
	D	@ 7' to 11.5' - Silty Medium SAND: medium brown (5YR 4/4), moist to very moist, medium dense	Qoa	SM			

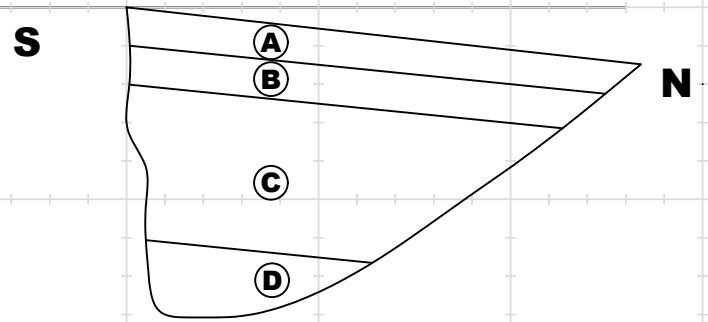
GRAPHICAL REPRESENTATION BELOW: **Elevation : 1449 ' MSL** **Surface Slope: 2 deg.** **Trend: E-W**



Project Name: Meritage - Salt Creek	Logged By: CPM	Trench No: TP-10	LGC Geotechnical, Inc.
Project Number : 22057-01	Date : 4/15/2022	Engineering Properties:	
Equipment: John Deer Backhoe 410 (18"/36")	Location: See Geotechnical Map		

Geologic Attitudes	Unit	SOIL DESCRIPTION:	GEOLOGIC UNIT	USCS	SAMPLE No	MOISTURE (%)	Organic Content (%)
	A	***Agricultural Fill*** @0' to 1' - Silty Fine SAND: pale yellowish brown (10YR 6/2), dry, loose, roots	Afu	SM	Grab@1'	2.1	1.3
	B	***Young Alluvium*** @ 1' to 2' - Silty Fine SAND: pale yellowish brown (10YR 6/2), slightly moist, loose, porous, trace roots	Qal	SM	Grab@2'	4.8	1.4
	C	***Old Alluvium*** @ 2' to 6' - Silty Fine to Medium SAND: dark yellowish brown (10YR 6/6), moist, medium dense, porous, trace roots	Qoa	SM	Grab@3'	7.3	1.3
	D	***Bedrock - Domenigoni Valley Granodiorite*** @ 6' to 8' - highly weathered, recovered as Silty Medium SAND: light gray (7N), dry to slightly moist, dense, decreased weathering with depth, slow production, abandoned @8' (practical refusal)	Kdvg	SM			

GRAPHICAL REPRESENTATION BELOW: **Elevation : 1494 ' MSL** **Surface Slope: 12 deg.** **Trend: N-S**



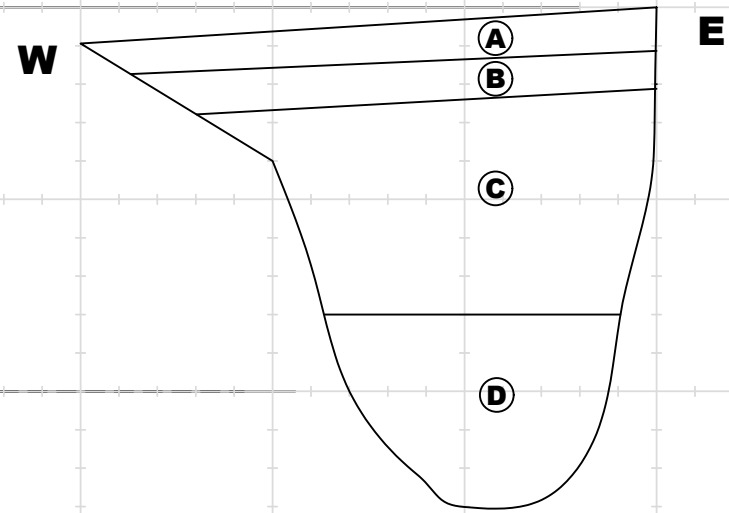
Total Depth: 8'
Groundwater: None
Backfilled: 4/15/22

scale : 1 in = 5 ft

Project Name: Meritage - Salt Creek	Logged By: CPM	Trench No: TP-11	LGC Geotechnical, Inc.
Project Number : 22057-01	Date : 4/15/2022	Engineering Properties:	
Equipment: John Deer Backhoe 410 (18"/36")	Location: See Geotechnical Map		

Geologic Attitudes	Unit	SOIL DESCRIPTION:	GEOLOGIC UNIT	USCS	SAMPLE No	MOISTURE (%)	Organic Content (%)
	A	***Agricultural Fill*** @0' to 1' - Silty Fine SAND: pale yellowish brown (10YR 6/2), dry, loose, roots	Afu	SM	Grab@1'	3.0	3.4
	B	***Young Alluvium*** @ 1' to 2' -Clayey to Silty Fine SAND: medium yellowish brown (10YR 5/4), slightly moist, loose, porous, trace roots	Qal	SC-SM	Grab@2'	5.4	1.0
	C	***Old Alluvium*** @ 2' to 8' - Silty Fine to Medium SAND: light brown (5YR 6/4), moist, medium dense	Qoa	SM	Grab@3'		
	D	***Bedrock - Domenigoni Valley Granodiorite*** @ 8' to 13' - Highly weathered, recovered as Fine to Medium SAND with Silt: medium yellowish brown (10YR 5/4), moist, dense, slow production, abandoned @13' (practical refusal)	Kdvg	SP-SM			

GRAPHICAL REPRESENTATION BELOW: **Elevation : 1501' MSL** **Surface Slope: 7 deg.** **Trend: E-W**



Total Depth: 13'
Groundwater: None
Backfilled: 4/15/22

scale : 1 in = 5 ft

Appendix C
Laboratory Test Results

APPENDIX C

Laboratory Test Results

The laboratory testing program was directed towards providing quantitative data relating to the relevant engineering properties of the soils. Samples considered representative of site conditions were tested in general accordance with American Society for Testing and Materials (ASTM) procedure and/or California Test Methods (CTM), where applicable. The following summary is a brief outline of the test type and a table summarizing the test results.

Moisture and Density Determination Tests: Moisture content (ASTM D2216) and dry density determinations (ASTM D2937) were performed on driven samples obtained from the test borings. The results of these tests are presented in the boring logs. Where applicable, only moisture content was determined.

Atterberg Limits: The liquid and plastic limits ("Atterberg Limits") were determined per ASTM D4318 for engineering classification of fine-grained material and presented in the table below. The USCS soil classification indicated in the table below is based on the portion of sample passing the No. 40 sieve and may not necessarily be representative of the entire sample. The plots are provided in this Appendix.

Sample Location	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	USCS Soil Classification
HS-5 @ 0-5 ft	32	22	10	CL
TP-4 @ 0-5 ft	41	29	12	ML

Expansion Index: The expansion potential of selected representative samples was evaluated by the Expansion Index Test per ASTM D4829. The results are presented in the table below.

Sample Location	Expansion Index	Expansion Potential*
HS-2 @ 0-5 ft	26	Low
HS-5 @ 0-5 ft	24	Low
TP-3 @ 0-5 ft	15	Very Low
TP-4 @ 0-5 ft	0	Very Low
TP-5 @ 0-5 ft	2	Very Low
TP-10 @ 0-5 ft	4	Very Low

* Per ASTM D4829

Laboratory Test Results

Laboratory Compaction: The maximum dry density and optimum moisture content of typical materials were determined in accordance with ASTM D1557. The results are presented in the table below.

Sample Location	Sample Description	Maximum Dry Density (pcf)	Optimum Moisture Content (%)
HS-5 @ 0-5 ft	Brown Silty SAND/Sandy SILT	117.0	13.0
TP-4 @ 0-5 ft	Light Yellowish-Brown Sandy SILT	97.0	22.0
TP-8 @ 0-5 ft	Light Brown Silty SAND	133.5	7.5
TP-11 @ 0-5 ft	Pale Brown Silty SAND	131.0	8.5

*Includes rock correction

Consolidation: Consolidation tests were performed per ASTM D2435. Samples (2.4 inches in diameter and 1 inch in height) were placed in a consolidometer and increasing loads were applied. The samples were allowed to consolidate under "double drainage" and total deformation for each loading step was recorded. The percent consolidation for each load step was recorded as the ratio of the amount of vertical compression to the original sample height. The consolidation pressure curves are provided in this Appendix.

Collapse/Swell Potential: Collapse tests were performed per ASTM D4546. Samples (2.4 inches in diameter and 1 inch in height) were placed in a consolidometer and loaded to their approximate in-situ effective stress. The collapse/swell plots are presented in this Appendix.

R-value Test: R-value test was performed in general accordance with California Test Method 301. The plot is included in the Appendix.

Sample Location	R-value
HS-3 @ 0-5 feet	21

Laboratory Test Results

Soluble Sulfates: The soluble sulfate contents of selected samples were determined by standard geochemical methods (CTM 417). The test results are presented in the table below.

Sample Location	Sulfate Content (%)
HS-2 @ 0-5 ft	0.154
HS-4 @ 0-5 ft	0.016
HS-5 @ 0-5 ft	0.334
TP-7 @ 0-5 ft	0.942
TP-9 @ 0-5 ft	0.030
TP-11 @ 0-5 ft	0.013

Chloride Content: Chloride content was tested per CTM 422. The results are presented below.

Sample Location	Chloride Content (ppm)
HS-2 @ 0-5 ft	420
HS-4 @ 0-5 ft	200
HS-5 @ 0-5 ft	360
TP-7 @ 0-5 ft	540
TP-9 @ 0-5 ft	227
TP-11 @ 0-5 ft	100

Minimum Resistivity and pH Tests: Minimum resistivity and pH tests were performed in general accordance with CTM 643 and standard geochemical methods. The results are presented in the table below.

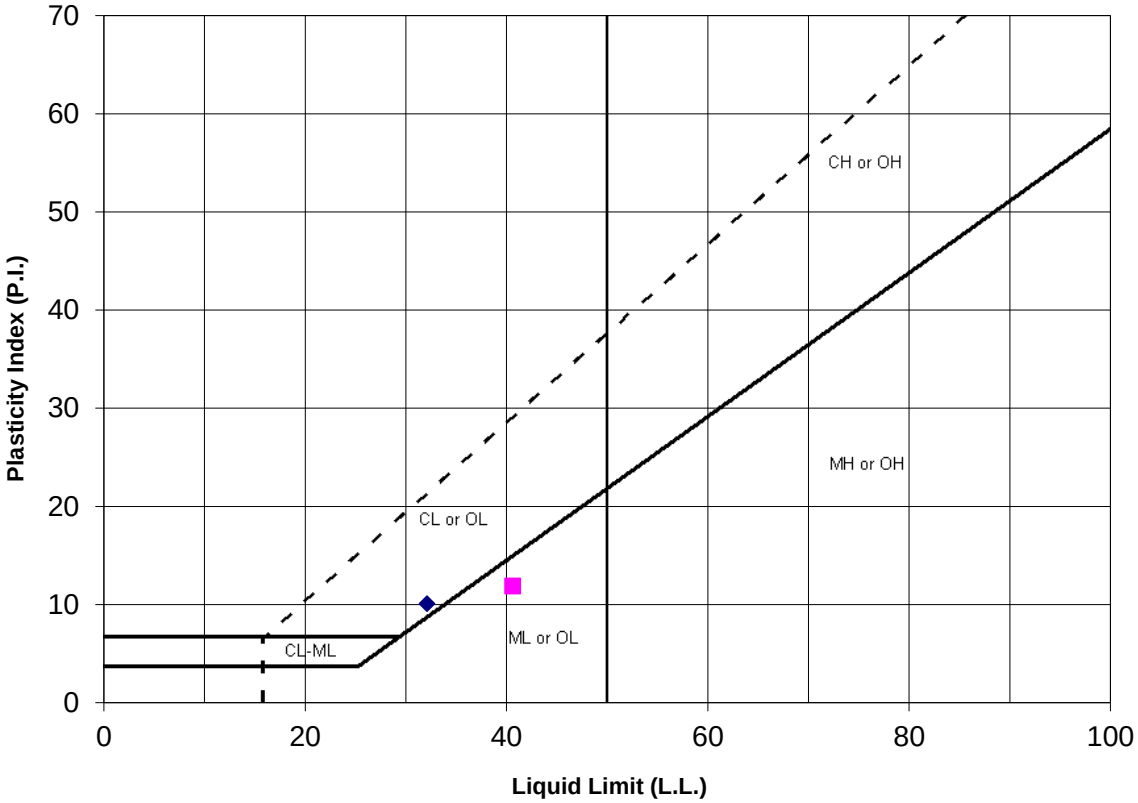
Sample Location	pH	Minimum Resistivity (ohm-cm)
TP-7 @ 0-5 ft	8.16	246

Laboratory Test Results

Organic Matter Content of Soils: Organic matter content tests were performed in general accordance with ASTM D 2974 (Test Methods A & C). The results are presented in the table below.

Sample Location	Organics Content (%)
TP-1 @ 1 ft	1.4
TP-1 @ 2 ft	1.8
TP-2 @ 1 ft	0.7
TP-2 @ 2 ft	1.1
TP-3 @ 1 ft	2.8
TP-3 @ 2 ft	2.3
TP-3 @ 3 ft	2.0
TP-4 @ 1 ft	4.6
TP-4 @ 2 ft	3.3
TP-4 @ 3 ft	4.2
TP-4 @ 4 ft	2.4
TP-5 @ 1 ft	1.0
TP-5 @ 2 ft	1.2
TP-6 @ 1 ft	0.8
TP-6 @ 2 ft	1.2
TP-6 @ 3 ft	2.5
TP-7 @ 1 ft	2.9
TP-7 @ 2 ft	2.3
TP-7 @ 3 ft	1.2
TP-8 @ 1 ft	1.4
TP-8 @ 2 ft	1.2
TP-8 @ 3 ft	1.1
TP-9 @ 1 ft	2.7
TP-9 @ 2 ft	1.1
TP-9 @ 3 ft	1.6
TP-10 @ 1 ft	1.3
TP-10 @ 2 ft	1.4
TP-10 @ 3 ft	1.3
TP-11 @ 1 ft	3.4
TP-11 @ 2 ft	1.0

PLASTICITY CHART - CLASSIFICATION OF FINE-GRAINED SOILS



Symbol	Location.:	Sample No.:	Depth (ft)	Passing No. 200 Sieve (%)	Liquid Limit (%) LL	Plastic Limit (%) PL	Plasticity Index (%) PI	USCS
◆	HS-5	B-1	0-5'	-	32	22	10	CL
■	TP4	Bulk1	0-5'	-	41	29	12	ML

LGC Geotechnical, Inc.

ATTERBERG LIMITS
(ASTM D 4318)

Project Number: 22057-01
Date: May-22

Salt Creek

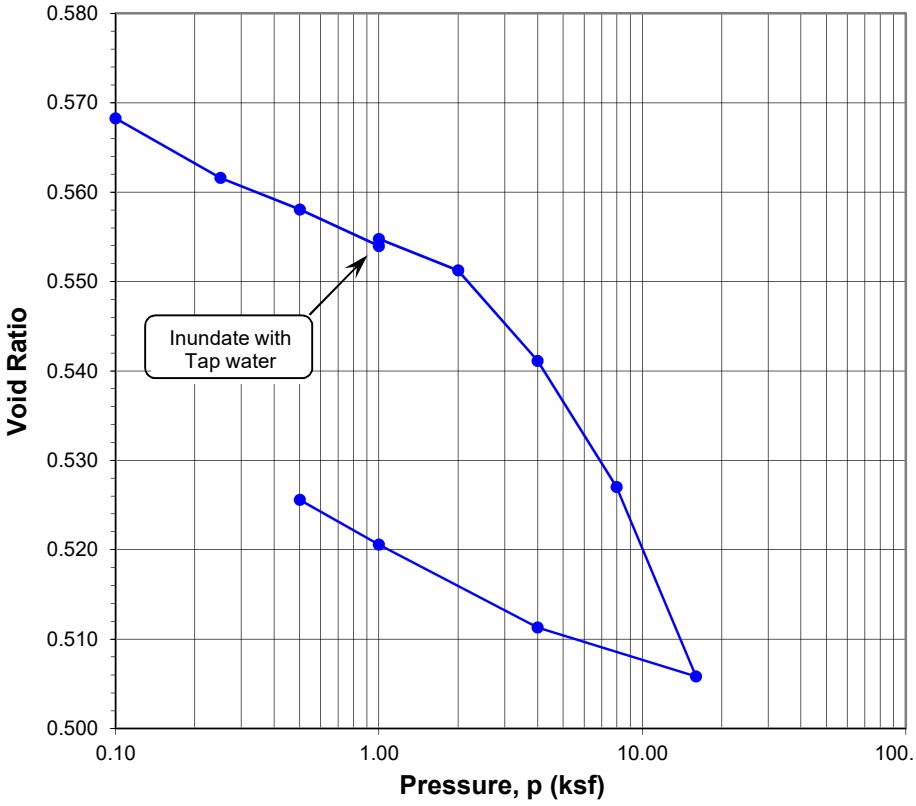
ONE-DIMENSIONAL CONSOLIDATION PROPERTIES of SOILS

ASTM D 2435

Project Name: Salt Creek
Project No.: 22057-01
Boring No.: HS-2
Sample No.: R-5
Soil Identification: Light olive brown silty clay with sand (CL-ML)s

Tested By: G. Bathala Date: 05/05/22
Checked By: J. Ward Date: 05/25/22
Depth (ft.): 10.0
Sample Type: Ring

Sample Diameter (in.):	2.415
Sample Thickness (in.):	1.000
Weight of Sample + ring (g):	201.85
Weight of Ring (g):	44.80
Height after consol. (in.):	0.9726
Before Test	
Wt. of Wet Sample+Cont. (g):	201.60
Wt. of Dry Sample+Cont. (g):	179.50
Weight of Container (g):	65.19
Initial Moisture Content (%)	19.3
Initial Dry Density (pcf)	109.5
Initial Saturation (%):	94
Initial Vertical Reading (in.)	0.0996
After Test	
Wt. of Wet Sample+Cont. (g):	267.02
Wt. of Dry Sample+Cont. (g):	240.92
Weight of Container (g):	67.14
Final Moisture Content (%)	20.24
Final Dry Density (pcf):	110.3
Final Saturation (%):	100
Final Vertical Reading (in.)	0.1321
Specific Gravity (assumed):	2.75
Water Density (pcf):	62.43

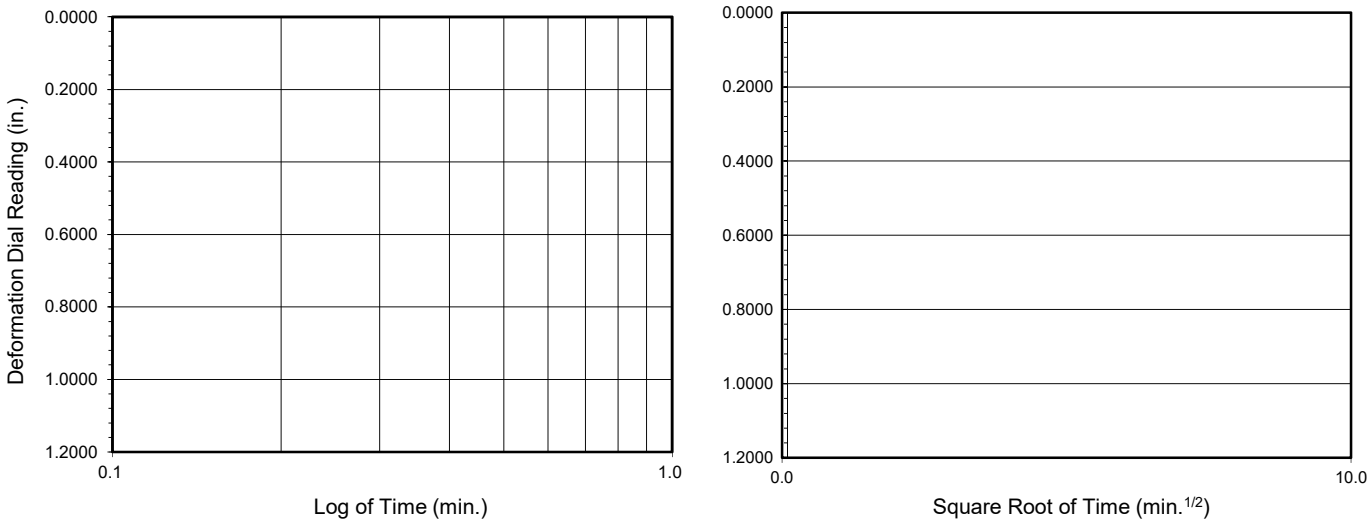


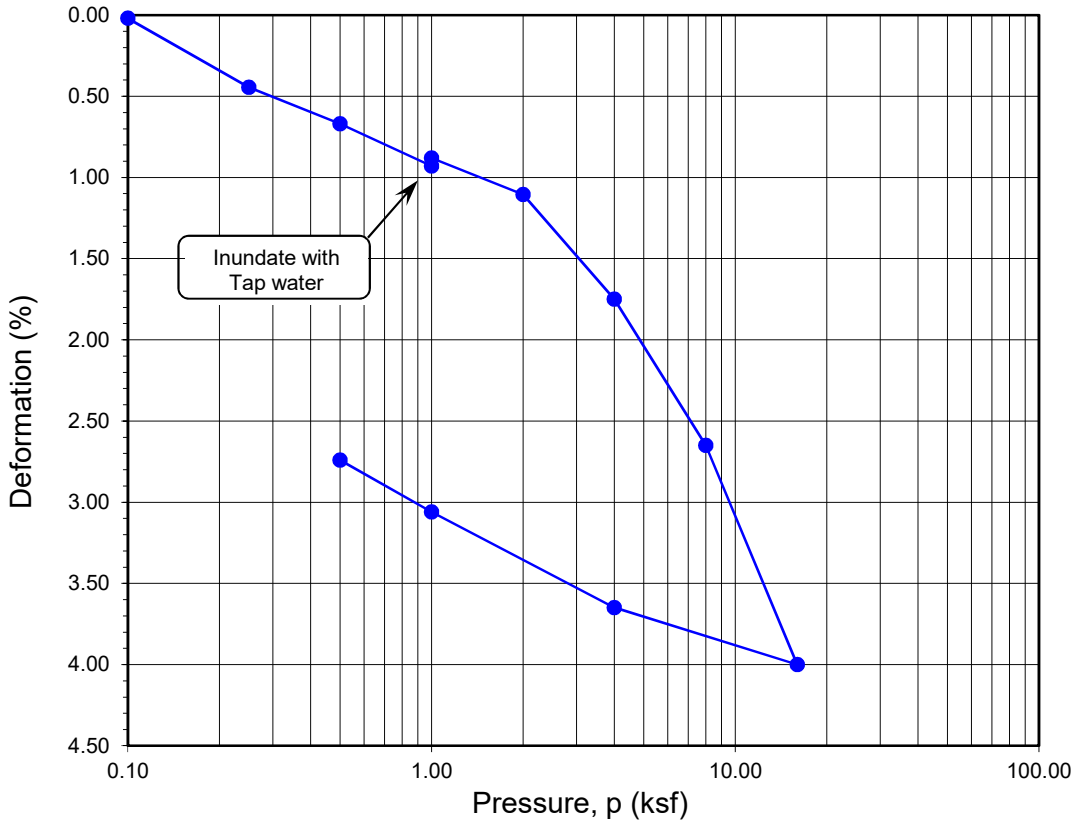
Pressure (p) (ksf)	Final Reading (in.)	Apparent Thickness (in.)	Load Compliance (%)	Deformation % of Sample Thickness	Void Ratio	Corrected Deforma-tion (%)
0.10	0.0998	0.9998	0.00	0.02	0.568	0.02
0.25	0.1043	0.9954	0.02	0.47	0.562	0.45
0.50	0.1072	0.9924	0.09	0.76	0.558	0.67
1.00	0.1113	0.9883	0.24	1.17	0.554	0.93
1.00	0.1108	0.9888	0.24	1.12	0.555	0.88
2.00	0.1146	0.9851	0.39	1.50	0.551	1.11
4.00	0.1224	0.9772	0.53	2.28	0.541	1.75
8.00	0.1327	0.9669	0.66	3.31	0.527	2.65
16.00	0.1477	0.9519	0.81	4.81	0.506	4.00
4.00	0.1427	0.9569	0.66	4.31	0.511	3.65
1.00	0.1357	0.9639	0.55	3.61	0.521	3.06
0.50	0.1321	0.9675	0.51	3.25	0.526	2.74

Time Readings

Date	Time	Elapsed Time (min)	Square Root of Time	Dial Rdgs. (in.)

Time Readings





Boring No.	Sample No.	Depth (ft.)	Moisture Content (%)		Dry Density (pcf)		Void Ratio		Degree of Saturation (%)	
			Initial	Final	Initial	Final	Initial	Final	Initial	Final
HS-2	**R-5**	**10**	**19.3**	**20.2**	**109.5**	**110.3**	**0.569**	**0.526**	**94**	**100**

Soil Identification: Light olive brown silty clay with sand (CL-ML)s

ONE-DIMENSIONAL CONSOLIDATION PROPERTIES of SOILS
ASTM D 2435

Project No.: 22057-01

Salt Creek

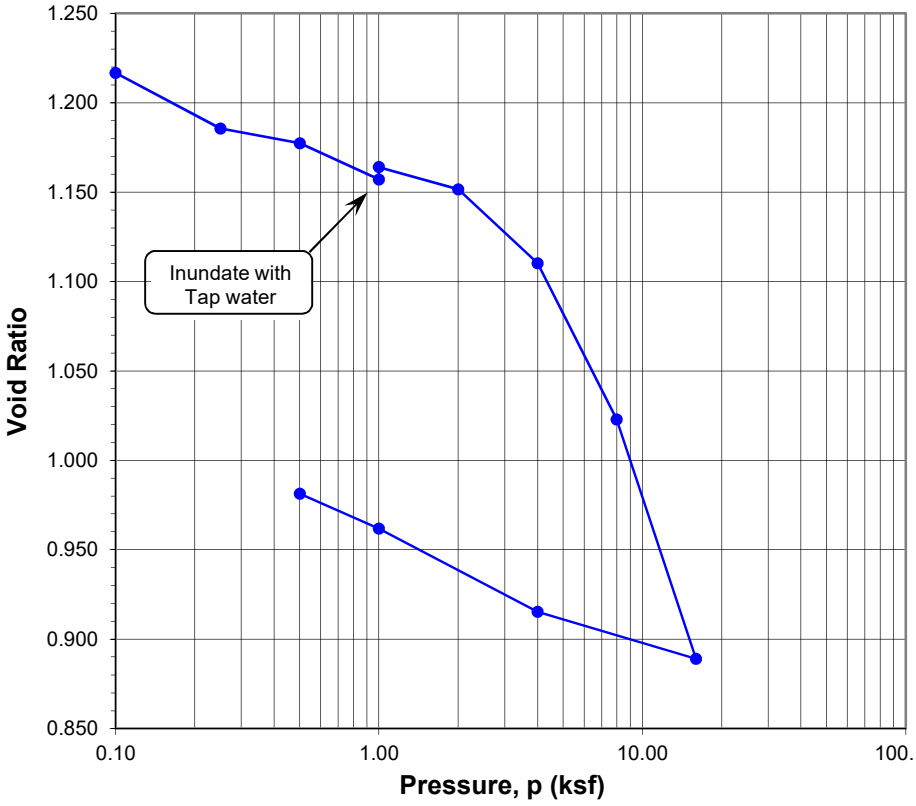
05-22

ONE-DIMENSIONAL CONSOLIDATION PROPERTIES of SOILS

ASTM D 2435

Project Name:	Salt Creek	Tested By: G. Bathala	Date: 05/05/22
Project No.:	22057-01	Checked By: J. Ward	Date: 05/25/22
Boring No.:	HS-2	Depth (ft.): 20.0	
Sample No.:	R-6	Sample Type: Ring	
Soil Identification:	Light olive brown lean clay (CL)		

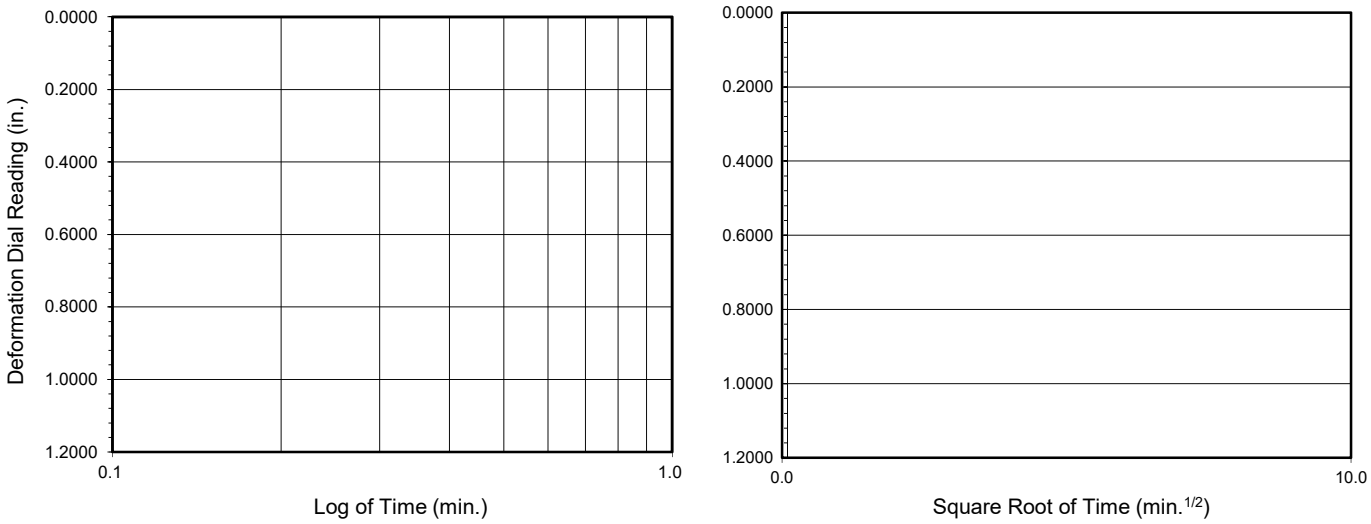
Sample Diameter (in.):	2.415
Sample Thickness (in.):	1.000
Weight of Sample + ring (g):	178.91
Weight of Ring (g):	44.47
Height after consol. (in.):	0.8921
Before Test	
Wt. of Wet Sample+Cont. (g):	168.01
Wt. of Dry Sample+Cont. (g):	135.04
Weight of Container (g):	56.66
Initial Moisture Content (%)	42.1
Initial Dry Density (pcf)	78.7
Initial Saturation (%):	96
Initial Vertical Reading (in.)	0.0516
After Test	
Wt. of Wet Sample+Cont. (g):	224.52
Wt. of Dry Sample+Cont. (g):	190.42
Weight of Container (g):	53.70
Final Moisture Content (%)	36.96
Final Dry Density (pcf):	86.0
Final Saturation (%):	100
Final Vertical Reading (in.)	0.1627
Specific Gravity (assumed):	2.80
Water Density (pcf):	62.43

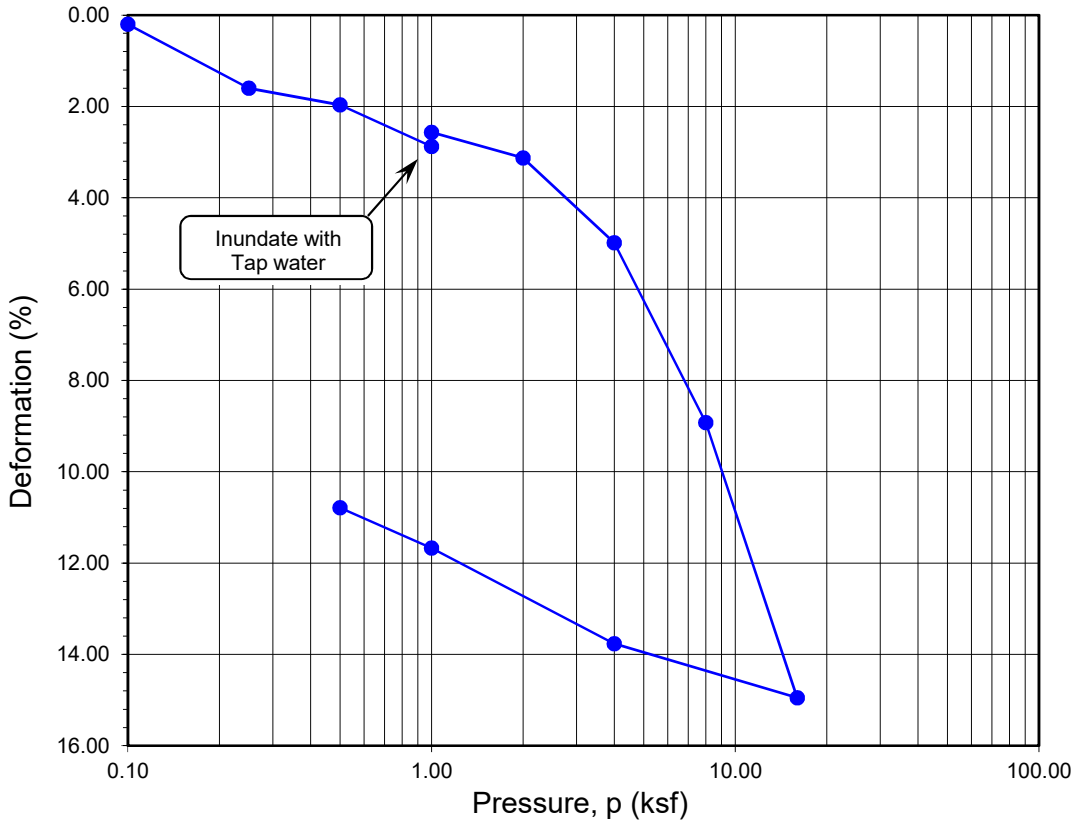


Pressure (p) (ksf)	Final Reading (in.)	Apparent Thickness (in.)	Load Compliance (%)	Deformation % of Sample Thickness	Void Ratio	Corrected Deforma-tion (%)
0.10	0.0536	0.9980	0.00	0.20	1.217	0.20
0.25	0.0680	0.9836	0.04	1.64	1.186	1.60
0.50	0.0723	0.9793	0.10	2.07	1.177	1.97
1.00	0.0821	0.9695	0.17	3.05	1.157	2.88
1.00	0.0790	0.9726	0.17	2.74	1.164	2.57
2.00	0.0854	0.9662	0.25	3.38	1.152	3.13
4.00	0.1050	0.9466	0.35	5.34	1.110	4.99
8.00	0.1456	0.9061	0.47	9.40	1.023	8.93
16.00	0.2074	0.8442	0.63	15.58	0.889	14.95
4.00	0.1940	0.8576	0.47	14.24	0.915	13.77
1.00	0.1720	0.8797	0.36	12.04	0.962	11.68
0.50	0.1627	0.8889	0.32	11.11	0.981	10.79

Time Readings				
Date	Time	Elapsed Time (min)	Square Root of Time	Dial Rdgs. (in.)

Time Readings





Boring No.	Sample No.	Depth (ft.)	Moisture Content (%)		Dry Density (pcf)		Void Ratio		Degree of Saturation (%)	
			Initial	Final	Initial	Final	Initial	Final	Initial	Final
HS-2	**R-6**	**20**	**42.1**	**37.0**	**78.7**	**86.0**	**1.221**	**0.981**	**96**	**100**

Soil Identification: Light olive brown lean clay (CL)

ONE-DIMENSIONAL CONSOLIDATION PROPERTIES of SOILS
ASTM D 2435

Project No.: 22057-01

Salt Creek

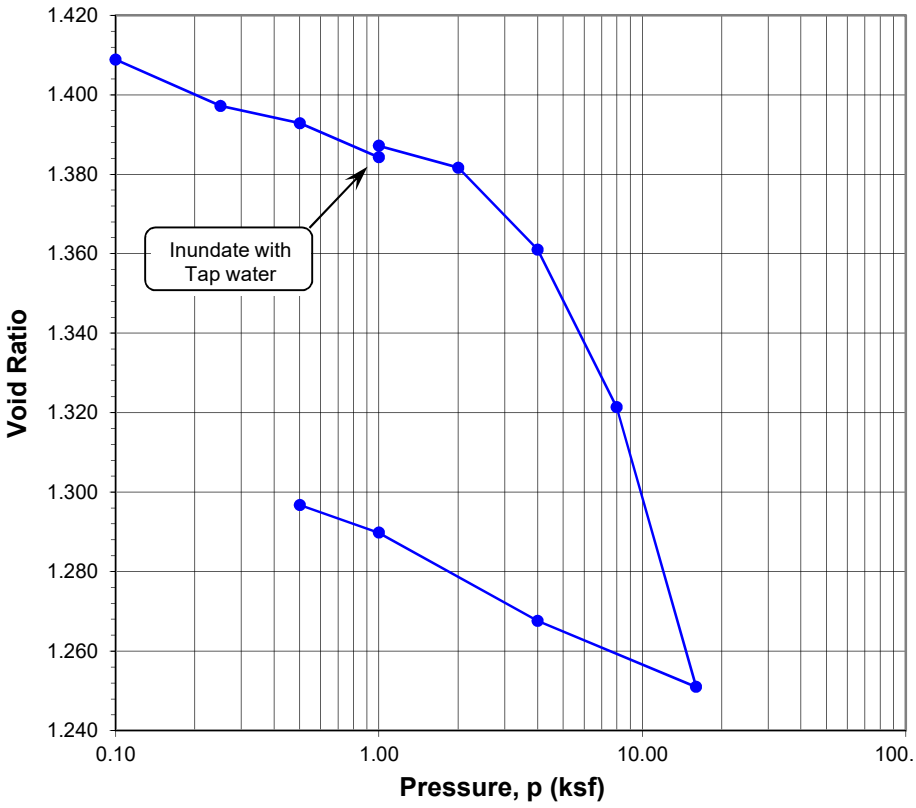
05-22

ONE-DIMENSIONAL CONSOLIDATION PROPERTIES of SOILS

ASTM D 2435

Project Name:	Salt Creek	Tested By: G. Bathala	Date: 05/05/22
Project No.:	22057-01	Checked By: J. Ward	Date: 05/25/22
Boring No.:	HS-5	Depth (ft.): 20.0	
Sample No.:	R-6	Sample Type: Ring	
Soil Identification:	Light olive brown lean clay (CL), caliche noted		

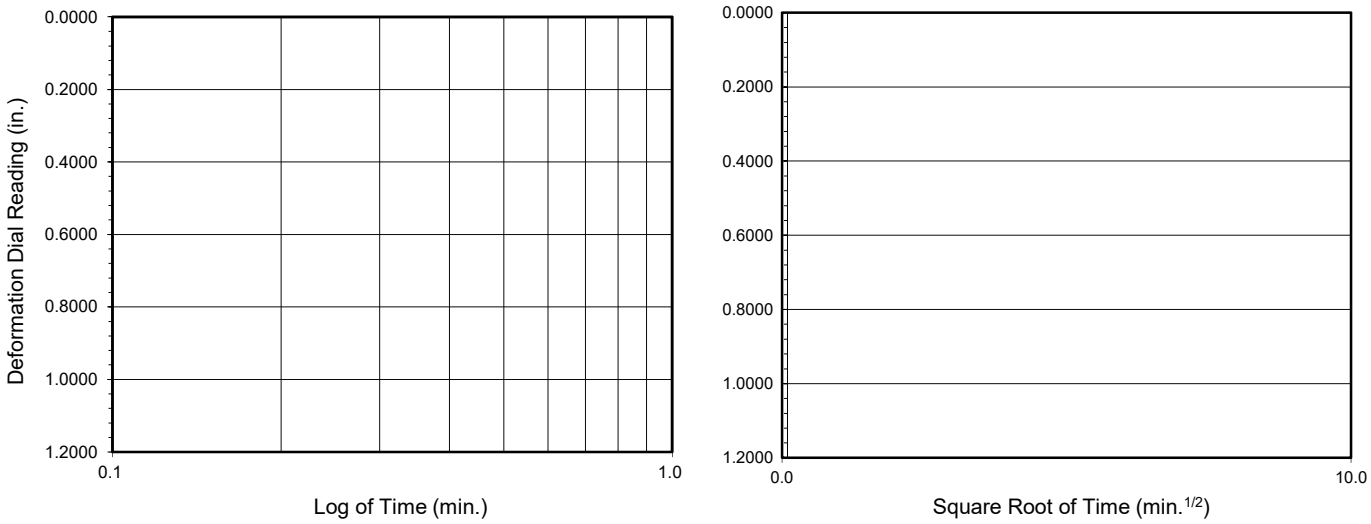
Sample Diameter (in.):	2.415
Sample Thickness (in.):	1.000
Weight of Sample + ring (g):	182.56
Weight of Ring (g):	45.97
Height after consol. (in.):	0.9529
Before Test	
Wt. of Wet Sample+Cont. (g):	174.95
Wt. of Dry Sample+Cont. (g):	139.06
Weight of Container (g):	63.77
Initial Moisture Content (%)	47.7
Initial Dry Density (pcf)	76.9
Initial Saturation (%):	100
Initial Vertical Reading (in.)	0.0693
After Test	
Wt. of Wet Sample+Cont. (g):	238.50
Wt. of Dry Sample+Cont. (g):	202.68
Weight of Container (g):	59.51
Final Moisture Content (%)	36.85
Final Dry Density (pcf):	84.8
Final Saturation (%):	92
Final Vertical Reading (in.)	0.1194
Specific Gravity (assumed):	2.97
Water Density (pcf):	62.43

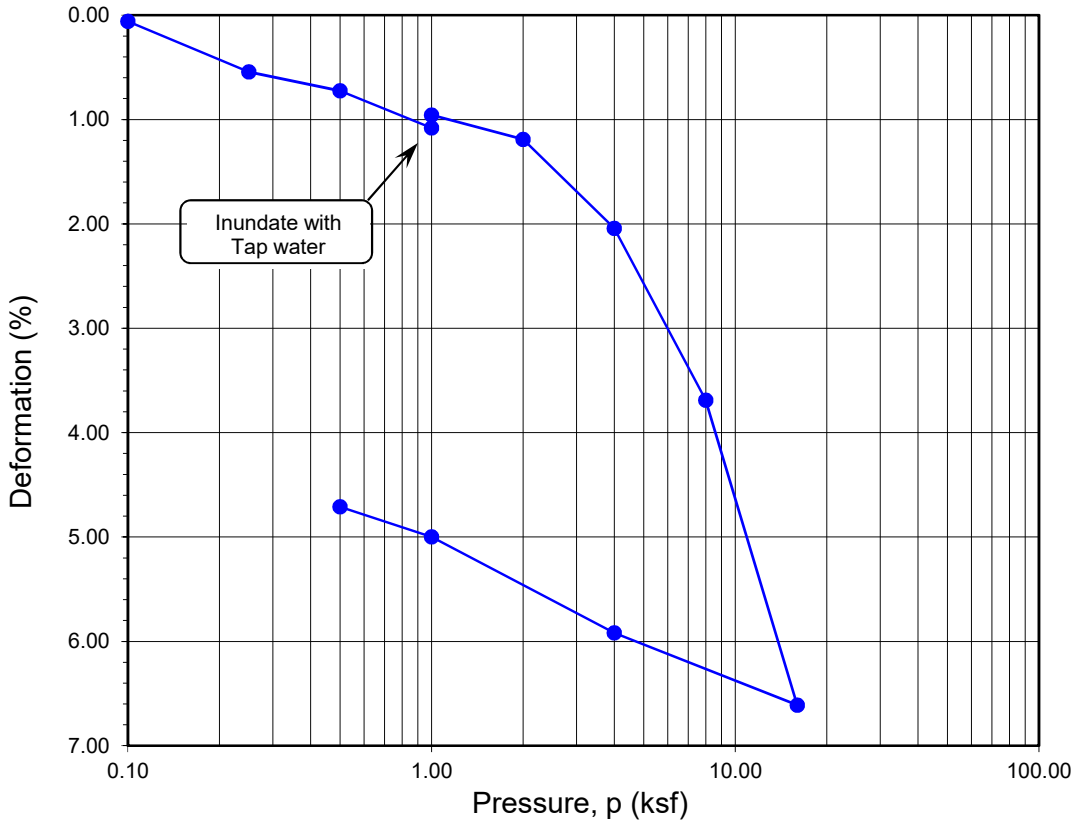


Pressure (p) (ksf)	Final Reading (in.)	Apparent Thickness (in.)	Load Compliance (%)	Deformation % of Sample Thickness	Void Ratio	Corrected Deforma-tion (%)
0.10	0.0699	0.9994	0.00	0.06	1.409	0.06
0.25	0.0753	0.9941	0.05	0.60	1.397	0.55
0.50	0.0777	0.9917	0.11	0.83	1.393	0.72
1.00	0.0820	0.9873	0.19	1.27	1.384	1.08
1.00	0.0808	0.9885	0.19	1.15	1.387	0.96
2.00	0.0841	0.9852	0.29	1.48	1.382	1.19
4.00	0.0939	0.9755	0.41	2.46	1.361	2.05
8.00	0.1116	0.9577	0.54	4.23	1.321	3.69
16.00	0.1423	0.9270	0.69	7.30	1.251	6.61
4.00	0.1336	0.9357	0.51	6.43	1.268	5.92
1.00	0.1229	0.9464	0.36	5.36	1.290	5.00
0.50	0.1194	0.9499	0.30	5.01	1.297	4.71

Time Readings				
Date	Time	Elapsed Time (min)	Square Root of Time	Dial Rdgs. (in.)

Time Readings





Boring No.	Sample No.	Depth (ft.)	Moisture Content (%)		Dry Density (pcf)		Void Ratio		Degree of Saturation (%)	
			Initial	Final	Initial	Final	Initial	Final	Initial	Final
HS-5	**R-6**	**20**	**47.7**	**36.9**	**76.9**	**84.8**	**1.410**	**1.297**	**100**	**92**

Soil Identification: Light olive brown lean clay (CL), caliche noted

ONE-DIMENSIONAL CONSOLIDATION PROPERTIES of SOILS
ASTM D 2435

Project No.: 22057-01

Salt Creek

05-22

ONE-DIMENSIONAL SWELL OR SETTLEMENT POTENTIAL OF COHESIVE SOILS

ASTM D 4546

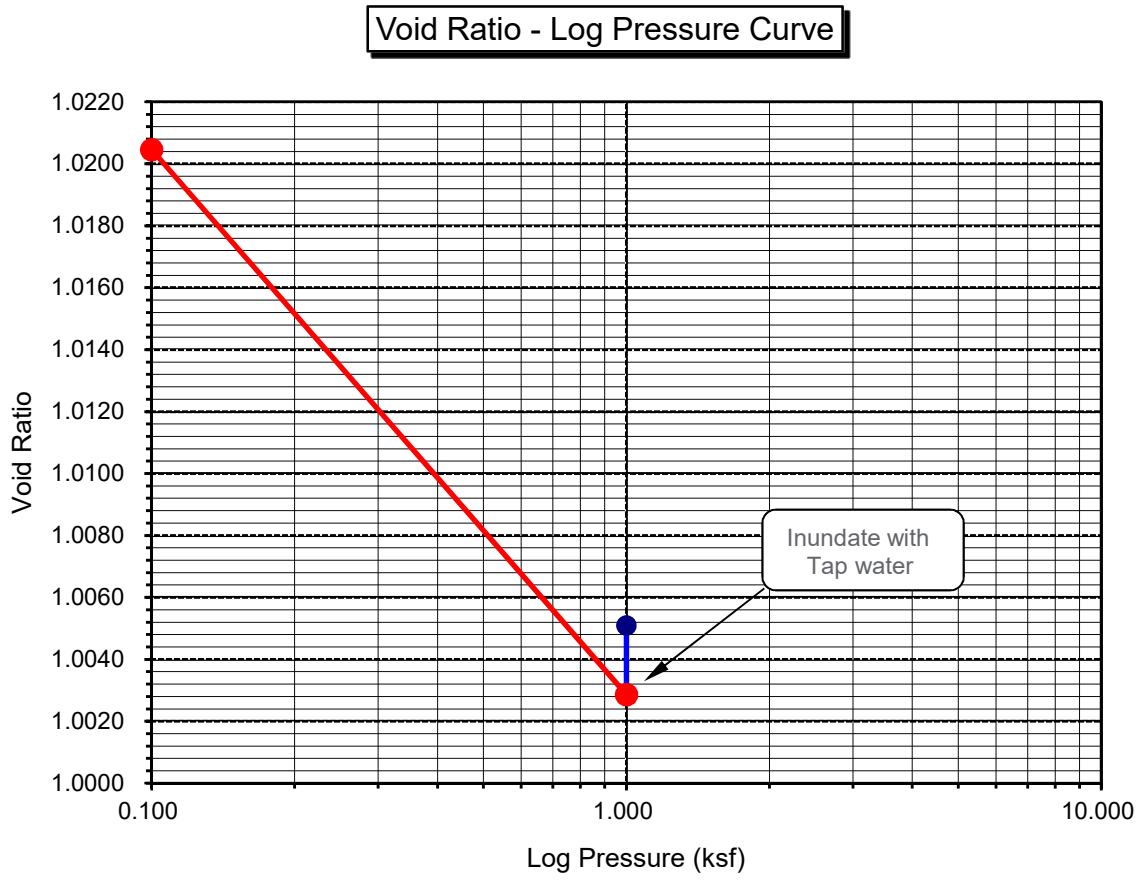
Project Name:	Salt Creek	Tested By:	G. Bathala	Date:	05/09/22
Project No.:	22057-01	Checked By:	J. Ward	Date:	05/25/22
Boring No.:	HS-2	Sample Type:	Ring		
Sample No.:	R-4	Depth (ft.)	7.5		
Sample Description:	Olive yellow lean clay (CL)				

Initial Dry Density (pcf):	83.4
Initial Moisture (%):	36.06
Initial Length (in.):	1.0000
Initial Dial Reading:	0.1364
Diameter(in):	2.415

Final Dry Density (pcf):	84.5
Final Moisture (%) :	35.4
Initial Void ratio:	1.0223
Specific Gravity(assumed):	2.70
Initial Saturation (%)	95.2

Pressure (p) (ksf)	Final Reading (in)	Apparent Thickness (in)	Load Compliance (%)	Swell (+) Settlement (-) % of Sample Thickness	Void Ratio	Corrected Deformation (%)
0.100	0.1373	0.9991	0.00	-0.09	1.0205	-0.09
1.000	0.1484	0.9880	0.24	-1.20	1.0029	-0.96
H2O	0.1473	0.9891	0.24	-1.09	1.0051	-0.85

Percent Swell (+) / Settlement (-) After Inundation = 0.11



ONE-DIMENSIONAL SWELL OR SETTLEMENT POTENTIAL OF COHESIVE SOILS

ASTM D 4546

Project Name:	Salt Creek	Tested By:	G. Bathala	Date:	05/10/22
Project No.:	22057-01	Checked By:	J. Ward	Date:	05/25/22
Boring No.:	HS-4	Sample Type:	Ring		
Sample No.:	R-4	Depth (ft.)	7.5		

Sample Description: Olive brown silty clay with sand (CL-ML)s, mica noted

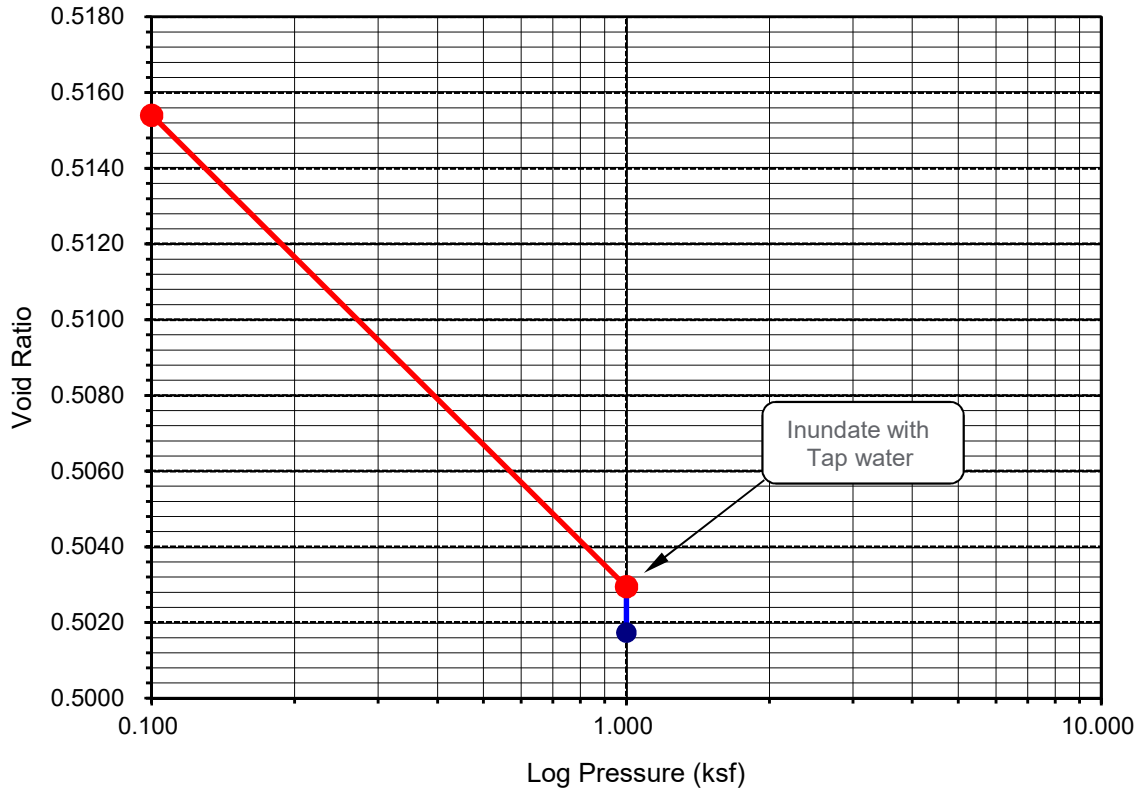
Initial Dry Density (pcf):	111.0
Initial Moisture (%):	20.65
Initial Length (in.):	1.0000
Initial Dial Reading:	0.1295
Diameter(in):	2.415

Final Dry Density (pcf):	112.8
Final Moisture (%) :	19.6
Initial Void ratio:	0.5192
Specific Gravity(assumed):	2.70
Initial Saturation (%)	107.4

Pressure (p) (ksf)	Final Reading (in)	Apparent Thickness (in)	Load Compliance (%)	Swell (+) Settlement (-) % of Sample Thickness	Void Ratio	Corrected Deformation (%)
0.100	0.1320	0.9975	0.00	-0.25	0.5154	-0.25
1.000	0.1426	0.9869	0.24	-1.31	0.5029	-1.07
H2O	0.1434	0.9861	0.24	-1.39	0.5017	-1.15

Percent Swell (+) / Settlement (-) After Inundation = -0.08

Void Ratio - Log Pressure Curve



ONE-DIMENSIONAL SWELL OR SETTLEMENT POTENTIAL OF COHESIVE SOILS

ASTM D 4546

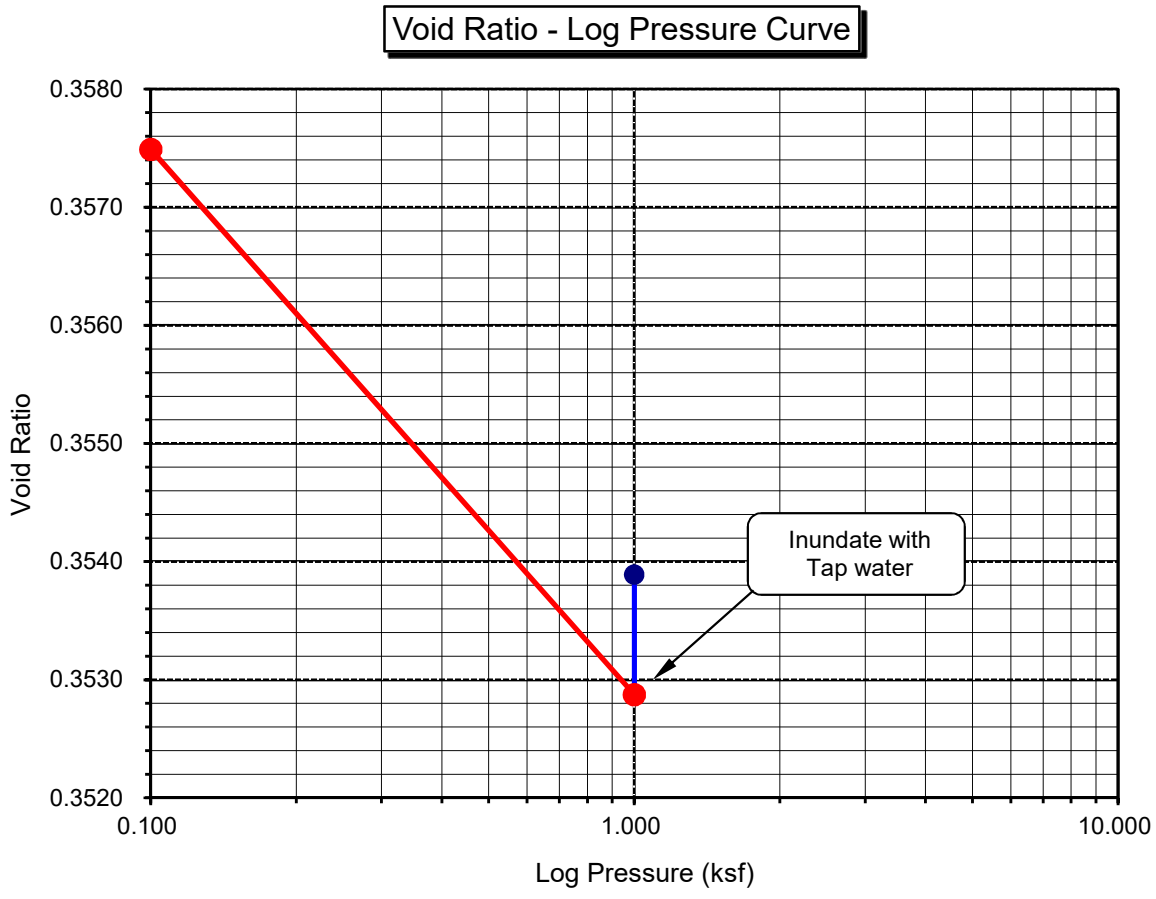
Project Name:	Salt Creek	Tested By:	G. Bathala	Date:	05/16/22
Project No.:	22057-01	Checked By:	J. Ward	Date:	05/25/22
Boring No.:	HS-9	Sample Type:	Ring		
Sample No.:	R-4	Depth (ft.)	7.5		
Sample Description:	Light olive brown sandy lean clay s(CL)				

Initial Dry Density (pcf):	124.1
Initial Moisture (%):	12.19
Initial Length (in.):	1.0000
Initial Dial Reading:	0.2938
Diameter(in):	2.415

Final Dry Density (pcf):	124.5
Final Moisture (%) :	12.6
Initial Void Ratio:	0.3579
Specific Gravity(assumed):	2.70
Initial Saturation (%)	92.0

Pressure (p) (ksf)	Final Reading (in)	Apparent Thickness (in)	Load Compliance (%)	Swell (+) Settlement (-) % of Sample Thickness	Void Ratio	Corrected Deformation (%)
0.100	0.2935	0.9997	0.00	-0.03	0.3575	-0.03
1.000	0.2880	0.9942	0.21	-0.58	0.3529	-0.37
H2O	0.2888	0.9950	0.21	-0.51	0.3539	-0.30

Percent Swell (+) / Settlement (-) After Inundation = 0.08



ONE-DIMENSIONAL SWELL OR SETTLEMENT POTENTIAL OF COHESIVE SOILS

ASTM D 4546

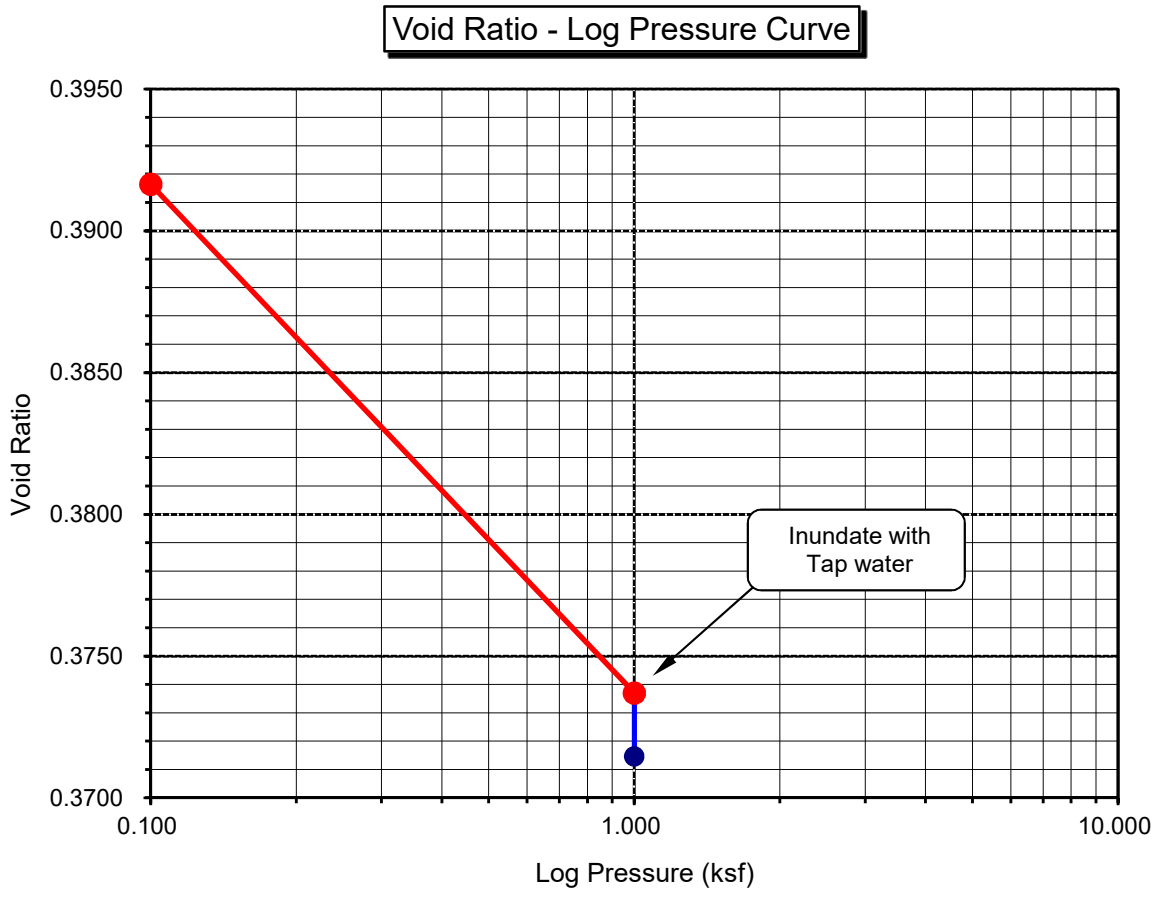
Project Name:	Salt Creek	Tested By:	G. Bathala	Date:	05/16/22
Project No.:	22057-01	Checked By:	J. Ward	Date:	05/25/22
Boring No.:	HS-9	Sample Type:	Ring		
Sample No.:	R-6	Depth (ft.)	15.0		
Sample Description:	Dark yellowish brown clayey sand (SC)				

Initial Dry Density (pcf):	120.3
Initial Moisture (%):	14.53
Initial Length (in.):	1.0000
Initial Dial Reading:	0.2740
Diameter(in):	2.415

Final Dry Density (pcf):	122.9
Final Moisture (%) :	14.3
Initial Void Ratio:	0.4016
Specific Gravity(assumed):	2.70
Initial Saturation (%)	97.7

Pressure (p) (ksf)	Final Reading (in)	Apparent Thickness (in)	Load Compliance (%)	Swell (+) Settlement (-) % of Sample Thickness	Void Ratio	Corrected Deformation (%)
0.100	0.2669	0.9929	0.00	-0.71	0.3916	-0.71
1.000	0.2514	0.9774	0.27	-2.26	0.3737	-1.99
H2O	0.2498	0.9758	0.27	-2.42	0.3715	-2.15

Percent Swell (+) / Settlement (-) After Inundation = -0.16



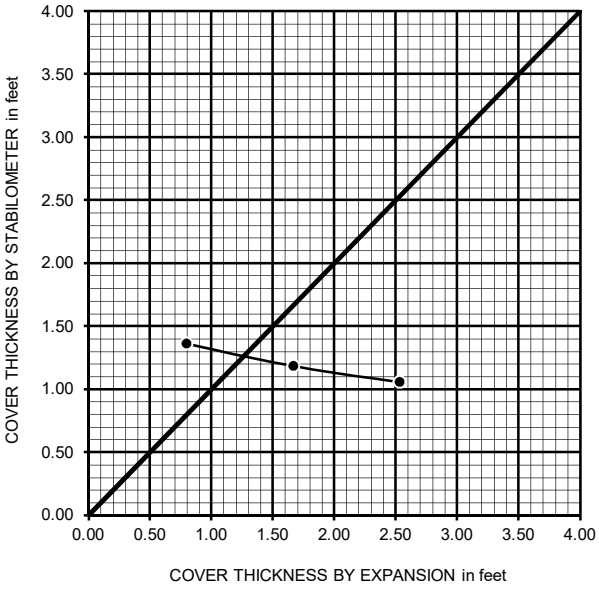
R-VALUE TEST RESULTS
DOT CA Test 301

PROJECT NAME:	Salt Creek	PROJECT NUMBER:	22057-01
BORING NUMBER:	HS-3	DEPTH (FT.):	0-5
SAMPLE NUMBER:	B-1	TECHNICIAN:	O. Figueroa
SAMPLE DESCRIPTION:	Olive brown silty clay (CL-ML)	DATE COMPLETED:	5/6/2022

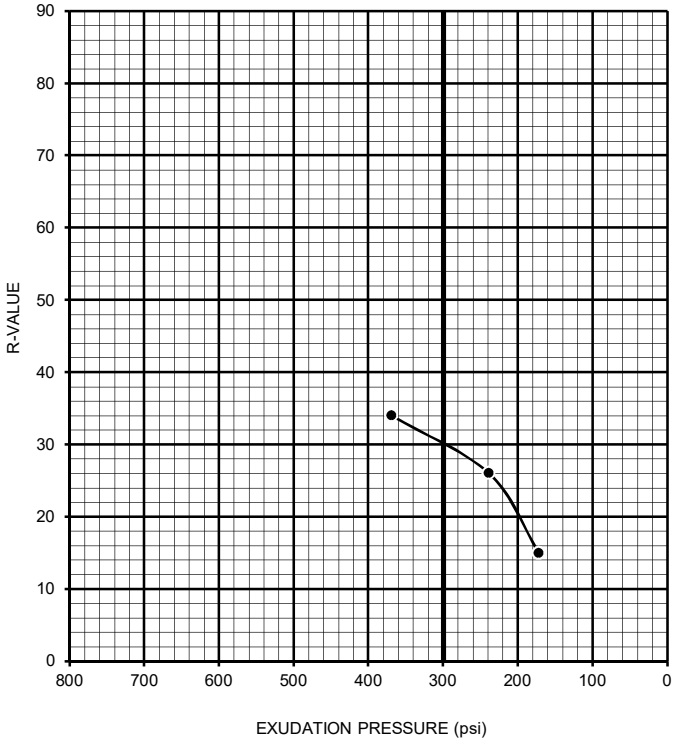
TEST SPECIMEN	a	b	c
MOISTURE AT COMPACTION %	18.8	20.0	20.9
HEIGHT OF SAMPLE, Inches	2.42	2.45	2.50
DRY DENSITY, pcf	109.5	107.2	106.6
COMPACTOR PRESSURE, psi	150	90	60
EXUDATION PRESSURE, psi	369	239	172
EXPANSION, Inches x 10exp-4	76	50	24
STABILITY Ph 2,000 lbs (160 psi)	81	99	122
TURNS DISPLACEMENT	4.34	4.40	4.45
R-VALUE UNCORRECTED	36	26	15
R-VALUE CORRECTED	34	26	15

DESIGN CALCULATION DATA	a	b	c
GRAVEL EQUIVALENT FACTOR	1.0	1.0	1.0
TRAFFIC INDEX	5.0	5.0	5.0
STABILOMETER THICKNESS, ft.	1.06	1.18	1.36
EXPANSION PRESSURE THICKNESS, ft.	2.53	1.67	0.80

EXPANSION PRESSURE CHART



EXUDATION PRESSURE CHART



R-VALUE BY EXPANSION:	21
R-VALUE BY EXUDATION:	30
EQUILIBRIUM R-VALUE:	21

Appendix D
Infiltration Test Results

Infiltration Test Data Sheet

LGC Geotechnical, Inc
131 Calle Iglesia Suite 200, San Clemente, CA 92672 tel. (949) 369-6141

Project Name: Meritage - Salt Creek
Project Number: 22057-01
Date: 4/13/2022
Boring Number: I-1

Test hole dimensions (if circular)	
Boring Depth (feet)*:	5
Boring Diameter (inches):	8
Pipe Diameter (inches):	3

*measured at time of test

Test pit dimensions (if rectangular)	
Pit Depth (feet):	
Pit Length (feet):	
Pit Breadth (feet):	

*Pre-Test (Sandy Soil Criteria)**

Trial No.	Start Time (24:HR)	Stop Time (24:HR)	Time Interval (min)	Initial Depth to Water (feet)	Final Depth to Water (feet)	Total Change in Water Level (feet)	Greater Than or Equal to 0.5 feet (yes/no)
1	8:15	8:40	25.0	2.70	3.27	0.57	Yes
2	8:50	9:15	25.0	1.9	2.66	0.76	Yes

*If two consecutive measurements show that six inches of water seeps away in less than 25 minutes, the test shall be run for an additional hour with measurements taken every 10 minutes. Otherwise, pre-soak (fill) overnight, and then obtain at least twelve measurements per hole over at least six hours (approximately 30 minute intervals) with a precision of at least 0.25 inches

Main Test Data

Trial No.	Start Time (24:HR)	Stop Time (24:HR)	Time Interval, t (min)	Initial Depth to Water, D_o (feet)	Final Depth to Water, D_f (feet)	Change in Water Level, D (feet)	Observed Infiltration Rate(in/hr)
1	16:08	16:18	10.0	2.15	2.51	0.36	1.5
2	16:20	16:30	10.0	2.17	2.51	0.34	1.4
3	16:35	16:45	10.0	2.07	2.42	0.35	1.4
4	16:47	16:57	10.0	2.10	2.5	0.4	1.7
5	17:02	17:12	10.0	2.15	2.55	0.4	1.7
6	17:15	17:25	10.0	2.17	2.6	0.43	1.9
7							
8							
9							
10							
11							
12							

Observed Infiltration Rate (No Factor of Safety)	**1.9**
MinimumFactor of Safety	**3.0**
Measured Infiltration Rate (With Factor of Safety)	**0.6**

Sketch:

Notes:

Based on Guidelines from: Riverside County 09/2012
Spreadsheet Revised on: 10/30/2019

LGC Geotechnical, Inc.

Infiltration Test Data Sheet

LGC Geotechnical, Inc
131 Calle Iglesia Suite 200, San Clemente, CA 92672 tel. (949) 369-6141

Project Name: Meritage - Salt Creek
Project Number: 22057-01
Date: 4/13/2022
Boring Number: I-2

Test hole dimensions (if circular)	
Boring Depth (feet)*:	5
Boring Diameter (inches):	8
Pipe Diameter (inches):	3

*measured at time of test

Test pit dimensions (if rectangular)	
Pit Depth (feet):	
Pit Length (feet):	
Pit Breadth (feet):	

*Pre-Test (Sandy Soil Criteria)**

Trial No.	Start Time (24:HR)	Stop Time (24:HR)	Time Interval (min)	Initial Depth to Water (feet)	Final Depth to Water (feet)	Total Change in Water Level (feet)	Greater Than or Equal to 0.5 feet (yes/no)
1	8:25	8:50	25.0	2.00	2.65	0.65	Yes
2	9:00	9:25	25.0	2.1	2.69	0.59	Yes

*If two consecutive measurements show that six inches of water seeps away in less than 25 minutes, the test shall be run for an additional hour with measurements taken every 10 minutes. Otherwise, pre-soak (fill) overnight, and then obtain at least twelve measurements per hole over at least six hours (approximately 30 minute intervals) with a precision of at least 0.25 inches

Main Test Data

Trial No.	Start Time (24:HR)	Stop Time (24:HR)	Time Interval, t (min)	Initial Depth to Water, D_o (feet)	Final Depth to Water, D_f (feet)	Change in Water Level, D (feet)	Observed Infiltration Rate(in/hr)
1	16:14	16:24	10.0	2.1	2.45	0.35	1.5
2	16:27	16:37	10.0	2	2.32	0.32	1.3
3	16:40	16:50	10.0	2.2	2.43	0.23	1.0
4	16:55	17:05	10.0	2	2.39	0.39	1.6
5	17:07	17:17	10.0	2	2.55	0.55	2.3
6	17:24	17:34	10.0	2	2.65	0.65	2.7
7							
8							
9							
10							
11							
12							

Observed Infiltration Rate (No Factor of Safety)	**2.7**
MinimumFactor of Safety	**3.0**
Measured Infiltration Rate (With Factor of Safety)	**0.9**

Sketch:

Notes:

Based on Guidelines from: Riverside County 09/2012
Spreadsheet Revised on: 10/30/2019

LGC Geotechnical, Inc.

Infiltration Test Data Sheet

LGC Geotechnical, Inc
131 Calle Iglesia Suite 200, San Clemente, CA 92672 tel. (949) 369-6141

Project Name: Meritage - Salt Creek
Project Number: 22057-01
Date: 4/13/2022
Boring Number: I-3

Test hole dimensions (if circular)	
Boring Depth (feet)*:	10
Boring Diameter (inches):	8
Pipe Diameter (inches):	3

*measured at time of test

Test pit dimensions (if rectangular)	
Pit Depth (feet):	
Pit Length (feet):	
Pit Breadth (feet):	

*Pre-Test (Sandy Soil Criteria)**

Trial No.	Start Time (24:HR)	Stop Time (24:HR)	Time Interval (min)	Initial Depth to Water (feet)	Final Depth to Water (feet)	Total Change in Water Level (feet)	Greater Than or Equal to 0.5 feet (yes/no)
1	8:40	9:05	25.0	5.15	5.21	0.06	No
2	9:15	9:40	25.0	5.21	5.27	0.06	No

*If two consecutive measurements show that six inches of water seeps away in less than 25 minutes, the test shall be run for an additional hour with measurements taken every 10 minutes. Otherwise, pre-soak (fill) overnight, and then obtain at least twelve measurements per hole over at least six hours (approximately 30 minute intervals) with a precision of at least 0.25 inches

Main Test Data

Trial No.	Start Time (24:HR)	Stop Time (24:HR)	Time Interval, t (min)	Initial Depth to Water, D_o (feet)	Final Depth to Water, D_f (feet)	Change in Water Level, D (feet)	Observed Infiltration Rate(in/hr)
1	9:50	10:20	30.0	5.27	5.32	0.05	0.0
2	10:20	10:50	30.0	5.32	5.37	0.05	0.0
3	10:50	11:20	30.0	5.37	5.42	0.05	0.0
4	11:20	11:50	30.0	5.42	5.46	0.04	0.0
5	11:50	12:20	30.0	5.46	5.52	0.06	0.1
6	12:20	12:50	30.0	5.52	5.58	0.06	0.1
7	12:50	13:20	30.0	5.58	5.61	0.03	0.0
8	13:20	13:50	30.0	5.61	5.67	0.06	0.1
9	13:50	14:20	30.0	5.67	5.71	0.04	0.0
10	14:20	14:50	30.0	5.71	5.74	0.03	0.0
11	14:50	15:20	30.0	5.74	5.78	0.04	0.0
12	15:20	15:50	30.0	5.78	5.81	0.03	0.0

Observed Infiltration Rate (No Factor of Safety)	**0.0**
MinimumFactor of Safety	**3.0**
Measured Infiltration Rate (With Factor of Safety)	**0.0**

Sketch:

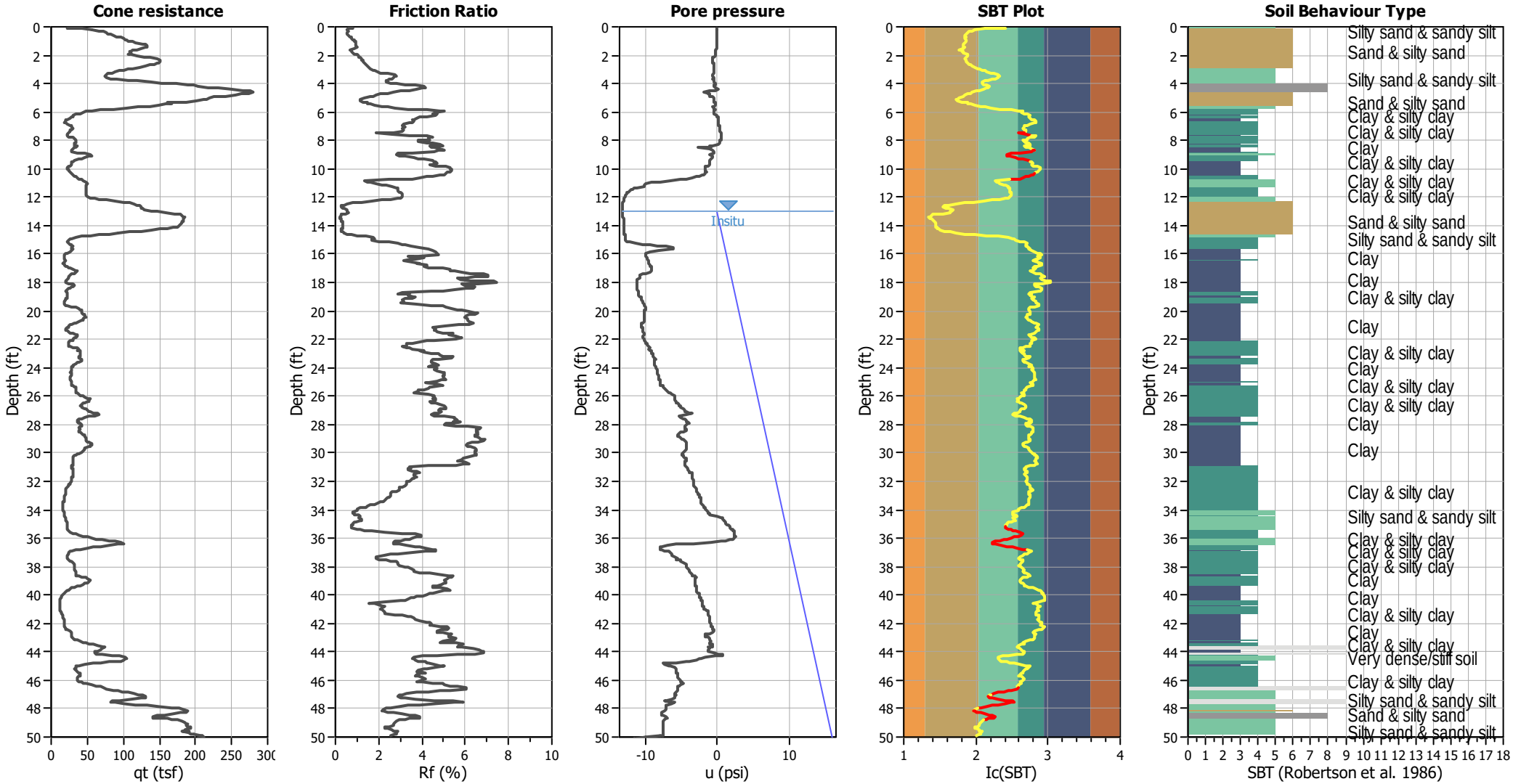
Notes:

Based on Guidelines from: Riverside County 09/2012
Spreadsheet Revised on: 10/30/2019

LGC Geotechnical, Inc.

Appendix E
Liquefaction Calculations

CPT basic interpretation plots



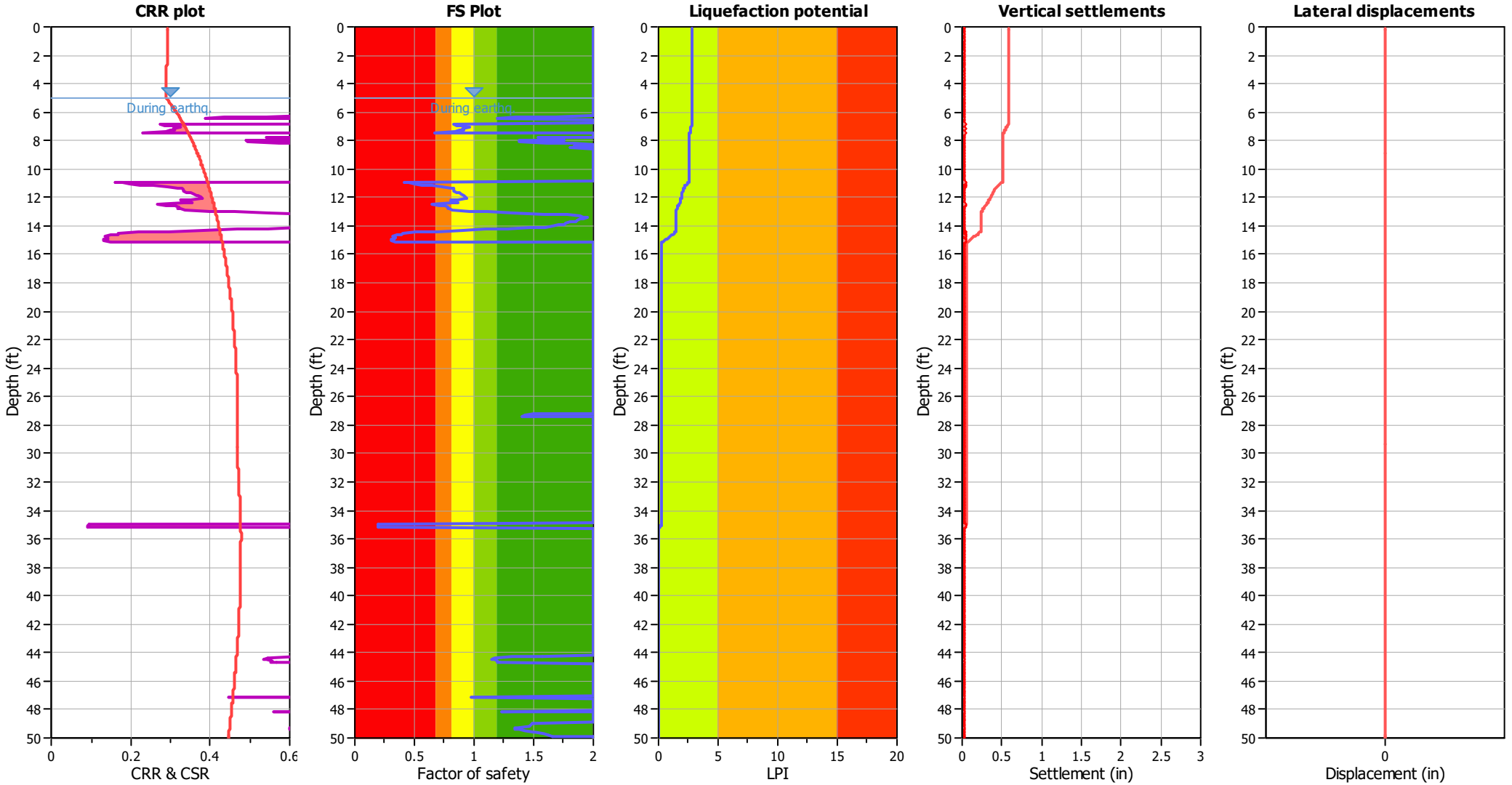
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	5.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	1	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.93	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.55	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	13.00 ft	Fill height:	N/A	Limit depth:	50.00 ft

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

Liquefaction analysis overall plots



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	5.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	1	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.93	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.55	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	13.00 ft	Fill height:	N/A	Limit depth:	50.00 ft

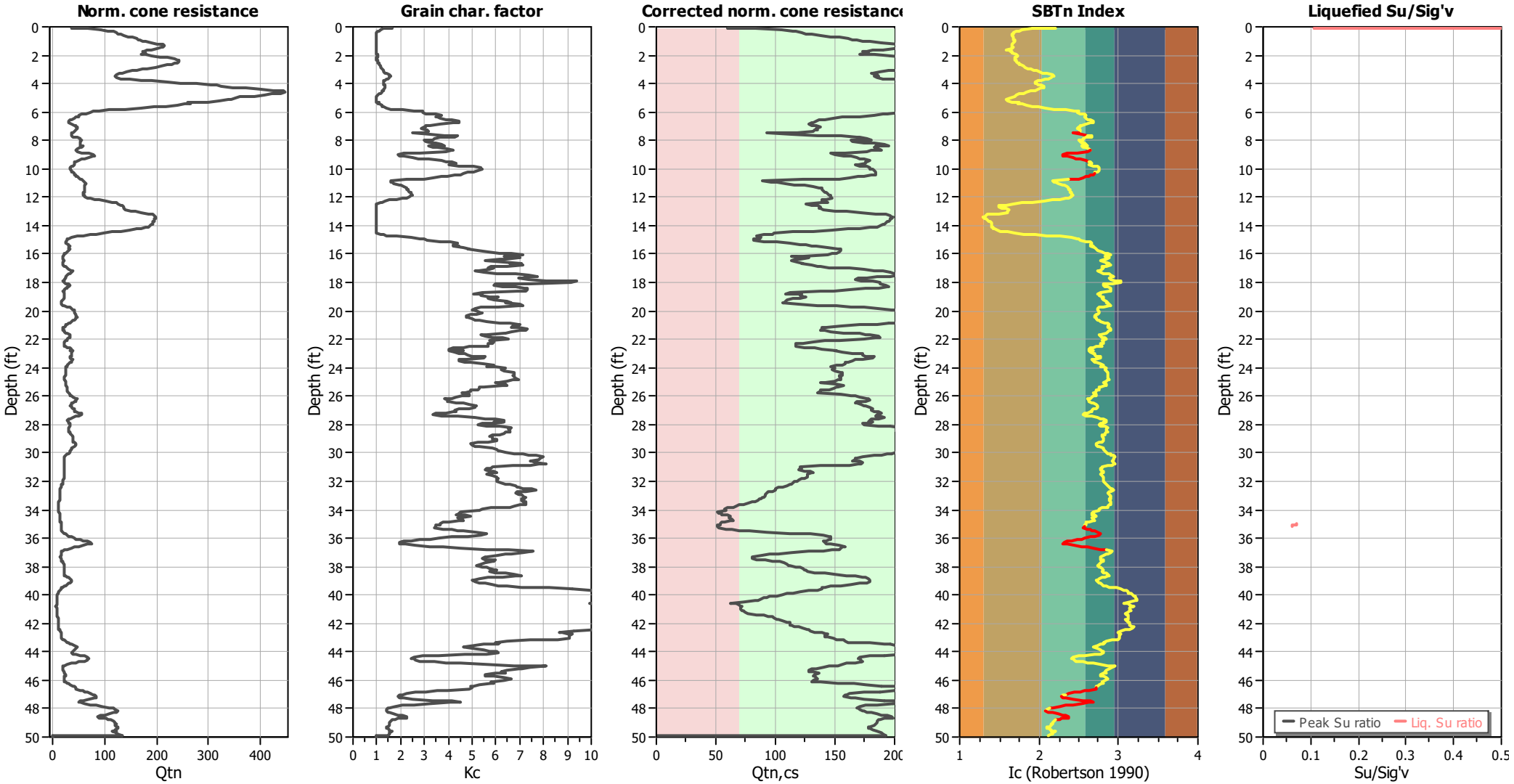
F.S. color scheme

- Almost certain it will liquefy
- Very likely to liquefy
- Liquefaction and no liq. are equally likely
- Unlike to liquefy
- Almost certain it will not liquefy

LPI color scheme

- Very high risk
- High risk
- Low risk

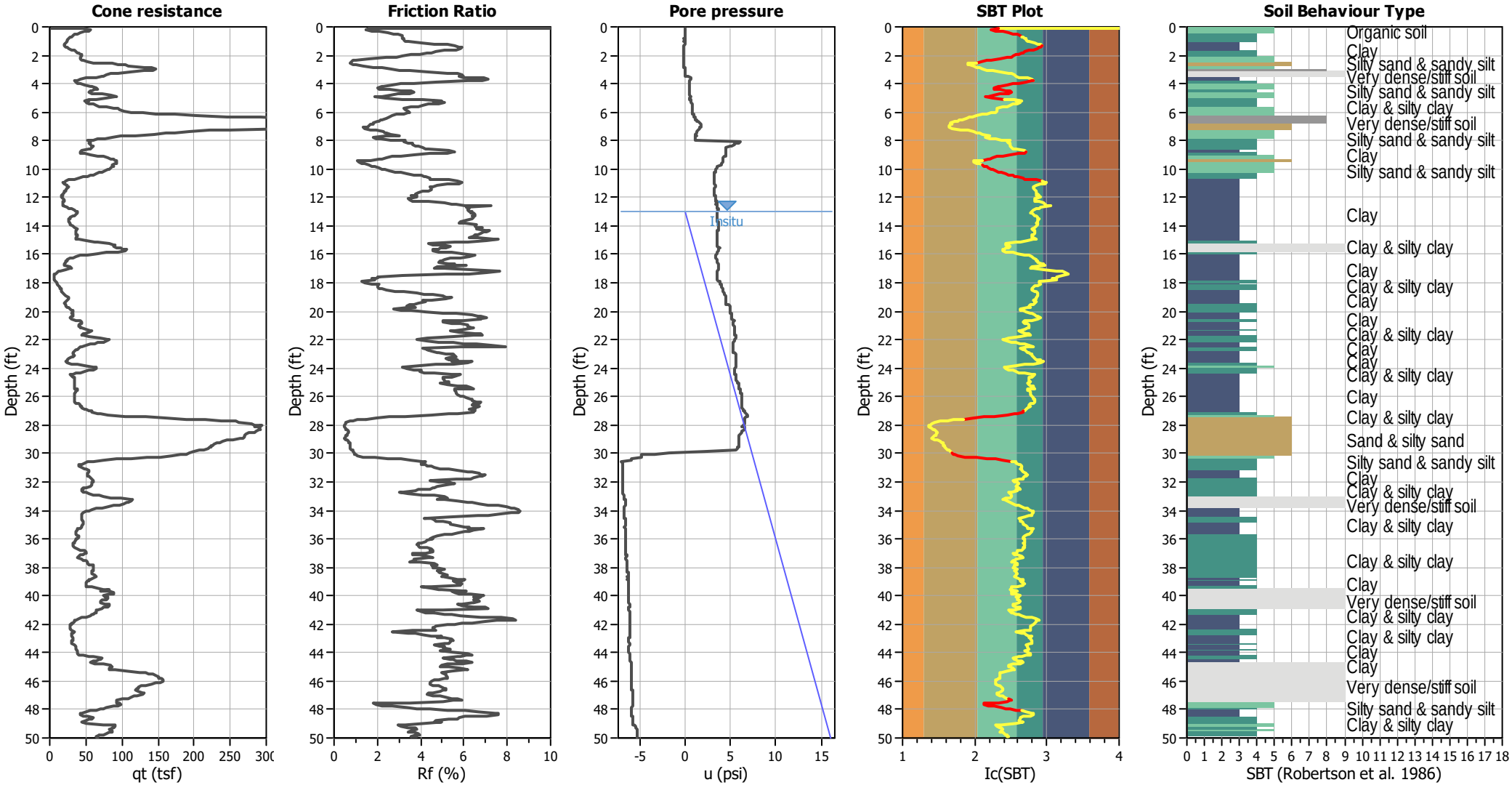
Check for strength loss plots (Robertson (2010))



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	5.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	1	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.93	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.55	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	13.00 ft	Fill height:	N/A	Limit depth:	50.00 ft

CPT basic interpretation plots



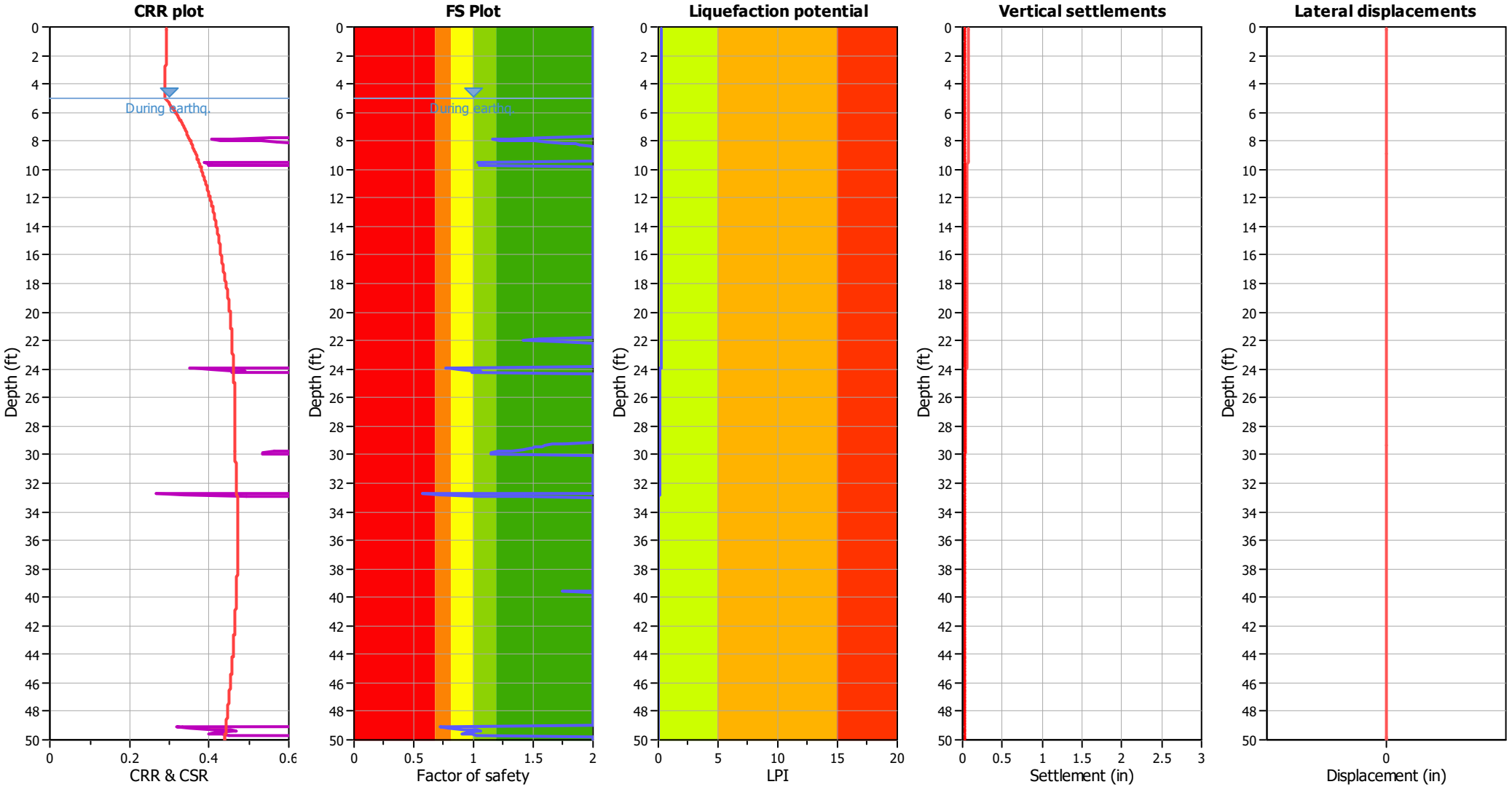
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	5.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	1	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.93	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.55	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	13.00 ft	Fill height:	N/A	Limit depth:	50.00 ft

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

Liquefaction analysis overall plots



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	5.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	1	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.93	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.55	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	13.00 ft	Fill height:	N/A	Limit depth:	50.00 ft

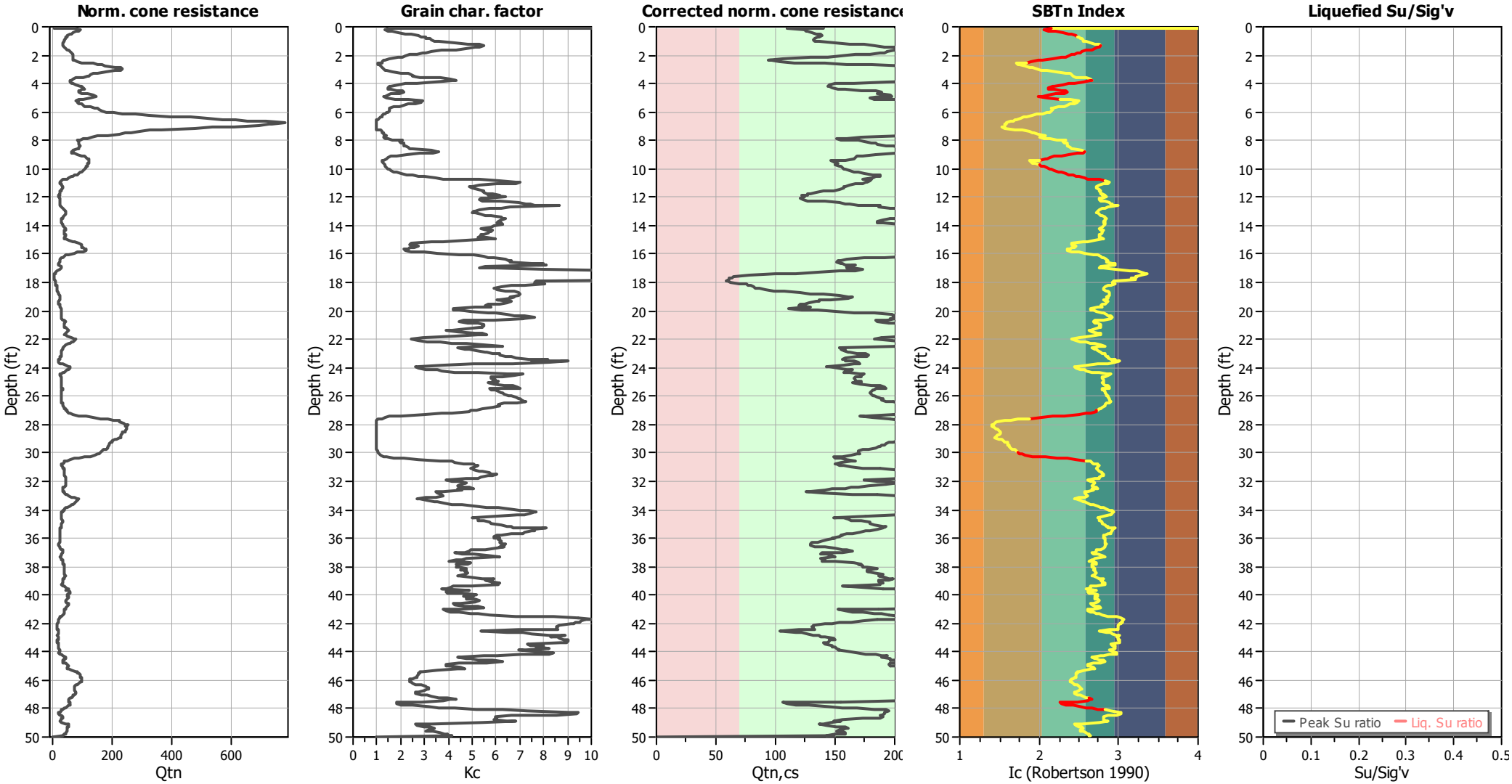
F.S. color scheme

- Almost certain it will liquefy
- Very likely to liquefy
- Liquefaction and no liq. are equally likely
- Unlike to liquefy
- Almost certain it will not liquefy

LPI color scheme

- Very high risk
- High risk
- Low risk

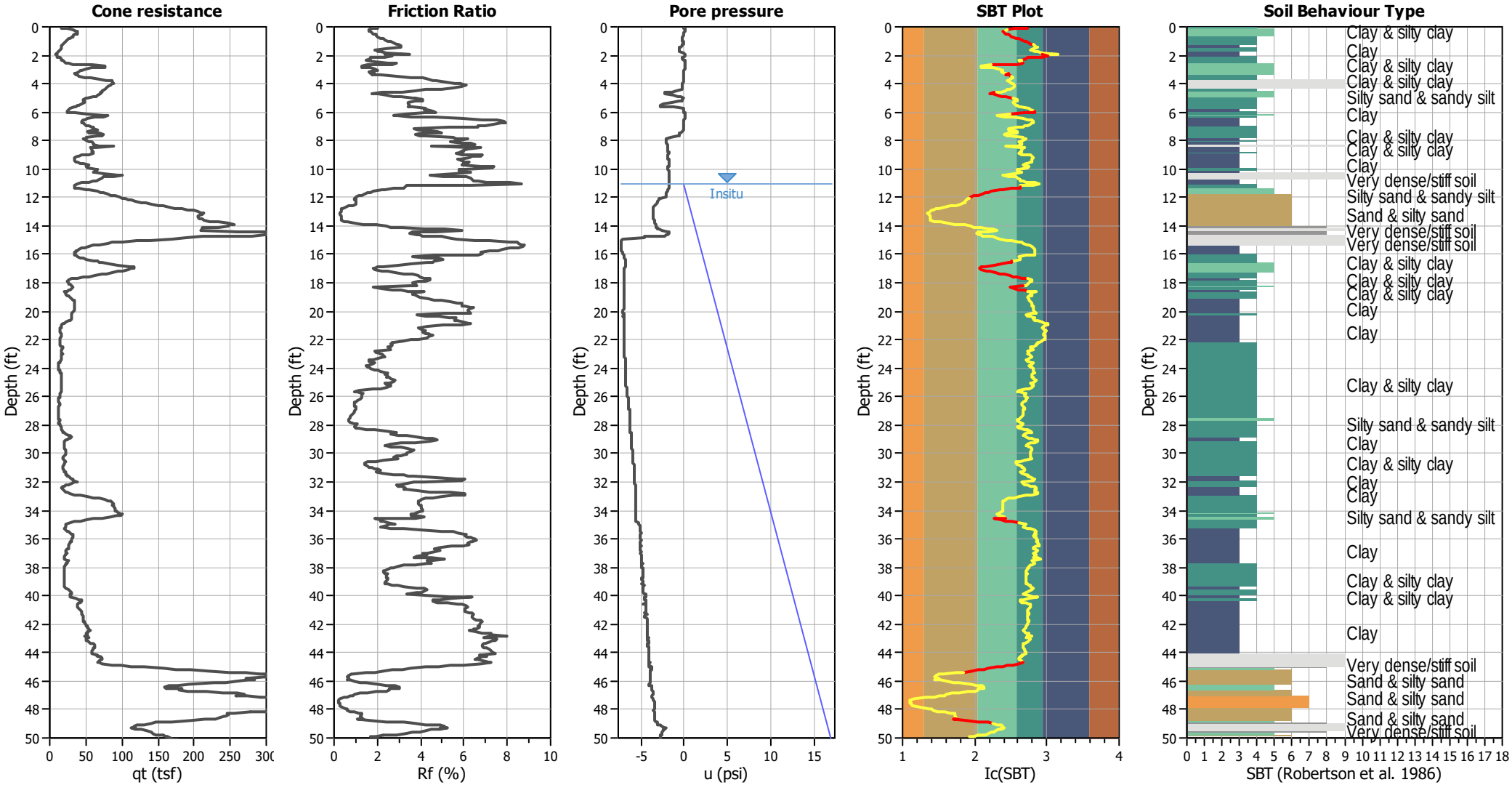
Check for strength loss plots (Robertson (2010))



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	5.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	1	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.93	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.55	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	13.00 ft	Fill height:	N/A	Limit depth:	50.00 ft

CPT basic interpretation plots



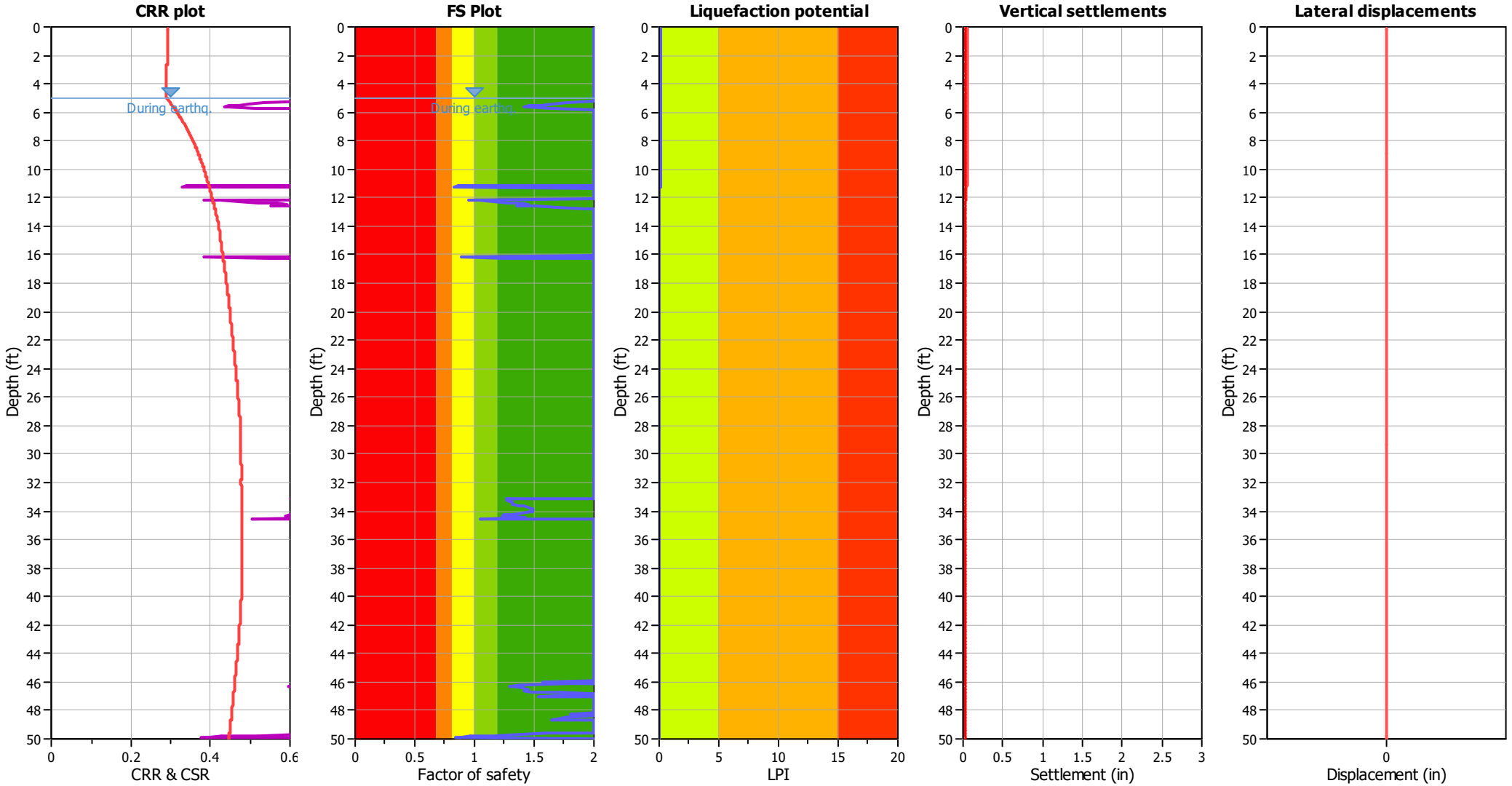
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	5.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	1	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.93	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.55	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	11.00 ft	Fill height:	N/A	Limit depth:	50.00 ft

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

Liquefaction analysis overall plots



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	5.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	1	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.93	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.55	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	11.00 ft	Fill height:	N/A	Limit depth:	50.00 ft

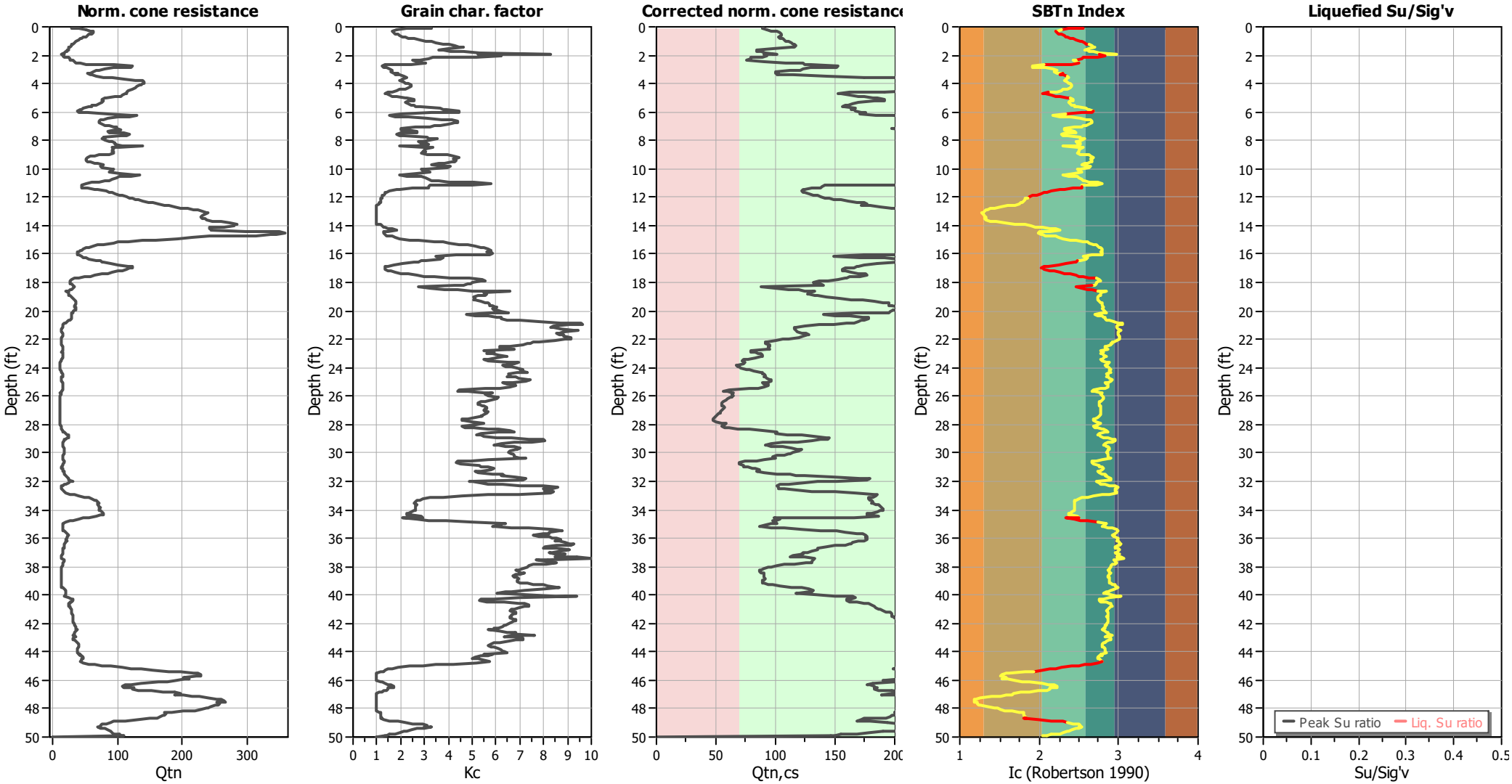
F.S. color scheme

- Almost certain it will liquefy
- Very likely to liquefy
- Liquefaction and no liq. are equally likely
- Unlike to liquefy
- Almost certain it will not liquefy

LPI color scheme

- Very high risk
- High risk
- Low risk

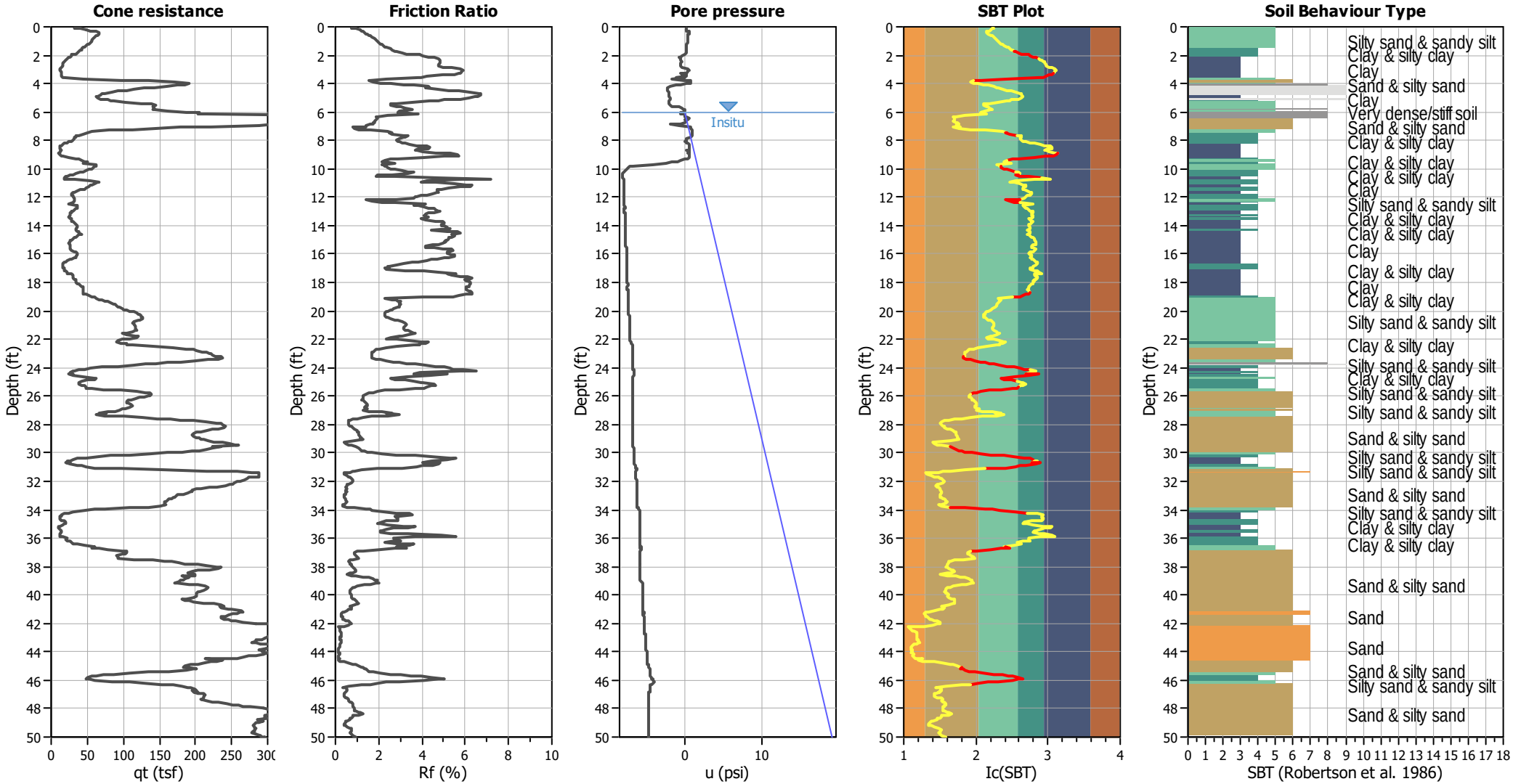
Check for strength loss plots (Robertson (2010))



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	5.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	1	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.93	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.55	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	11.00 ft	Fill height:	N/A	Limit depth:	50.00 ft

CPT basic interpretation plots



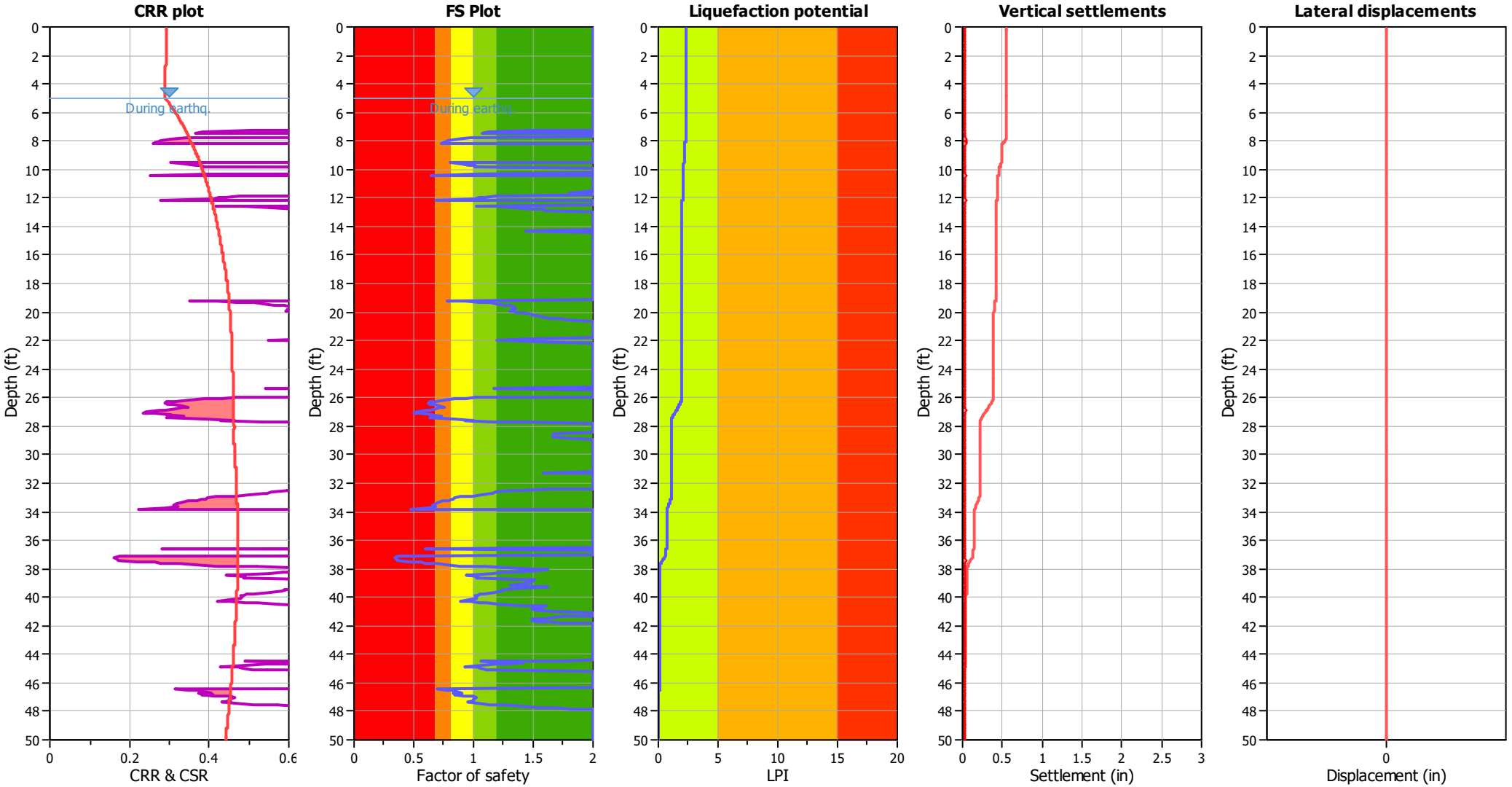
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	5.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	1	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.93	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.55	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	6.00 ft	Fill height:	N/A	Limit depth:	50.00 ft

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

Liquefaction analysis overall plots



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	5.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	1	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.93	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.55	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	6.00 ft	Fill height:	N/A	Limit depth:	50.00 ft

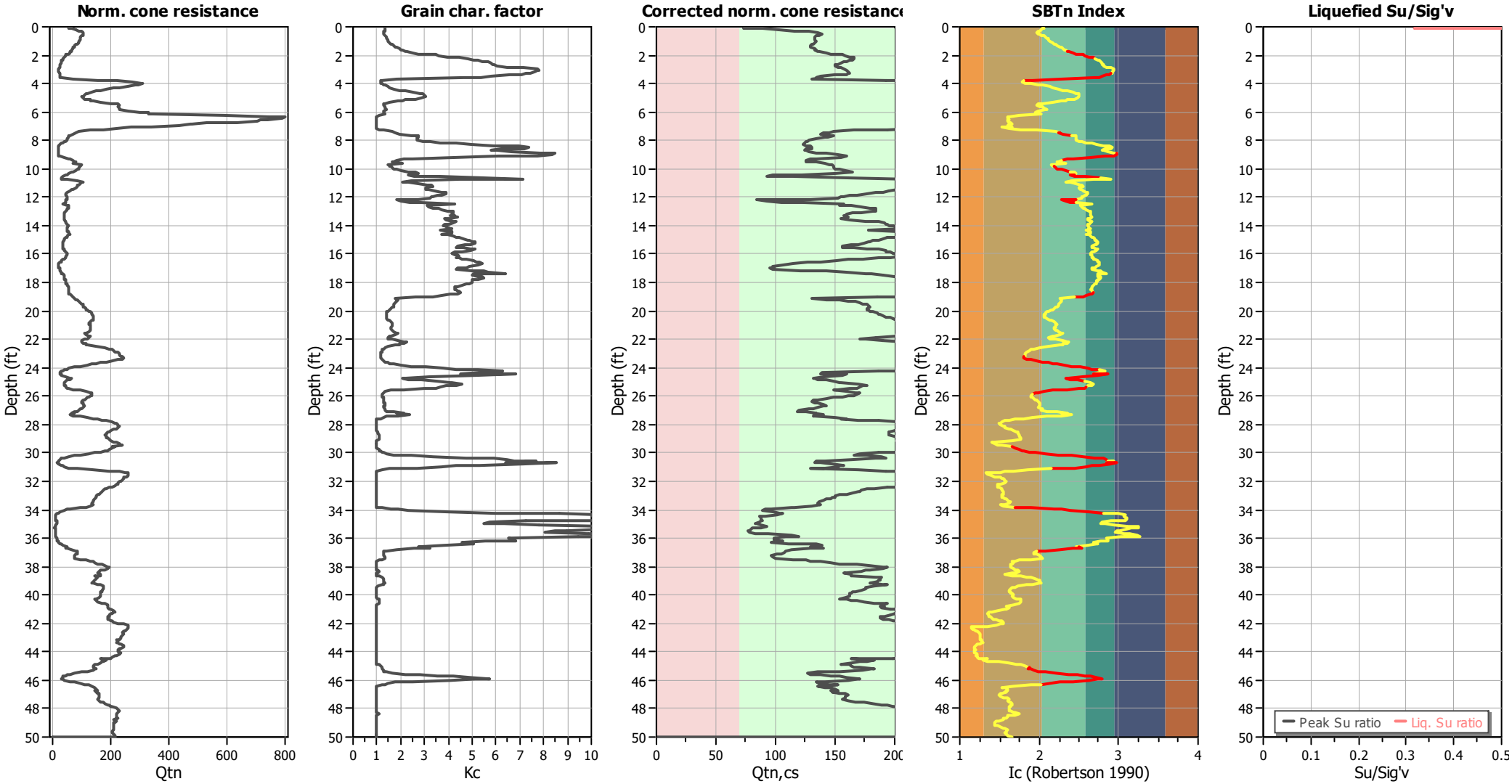
F.S. color scheme

- Almost certain it will liquefy
- Very likely to liquefy
- Liquefaction and no liq. are equally likely
- Unlike to liquefy
- Almost certain it will not liquefy

LPI color scheme

- Very high risk
- High risk
- Low risk

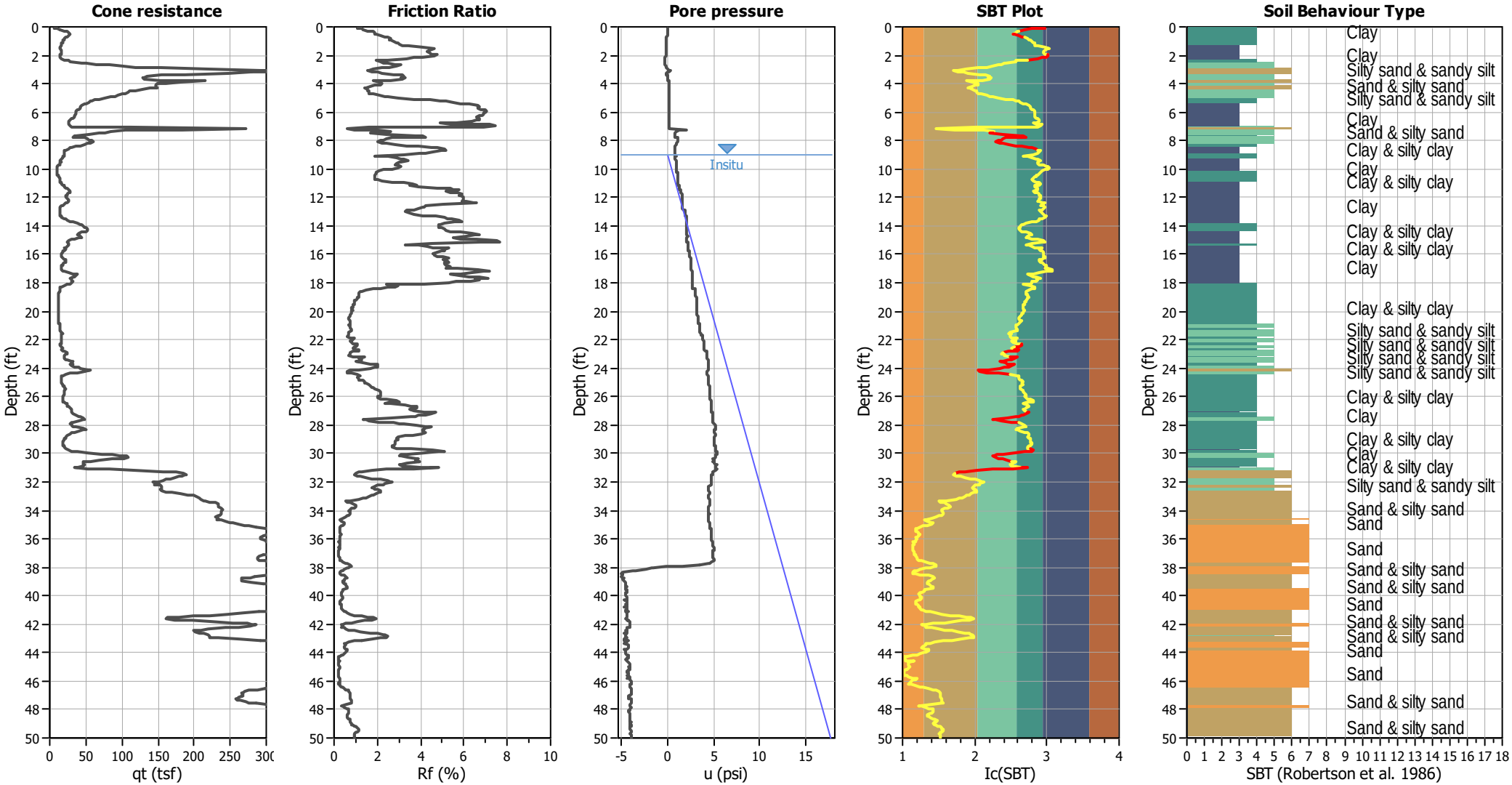
Check for strength loss plots (Robertson (2010))



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	5.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	1	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.93	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.55	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	6.00 ft	Fill height:	N/A	Limit depth:	50.00 ft

CPT basic interpretation plots



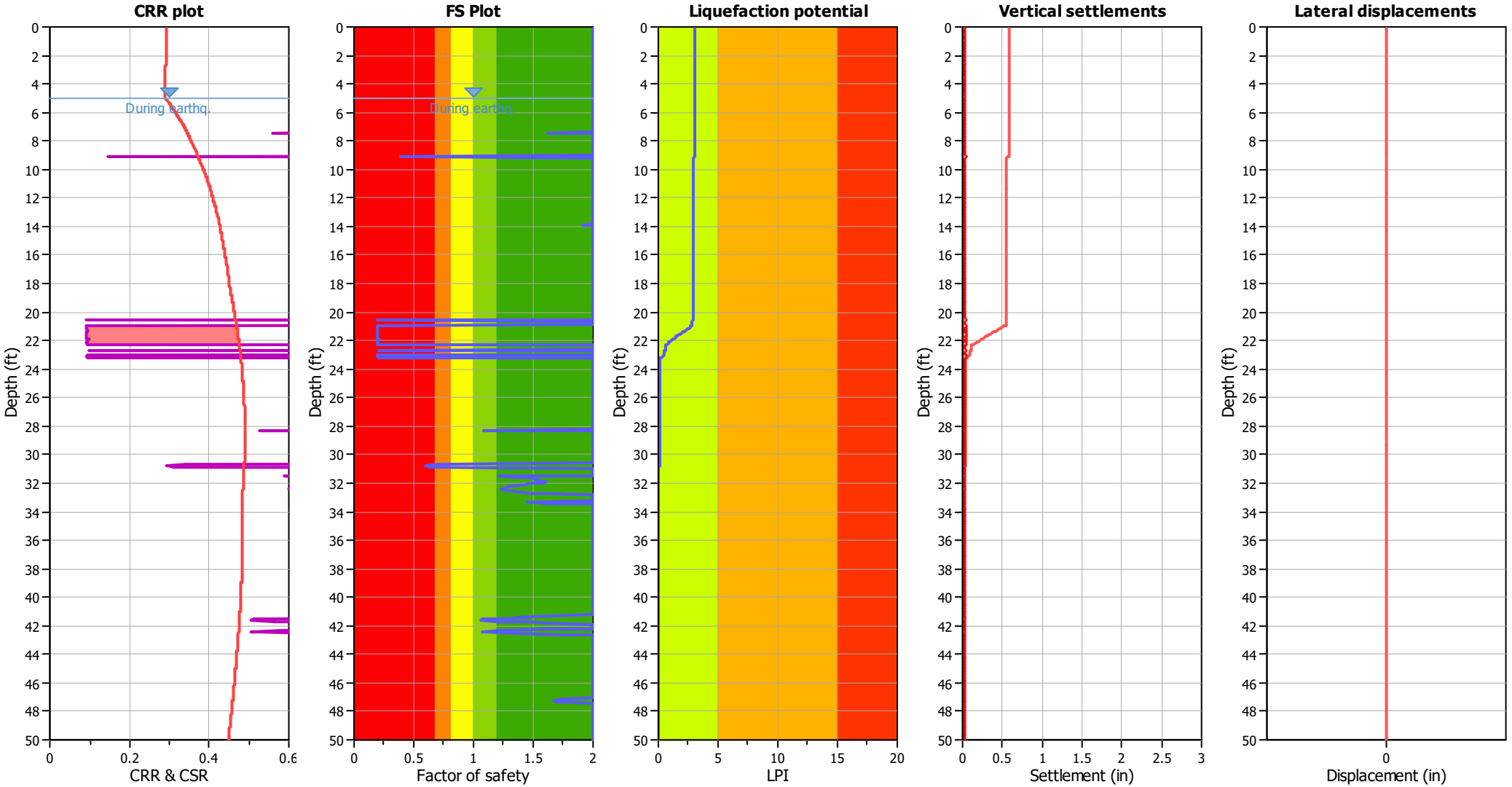
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	5.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	1	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.93	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.55	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	9.00 ft	Fill height:	N/A	Limit depth:	50.00 ft

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

Liquefaction analysis overall plots



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	5.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	1	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.93	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.55	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	9.00 ft	Fill height:	N/A	Limit depth:	50.00 ft

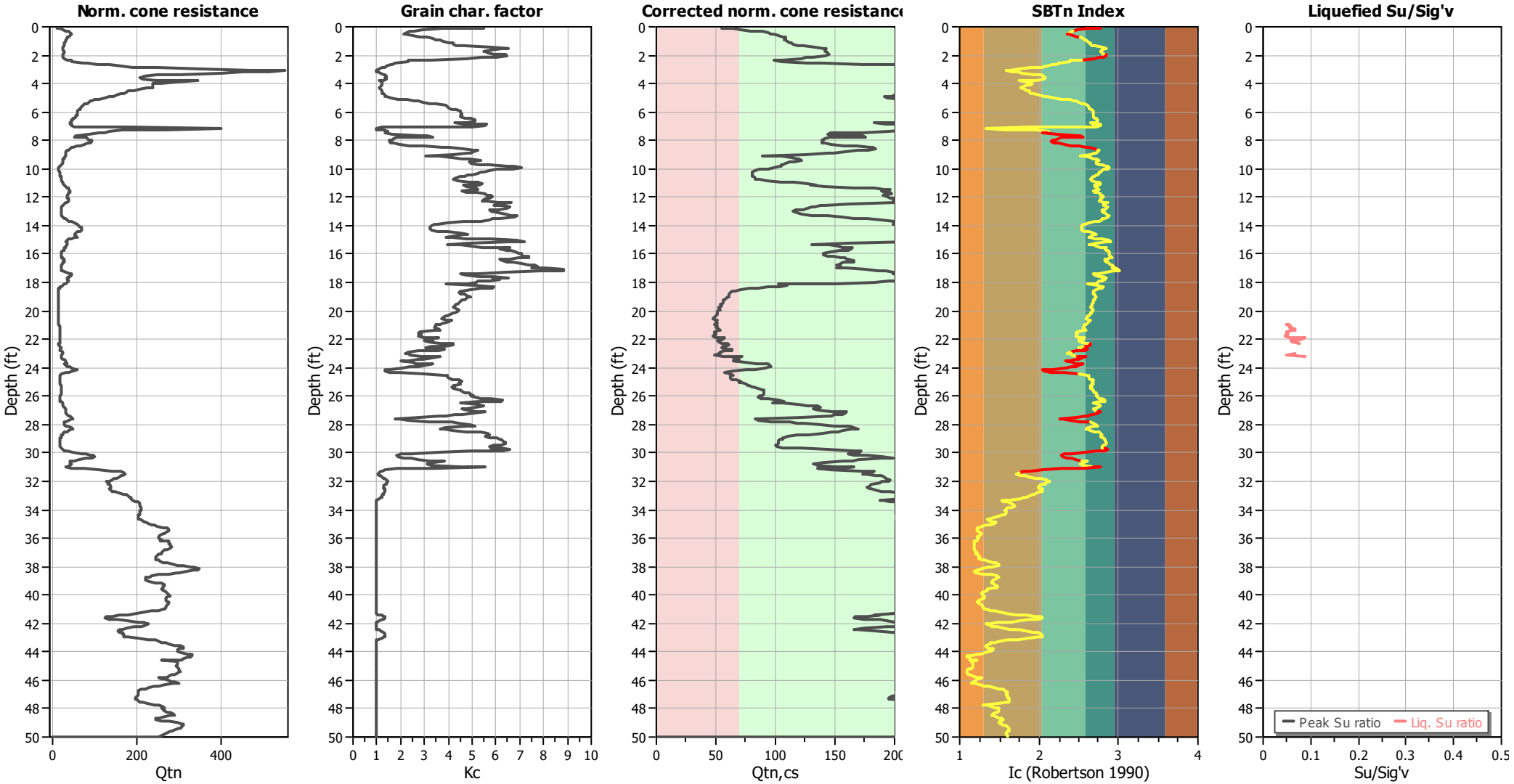
F.S. color scheme

- Almost certain it will liquefy
- Very likely to liquefy
- Liquefaction and no liq. are equally likely
- Unlike to liquefy
- Almost certain it will not liquefy

LPI color scheme

- Very high risk
- High risk
- Low risk

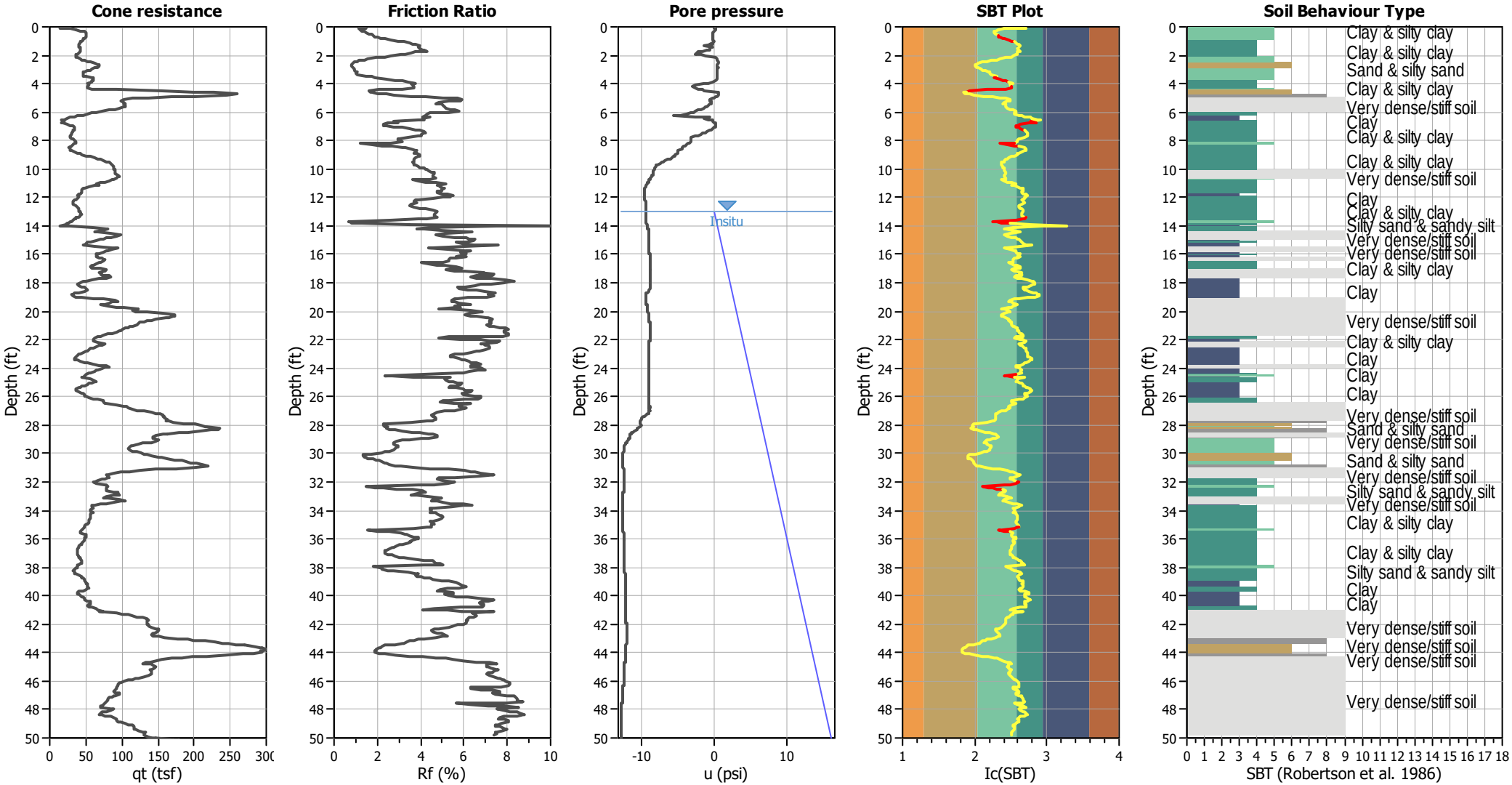
Check for strength loss plots (Robertson (2010))



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	5.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	1	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.93	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.55	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	9.00 ft	Fill height:	N/A	Limit depth:	50.00 ft

CPT basic interpretation plots



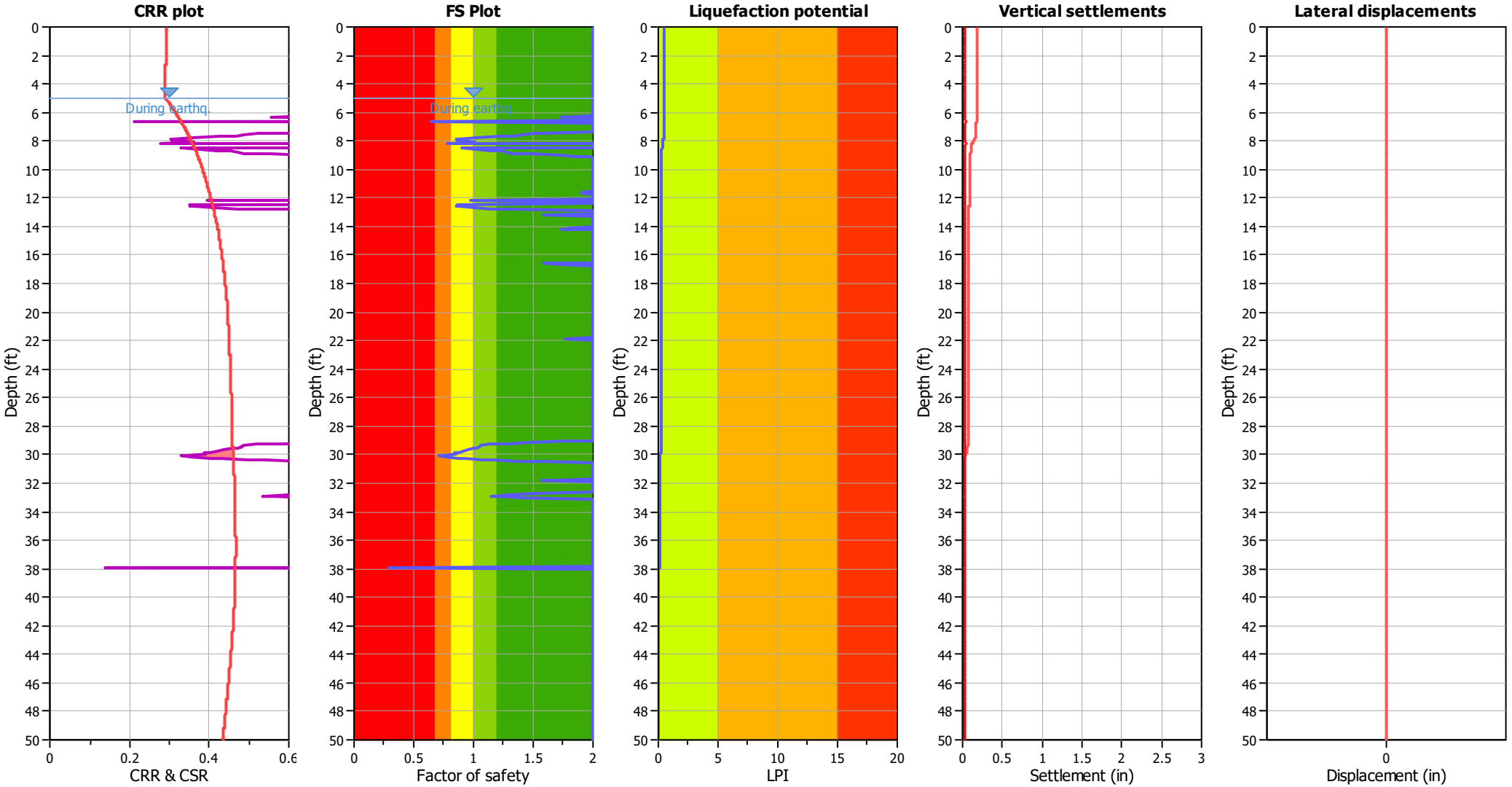
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	5.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	1	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.93	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.55	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	13.00 ft	Fill height:	N/A	Limit depth:	50.00 ft

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

Liquefaction analysis overall plots



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	5.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	1	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.93	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.55	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	13.00 ft	Fill height:	N/A	Limit depth:	50.00 ft

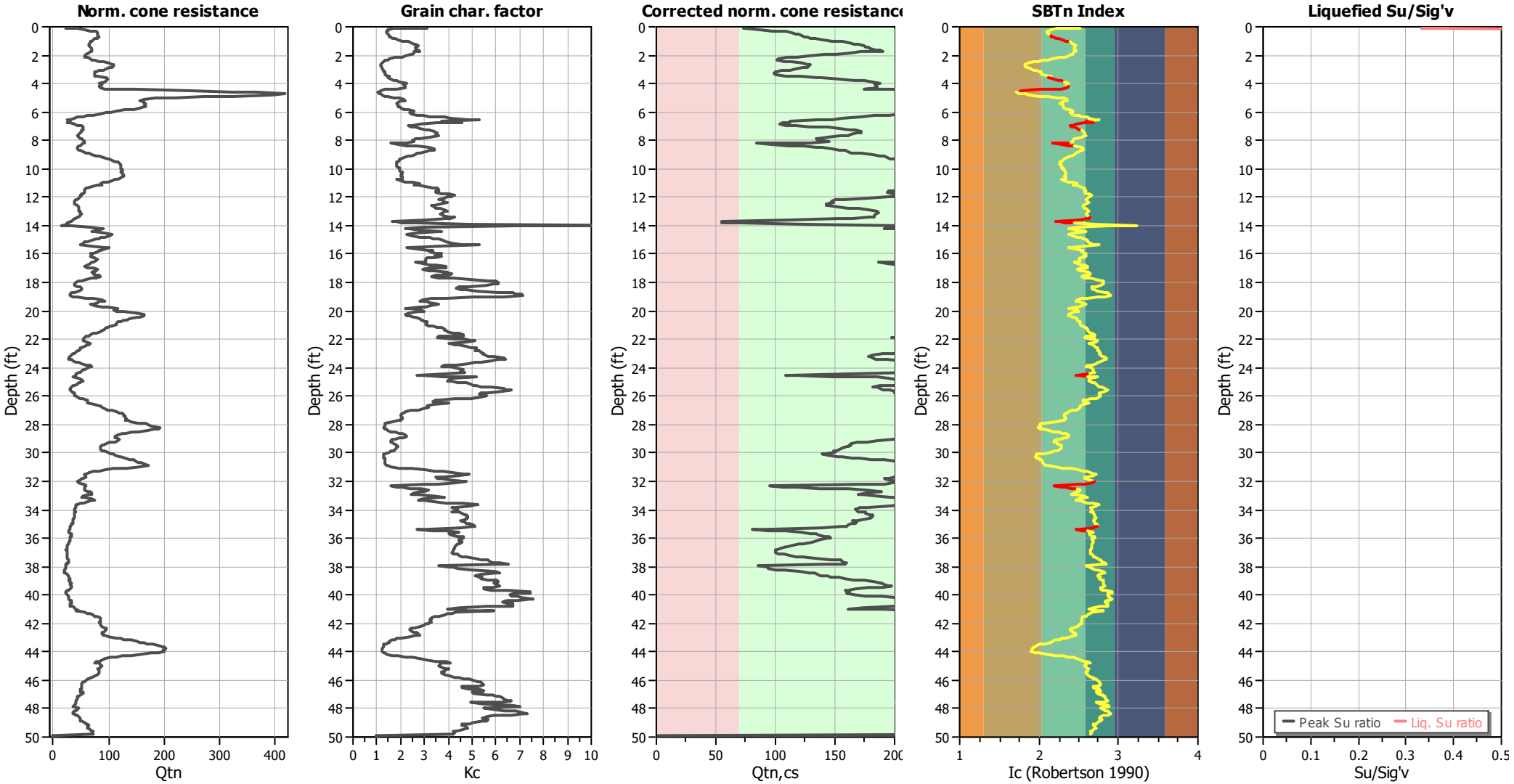
F.S. color scheme

- Almost certain it will liquefy
- Very likely to liquefy
- Liquefaction and no liq. are equally likely
- Unlike to liquefy
- Almost certain it will not liquefy

LPI color scheme

- Very high risk
- High risk
- Low risk

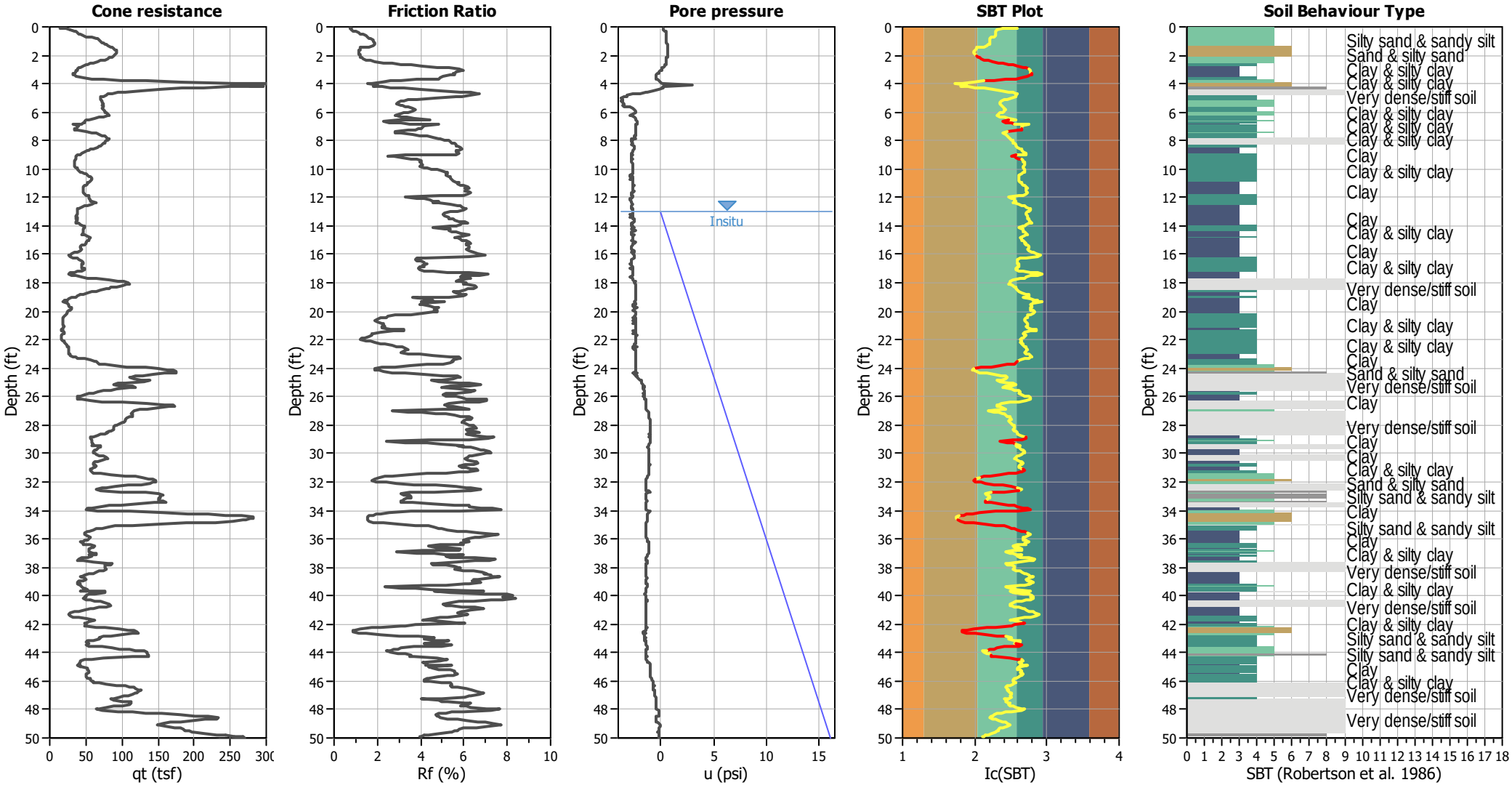
Check for strength loss plots (Robertson (2010))



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	5.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	1	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.93	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.55	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	13.00 ft	Fill height:	N/A	Limit depth:	50.00 ft

CPT basic interpretation plots



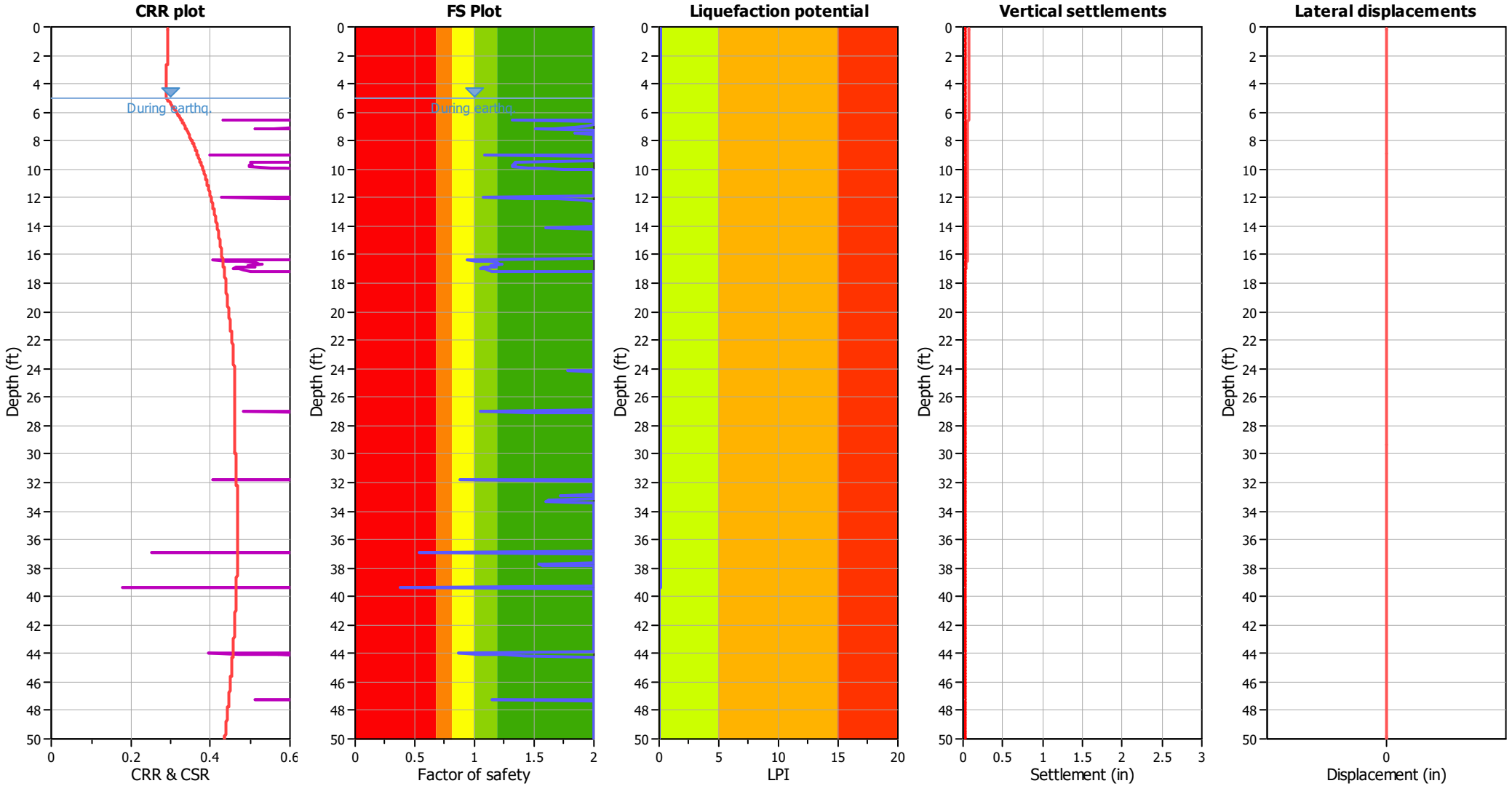
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	5.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	1	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.93	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.55	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	13.00 ft	Fill height:	N/A	Limit depth:	50.00 ft

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

Liquefaction analysis overall plots



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	5.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	1	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.93	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.55	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	13.00 ft	Fill height:	N/A	Limit depth:	50.00 ft

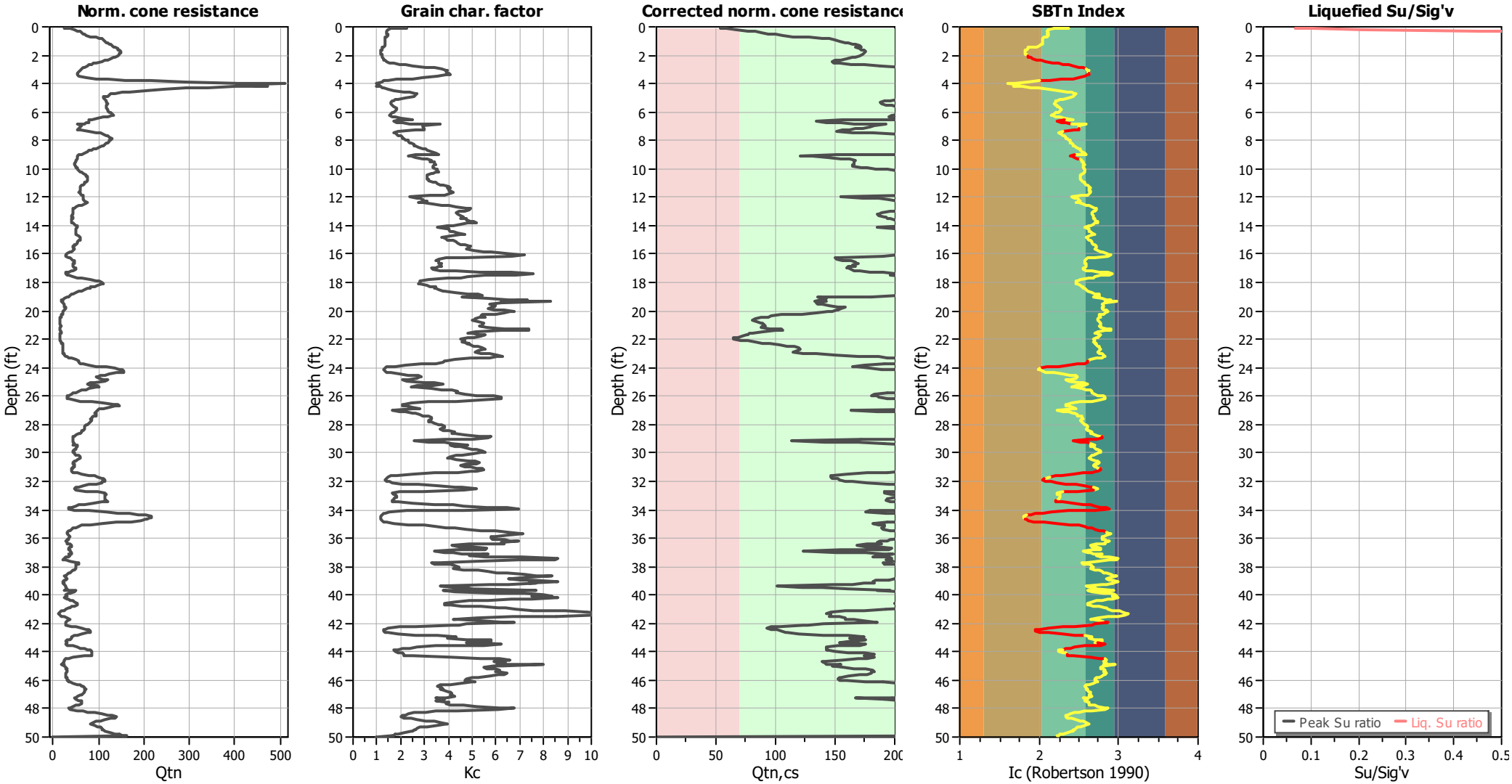
F.S. color scheme

- Almost certain it will liquefy
- Very likely to liquefy
- Liquefaction and no liq. are equally likely
- Unlike to liquefy
- Almost certain it will not liquefy

LPI color scheme

- Very high risk
- High risk
- Low risk

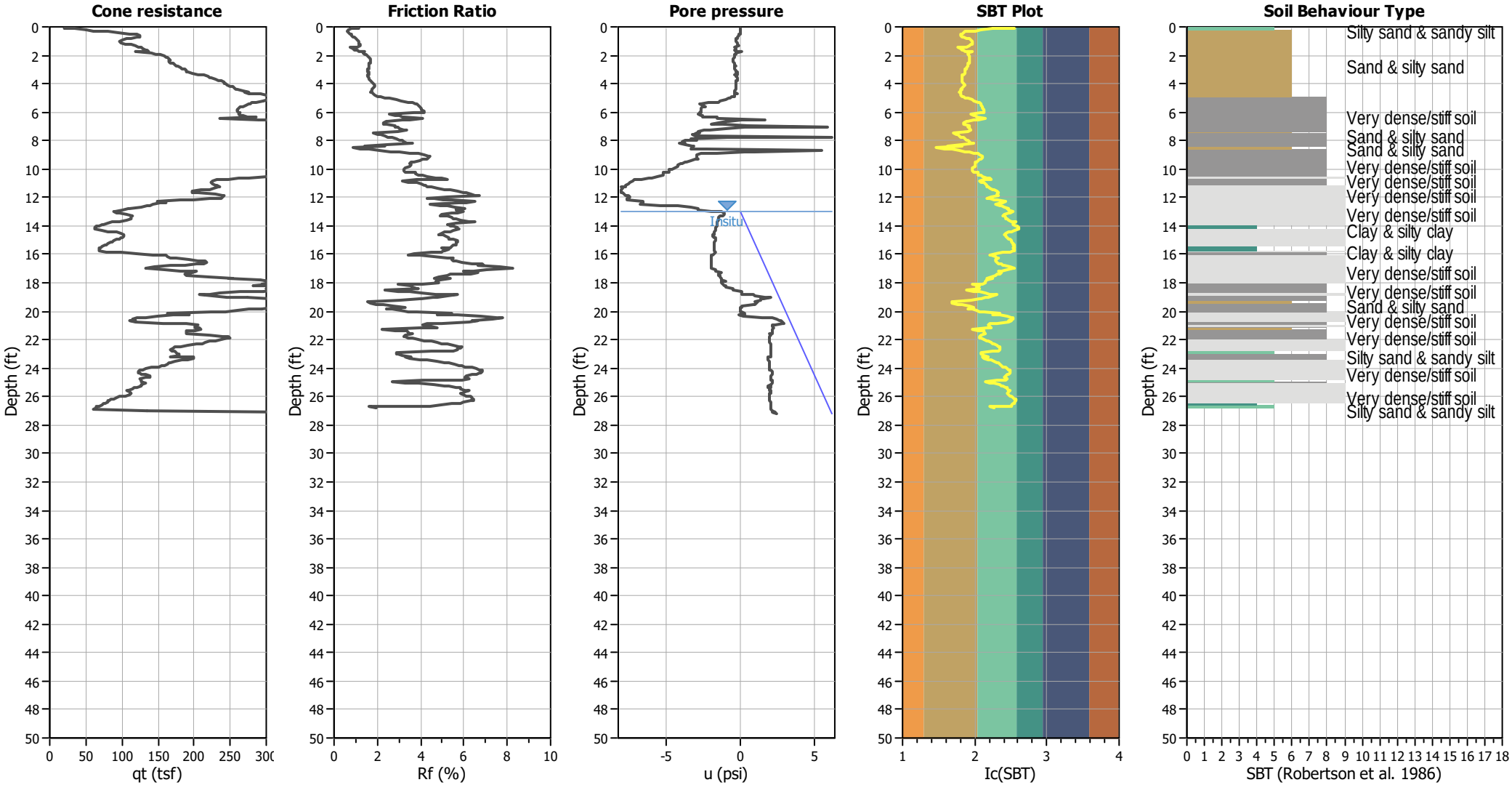
Check for strength loss plots (Robertson (2010))



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	5.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	1	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.93	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.55	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	13.00 ft	Fill height:	N/A	Limit depth:	50.00 ft

CPT basic interpretation plots



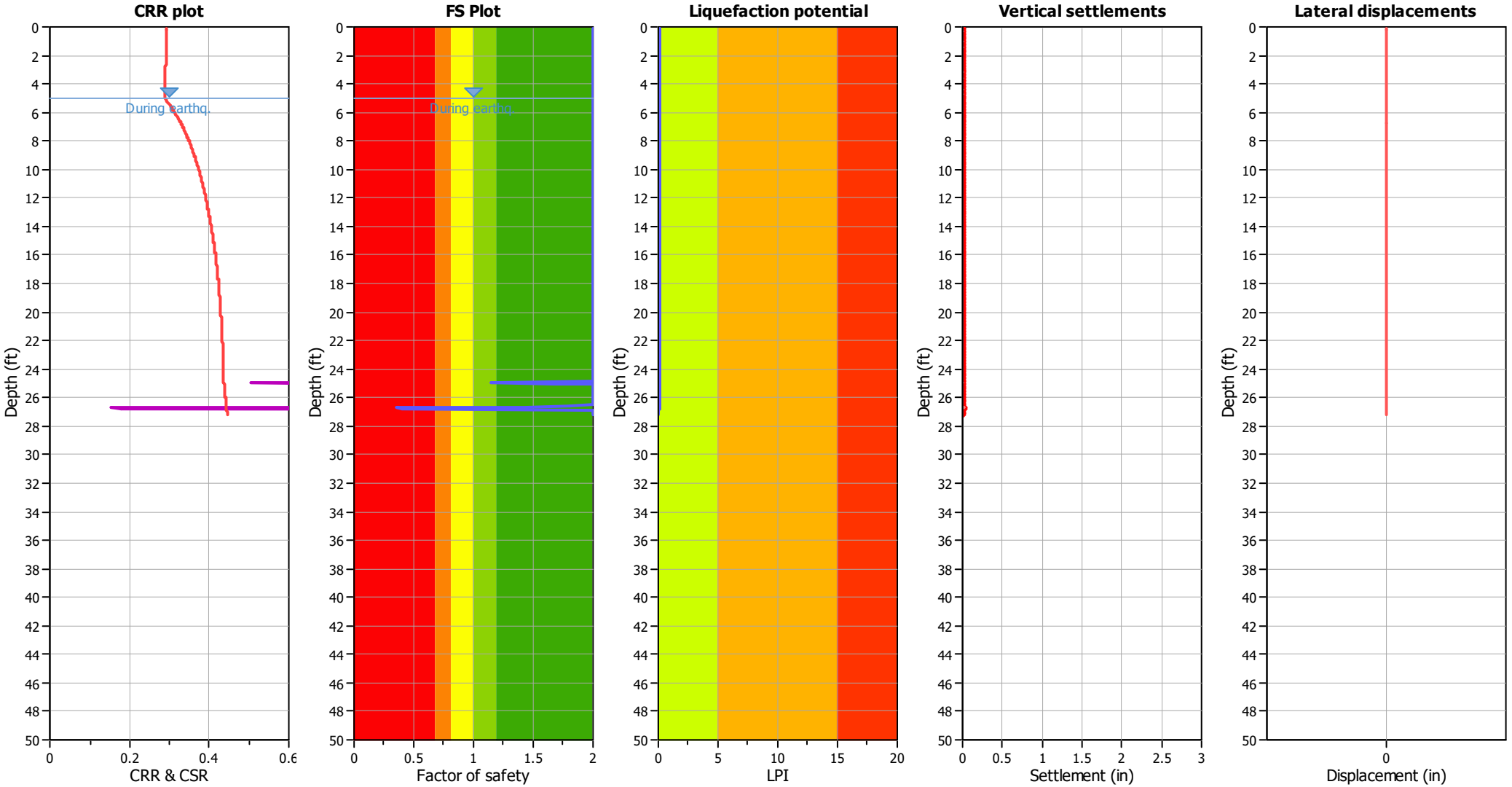
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	5.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	1	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.93	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.55	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	13.00 ft	Fill height:	N/A	Limit depth:	50.00 ft

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

Liquefaction analysis overall plots



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	5.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	1	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.93	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.55	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	13.00 ft	Fill height:	N/A	Limit depth:	50.00 ft

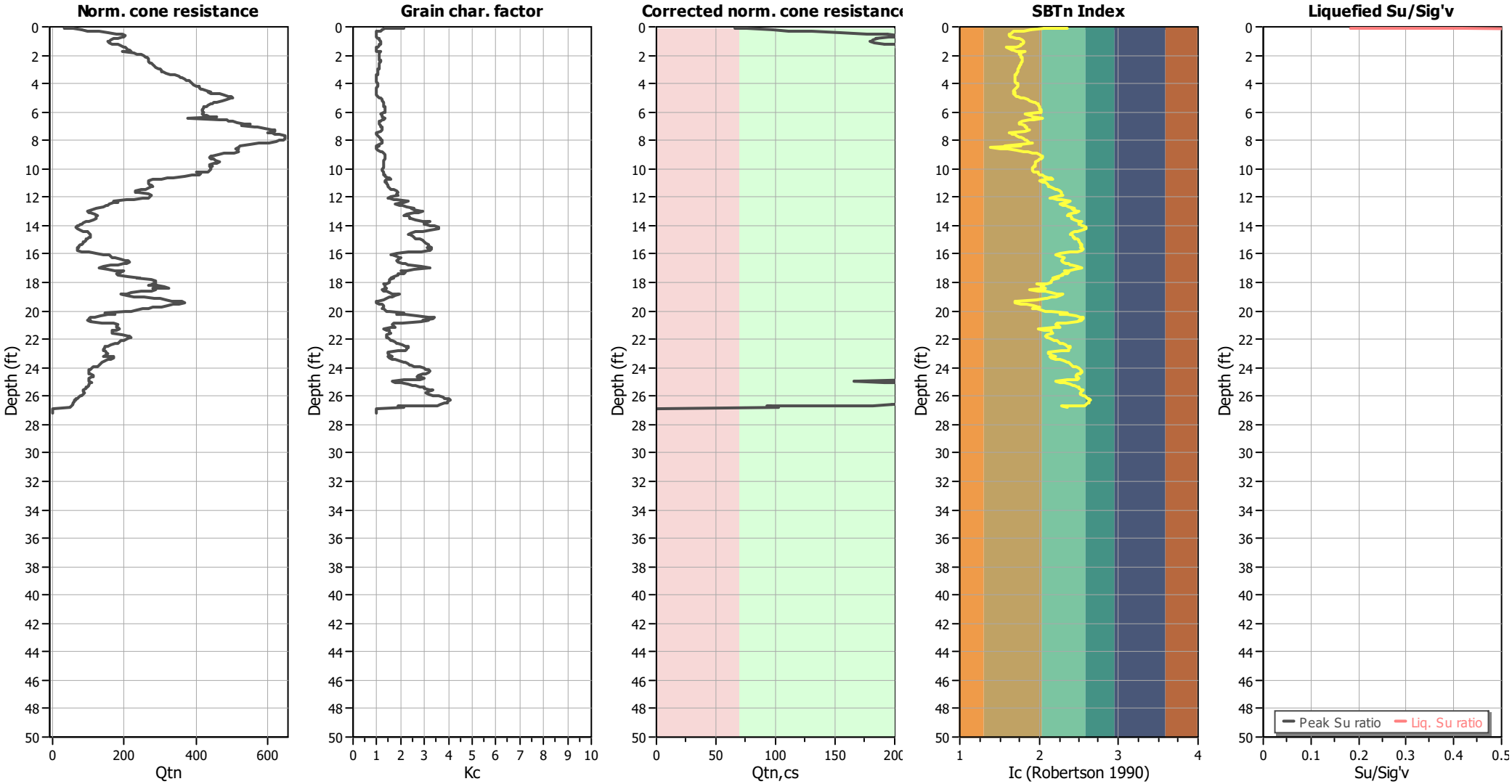
F.S. color scheme

- Almost certain it will liquefy
- Very likely to liquefy
- Liquefaction and no liq. are equally likely
- Unlike to liquefy
- Almost certain it will not liquefy

LPI color scheme

- Very high risk
- High risk
- Low risk

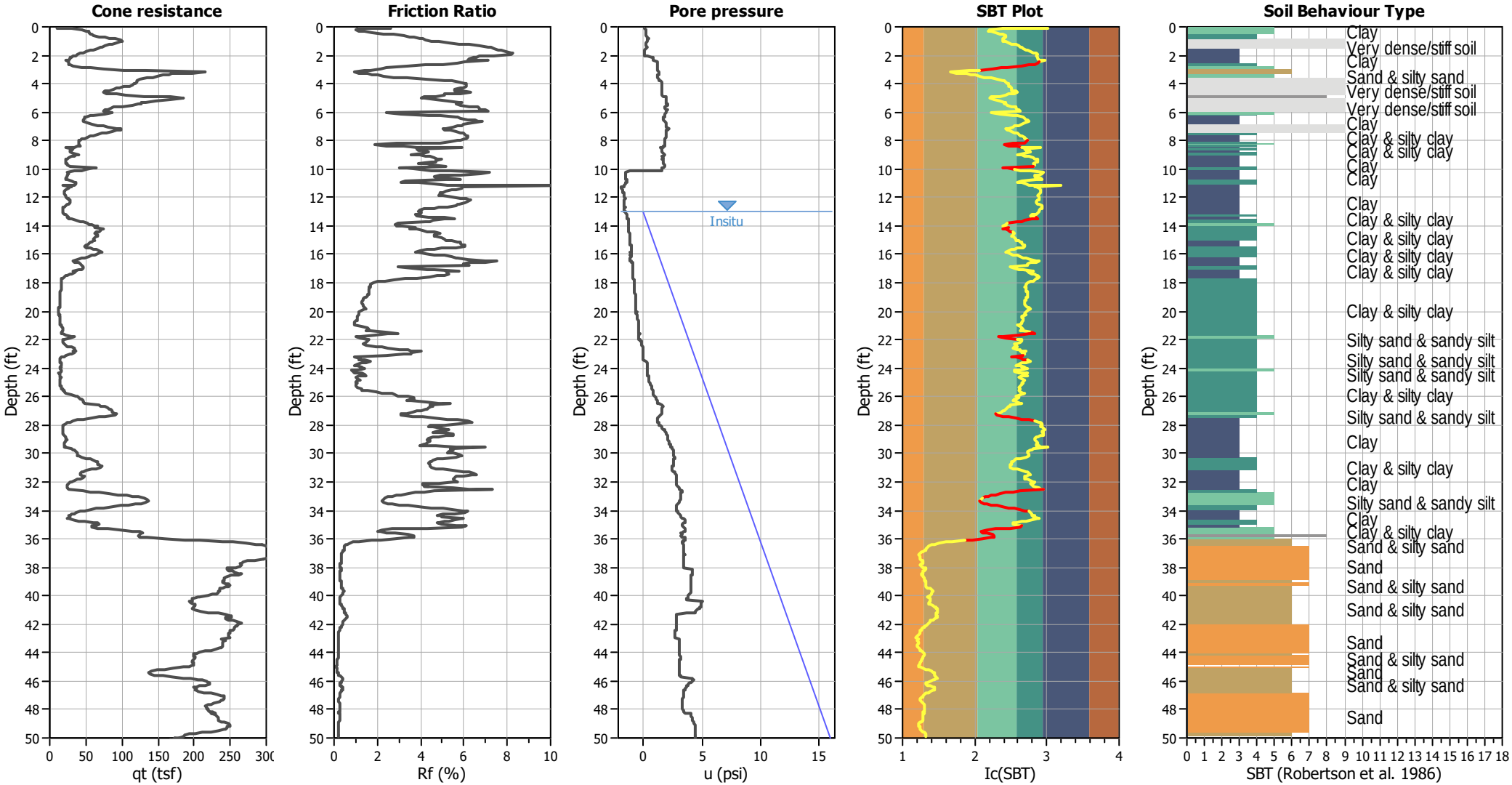
Check for strength loss plots (Robertson (2010))



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	5.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	1	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.93	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.55	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	13.00 ft	Fill height:	N/A	Limit depth:	50.00 ft

CPT basic interpretation plots



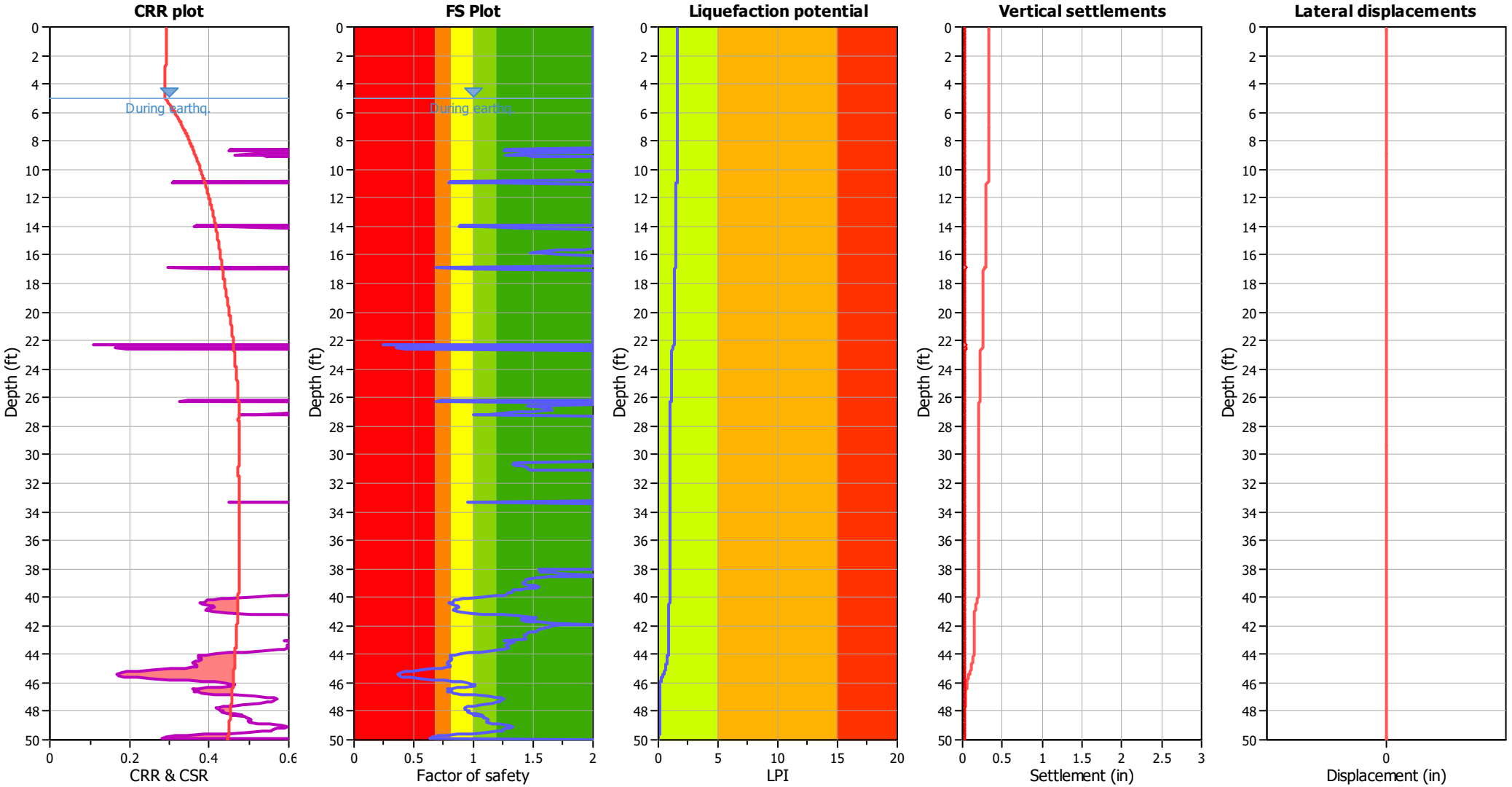
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	5.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	1	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.93	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.55	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	13.00 ft	Fill height:	N/A	Limit depth:	50.00 ft

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

Liquefaction analysis overall plots



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	5.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	1	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.93	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.55	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	13.00 ft	Fill height:	N/A	Limit depth:	50.00 ft

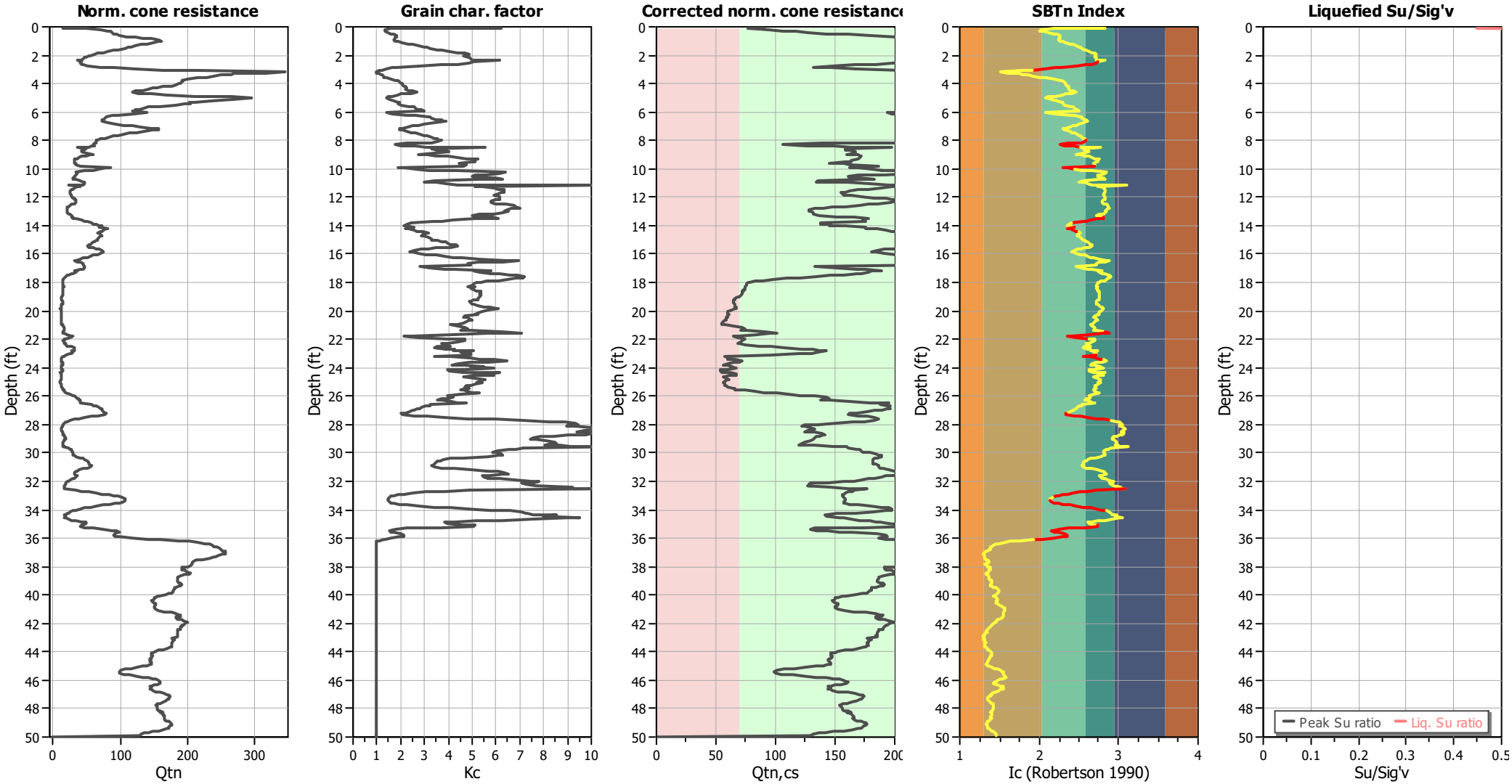
F.S. color scheme

- Almost certain it will liquefy
- Very likely to liquefy
- Liquefaction and no liq. are equally likely
- Unlike to liquefy
- Almost certain it will not liquefy

LPI color scheme

- Very high risk
- High risk
- Low risk

Check for strength loss plots (Robertson (2010))



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	5.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	1	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.93	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.55	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	13.00 ft	Fill height:	N/A	Limit depth:	50.00 ft

Appendix F
General Earthwork and Grading Specifications

General Earthwork and Grading Specifications for Rough Grading

1.0 General

1.1 Intent

These General Earthwork and Grading Specifications are for the grading and earthwork shown on the approved grading plan(s) and/or indicated in the geotechnical report(s). These Specifications are a part of the recommendations contained in the geotechnical report(s). In case of conflict, the specific recommendations in the geotechnical report shall supersede these more general Specifications. Observations of the earthwork by the project Geotechnical Consultant during the course of grading may result in new or revised recommendations that could supersede these specifications or the recommendations in the geotechnical report(s).

1.2 The Geotechnical Consultant of Record

Prior to commencement of work, the owner shall employ a qualified Geotechnical Consultant of Record (Geotechnical Consultant). The Geotechnical Consultant shall be responsible for reviewing the approved geotechnical report(s) and accepting the adequacy of the preliminary geotechnical findings, conclusions, and recommendations prior to the commencement of the grading.

Prior to commencement of grading, the Geotechnical Consultant shall review the "work plan" prepared by the Earthwork Contractor (Contractor) and schedule sufficient personnel to perform the appropriate level of observation, mapping, and compaction testing.

During the grading and earthwork operations, the Geotechnical Consultant shall observe, map, and document the subsurface exposures to verify the geotechnical design assumptions. If the observed conditions are found to be significantly different than the interpreted assumptions during the design phase, the Geotechnical Consultant shall inform the owner, recommend appropriate changes in design to accommodate the observed conditions, and notify the review agency where required.

The Geotechnical Consultant shall observe the moisture-conditioning and processing of the subgrade and fill materials and perform relative compaction testing of fill to confirm that the attained level of compaction is being accomplished as specified. The Geotechnical Consultant shall provide the test results to the owner and the Contractor on a routine and frequent basis.

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 Specifications prior to commencement of grading. The Contractor shall be solely responsible for performing the grading in accordance with the project plans and specifications. The Contractor shall prepare and submit to the owner and the Geotechnical Consultant a work plan that indicates the sequence of earthwork grading, the number of “equipment” of work and the estimated quantities of daily earthwork

contemplated for the site prior to commencement of grading. The Contractor shall inform the owner and the
Geotechnical Consultant of changes in work schedules and updates to the work plan at least 24 hours in advance of such changes so that appropriate personnel will be available for observation and testing. The Contractor shall not assume that the Geotechnical Consultant is aware of all grading operations.

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

2.0 Preparation of Areas to be Filled

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 the Geotechnical Consultant.

The Geotechnical Consultant shall evaluate the extent of these removals depending on specific site conditions. Earth fill material shall not contain more than 1 percent of organic materials (by volume). 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. The contractor is responsible for all hazardous waste relating to his work. The Geotechnical Consultant does not have expertise in this area. If hazardous waste is a concern, then the Client should acquire the services of a qualified environmental assessor.

2.2 Processing

Existing ground that has been declared satisfactory for support of fill by the Geotechnical Consultant shall be scarified to a minimum depth of 6 inches. Existing ground that is not satisfactory shall be over-excavated as specified in the following section. Scarification shall continue until soils are broken down and free of oversize material and the working surface is reasonably uniform, flat, and free of uneven features that would inhibit uniform compaction.

2.3 Over-excavation

In addition to removals and over-excavations 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 over-excavated to competent ground as evaluated by the Geotechnical Consultant during grading.

2.4 Benching

Where fills are to be placed on ground with slopes steeper than 5:1 (horizontal to vertical units), the ground shall be stepped or benched. Please see the Standard Details for a graphic illustration. The lowest bench or key shall be a minimum of 15 feet wide and at least 2 feet deep, into competent material as evaluated by the Geotechnical Consultant. Other benches shall be excavated a minimum height of 4 feet into competent material or as otherwise recommended by the Geotechnical Consultant. Fill placed on ground sloping flatter than 5:1 shall also be benched or otherwise over-excavated to provide a flat subgrade for the fill.

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 the Geotechnical Consultant as suitable to receive fill. The Contractor shall obtain a written acceptance from the Geotechnical Consultant prior to fill placement. A licensed surveyor shall provide the survey control for determining elevations of processed areas, keys, and benches.

3.0 Fill Material

3.1 General

Material to be used as fill shall be essentially free of organic matter and other deleterious substances evaluated and accepted by the Geotechnical Consultant 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 the Geotechnical Consultant or mixed with other soils to achieve satisfactory fill material.

3.2 Oversize

Oversize material defined as rock, or other irreducible material with a maximum dimension greater than 8 inches, shall not be buried or placed in fill unless location, materials, and placement methods are specifically accepted by the Geotechnical Consultant. 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 vertical feet of finish grade or within 2 feet of future utilities or underground construction.

3.3 Import

If importing of fill material is required for grading, proposed import material shall meet the requirements of the geotechnical consultant. The potential import source shall be given to the Geotechnical Consultant at least 48 hours (2 working days) before importing begins so that its suitability can be determined and appropriate tests performed.

4.0 Fill Placement and Compaction

4.1 Fill Layers

Approved fill material shall be placed in areas prepared to receive fill (per Section 3.0) in near-horizontal layers not exceeding 8 inches in loose thickness. The Geotechnical Consultant may accept thicker layers if testing indicates the grading procedures can adequately compact the thicker layers. Each layer shall be spread evenly and mixed thoroughly to attain relative uniformity of material and moisture throughout.

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 D1557).

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 (ASTM Test Method D1557). 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.

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 in fill elevation, or by other methods producing satisfactory results acceptable to the Geotechnical Consultant. Upon completion of grading, relative compaction of the fill, out to the slope face, shall be at least 90 percent of maximum density per ASTM Test Method D1557.

4.5 Compaction Testing

Field tests for moisture content and relative compaction of the fill soils shall be performed by the Geotechnical Consultant. Location and frequency of tests shall be at the Consultant'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).

4.6 Frequency of Compaction Testing

Tests shall be taken at intervals not exceeding 2 feet in vertical rise and/or 1,000 cubic yards of compacted fill soils embankment. In addition, as a guideline, at least one test shall be taken on slope faces for each 5,000 square feet of slope face and/or each 10 feet of vertical height of slope. The Contractor shall assure that fill construction is such that the testing schedule can be accomplished by the Geotechnical Consultant. The Contractor shall stop or slow down the earthwork construction if these minimum standards are not met.

4.7 Compaction Test Locations

The Geotechnical Consultant shall document the approximate elevation and horizontal coordinates of each test location. The Contractor shall coordinate with the project surveyor to assure that sufficient grade stakes are established so that the Geotechnical Consultant can determine the test locations with sufficient accuracy. At a minimum, two grade stakes within a horizontal distance of 100 feet and vertically less than
5 feet apart from potential test locations shall be provided.

5.0 Subdrain Installation

Subdrain systems shall be installed in accordance with the approved geotechnical report(s), the grading plan, and the Standard Details. The Geotechnical Consultant may recommend additional subdrains and/or changes in subdrain extent, location, grade, or material depending on conditions encountered during grading. All subdrains shall be surveyed by a land surveyor/civil engineer for line and grade after installation and prior to burial. Sufficient time should be allowed by the Contractor for these surveys.

6.0 Excavation

Excavations, as well as over-excavation for remedial purposes, shall be evaluated by the Geotechnical Consultant during grading. Remedial removal depths shown on geotechnical plans are estimates only. The actual extent of removal shall be determined by the Geotechnical Consultant 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 the Geotechnical Consultant prior to placement of materials for construction of the fill portion of the slope, unless otherwise recommended by the Geotechnical Consultant.

7.0 Trench Backfills

7.1 The Contractor shall follow all OHSA and Cal/OSHA requirements for safety of trench excavations.

7.2 All bedding and backfill of utility trenches shall be done in accordance with the applicable provisions of Standard Specifications of Public Works Construction. Bedding material shall have a Sand Equivalent greater than 30 (SE>30). The bedding shall be placed to 1 foot over

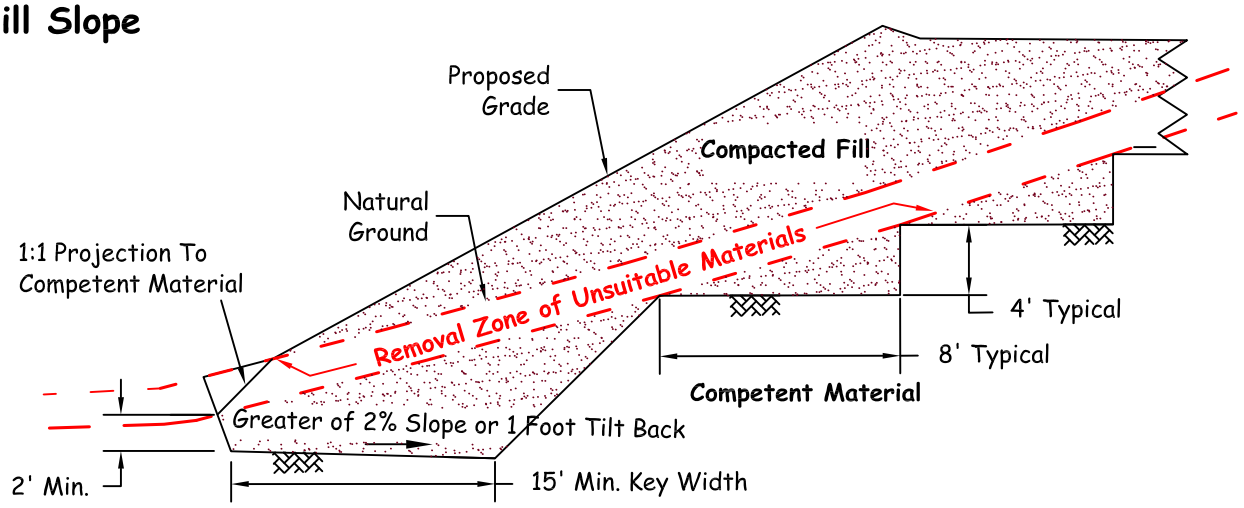
the top of the conduit and densified by jetting. Backfill shall be placed and densified to a minimum of 90 percent of maximum from 1 foot above the top of the conduit to the surface.

7.3 The jetting of the bedding around the conduits shall be observed by the Geotechnical Consultant.

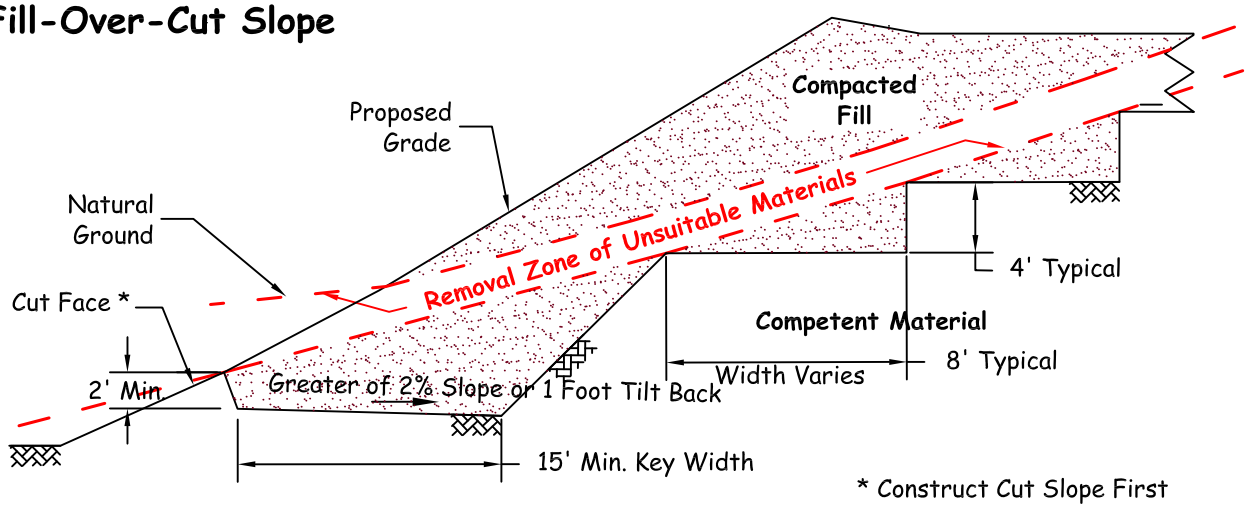
7.4 The Geotechnical Consultant shall test the trench backfill for relative compaction. At least one test should be made for every 300 feet of trench and 2 feet of fill.

7.5 Lift thickness of trench backfill shall not exceed those allowed in the Standard Specifications of Public Works Construction unless the Contractor can demonstrate to the Geotechnical Consultant that the fill lift can be compacted to the minimum relative compaction by his alternative equipment and method.

Fill Slope

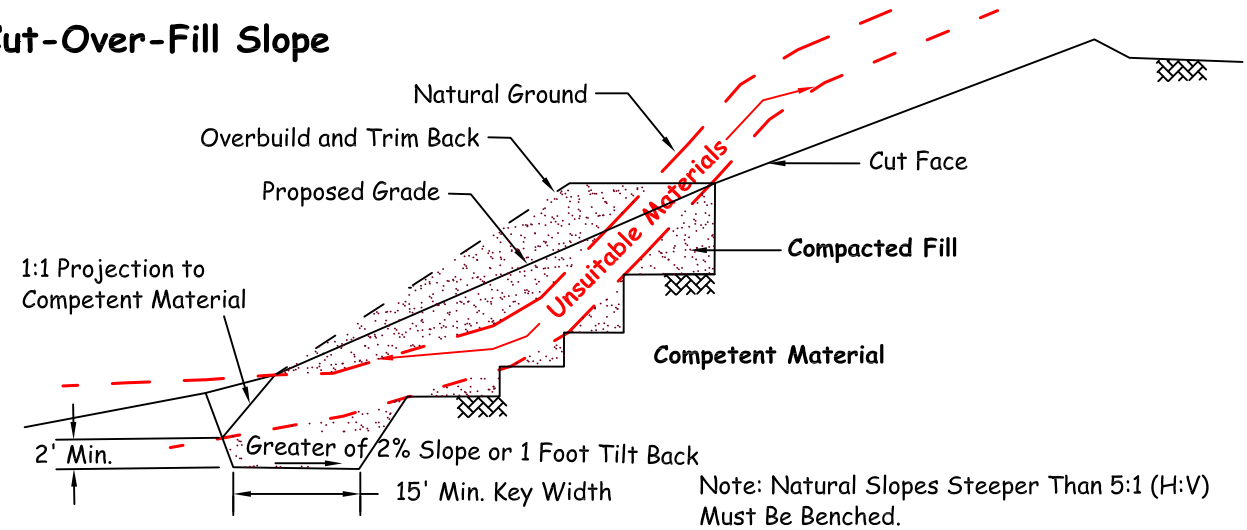


Fill-Over-Cut Slope



* Construct Cut Slope First

Cut-Over-Fill Slope



Note: Natural Slopes Steeper Than 5:1 (H:V) Must Be Benched.

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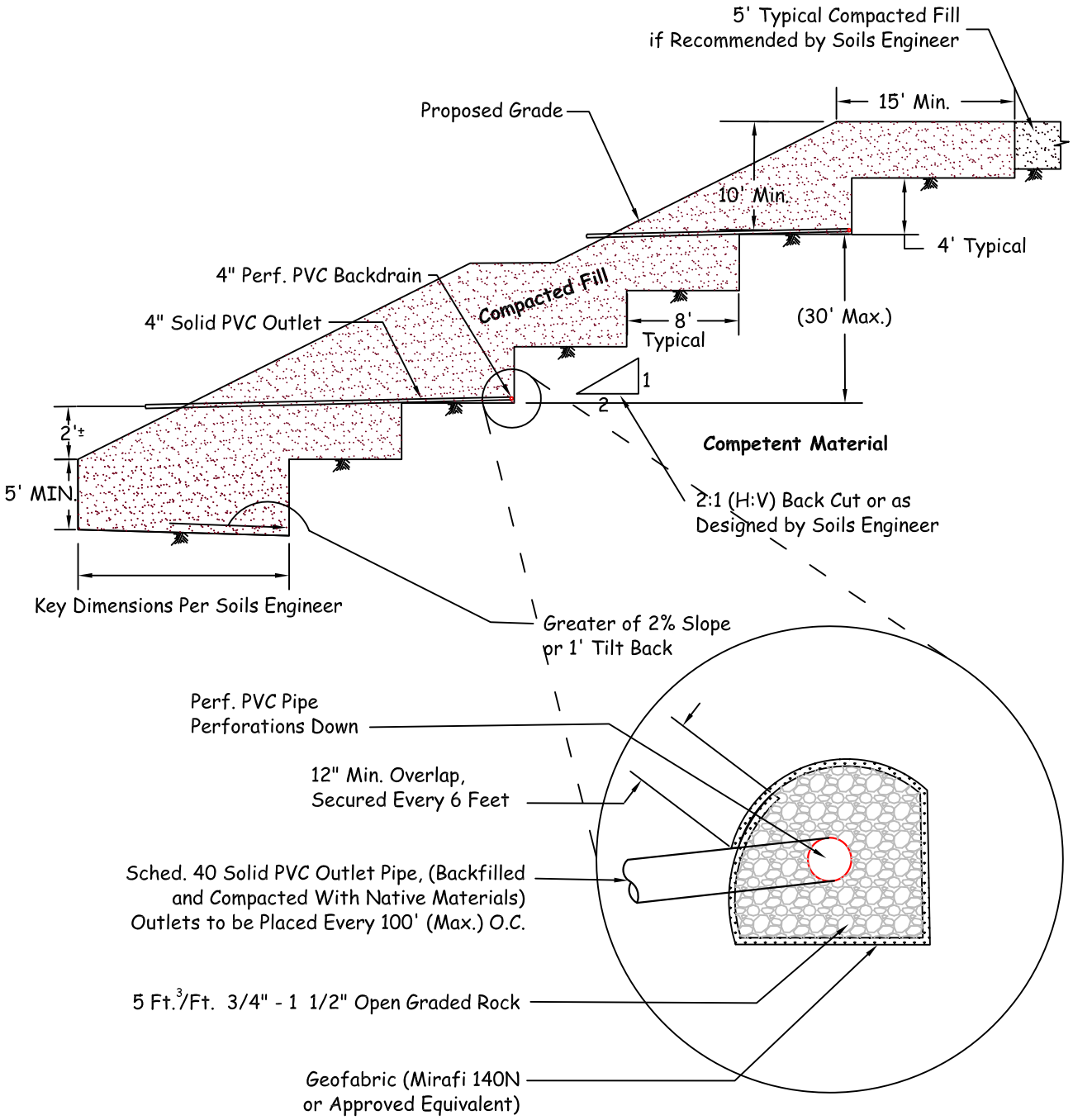
KEYING AND BENCHING



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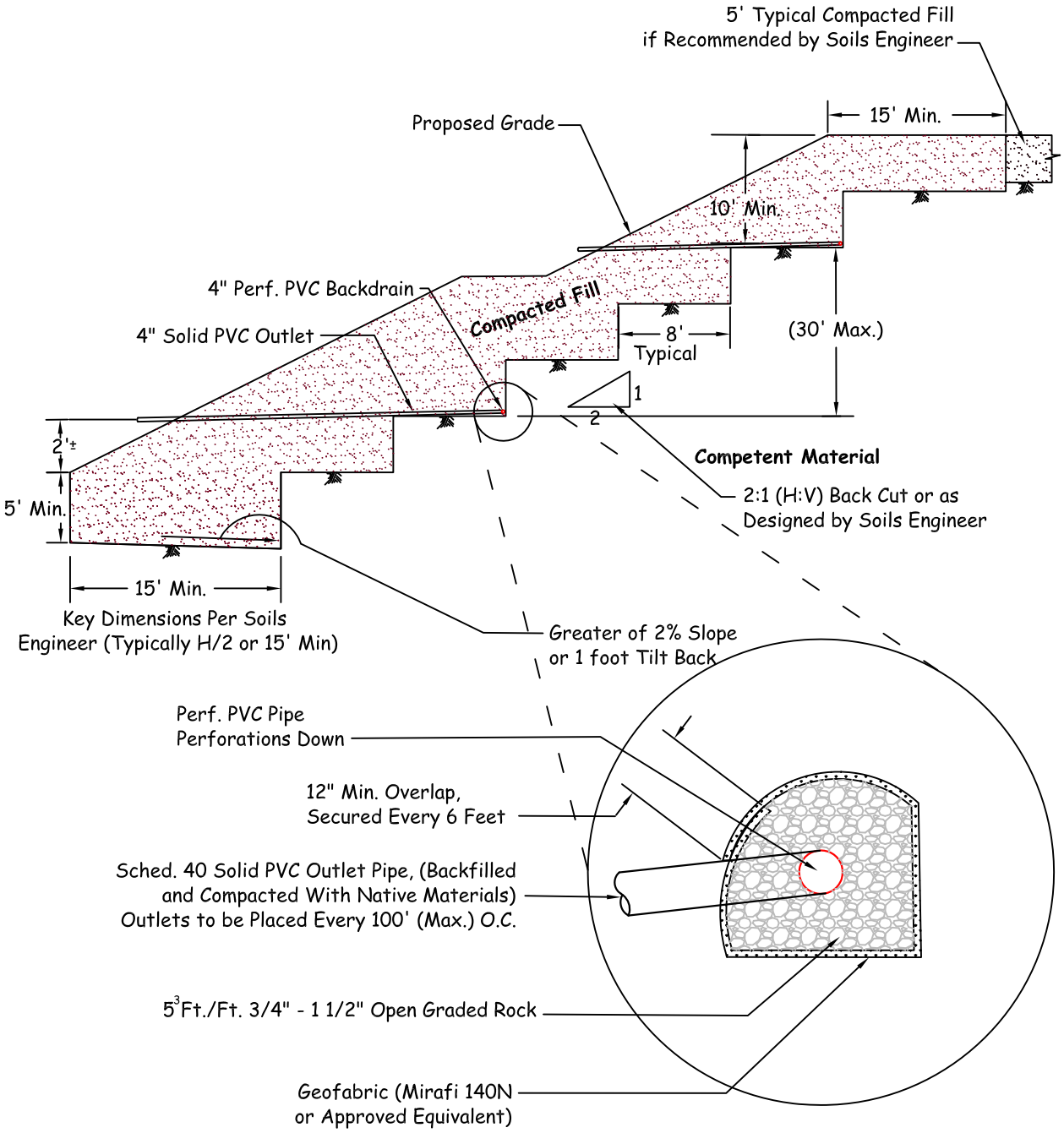
TYPICAL BUTTRESS DETAIL



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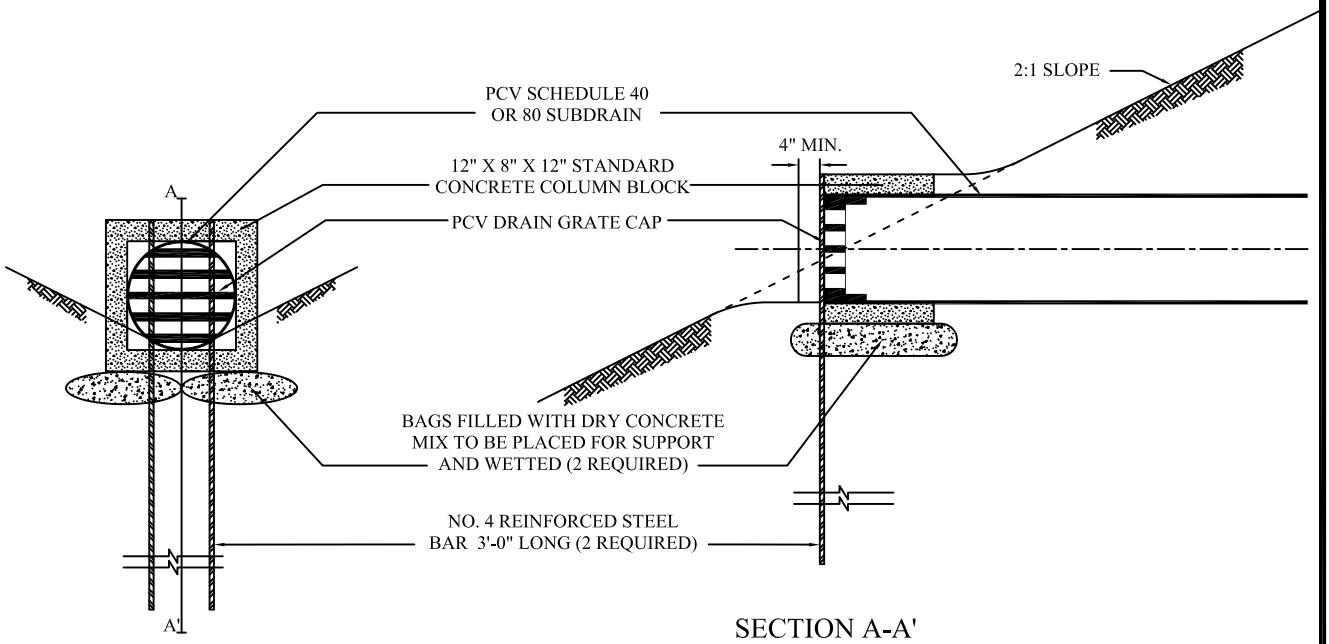
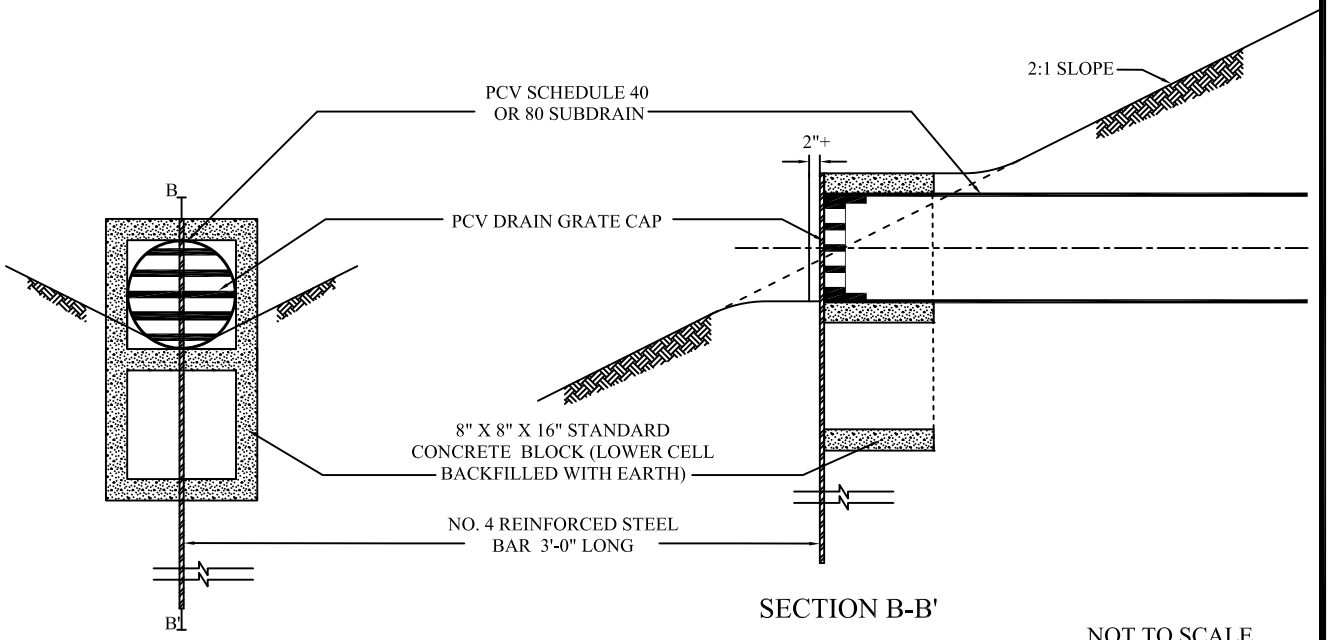
TYPICAL STABILIZATION FILL DETAIL

SUBDRAIN OUTLET MARKER -6" & 8" PIPE



SECTION A-A'

SUBDRAIN OUTLET MARKER -4" PIPE



SECTION B-B'

NOT TO SCALE

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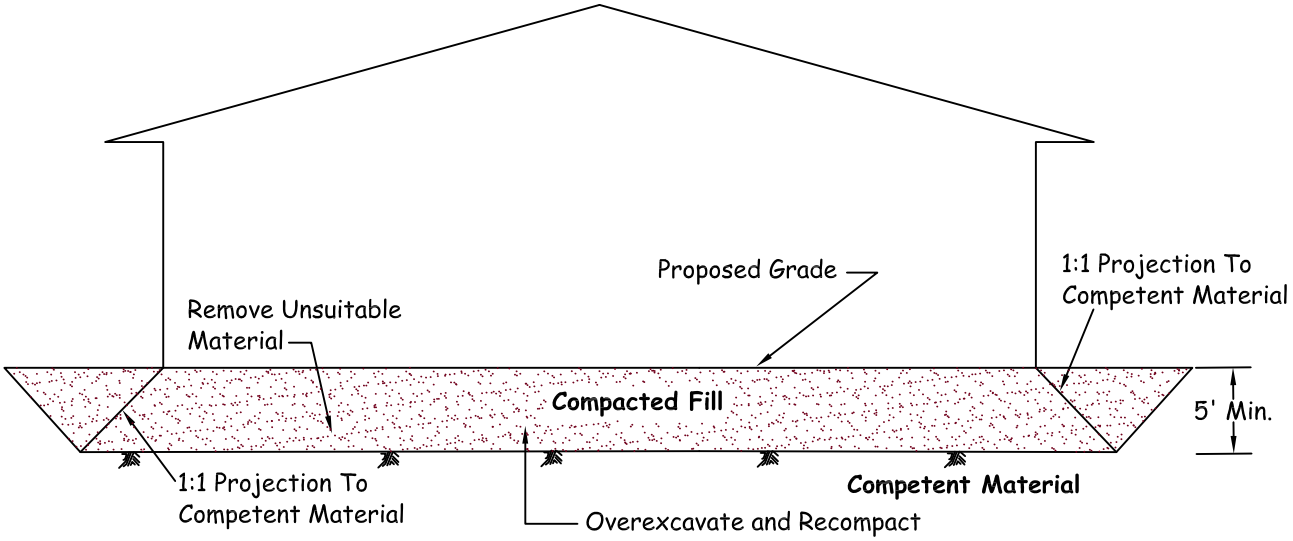
SUBDRAIN OUTLET MARKER DETAIL

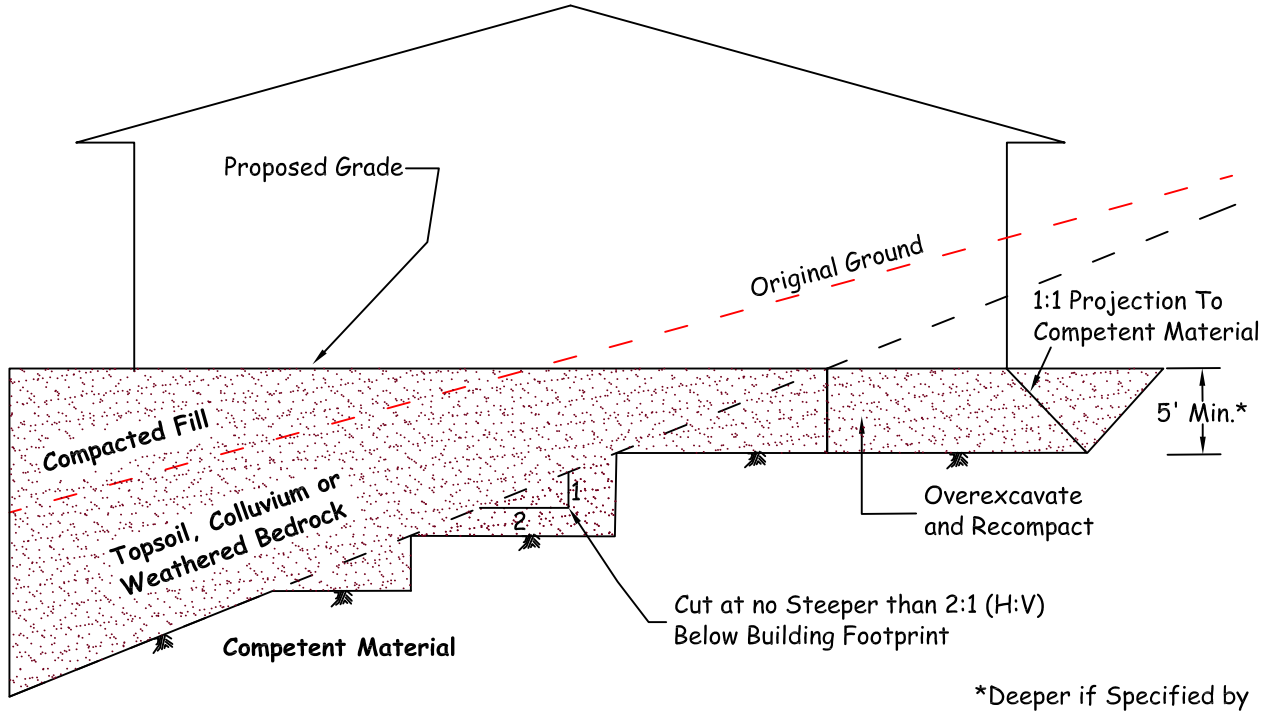
Cut Lot
(Exposing Unsuitable Soils at Design Grade)



Note 1: Removal Bottom Should be Graded With Minimum 2% Fall Towards Street or Other Suitable Area (as Determined by Soils Engineer) to Avoid Ponding Below Building

Note 2: Where Design Cut Lots are Excavated Entirely Into Competent Material, Overexcavation May Still be Required for Hard-Rock Conditions or for Materials With Variable Expansion Characteristics.

Cut/Fill Transition Lot



*Deeper if Specified by Soils Engineer

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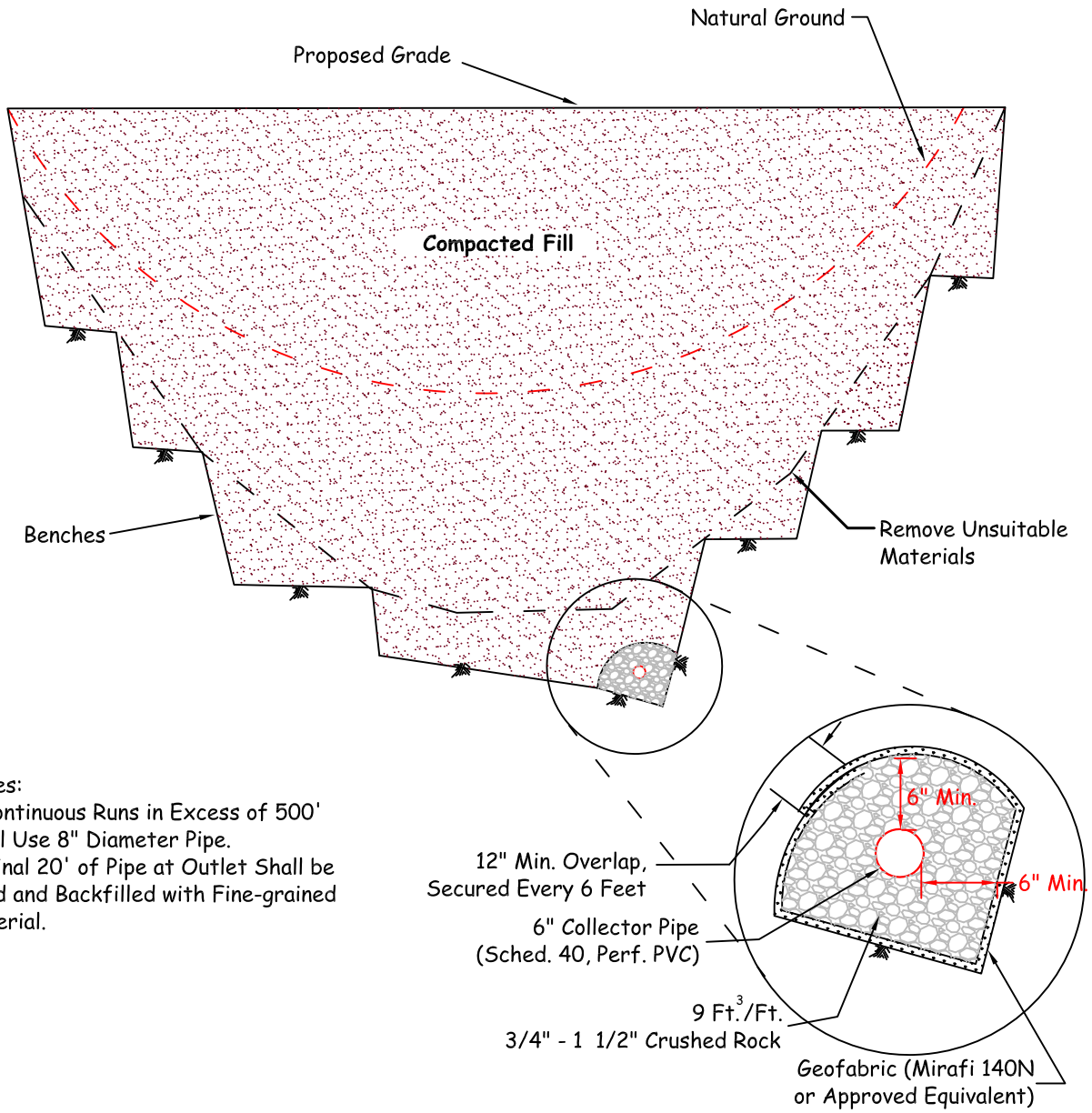
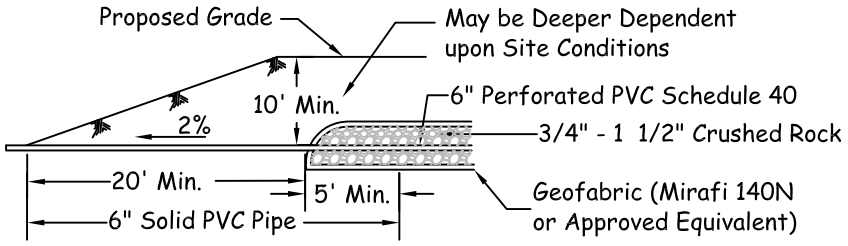
CUT AND TRANSITION LOT OVEREXCAVATION DETAIL



Notes:
1) Continuous Runs in Excess of 500' Shall Use 8" Diameter Pipe.
2) Final 20' of Pipe at Outlet Shall be Solid and Backfilled with Fine-grained Material.

Proposed Outlet Detail



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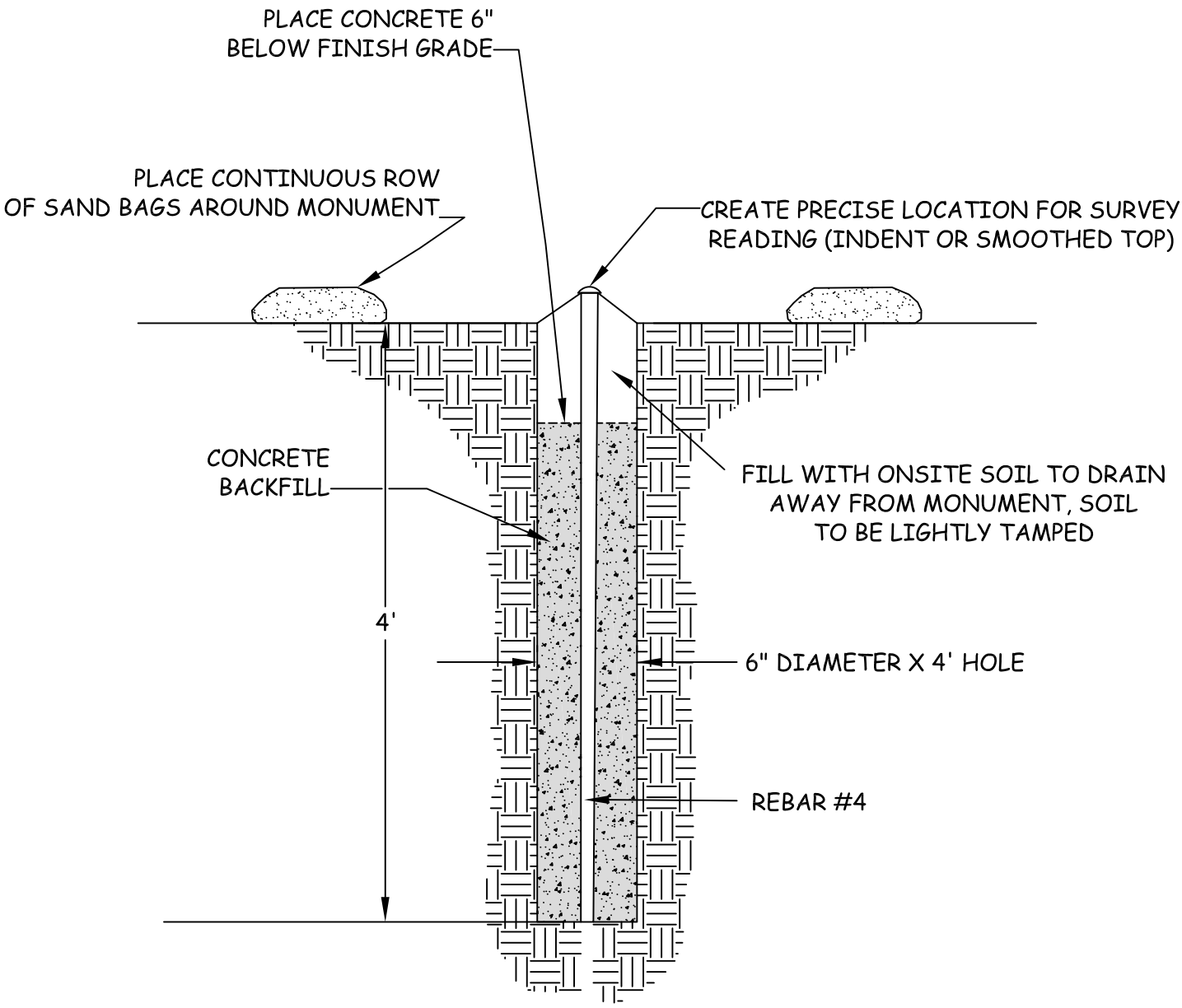
CANYON SUBDRAINS



NO CONSTRUCTION EQUIPMENT WITHIN 25 FEET
OF ANY INSTALLED SETTLEMENT MONUMENTS

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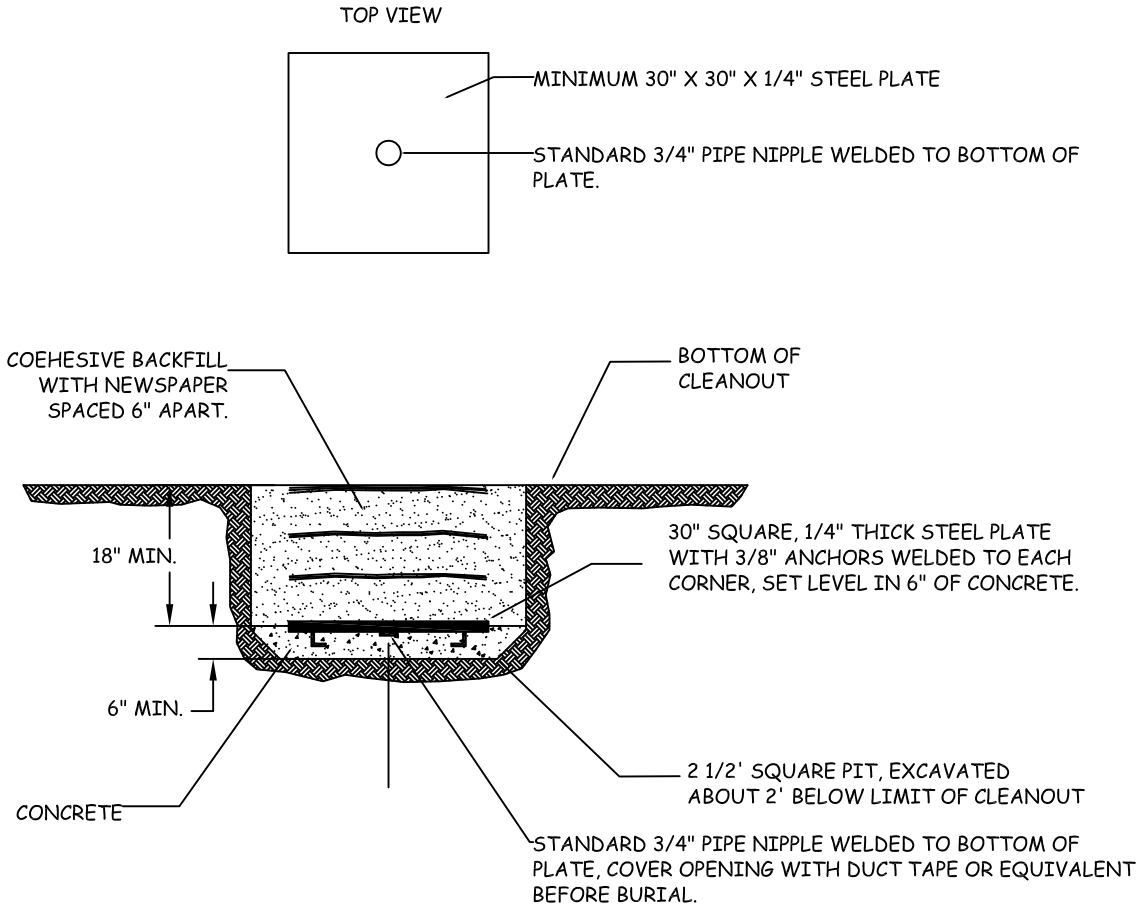
TYPICAL SURFACE SETTLEMENT MONUMENT



1. SURVEY FOR HORIZONTAL AND VERTICAL LOCATION TO NEAREST .01 INCH PRIOR TO BACKFILL USING KNOW LOCATIONS THAT WILL REMAIN INTACT DURING THE DURATION OF THE MONITORING PROGRAM. KNOW POINTS EXPLICITELY NOT ALLOWED ARE THOSE LOCATED ON FILL OR THAT WILL BE DESTROYED DURING GRADING.
2. IN THE EVENT OF DAMAGE TO SETTLEMENT PLATE DURING GRADING, CONTRACTOR SHALL IMMEDIATELY NOTIFY THE GEOTECHNICAL ENGINEER AND SHALL BE RESPONSIBLE FOR RESTORING THE SETTLEMENT PLATES TO WORKING ORDER.
3. DRILL TO RECOVER AND ATTACH RISER PIPE.

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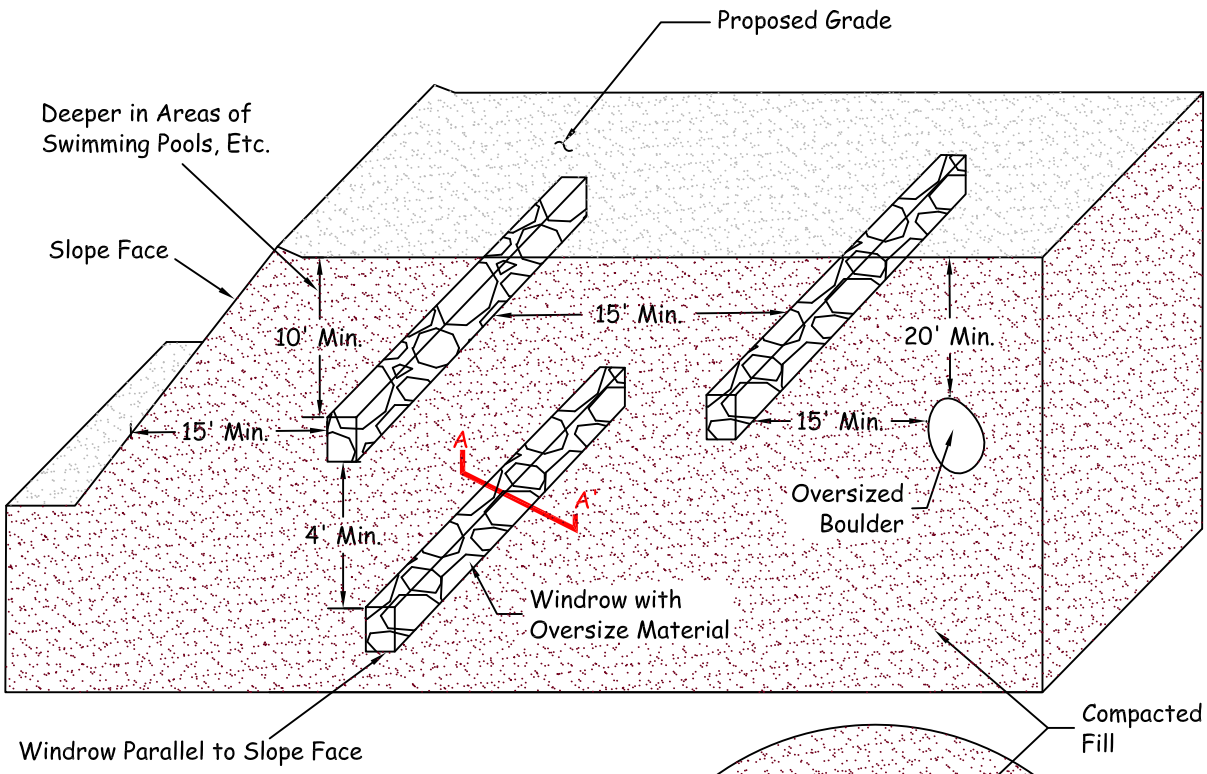
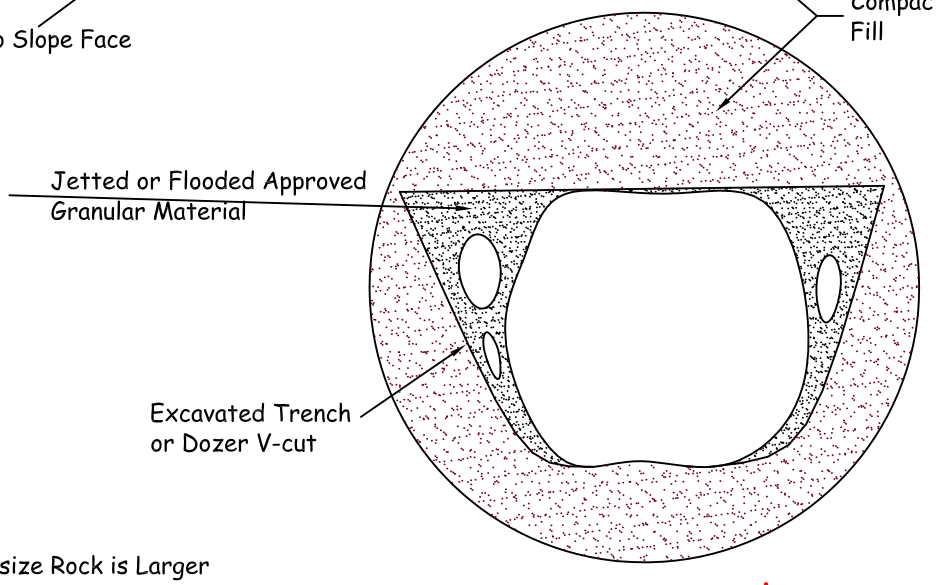
TYPICAL SETTLEMENT PLATE AND RISER





Note: Oversize Rock is Larger
than 8" in Maximum Dimension.

Section A-A'

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OVERSIZE ROCK DISPOSAL DETAIL

LEGEND

Qal	Young Alluvium
Qoa	Old Alluvium
~ - ~	Approximate Location of Geologic Contact
Afu	Undocumented Fill (Not a Part)
Afe	Engineered Fill (Not a Part)
Kdvg	Domenigoni Valley Granodiorite (Not a Part)

HS-2 T.D. = 26'	Approximate Location of Hollow Stem Auger Boring by LGC Geotechnical, With Total Depth in Feet
I-1 T.D. = 5'	Approximate Location of Hollow Stem Auger Infiltration Boring by LGC Geotechnical, With Total Depth in Feet
CPT-1 T.D. = 50'	Approximate Location of Cone Penetration Test (CPT) Boring by LGC Geotechnical, With Total Depth in Feet
TP-2	Approximate Location of Exploratory Test Pit by LGC Geotechnical, With Total Depth in Feet
6	Estimated Depth of Remedial Grading in Feet

Simpson Rd

HS-1 T.D. = 26'
TP-2
6
Qoa
Qoa
CPT-1 T.D. = 50'
TP-1
I-1 T.D. = 5'
HS-2 T.D. = 26'
5
Qal

TP-4
CPT-2 T.D. = 50'
HS-4 T.D. = 26'
TP-5 T.D. = 50'
HS-11 T.D. = 26'
Qal
TP-6
N.A.P.
TP-3
CPT-3 T.D. = 50'
Qal
Qal
HS-5 T.D. = 26'
I-2 T.D. = 5'
HS-3 T.D. = 51'
CPT-4 T.D. = 50'
TP-7
Afu
approx. 8-12ft stockpile
HS-10 T.D. = 51'
CPT-5 T.D. = 50'

La Ventana Road

Sewer Lift Station

Approximate Site Limits

Salt Creek Channel

HS-9 T.D. = 23'
I-3 T.D. = 10'
CPT-7 T.D. = 50'
Afu
approx. 10-20ft stockpile
HS-6 T.D. = 51'
Qoa
Kdvg
Qal
TP-9
CPT-6 T.D. = 50'
HS-8 T.D. = 7'
CPT-8 T.D. = 27'
Kdvg
N.A.P.
Qal
TP-8
HS-7 T.D. = 26'
Afe
Domenigoni Pkwy
TP-11
Kdvg
Qoa
Qoa
N.A.P.
TP-10
Kdvg
Kdvg

SCALE: 1"=200'
200' 0 200' 400'

LGC Geotechnical, Inc.	LGC Geotechnical, Inc. 131 Calle Iglesia, Ste. 200 San Clemente, CA 92672 TEL (949) 369-6141 FAX (949) 369-6142
Sheet 1 Geotechnical Map	

PROJECT NAME	Meritage - Salt Creek, Riverside
PROJECT NO.	22057-01
ENG. / GEOL.	DJB/CPM
SCALE	1"=200'
DATE	August 2022

SHEET 1 of 1

Appendix 4: Historical Site Conditions

Phase I Environmental Site Assessment or Other Information on Past Site Use

HILLMANN
CONSULTING

PHASE I ENVIRONMENTAL SITE ASSESSMENT

Salt Creek
Menifee, California 92545

Prepared For:

MLC Holdings, Inc.
5 Peters Canyon Road, Suite 310
Irvine, California 92606

May 27, 2022

Hillmann Project Number C3-9046

HILLMANN
CONSULTING

May 27, 2022

Ms. Johanna Crooker
MLC Holdings, Inc.
5 Peters Canyon Road, Suite 310
Irvine, California 92606

RE: Phase I Environmental Site Assessment
Salt Creek
Menifee, California 92545
Hillmann Project No: C3-9046

Dear Ms. Crooker:

Hillmann Consulting LLC has completed a Phase I Environmental Site Assessment of the above referenced property. This assessment was performed in conformance with our contract agreement and the scope and limitations of ASTM Practice E1527-21, which is the latest version of the E1527 standard published by the ASTM.

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

Sincerely,

Hillmann Consulting, LLC

Kofi Bonner
Junior Project Manager

Ryan Terwilliger
West Coast Operations Manager

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List of Abbreviations/Acronyms

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

ACM	– Asbestos Containing Material
AOC	– Area of Concern
AST	– Aboveground Storage Tank
ASTM	– American Society for Testing Materials
BER	– Business Environmental Risk
CEA	– Classification Exception Area
CERCLA	– Comprehensive Environmental Response Compensation and Liability Act
CERCLIS	– Comprehensive Environmental Response Compensation and Liability Information System
CESQG	– Conditionally Exempt Small Quantity Generator
COC	– Chemicals of Concern
CORRACTS	– Corrective Action Sites
CREC	– Controlled Recognized Environmental Condition
DEC	– Department of Environmental Conservation
DEP	– Department of Environmental Protection
DHS	– Department of Health Services
DNPL	– Delisted National Priority List
DOB	– Department of Buildings
DOH	– Department of Health
DOT	– Department of Transportation
DTSC	– Department of Toxic Substances Control
ENG	– Engineering
EPA	– Environmental Protection Agency
ERNS	– Emergency Response Notification System
FD	– Fire Department
FOI/FOIA/FOIL	– Freedom of Information / Freedom of Information Act / Freedom of Information Letter
HVAC	– Heating Ventilation & Air Conditioning
HREC	– Historic Recognized Environmental Condition
IAQ	– Indoor Air Quality
ISRA	– Industrial Site Recovery Act
LBP	– Lead-Based Paint
LCP	– Lead-Containing Paint
LQG	– Large Quantity Generator
LTANK	– Leaking Storage Tank
LUST	– Leaking Underground Storage Tank
SDS/MSDS	– Safety Data Sheet / Material Safety Data Sheet
NA	– Not Applicable
NFA	– No Further Action
NFRAP	– No Further Remedial Actions Planned
NPDES	– National Pollutant Discharge Elimination System
NPL	– National Priority List
OER	– Office of Environmental Remediation
OPRA	– Open Public Records Act
PAH	– Polycyclic Aromatic Hydrocarbon
PCE	– Perchloroethylene
RAO	– Response Action Outcome
RCRA	– Resource Conservation and Recovery Act
RCRIS	– Resource Conservation and Recovery Information System
REC	– Recognized Environmental Condition
RWQCB	– Regional Water Quality Control Board
SCAQMD	– South Coast Air Quality Management District
SDG	– Significant Data Gap
SEMS	– Superfund Enterprise Management System
SRP	– Site Remediation Program
SQG	– Small Quantity Generator
SVOC	– Semi-Volatile Organic Compound
TCE	– Trichloroethylene
TSDF	– Treatment Storage and/or Disposal Facility
UST	– Underground Storage Tank
VEC	– Vapor Encroachment Condition
VOC	– Volatile Organic Compound

1.0 FINDINGS, OPINIONS, AND CONCLUSIONS

Hillmann Consulting, LLC (Hillmann) performed a Phase I Environmental Site Assessment (ESA) of Salt Creek, Menifee, California (the Subject Property). The assessment has been conducted in accordance with our contracted scope of work and the ASTM Standard Practice E1527-21 for Phase I Environmental Site Assessments and All Appropriate Inquiries (AAI) Final Rule 40 CFR Part 312. This section contains a summary of findings, opinions and conclusions made by this assessment. However, this section, alone, does not constitute the complete assessment. The report must be read in its entirety.

1.1 Summary of Project Details

Primary Street Address:		Salt Creek			
City:	Menifee	**County:**	Riverside County	**State:**	California
Tax ID/Parcel Number:		333-200-062, 461-150-010, 461-150-017, 460-160-017, 461-160-037, 460-160-050, 461-160-038, 460-160-039			
Property Owner:		Salt Creek I, Salt Creek II, Rancho De Cazadores			
Zoning Designation:		Rural/ Agricultural-Vacant Land/ Farm			
Approx. Property Area:		312.54 acres			
Buildings:		None			
Approx. Building Size:		N/A			
Approx. Year Built:		N/A			
Commercial Occupants:		N/A			
Current Use:		Agricultural / Apiculture			
Inspected By:		Kofi Bonner & Gabriela Cyrulik			
Site Contact/Company:		Johanna Crooker / Meritage Homes			
Site Escort/Company:		None			
Inspection Date:		May 17, 2022			
Weather Conditions:		Sunny, 90 degrees F			

1.2 Findings Summary Table

Assessment Subject	No REC	REC	CREC	HREC	SDG	Rpt. Ref.
Property Regulatory Records Review:	X					4.3
Property Historical Records Review:	X					4.2
Bulk Petroleum Storage:	X					6.3
On-Site Operations:	X					6.3
On-Site Haz-Mat Storage/Use/Spills:	X					6.3
Transformers/Hydraulic Systems:	X					6.3
Waste Discharges:	X					6.3
Interviews:	X					5.0
Adjoining & Nearby Properties:	X					4.3 6.2
Prior Env. Reports/User Provided Info:	X					3.0

1.3 Findings, Opinions and Conclusions

Recognized Environmental Conditions & Significant Data Gaps

Hillmann has performed a Phase I Environmental Site Assessment in accordance with the scope and limitations of ASTM Practice E1527-21 of the Subject Property as described in Section 2.2 of this report. Any additions to, exceptions to, or deletions from this practice are also described in Section 2 of this report. This assessment has revealed the following *recognized environmental conditions* (RECs), *controlled recognized environmental conditions* (CRECs) and/or *significant data gaps* (SDGs) in connection with the Subject Property:

RECOGNIZED ENVIRONMENTAL CONDITIONS
No RECs were identified.
CONTROLLED RECOGNIZED ENVIRONMENTAL CONDITIONS (CRECs)
No CRECs were identified.
SIGNIFICANT DATA GAPS (SDGs)
No SDGs were identified.

Historical Recognized Environmental Conditions (HRECs)

This assessment has revealed the following *historical recognized environmental conditions* (HRECs) in connection with the Subject Property:

HISTORICAL RECOGNIZED ENVIRONMENTAL CONDITIONS	
	No HRECs were identified.

De Minimis and Other Environmental Conditions

The following *de minimis* and other environmental conditions were identified:

OTHER ENVIRONMENTAL CONDITIONS / DE MINIMIS CONDITIONS
The Subject Property has been utilized for agricultural operations from approximately 1953 until 2022, with remnant crops currently on the Subject Property. Hillmann collected one-hundred sixty (160) individual samples, which were then composited into forty (40) composite samples, and analyzed for OCPs and Title 22 Metals. Results of the OCP analysis indicated that OCP analytes were not detected at levels above the laboratory reporting limits (RLs), and all RLs were significantly below EPA Regional Screening Levels (RSLs) for residential applications. For residential applications, results of Title 22 Metals analysis indicated low background levels of metals that did not exceed acceptable screening levels for residential applications. Based on these non-detected levels of pesticides obtained within the area of concern at the site, and the low-level detections of heavy metals consist with background levels at the Subject Property. Hillmann recommends no further investigations at this time.

Environmental Professional Statement

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

Ryan Terwilliger
Environmental Professional

1.4 Business Environmental Risks / Non-ASTM Scope

Hillmann has performed a limited review of the following potential Business Environmental Risks (BER), also known as "Non-ASTM Scope concerns", in accordance with the contracted scope of work scope for this assessment. BER is defined by ASTM E1527-21 as *"a risk which can have a material environmental or environmentally-driven impact on the business associated with the current or planned use of a parcel of commercial real estate, not necessarily limited to those environmental issues required to be investigated in this practice."* The following is a summary of findings for the limited review of potential BERs, where applicable, as per the contracted scope of work and limitations outlined in Section 2. For a more detailed discussion of the findings and contracted scope of work, please see the referenced report section.

BUSINESS ENVIRONMENTAL RISKS / NON-ASTM SCOPE			
Subject	**Findings**	**Not Appl.**	**Rpt. Ref.**
Asbestos	No buildings were present at the Property.	X	7.1
Lead Paint	No residential buildings built prior to 1980 were present at the Property.	X	7.2
Radon	Property is located in the USEPA radon designation Zone 2 or 'moderate risk' area for radon.		7.3
Mold / Microbial Damage	Given the absence of building structures at the Property, mold/microbial growth is not considered to be a significant environmental concern.	X	7.4
NWI Wetlands	The review did not indicate regulated wetland areas on the Property.		7.5
Lead in Drinking Water	No potable water service was identified at the Property.	X	7.6

2.0 INTRODUCTION

2.1 Purpose and Scope

This assessment was conducted utilizing generally accepted Phase I ESA industry standards in accordance with the ASTM Standard Practice E1527-21. The ASTM describes these methodologies as representing good commercial and customary practice in the United States of America for conducting an environmental site assessment of a parcel of commercial real estate with respect to the range of contaminants within the scope of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) (42 U.S.C. § 9601) and petroleum products. As such, this practice is intended to permit a user to satisfy one of the requirements to qualify for the innocent landowner, contiguous property owner or bona fide prospective purchaser limitations on CERCLA liability (hereinafter, the "landowner liability protections," or "LLPs"): that is, the practice that constitutes all appropriate inquiries into the previous ownership and uses the property consistent with good commercial and customary practice as defined at 42 U.S.C. §9601(35) (B). The goal of the processes established by ASTM E1527-21 is to identify *recognized environmental conditions* in connection with the Subject Property.

The term *recognized environmental condition* (REC) is defined by ASTM E1527-21 as *"(1) the presence of hazardous substances or petroleum products in, on, or at the subject property due to a release to the environment; (2) the likely presence of hazardous substances or petroleum products in, on, or at the subject property due to a release or likely release to the environment; or (3) the presence of hazardous substances or petroleum products in, on, or at the subject property under conditions that pose a material threat of a future release to the environment."*

The term *controlled recognized environmental condition* is a type of recognized environmental condition and defined by ASTM E1527-21 as a *"recognized environmental condition affecting the subject property that has been addressed to the satisfaction of the applicable regulatory authority or authorities with hazardous substances or petroleum products allowed to remain in place subject to implementation of required controls (for example, activity and use limitations or other property use limitations)."*

The term *historical recognized environmental condition* is defined as a *"previous release of hazardous substances or petroleum products affecting the subject property that has been addressed to the satisfaction of the applicable regulatory authority or authorities and meeting unrestricted use criteria established by the applicable regulatory authority or authorities without subjecting the subject property to any controls (for example, activity and use limitations or other property use limitations)."* The ASTM E1527-21 standard has clarified that a *historical recognized environmental condition* (HREC) is not a *recognized environmental condition* (REC).

The term *de minimis condition* is defined by the ASTM, *"...a condition related to a release that generally does not present a threat to human health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies."* A condition determined to be a *de minimis condition* is not REC nor a CREC.

The chief components of this assessment are generally described as follows:

- A non-invasive visual reconnaissance of the Subject Property and adjoining properties in accordance with ASTM guidelines for evidence of RECs.

- Interviews of past and present owners and occupants and state and local government officials, seeking information related to the potential presence of RECs at the Subject Property.

- A review of standard physical record sources for available topographic, geologic and groundwater data.

- A review of standard historic record sources, such as fire insurance maps, city directories, aerial photographs, prior reports and interviews, etc., to determine prior uses of the Subject Property from the present, back to the Subject Property's first developed use, or back to 1940, whichever is earlier.

- A review of standard environmental record sources including federal and state environmental databases, and additional environmental record sources, to identify potential regulatory concerns with the Subject Property, adjoining properties and properties located within the surrounding area.

An evaluation of environmental or other regulatory compliance matters is excluded from the scope of this assessment.

These methodologies are described as representing good commercial and customary practice for conducting an Environmental Site Assessment of a property for the purpose of identifying recognized environmental conditions.

Business Environmental Risks/Non-ASTM Scope Considerations

In accordance with our contract agreement, Hillmann may have addressed the following potential environmental subject matters that are outside of the requirements of the ASTM E1527-21 standard:

- Asbestos-Containing Materials (ACM): A cursory non-intrusive visual screening for the presence of suspect ACM within the accessed areas of buildings built prior to 1990 on the Subject Property. If the Subject Property contains buildings built in 1990 or later, the contracted scope of work excludes a cursory non-intrusive visual screening or any other level of evaluation for suspect ACM; however, the exclusion for buildings built ≥1990 should not be interpreted to suggest that any such buildings are free of ACM or would not warrant evaluation of building materials for ACM prior to disturbance. It is emphasized that this cursory non-intrusive visual screening does not constitute an asbestos survey/inspection of the premises. An asbestos survey/inspection should be sought by the report User(s) if a greater certainty is desired regarding ACM and potential asbestos hazards at the Subject Property. Furthermore, a review of regulatory compliance matters pertaining to asbestos is excluded from the scope of work.

- Lead-Based Paint (LBP): A cursory non-intrusive visual screening of the condition of painted surfaces in the accessed areas of residential buildings/units built prior to 1980 on the Subject Property. If the Property contains buildings built in 1980 or later, the contracted scope of work excludes any cursory non-intrusive visual screening or other level of evaluation for suspect

LPB; however, the scope of work exclusion for building built ≥1980 should not be interpreted to suggest that any such buildings are free of LPB or other lead hazards. It is emphasized that this cursory non-intrusive visual screening does not constitute a comprehensive survey for LBP or potential lead hazards. A comprehensive inspection should be sought by the report User(s) if more certainty is desired regarding LBP at the Subject Property. Furthermore, a review of regulatory compliance matters pertaining to lead-based paint is excluded from the scope of work.

- USEPA Designated Radon Potential: Review of general non-site specific data published by the USEPA regarding the Radon Zone classification for the area of the Subject Property.

- Mold/Microbial Damage: A cursory non-intrusive visual screening within the accessed areas of buildings on the Subject Property for evidence of systemic microbial problems, including visible mold growth, water damaged building materials or musty odors. It is emphasized that this cursory non-intrusive visual screening does not constitute a comprehensive survey for moisture/mold/microbial damage. A more comprehensive inspection should be sought by the report User(s) if more certainty is desired regarding the potential for moisture/mold/microbial damages at the Subject Property.

- NWI Wetlands: The Property has been reviewed for jurisdictional wetlands using the National Wetlands Inventory Wetland Mapper (http://wetlandsfws.er.usgs.gov/NWI/download.html) to determine whether mapped federal wetlands have been indicated on the Subject Property. Any further evaluation or legal delineation of regulated wetlands areas is excluded from the scope of work. It is also emphasized that a field delineation of regulated wetlands by a qualified professional would be warranted to more fully determine the presence or absence of regulated wetlands at the Subject Property.

- Lead in Drinking Water: Review of the potential for elevated levels of lead in the drinking water by determining the source of the drinking water supply and a review of available testing or compliance data reports.

2.2 Property Location/Legal Description

Property location and legal description details are described as follows:

Primary Street Address:	Salt Creek				
City:	Menifee	**County:**	Riverside County	**State:**	California
Tax ID/Parcel Number:	333-200-062, 461-150-010, 461-150-017, 460-160-017, 461-160-037, 460-160-050, 461-160-038, 460-160-039				
Approx. Land Area:	312.54 acres				
Apprx. Latitude/Longitude:	North 33.703257 degrees/West -117.131402 degrees				
Additional Details (if appl.):	NA				
Property Owner:	Salt Creek I, Salt Creek II, Rancho De Cazadores				

Zoning Designation:	Rural/ Agricultural-Vacant Land/ Farm

2.3 Data Gaps

A *data gap* is defined by the ASTM as a lack of or inability to obtain information required by this practice despite good faith efforts by the environmental professional to gather such information. A data gap is only significant if other information and/or professional experience raises reasonable concerns involving the data gap and the ability to determine the presence or absence of recognized environmental conditions. The following table summarizes data gaps encountered during the assessment as well as a discussion of their significance.

Data Gap:	Significant (Yes/No)?	Discussion
Historical records data failure	No	The date and/or type of the first developed use of the Subject Property was not documented. Record gaps exceeding five years were encountered; however, no significant site use changes are suspected during these intervals.
Response to agency records requests not received as of date of report.	No	Any additional information indicative of a REC will be forwarded upon receipt.

2.4 ESA Report Component Dates/Viability

The ASTM E1527-21 standard states that an environmental site assessment (ESA) is presumed to be viable when it is conducted within 180 days prior to the date of acquisition of the Subject Property (or, for transactions not involving an acquisition such as a lease or refinance, the date of the intended transaction). Specifically, all of the following components must be conducted or updated within 180 days prior to the date of acquisition or prior to the date of the transaction. The following table summarizes the component completion dates:

ESA Component	Completion Date
Interviews	N/A
Env Lien Search	(excluded from scope)
Government Records Review	April 22, 2022
Visual Inspections	May 17, 2022
Env. Professional Declaration	May 27, 2022

2.5 User Reliance

This report is for the exclusive use of MLC Holdings, Inc. and additional relying entities, if any, named on the front cover. No additional individuals or entities shall be permitted to rely upon any data, interpretation, reports or other information or documentation contained in this report, without first obtaining the consent of MLC Holdings, Inc.; and without obtaining written consent from Hillmann in the form of a reliance agreement/letter.

Hillmann may, in its sole discretion, withhold its consent to additional reliance and/or Hillmann may condition consent for reliance upon payment of a fee or other conditions.

2.6 Significant Assumptions

The following significant assumptions are made:

- The site operations at the time of the site visit are assumed to reflect typical site conditions relative to potential environmental conditions and that no concealment of environmental conditions or releases by site owners or occupants has occurred. Likewise, it is assumed that no areas of the Subject Property with potential environmental concerns or RECs were concealed or otherwise not reported, intentionally or unknowingly, by the Subject Property owners/occupants and/or site escort at the time of the site visit.

- For the purpose of estimating the approximate direction of groundwater flow in the absence of site-specific groundwater data, unless indicated otherwise, an assumption has been made that the gradient of groundwater flow follows the surface topography of the Subject Property and immediate surrounding area.

2.7 General Limitations and Exceptions

Limitations

The report turnaround time specified by the contract agreement for this assessment may present a limitation to the availability of pertinent regulatory agency records. Such limitations, if encountered, would be further specified in Section 4.1.

Significant limitations related to the condition or accessibility of the Subject Property at the time of the site reconnaissance, if encountered, are reported in Section 6.1.

Other Exceptions or Deletions

No other exceptions or deletions from the ASTM Standard E1527-21 are reported.

Special Terms and Conditions

This Phase I Environmental Site Assessment has been prepared using reasonable efforts in each phase of its work to identify recognized environmental conditions associated with hazardous substances, wastes and petroleum products at the Subject Property. Findings within this report are based on information collected from observations made on the day of the site reconnaissance and from reasonably ascertainable information obtained from governing public agencies and private sources.

This report is not definitive and should not be assumed to be a complete or specific definition of the conditions above or below grade. Information in this report is not intended to be used as a construction document and should not be used for demolition, renovation, site development, redevelopment, or other construction purposes. No representation or warranty is made that the past

or current operations at the Subject Property are, or have been, in compliance with all applicable federal, state and local laws, regulations and codes.

Findings, conclusions and recommendations presented in this report are based on visual observations of the Subject Property, interviews conducted, the records reviewed, information provided by the Client, and/or a review of readily available and supplied drawings and documents. Information obtained during the assessment, whether written, graphic or verbal, provided by the Subject Property contact(s) or as shown on any documents reviewed or received from the Subject Property contact, owner or agent, or government agency source; is assumed to be accurate except as specifically stated otherwise in this report. Independent verification of the accuracy or completeness of all information reviewed or received during the course of this assessment is not made and excluded from the scope of work for this assessment. No warranty or guarantee is made of the accuracy or completeness of information that was obtained from ostensibly knowledgeable individuals, regulatory agency representatives or other secondary sources.

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

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

The regulatory database report provided is based on an evaluation of the data collected and compiled by a contracted data research company. Hillmann can neither warrant nor guarantee the accuracy or completeness of the information obtained from the regulatory database report provider during the course of this assessment.

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

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

No guarantee, explicit or implied, is made that the records pertaining to historical ownership or occupancy which were reviewed represent a comprehensive or precise delineation of past Property ownership or tenancy for legal purposes.

The ASTM E1527-21 standard states that recommendations are not required to be included in a Phase I ESA report; however, further that recommendations are an additional service that may be useful in the User's analysis of landowner liability protections or business environmental risks; and that the User should consider whether recommendations for additional inquiries or other services are desired.

Recommended response actions offered in Section 1.3, if any, are provided as an option to the Client, and may have taken into account the Client's relation to the Subject Property and/or their intended purpose of this assessment. If included, it is not intended by Hillmann to represent the only course(s) of action, or inaction, to take. Furthermore, it is emphasized that additional response actions may become advisable depending on the outcome of the initial action(s) taken. Hillmann advises that Client and any additional authorized relying parties as specified on the report Cover and Section 2.5, or via letter of reliance extension, undertake consultation with legal counsel familiar with environmental and real estate law would be beneficial to the decision making process for the type and timing of a response action to identified RECs or Business Environmental Risks, if any.

Due to the limited nature of our review of potential Business Environmental Risks, the User(s) of the report should consider whether to take additional action(s) to further define, properly manage and/or mitigate potential BERs.

The User(s) assumes responsibility for business decisions that it makes utilizing information in the report provided by Hillmann. Hillmann shall not be responsible for any conclusions, interpretations and/or decisions of the User(s).

In the event of any conflict between the terms and conditions of this report and the terms and conditions of the consulting services agreement for this project, the consulting services agreement shall control.

3.0 USER PROVIDED INFORMATION

The term "User" is defined by ASTM as the party seeking to use Practice E1527 to complete an environmental site assessment of the Subject Property; specifically, the entity or entities named on the front cover to which the report has been addressed.

3.1 Environmental Lien and Activity and Use Limitation (AUL) Search

The User did not provide Hillmann with the results of an environmental lien and AUL search for the Subject Property.

3.2 Prior Environmental Reports/Documentation

The following prior environmental reports/documentation was provided:

Preliminary Environmental Assessment Report: Proposed Elementary School No.6, Northwest corner of Winchester Hills Drive and La Ventana Road, Winchester, California 92584; prepared by The Planning Center, and dated June 2, 2008.

The scope of work included forty-four (44) soil samples (plus 6 duplicates) were collected from 22 locations at two depths, across the site to address the historical agriculture use on the site. The soil samples were analyzed for organochlorine pesticides by EPA Method 8081and arsenic by EPA Method 6010B. The report indicated the following:

- *A total of six (6) composite samples (plus one composite duplicate) were analyzed for organochlorine pesticides by EPA Method 8081A. Two organochlorine pesticides (4,4'-DOE and 4,4'-DDT) were detected at low concentrations above the laboratory detection limits but below California Human Health Screening Levels (CHHSLs)*
- *Six (6) discrete surface samples (plus one duplicate) were analyzed for arsenic by EPA Method 6010B. Arsenic was not detected above the laboratory detection limits.*
- *The preliminary human health risk screening indicates that chemical concentrations do not present a significant concern for the site.*

The Planning Center concluded the following:

- *Based on the PEA objectives, the environmental quality goals of the district, and the results of the PEA investigation, The Planning Center recommends a NFA determination for this site Per California Education Code Section 17213 1, Section 3, The Planning Center concludes that further investigation of the site is not necessary*

3.3 User Responsibilities

Section 6 of the ASTM E1527-21 standard describes certain tasks required to be performed by the report User in order to qualify for landowner liability protections to CERCLA liability. To assist the report User to meet these requirements, the ASTM E1527-21 standard recommends a questionnaire of inquiries (User Questionnaire) specified in 40 CFR 312.25, 312.28, 312.29,

312.30, and 312.31 be provided to the original report User. A User Questionnaire has been provided to the report User; however, a completed questionnaire was not returned to Hillmann.

Question:	Yes/No:	Detail:
Environmental liens that are filed or recorded against the property: Did a search of recorded land title records identify any environmental liens filed or recorded against the property under federal, tribal, state or local law?	NR	*No Response*
Activity and use limitations that are in place on the property or that have been filed or recorded against the property: Did a search of recorded land title records (or judicial records where appropriate, identify any AULs, such as engineering controls, land use restrictions or institutional controls that are in place at the property and/or have been filed or recorded against the property under federal, tribal, state or local law?	NR	
Specialized knowledge or experience of the person seeking to qualify for the LLP: Do you have any specialized knowledge or experience related to the property or nearby properties? For example, are you involved in the same line of business as the current or former occupants of the property or an adjoining property so that you would have specialized knowledge of the chemicals and processes used by this type of business?	NR	
Relationship of the purchase price to the fair market value of the property if it were not contaminated: Does the purchase price being paid for this property reasonably reflect the fair market value of the property? If you conclude that there is a difference, have you considered whether the lower purchase price is because contamination is known or believed to be present at the property?	NR	
Commonly Known or Reasonably Ascertainable Information: Are you aware of commonly known or reasonably ascertainable information about the property that would help the environmental professional to identify conditions indicative of releases or threatened releases? For example,		
-Do you know the past uses of the property?	NR	
-Do you know of specific chemicals that are present or were once present at the property?	NR	
-Do you know of spills or other chemical releases that have taken place at the property?	NR	
-Do you know of any environmental cleanups that have taken place at the property?	NR	
The degree of obviousness of the presence or likely presence of contamination at the property, and the ability to detect the contamination by appropriate investigation:	NR	

Question:	Yes/No:	Detail:
Based on your knowledge and experience related to the property are there any obvious indicators that point to the presence or likely presence of releases at the property?		
Litigation/Administrative Proceedings/Government Notices As the User of this ESA, do you have knowledge of (1) any pending, threatened, or past litigation relevant to hazardous substances or petroleum products in, on, or from the property; (2) any pending, threatened, or past administrative proceedings relevant to hazardous substances or petroleum products in, on or from the property; and (3) any notices from any governmental entity regarding any possible violation of environmental laws or possible liability relating to hazardous substances or petroleum products.	NR	

NR-no response

3.4 User's Reason for Performing Phase I ESA

The User did not indicate the purpose of the assessment. In accordance with ASTM E1527-13, it is assumed that the Phase I ESA was being performed in order to qualify for landowner liability protection to CERCLA liability.

4.0 RECORDS REVIEW

4.1 Environmental Information

Physical Setting

Source	Discussion
USGS 7.5 minute Topographic Map Data: (EDR Geocheck-Physical Setting Source Addendum)	The Subject Property lies at an elevation of approximately 1,446 feet above mean sea level. An interpretation of topographic contour lines, as well as, a review of the EDR Geocheck-General Topographic Gradient suggested terrain sloping downward towards the south-southeast. The southern side of the Property slopes upward and forms a high hill approximately 200 feet above the typical elevation profile of the Property. The closest water body is the Menifee Lakes, located approximately 3,500 feet to the west-soutwest.
USDA SCS Soil Data: (EDR Geocheck-Physical Setting Source Addendum)	The soil type at the Subject Property is classified as "Domino". This soil type is described as moderately well drained, with slow infiltration rates. The soil texture is described as silt loam.
Geologic Data: (EDR Geocheck-Physical Setting Source Addendum)	The geologic formation in the vicinity of the Subject Property is described as Plutonic and Intrusive rocks of the Mesozoic, Cretaceous, and Cretaceous granitic rock series.
Prior Env. Reports: (Section 3.2)	None
Additional Sources/ Data:	No additional physical setting sources or data was obtained.
Groundwater Flow Discussion:	Based on a review of the above information as well as observation of the site, the direction of shallow groundwater flow at the site is inferred to be towards the southeast.

Federal, State and Tribal Environmental Record Sources

Standard government records were obtained and reviewed primarily via a third-party regulatory database report, titled EDR Radius Map™ Report, prepared by Environmental Data Resources of Shelton, CT. The report provided government records from the standard environmental resources and within minimum search distances specified by Section 8.2.2-Table 2 of the ASTM E1527-21; and were reviewed for the purpose of identifying potential RECs in connection with the Subject Property. Additional detail of the source and significance of the regulatory databases can be found in the regulatory database report in Appendix E. Hillmann has also included discussion of records pertaining to the Subject Property from other government record sources not specifically listed under Table 2, as applicable.

Reported distances for adjoining property listings, if applicable, are approximate and indicative of the presence of a public roadway or right-of-way between the adjoining site and Property.

The reported gradients have been estimated based on a number of factors including but not necessarily limited to field observation, review of topographic maps, database listing details and/or site specific geo-technical data.

Limited analysis of the details of on-site, adjoining and vicinity database sites was conducted to identify potential sources of sub-surface vapor encroachment. This review was based on elements of the ASTM "Standard Guide for Vapor Encroachment Screening on Property Involved in Real Estate Transactions" (ASTM E 2600-15); and also on elements of "Methodology for Identifying the Area of Concern Around a Property Potentially Impacted by Vapor Migration from Nearby

Contaminated Sources" (Buonicore, 2011-S-103-AWMA). Vicinity database sites pertaining to non-petroleum product releases within 1,760 feet of the Subject Property in the up-gradient direction, 365 feet of the Subject Property in the cross gradient direction and 100 feet of the Subject Property in the down gradient direction; and vicinity database sites pertaining to petroleum product releases within 528 feet of the Subject Property in the up-gradient direction, 165 feet of the Subject Property in the cross gradient direction and 100 feet of the Subject Property in the down gradient direction were reviewed to identify active contamination sites with the potential to affect subsurface vapor conditions at the Subject Property. The potential for vapor encroachment was considered in assessing whether or not a REC exists in connection with the Subject Property when reviewing applicable sites within those distances.

Regulatory database sites with active petroleum or non-petroleum releases that are considered to constitute a vapor encroachment condition (VEC) to the Subject Property, if any, are identified and discussed in this section.

The EDR Radius Map report is attached in Appendix E.

Property Listings

The following listings of the Subject Property were identified:

Name/Address:	New Elementary School No.6 / La Ventana Road & Newport Road
Database(s):	ENVIROSTOR, SCH, CERS
Data Discussion:	The site addressed as the New Elementary School No.6 is listed as a SCH property on the regulatory database. The listing indicated that a portion of the Subject Property was investigated as part of a DTSC Site Cleanup Program. A Preliminary Environmental Assessment (PEA) was performed on the site June 8, 2008. As a part of the report, field sampling operations were performed on April 4, 2008. Operations included the soil sampling of twenty-two (22) sample locations from approximately 6 inches bgs and from a depth of 2.5-3.0 feet, resulting in forty-four (44) samples. A total of six (6) composite surface soil samples (plus one composite duplicate) were analyzed for organochlorine pesticides by EPA Method 8081A. Six (6) discrete soil samples (plus one discrete duplicate) were analyzed for arsenic by EPA Method 6010B. Analyzed results reported showed organochlorine pesticides (4,4'-DDE and 4,4'-DDT) were detected at low concentrations, and arsenic was not detected above the laboratory limits. Based on these results the DTSC assigned the property a "No Further Action" status in September 2008.
REC Discussion:	Based on the details provided above, a REC is not suspected in connection with the Property.
VEC Discussion:	Based on the available data, a VEC is not suspected.

Name/Address:	Salt Creek Regional Sewer / Olive Avenue &Adams Street
Database(s):	CIWQS
Data Discussion:	The site addressed as Salt Creek Regional Sewer is listed as an CIWQS property on the regulatory database. The listing indicated that the property maintained a NPDES Permit with the NPDES number: CAS000002 for the construction of a stormwater line. The report was issued on January 14, 2015 and terminated on October 8, 2015 under the oversight of the Eastern Municipal Water District. No violations or enforcement actions are reported for this listing.
REC Discussion:	Based on the details provided above, a REC is not suspected in connection with the Property.
VEC Discussion:	Based on the available data, a VEC is not suspected.

Adjoining Property Listings

The following adjoining property listings were identified.

Name/Address:	None				
Database(s):					
Distance in feet:		**Direction:**		**Gradient:**	
Data Discussion:					
REC Discussion:					
VEC Discussion:					

Surrounding Area Findings

The following is a discussion of non-adjoining sites identified as located within the ASTM specified search distance surrounding the Subject Property. In order to keep this discussion informative and concise, discussion(s) is/are provided of the listed site(s) for each database category that appears most likely to impact the Subject Property based on distance, area topography and/or regulatory status. Listings of sites within the applicable search distances not specifically discussed below were reviewed and concluded not to be RECs in connection with the Subject Property or VECs based on various factors including distance, area topography, known or inferred groundwater flow direction and/or regulatory status.

Federal NPL				**# of sites:**	0	**Search Distance:**	1-mile
Notable Listing:	None						
Distance in feet:		**Direction:**		**Gradient:**			
Data Discussion:							
REC Discussion:							
VEC Discussion:							

Federal Delisted NPL				**# of sites:**	0	**Search Distance:**	1-mile
Notable Listing:	None						
Distance in feet:		**Direction:**		**Gradient:**			
Data Discussion:							
REC Discussion:							
VEC Discussion:							

Federal SEMS				**# of sites:**	0	**Search Distance:**	½-mile
Notable Listing:	None						
Distance in feet:		**Direction:**		**Gradient:**			
Data Discussion:							
REC Discussion:							
VEC Discussion:							

Federal SEMS-ARCHIVE				**# of sites:**	0	**Search Distance:**	½-mile
Notable Listing:	None						
Distance in feet:		**Direction:**		**Gradient:**			
Data Discussion:							

REC Discussion:	
VEC Discussion:	

Federal CORRACTS				**# of sites:**	0	**Search Distance:**	1-mile
Notable Listing:	None						
Distance in feet:		**Direction:**		**Gradient:**			
Data Discussion:							
REC Discussion:							
VEC Discussion:							

Federal RCRA-TSD				**# of sites:**	0	**Search Distance:**	½-mile
Notable Listing:	None						
Distance in feet:		**Direction:**		**Gradient:**			
Data Discussion:							
REC Discussion:							
VEC Discussion:							

State/Tribal SUPERFUND & HAZARDOUS WASTE				**# of sites:**	0	**Search Distance:**	1-mile
Notable Listing:	Middle School No.8 / Olive Avenue & Longfellow Street						
Distance in feet:	3,987 feet	**Direction:**	E	**Gradient:**	Down/Cross		
Data Discussion:	The SCH listing correlates with the "School Investigation" and is on the "DTSC-State Cleanup Program" with the date as of 03/30/2006, with no further action required status.						
REC Discussion:	Based on the details provided above, a REC is not suspected in connection with the Property.						
VEC Discussion:	Based on the available data, a VEC is not suspected.						

State/Tribal LANDFILL/SOLID WASTE DISPOSAL				**# of sites:**	0	**Search Distance:**	½-mile
Notable Listing:	None						
Distance in feet:		**Direction:**		**Gradient:**			
Data Discussion:							
REC Discussion:							
VEC Discussion:							

State/Tribal LEAKING STORAGE TANKS				**# of sites:**	0	**Search Distance:**	½-mile
Notable Listing:	None						
Distance in feet:		**Direction:**		**Gradient:**			
Data Discussion:							
REC Discussion:							
VEC Discussion:							

State/Tribal VOLUNTARY CLEANUP SITES				**# of sites:**	0	**Search Distance:**	½-mile
Notable Listing:	None						
Distance in feet:		**Direction:**		**Gradient:**			
Data Discussion:							
REC Discussion:							

VEC Discussion:	

State/Tribal BROWNFIELD SITES				**# of sites:**	0	**Search Distance:**	½-mile
Notable Listing:	None						
Distance in feet:		**Direction:**		**Gradient:**			
Data Discussion:							
REC Discussion:							
VEC Discussion:							

UNMAPPED/ORPHAN LIST SITES	
	Hillmann has also reviewed a list of unmapped sites (a.k.a. "Orphan List" sites) indicated by the database report. Unmapped sites that were identified as falling within an applicable specific search distance or warranting discussion have either been discussed in the preceding tables or are detailed below:
Notable Listings:	None

Additional Environmental Record Sources

Requests have been submitted to local, municipal and state agencies for pertinent records pertaining to the Subject Property, particularly with regard to potential environmental concerns such as petroleum storage tanks, storage and usage of hazardous substances and petroleum products, and/or known or suspected environmental contamination. Where applicable, internet research of government environmental regulatory databases was also conducted, as well as a general cursory internet search of the Subject Property address, for information indicative of a REC. The following table summarizes the findings of the research:

Source	Type of Request	Outcome
CA DTSC	FOI request	A response was received stating that no records were found.
CA GeoTracker database (geotracker.waterboards.ca.gov/)	Online search	Hillmann searched online for records pertaining to the Property. No records pertaining to the property were found.
www.realquest.com	Online search	Hillmann searched online for records pertaining to the Property. No records pertaining to the property were found.
Riverside County Department of Environmental Health	FOI request	No response was received prior to report issuance.
Riverside County Fire Department	FOI request	No response was received prior to report issuance.
CA SWRCB	FOI request	No response was received prior to report issuance.

Pertinent records referenced in the above table have been included in Appendix F.

4.2 Historical Research

Historical records have been compiled and analyzed for historical property information and developing a history of previous uses of the Subject Property, adjoining properties and surrounding area. These records were reviewed for the purpose of identifying the likelihood of past uses having led to RECs in connection with the Subject Property.

The historical record sources listed below have been sought with the objective to document past uses of the Subject Property from the present back to the Subject Property's first developed use, or back to 1940, whichever is earlier. The term "developed use" includes agricultural use, placement of fill dirt and other uses that do not involve structures. Hillmann has sought to review historical records in minimum intervals of five years.

Fire Insurance Maps

A Certified Sanborn Map Report was obtained from EDR for a review of published historic fire insurance maps for the Subject Property and surrounding area. The following is a summary of site uses and notable details depicted by the available maps:

Year(s)	Prop/Adj	Depicted Use(s)	Notable Details
None	**Property:**	None	None
	Adjoining:	None	None

A copy of the Certified Sanborn Map Report is attached in Appendix D.

City Directories

An EDR City Directory Abstract report was reviewed for data of former occupants of the Subject Property's Street address. The following is a generalized summary of the findings of city directory research for past occupants of the Subject Property.

Property	
Use(s) / Occupant(s):	**Years**
None identified	

The EDR City Directory Abstract report was also reviewed for listings of historic occupants of the adjoining properties. The following is a general summary of listings of historic adjoining property occupants:

Adjoining Properties	
Use and/or Occupant(s)	**Years**
Residential	2010-2017

A copy of the EDR City Directory report is attached in Appendix D.

Historical Topographic Maps

Historical topographic maps of the Property and vicinity obtained from an EDR Historical Topographic Map report (as attached in Appendix D) have been reviewed. The following interpretation of land usage was made by review of the maps:

Year(s)	Summary	
1901	**Property:**	Depicted as vacant/undeveloped land with improved roads bisecting portions of the property. A portion of the San Jacinto River is depicted travelling through the southwestern corner of the Subject Property.
	Adjoining:	Depicted as vacant/undeveloped land. There is a structure depicted to the west of the Subject Property.
1942, 1943, 1947	**Property:**	Depicted as vacant/undeveloped land with an unimproved road bisecting the property. A narrow wash is depicted traveling from the northern boundary of the Subject Property and splitting near the center of the property.
	Adjoining:	Depicted as vacant/undeveloped land. West of the Subject Property there is a parcel of land with an orchard depicted.
1953	**Property:**	Depicted as vacant/undeveloped land with an unimproved road bisecting the property. A southeastern portion of the Subject Property is depicted with orchard land.
	Adjoining:	Depicted as vacant/undeveloped land. Portions of land to the west and south of the Subject Property are depicted with orchard land.
1973, 1979	**Property:**	Depicted as vacant/undeveloped land with two unimproved roads bisecting the property. A southeastern portion of the Subject Property is depicted with orchard land. A structure is depicted near the northwestern corner of the Subject Property.
	Adjoining:	Depicted as vacant/undeveloped land. Portions of land to the west and south of the Subject Property are depicted with orchards
2012, 2015, 2018	**Property:**	No improvements or other depictions are shown. However, a narrow wash is depicted travelling through the center portion of the property.
	Adjoining:	No improvements or other depictions are shown.

If obtained, copies of historical topographic maps have been included in Appendix D.

Historical Aerial Photographs

Historical aerial photographs of the Property and vicinity obtained from an EDR Aerial Photo Decade Package report, as attached in Appendix D, were reviewed. The following interpretation of land usage was made by review of the aerial photographs:

Year(s)	Summary of Interpretation	
1938	**Property:**	Appears to be undeveloped land; a portion of the property is not visible on this aerial photo.
	Adjoining:	Appears to be undeveloped land.
1949	**Property:**	Appears to be undeveloped land.
	Adjoining:	Appears to be undeveloped land.
1953	**Property:**	Appears to be used for agricultural farming, specifically dry-land farming operations.
	Adjoining:	Parcels of land adjoining the Subject Property appear to be used for agricultural operations or appear to be undeveloped land.
1961	**Property:**	Appears to be used for agricultural farming, specifically dry-land farming operations. A portion of property to the northeast appears to be utilized for orchard operations

	Adjoining:	Parcels of land adjoining the Subject Property appear to be used for agricultural operations or appear to be undeveloped land.
1967, 1978, 1985, 1989, 1996, 2002	**Property:**	Appears to be used for agricultural farming, specifically dry-land farming operations.
	Adjoining:	Parcels of land adjoining the Subject Property appear to be used for agricultural operations or appear to be undeveloped land.
2006, 2009, 2012, 2016	**Property:**	Appears to be used for agricultural farming, specifically dry-land farming operations. There appears to be two areas within the Subject Property that have unimproved roads and appears to be under development.
	Adjoining:	Parcel of land to the west and northwest of the Subject Property have been developed into a large residential development. Other parcels adjoining the Subject Property appear to be undeveloped or agricultural land.

If obtained, copies of historical aerial photographs have been included in Appendix D.

EDR High-Risk Historical Records

The EDR Radius Map™ report, which is discussed in greater detail in Section 4.1 and attached in Appendix E, provided a search of proprietary databases of potential historical high-risk uses at or in the vicinity of the Subject Property. These databases include EDR Historic Cleaners – a database of property addresses with records of historical occupancy by suspected cleaners businesses; EDR Historic Auto – a database of property addresses with records of historical occupancy by potential automotive gas/filling stations and repair facilities; and EDR MGP- a database of sites historically occupied by manufactured gas plants and related facilities.

EDR Database	On-site Listings:	Adjoining/Off-Site Listings
Historic Cleaners: (on-site/adjoining only)	None	None
Historic Auto: (on-site/adjoining only)	None	None
MGP: (1-mile distance)	None	None

Petroleum/Natural Gas Well Review

The historical record sources and the California Geologic Energy Management Division (CalGEM) online mapping application were reviewed for records of historic petroleum and/or natural gas wells at the Subject Property. No record of any historical petroleum/natural gas wells at or adjoining the Property was identified.

Additional Historical Data

Where applicable, the following additional pertinent historical data was obtained:

Interviews/Anecdotal:	No additional pertinent historical data was obtained.
Local Gov't Records:	No additional pertinent historical data was obtained.
Prior Env. Reports: (Section 3.2)	Prior environmental reports reviewed as part of this assessment, as detailed in Section 3.1, did not provide additional pertinent detail of historical site usage.

Site Observations:	As further detailed in Section 5.2.1, indications of the following historic uses of the Property and/or adjoining properties were observed during the site reconnaissance:
Other Sources:	No additional pertinent historical data was obtained.

Summary of Identified Historic Uses

The following table presents a summary of the types and approximate date ranges of identified prior uses of the Subject Property:

Property	
Date Range	**Use**
Unk to 1949	Undeveloped / vacant land
1949 - 2016	Agricultural farmland

The following table presents a summary of the types of identified prior uses of the adjoining properties:

Adjoining Properties	
Date Range	**Use**
Unk to 1949	Undeveloped /vacant land
1953 - 2002	Undeveloped land / agricultural farmland
2006 - 2016	Residential and agricultural / undeveloped land

Historical Records Data Failure

The ASTM E1527-21 standard defines data failure as failure to achieve the historical research objective even after reviewing the standard historical sources that are reasonably ascertainable and likely to be useful. The objective is to identify all obvious uses of the property from the present, back to the property's first developed use, or back to 1940, whichever is earlier. Furthermore, records of historic use/conditions were sought in intervals no less than approximately five years, unless the property conditions appear unchanged over a longer interval. In encountered, data failure and its significance as a data gap is discussed below:

Objective	Met?	Detail	Significant?
First developed use/date determined?	Yes	The earliest documented use of the Property was agricultural land.	Yes
Record sources at 5-year intervals back to 1940 or first developed use?	No	Historical record gaps exceeding five years were encountered. However, significant site-use changes or undiscovered site uses appear unlikely to have occurred during the record gaps.	No
All obvious prior uses identified?	Yes	See Summary of Identified Past Uses of this section.	Yes

Please refer to Section 2.3 for additional discussion of data gaps and their significance to the findings of the assessment.

Historic Uses REC Discussion

The review of historical records indicated evidence of the following potential RECs in connection with the Property:

The Subject Property has been utilized for agricultural operations from approximately 1953 until 2022, with remnant crops currently on the Subject Property. Hillmann collected one-hundred sixty (160) individual samples, which were then composited into forty (40) composite samples, and analyzed for OCPs and Title 22 Metals. Results of the OCP analysis indicated that OCP analytes were not detected at levels above the laboratory reporting limits (RLs), and all RLs were significantly below EPA Regional Screening Levels (RSLs) for residential applications. For residential applications, results of Title 22 Metals analysis indicated low background levels of metals that did not exceed acceptable screening levels for residential applications.

Based on these non-detected levels of pesticides obtained within the area of concern at the site, and the low-level detections of heavy metals consist with background levels at the Subject Property. Hillmann recommends no further investigations at this time.

5.0 INTERVIEWS

5.1 Interviews with Owners, Operators and Occupants

Current Owner

Property Owner	Contact Name	Affiliation	Interview Type
Salt Creek I, Salt Creek II, Rancho De Cazadores			Email/questionnaire
Interview Date:			
Interview Outcome/Findings:			
An environmental questionnaire for information pertinent to the assessment was forwarded to property ownership. However, a completed questionnaire was never received.			

Key Site Manager/Operator

Name	Company/Title	Yrs @ Site	Interview Type
None			
Interview Date:			
Interview Outcome/Findings:			

Occupant(s)

Name	Company/Title	Yrs @ Site	Interview Type
None			
Interview Date:			
Interview Outcome/Findings:			

Prior Owners/Operators/Occupants

Name	Company/Title	Yrs @ Site	Interview Type
None			
Interview Date:			
Interview Outcome/Findings:			

No prior owners, operators or occupants were interviewed.

Neighboring Property Owner/Occupants

Name	Company/Title	Yrs at site	Interview Type
Interview Date:			
Interview Outcome/Findings:			
The Property was not an abandoned property with evidence of unauthorized uses or uncontrolled access; therefore, interviews with adjoining or nearby property owners or occupants were not conducted.			

5.2 Interviews with State and/or Local Government Officials

State and/or local governmental officials have been interviewed to obtain information of potential RECs in connection with the Subject Property. Many government agencies and their officials require submittal of written request for records in order to respond. The details in Section 4.1 list the various state and local government agencies contacted as part of this assessment, and the outcome of each inquiry. In addition, the details of regulatory database research in Section 4.1 may have included detail of interviews with officials pertinent to government records review and identification of RECs.

Additional interview of government officials not previously detailed in Sections 4.1 are discussed below, if applicable.

Name	Agency Name/Title	Interview Type
Interview Outcome/Findings:		
No additional local/state government officials were interviewed.		

6.0 SITE RECONNAISSANCE

6.1 Methodology and Limiting Conditions

A site reconnaissance was conducted to collect information and make observations to help identify RECs in connection with the Subject Property. This included visual and/or physical observations of the Subject Property and its structures, adjoining properties as viewed from the Subject Property boundaries and the surrounding area based on visual observations from adjoining public thoroughfares and accessed Subject Property structures. Subject property building exteriors were observed at ground level, unless otherwise indicated. Where applicable, building interiors were accessed and observed to the extent they were made safely accessible with the cooperation of the site escort.

Site Inspection Personnel:	Kofi Bonner & Gabriela Cyrulik
Property Escort/Company:	None
Inspection Date:	May 17, 2022
Weather Conditions:	Sunny, 90 degrees F

Significant Inaccessible Areas

No significant areas of the Property inaccessible at the time of the inspection were noted.

Significant Limiting Site Conditions

No significant limiting site conditions were noted at the time of the site reconnaissance.

6.2 General Site Setting

Site and Vicinity Characteristics

Abutting Roadways:	Simpson Road to the north; La Ventana Road to the east; and Olive Avenue bisects the Property
Current Property Use:	Vacant land / agricultural land; a portion of the Property located in the southern central area is used for apiculture or the maintenance of bee colonies.
Evidence of Past Property Uses:	Rows of crops were observed on the Subject Property
Evidence of Past Adjoining Property Uses:	None observed
Surrounding Area Uses:	Agricultural land, residential

Current Adjoining Property Uses

Dir	Street Address	Description
N	N/A	Vacant land
NW	Maritime Way	Residential homes
E	N/A	Vacant land
SE	30818 Expedition Drive	Winchester Ridge multi-family homes

No visual observations indicative of a potential environmental concern were noted on the adjoining properties.

Topographic Characteristics

Terrain:	Flat to gently sloping
Direction of Downward Slope:	Towards the south-southeast
On-site Water Bodies:	There is a shallow pool of water located on the northern portion of the Subject Property near an outfall storm drain
Other Significant Features:	None observed

General Description of Structures and Improvements

Buildings:	None
Approx. Building Size:	N/A
Approx. Year Built:	N/A
Number of Stories:	N/A
Basement/Subgrade Levels:	N/A
Exterior Ground Cover:	Soil
Ancillary Structures:	None
Sources of Heating & Cooling:	N/A
Potable Water/Sewage Disposal:	No potable water or sewer services were present at the Subject Property.

6.3 Site Features and Conditions

Storage/Usage of Hazardous Substances and Petroleum Products

The following approximate number of containers, and general description of their contents, capacity, container types and storage conditions, were observed to be stored and/or used at the Subject Property:

Occupant	Substance	Qty/Container Type	Storage Conditions
None			

Bulk Petroleum/Hazardous Material Storage Tanks

The following storage tanks for bulk petroleum or hazardous material storage were identified or reported to be present; or are suspected to be present based on visual observations:

AST/ UST	Product	Capacity	Construction	Year Installed	Status	Location/Notes
(none)						

Strong, Pungent or Noxious Odors and their Sources

No strong, pungent or noxious odors were noted at the Subject Property.

Standing Surface Water/Pools & Sumps

No standing water, pools or sumps containing liquids likely to be hazardous substances or petroleum products were noted.

Drums, Totes and Intermediate Bulk Containers

No hazardous substance or petroleum product drums were noted.

Unidentified Substance Containers

No unidentified substance containers suspected of containing hazardous substance or petroleum product were noted.

PCBs in Oil Filled Electrical/Hydraulic Equipment

No oil-filled electrical or hydraulic equipment was identified at the Subject Property.

Stains or Corrosion on Floors, Walls or Ceilings

No building structures were present at the Property.

Drains and Sumps

No building structures were present at the Property.

Pits/Ponds/Lagoons

No pits, ponds or lagoons were identified in connection with waste treatment or disposal.

Stained Soil, Pavement/Stressed Vegetation

No stained soil, pavement or stressed vegetation was observed.

On-Site Solid Waste Disposal/Fill Material

The following evidence of on-site disposal of trash, construction debris, demolition debris or other solid waste was observed:

During site reconnaissance, Hillman noted areas where consumer debris was disposed of on the Subject Property.

Waste Water

No sanitary sewer discharges were identified at the Subject Property.

The following additional waste water discharge(s) were identified at the Subject Property:

During site reconnaissance, Hillman noted that the Subject Property has a recycled water purple pipeline used to irrigate the Property.

Septic Systems/Cesspools

No septic systems or cesspools were identified at the Subject Property.

Wells

No wells (including any dry wells, irrigation wells, injection wells, abandoned wells, or other wells) were identified at the Subject Property.

Railroad Spurs

No railroad spurs were identified on the Subject Property.

7.0 BUSINESS ENVIRONMENTAL RISKS

In accordance with the contract agreement for this assessment, Hillmann has performed cursory reviews of several potential Business Environmental Risks (also known as "Non-Scope Considerations"). The ASTM E1527-21 standard defines the term business environmental risk (BER) as, *"a risk which can have a material environmental or environmentally-driven impact on the business associated with the current or planned use of a parcel of commercial real estate, not necessarily limited to those environmental issues required to be investigated in this practice."*

7.1 Asbestos-Containing Material (ACM)

The contracted scope of work included a cursory visual screening of the accessed portions of buildings at the Subject Property built prior to 1990 for suspect asbestos containing materials (ACM). The information provided in this section, where applicable, is limited to identification of potential suspect materials in the readily accessible and observed areas of the building, and their general condition. This is not intended to be a comprehensive survey for the presence of ACM, and no testing has been conducted.

No buildings were present at the Property.

7.2 Lead-Based Paint

The contracted scope of work included a cursory visual screening of the condition of painted surfaces in the accessed areas of residential buildings/units built prior to 1980. This is not intended to constitute a comprehensive survey for LBP or potential lead hazards, and no testing has been conducted.

No residential buildings were present at the Property.

7.3 Radon

Data compiled by the USEPA, as summarized by the regulatory database report, indicated that the Subject Property is located in an area classified as Zone 2 or 'moderate risk' area for radon. Radon testing was not included in the scope of this assessment.

7.4 Mold/Microbial Damage

The contracted scope of work included a cursory visual screening of the accessed areas of the building for evidence of significant damage to building materials and finishes as result of moisture intrusion and/or mold/microbial growth. Given the absence of building structures at the Property, mold/microbial growth is not considered to be a significant environmental concern.

7.5 NWI Mapped Wetlands

The National Wetlands Inventory online Wetland Mapper (https://www.fws.gov/wetlands/data/mapper.html) was reviewed for indications of jurisdictional wetlands at or immediately

adjoining the Subject Property. The scope of work for this assessment excluded a visual determination of regulated wetlands at the Subject Property. It is emphasized that, regardless of the data reviewed via the NWI Wetlands Mapper, a field delineation of regulated wetlands by a qualified professional would be warranted to determine the presence or absence of regulated wetlands at the Subject Property.

The review did not indicate regulated wetland areas on the Property.

7.6 Lead in Drinking Water

The scope of work for this assessment included a review of the potential for elevated levels of lead in drinking water by determining the source of the drinking water supply and a review of available compliance or testing data.

No potable water service was identified at the Property.

8.0 REFERENCES

ASTM E1527-21-Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process; ASTM International, 2021

ASTM E12600-15-Standard Guide for Vapor Encroachment Screening on Property Involved in Real Estate Transaction, ASTM International, 2015

EDR Radius Map Report, and historical record reports discussed in Section 4, Environmental Data Resources

Methodology for Identifying the Area of Concern Around a Property Potentially Impacted by Vapor Migration from Nearby Contaminated Sources; A. Buonicore, 2011

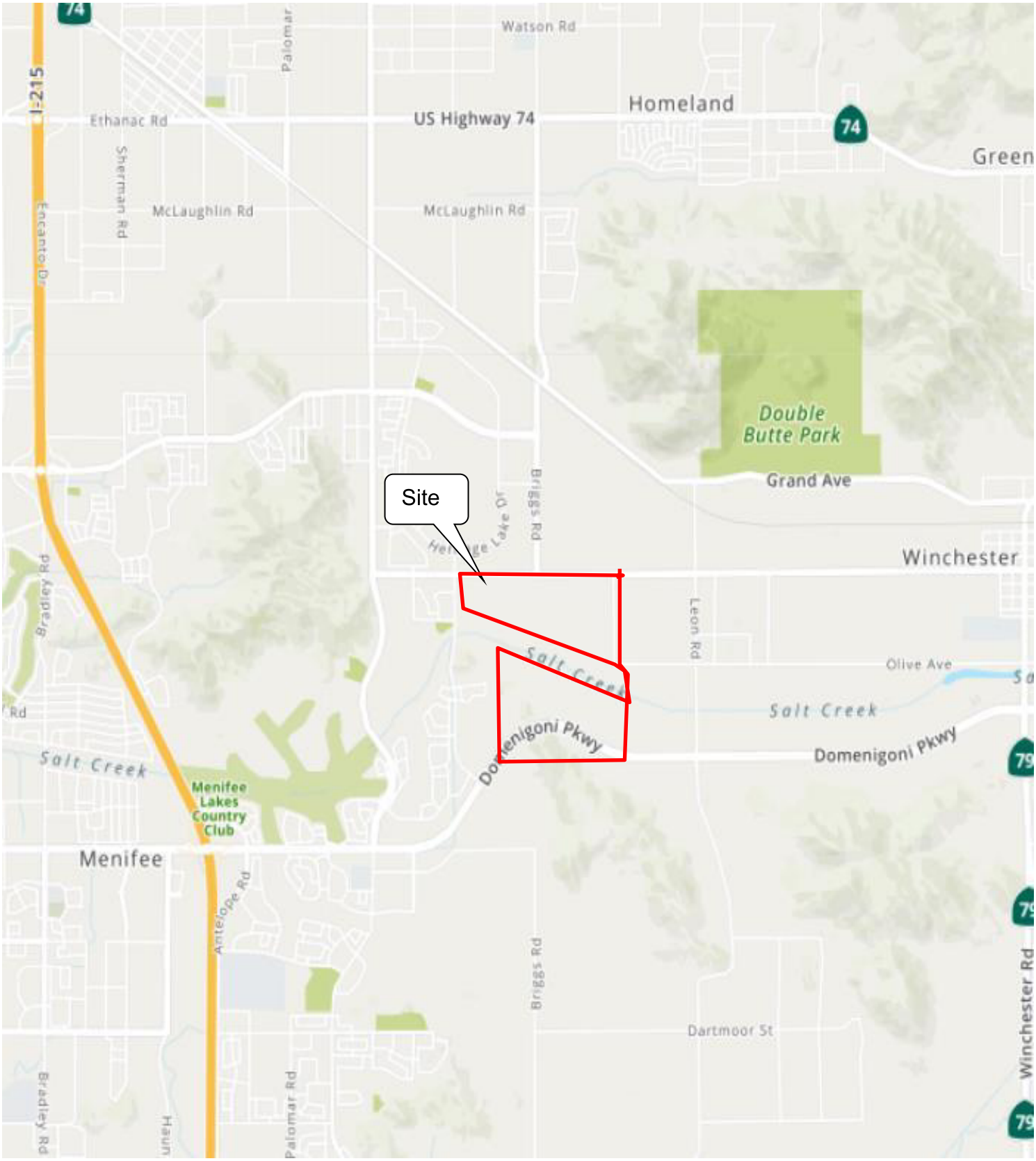
Preliminary Environmental Assessment Report, Proposed Elementary School No.6, Northwest corner of Winchester Hills Drive and La Ventana Road Winchester, California 92596; The Planning Center, June 2, 2008

9.0 APPENDICES

Appendix A	Site Diagram / Vicinity Map
Appendix B	Site Photographs
Appendix C	Questionnaires / User Provided Information
Appendix D	Historical Records Documentation
Appendix E	Regulatory Records Documentation
Appendix F	Other Documents / Lab Results
Appendix G	Project Personnel Qualifications

APPENDIX A

MAPS / DIAGRAMS



HILLMANN CONSULTING

Figure 1: Site Vicinity Map

Salt Creek
Menifee, California

N

SCALE: (NOT TO SCALE)

PROJECT No.: C3-9046

HILLMANN CONSULTING

Figure 2: Site Diagram

Salt Creek
Menifee, California 92545

N

SCALE: (NOT TO SCALE)

PROJECT No.: C3-9046

APPENDIX B

SITE PHOTOGRAPHS

SITE PHOTOGRAPHS

View south from northern boundary of Subject Property

View south from central parcel of land on Subject Property

View east from western parcel of land on Subject Property

View west from eastern parcel of land on Subject Property

View south from southern parcel of land on Subject Property

View north from western parcel of land on Subject Property

PHASE I ESA - SITE PHOTOGRAPHS

Salt Creek,
Menifee, California

Project No.:	C3-9046

HILLMANN
CONSULTING

SITE PHOTOGRAPHS

View of construction materials near the southeastern portion of the Subject Property

View of ponded water near the northern boundary of the Subject Property

View of bee boxes used for apiculture on the Subject Property

View of purple water pipeline for irrigation used on Subject Property

View of consumer debris dumped on Subject Property

View of conduit to the subsurface observed on the Subject Property

PHASE I ESA - SITE PHOTOGRAPHS

Salt Creek,
Menifee, California

Project No.:	C3-9046

HILLMANN
CONSULTING

APPENDIX C

QUESTIONNAIRES/USER PROVIDED DOCUMENTATION

PRELIMINARY ENVIRONMENTAL ASSESSMENT REPORT FOR:

HEMET UNIFIED SCHOOL DISTRICT PROPOSED ELEMENTARY SCHOOL NO. 6 SITE

prepared for:

HEMET UNIFIED SCHOOL DISTRICT

1791 W. Acacia Avenue
Hemet, CA 92545
Phone: 9517655100

Contact
Ms Tina Koonce

prepared by:

THE PLANNING CENTER

2131 S. Grove Avenue, Suite A
Ontario, CA 91761
Phone: 909930 1380
Fax: 9099301365

Contact
Denise Clendening, Ph.D., REAli
Director of Site Assessment Services

HEM-f8.0E

JUNE2,2008

June 2,2008
File No HEM-1aOE

Hemet Unified School District
1791 W. Acacia *Avenue*
Hemet, California 92545

Attention: Ms Tina Koonce

Subject: Preliminary Environmental Assessment Report
Proposed Elementary School No, 6
Northwest corner of Winchester Hills *Drive* and La Ventana Road
Winchester, California

Dear Ms Koonce:

Enclosed please find the Preliminary *Environmental* Assessment (PEA) Report for the proposed Elementary School No, 6, The approximately 12-acre project site is located within the community of Winchester, Riverside County, California, The Planning Center is submitting this Draft PEA Report to Hemet Unified School District and the Department of Toxic Substances Control as part of the ongoing assessment of the proposed school site

Sincerely yours,
THE PLANNING CENTER

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Enclosures

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Executive Summary

This Preliminary Environmental Assessment (PEA) Report for the Proposed Elementary School No 6 (site), was prepared by The Planning Center on behalf of Hemet Unified School District (District) pursuant to the California Education Code which requires that all new school sites obtain a "No Further Action" (NFA) determination from the California Environmental Protection Agency Department of Toxic Substances Control (DTSC) prior to proceeding with acquisition and/or construction of a school.

The approximately 12-acre project site is located within the community of Winchester, Riverside County, California The site is in the process of being acquired by the District The site consists of agricultural land that has a history of being used for grass crops. The project site is iocated on the northwest corner of the future Winchester Hills Drive and La Ventana Road (Figure 1). The site is surrounded by grass crops to the south and west Residential lots under construction exist to the east Salt Creek Channel is located to the north. The site is generally located north of Domenigoni Parkway and west of Leon Road No address is known to be associated with the subject site The subject site is within the boundaries of Assessor's Parcel Number (APN) 461-160-030

The overall objectives of this PEA are to:

- Evaluate historical information for indications of the past use, storage, disposal, or release of hazardous wastes/substances at the site;
- Establish through a field sampling and analysis program the nature of hazardous wastes/substances that may be present in soil at the site, their concentration and general extent; and
- Estimate the potential threat to public health and/or the environment posed by hazardous constituents at the site using a residential land-use scenario

Based on information developed during the PEA using the DTSC's PEA Guidance Manual (DTSC 1999), the DTSC will then make an informed decision regarding potential risks posed by the site

The scope of investigation comprised a review of readily available agency files and aerial photograph review of the site area A review of various information sources indicates that the site itself has no history of any activity that would adversely impact the environment However, there were some potential environmental issues evaluated in this PEA. The PEA was conducted to assess the possibility of residual pesticides present in the soil due to aqricultural use of the site since approximately 1953 The site appears to have been utilized for grass crops

The field sampling program implemented and the results are summarized below:

- Forty-four (44) soil samples (plus 6 duplicates) were collected from 22 locations at two depths, across the 12-acre site to address the historical agriculture use on the site Soil sampling was conducted in general accordance with the guidelines provided by the DTSC in *Interim Guidance for Sampling Agricultural Properties (Third Revision)* (DTSC 2008);
- A total of six (6) composite samples (plus one composite duplicate) were analyzed for organochlorine pesticides by EPA Method 8081A;
- Six (6) discrete surface samples (plus one duplicate) were analyzed for arsenic by EPA Method 6010B;
- Two organochlorine pesticides (4,4'-DDE and 4,4'-DDT) were detected at low concentrations above the laboratory detection limits but below California Human Health Screening Levels (CHHSLs);
- Arsenic was not detected above the laboratory detection limits
- The preliminary human health risk screening indicates that chemical concentrations do not present a significant concern for the site

- Laboratory data obtained were validated to assure that Data Ouality Objectives (DOOs) were met and the data were suitable for use in a human heaith and ecological screening evaluation

The results of the PEA support the following conclusions and recommendations:

Based on the PEA objectives, the environmental quality goals of the District, and the results of the PEA investigation, The Planning Center recommends a NFA determination for this site Per California Education Code Section 17213 1, Section 3, The Planning Center concludes that further investigation of the site is not necessary

1. Introduetion

This document presents a Preliminary Environmental Assessment (PEA) Report for the Proposed Eiementary School No.6 (site) The approximately 12-acre project site is located within the community of Winchester, Riverside County, California The project site is located on the northwest corner of the future Winchester Hills Drive and La Ventana Road (Figure 1). The site is generally located north of Domenigoni Parkway and west of Leon Road No address is known to be associated with the subject site. The subject site is within the boundaries of Assessor's Parcel Number (APN) 461-160-030.

This PEA was prepared in accordance with the guidelines of the California Environmental Protection Agency Department of Toxic Substances Control (DTSC), as detailed in the PEA Guidance Manual (DTSC 1999). A PEA Technical Memorandum (Tech Memo) dated March 5, 2008 for the school site was implemented with DTSC approval on April 4, 2008.

The PEA was conducted to assess the possibility of residual pesticides present in the soil due to agricultural use of the land since at least 1953. Soil sampling was conducted on the approximately 12-acre area in general accordance with the guidelines provided by the DTSC in *I Interim Guidance for Sampling Agricultural Properties (Third Revision)* (DTSC 2008) and in the PEA Guidance Manual (DTSC 1999)

1.1 PEA OBJECTIVES

The District has prepared this PEA pursuant to the California Education Code that now requires the completion of a Phase I Environmental Site Assessment (Phase I) or PEA, with DTSC oversight, for all new school sites that will receive state funding prior to proceeding with construction of a school

The overall objectives of this PEA are to:

- Evaluate historical information for indications of the past use, storage, disposal, or release of hazardous waste/substances at the site;
- Establish through a field sampling and anaiysis program the nature of hazardous wastes/substances that may be present in soil at the site, their concentration and general ex1ent; and
- Estimate the potential threat to public health and/or the environment posed by hazardous constituents, if any, at the site using a residential land-use scenario

Based on information developed during the PEA and the conservative human and ecological risk evaluation set forth in the DTSC's Preliminary Endangerment Assessment Guidance Manual (DTSC 1999), the DTSC will then make an informed decision regarding potential risks posed by the site

Possible outcomes of the PEA decision include, but are not limited to, the requirement for further investigation through the Remedial Investigation/Feasibility Study process if the site is found to be significantly impacted by hazardous substances release(s); the need to perform a Removal Action if localized impacts by hazardous substances release(s) are found; implementation of mitigation actions to address any potential risks; and an issuance of a "No Further Action" (NFA) finding if the site is found not to be significantly impacted and risks to human heaith and the environment are found to be within acceptable levels based on the conservative screening-level risk assessment

1.2 SCOPE OF WORK

The scope of work implemented to prepare this PEA included:

- Discussions with DTSC representatives;
- Researching available site background information regarding former and current land use;
- Implementing field and laboratory data collection and evaluation to further assess environmental conditions at the site; and

- Preparing this PEA report

Several information sources were reviewed as part of the background research for development of this PEA report. These sources were reviewed to develop an understanding of current and past land uses and practices that may have involved the handling, use, storage, and/or disposal of hazardous substances or wastes. Information was obtained and used to develop a general site history in an attempt to identify potential sources of chemical impact, if any.

The approach utilized to perform the background research is very similar to that used in completing a Phase I under the American Society for Testing and Materials (ASTM) Practice for Environmental Site Assessments (ESAs): Phase I Assessments Process (ASTM Standard E 1527-05) Specific sources of information reviewed and activities performed by The Planning Center in conducting the background research included:

- Site inspections and observations of the site and surrounding area within ¼-mile (site photographs are included in Appendix A);
- Review of available aerial photographs (included in Appendix B);
- Review of current U.S Geological Survey (USGS) 75-minute topographic map (USGS 1979) (included in Appendix B);
- Evaluation of environmental database list searches (included in Appendix C);
- Review of agency files at federal, state and local regulatory agencies and offices for the site;
- Review of agency files for listed facilities within ¼-mile of the site that were identified as having a potential to have impacted the site (included in Appendix C);
- Interviews with persons knowledgeable of site history and operations; and
- Collection and review of available applicable information from the District's files.

A sampling and analyses program was conducted to evaluate the potential presence of chemical constituents in shallow soil beneath the site The sampling program was conducted on April 4, 2008 The scope for the field and laboratory investigation is discussed in Section 6. The field-sampling program and the results are summarized below:

- Forty-four (44) soil samples (plus 6 duplicates) were collected from 22 locations at two depths, across the tz-aore site to address the historical agriculture use on the site. Soil sampling was conducted in general accordance with the guidelines provided by the DTSC in *Interim Guidance for Sampling Agricultural Fields for School Sites (Second Revision)* (DTSC 2002) and Table 1 of the *Draft Guidance for Sampling Agricultural Fields* dated May 24, 2007;
- A total of six (6) composite samples (plus one composite duplicate) were analyzed for organochlorine pesticides by EPA Method 8081A;
- Six (6) discrete surface samples (plus one duplicate) were analyzed for arsenic by EPA Method 6010B;
- *Two* organochlorine pesticides (4,4'-DOE and 4,4'-DDT) were detected at low concentrations above the laboratory detection limits but below California Human Health Screening Levels (CHHSLs);
- Arsenic was not detected above the laboratory detection limits.
- The preliminary human health risk screening indicates that chemical concentrations do not present a significant concern for the site

- Laboratory data obtained were validated to assure that Data Quality Objectives (DQOs) were met and the data were suitable for use in a human health and ecological screening evaluation

1.3 PEA REPORT FORMAT

This PEA Report is organized in general accordance with the format presented in Chapter 3 of the DTSC's PEA Guidance Manual This PEA Report contains the following sections:

- Section 1 presents an Introduction and Summary of PEA Objectives and PEA Report Format;
- Section 2 presents a Site Description of the proposed school site;
- Section 3 includes Site History and Background Information;
- Section 4 defines the Apparent Problem;
- Section 5 contains a description of the Site Environmental Setting;
- Section 6 presents a discussion of Sampling Activities and Results;
- Section 7 includes the Human Health Screening Evaluation Statement;
- Section 8 presents the Ecological Screening Evaluation Statement;
- Section 9 includes a summary of Quality Assurance Project Plan (QAPP) measures;
- Section 10 describes Health and Safety Plan (HASP) implementation;
- Section 11 summarizes variances from the proposed sampling plan;
- Section 12 presents a discussion of Applicable or Relevant Laws and Regulation Pertaining to School Sites;
- Section 13 presents Conclusions and Recommendations of the PEA; and
- Section 14 lists References cited in the document

The appendices to this PEA Report include:

Appendix A - Site Photographs;

Appendix B - Historical Research Documentation;

Appendix C - Environmental Database Search Report;

Appendix D - Health and Safety Plan;

Appendix E - Laboratory Reports; and

Appendix F - Quality Assurance Project Plan

1.4 PUBLIC PARTICIPATION

Per Assembly Bill (AB) 972, prior to the commencement of the proposed PEA sampling, the public that was within the line of site was notified of the planned investigation activities. The PEA will be made available for public review and comment when the PEA is submitted to the DTSC for review, An independent public hearing will be conducted for the PEA (Option A under AS 972) that will be advertised in the local newspaper, The District has not received any comments from the public regarding the site

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2. Site Description

This section describes the location and ownership of the site as well as other pertinent details required by DTSC regarding the specifics of the site descriptions.

2.1 SITE NAME

The site has been identified by the District as Proposed Elementary School No 6.

2.2 SITE ADDRESS

The project site is located at the northwest corner of Winchester Hills Drive and La Ventana Road (Figure 1). The site is surrounded by grass crops to the south and west, residential lots under construction to the east, and Salt Creek Channel to the north. The site is generally located north of Domenigoni Parkway and west of Leon Road, within the community of Winchester, Riverside County, California

2.3 DESIGNATED CONTACT PERSON

Ms. Tina Koonce is the contact person designated by the District

2.4 MAILING ADDRESS

The mailing address for the project designated by the District is:

Hemet Unified School District
1791 West Acacia Avenue
Hemet, CA 92545

25 'TELEPHONE NUMBER

The telephone number for Ms. Koonce is (951) 765-5100

2.6 OTHER SITE NAMES

No other names are associated with the site

2.7 U.S. ENVIRONMENTAL. PROTECTION AGENCY (USEPA) IDENTIFICATION NUMBER

Based on a review of the regulatory database search report and contacts with regulatory agencies, discussed further below, the site has not been issued a USEPA Identification Number.

2.8 ENVIROSTOR DATABASE NUMBER

Based on a review of the DTSC website, the site is identified in the EnviroStor database with EnviroStor ID 60000762.

2.9 ASSESSOR'S PARCEL NUMBER(S)

The subject site is within the boundaries of Assessor's Parcel Number (APN) 461-160-030.

2.10 TOWNSHIP, RANGE, SECTION AND MERIDIAN

The United States Geological Survey (USGS) topographic map for the site is the Romoland, California Quadrangle. According to USGS (1979) the site is located in Section 31 of Township 5 South, Range 2 West of the San Bernardino Base Line and Meridian. The USGS topographic map was used as the source for site setting information The site is located in Riverside County at approximately 33 6965 north latitude and 117.1290 west longitude,

2.11 SITE ZONING

According to the County of Riverside's Land Information System website, the site is currently zoned for Rural Residential (R-R).

2.12 SITE MAPS AND PHOTOGRAPHS

Maps depicting the site and surrounding area are included as Figures 1 and 2 Site photographs are included in Appendix A.

3. Site History and Background Information

This section highlights the history and background information related to the site and adjacent parcels

3.1 SITE STATUS/HISTORICAL SITE INFORMATION

Several information sources were reviewed as part of the background research for development of this PEA report. The approach utilized to perform the background research is very similar to that used in completing a Phase I.

3.,1.1 Property Ownership

The site is currently being acquired by the District

3.1,,2 Facility Ownership/Operators

The site has been utilized for agricultural purposes since at least 1953

3"1,,3 Business *Type*

According to historical aerial photographs reviewed, the site has been utilized for agricultural purposes (grass crops) since at least 1953

3.1A Years of *Operation*

According to historical aeriai photographs reviewed, the site has been utilized for agricultural purposes (grass crops) since at least 1953,

3.2 SURROUNDING LAND USES

At the time of the site inspection by Michael Watson of The Planning Center on April 4, 2008, surrounding land was observed to be a mix of agricultural land and residential land under construction In general, prominent adjoining land uses are as follows:

North: Salt Creek Channel is located to the north

East: The area is residential land under construction.

South: The area is agricultural land

West: The area is agricultural land

Section 17213 of the California Education Code and Section 21151.8 of the California Public Resources Code prohibit construction of a school upon a current or former hazardous waste disposal site or solid waste disposal site. Based on site inspections and information reviewed for preparation of this PEA Report, the proposed elementary school is not located on a current or former disposal site

3.3 PAST USAGE OF THE SITE

Past usage of the site was assessed through a review of aerial photographs and past reports Copies of historical references reviewed are included in Appendix B

Based on historical aerial photographs and a site visit, the site has been utilized for agricultural purposes (grass crops) from at least 1953 to the present

3"3,, 1 *Aerial Photographs*

Aerial photographs obtained from GeoSearch dated 1938, 1953, 1967, 1976, 1980, 1989, 1996 and 2005 were reviewed for the site and copies are included in Appendix B. The site appears to have been utilized for grass crops from at least 1938 to the present

- 1938 — The site appears to be vacant land
- 1953 — The subject site appears to be used for agricultural purposes (grass crops).

- 1967 - The subject site appears relatively unchanged in comparison to the 1953 aerial photograph.
- 1976 - The subject site appears relatively unchanged in comparison to the 1967 aerial photograph.
- 1980 - The subject site appears relatively unchanged in comparison to the 1976 aerial photograph.
- 1989 – The subject site appears relatively unchanged in comparison to the 1980 aerial photograph.
- 1996 – The subject site appears relatively unchanged in comparison to the 1989 aerial photograph.
- 2005 - The subject site appears relatively unchanged in comparison to the 1996 aerial photograph.

3,3.2 ***Historical Topogr'aphic*** **Maps**

Historical topographic maps obtained from GeoSearch dated 1901, 1953, 1973 and 1979 were reviewed for the subject site Copies of the historic topographic maps are included in Appendix B

- 1901 - No buildings are depicted on the subject site
- 1953 - The site appears unchanged in comparison to the 1901 topographic map,
- 1973 - The site appears unchanged in comparison to the 1953 topographic map,
- 1979 - The site appears unchanged in comparison to the 1973 topographic map.

3,,4 PAST USAGE OF ADJOINING PROPERTIES

Past usage of the adjoining properties was assessed through a review of aerial photographs and past reports Copies of historical references reviewed are included in Appendix B

Based on historical aerial photographs and topographic maps, the adjoining properties to the east were utilized for agricultural purposes from at least 1938 to about 1996 The area to the east of the site has been graded for a residential development since at least 2005 The adjoining properties to the south and west appear to have been utilized for agricultural purposes from at least 1953 to the present Salt Creek is located to the north and was channelized in about 1989.

3"4,, **1** ***Aerial Photographs***

Aerial photographs for the site obtained from GeoSearch dated 1938, 1953, 1967, 1976, 1980, 1989, 1996 and 2005 were reviewed for the adjoining properties and are included in Appendix B

- 1938 - Adjoining properties to the south and west appear to be vacant land, Salt Creek is located to the north. The adjoining property to the east appears to be used for agricultural purposes (grass crops).
- 1953 - The adjoining properties to the south and west appear to be developed for agricultural purposes (grass crops). The remaining adjoining areas appear relatively unchanged in comparison to the 1938 aerial photograph.
- 1967 - The adjoining properties appear relatively unchanged in comparison to the 1953 aerial photograph
- 1976 - The adjoining properties appear relatively unchanged in comparison to the 1967 aerial photograph.

- 1sao - The adjoining properties appear relatively unchanged in comparison to the 1976 aerial photograph.
- 19a9 - Salt Creek Channei is located to the north of the site The remaining adjoining properties appear relatively unchanged in comparison to the 19ao aerial photograph.
- 1996 - The adjoining properties appear relatively unchanged in comparison to the 19a9 aerial photograph.
- 2005 – The adjoining property to the east has been graded for a residential development The remaining adjoining properties appear relatively unchanged in comparison to the 1996 aerial photograph.

3.4.,2 Historical Topographic Maps

Historical topographic maps obtained from GeoSearch dated 1901, 1953, 1973 and 1979 were reviewed for the adjoining properties. Copies of the historic topographic maps are included in Appendix B.

- 1901 - No buildings are depicted adjacent to site
- 1953 - Salt Creek is depicted north of the site The adjoining properties appear unchanged in comparison with the 1901 topographic map
- 1973 - The adjoining properties appear unchanged in comparison with the 1953 topographic map.
- 1979 – The adjoining properties appear unchanged in comparison with the 1973 topographic map.

3.5 HAZARDOUS SUBSTANCE/WAST'E MANAGEMENT INFORMATION

The following sections describe hazardous substance/waste management information.

3,,5.1 Business/Manufacturing Activities

Based on the review of historical aerial photographs and topographic maps, the site has been utilized for agriculturai purposes since at least 1953 There is no evidence indicating manufacturing activities took place onsite

3,,5.,2 Onsite Storage, Treatment, and Disposal

No treatment or disposal activities are known to have occurred at the site No storage of hazardous materials were observed onsite or identified by GeoSearch (Appendix C)

3.6 REGULATORY STATUS

The Planning Center utilized the electronic database service GeoSearch to complete the environmental records review (a copy of the Radius Report dated July 2, 2007 is included in AppendiX C). The database search was used to identify properties that may be listed in the referenced Agency records, located within the American Society for Testing and Materials (ASTM}-specified search radii indicated below:

- NPL sites: 1 mile
- CERCUS sites: 0.5 mile
- CERCUS NFRAP sites Site and Adjoining
- Federal ERNS: Site only
- RCRA non-CORRACTS TSD facilities: 05mile

- RCRA CORRACTS TSD facilities: 1 mile
- RCRA Generators: Site & Adjoining
- State Hazardous Waste Sites: 1 mile
- Registered Underground Storage Tanks: Site & Adjoining
- State Landfills and Solid Waste Disposal Sites: 05mile
- State Leaking Underground Storage Tanks: 0.5 mile
- CHMIRS: 0.5 mile
- HAZNET: 025 mile

A review of selected regulatory agency databases for documented environmental concerns on the site, or in close proximity to the site, was conducted by GeoSearch.

The site was not identified on any of the databases searched. A summary of significant findings by the database follows below

3.6"1 *NPL Sites*

The National Priorities List (NPL) is a list of contaminated sites that are considered the highest priority for clean-up by the USEPA.

- The subject site is not listed on the NPL List
- The database search did not identify any NPL sites within a one-mile radius of the subject property

3_6.,2 CERCLIS Sites

The Comprehensive Environmental Response, Compensation, and Liability Act Information System (CERCUS) list identifies sites which are suspected to have contamination and require additional investigation to assess if they should be considered for inclusion on the NPL

- The subject site is not listed on the CERCUS List
- The database search did not identify any CERCUS sites within a ½-mile radius of the subject property

3,,6,,3 CERCLIS-NFRAP Sites

CERCLIS-NFRAP status indicates that a site was once on the CERCUS List but has No Further Response Actions Planned (NFRAP) Sites on the CERCLIS-NFRAP List were removed from the CERCUS List in February 1995 because, after an initial investigation was performed, no contamination was found, contamination was removed quickly, or the contamination was not significant enough to warrant NPL status

- The subject site is not listed on the CERCUS-NFRAP List
- The database search did not identify any CERCUS-NFRAP sites adjacent to the subject property.

3.6,,4 Federal ERNS List

The Federal Emergency Response Notification System (ERNS) list tracks information on reported releases of oil and hazardous materials.

- The subject site is not identified on the Federal ERNS list

3.6.5 RCRA CORRACTS TSD Facilities

The Resource and Conservation Recovery Act (RCRA) CORRACTS TSD Facilities list catalogues facilities that treat, store, or dispose of hazardous waste and have been associated with corrective action activity.

- The subject site is not listed as a RCRA CORRACTS TSD facility.
- The database search did not identify any RCRA CORRACTS TSD facilities within a one-mile radius of the subject property

3.6.6 RCRA non-CORRACTS TSD Facilities

The RCRA non-CORRACTS TSD Facilities List tracks facilities which treat, store, or dispose of hazardous waste and are not associated with corrective action activity.

- The subject site is not listed as a RCRA non-CORRACTS TSD facility.
- The database search did not identify any RCRA non-CORRACTS TSD facilities within a ½-mile radius of the subject property

3.6.7 RCRA Generators

The RCRA Generator list is maintained by the USEPA to track facilities that generate hazardous waste.

- The subject site is not listed as a RCRA Hazardous Waste Generator.
- The database search did not identify any RCRA Hazardous Waste Generators adjacent to the subject property.

3.6.8 Cortese List

The Cortese list database identifies hazardous waste sites selected for remedial action and underground storage tank (US1) properties having a reportabie release and is maintained by the EPA/Office of Emergency Information

- The subject site is not listed on the Cortese List
- The database search did not identify any Cortese sites adjacent to the subject property

3.6.9 Registered Underground Storage Tanks (USTs)

The State Water Resources Control Board's Hazardous Substance Storage Container Database maintains a list of USTs regulated by the RCRA.

- The subject site is not listed on the registered UST list

3.6.10 State Landfills and Solid Waste Disposal Sites

- The database search did not identify any State Landfills or Solid Waste Disposal sites within a ½-mile radius of the subject property.

Section 17213 of the California Education Code and Section 211518 of the California Public Resources Code prohibit construction of a school upon a current or former hazardous waste disposal site or solid waste disposal site Based on site inspections and information reviewed for preparation of this PEA Report, the proposed middle school is not located on a current or former disposal site

3.6.11 State Leaking Underground Storage Tanks (LUSTs)

The State Water Resources Control Board's Leaking Underground Storage Tank Information System contains an inventory of LUST Incident Reports.

- The subject site is not listed on the LUST list

- The database search did not identify any LUST facilities within a ½-mile radius of the subject property

3.6"12 *Cal-Sites Database*

The Cal-Sites database, maintained by the DTSC, contains both known and potential hazardous substance sites

- The subject site is not listed on the Cal-Sites database.
- The database search did not identify any sites on the Cal-Sites database within a one-mile radius of the subject property.

3,,6.13 Clandestine Drug Labs (CACDL)

The California Department of Toxic Substances Control (DTSC) maintains this listing of illegal drug laboratories.

- The subject site is not listed on the CACDL list
- The database search identified four CACDL sites within a one-mile radius of the subject site:
    - An illegal drug lab located at 31110 Olive Avenue, about 0.7 miles east of the site, was identified The location was where an illegal drug lab was was operated or drug lab equipement and/or materials were stored
    - An illegal drug lab located at 29100 Undenberger Road, about 09 miles west of the site, was identified. The location was where an illegal drug lab was operated or drug lab equipment and/or materials were stored

Based on the small quantities of substances involved, distance from the site, topographic gradient and/or regulatory status, these locations are not expected to impact the site.

3.7 ADDITIONAL ENVIRONMENTAL RECORDS REVIEW

In conformance with ASTM, inquiry was made with representatives of the agencies described below and with the user of this PEA.

3.7.1 *Agency Files*

The Underground Service Alert (USA) website was accessed June 27, 2007, to request a list of utility companies in the vicinity of the subject property that may operate transmission lines. USA provided a list of five companies, including the Southern California Gas Company (SCGC). Letters were sent to SCGC and the Office of the State Fire Marshal on June 27, 2007 to determine what types of pipelines are in the area (Appendix B). No petroleum pipelines were identified in the vicinity of the site. The State Fire Marshal responded that there are no pipelines in their jurisdiction near the site According to SCGC, the is an 8-inch high pressure gas pipeline currently located approximately 464 feet southwest of the subject site under Domenigoni Parkway The District will conduct a pipeline risk assessment under a separate report to address the gas pipeline for the California Department of Education.

3.7.2 *Site Ownel10peratol Records*

Site owner and operator records were not reviewed

3.7.3 *Oil and Gas Map Review*

A review of California Division of Oil, Gas and Geothermal Resources, Regional Wildcat Map W1-7 (California Department of Conservation 2004) indicated that there are no active or abandoned oil or gas fields on the subject site or adjoining properties. The closest oil well is located approximately 33 miles northeast of the subject site The well is identified as a plugged and abandoned dry hole. Ella Chisholm

Darn advanced the well to a depth of 216 feet bgs in 1950 The oil wells in the vicinity were dry, non-producing wells that were piugged shortly after completion. The oil and gas map pages showing the vicinity of the closest oil wells are included as Appendix B

The environmental databases reviewed as part of this Phase i include the Former Manufactured Gas Sites database (Coal Gas). The subject site and surrounding sites were not identified on the Coal Gas database, thereby, providing additional information on the absence of gas fields in the immediate area of the subject site (Appendix B)

3.8 SITE INSPECTION RESULTS

A site visit to observe site conditions was conducted by Michael Watson of The Planning Center on April 4, 2008 The Planning Center personnel observed the property, including the property boundaries No weather-related conditions or other conditions that would limit our ability to observe the site occurred during our site reconnaissance

Summarized on the next page are observations relative to specific physical features identified in Section 23.2 of the PEA Guidance Manual and site photographs are included as Appendix A

Physical Feature	*Observations*
Site boundaries:	The subject site consists of an approximately 12-acre parcel of land. The subject site currently consists of land developed for grass crops The surrounding land to the south and west is used for grass crops. Land to the east is under construction for residential lots. Salt Creek Channel is located to the north.
Locations and boundaries of all onsite operations (present and past):	Historical aerial photographs were reviewed. The site has been historically utilized for agricultural purposes since at least 1953.
Foundations of former structures:	None noted by The Planning Center
Storage tanks and storage areas:	None noted by The Planning Center
Odors:	None noted by The Planning Center
Pools of liquid:	None noted by The Planning Center
Electrical or hydraulic equipment known or likely to contain PCBs:	None noted by The Planning Center
Unidentified substance containers (including empty drum storage):	None noted by The Planning Center
Stained soil and pavement, corrosion, and degradation of floors and walls:	None noted by The Planning Center
Drains and Sumps:	None noted by The Planning Center
Pits, ponds, and lagoons:	None noted by The Planning Center
Surtace drainage pathways:	None noted by The Planning Center
Stressed vegetation (from other than insufficient water):	None noted by The Planning Center
Solid waste and waste water:	None noted by The Planning Center
Wells (including dry wells, irrigation wells, injection wells):	None noted by The Planning Center
Septic systems:	None noted by The Planning Center

Physical Feature	Observations
Overhead electrical lines:	None noted by The Pianning Center
High-pressure gas or fuel transmission lines:	According to SCGC, an 8-inch high pressure gas pipeiine is currernly located within 1,500 feet of *the* subject site. See Section 3 7 1 for further explanation. No petroleum companies were identified by USA.
Railroad tracks:	No railroad tracks were identified within 1,500 feet of he site

3,,8,1 *Interviews*

Interviews were conducted by Denise Clendening of The Planning Center, Ms Tina Koonce, the facilities manager for the District was interviewed, To the best of Ms Koonce's knowledge, no significant hazardous materials or agricultural chemical spills have occurred on the property, Ms, Koonce indicated that the site had been used for grass crops,

3.9 PRIOR ASSESSMENTS/REMEDIATION

No prior assessments or remediation activities were conducted on the site,

3. Site History and Background Information

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4. Apparent Problem

There is no physical or historic evidence of any site activity that might have caused any environmental impact to the site However, there are potential environmental issues evaluated in this PEA There is a possibility of residual pesticides present in the soil due to agricultural use of the land from at least 1953 to the present

Because a school is proposed, there is a potential for children who attend the school and adult employees of the school to be exposed to chemicals that may be present in soiL Potential exposure may occur from soil ingestion, dermal exposure to soil, and inhalation of particles. The sampling that was conducted as part of this PEA was directed at addressing these potential chemicals of concern and these potential exposure pathways

Because of the presence of the above-mentioned concerns, a PEA was initiated for the site

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5. Environmental Setting!

This section describes potential exposure pathways and the site geology and hydrogeology

5.1 FACTORS RELATED TO SOIL EXPOSURE PATHWAYS

The following sections describe factors related to potential soil exposure pathways,

5"1.1 *Site Topography and Surface Slope*

Topographically, the site gently slopes to the north-northeast Based on a review of the USGS 75-minute Topographic Series, Romoland, California Quadrangle Map (USGS 1979), surface elevation of the subject property ranges between approximately 1,440 feet and 1,460 feet above mean sea level (msl):

5.1,,2 Proximity to *Surface Water Bodies*

Salt Creek is located across a frontage road northeast of the site and has been channelized,

5"1,,3 *Evidence* of *Releases* to *the Environment*

As discussed in Section 3,5,2, no treatment or disposal activities are known to have occurred at the site, There is no observed evidence of environmental impacts from a release at the site No oil wells, active or abandoned, are located on the proposed school site,

5"1A Site Geology and Soil Types

The site is located on the Perris Block, in the Peninsular Ranges Geomorphic Province" The Peninsular Ranges Geomorphic Province extends approximately 900 miles southward from the Los Angeles Basin to Baja California, Mexico and is characterized by elongated northwest-trending mountain ranges separated by sediment-floored valleys (Yerkes *et et.* 1965), The most dominant structural features of the province are the northwest-trending fault zones, most of which die out, merge with, or are terminated by the steep reverse faults at the southern margin of the San Gabriel-San Bernardino Mountains within the Transverse Ranges Geomorphic Province far to the north of the site, The property itself sits atop late to middle Pleistocene old sandy alluvial fan deposits (Morton 2004),

5"1,,5 *Naturally Occurring Asbestos*

According to the California Division of Mines and Geology (CDMG), no naturally-occurring serpentine rock or rock formations that may contain a significant quantity of asbestos are located within a ten-mile radius or upstream of the site (CDMG 2000),

5,.1,,6 Site Accessibility

The site is accessible from the north from a frontage road that parallels the south side of Salt Creek Channel

5.1.7 Proximity to *Nearby Receptors*

Nearby receptors in the vicinity of the site include residential developments to the east

5.2 FACTORS RELAT'ED TO WATER PATHWAYS

The following sections describe factors related to potential water pathways,

5"2,, 1 *Groundwater Pathway*

There are no known releases to the site, therefore, the potential for releases of hazardous substances from the site to the groundwater is considered negligible The water supply for the site will be from municipal water and not from groundwater at the site

5,,2,,1,,1 Site Hydrogeologic Setting

Based on surface topography, surface water at the site generally flows to the north-northeast Also based on topography, regional groundwater flow is anticipated to be to the northwest No natural water

bodies are present on the site Salt Creek is located to the north of the subject site Hydrogeologic investigations were not performed on the site for this investigation; therefore, it is unknown to what extent localized variations in groundwater presence and flow occur on the site

According to the Flood Insurance Rate Map (dated 1996) located on the FEMA website, the subject site is partially located within a 1DO-year floodplain. However, according to the Riverside County Land Information System (2007) and the Riverside County Flood Control and Water Conservation District (2007), the site is not located within any flood zone. The site is serviced by Eastern Municipal Water District, which provides potable water to Winchester There are no monitoring wells located on the property

The subject site is located within the Winchester subarea of the Perris South subbasin in the San Jacinto Groundwater Basin Groundwater in the San Jacinto Groundwater Basin flows generally toward the course of the San Jacinto River and westward out of the basin, however, high extraction rates have produced groundwater depressions and locally reversed the flow pattern. Primary recharge in this basin occurs from percolation of flow from the San Jacinto River and its tributary streams and from infiltration of rainfall on the valley floor. Percolation of water stored in Diamond Valley Reservoir and several other storage ponds distributed throughout the valley is an additional source of recharge

5.2,1,,2 Impacted Aquifers from Site Releases

There are no known site releases

5.3 FACTORS **RELATED TO** AIR PATHWAYS

There are no known releases to the site, therefore, the potential for releases of hazardous substances from the site to the atmosphere is considered negligible The site vicinity is an area with typical Mediterranean climate, characterized by warm dry summers and mild winters. The Western Regional Climate Center collected climatic data in the Sun City area (the closest weather station to the site) from 1973 to 2005 The average temperature ranges from a low of 34.5° Fahrenheit (OF) in the winter to a high of 98.,QoF in the summer, although extremes of 14°F and 115°F have been recorded. The average annual precipitation is 11 2 Inches per year and snowfall is rare in the area

6. Sampling Actiuiiies and Results

This section describes methods and results of the soil sampling activities conducted at the site on April 4, 2008 A total of 44 soil samples (plus 6 duplicates) were collected from 22 locations at two depths. across the 12-acre site Figure 3 shows the sampling locations and Table 1 provides a summary of the sampling and analysis program. The Health and Safety Plan used for the site is included in Appendix D

6.1 UTILITY CLEARANCE

Prior to commencement of field activities. USA was notified of our intent to conduct subsurface investigations at least 48 hours prior to initiation of intrusive field tasks USA contacted all utility owners of record within the site vicinity and notified them of our intention to conduct subsurface investigations in proximity to buried utilities. All utility owners of record. or their designated agents. were expected to clearly mark the position of their utilities on the ground surface throughout the area designated for investigation.

6.2 SOIL SAMPLING PROCEDURES

Soil samples were collected on the approximately 12-acre area at twenty-two (22) sample locations to address the historical agriculture use on the site. Soil sampling was conducted in general accordance with the gUidelines provided by the DTSC in *Interim Guidance for Sampling Agricultural Properties (Third Revision)* (DTSC 2008). All soil samples were collected from the ground surface to approximately 6 inches below ground surface (bgs) and from a depth of approximately 25 to 3 feet bgs at each location The sampling locations are shown on Figure 3. A summary of the sampling plan is included as Table 1.

A total of six (6) composite surface soil samples (plus one composite duplicate) were analyzed for organochlorine pesticides by EPA Method 8081A Six (6) discrete soil samples (plus one discrete duplicate) were analyzed for arsenic by EPA Method 601OB.

6.,2.,1 Sampling Methods and Procedures

Soil sampling was conducted using a truck-mounted direct push drill rig (Geoprobe?'). The Geoprobe?' rig advanced acetate lined sample *core* barrels sleeves to desired depths using a hydraulic ram or pneumatic hammer system. The inside diameter of the core barrel was 1 5 to 2 0 inches The sample barrel was retrieved and the sample interval was observed. logged and preserved.

Observations pertaining to the soil type were described by a field geologist and in accordance with the Unified Soil Classification System (USCS) Soil samples were preserved by placing Teflon?' sheeting and polyethylene caps leaving no headspace, and wrapping the samples with Paraflln" tape or placing them in sealable plastic bags. Each sample was labeled with the sample number, sample depth, and the date and time sampled Samples were immediately placed in an ice-filled cooler and listed on a chain-of-custody form. Any observation pertaining to potential soil contamination or soil source were recorded

6.3 QUALITY CONTROL SAMPLING PROCEDURES

Field quality control samples associated with the sampling program included duplicate soil samples. equipment blanks, and soil matrix spike/matrix spike duplicate (MS/MSD) samples, in accordance with the DTSC PEA Guidance Manual (DTSC 1999) Two duplicate soil samples were collected and one was analyzed MS/MSD samples were conducted in accordance with the DTSC PEA Guidance Manual to assess the matrix effects of site soils on the recovery of constituents present in the soil (DTSC 1999)

6.4 DECONTAMINATION PROCEDURES

All equipment that came into contact with the soil was decontaminated consistently to assure the quality of samples collected Decontamination was conducted prior to and after each use of a piece of equipment All sampling devices used were decontaminated using the following procedures:

- Non-phosphate detergent and distilled water wash. using a brush;
- Initial deionized/distilled water rinse; and

- Final deionized/distilled water rinse

6.5 INVESTIGATIVE-DERIVED WASTE MANAGEMENT

The borings were backfilled to the surface with bentonite All investigative-derived waste decontamination water was placed in 5-gallon buckets and transported offsite by the drilling contractor for proper disposal Used personal protection equipment (PPE) were double bagged and placed in a municipal refuse dumpster

6.6 ANALYTICAL RESULTS

Organochlorine pesticide results are summarized in Table 2 Arsenic results are presented in Table 3 Laboratory summary reports for all analytes are included in Appendix E

6.7 DISCUSSION OF RESULTS

6.7.1 *Soil Description*

The soils encountered and collected during the investigation consisted of medium dense brown (7.5YR5/4) and dark reddish brown (5YR3/4) silty sand, and medium stiff brown (5YR3/4) silt and clayey silt Fill material was not encountered In addition, no staining or odors were observed by the field geologist

6"7.2 *Soil Results*

6,,7,,2,,1 Organochlorine Pesticides

One or more pesticides were reported above laboratory detection limits in all 6 composite samples (plus one composite duplicate) All samples were analyzed by EPA Method 8081A 4,4'-00E was detected at a maximum concentration of 25 micrograms per kilogram (J.\g/kg) in composite soil sample 8·14, 8-15, 8-18, 8-19@O_5 4,4'··00T was detected at a maximum concentration of 6.7 J.\g/kg in composite soil sample 8-14, 8-15, 8-18, 8-19@05. Table 2 presents the organochlorine pesticides results for soil at the site.

4,4'-DOE and 4,4'-DDT were compared to their California Human Health Screening Levels (CHHSLs) that were adjusted for the number of samples that comprised the composite sample Both 4,4'-DDE and 4,4'-DOT were below their CHHSL values The CHHSL. for 4,4'-00E for 4 samples in a composite is 400J.\g/kg and the highest concentration was 25 J.\g/kg. The CHHSL for 4,4'-DOT for 4 samples in a composite is 400J.\g/kg and the highest concentration of 4'4'-DOT reported at the site was 6.7 J.\g/kg. The concentrations were significantly below their CHHSL values

6,7,,2,2 Arsenic

Table 3 presents the arsenic results for soil at the site

Arsenic was not reported at or above the reporting limit of 1 milligram per kilogram (mg/kg) in any of the 6 discrete samples (plus one discrete duplicate) collected from the site 8ased on the lack of detection at the site, arsenic is not considered to be a chemical of concern.

A human health screening assessment was conducted to evaluate the potential threat to human health at the proposed school site" The established PEA screening process was used to determine if there are levels of contamination at the site that may cause a concern about effects on hurnan health The purpose of the human health risk screening evaiuation was to assess whether existing levels of contaminants in soil at the site could pose a threat to human health under conservative (health-protective) exposure assumptions The PEA requires a residential land use scenario regardless of current use and zoning.

7.1 CONCEPTUAL SITE MODEL

The potentially complete soil exposure pathways include soli ingestion, dermal exposure to soli, and inhalation of particulates and volatile organics detected in soli. Figure 4 is a conceptual site model of the potentially complete exposure pathways Potentially exposed populations for the site include on-site school age children and employees based on future land use plans In order to estimate what the potential exposures may be under current and future land use plans, risk calculations were conducted using the data that were collected for the PEA.

7.2 CHEMICALS OF CONCERN SELECTION

The chemicals of concern (COCs) for the site that were evaluated in the PEA screening risk assessment have been identified based on site history, sampling results, DTSC quidance and protocol, and discussions with the DTSC project managers and toxicologists

Inorganic analyses of soli sample results indicated that arsenic was not detected in soil at the site (Table 3). Based on the lack of detection at the site, arsenic is not considered to be a chemical of concern

All pesticides that were reported in one or more soil sample(s) were considered to be a COC Two pesticides were detected above reporting limits in the soli samples analyzed for the site Even though both DDE and DDT were below their CHHSL values, a screening level assessment was implemented to estimate the cumulative risk from the two pesticides.

7.3 EXPOSURE ASSUMPTIONS

The PEA Guidance Manual (DTSC 1999) requires the followinq exposure assumptions (Table 4) for residential soli for carcinogens to include:

- Combined Childhood (6 years) and adult (24 years) exposure duration;
- Ingestion rate of 200 mg/day for a 15-kllogram child and 100 mg/day for a 10-kllogram adult;
- Skin surface area exposed for adults of *5,100* $cm^{2/day}$ and for a child 2,900 cm^2/day;
- Inhalation factor of 10 m'/day for a 15·-kllogram child and 20 m'/day for a 10-kilogram adult;
- Exposure frequency of 350 days/year; and
- Averaging time of 25,500 days *(10* years)

The exposure assumptions for residential soli for noncarcinogens (Table 5) include:

- Childhood only exposure duration of 6 years;
- Ingestion rate of 200 mg/day;
- Inhalation rate of 10 m'/day;
- Skin contact area of 2,900 ern";
- Body weight of 15 kilograms;
- Exposure frequency of 350 days/year; and
- Averaging time of 2,190 days (6 years).

In addition, PEA default values for skin absorption factors (DTSC 1999), soil adherence factor (1.0 mgt cm'), chemical-specific volatilization factors, and a particulate emission factor were used in the equations to estimate potential exposure.

The exposure pathways that were included in the screening assessment were dermal exposure to soil, soil ingestion, and inhalation of particulates.

These exposure factors may overestimate current exposure conditions at the school site, because they assume young children and adults have daily contact with soil 350 days per year for 30 years, whereas proposed future exposures for a school site would be closer to 250 days per year for six to seven years

The level of concern in a PEA for noncarcinogens are the concentrations in soil or water that are estimated to result in a "Hazard Quotient" (HQ) of 1 for residential receptors at the site Intake factors for carcinogenic exposure routes were calculated for both the adult and child residents as required in the PEA Guidance Manual.

The total cancer risk is estimated by summing the risk estimated for each COC and for each pathway. The level of concern in a PEA for carcinogens are the concentrations in the medium that are estimated to result in excess cancer risk of 10^{-6} (1 in 1,000,000) to residential receptors. For noncarcinogens, the levels of concern are the concentrations in soil or water that are estimated to result in an HQ of 1 for residential receptors at the site Intake factors for carcinogenic exposure routes were calculated for both the adult and child residents For noncarcinogenic exposure, intake factors were calculated for only the child resident as required in the PEA Guidance Manual

7.4 TOXICITY VALUES

The hierarchy of toxicity values used in the PEA risk calcuiations followed the outline In the PEA Guidance Manual (DTSC 1999):

- California cancer potency factors (OEHHA 2006);
- EPA Integrated Risk Information System (IRIS 2006); and
- EPA Health Effects Assessment Summary Tables (HEAST) (USEPA 1997).

Tables 4 and 5 include the toxicity values for the chemicals that were identified as being potential COCs Intake factors and the equations used to estimate intake for the exposure pathways for noncarcinogenic exposure are shown in Table 5. Intake equations are from the PEA Guidance Manual For noncarcinogenic exposure, intake factors were calculated for only the child resident as required in the PEA Inhalation of particulates for noncarcinogenic estimates are included in Table 5 and for carcinogens in Table 4 Intake factors and the equations used to estimate intake for the exposure pathways for carcinogenic exposures are shown in Table 4.

7.5 RISK ASSESSMENT SCREENING RESULTS

The maximum detected concentrations of all COCs (four pesticides) were used in the PEA risk assessment The maximum concentration of 4,4'-DDE was 25 µg/kg in a composite soil sample comprised of 4 samples, so a concentration of 100 µg/kg was used in the assessment The maximum concentration of 4,4'-DDT was 6.7 µg/kg in a composite sample comprised of 4 samples, so a concentration of 268 µg/kg was used in the assessment

The estimated noncarcinogenic hazard from all COCs for all exposure pathways was 0 0037, significantly below the level of concern of 1.0 (Table 5).

The estimated carcinogenic risk from all COCs for all exposure pathways was 5.84 x 1D··, below the level of concern (Table 4).

In conclusion. the concentrations of chemicals detected at the site are below regulatory limits The maximum detected concentrations of the COCs were used in noncarcinogenic and carcinogenic estimates for the site

7„6 UNCERTAINTY ANALYSIS

The data collected are subject to uncertainty associated with sampling and analysis These data are presented in other parts of the PEA In the risk analysis it was assumed that samples collected were representative of conditions to which various populations may be exposed. However. the collected samples may not be completely representative due to biases in sampling and to random variability of samples. In general, sampling was biased toward areas of known and suspected elevated chemical concentrations, which will iead to an overestimation of risk when these results are assumed to represent a larger area. The placement of soil borings was in part. purposely biased to detect and characterize potential hot spots of soil based on historical site use. This type of sampling approach is likely to overestimate the chemical concentrations to which a receptor would be exposed and the potential health impact to the receptors evaluated

Samples were analyzed using California State Certified Laboratory procedures and were subjected to limited review, to obtain data suitable for decision-making. However. it should be understood that sample analysis is subject to uncertainties associated with precision. accuracy, and detection of chemicals at low concentrations

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8.1 SITE CHARACTERIZATION

Based on visual observations during the site visit and information provided by the District, the site has been dry land farmed for grass crops and does not possess wildlife habitats

8.2 BIOLOGICAL CHARACTERIZATION

The site is a disturbed non-native area that does not support wildiife habitat The site has been used for agriculturai purposes

8.3 ECOLOGICAL PATHWAY ASSESSMENT

Because the site does not have significant numbers of wildiife and chemicals of concern were not identified for the site, no assessment of potential exposures to sensitive ecological receptors is necessary,

8.4 ECOLOGICAL SCREENING EVALUATION SUMMARY

An ecological screening evaluation was not conducted for the site because chemicais of concern were not reported for the site

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9. Quality Anurance/Quality Control (QA/QC) Implementation

The *QNQC* Program was implemented in accordance with the DTSC PEA Guidance Manual (DTSC 1999). The primary quality control features of the QA/QC program include the collection and analysis of field quality control samples and the data validation

Quality control samples collected in the field included duplicate samples (six collected and analyzed) and equipment rinseate blanks as described in Section 6 The data for these quality control samples were reviewed as part of the data validation process, along with results from laboratory quality control analyses. Data validation was performed in compliance with DTSC's PEA Guidance Manual, using protocols consistent with the USEPA National Functional Guidelines (DTSC 1999) Each sample was analyzed for the specified suite of analyses presented in Section 6 Data from each of the analyses were evaluated with respect to the quality control criteria listed below Data for the project as a whole were evaluated in terms of completeness.

- Holding times;
- Field blanks;
- Laboratory method and calibration blanks;
- Initial and continuinq calibrations;
- System monitoring compounds (surrogates - organic analyses only);
- Laboratory control samples (LCS) and LCS duplicate samples (LCSD) - as applicable;
- Matrix spikes (MS)/Matrix spike duplicates (MSD);
- Field replicates/confirmatory samples; and
- Compound identification and quantitation.

Data quality for the project is very good, and the data collected are of acceptable quality for use in the screening evaluation The following issues were identified during the course of the validation review

Results from the field duplicate samples indicate appropriate sample collection and handling procedures were implemented, and that laboratory analytical precision was also acceptable

Data validation qualifier flags have been added to those data that did not meet acceptance criteria defined in School Quality Assurance Project Plans (a Quality Assurance Project Plan is included as Appendix F) Results of the validation indicate that all samples collected and analyzed are useful in characterizing the site and assessing the human health and ecological risks for the site No detectable concentrations were qualified as rejected (R) or were considered to be unusable based on the validation evaluation Data qualified as estimated (J/UJ) exhibited some bias during analysis and should be considered as an approximate measure of the respective analyte concentration. Qualified data are presented along with the data results in the analytical summary tables provided in this report

Field activities were observed to be conducted in a manner consistent with the QA/QC procedures presented in the DTSC PEA Guidance Manual (DTSC 1999). No findings were identified that significantly affect the quality of the samples collected or the resulting data evaluation

9.1 DATA VALIDATION

Data validation was performed for all sampies submitted as part of The Planning Center's evaluation of soil Advanced Technology Laboratories, Inc was the lead laboratory for the project and performed the required analyses

Validation was performed in accordance with the general guidance provided in the USEPA Functional Guidelines for Evaluating Inorganic Analyses (USEPA 1994), Data Validation Memorandum dated May 2, 2006 (DTSC 2006) and in accordance with the professional judgment of the validation team Validation

was performed to assess analytical performance in terms of the DOOs accuracy, precision, sensitivity, and completeness. Comparability and representativeness DOOs for the samples collected are addressed by the correct implementation of the procedures defined in the sampling and analysis plan.

A summary of the validation program, in terms of the DOOs listed above, is provided in the following sections. Data qualifiers assigned to results, if required, were as follows:

J Result is estimated due to failure to meet one of the DOO criteria associated with the sample result or associated sample batch Results reported at concentrations below standard laboratory reporting limits, but above method detection limits, were flagged "J" by the laboratory, or "B" in the case of metals. These data are validated as J/estimated because they are below the reliable quantitation limits determined by the laboratory.

U. Result is qualified as not-detected at the reported value This qualifier is used when results from blank analyses indicate that detections in associated samples may be biased high due to potential contaminant conditions in the field or laboratory.

UJ. Result is qualified as not-detected at the reported value, and the value is determined to be estimated This qualifier commonly results when quality control failures are associated with analytes that are not detected, or when detections are qualified "U" due to blank contamination combined with a "J" qualifier resulting from another OC problem

R. Result is rejected due to severe OC failure, or due to multiple lessor OC problems that are determined to be additive

9.2 ACCURACY

Accuracy was evaluated by assessing the results of holding times, field and laboratory blanks, initial and continuing calibrations, surrogate spike recoveries (organic analyses), LCS recoveries, MS analyses, and interference check samples (metals by inductively coupled plasma).

Holding times were met for all analyses. Frequency and control criteria for initial and continuing calibration verifications were met The method blank data showed non-detectable levels for all constituents MS and MSD were performed at required frequencies. All recoveries were within acceptable limits LCS analyses were performed at required frequencies All recoveries were within acceptable limits Surrogate recoveries were within acceptable control limits.

9.3 PRECISION

Precision was evaluated by assessing the results between MS and MSD analyses, LCS and LCSD analyses, between field and laboratory duplicate analyses. The precision DOO was generally satisfied for the samples collected during the project Precision was evaluated as the relative percent difference (RPD) between control or duplicate sample results RPD criteria reported by the laboratory were used to assess precision. RPDs were within the appropriate control limits and precision is considered acceptable

9.4 SENSITIVITY

SensitiVity was addressed by ensuring that the reporting iimits provided by the laboratories met those as requested in the workplans and task orders provided to the laboratory Data were qualified in cases where results were reported at concentrations below standard laboratory reporting limits, but above the method detection limits that may have been required to meet the sensitivity requirements for the project Such results were flagged by the laboratory as either J or B qualified data. These data retain a J/estimated qualifier due to potential decreased reliability at low concentration levels.

9.5 COMPLETENESS

Completeness is an evaluation of the overall sampling program with respect to data generated that is usable versus data that may have been rejected. No data was rejected during the data validation process for this project The completeness objectives (minimum 90 percent) for this project are therefore considered to be satisfied for all analyses.

9.6 DATA VALIDATION CHART

The following table is a summary of pertinent quality indicators that were verified during the data validation process.

ACCEPTABILITY		
QUALITY INDICATOR	**SOIL**	**SOIL**
	EPA Method 601OB	EPA Method 8081A
	Target Analy1e: Arsenic	Target Analy1e: DDT
Completeness of Laboratory Reports (e.q., laboratory, client, and sample identifications; ELAP certification number, project name, sample matrix, sample collection, preservation, preparation, extraction, analysis dates; analy1ical methods; analy1es; reporting units and limits; dilution factors; report page numbering system; designated title and signatures)	Y See discussion Section 9	Y See discussion Section 9
Reporting Limit (RL)	y 1 mg/kg	y 2 ug/kg
Chain of Custody	Y	Y
Sample Containers and Conditions	Y	Y
Holding Time «28 days)	Y	Y
Sample Preservation	Y	Y
Equipment Rinsate Bianks	Y	Y
Field Duplicates	Y	Y
Field QC Samples - Others	NA	NA
Surrogate Recoveries	NA	NA
Method Blanks	Y	Y
LCS % Recoverv	Y	Y
MS/MSD % Recoverv	See discussion Section 9	See discussion Section 9
MS/MSD%RPD	See discussion Section 9	See discussion Section 9
Laboratory Duplicates	See discussion Section 9	See discussion Section 9
Laboratory QC Samples .;Others	NA	NA
Compound Identification	Y	y
Compound Quantitation	y	y
Dilution Factors	Y	Y
Data Qualifiers	y	y
Confirmation of Positive Sampies	NA	NA
Observations of Significance	NA	NA
Case Narrative	Y	Y
Instrument Tuning	NA	NA
Initial Calibration	Lab	Lab

Calibration Verification	Lab	Lab
Interference Check Standard	NA	NA
Others	NA	NA

NOTES:
Y = acceptable or in compliance
NA = not applicable
See Discussion = see discussions in the section of Review of Data Reports
Lab = responsible by the Laboratory

10. HASP Implementation

The Planning Center prepared a site-specific HASP pursuant to Health and Safety Code 1910.120 The plan addressed the following:

- Identification and description of potentially hazardous substances that may be encountered during field operations;
- PPE and clothing for site activities; and
- Measures that need to be implemented in the event of an emergency.

The Pianning Center field personnel reviewed the HASP prior to commencing fieldwork Prior to initiation of field activities each day, a site safety briefing was conducted to identify potential physicai and chemical hazards and measures to be taken in event of an emergency. All on-site personnel were required to sign the site safety briefing form

During field activities, all personnel within the exclusion zone wore appropriate level D PPE. No incidents or emergency actions related to site sampling occurred during the field program. A copy of the HASP is contained in Appendix D.

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11. Field Variances

Soil sampling was conducted on the approximately 12-acre area in general accordance with the DTSC's *Interim Guidance for Sampling Agricultural Properties (Third Revision)* (DTSC 2008) and the **PEA** Guidance Manual (DTSC 1999)

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12. Evaluatiom ofApplicable or Relevant Laus and Regulaiions Pertaining to School SU«

State of California Department of Education Code Section 17213 and Public Resources Code 21151.8 prohibit the approval of a project involving the purchase of a school site or the construction of a new elementary or secondary school by a school district unless the district first determines whether the site is:

a) The site of a current or former hazardous waste disposal site or solid waste disposal site and, if so, whether the wastes have been removed

b) A hazardous substance release site identified by the State Department of Health Services in a current list adopted pursuant to Section 25356 for removal or remedial action pursuant to Chapter 6.8 (commencing with Section 25300) of Division 20 of the Health and Safety Code.

c) A site which contains one or more pipelines, situated underground or aboveground, which carries hazardous substance, acutely hazardous materials or hazardous wastes, unless the pipeline is a natural gas line which is used only to supply natural gas to that school or neighborhood.

In addition, the school district must contact the local air pollution control district to identify any facilities located within ¼-mile of the proposed school site that might reasonably be anticipated to emit hazardous emissions or handle hazardous materials, substances or waste. If any facilities exist within the ¼-mile the district must be able to make a written finding that:

a) The health risks from the facilities do not and will not constitute an actual or potential endangerment of public health to persons who attend or are employed at the proposed school; or

b) If potential hazards exist and have been identified, corrective measures can be implemented that mitigate air emissions to levels that do not constitute an actual potential endangerment of public health to persons who would attend or be employed at the proposed school

For this proposed school site, a records search of any hazardous waste/substance storage, treatment, or disposal activities at the site and within a ¼-mile of the site was conducted. No evidence of the site being used as a solid waste or hazardous waste disposal site was found There was no indication that aboveground or underground pipelines are located on the proposed school site. A summary of agencies contacted and records reviewed is provided in Section 3.5

12. Evaluation of Applicable or Relevant Laws and Regulation Pertaining to School Sites

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After reviewing and analyzing the analytical and human health screening evaluation results of this PEA, The Planning Center concludes the following with respect to the site:

- Forty-four (44) soil samples (plus 6 duplicates) were collected from 22 locations at two depths, across the 12-acre site to address the historical agriculture use on the site Soil sampling was conducted in general accordance with the guidelines provided by the DTSC in *Interim Guidance for Sampling Agricultural Fields for School Sites (Second Revision)* (DTSC 2002) and Table 1 of the *Draft Guidance for Sampling Agricultural Fields* dated May 24, 2007;
- A total of six (6) composite samples (plus one composite duplicate) were anaiyzed for organochlorine pesticides by EPA Method 8081A;
- Six (6) discrete surface samples (plus one duplicate) were analyzed for arsenic by EPA Method 6010B;
- Two organochiorine pesticides (4,4'-DDE and 4,4'-DDT) were detected at low concentrations above the laboratory detection limits;
- Arsenic was not detected above the laboratory detection limits,
- The preliminary human health risk screening indicates that chemical concentrations do not present a significant concern for the site"
- Laboratory data obtained were validated to assure that Data Ouality Objectives (DOOs) were met and the data were suitable for use in a human health and ecological screening evaluation,

13.1 RECOMMENDATIONS

The results of the PEA support the following conclusions and recommendations:

Based on the PEA objectives, the environmental quality goals of the District, and the results of the PEA investigation, The Planning Center recommends a NFA determination for this site Per California Education Code Section 172131, Section 3, The Pianning Center concludes that further investigation of the site is not necessary,

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TABLE 1
SUMMARY OF SAMPLING AND ANALYSIS PROGRAM
Proposed Elementary School No.6
Northwest Corner of La Ventana Road and Winchester Hills Drive
Hemet Unified School District
Winchester, California

Sample Number	Depth (feet bgs)	Rationale	EPA 8081A Organochlorine Pesticides	EPA 6010B Arsenic
B-1, B-2, B-3	0' - 0.5'	Historical Aariculture	C	D (B-2)
	2.5' - 3.0'		-	-
B-1DUP, B:2DUP, B-3DUP	0' - 0.5'	Duplicate	CDUP	D (B-2 DUP)
	2.5' - 3.0'		-	-
B-4, B-5, B-8, B-9	0' - 0.5'	Historical Aqriculture	C	D (B-8)
	2.5' - 3.0'		-	-
B-6, B-7, B-10, B-11	0' -0.5'	Historical Aoriculture,	C	D (B-7)
	2.5' - 3.0'		-	-
B·12, B-13, B-16, B-17	0' - 0.5'	Historical Aariculture	C	D (B-17)
	2.5' - 3.0'		-	-
B-14, B-15, B-18, B-19	0' - 0.5'	Historical Aariculture	C	D (B-19)
	2.5' - 3.0'		-	-
B-20, B-21, B-22	0' -0.5'	Duplicate	C	D (B-22)
	2.5' - 3.0'		-	
EB	NA	Quality Control	D	D
TOTAL	44 **PS,6 DUP,1 EB collected**		6 **C, 1 C DUP, 1 EB**	6 **D PS, 1 DUP,** 1 **EB**

Notes:
D = Discrete Sample; C = Composite Sample
DUP = duplicate; EB = equipment blank; PS = primary samples
- The corresponding subsurface sample will be analyzed if a significant detection is detected in the surface sample
Field duplicates will be collected at a frequency of approximately 10 percent of the primary samples collected.
Equipment blanks will be collected at a frequency of one per day of field activities

TABLE 2
SUMMARY TABLE OF ORGANOCHLORINE PESTICIDES IN SOIL
Proposed Elementary School No" 6
Northwest Corner of Winchester Hills Drive and La Ventana Road
Hemet Unified School District
Winchester, California

		Concentration (micrograms per kilogram [µg/kg])	
Sample Number	Sample Oate	4,4'-00E	4,4'-001'
B-1, B-2, B-3@0.5	4/4/2008	10	2.9
B-1DUP, B-2DUP, B-3DUP@0.5	4/4/2008	8.3	2.3
B-4, B-5, B-8, B9@0.5	4/4/2008	12	3.1
B-6, B-7, B-10, B-11@0.5	4/4/2008	3.8	ND<2.0
B-12, B-13, B-16, B-17@0.5	4/4/2008	2.9	ND<2.0
B-14, B-15, B-18, B-19@0.5	4/4/2008	25	6.7
B-20, B-21, B-22@0.5	4/4/2008	2.8	2.0
EQUIPMENT BLANKS			
		Concentration (micrograms per iiter [µg/L])	
EB040408	4/4/2008	ND<0.050	ND<0.050
CHHSL one sample		1600	1600
CHHSL 1wo samples in composite		800	800
CHHSL three samples in composite		533.33	533.33
CHHSL four samples in composite		400	400

Notes:

Sampies analyzed by EPA Method 8081A

CHHSL = Caiifomia Human Health Screening Level

The complete laboratory analytical reports are included in Appendix E

ND - Non detect at the estabiished method detection limit

All samples were non-detect for the following pesticides analyzed: 4,4'-DDD, Aldrin, Alpha-BHC, Alpha-Chlordane, Beta-BHC, Chlordane, Delta- BHC, Dieldrin, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin aldehyde, Endrin ketone, Gamma-SHC, Gamma-Chlordane, Heptachlor, Heptachlor epoxide, Methoxychlor and Toxaphene

TABLE 3

SUMMARY TABLE OF ARSENIC IN SOIL
Proposed Elementary School No.6
Northwest Corner of Winchester Hills Drive and La Ventana Road
Hemet Unified School District
Winchester, California

Concentration (milligrams per kilogram [mg/kg])		
Sample Number	**Sample Date**	**Arsenic**
B-2@0.5	4/4/2008	ND<1.0
B-2DUP@0.5	4/4/2008	ND<1.0
B-7@05	4/4/2008	ND<1.0
B-8@0.5	4/4/2008	ND<1.0
B-17@0.5	4/4/2008	ND<1.0
B-19@0.5	4/4/2008	ND<1.0
B-22@0.5	4/4/2008	ND<1.0
EQUIPMENT BLANK		
Concentration (milligrams per liter [mg/L])		
EB092607	9/26/2007	ND<0.010

Notes:

Arsenic was analyzed by EPA Method 6010B

The complete laboratory analytical reports are included in Appendix D

ND - Non detect at the established method detection limit NA - Not Analyzed

TABLE 4
CARCINOGENIC RISK ESTIMATE (RESIDENTIAL) - MAXIMUM CONCENTRATIONS
Proposed Elementary School NO.6
Hemet Unified School District
Winchester, California

General Exposure Factors		
Exposure Frequency	(days/yr)	100 adult; 350 child
Exposure Duration	(yrs)	24 adult; 6 child
BodvWeight	(kg)	70 adult;15 child
Averaging Time	(devs:	25550
Dermal exposure factors		
Skin Surtace Area	(cm^2/day)	5700 adult; 2900 child
Soil to Skin Adherence Factor	($mgicm^2$)	0.07 adult; 0.2 child
Dermal Absorption Factor	(unltlessj	Chemical Specific
Exposure Frequency	(davs/yr)	100 adult: 350 child
Ingestion Exposure Factors		
Soil Ingestion Rate	(mg/day)	100 adult; 200 child
Absorption Rate	(unltless)	1
Exposure Frequency	(dayslyr)	350 adult; 350 child
Inhalation Exposure Factors		
Particulate Concentration	($\mu g/m^3$)	50
Inhaiation Rate	($m^{3/day}$)	20 m^{3jdav} adult: 10 m^{3ldav} child

Exposure Pathway: Soil Ingestion + Dermal Contact

Chemical	(Cs (ma/kg)		1.57x10-6		SFo) (mg/kg-day)"'	+	(SFo (mg/kg·day)",		Cs (ma/ka)		3.71E-06		ASS) (unitless)		Excess Cancer Risk
4,4'-DDE	0.100		1.57E-06		3.40E-01	+	3.40E-01		0.100		3.71E-06		0.05		4.21 E-OB
4,4'-DDT	0.027		i.57E-06		3 AOE-01	+	3AOE-01		0.027		3.71 E-06		0.05		1,60E-OB
													Total Cancer Risk Dermal and 5011 Ingestion.		5.B1E-OB

Exposure Pathway: Inhalation of Particulates (for ncn-vclatllee)

Chemical	Cs (ma/ka)		5.00E-OB (ka/m')		0.149 (kg/µg)		SFi (mg/kg-day)",		Cancer Risk
4,4'-DDE	0.100		5.00E-OS		0.149		3AOE-01		1.79E-10
4,4'-ODT	0.027		5.00E-OB		0.149		3AOE-01		6.79E-11
							Total Cancer Risk Inhalation of Nonvolatlles:		2.sE-10

Note: Cs = Maximum Concentrations multiplied by the number ot samples that comprised the composite sample

TABLES
SITE SPECIFIC HAZARD INDEX (RESIDENTIAL)· MAXIMUM CONCENTRATIONS
Proposed Elementary School No.6
Hemet Unified School District
Winchester, California

General Exposure Factors		
Exposure Frequency	(dayslyr)	350
Exposure Duration	(yrs)	6
Bodv Weiqht	(kg)	15
Averagmg Time	(davs)	2190

Dermal exposure factors		
Skin Surface Area	($cm^{2/day}$)	5700 adult; 2900 child
Soil to Skin Adherence Factor	(mg/cm^2)	0.07 adult: 0.2 child
Dermal Absorption Factor	tunltlessi	Chemical Specific
Exposure Frequencv	(davs/yr)	100 adult; *350* child

Ingestion Exposure Factors		
Soil Ingestion Rate	(rng/day)	200
Exposure Frequency	(davs/yrj	350

Inhalation Exposure Factors		
Particulate Concentration	($\mu g/m^3$)	50
Inhalation Rate	($m^{3/day}$)	10

Exposure Pathway: Dermal Contact and 8011 Ingestion

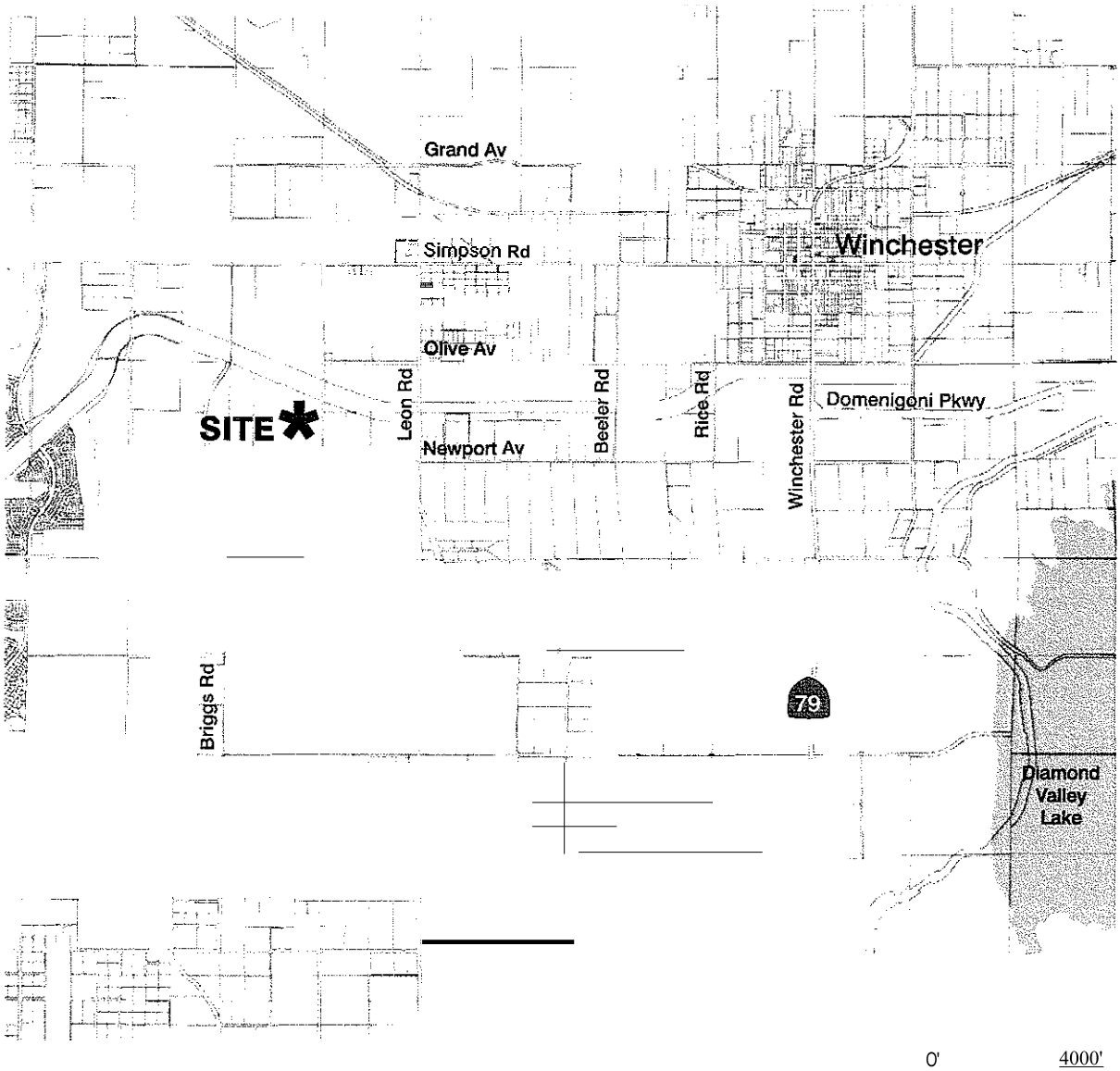
Chemical	((Cs (mq/kq)	/	RfO) * (mq/kq-dav)	•	0.000012B)	+	(Cs	/	RID) (mq/kq-dav)	•	3.71E-05	•	ABS (unitless)		Hazard Index
4,4'-00E	0.100	/	5.00E-04	•	1.2BE-05	+	0.100	/	5.00E-04	•	3.71E-05	•	0.05		2.9SE-03
44'-00T	0.027	/	5.00E-04	•	1.28E-05	+	0.027	/	5.00E-04	•	3,71E-05	•	0.05		7.B6E-04
											Total Soli Ingestion and Dermal Hazard Index:				0.0057

Expos...ll■■....lway, Inhalation of Particulates

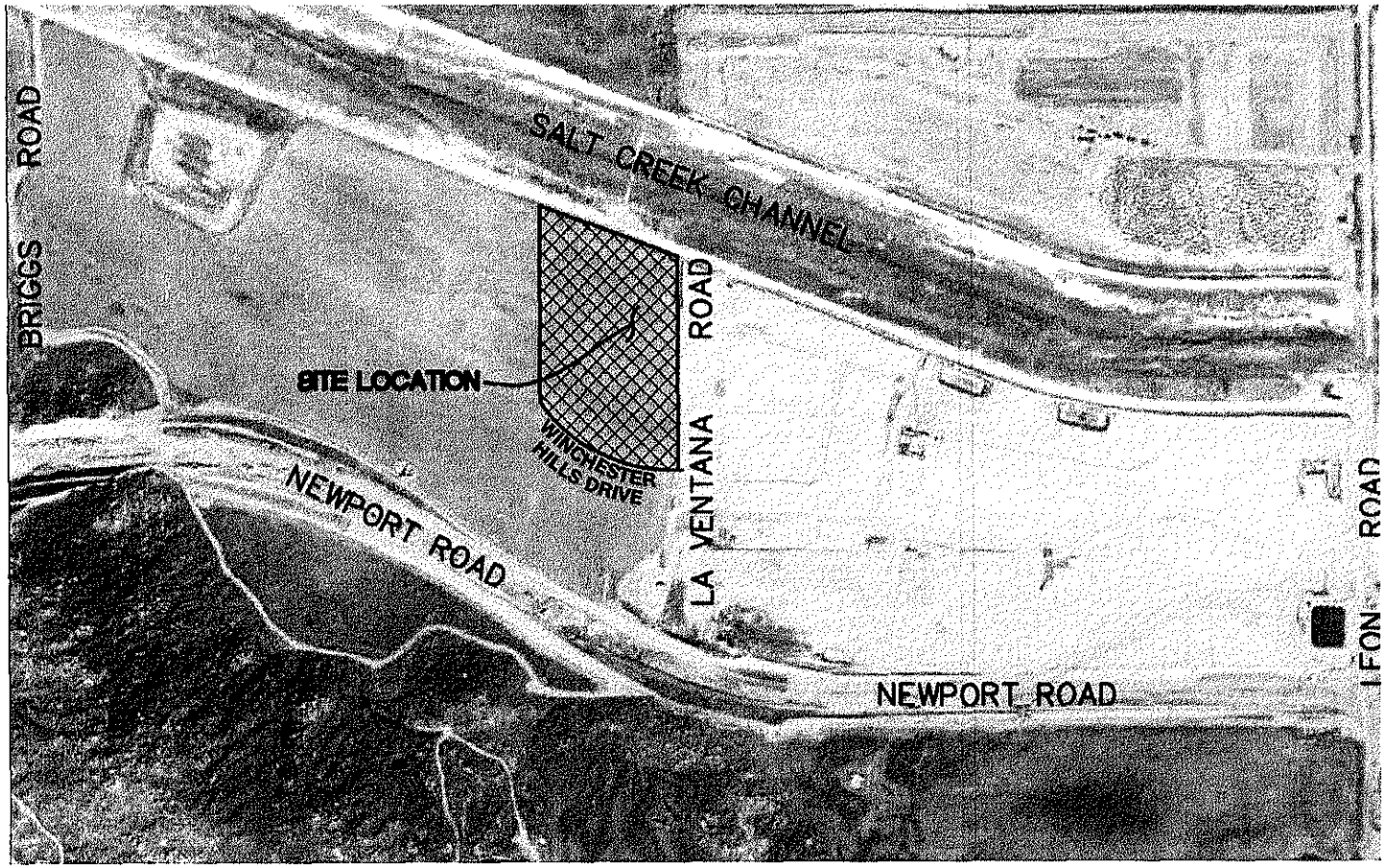
Chemical	(Cs (mq/kq)	•	5.0E-OB) (kq/m,i	/	RID {mq/kq-davl	•	0.639		Hazard Index
4,4'-ODE	0.100	•	5.0E-OB	/	s.00E-04	•	0.639	=	6.39E-06
44'-00T	0.027	•	5.0E-OB	/	5.00E-04	•	0.639	=	i.71E-06
					Total Inhalation of Particulates Hazard Index:				0.00001

Note: Cs = Maximum Concentrations multiplied by the number of samples that comprised the composite sample

Site Location



Existing Site Conditions



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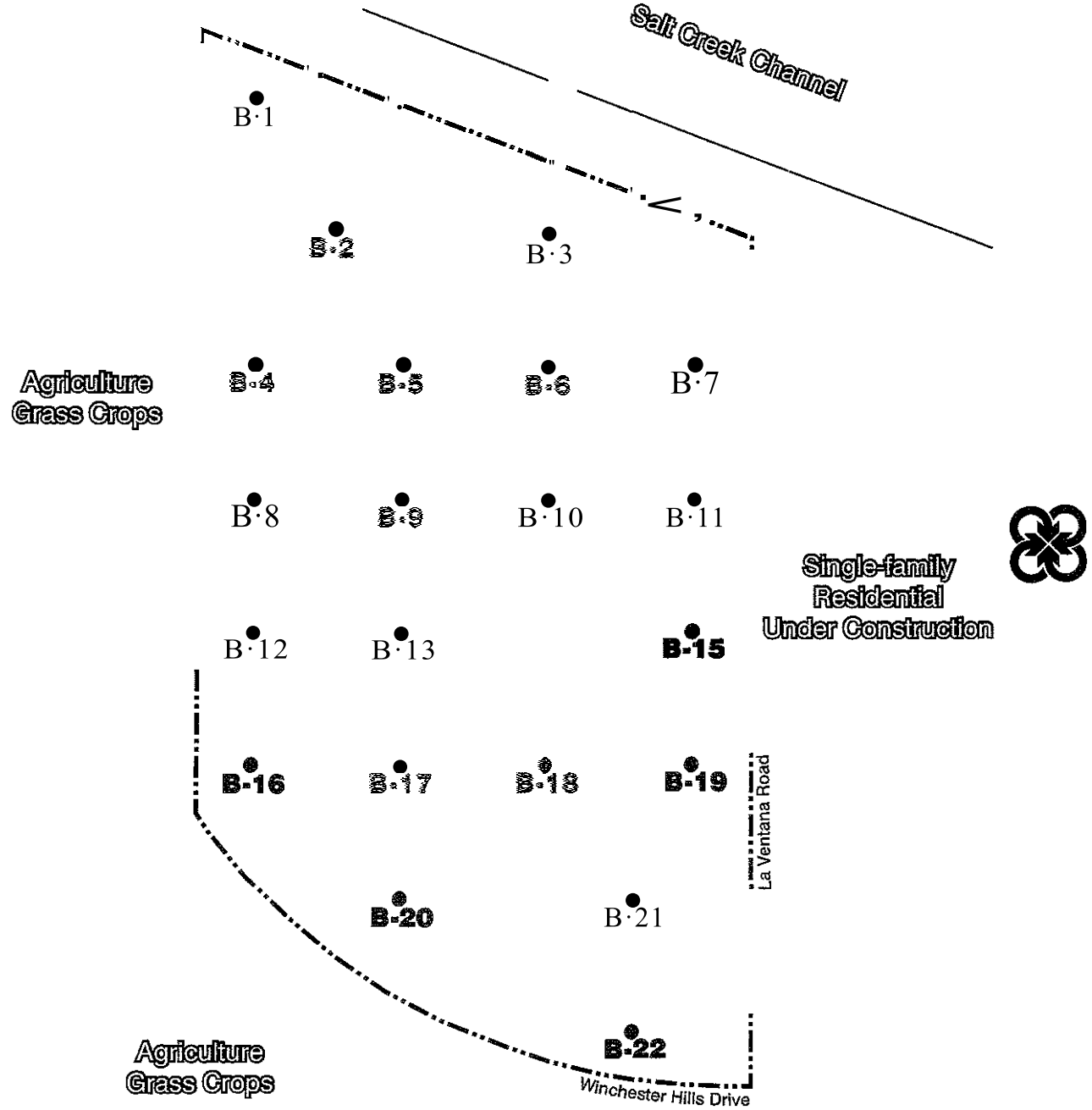
Source: Google Earth

Sampling Locations



●B-16 Soil Sampling Location

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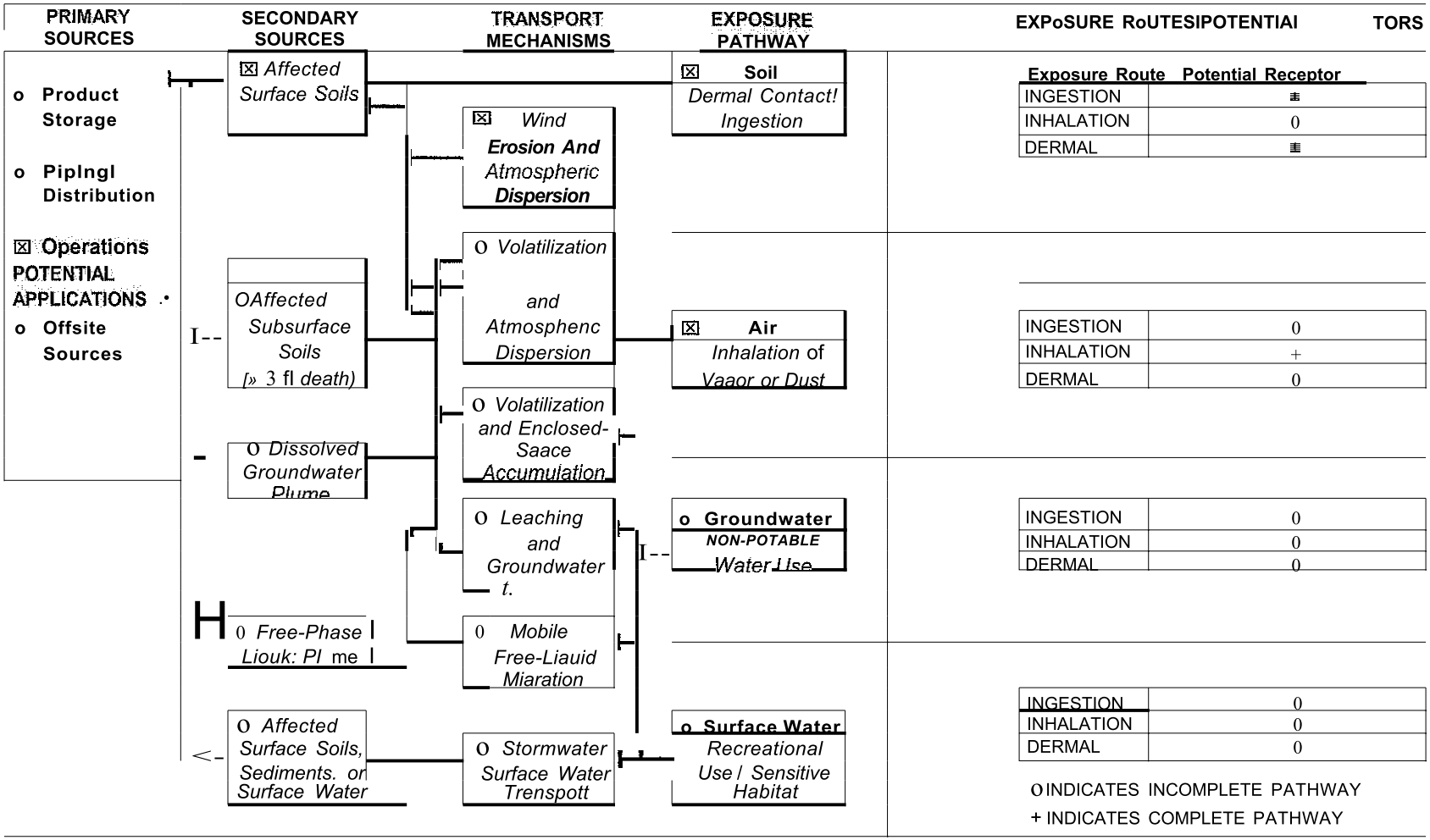
Scale in Feet

Source: Google Earth, 2007

Proposed Hemet Elementary School No.6 Site
Hemet Unified School District
Winchester, California



APPENDIX D

HISTORICAL RECORDS DOCUMENTATION

C3-9046

Not Reported

Winchester, CA 92596

Inquiry Number: 6952499.8

April 25, 2022

The EDR Aerial Photo Decade Package

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Aerial Photo Decade Package

04/25/22

Site Name:

C3-9046
Not Reported
Winchester, CA 92596
EDR Inquiry # 6952499.8

Client Name:

Hillmann Environmental Co.
1745 W Orangewood Avenue
Orange, CA 92868-0000
Contact: Alyssa Berry

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

Search Results:

Year	Scale	Details	Source
2016	1"=750'	Flight Year: 2016	USDA/NAIP
2012	1"=750'	Flight Year: 2012	USDA/NAIP
2009	1"=750'	Flight Year: 2009	USDA/NAIP
2006	1"=750'	Flight Year: 2006	USDA/NAIP
2002	1"=750'	Acquisition Date: January 01, 2002	USGS/DOQQ
1996	1"=750'	Acquisition Date: September 30, 1996	USGS/DOQQ
1989	1"=750'	Flight Date: August 15, 1989	USDA
1985	1"=750'	Flight Date: July 28, 1985	USDA
1978	1"=750'	Flight Date: September 20, 1978	USDA
1967	1"=750'	Flight Date: May 09, 1967	USDA
1961	1"=750'	Flight Date: October 02, 1961	USDA
1953	1"=750'	Flight Date: August 28, 1953	USDA
1949	1"=750'	Flight Date: May 23, 1949	USDA
1938	1"=750'	Flight Date: June 14, 1938	USDA

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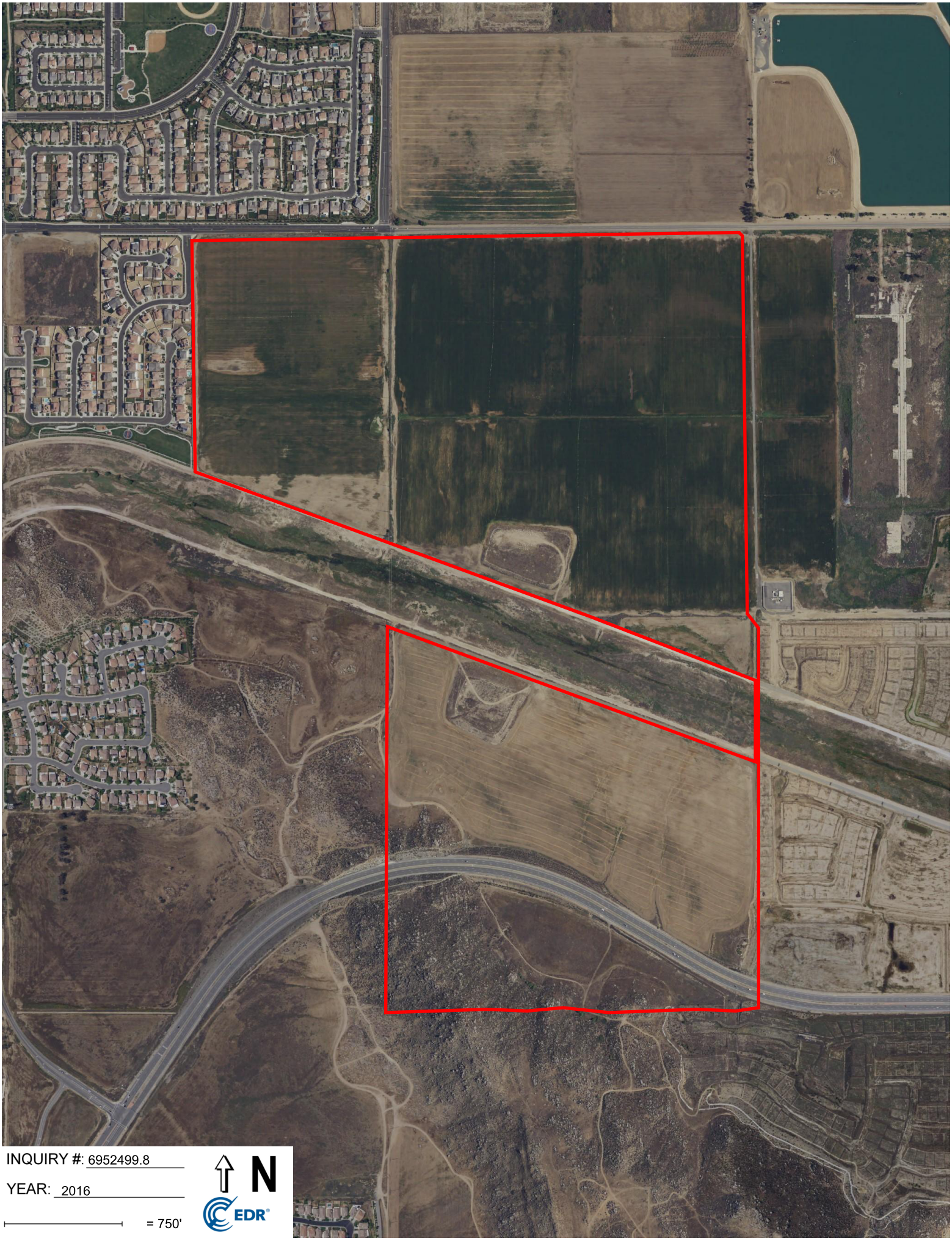
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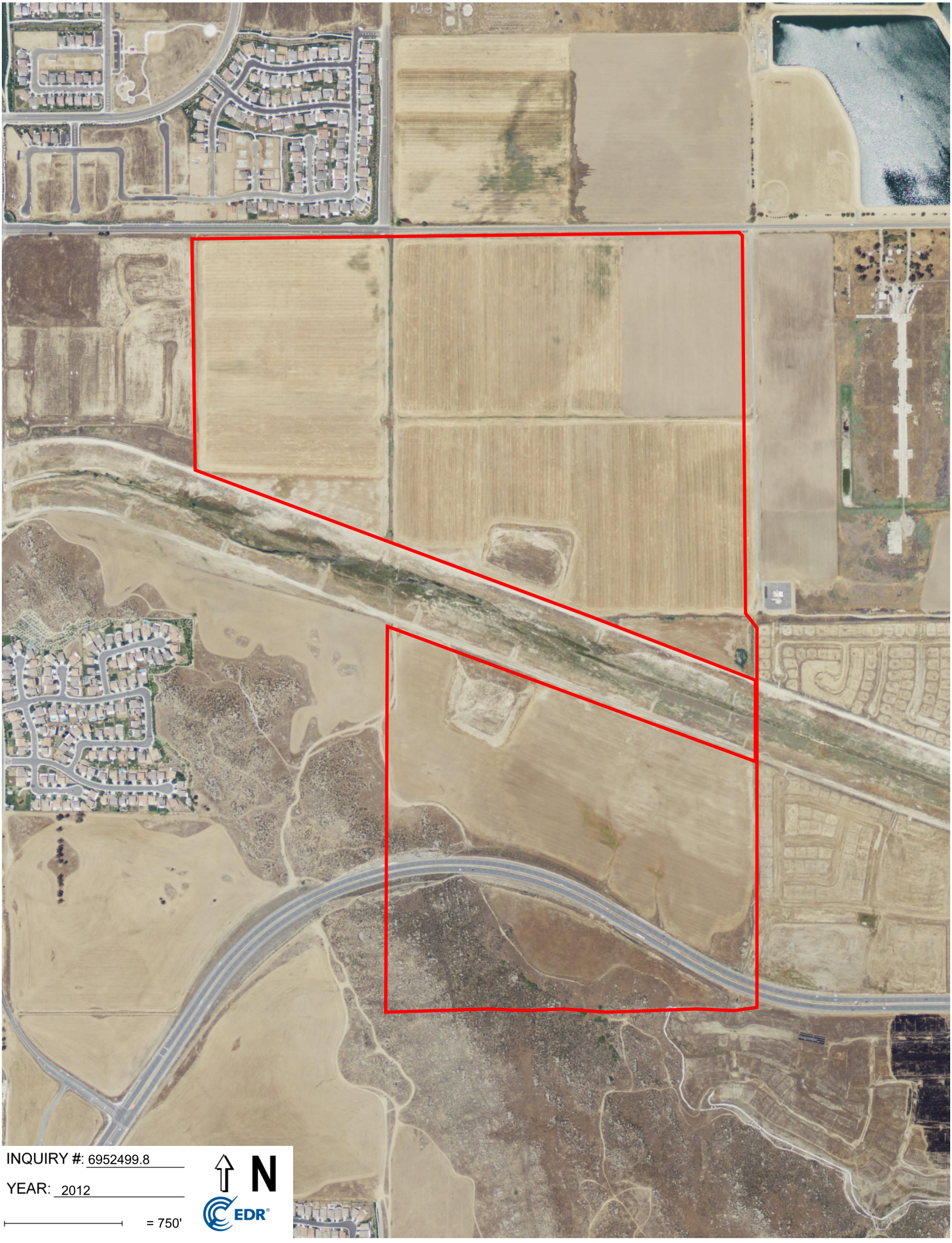
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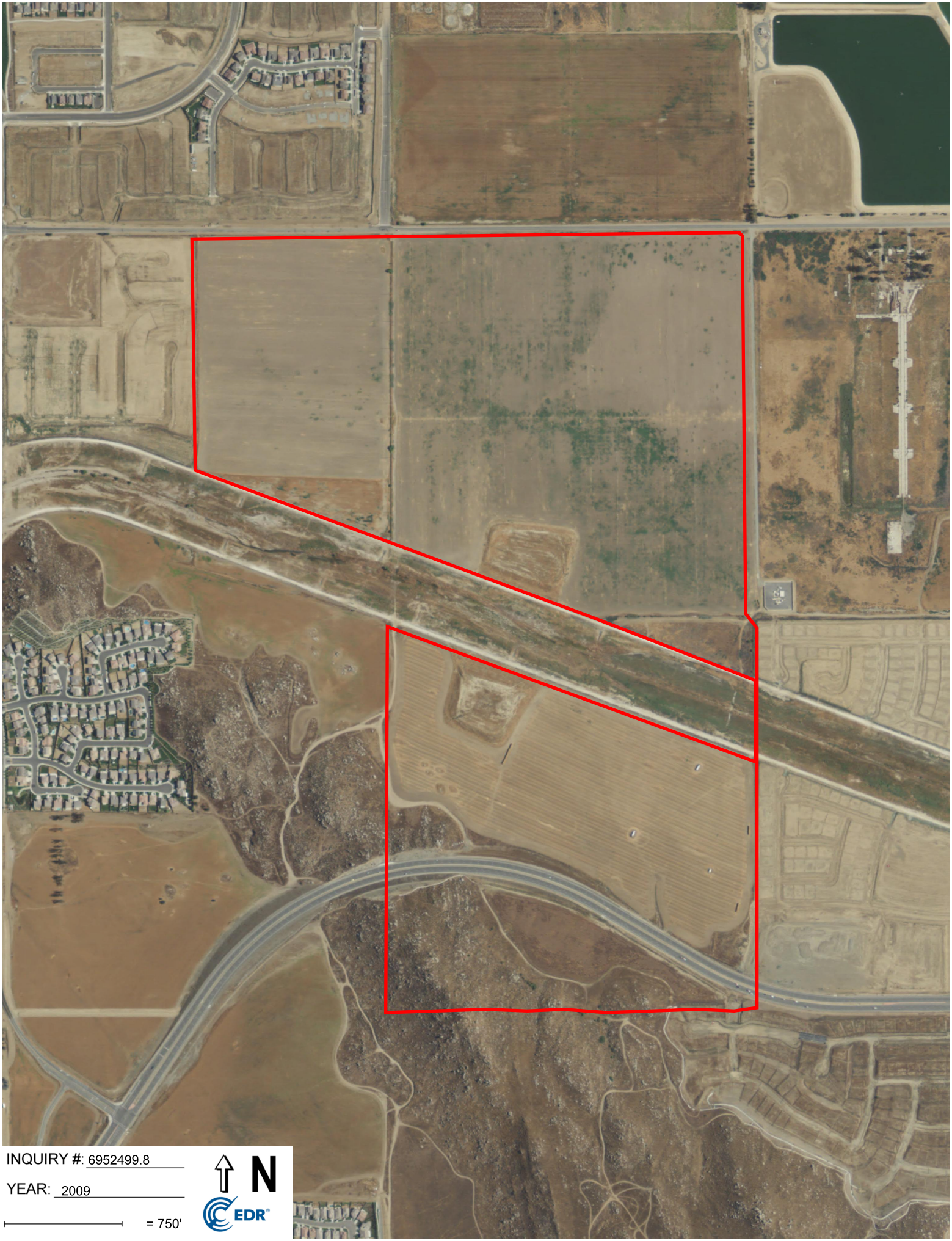
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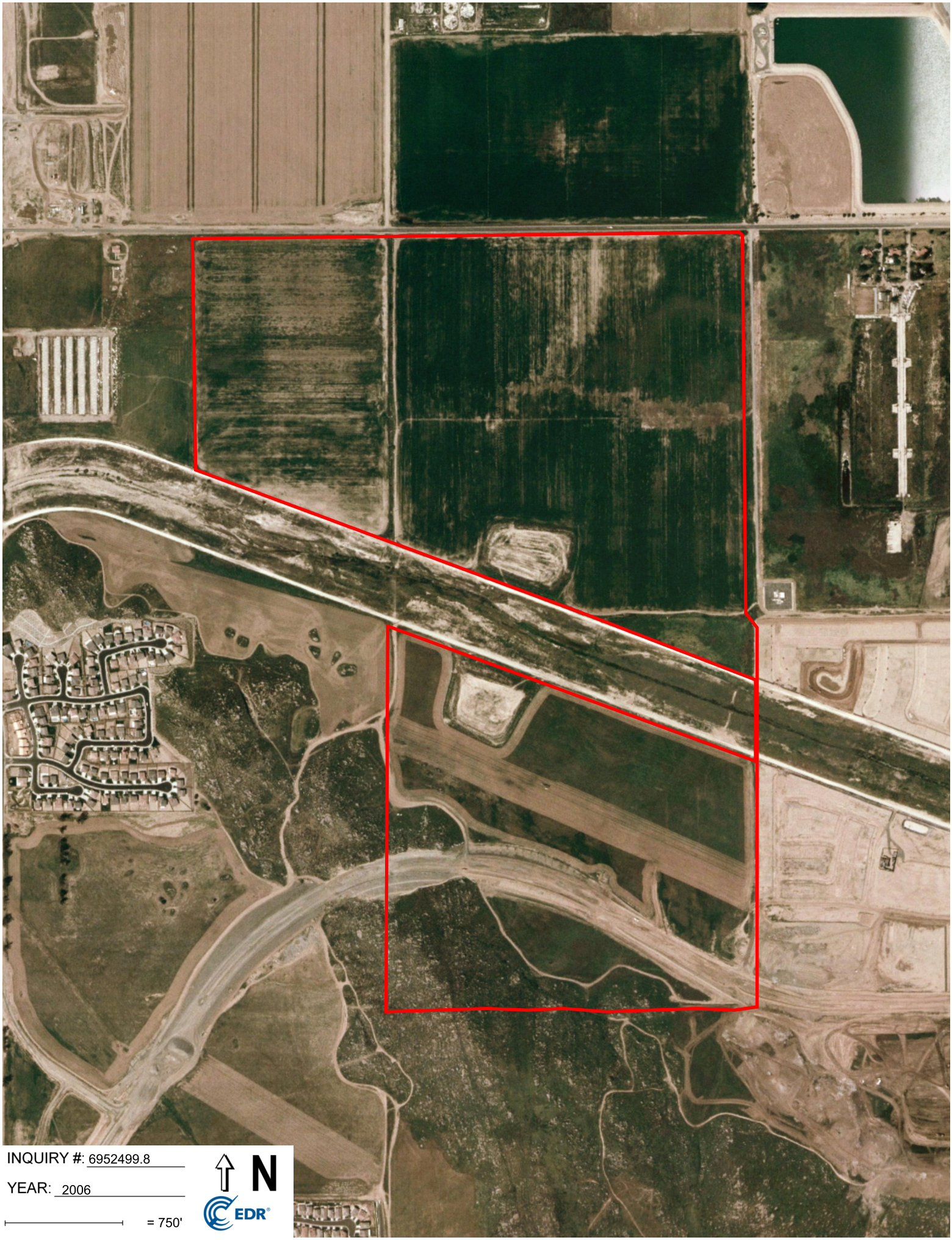
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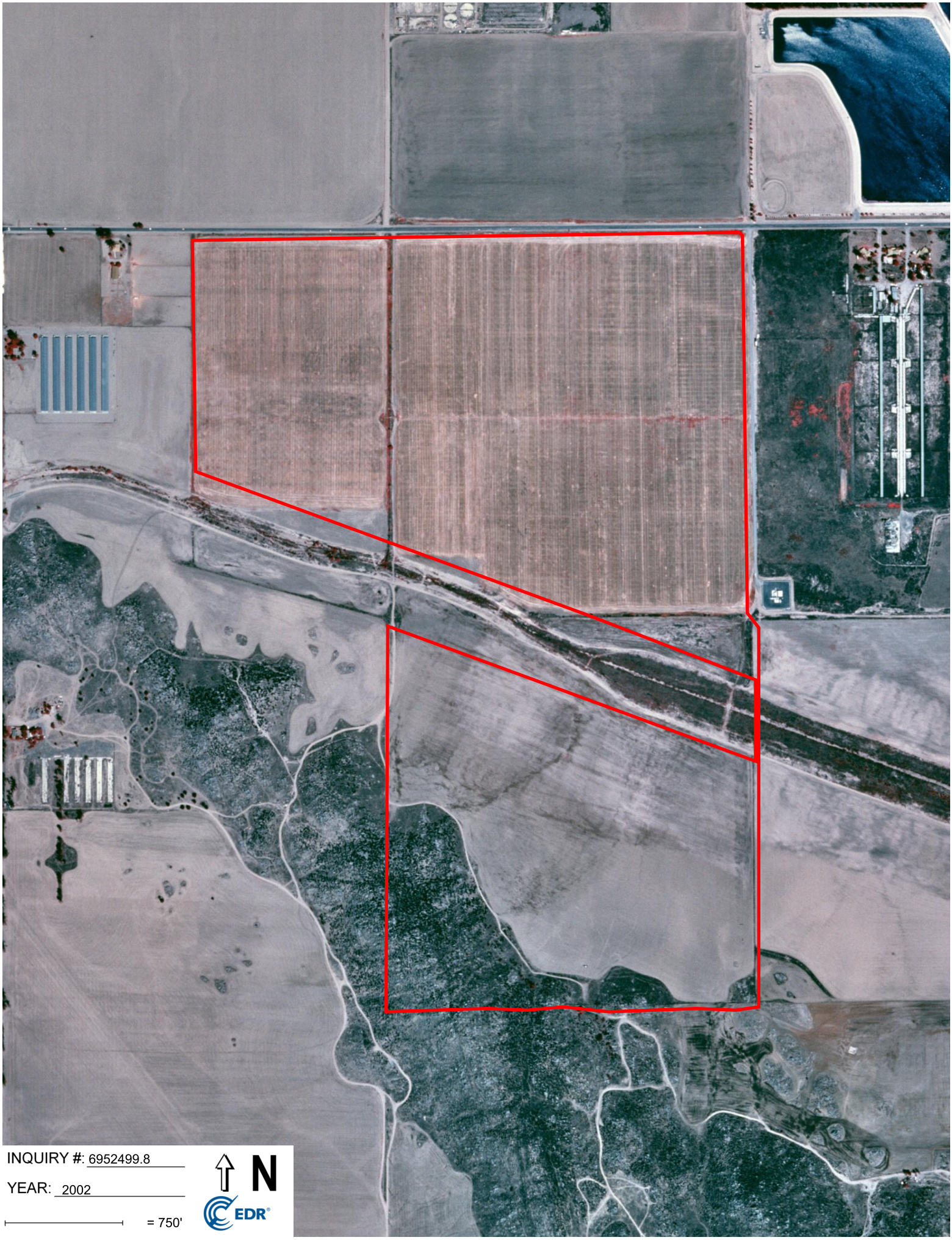
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YEAR: 1985

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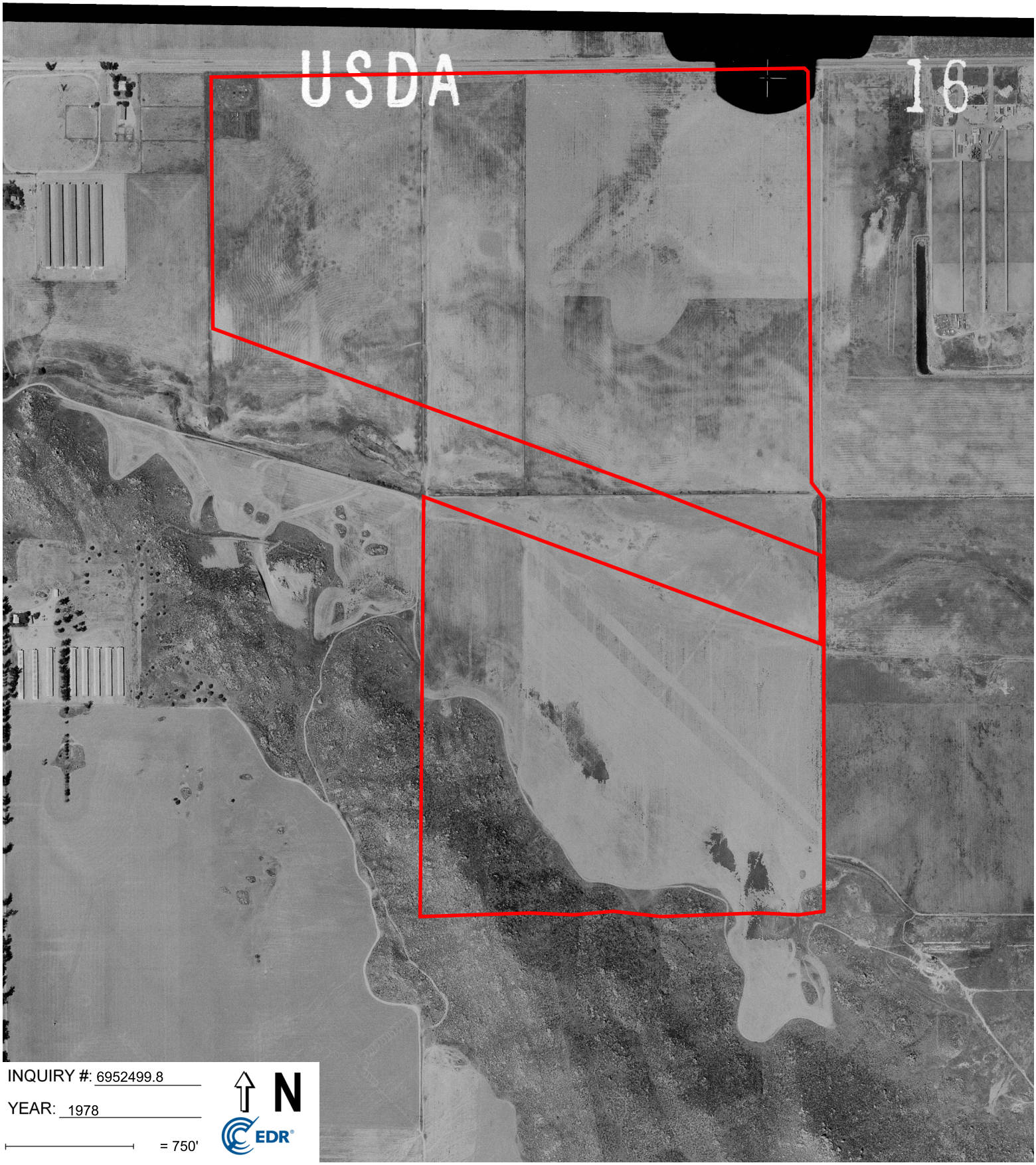
EDR



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EDR

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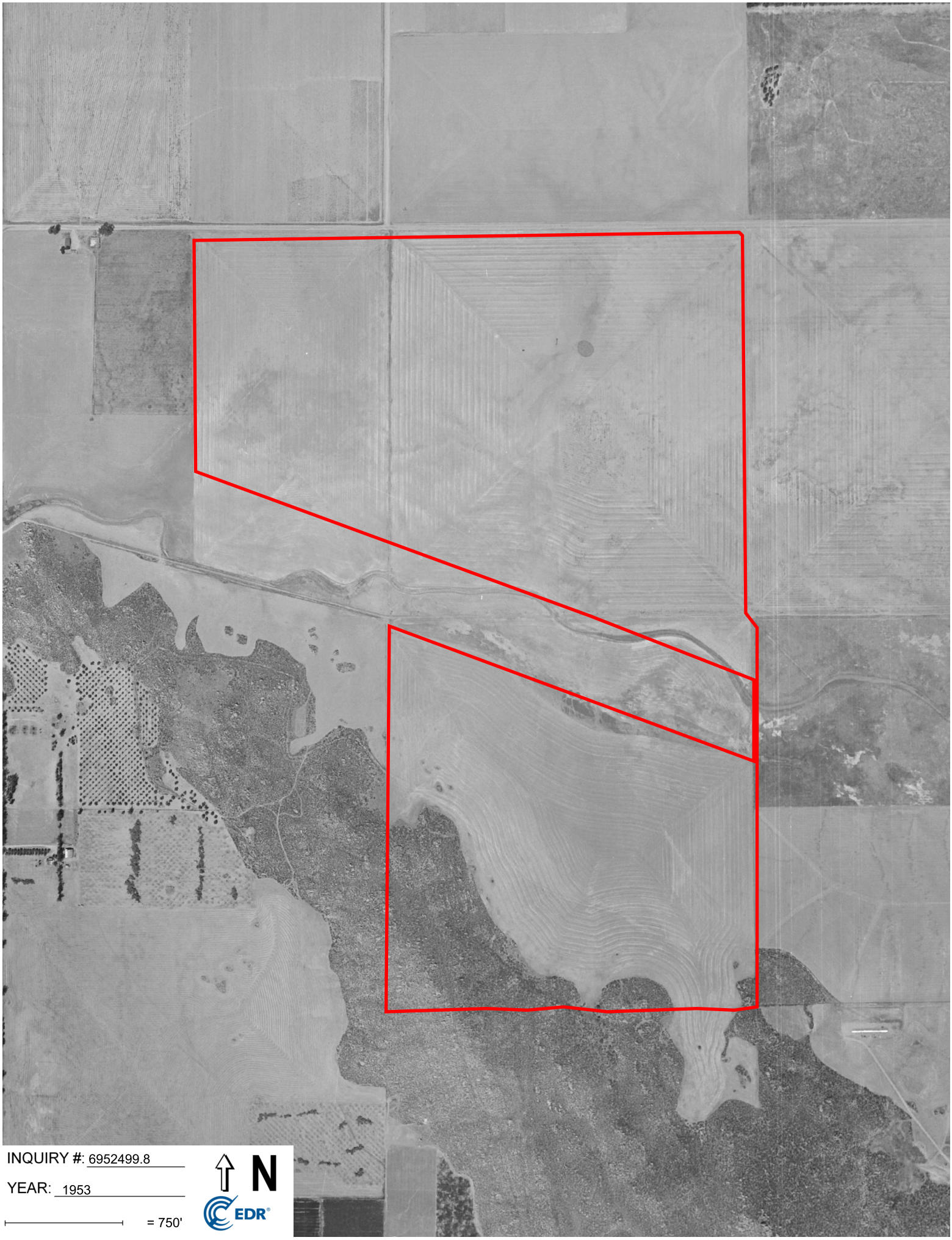
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EDR

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YEAR: 1938

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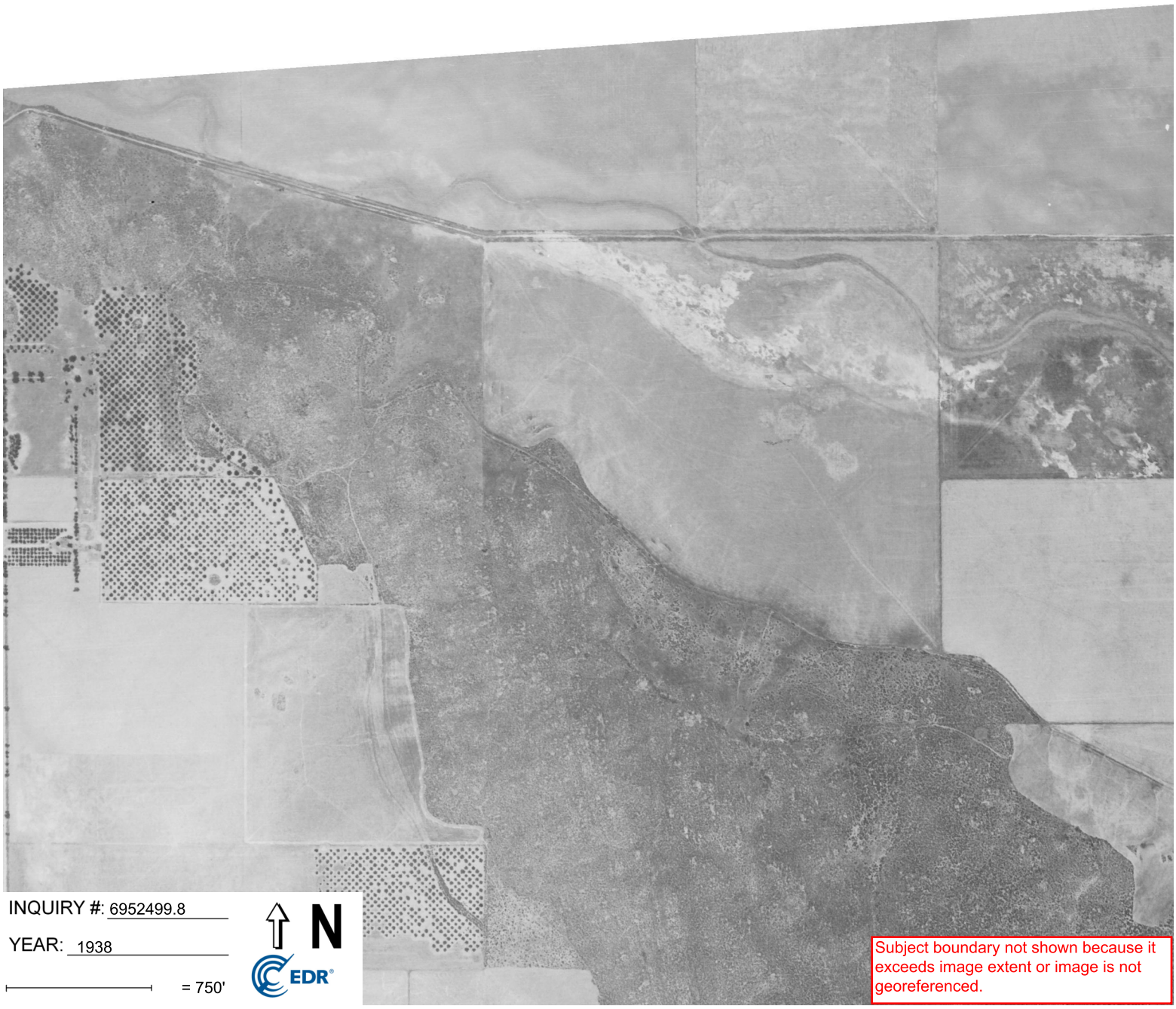
EDR

Subject boundary not shown because it exceeds image extent or image is not georeferenced.



INQUIRY #: 6952499.8

YEAR: 1938

= 750'

N

EDR

Subject boundary not shown because it exceeds image extent or image is not georeferenced.

C3-9046

Not Reported

Winchester, CA 92596

Inquiry Number: 6952499.4

April 22, 2022

EDR Historical Topo Map Report

with QuadMatch™

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Historical Topo Map Report

04/22/22

Site Name:

C3-9046
Not Reported
Winchester, CA 92596
EDR Inquiry # 6952499.4

Client Name:

Hillmann Environmental Co.
1745 W Orangewood Avenue
Orange, CA 92868-0000
Contact: Alyssa Berry

EDR Topographic Map Library has been searched by EDR and maps covering the target property location as provided by Hillmann Environmental Co. were identified for the years listed below. EDR's Historical Topo Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDRs Historical Topo Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the late 1800s.

Search Results:

P.O.# NA
Project: C3-9046

Coordinates:

Latitude:	33.703257 33° 42' 12" North
Longitude:	-117.131402 -117° 7' 53" West
UTM Zone:	Zone 11 North
UTM X Meters:	487823.27
UTM Y Meters:	3729262.24
Elevation:	1446.00' above sea level

Maps Provided:

2018
2015
2012
1979
1973
1953
1947
1943
1942
1901

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Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

2018 Source Sheets

Romoland
2018
7.5-minute, 24000

Winchester
2018
7.5-minute, 24000

2015 Source Sheets

Romoland
2015
7.5-minute, 24000

Winchester
2015
7.5-minute, 24000

2012 Source Sheets

Romoland
2012
7.5-minute, 24000

Winchester
2012
7.5-minute, 24000

1979 Source Sheets

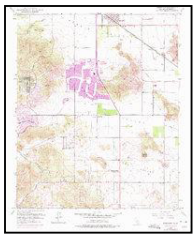
Romoland
1979
7.5-minute, 24000
Aerial Photo Revised 1976

Winchester
1979
7.5-minute, 24000
Aerial Photo Revised 1976

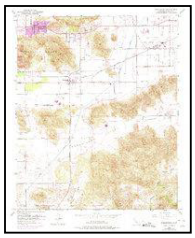
Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1973 Source Sheets

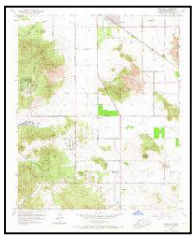


Romoland
1973
7.5-minute, 24000
Aerial Photo Revised 1973



Winchester
1973
7.5-minute, 24000
Aerial Photo Revised 1973

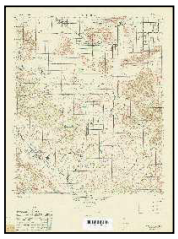
1953 Source Sheets



Romoland
1953
7.5-minute, 24000
Aerial Photo Revised 1951

Winchester
1953
7.5-minute, 24000
Aerial Photo Revised 1951

1947 Source Sheets



MURRIETA
1947
15-minute, 50000

1943 Source Sheets

Murrieta
1943
15-minute, 62500
Aerial Photo Revised 1939

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1942 Source Sheets

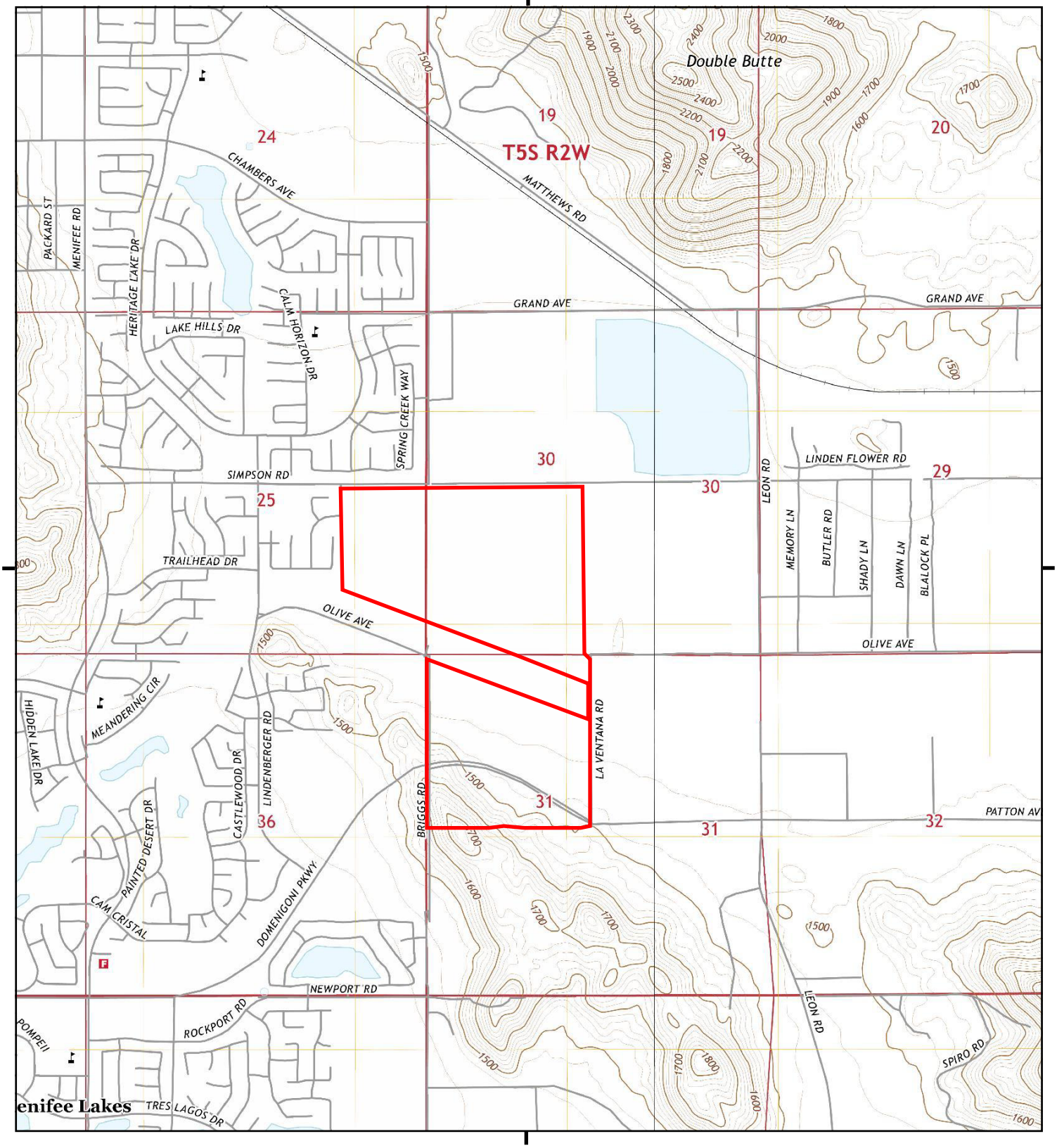
Murrieta
1942
15-minute, 62500
Aerial Photo Revised 1939

1901 Source Sheets

Elsinore
1901
30-minute, 125000

Historical Topo Map

2018



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

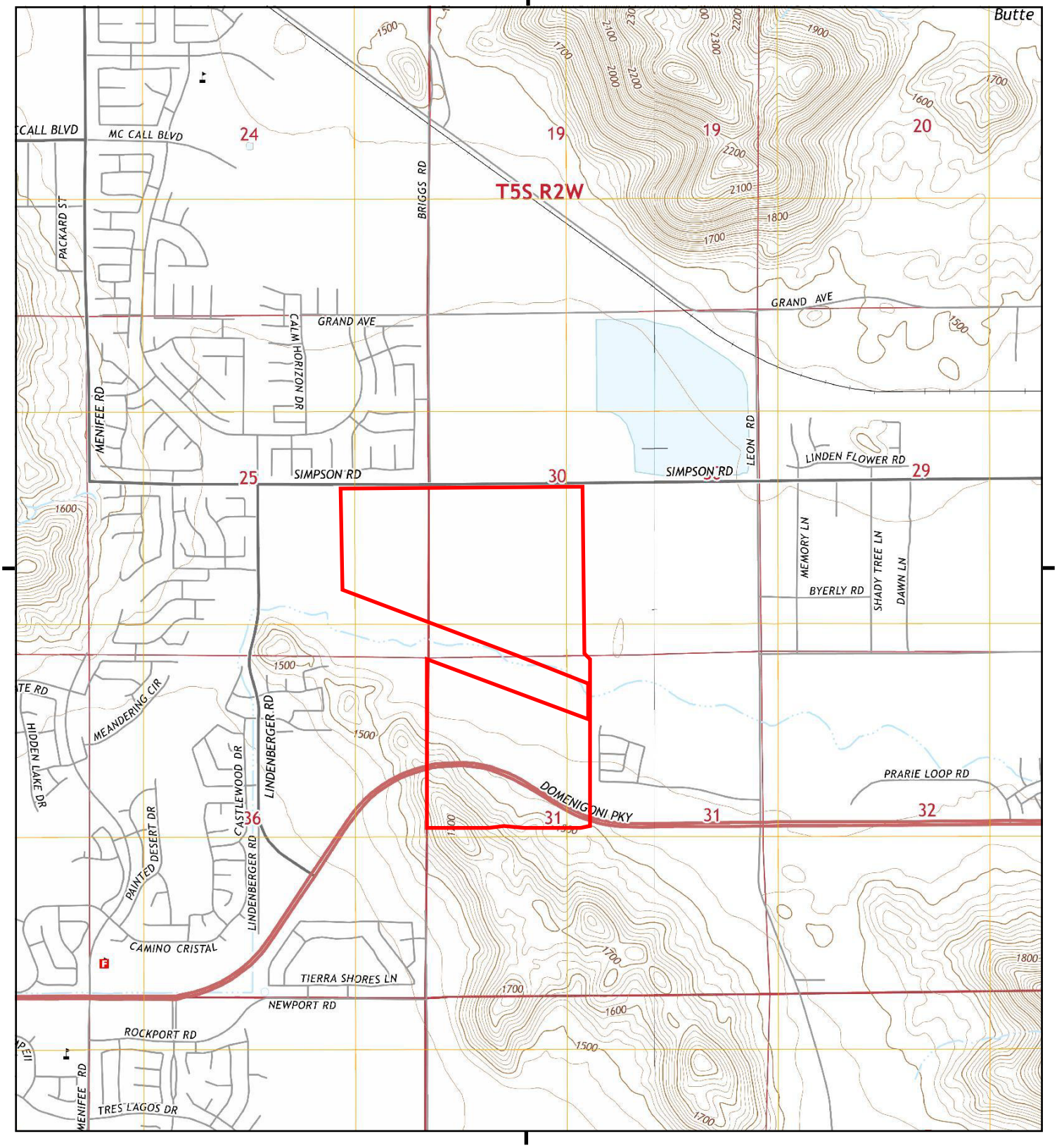
TP, Romoland, 2018, 7.5-minute
E, Winchester, 2018, 7.5-minute

SITE NAME: C3-9046
ADDRESS: Not Reported
Winchester, CA 92596
CLIENT: Hillmann Environmental Co.

N

Historical Topo Map

2015



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

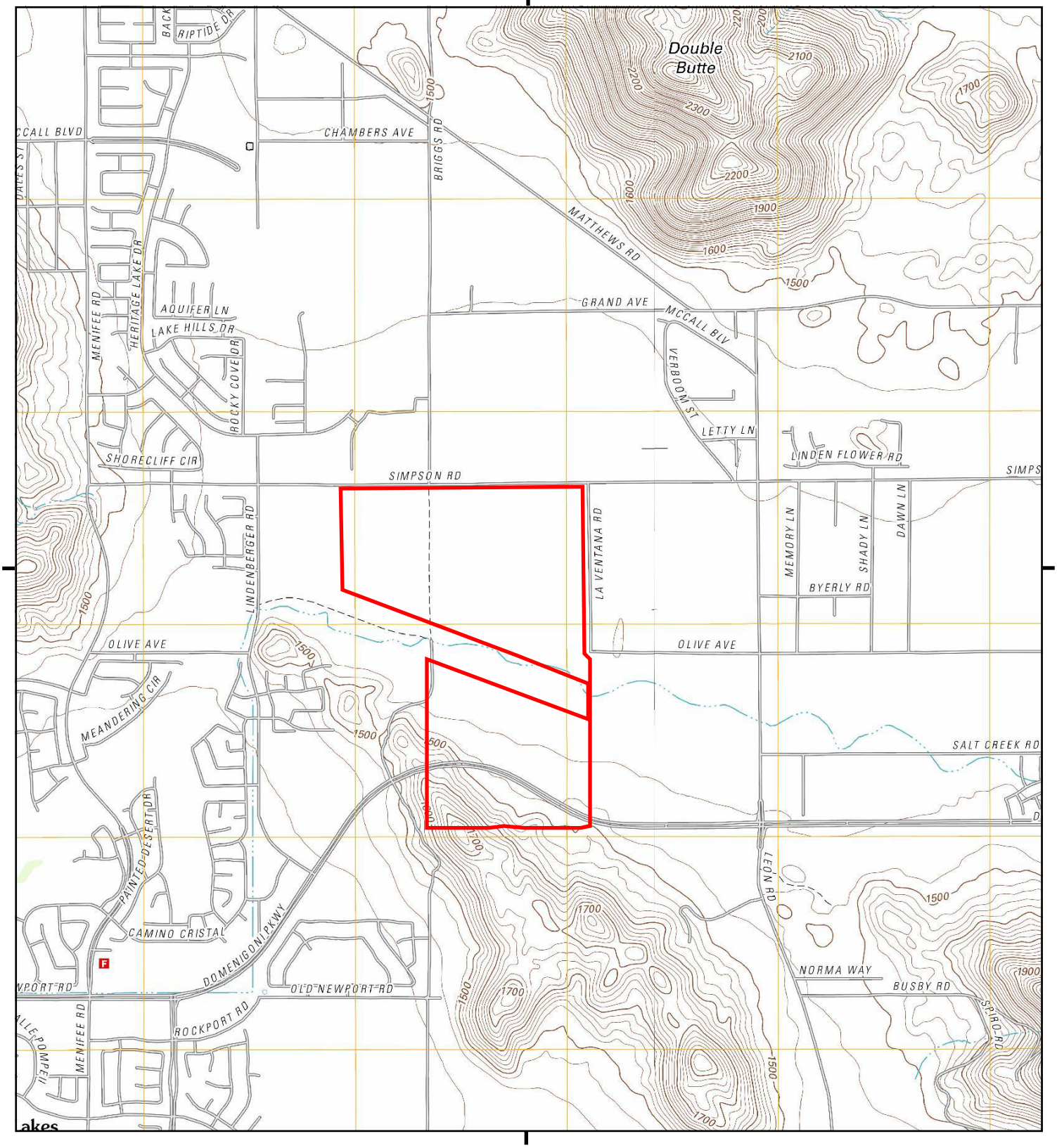
TP, Romoland, 2015, 7.5-minute
E, Winchester, 2015, 7.5-minute

SITE NAME: C3-9046
ADDRESS: Not Reported
Winchester, CA 92596
CLIENT: Hillmann Environmental Co.

N

Historical Topo Map

2012



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

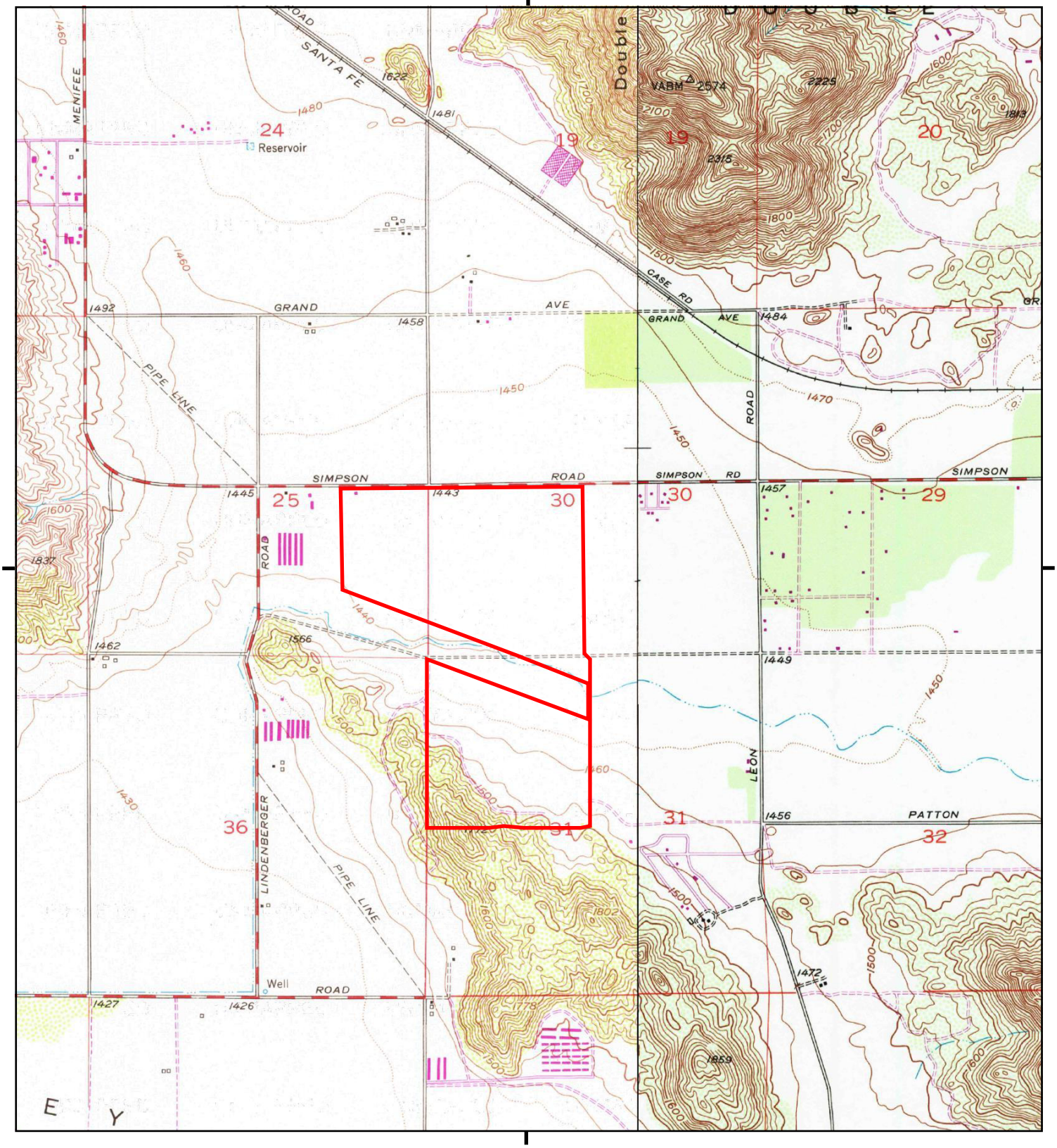
TP, Romoland, 2012, 7.5-minute
E, Winchester, 2012, 7.5-minute

SITE NAME: C3-9046
ADDRESS: Not Reported
Winchester, CA 92596
CLIENT: Hillmann Environmental Co.

N

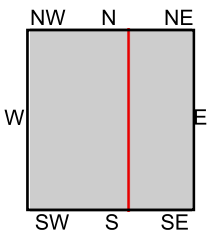
Historical Topo Map

1979



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5



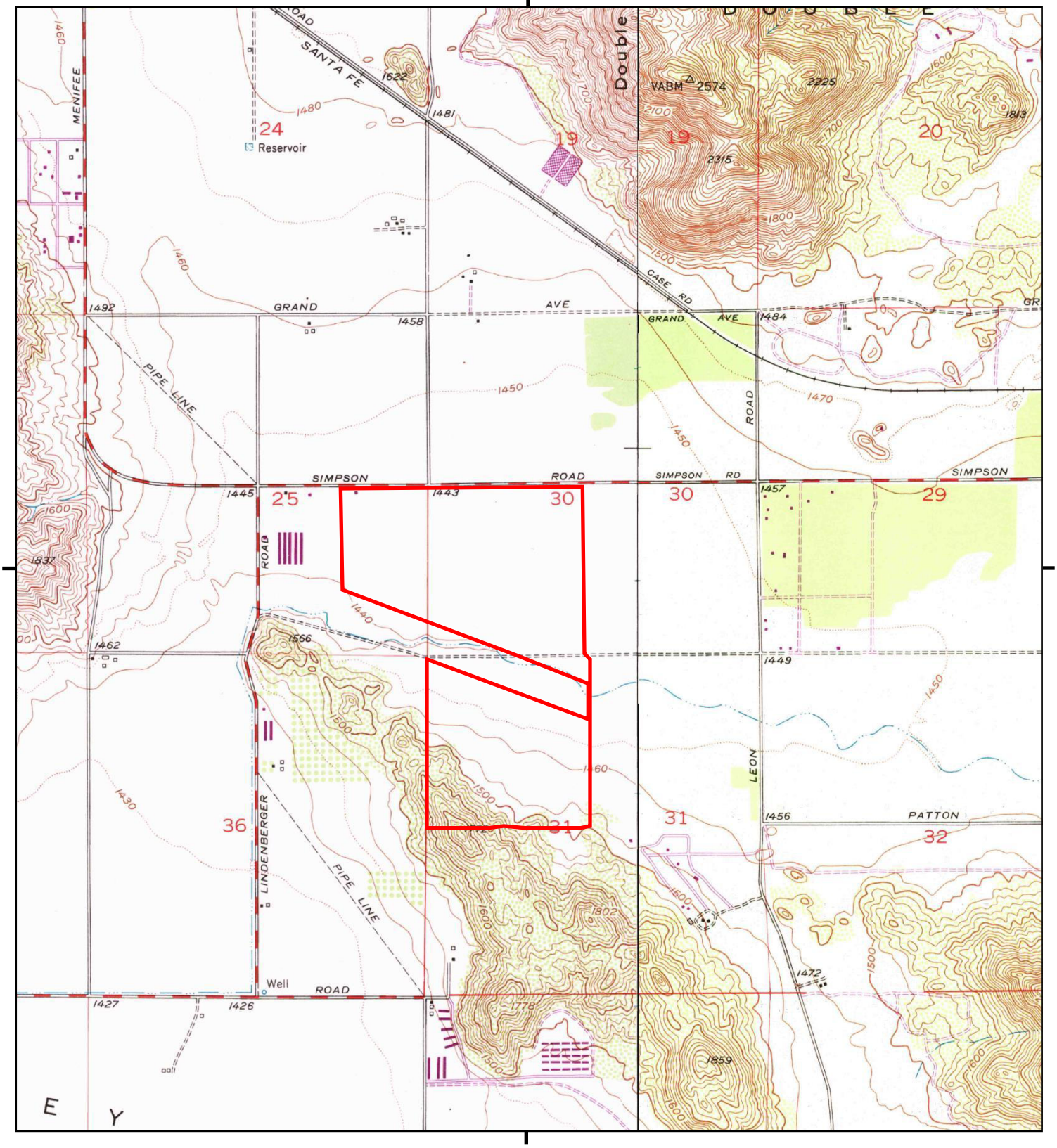
TP, Romoland, 1979, 7.5-minute
E, Winchester, 1979, 7.5-minute

SITE NAME: C3-9046
ADDRESS: Not Reported
Winchester, CA 92596
CLIENT: Hillmann Environmental Co.

N

Historical Topo Map

1973



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

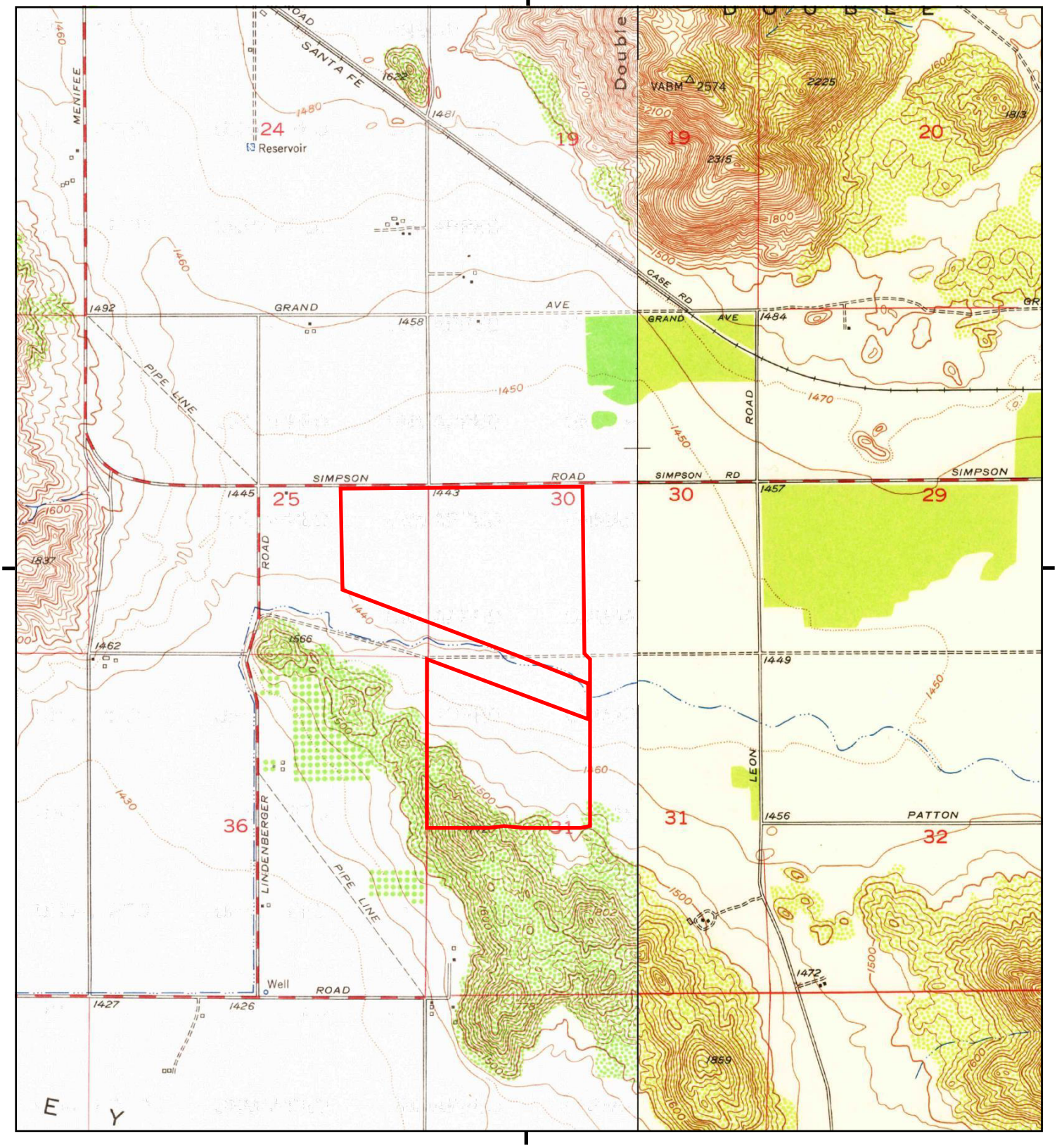
TP, Romoland, 1973, 7.5-minute
E, Winchester, 1973, 7.5-minute

SITE NAME: C3-9046
ADDRESS: Not Reported
Winchester, CA 92596
CLIENT: Hillmann Environmental Co.

N

Historical Topo Map

1953



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

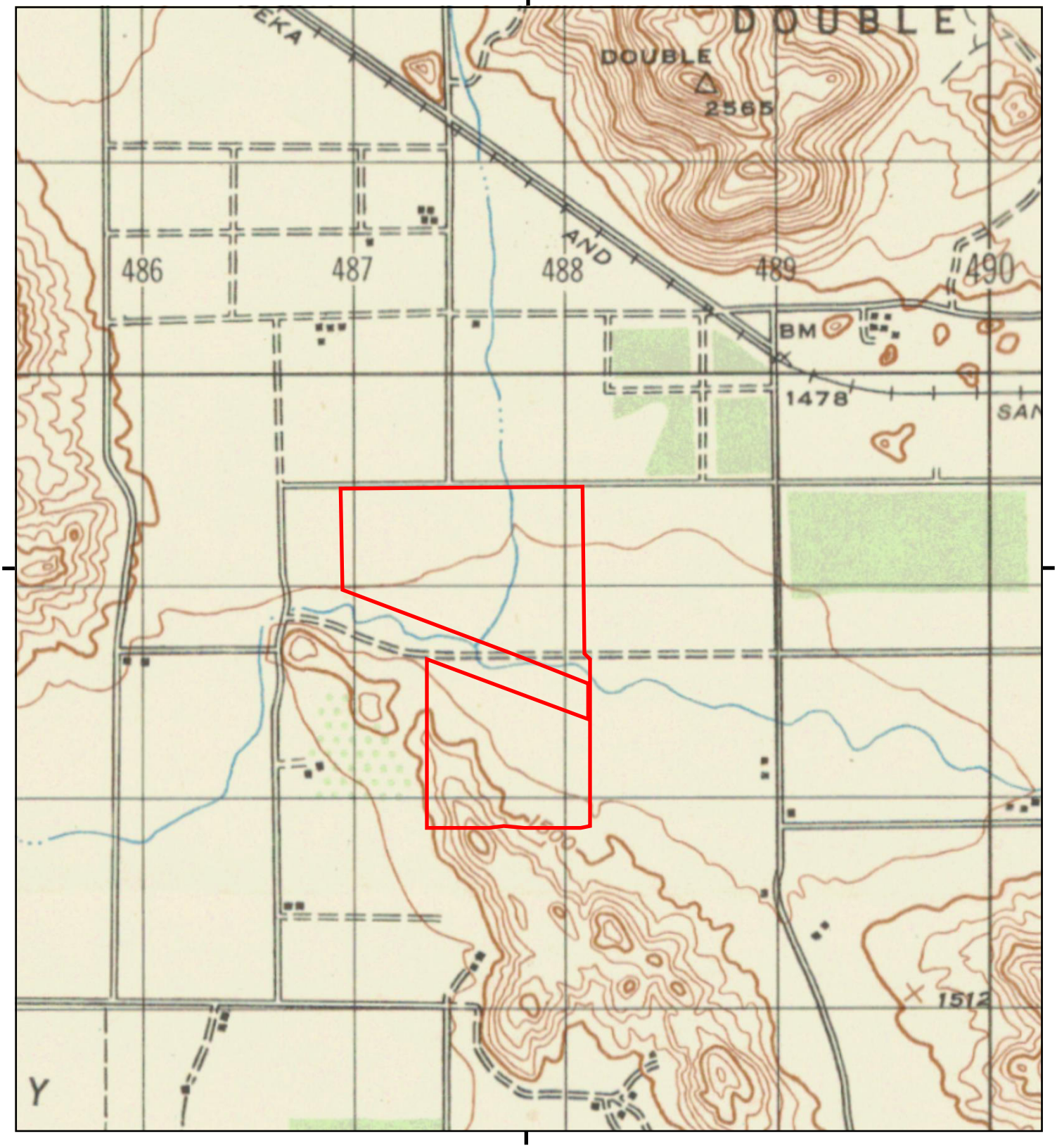
TP, Romoland, 1953, 7.5-minute
E, Winchester, 1953, 7.5-minute

SITE NAME: C3-9046
ADDRESS: Not Reported
Winchester, CA 92596
CLIENT: Hillmann Environmental Co.

N

Historical Topo Map

1947



This report includes information from the following map sheet(s).

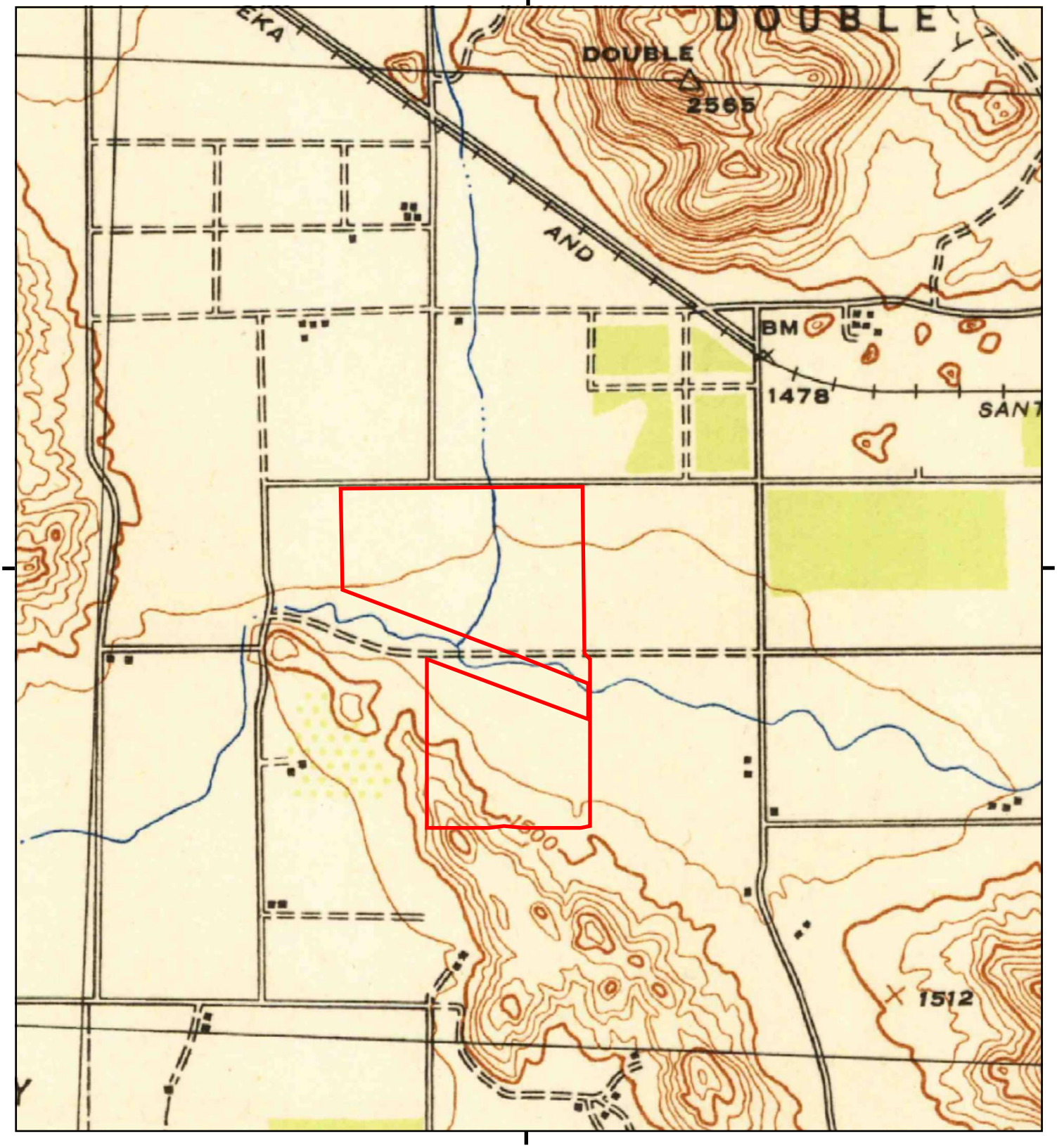
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, MURRIETA, 1947, 15-minute

SITE NAME: C3-9046
ADDRESS: Not Reported
Winchester, CA 92596
CLIENT: Hillmann Environmental Co.

N



This report includes information from the following map sheet(s).

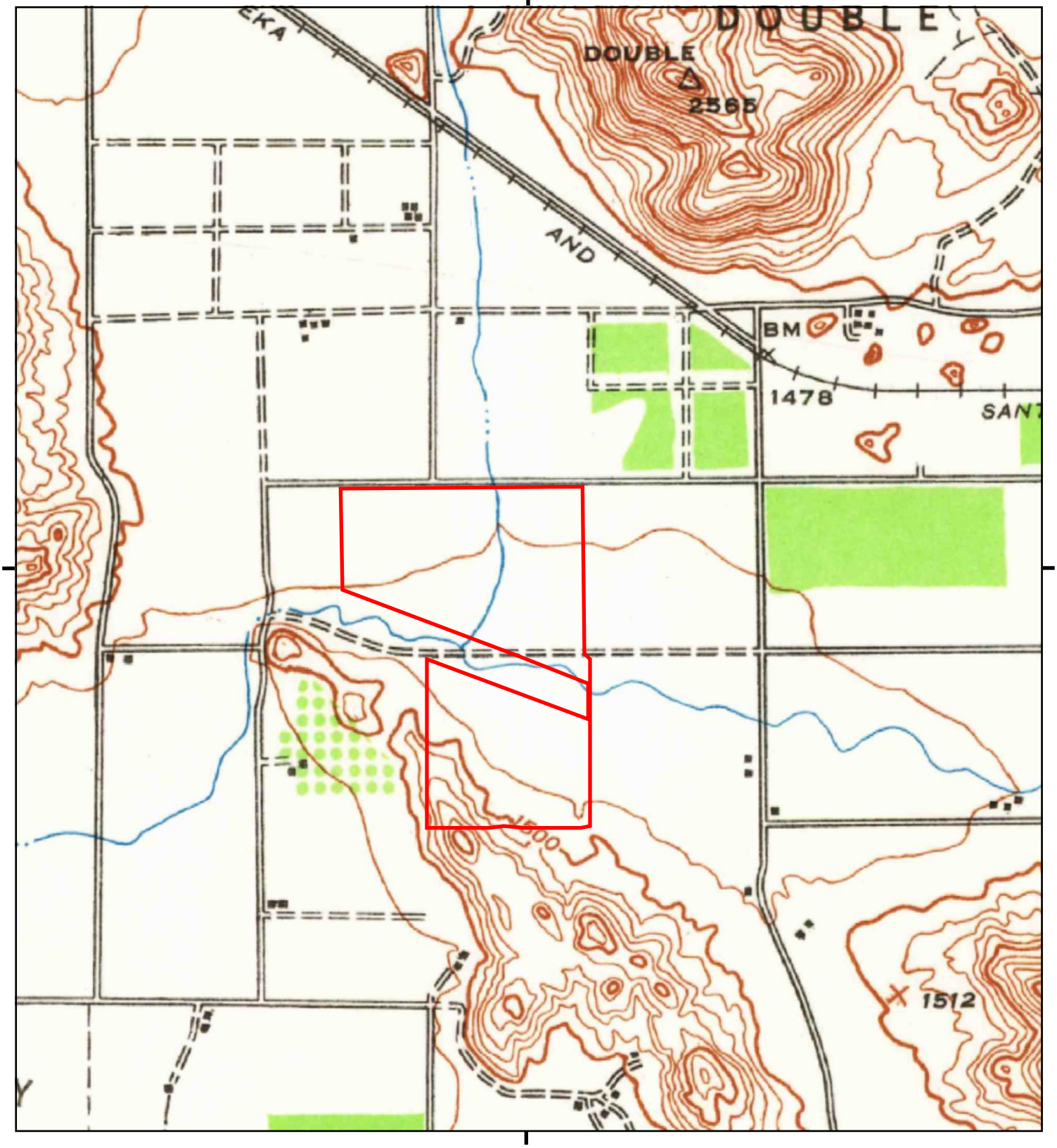
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Murrieta, 1943, 15-minute

SITE NAME: C3-9046
ADDRESS: Not Reported
Winchester, CA 92596
CLIENT: Hillmann Environmental Co.

N



This report includes information from the following map sheet(s).

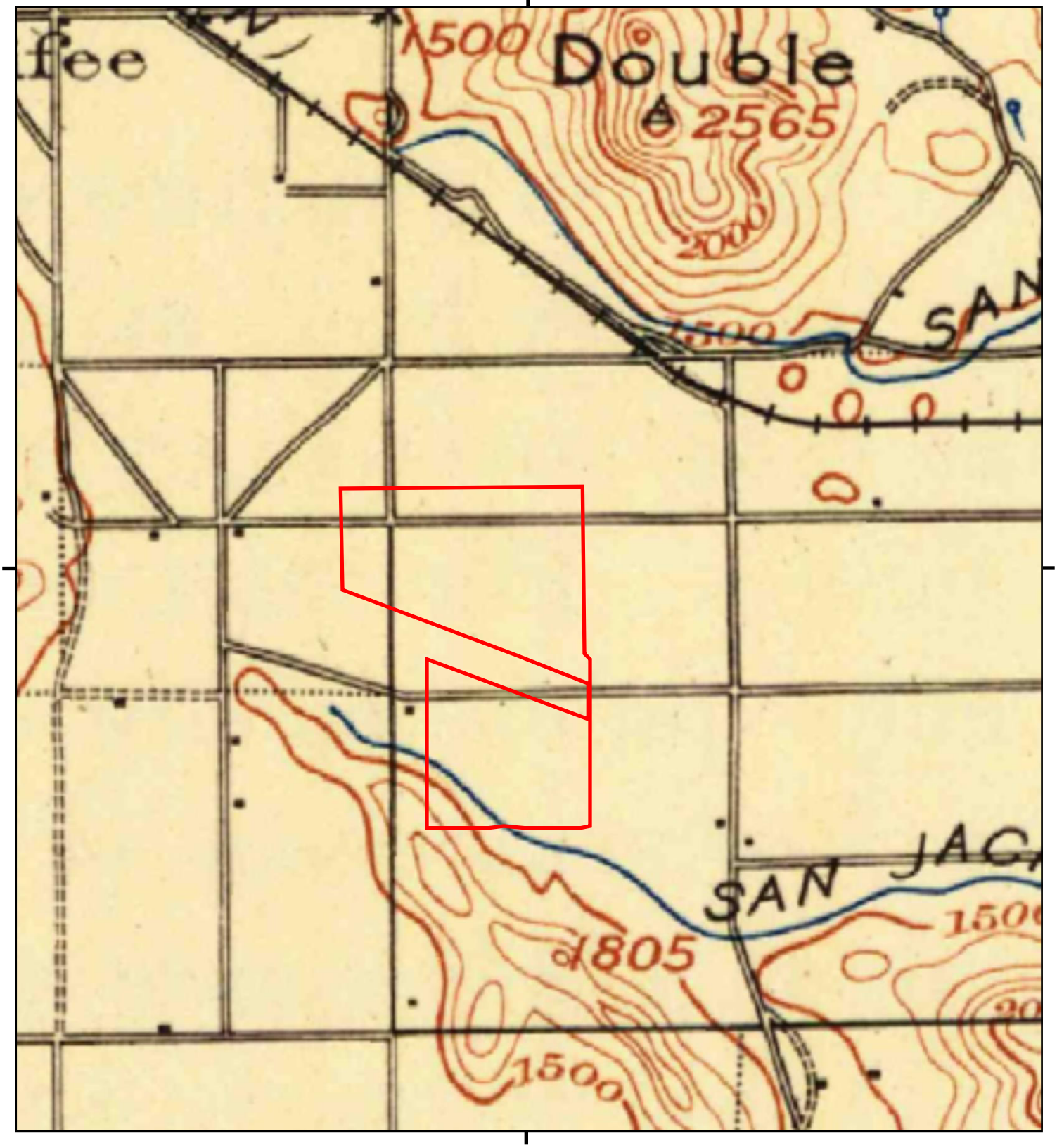
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Murrieta, 1942, 15-minute

SITE NAME: C3-9046
ADDRESS: Not Reported
Winchester, CA 92596
CLIENT: Hillmann Environmental Co.

N



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Elsinore, 1901, 30-minute

SITE NAME: C3-9046
ADDRESS: Not Reported
Winchester, CA 92596
CLIENT: Hillmann Environmental Co.

N

C3-9046

Not Reported

Winchester, CA 92596

Inquiry Number: 6952499.3

April 22, 2022

Certified Sanborn® Map Report

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

04/22/22

Site Name:

C3-9046
Not Reported
Winchester, CA 92596
EDR Inquiry # 6952499.3

Client Name:

Hillmann Environmental Co.
1745 W Orangewood Avenue
Orange, CA 92868-0000
Contact: Alyssa Berry

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The Sanborn Library is continually enhanced with newly identified map archives. This report accesses all maps in the collection as of the day this report was generated.

Certified Sanborn Results:

Certification # 8A26-47F7-8AEA

PO # NA

Project C3-9046

UNMAPPED PROPERTY

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

Sanborn® Library search results

Certification #: 8A26-47F7-8AEA

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

The Sanborn Library LLC Since 1866™

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C3-9046
Not Reported
Winchester, CA 92596

Inquiry Number: 6952499.5
April 28, 2022

The EDR-City Directory Image Report

Environmental Data Resources Inc

6 Armstrong Road
Shelton, CT 06484
800.352.0050
www.edrnet.com

TABLE OF CONTENTS

SECTION

Executive Summary

Findings

City Directory Images

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with any questions or comments.

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EXECUTIVE SUMMARY

DESCRIPTION

Environmental Data Resources, Inc.'s (EDR) City Directory Report is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's City Directory Report includes a search of available city directory data at 5 year intervals.

RECORD SOURCES

EDR's Digital Archive combines historical directory listings from sources such as Cole Information and Dun & Bradstreet. These standard sources of property information complement and enhance each other to provide a more comprehensive report.

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RESEARCH SUMMARY

The following research sources were consulted in the preparation of this report. A check mark indicates where information was identified in the source and provided in this report.

Year	Target Street	Cross Street	Source
2017	☐	☑	EDR Digital Archive
2014	☐	☑	EDR Digital Archive
2010	☐	☑	EDR Digital Archive
2005	☐	☐	Haines Criss-Cross Directory
2000	☐	☐	Haines Criss-Cross Directory
1995	☐	☐	Haines Criss-Cross Directory
1990	☐	☐	Haines Criss-Cross Directory
1985	☐	☐	Haines Criss-Cross Directory
1980	☐	☐	Haines Criss-Cross Directory
1976	☐	☐	Haines Criss-Cross Directory
1971	☐	☐	Haines Criss-Cross Directory

FINDINGS

TARGET PROPERTY STREET

Not Reported
Winchester, CA 92596

No Addresses Found

FINDINGS

CROSS STREETS

Year	*CD Image*	*Source*	
GARDEN GROVE DR			
2017	pg. A1	EDR Digital Archive	
2014	-	EDR Digital Archive	Target and Adjoining not listed in Source
2010	-	EDR Digital Archive	Target and Adjoining not listed in Source
2005	-	Haines Criss-Cross Directory	Street not listed in Source
2000	-	Haines Criss-Cross Directory	Street not listed in Source
1995	-	Haines Criss-Cross Directory	Street not listed in Source
1990	-	Haines Criss-Cross Directory	Street not listed in Source
1985	-	Haines Criss-Cross Directory	Street not listed in Source
1980	-	Haines Criss-Cross Directory	Street not listed in Source
1976	-	Haines Criss-Cross Directory	Street not listed in Source
1971	-	Haines Criss-Cross Directory	Street not listed in Source
MESA VERDE CIR			
2017	pg. A2	EDR Digital Archive	
2014	pg. A3	EDR Digital Archive	
2010	pg. A4	EDR Digital Archive	
2005	-	Haines Criss-Cross Directory	Street not listed in Source
2000	-	Haines Criss-Cross Directory	Street not listed in Source
1995	-	Haines Criss-Cross Directory	Street not listed in Source
1990	-	Haines Criss-Cross Directory	Street not listed in Source
1985	-	Haines Criss-Cross Directory	Street not listed in Source
1980	-	Haines Criss-Cross Directory	Street not listed in Source
1976	-	Haines Criss-Cross Directory	Street not listed in Source
1971	-	Haines Criss-Cross Directory	Street not listed in Source

City Directory Images

Target Street	Cross Street	Source
-	✓	EDR Digital Archive

GARDEN GROVE DR 2017

29590	WOLFE, STEVEN S
29612	WOODS, KELVIN D
29634	PERRY, SEANMICHAEL L
29656	LOPEZ, STEVEN L
29700	KIMBROUGH, TASHAREE
29722	FINUCANE, PATRIC J
29744	NGUYEN, DUY P
29766	GUTIERREZ, ROBERT L
29810	CHILDS, MICHAEL E
29832	HENDRICKS, LAURENCE T
29854	ROEBKE, KEVIN G

Target Street	Cross Street	Source
-	✓	EDR Digital Archive

MESA VERDE CIR 2017

29558	DEMOLL, DANIEL R
29572	DELONG, JASON
29586	MARSHALL, ANNE M
29600	CHANA, GURINDER S
29614	YEATES, NATASHA R
29628	RUIZ, RAMON J
29642	CARLON, RICARDO
29647	WILLIAMS, JANETTE
29656	KHAN, ANWAR N
29661	THONGDYNALAY, BOUNSOUM B
29670	RIPLEY, PAMELA D
29675	MORENO, MAXIMIANO
29684	PALENCIA, VELKY O
29689	JOHNSTON, SHAWN K
29698	LUGRIS, PHILIP
29717	WISNER, STEPHEN C
29726	DIAZ, ROBERT L
29731	STEWART, WARREN A
29740	DESBOROUGH, DONAL

Target Street	Cross Street	Source
-	✓	EDR Digital Archive

MESA VERDE CIR 2014

29558	MORGAN, CISSY
29572	DELONG, JASON
29586	MARSHALL, DOUGLAS M
29600	CHANA, GURINDER S
29614	YEATES, NATASHA R
29628	RUIZ, RAMON J
29642	CARLON, RICARDO
29647	VILLARREAL, ASHLEY T
29656	KHAN, GOHAR
29661	THONGDYNALAY, BOUNSOUM B
29670	HENDERSON, AMBEROSE J
29675	MORENO, MAXIMIANO
29684	OCCUPANT UNKNOWN,
29689	JOHNSTON, SHAWN K
29698	LUGRIS, PHILIP
29703	CLARK, KENNETH W
29712	MARRUJO, LILLIAN F
29717	WISNER, STEPHEN C
29726	DIAZ, ROBERT L
29731	OCCUPANT UNKNOWN,
29740	DESBOROUGH, DONALD
29745	OCCUPANT UNKNOWN,

Target Street	Cross Street	Source
-	✓	EDR Digital Archive

MESA VERDE CIR 2010

29558 OCCUPANT UNKNOWN,
29572 DELONG, JASON
29586 OLSON, MARK
29600 BROWN, CRYSTAL
29614 ORBACH, WENDI K
29628 ANASTACIO, ANTONIO T
29642 CARLON, RICARDO
29647 OCCUPANT UNKNOWN,
29656 OCCUPANT UNKNOWN,
29661 THONGDYNALAY, BAY B
29670 DEHEER, JOHN D
29675 PALMERTON, DAVID K
29684 OCCUPANT UNKNOWN,
29689 JOHNSTON, SHAWN K
29698 LUCRIS, DONNA J
29703 CLARK, KENNETH
29712 OCCUPANT UNKNOWN,
29717 WISNER, STEPHEN C
29726 OCCUPANT UNKNOWN,
29731 WELCH, ERIC R
29740 OCCUPANT UNKNOWN,
29745 OCCUPANT UNKNOWN,

APPENDIX E

REGULATORY RECORDS DOCUMENTATION

C3-9046
Not Reported
Winchester, CA 92596

Inquiry Number: 06952499.2r
April 22, 2022

The EDR Radius Map™ Report with GeoCheck®

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

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

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E1527-21), the ASTM Standard Practice for Environmental Site Assessments for Forestland or Rural Property (E 2247-16), the ASTM Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (E 1528-14) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

NOT REPORTED
WINCHESTER, CA 92596

COORDINATES

Latitude (North):	33.7032570 - 33ˆ 42' 11.72''
Longitude (West):	117.1314020 - 117ˆ 7' 53.04''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	487823.0
UTM Y (Meters):	3729068.8
Elevation:	1446 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	12015913 ROMOLAND, CA
Version Date:	2018
East Map:	12015933 WINCHESTER, CA
Version Date:	2018

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20140530, 20140603
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
NOT REPORTED
WINCHESTER, CA 92596

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
A1	NEW ELEMENTARY SCHOO	LA VENTANA ROAD/NEWP	ENVIROSTOR, SCH	Higher	1 ft.
A2	NEW ELEMENTARY SCHOO	LA VENTANA ROAD/NEWP	CERS	Higher	1 ft.
A3	SALT CREEK REGIONAL	OLIVE AVE ADAMS STRE	CIWQS	Higher	1 ft.
4	HERITAGE LAKE SCHOOL	HERITAGE LAKE DRIVE	ENVIROSTOR, SCH	Higher	2703, 0.512, NW
5	MIDDLE SCHOOL NO. 8	OLIVE AVENUE AND LON	ENVIROSTOR, SCH, CERS	Higher	3938, 0.746, ESE

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

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

DATABASES WITH NO MAPPED SITES

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

STANDARD ENVIRONMENTAL RECORDS

Lists of Federal NPL (Superfund) sites

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

Lists of Federal Delisted NPL sites

Delisted NPL ---------- National Priority List Deletions

Lists of Federal sites subject to CERCLA removals and CERCLA orders

FEDERAL FACILITY ---------- Federal Facility Site Information listing
SEMS ---------- Superfund Enterprise Management System

Lists of Federal CERCLA sites with NFRAP

SEMS-ARCHIVE ---------- Superfund Enterprise Management System Archive

Lists of Federal RCRA facilities undergoing Corrective Action

CORRACTS ---------- Corrective Action Report

Lists of Federal RCRA TSD facilities

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

Lists of Federal RCRA generators

RCRA-LQG ---------- RCRA - Large Quantity Generators
RCRA-SQG ---------- RCRA - Small Quantity Generators
RCRA-VSQG ---------- RCRA - Very Small Quantity Generators (Formerly Conditionally Exempt Small Quantity Generators)

Federal institutional controls / engineering controls registries

LUCIS ---------- Land Use Control Information System

US ENG CONTROLS ..... Engineering Controls Sites List
US INST CONTROLS ..... Institutional Controls Sites List

Federal ERNS list

ERNS ..... Emergency Response Notification System

Lists of state- and tribal (Superfund) equivalent sites

RESPONSE ..... State Response Sites

Lists of state and tribal landfills and solid waste disposal facilities

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

Lists of state and tribal leaking storage tanks

LUST ..... Geotracker's Leaking Underground Fuel Tank Report
INDIAN LUST ..... Leaking Underground Storage Tanks on Indian Land
CPS-SLIC ..... Statewide SLIC Cases

Lists of state and tribal registered storage tanks

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

Lists of state and tribal voluntary cleanup sites

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

Lists of state and tribal brownfield sites

BROWNFIELDS ..... Considered Brownfieds Sites Listing

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

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

Local Lists of Landfill / Solid Waste Disposal Sites

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

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL ..... Delisted National Clandestine Laboratory Register

HIST Cal-Sites	Historical Calsites Database
CDL	Clandestine Drug Labs
CERS HAZ WASTE	CERS HAZ WASTE
Toxic Pits	Toxic Pits Cleanup Act Sites
US CDL	National Clandestine Laboratory Register
AQUEOUS FOAM	Former Fire Training Facility Assessments Listing
PFAS	PFAS Contamination Site Location Listing

Local Lists of Registered Storage Tanks

SWEEPS UST	SWEEPS UST Listing
HIST UST	Hazardous Substance Storage Container Database
CA FID UST	Facility Inventory Database
CERS TANKS	California Environmental Reporting System (CERS) Tanks

Local Land Records

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

Records of Emergency Release Reports

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

Other Ascertainable Records

RCRA NonGen / NLR	RCRA - Non Generators / No Longer Regulated
FUDS	Formerly Used Defense Sites
DOD	Department of Defense Sites
SCRD DRYCLEANERS	State Coalition for Remediation of Drycleaners Listing
US FIN ASSUR	Financial Assurance Information
EPA WATCH LIST	EPA WATCH LIST
2020 COR ACTION	2020 Corrective Action Program List
TSCA	Toxic Substances Control Act
TRIS	Toxic Chemical Release Inventory System
SSTS	Section 7 Tracking Systems
ROD	Records Of Decision
RMP	Risk Management Plans
RAATS	RCRA Administrative Action Tracking System
PRP	Potentially Responsible Parties
PADS	PCB Activity Database System
ICIS	Integrated Compliance Information System
FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
MLTS	Material Licensing Tracking System
COAL ASH DOE	Steam-Electric Plant Operation Data
COAL ASH EPA	Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER	PCB Transformer Registration Database
RADINFO	Radiation Information Database
HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing

DOT OPS	Incident and Accident Data
CONSENT	Superfund (CERCLA) Consent Decrees
INDIAN RESERV	Indian Reservations
FUSRAP	Formerly Utilized Sites Remedial Action Program
UMTRA	Uranium Mill Tailings Sites
LEAD SMELTERS	Lead Smelter Sites
US AIRS	Aerometric Information Retrieval System Facility Subsystem
US MINES	Mines Master Index File
ABANDONED MINES	Abandoned Mines
FINDS	Facility Index System/Facility Registry System
ECHO	Enforcement & Compliance History Information
UXO	Unexploded Ordnance Sites
DOCKET HWC	Hazardous Waste Compliance Docket Listing
FUELS PROGRAM	EPA Fuels Program Registered Listing
CA BOND EXP. PLAN	Bond Expenditure Plan
Cortese	"Cortese" Hazardous Waste & Substances Sites List
CUPA Listings	CUPA Resources List
DRYCLEANERS	Cleaner Facilities
EMI	Emissions Inventory Data
ENF	Enforcement Action Listing
Financial Assurance	Financial Assurance Information Listing
HAZNET	Facility and Manifest Data
ICE	ICE
HIST CORTESE	Hazardous Waste & Substance Site List
HWP	EnviroStor Permitted Facilities Listing
HWT	Registered Hazardous Waste Transporter Database
MINES	Mines Site Location Listing
MWMP	Medical Waste Management Program Listing
NPDES	NPDES Permits Listing
PEST LIC	Pesticide Regulation Licenses Listing
PROC	Certified Processors Database
Notify 65	Proposition 65 Records
UIC	UIC Listing
UIC GEO	UIC GEO (GEOTRACKER)
WASTEWATER PITS	Oil Wastewater Pits Listing
WDS	Waste Discharge System
WIP	Well Investigation Program Case List
MILITARY PRIV SITES	MILITARY PRIV SITES (GEOTRACKER)
PROJECT	PROJECT (GEOTRACKER)
WDR	Waste Discharge Requirements Listing
NON-CASE INFO	NON-CASE INFO (GEOTRACKER)
OTHER OIL GAS	OTHER OIL & GAS (GEOTRACKER)
PROD WATER PONDS	PROD WATER PONDS (GEOTRACKER)
SAMPLING POINT	SAMPLING POINT (GEOTRACKER)
WELL STIM PROJ	Well Stimulation Project (GEOTRACKER)
HWTS	Hazardous Waste Tracking System
MINES MRDS	Mineral Resources Data System

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP	EDR Proprietary Manufactured Gas Plants
EDR Hist Auto	EDR Exclusive Historical Auto Stations

EXECUTIVE SUMMARY

EDR Hist Cleaner..... EDR Exclusive Historical Cleaners

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF..... Recovered Government Archive Solid Waste Facilities List
RGA LUST..... Recovered Government Archive Leaking Underground Storage Tank

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

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

STANDARD ENVIRONMENTAL RECORDS

Lists of state- and tribal hazardous waste facilities

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

A review of the ENVIROSTOR list, as provided by EDR, and dated 01/24/2022 has revealed that there are 3 ENVIROSTOR sites within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
NEW ELEMENTARY SCHOO Facility Id: 60000762 Status: No Further Action	***LA VENTANA ROAD/NEWP***	***0 - 1/8 (0.000 mi.)***	***A1***	***9***
HERITAGE LAKE SCHOOL Facility Id: 60000480 Status: No Further Action	***HERITAGE LAKE DRIVE***	***NW 1/2 - 1 (0.512 mi.)***	***4***	***12***
MIDDLE SCHOOL NO. 8 Facility Id: 70000027 Status: No Further Action	***OLIVE AVENUE AND LON***	***ESE 1/2 - 1 (0.746 mi.)***	***5***	***16***

ADDITIONAL ENVIRONMENTAL RECORDS

Local Lists of Hazardous waste / Contaminated Sites

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

A review of the SCH list, as provided by EDR, and dated 01/24/2022 has revealed that there is 1 SCH site within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
NEW ELEMENTARY SCHOO	***LA VENTANA ROAD/NEWP***	***0 - 1/8 (0.000 mi.)***	***A1***	***9***
Facility Id: 60000762				
Status: No Further Action				

Other Ascertainable Records

CIWQS: The California Integrated Water Quality System (CIWQS) is a computer system used by the State and Regional Water Quality Control Boards to track information about places of environmental interest, manage permits and other orders, track inspections, and manage violations and enforcement activities.

A review of the CIWQS list, as provided by EDR, and dated 11/30/2021 has revealed that there is 1 CIWQS site within approximately 0.001 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
SALT CREEK REGIONAL	OLIVE AVE ADAMS STRE	0 - 1/8 (0.000 mi.)	A3	12

CERS: The CalEPA Regulated Site Portal database combines data about environmentally regulated sites and facilities in California into a single database. It combines data from a variety of state and federal databases, and provides an overview of regulated activities across the spectrum of environmental programs for any given location in California. These activities include hazardous materials and waste, state and federal cleanups, impacted ground and surface waters, and toxic materials

A review of the CERS list, as provided by EDR, and dated 01/18/2022 has revealed that there is 1 CERS site within approximately 0.001 miles of the target property.

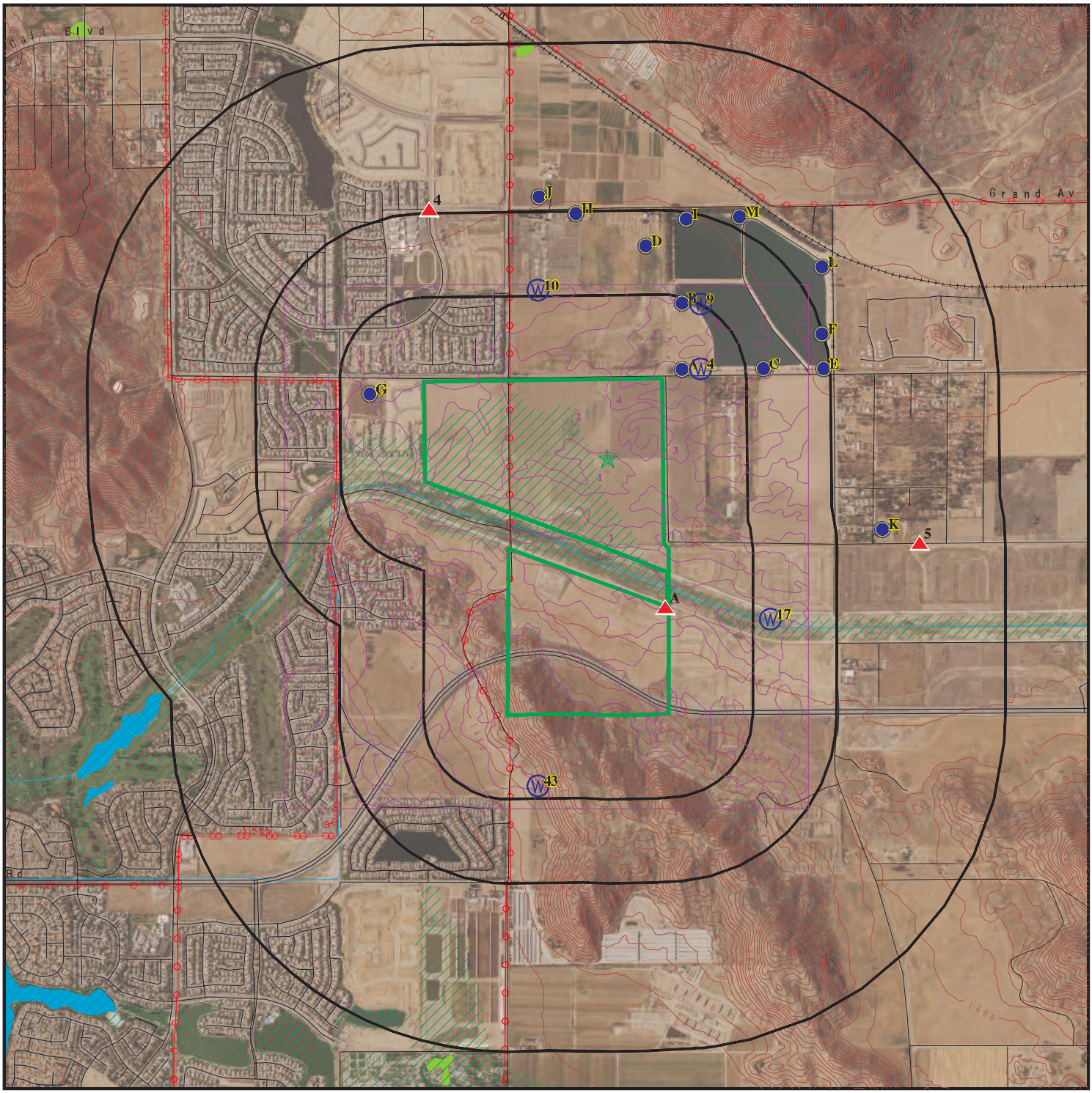
Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
NEW ELEMENTARY SCHOO	LA VENTANA ROAD/NEWP	0 - 1/8 (0.000 mi.)	A2	11

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 4 records.

Site Name	Database(s)
	CDL
	CDL
	CDL
PROPOSED ELEMENTARY SCHOOL NO. 15	ENVIROSTOR, SCH

OVERVIEW MAP - 06952499.2R



Target Property

Sites at elevations higher than or equal to the target property

Sites at elevations lower than the target property

Manufactured Gas Plants

National Priority List Sites

Dept. Defense Sites

0 1/4 1/2 1 Miles

Indian Reservations BIA

Power transmission lines

Special Flood Hazard Area (1%)

0.2% Annual Chance Flood Hazard

National Wetland Inventory

State Wetlands

Areas of Concern

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

SITE NAME:	C3-9046	CLIENT:	Hillmann Environmental Co.
ADDRESS:	Not Reported Winchester CA 92596	CONTACT:	Alyssa Berry
LAT/LONG:	33.703257 / 117.131402	INQUIRY #:	06952499.2r
		DATE:	April 22, 2022 4:06 pm

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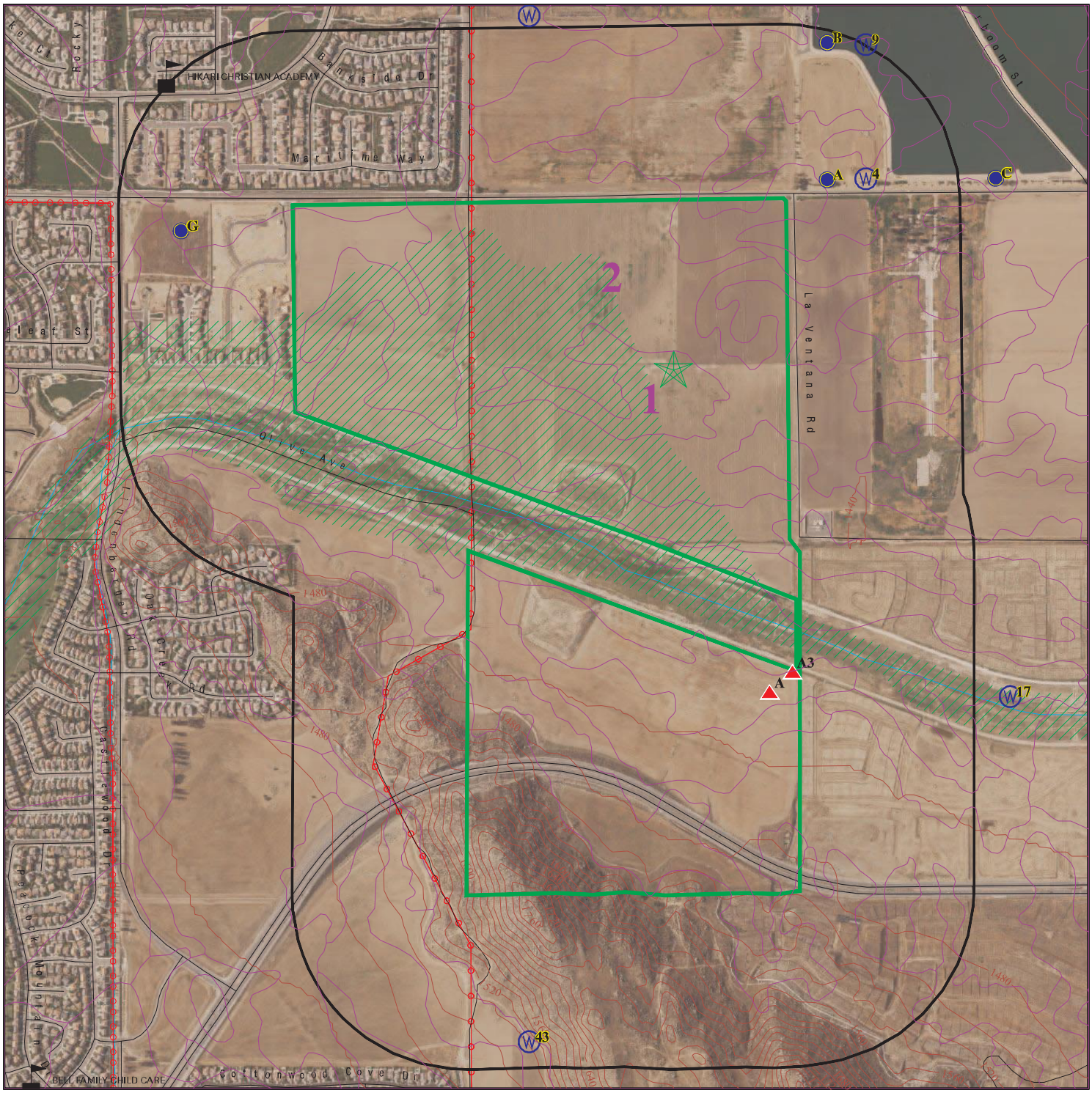
DETAIL MAP - 06952499.2R



0 1/8 1/4 1/2 Miles

- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- Special Flood Hazard Area (1%)
- 0.2% Annual Chance Flood Hazard
- Areas of Concern

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

SITE NAME:	C3-9046	CLIENT:	Hillmann Environmental Co.
ADDRESS:	Not Reported Winchester CA 92596	CONTACT:	Alyssa Berry
LAT/LONG:	33.703257 / 117.131402	INQUIRY #:	06952499.2r
		DATE:	April 22, 2022 4:07 pm

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MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Lists of Federal NPL (Superfund) sites								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	1.000		0	0	0	0	NR	0
Lists of Federal Delisted NPL sites								
Delisted NPL	1.000		0	0	0	0	NR	0
Lists of Federal sites subject to CERCLA removals and CERCLA orders								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	0	NR	NR	0
Lists of Federal CERCLA sites with NFRAP								
SEMS-ARCHIVE	0.500		0	0	0	NR	NR	0
Lists of Federal RCRA facilities undergoing Corrective Action								
CORRACTS	1.000		0	0	0	0	NR	0
Lists of Federal RCRA TSD facilities								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Lists of Federal RCRA generators								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-VSQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROLS	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	0.001		0	NR	NR	NR	NR	0
Lists of state- and tribal (Superfund) equivalent sites								
RESPONSE	1.000		0	0	0	0	NR	0
Lists of state- and tribal hazardous waste facilities								
ENVIROSTOR	1.000		1	0	0	2	NR	3
Lists of state and tribal landfills and solid waste disposal facilities								
SWF/LF	0.500		0	0	0	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
Lists of state and tribal leaking storage tanks								
LUST	0.500		0	0	0	NR	NR	0
INDIAN LUST	0.500		0	0	0	NR	NR	0
CPS-SLIC	0.500		0	0	0	NR	NR	0
Lists of state and tribal registered storage tanks								
FEMA UST	0.250		0	0	NR	NR	NR	0
UST	0.250		0	0	NR	NR	NR	0
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
Lists of state and tribal voluntary cleanup sites								
VCP	0.500		0	0	0	NR	NR	0
INDIAN VCP	0.500		0	0	0	NR	NR	0
Lists of state and tribal brownfield sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
WMUDS/SWAT	0.500		0	0	0	NR	NR	0
SWRCY	0.500		0	0	0	NR	NR	0
HAULERS	0.001		0	NR	NR	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
IHS OPEN DUMPS	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	0.001		0	NR	NR	NR	NR	0
HIST Cal-Sites	1.000		0	0	0	0	NR	0
SCH	0.250		1	0	NR	NR	NR	1
CDL	0.001		0	NR	NR	NR	NR	0
CERS HAZ WASTE	0.250		0	0	NR	NR	NR	0
Toxic Pits	1.000		0	0	0	0	NR	0
US CDL	0.001		0	NR	NR	NR	NR	0
AQUEOUS FOAM	TP		NR	NR	NR	NR	NR	0
PFAS	0.500		0	0	0	NR	NR	0
Local Lists of Registered Storage Tanks								
SWEEPS UST	0.250		0	0	NR	NR	NR	0
HIST UST	0.250		0	0	NR	NR	NR	0
CA FID UST	0.250		0	0	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
CERS TANKS	0.250		0	0	NR	NR	NR	0
Local Land Records								
LIENS	0.001		0	NR	NR	NR	NR	0
LIENS 2	0.001		0	NR	NR	NR	NR	0
DEED	0.500		0	0	0	NR	NR	0
Records of Emergency Release Reports								
HMIRS	0.001		0	NR	NR	NR	NR	0
CHMIRS	0.001		0	NR	NR	NR	NR	0
LDS	0.001		0	NR	NR	NR	NR	0
MCS	0.001		0	NR	NR	NR	NR	0
SPILLS 90	0.001		0	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		0	0	NR	NR	NR	0
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	0.001		0	NR	NR	NR	NR	0
EPA WATCH LIST	0.001		0	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	0.001		0	NR	NR	NR	NR	0
TRIS	0.001		0	NR	NR	NR	NR	0
SSTS	0.001		0	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	0.001		0	NR	NR	NR	NR	0
RAATS	0.001		0	NR	NR	NR	NR	0
PRP	0.001		0	NR	NR	NR	NR	0
PADS	0.001		0	NR	NR	NR	NR	0
ICIS	0.001		0	NR	NR	NR	NR	0
FTTS	0.001		0	NR	NR	NR	NR	0
MLTS	0.001		0	NR	NR	NR	NR	0
COAL ASH DOE	0.001		0	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	0.001		0	NR	NR	NR	NR	0
RADINFO	0.001		0	NR	NR	NR	NR	0
HIST FTTS	0.001		0	NR	NR	NR	NR	0
DOT OPS	0.001		0	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	0.001		0	NR	NR	NR	NR	0
US AIRS	0.001		0	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
ABANDONED MINES	0.250		0	0	NR	NR	NR	0
FINDS	0.001		0	NR	NR	NR	NR	0
ECHO	0.001		0	NR	NR	NR	NR	0
UXO	1.000		0	0	0	0	NR	0
DOCKET HWC	0.001		0	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0
CA BOND EXP. PLAN	1.000		0	0	0	0	NR	0
Cortese	0.500		0	0	0	NR	NR	0
CUPA Listings	0.250		0	0	NR	NR	NR	0
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
EMI	0.001		0	NR	NR	NR	NR	0
ENF	0.001		0	NR	NR	NR	NR	0
Financial Assurance	0.001		0	NR	NR	NR	NR	0
HAZNET	0.001		0	NR	NR	NR	NR	0
ICE	0.001		0	NR	NR	NR	NR	0
HIST CORTESE	0.500		0	0	0	NR	NR	0
HWP	1.000		0	0	0	0	NR	0
HWT	0.250		0	0	NR	NR	NR	0
MINES	0.250		0	0	NR	NR	NR	0
MWMP	0.250		0	0	NR	NR	NR	0
NPDES	0.001		0	NR	NR	NR	NR	0
PEST LIC	0.001		0	NR	NR	NR	NR	0
PROC	0.500		0	0	0	NR	NR	0
Notify 65	1.000		0	0	0	0	NR	0
UIC	0.001		0	NR	NR	NR	NR	0
UIC GEO	0.001		0	NR	NR	NR	NR	0
WASTEWATER PITS	0.500		0	0	0	NR	NR	0
WDS	0.001		0	NR	NR	NR	NR	0
WIP	0.250		0	0	NR	NR	NR	0
MILITARY PRIV SITES	0.001		0	NR	NR	NR	NR	0
PROJECT	0.001		0	NR	NR	NR	NR	0
WDR	0.001		0	NR	NR	NR	NR	0
CIWQS	0.001		1	NR	NR	NR	NR	1
CERS	0.001		1	NR	NR	NR	NR	1
NON-CASE INFO	0.001		0	NR	NR	NR	NR	0
OTHER OIL GAS	0.001		0	NR	NR	NR	NR	0
PROD WATER PONDS	0.001		0	NR	NR	NR	NR	0
SAMPLING POINT	0.001		0	NR	NR	NR	NR	0
WELL STIM PROJ	0.001		0	NR	NR	NR	NR	0
HWTS	TP		NR	NR	NR	NR	NR	0
MINES MRDS	0.001		0	NR	NR	NR	NR	0
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR Hist Auto	0.125		0	NR	NR	NR	NR	0
EDR Hist Cleaner	0.125		0	NR	NR	NR	NR	0
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA LF	0.001		0	NR	NR	NR	NR	0
RGA LUST	0.001		0	NR	NR	NR	NR	0
- Totals --		0	4	0	0	2	0	6

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

A1
< 1/8
1 ft.

NEW ELEMENTARY SCHOOL NO. 6
LA VENTANA ROAD/NEWPORT ROAD
WINCHESTER (UNINCORPORATED), CA 92544

ENVIROSTOR SCH | **S108936086 N/A**

Site 1 of 3 in cluster A

Relative: Higher
Actual: 1449 ft.

ENVIROSTOR:

Name:	NEW ELEMENTARY SCHOOL NO. 6
Address:	LA VENTANA ROAD/NEWPORT ROAD
City,State,Zip:	WINCHESTER (UNINCORPORATED), CA 92544
Facility ID:	60000762
Status:	No Further Action
Status Date:	09/03/2008
Site Code:	404761
Site Type:	School Investigation
Site Type Detailed:	School
Acres:	12
NPL:	NO
Regulatory Agencies:	SMBRP
Lead Agency:	SMBRP
Program Manager:	Not reported
Supervisor:	Shahir Haddad
Division Branch:	Southern California Schools & Brownfields Outreach
Assembly:	67
Senate:	28
Special Program:	Not reported
Restricted Use:	NO
Site Mgmt Req:	NONE SPECIFIED
Funding:	School District
Latitude:	33.6965
Longitude:	-117.129
APN:	NONE SPECIFIED
Past Use:	UNKNOWN
Potential COC:	Under Investigation
Confirmed COC:	NONE SPECIFIED
Potential Description:	SOIL
Alias Name:	404761
Alias Type:	Project Code (Site Code)
Alias Name:	60000762
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Cost Recovery Closeout Memo
Completed Date:	09/11/2008
Comments:	DTSC prepared project close out Cost Recovery Unit Memorandum
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Environmental Oversight Agreement
Completed Date:	12/03/2007
Comments:	Sent fully executed agreement to district
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Other Report
Completed Date:	04/03/2008
Comments:	DTSC concurred with the proposed sampling.

NEW ELEMENTARY SCHOOL NO. 6 (Continued) **S108936086**

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Preliminary Endangerment Assessment Report
Completed Date:	09/03/2008
Comments:	Not reported
Future Area Name:	Not reported
Future Sub Area Name:	Not reported
Future Document Type:	Not reported
Future Due Date:	Not reported
Schedule Area Name:	Not reported
Schedule Sub Area Name:	Not reported
Schedule Document Type:	Not reported
Schedule Due Date:	Not reported
Schedule Revised Date:	Not reported

SCH:

Name:	NEW ELEMENTARY SCHOOL NO. 6
Address:	LA VENTANA ROAD/NEWPORT ROAD
City,State,Zip:	WINCHESTER (UNINCORPORATED), CA 92544
Facility ID:	60000762
Site Type:	School Investigation
Site Type Detail:	School
Site Mgmt. Req.:	NONE SPECIFIED
Acres:	12
National Priorities List:	NO
Cleanup Oversight Agencies:	SMBRP
Lead Agency:	SMBRP
Lead Agency Description:	DTSC - Site Cleanup Program
Project Manager:	Not reported
Supervisor:	Shahir Haddad
Division Branch:	Southern California Schools & Brownfields Outreach
Site Code:	404761
Assembly:	67
Senate:	28
Special Program Status:	Not reported
Status:	No Further Action
Status Date:	09/03/2008
Restricted Use:	NO
Funding:	School District
Latitude:	33.6965
Longitude:	-117.129
APN:	NONE SPECIFIED
Past Use:	UNKNOWN
Potential COC:	Under Investigation
Confirmed COC:	NONE SPECIFIED
Potential Description:	SOIL
Alias Name:	404761
Alias Type:	Project Code (Site Code)
Alias Name:	60000762
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Cost Recovery Closeout Memo

NEW ELEMENTARY SCHOOL NO. 6 (Continued) **S108936086**

Completed Date:	09/11/2008
Comments:	DTSC prepared project close out Cost Recovery Unit Memorandum
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Environmental Oversight Agreement
Completed Date:	12/03/2007
Comments:	Sent fully executed agreement to district
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Other Report
Completed Date:	04/03/2008
Comments:	DTSC concurred with the proposed sampling.
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Preliminary Endangerment Assessment Report
Completed Date:	09/03/2008
Comments:	Not reported
Future Area Name:	Not reported
Future Sub Area Name:	Not reported
Future Document Type:	Not reported
Future Due Date:	Not reported
Schedule Area Name:	Not reported
Schedule Sub Area Name:	Not reported
Schedule Document Type:	Not reported
Schedule Due Date:	Not reported
Schedule Revised Date:	Not reported

A2 **NEW ELEMENTARY SCHOO** **CERS** **S123510151**
LA VENTANA ROAD/NEWPORT ROAD **N/A**
< 1/8 **WINCHESTER (UNINCORPORATED), CA 92544**
1 ft.

Site 2 of 3 in cluster A

Relative: Higher
Actual: 1449 ft.

CERS:

Name:	NEW ELEMENTARY SCHOO
Address:	LA VENTANA ROAD/NEWPORT ROAD
City,State,Zip:	WINCHESTER (UNINCORPORATED), CA 92544
Site ID:	340555
CERS ID:	60000762
CERS Description:	School Investigation

Affiliation:

Affiliation Type Desc:	Supervisor
Entity Name:	SHAHIR HADDAD
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	,

A3
< 1/8
1 ft.

SALT CREEK REGIONAL SEWER
OLIVE AVE ADAMS STREET
WINCHESTER, CA 92584

Site 3 of 3 in cluster A

CIWQS **S117542900**
N/A

Relative: Higher
Actual: 1446 ft.

CIWQS:

Name:	SALT CREEK REGIONAL SEWER
Address:	OLIVE AVE ADAMS STREET
City,State,Zip:	WINCHESTER, CA 92584
Agency:	Eastern Municipal Water District
Agency Address:	2270 Trumble Road PO Box 8300, Perris, CA 92572
Place/Project Type:	Construction - Water/Sewer Line
SIC/NAICS:	Not reported
Region:	8
Program:	CONSTW
Regulatory Measure Status:	Terminated
Regulatory Measure Type:	Storm water construction
Order Number:	2009-0009-DWQ
WDID:	8 33C371893
NPDES Number:	CAS000002
Adoption Date:	Not reported
Effective Date:	01/14/2015
Termination Date:	10/08/2015
Expiration/Review Date:	Not reported
Design Flow:	Not reported
Major/Minor:	Not reported
Complexity:	Not reported
TTWQ:	Not reported
Enforcement Actions within 5 years:	0
Violations within 5 years:	0
Latitude:	33.69692
Longitude:	-117.12843

4
NW
1/2-1
0.512 mi.
2703 ft.

HERITAGE LAKE SCHOOL #2
HERITAGE LAKE DRIVE AND GRAND AVENUE
ROMOLAND, CA 92585

ENVIROSTOR SCH **S108195952**
N/A

Relative: Higher
Actual: 1464 ft.

ENVIROSTOR:

Name:	HERITAGE LAKE SCHOOL #2
Address:	HERITAGE LAKE DRIVE AND GRAND AVENUE
City,State,Zip:	ROMOLAND, CA 92585
Facility ID:	60000480
Status:	No Further Action
Status Date:	11/20/2008
Site Code:	404727
Site Type:	School Investigation
Site Type Detailed:	School
Acres:	20
NPL:	NO
Regulatory Agencies:	SMBRP
Lead Agency:	SMBRP
Program Manager:	Aslam Shareef
Supervisor:	Shahir Haddad
Division Branch:	Southern California Schools & Brownfields Outreach
Assembly:	67
Senate:	23
Special Program:	Not reported

HERITAGE LAKE SCHOOL #2 (Continued) **S108195952**

Restricted Use: NO
Site Mgmt Req: NONE SPECIFIED
Funding: School District
Latitude: 33.71048
Longitude: -117.1408
APN: 333-190-010, 333190010
Past Use: AGRICULTURAL - ROW CROPS
Potential COC: Arsenic Chlordane DDD DDE DDT Lead
Confirmed COC: 30001-NO 30004-NO 30006-NO 30007-NO 30008-NO 30013-NO
Potential Description: SOIL
Alias Name: 333-190-010
Alias Type: APN
Alias Name: 333190010
Alias Type: APN
Alias Name: 404727
Alias Type: Project Code (Site Code)
Alias Name: 60000480
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Inactive Status Letter
Completed Date: 03/02/2007
Comments: Fill material placed on the site by the developer will be removed by the developer sometime within the next six months. Sampling of the site will take place following fill removal. DTSC will follow up with the District in six months to verify fill removal.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Cost Recovery Closeout Memo
Completed Date: 12/10/2008
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Environmental Oversight Agreement
Completed Date: 11/29/2006
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Inspections/Visit (Non LUR)
Completed Date: 12/15/2006
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Workplan
Completed Date: 07/22/2008
Comments: PEA Workplan was conditionally approved by DTSC for implementation provided the District address several issues detailed with the approval letter during the sampling event.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Report

HERITAGE LAKE SCHOOL #2 (Continued) **S108195952**

Completed Date:	11/24/2008
Comments:	PEA No Further Action determination was forwarded to the district
Future Area Name:	Not reported
Future Sub Area Name:	Not reported
Future Document Type:	Not reported
Future Due Date:	Not reported
Schedule Area Name:	Not reported
Schedule Sub Area Name:	Not reported
Schedule Document Type:	Not reported
Schedule Due Date:	Not reported
Schedule Revised Date:	Not reported

SCH:

Name:	HERITAGE LAKE SCHOOL #2
Address:	HERITAGE LAKE DRIVE AND GRAND AVENUE
City,State,Zip:	ROMOLAND, CA 92585
Facility ID:	60000480
Site Type:	School Investigation
Site Type Detail:	School
Site Mgmt. Req.:	NONE SPECIFIED
Acres:	20
National Priorities List:	NO
Cleanup Oversight Agencies:	SMBRP
Lead Agency:	SMBRP
Lead Agency Description:	DTSC - Site Cleanup Program
Project Manager:	Aslam Shareef
Supervisor:	Shahir Haddad
Division Branch:	Southern California Schools & Brownfields Outreach
Site Code:	404727
Assembly:	67
Senate:	23
Special Program Status:	Not reported
Status:	No Further Action
Status Date:	11/20/2008
Restricted Use:	NO
Funding:	School District
Latitude:	33.71048
Longitude:	-117.1408
APN:	333-190-010, 333190010
Past Use:	AGRICULTURAL - ROW CROPS
Potential COC:	Arsenic, Chlordane, DDD, DDE, DDT, Lead
Confirmed COC:	30001-NO, 30004-NO, 30006-NO, 30007-NO, 30008-NO, 30013-NO
Potential Description:	SOIL
Alias Name:	333-190-010
Alias Type:	APN
Alias Name:	333190010
Alias Type:	APN
Alias Name:	404727
Alias Type:	Project Code (Site Code)
Alias Name:	60000480
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported

HERITAGE LAKE SCHOOL #2 (Continued) **S108195952**

Completed Document Type:	Inactive Status Letter
Completed Date:	03/02/2007
Comments:	Fill material placed on the site by the developer will be removed by the developer sometime within the next six months. Sampling of the site will take place following fill removal. DTSC will follow up with the District in six months to verify fill removal.
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Cost Recovery Closeout Memo
Completed Date:	12/10/2008
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Environmental Oversight Agreement
Completed Date:	11/29/2006
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Site Inspections/Visit (Non LUR)
Completed Date:	12/15/2006
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Preliminary Endangerment Assessment Workplan
Completed Date:	07/22/2008
Comments:	PEA Workplan was conditionally approved by DTSC for implementation provided the District address several issues detailed with the approval letter during the sampling event.
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Preliminary Endangerment Assessment Report
Completed Date:	11/24/2008
Comments:	PEA No Further Action determination was forwarded to the district
Future Area Name:	Not reported
Future Sub Area Name:	Not reported
Future Document Type:	Not reported
Future Due Date:	Not reported
Schedule Area Name:	Not reported
Schedule Sub Area Name:	Not reported
Schedule Document Type:	Not reported
Schedule Due Date:	Not reported
Schedule Revised Date:	Not reported

5
ESE
1/2-1
0.746 mi.
3938 ft.

MIDDLE SCHOOL NO. 8
OLIVE AVENUE AND LONGFELLOW STREEET
WINCHESTER, CA 92596

ENVIROSTOR
SCH
CERS

S107736737
N/A

Relative:
Higher

Actual:
1452 ft.

ENVIROSTOR:

Name:	MIDDLE SCHOOL NO. 8
Address:	OLIVE AVENUE AND LONGFELLOW STREEET
City,State,Zip:	WINCHESTER, CA 92596
Facility ID:	70000027
Status:	No Further Action
Status Date:	03/20/2006
Site Code:	404646
Site Type:	School Investigation
Site Type Detailed:	School
Acres:	23
NPL:	NO
Regulatory Agencies:	SMBRP
Lead Agency:	SMBRP
Program Manager:	Rana Georges
Supervisor:	Shahir Haddad
Division Branch:	Southern California Schools & Brownfields Outreach
Assembly:	67
Senate:	28
Special Program:	Not reported
Restricted Use:	NO
Site Mgmt Req:	NONE SPECIFIED
Funding:	School District
Latitude:	33.6997
Longitude:	-117.1153
APN:	NONE SPECIFIED
Past Use:	AGRICULTURAL - ROW CROPS
Potential COC:	NONE SPECIFIED No Contaminants found
Confirmed COC:	No Contaminants found
Potential Description:	NMA
Alias Name:	Hemet Unified School District
Alias Type:	Alternate Name
Alias Name:	404646
Alias Type:	Project Code (Site Code)
Alias Name:	20050027
Alias Type:	Envirostor ID Number
Alias Name:	70000027
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Environmental Oversight Agreement
Completed Date:	08/09/2005
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Cost Recovery Closeout Memo
Completed Date:	03/20/2006
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported

MIDDLE SCHOOL NO. 8 (Continued) **S107736737**

Completed Document Type:	Preliminary Endangerment Assessment Report
Completed Date:	03/20/2006
Comments:	DTSC issued no further action determination.
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Preliminary Endangerment Assessment Workplan
Completed Date:	10/17/2005
Comments:	DTSC conditionally approved the Tech Memo with consideration to comments issued. Comments must be addressed in PEA.
Future Area Name:	Not reported
Future Sub Area Name:	Not reported
Future Document Type:	Not reported
Future Due Date:	Not reported
Schedule Area Name:	Not reported
Schedule Sub Area Name:	Not reported
Schedule Document Type:	Not reported
Schedule Due Date:	Not reported
Schedule Revised Date:	Not reported

SCH:

Name:	MIDDLE SCHOOL NO. 8
Address:	OLIVE AVENUE AND LONGFELLOW STREEET
City,State,Zip:	WINCHESTER, CA 92596
Facility ID:	70000027
Site Type:	School Investigation
Site Type Detail:	School
Site Mgmt. Req.:	NONE SPECIFIED
Acres:	23
National Priorities List:	NO
Cleanup Oversight Agencies:	SMBRP
Lead Agency:	SMBRP
Lead Agency Description:	DTSC - Site Cleanup Program
Project Manager:	Rana Georges
Supervisor:	Shahir Haddad
Division Branch:	Southern California Schools & Brownfields Outreach
Site Code:	404646
Assembly:	67
Senate:	28
Special Program Status:	Not reported
Status:	No Further Action
Status Date:	03/20/2006
Restricted Use:	NO
Funding:	School District
Latitude:	33.6997
Longitude:	-117.1153
APN:	NONE SPECIFIED
Past Use:	AGRICULTURAL - ROW CROPS
Potential COC:	NONE SPECIFIED, No Contaminants found
Confirmed COC:	No Contaminants found
Potential Description:	NMA
Alias Name:	Hemet Unified School District
Alias Type:	Alternate Name
Alias Name:	404646
Alias Type:	Project Code (Site Code)

MIDDLE SCHOOL NO. 8 (Continued) **S107736737**

Alias Name: 20050027
Alias Type: Envirostor ID Number
Alias Name: 70000027
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Environmental Oversight Agreement
Completed Date: 08/09/2005
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Cost Recovery Closeout Memo
Completed Date: 03/20/2006
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Report
Completed Date: 03/20/2006
Comments: DTSC issued no further action determination.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Workplan
Completed Date: 10/17/2005
Comments: DTSC conditionally approved the Tech Memo with consideration to comments issued. Comments must be addressed in PEA.

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

CERS:
Name: MIDDLE SCHOOL NO. 8
Address: OLIVE AVENUE AND LONGFELLOW STREEET
City,State,Zip: WINCHESTER, CA 92596
Site ID: 340057
CERS ID: 70000027
CERS Description: School Investigation

Affiliation:
Affiliation Type Desc: Lead Project Manager
Entity Name: RANA GEORGES
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: CYPRESS
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: Not reported

MIDDLE SCHOOL NO. 8 (Continued) **S107736737**

Affiliation Phone:	,
Affiliation Type Desc:	Supervisor
Entity Name:	SHAHIR HADDAD
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	,

Count: 4 records. ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
HEMET	S107537955		CALIFORNIA & NEWPORT, INTERSEC		CDL
MENIFEE	S126330261	PROPOSED ELEMENTARY SCHOOL NO. 15	BRIGGS ROAD/WICKERD ROAD	92584	ENVIROSTOR, SCH
RIVERSIDE COUNTY	S107537916		BRIGGS ROAD/300' FROM POWERLIN		CDL
ROMOLAND	S107737706		BRIGGS RD, 1/2 MI S OF GUNTHER	92585	CDL

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

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

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

STANDARD ENVIRONMENTAL RECORDS

Lists of Federal NPL (Superfund) sites

NPL: National Priority List

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

Date of Government Version: 01/25/2022
Date Data Arrived at EDR: 02/03/2022
Date Made Active in Reports: 02/22/2022
Number of Days to Update: 19

Source: EPA
Telephone: N/A
Last EDR Contact: 04/01/2022
Next Scheduled EDR Contact: 07/11/2022
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

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

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

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

Date of Government Version: 01/25/2022
Date Data Arrived at EDR: 02/03/2022
Date Made Active in Reports: 02/22/2022
Number of Days to Update: 19

Source: EPA
Telephone: N/A
Last EDR Contact: 04/01/2022
Next Scheduled EDR Contact: 07/11/2022
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

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

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

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

Lists of Federal Delisted NPL sites

Delisted NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 01/25/2022
Date Data Arrived at EDR: 02/03/2022
Date Made Active in Reports: 02/22/2022
Number of Days to Update: 19

Source: EPA
Telephone: N/A
Last EDR Contact: 04/01/2022
Next Scheduled EDR Contact: 07/11/2022
Data Release Frequency: Quarterly

Lists of Federal sites subject to CERCLA removals and CERCLA orders

FEDERAL FACILITY: Federal Facility Site Information listing

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

Date of Government Version: 05/25/2021
Date Data Arrived at EDR: 06/24/2021
Date Made Active in Reports: 09/20/2021
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 04/01/2022
Next Scheduled EDR Contact: 07/11/2022
Data Release Frequency: Varies

SEMS: Superfund Enterprise Management System

SEMS (Superfund Enterprise Management System) tracks hazardous waste sites, potentially hazardous waste sites, and remedial activities performed in support of EPA's Superfund Program across the United States. The list was formerly know as CERCLIS, renamed to SEMS by the EPA in 2015. The list contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This dataset also contains sites which are either proposed to or on the National Priorities List (NPL) and the sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 01/25/2022
Date Data Arrived at EDR: 02/03/2022
Date Made Active in Reports: 02/22/2022
Number of Days to Update: 19

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 04/01/2022
Next Scheduled EDR Contact: 07/25/2022
Data Release Frequency: Quarterly

Lists of Federal CERCLA sites with NFRAP

SEMS-ARCHIVE: Superfund Enterprise Management System Archive

SEMS-ARCHIVE (Superfund Enterprise Management System Archive) tracks sites that have no further interest under the Federal Superfund Program based on available information. The list was formerly known as the CERCLIS-NFRAP, renamed to SEMS ARCHIVE by the EPA in 2015. EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or new information becomes available. Archived sites have been removed and archived from the inventory of SEMS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list the site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. The decision does not necessarily mean that there is no hazard associated with a given site; it only means that. based upon available information, the location is not judged to be potential NPL site.

Date of Government Version: 01/25/2022
Date Data Arrived at EDR: 02/03/2022
Date Made Active in Reports: 02/22/2022
Number of Days to Update: 19

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 04/01/2022
Next Scheduled EDR Contact: 07/25/2022
Data Release Frequency: Quarterly

Lists of Federal RCRA facilities undergoing Corrective Action

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 02/28/2022
Date Data Arrived at EDR: 03/02/2022
Date Made Active in Reports: 03/17/2022
Number of Days to Update: 15

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 04/06/2022
Next Scheduled EDR Contact: 07/04/2022
Data Release Frequency: Quarterly

Lists of Federal RCRA TSD facilities

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

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

Date of Government Version: 02/28/2022
Date Data Arrived at EDR: 03/02/2022
Date Made Active in Reports: 03/17/2022
Number of Days to Update: 15

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/06/2022
Next Scheduled EDR Contact: 07/04/2022
Data Release Frequency: Quarterly

Lists of Federal RCRA generators

RCRA-LQG: RCRA - Large Quantity Generators

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

Date of Government Version: 02/28/2022
Date Data Arrived at EDR: 03/02/2022
Date Made Active in Reports: 03/17/2022
Number of Days to Update: 15

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/06/2022
Next Scheduled EDR Contact: 07/04/2022
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

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

Date of Government Version: 02/28/2022
Date Data Arrived at EDR: 03/02/2022
Date Made Active in Reports: 03/17/2022
Number of Days to Update: 15

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/06/2022
Next Scheduled EDR Contact: 07/04/2022
Data Release Frequency: Quarterly

RCRA-VSQG: RCRA - Very Small Quantity Generators (Formerly Conditionally Exempt Small Quantity Generators)

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

Date of Government Version: 02/28/2022
Date Data Arrived at EDR: 03/02/2022
Date Made Active in Reports: 03/17/2022
Number of Days to Update: 15

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/06/2022
Next Scheduled EDR Contact: 07/04/2022
Data Release Frequency: Quarterly

Federal institutional controls / engineering controls registries

LUCIS: Land Use Control Information System

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

Date of Government Version: 11/15/2021
Date Data Arrived at EDR: 11/16/2021
Date Made Active in Reports: 02/08/2022
Number of Days to Update: 84

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 02/07/2022
Next Scheduled EDR Contact: 05/23/2022
Data Release Frequency: Varies

US ENG CONTROLS: Engineering Controls Sites List

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

Date of Government Version: 11/19/2021
Date Data Arrived at EDR: 11/19/2021
Date Made Active in Reports: 02/14/2022
Number of Days to Update: 87

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 02/23/2022
Next Scheduled EDR Contact: 06/06/2022
Data Release Frequency: Varies

US INST CONTROLS: Institutional Controls Sites List

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

Date of Government Version: 11/19/2021
Date Data Arrived at EDR: 11/19/2021
Date Made Active in Reports: 02/14/2022
Number of Days to Update: 87

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 02/23/2022
Next Scheduled EDR Contact: 06/06/2022
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

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

Date of Government Version: 12/31/2021
Date Data Arrived at EDR: 03/01/2022
Date Made Active in Reports: 03/10/2022
Number of Days to Update: 9

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 03/22/2022
Next Scheduled EDR Contact: 07/04/2022
Data Release Frequency: Quarterly

Lists of state- and tribal (Superfund) equivalent sites

RESPONSE: State Response Sites

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

Date of Government Version: 01/24/2022
Date Data Arrived at EDR: 01/25/2022
Date Made Active in Reports: 04/13/2022
Number of Days to Update: 78

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/25/2022
Next Scheduled EDR Contact: 05/09/2022
Data Release Frequency: Quarterly

Lists of state- and tribal hazardous waste facilities

ENVIROSTOR: EnviroStor Database

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

Date of Government Version: 01/24/2022
Date Data Arrived at EDR: 01/25/2022
Date Made Active in Reports: 04/13/2022
Number of Days to Update: 78

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/25/2022
Next Scheduled EDR Contact: 05/09/2022
Data Release Frequency: Quarterly

Lists of state and tribal landfills and solid waste disposal facilities

SWF/LF (SWIS): Solid Waste Information System

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

Date of Government Version: 11/08/2021
Date Data Arrived at EDR: 11/09/2021
Date Made Active in Reports: 01/28/2022
Number of Days to Update: 80

Source: Department of Resources Recycling and Recovery
Telephone: 916-341-6320
Last EDR Contact: 02/08/2022
Next Scheduled EDR Contact: 05/23/2022
Data Release Frequency: Quarterly

Lists of state and tribal leaking storage tanks

LUST REG 4: Underground Storage Tank Leak List

Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

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

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

LUST REG 7: Leaking Underground Storage Tank Case Listing

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

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

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

LUST REG 8: Leaking Underground Storage Tanks

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

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

Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 909-782-4496
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

LUST REG 2: Fuel Leak List

Leaking Underground Storage Tank locations. Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma counties.

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

Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-622-2433
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: No Update Planned

LUST REG 1: Active Toxic Site Investigation

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

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

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

LUST REG 9: Leaking Underground Storage Tank Report

Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

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

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

LUST REG 6V: Leaking Underground Storage Tank Case Listing
Leaking Underground Storage Tank locations. Inyo, Kern, Los Angeles, Mono, San Bernardino counties.

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

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

LUST: Leaking Underground Fuel Tank Report (GEOTRACKER)
Leaking Underground Storage Tank (LUST) Sites included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 12/06/2021
Date Data Arrived at EDR: 12/07/2021
Date Made Active in Reports: 02/23/2022
Number of Days to Update: 78

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 03/08/2022
Next Scheduled EDR Contact: 06/20/2022
Data Release Frequency: Quarterly

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

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

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

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

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

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

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

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

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

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

Date of Government Version: 05/28/2021
Date Data Arrived at EDR: 06/22/2021
Date Made Active in Reports: 09/20/2021
Number of Days to Update: 90

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 04/21/2022
Next Scheduled EDR Contact: 08/01/2022
Data Release Frequency: Varies

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

Date of Government Version: 10/12/2021
Date Data Arrived at EDR: 11/15/2021
Date Made Active in Reports: 02/08/2022
Number of Days to Update: 85

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 04/21/2022
Next Scheduled EDR Contact: 08/01/2022
Data Release Frequency: Varies

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

Date of Government Version: 10/12/2021
Date Data Arrived at EDR: 11/15/2021
Date Made Active in Reports: 02/08/2022
Number of Days to Update: 85

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 04/21/2022
Next Scheduled EDR Contact: 08/01/2022
Data Release Frequency: Varies

INDIAN LUST R5: Leaking Underground Storage Tanks on Indian Land
Leaking underground storage tanks located on Indian Land in Michigan, Minnesota and Wisconsin.

Date of Government Version: 10/12/2021
Date Data Arrived at EDR: 11/15/2021
Date Made Active in Reports: 02/08/2022
Number of Days to Update: 85

Source: EPA, Region 5
Telephone: 312-886-7439
Last EDR Contact: 04/21/2022
Next Scheduled EDR Contact: 08/01/2022
Data Release Frequency: Varies

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

Date of Government Version: 10/12/2021
Date Data Arrived at EDR: 11/15/2021
Date Made Active in Reports: 02/08/2022
Number of Days to Update: 85

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 04/21/2022
Next Scheduled EDR Contact: 08/01/2022
Data Release Frequency: Varies

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

Date of Government Version: 10/12/2021
Date Data Arrived at EDR: 11/15/2021
Date Made Active in Reports: 02/08/2022
Number of Days to Update: 85

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 04/21/2022
Next Scheduled EDR Contact: 08/01/2022
Data Release Frequency: Varies

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

Date of Government Version: 10/12/2021
Date Data Arrived at EDR: 11/15/2021
Date Made Active in Reports: 02/08/2022
Number of Days to Update: 85

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 04/21/2022
Next Scheduled EDR Contact: 08/01/2022
Data Release Frequency: Varies

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

Date of Government Version: 04/28/2021
Date Data Arrived at EDR: 06/11/2021
Date Made Active in Reports: 09/07/2021
Number of Days to Update: 88

Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 04/21/2022
Next Scheduled EDR Contact: 08/01/2022
Data Release Frequency: Varies

CPS-SLIC: Statewide SLIC Cases (GEOTRACKER)

Cleanup Program Sites (CPS; also known as Site Cleanups [SC] and formerly known as Spills, Leaks, Investigations, and Cleanups [SLIC] sites) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 12/06/2021
Date Data Arrived at EDR: 12/07/2021
Date Made Active in Reports: 02/23/2022
Number of Days to Update: 78

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/08/2022
Next Scheduled EDR Contact: 06/20/2022
Data Release Frequency: Varies

SLIC REG 1: Active Toxic Site Investigations

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

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

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

SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

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

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

Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: No Update Planned

SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

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

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

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: No Update Planned

SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

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

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

Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: No Update Planned

SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

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

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

Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

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

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

Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

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

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

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

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

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

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

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

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

Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-3298
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

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

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

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 08/08/2011
Next Scheduled EDR Contact: 11/21/2011
Data Release Frequency: No Update Planned

Lists of state and tribal registered storage tanks

FEMA UST: Underground Storage Tank Listing
A listing of all FEMA owned underground storage tanks.

Date of Government Version: 10/14/2021
Date Data Arrived at EDR: 11/05/2021
Date Made Active in Reports: 02/01/2022
Number of Days to Update: 88

Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 04/04/2022
Next Scheduled EDR Contact: 07/18/2022
Data Release Frequency: Varies

UST CLOSURE: Proposed Closure of Underground Storage Tank (UST) Cases

UST cases that are being considered for closure by either the State Water Resources Control Board or the Executive Director have been posted for a 60-day public comment period. UST Case Closures being proposed for consideration by the State Water Resources Control Board. These are primarily UST cases that meet closure criteria under the decisional framework in State Water Board Resolution No. 92-49 and other Board orders. UST Case Closures proposed for consideration by the Executive Director pursuant to State Water Board Resolution No. 2012-0061. These are cases that meet the criteria of the Low-Threat UST Case Closure Policy. UST Case Closure Review Denials and Approved Orders.

Date of Government Version: 12/01/2021
Date Data Arrived at EDR: 12/07/2021
Date Made Active in Reports: 03/02/2022
Number of Days to Update: 85

Source: State Water Resources Control Board
Telephone: 916-327-7844
Last EDR Contact: 03/08/2022
Next Scheduled EDR Contact: 06/20/2022
Data Release Frequency: Varies

MILITARY UST SITES: Military UST Sites (GEOTRACKER)

Military ust sites

Date of Government Version: 12/06/2021
Date Data Arrived at EDR: 12/07/2021
Date Made Active in Reports: 02/23/2022
Number of Days to Update: 78

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/08/2022
Next Scheduled EDR Contact: 06/20/2022
Data Release Frequency: Varies

UST: Active UST Facilities

Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 12/06/2021
Date Data Arrived at EDR: 12/07/2021
Date Made Active in Reports: 02/23/2022
Number of Days to Update: 78

Source: SWRCB
Telephone: 916-341-5851
Last EDR Contact: 03/08/2022
Next Scheduled EDR Contact: 06/20/2022
Data Release Frequency: Semi-Annually

AST: Aboveground Petroleum Storage Tank Facilities

A listing of aboveground storage tank petroleum storage tank locations.

Date of Government Version: 07/06/2016
Date Data Arrived at EDR: 07/12/2016
Date Made Active in Reports: 09/19/2016
Number of Days to Update: 69

Source: California Environmental Protection Agency
Telephone: 916-327-5092
Last EDR Contact: 03/10/2022
Next Scheduled EDR Contact: 06/27/2022
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land

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

Date of Government Version: 05/28/2021
Date Data Arrived at EDR: 06/22/2021
Date Made Active in Reports: 09/20/2021
Number of Days to Update: 90

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 04/21/2022
Next Scheduled EDR Contact: 08/01/2022
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land

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

Date of Government Version: 10/12/2021
Date Data Arrived at EDR: 11/15/2021
Date Made Active in Reports: 02/08/2022
Number of Days to Update: 85

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 04/21/2022
Next Scheduled EDR Contact: 08/01/2022
Data Release Frequency: Varies

INDIAN UST R5: Underground Storage Tanks on Indian Land

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

Date of Government Version: 04/06/2021
Date Data Arrived at EDR: 06/11/2021
Date Made Active in Reports: 09/07/2021
Number of Days to Update: 88

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 04/21/2022
Next Scheduled EDR Contact: 08/01/2022
Data Release Frequency: Varies

INDIAN UST R10: Underground Storage Tanks on Indian Land

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

Date of Government Version: 10/12/2021
Date Data Arrived at EDR: 11/15/2021
Date Made Active in Reports: 02/08/2022
Number of Days to Update: 85

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 04/21/2022
Next Scheduled EDR Contact: 08/01/2022
Data Release Frequency: Varies

INDIAN UST R7: Underground Storage Tanks on Indian Land

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

Date of Government Version: 10/12/2021
Date Data Arrived at EDR: 11/15/2021
Date Made Active in Reports: 02/08/2022
Number of Days to Update: 85

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 04/21/2022
Next Scheduled EDR Contact: 08/01/2022
Data Release Frequency: Varies

INDIAN UST R8: Underground Storage Tanks on Indian Land

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

Date of Government Version: 10/12/2021
Date Data Arrived at EDR: 11/15/2021
Date Made Active in Reports: 02/08/2022
Number of Days to Update: 85

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 04/21/2022
Next Scheduled EDR Contact: 08/01/2022
Data Release Frequency: Varies

INDIAN UST R9: Underground Storage Tanks on Indian Land

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

Date of Government Version: 10/12/2021
Date Data Arrived at EDR: 11/15/2021
Date Made Active in Reports: 02/08/2022
Number of Days to Update: 85

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 04/21/2022
Next Scheduled EDR Contact: 08/01/2022
Data Release Frequency: Varies

INDIAN UST R1: Underground Storage Tanks on Indian Land

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

Date of Government Version: 10/14/2021
Date Data Arrived at EDR: 11/15/2021
Date Made Active in Reports: 02/08/2022
Number of Days to Update: 85

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 04/21/2022
Next Scheduled EDR Contact: 08/01/2022
Data Release Frequency: Varies

Lists of state and tribal voluntary cleanup sites

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

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

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 07/08/2021
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

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

Date of Government Version: 01/24/2022
Date Data Arrived at EDR: 01/25/2022
Date Made Active in Reports: 04/13/2022
Number of Days to Update: 78

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/25/2022
Next Scheduled EDR Contact: 05/09/2022
Data Release Frequency: Quarterly

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

Date of Government Version: 07/27/2015
Date Data Arrived at EDR: 09/29/2015
Date Made Active in Reports: 02/18/2016
Number of Days to Update: 142

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 03/16/2022
Next Scheduled EDR Contact: 07/04/2022
Data Release Frequency: Varies

Lists of state and tribal brownfield sites

BROWNFIELDS: Considered Brownfieds Sites Listing
A listing of sites the SWRCB considers to be Brownfields since these are sites have come to them through the MOA Process.

Date of Government Version: 12/15/2021
Date Data Arrived at EDR: 12/16/2021
Date Made Active in Reports: 03/03/2022
Number of Days to Update: 77

Source: State Water Resources Control Board
Telephone: 916-323-7905
Last EDR Contact: 03/21/2022
Next Scheduled EDR Contact: 07/04/2022
Data Release Frequency: Quarterly

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

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

Date of Government Version: 02/23/2022
Date Data Arrived at EDR: 03/10/2022
Date Made Active in Reports: 03/10/2022
Number of Days to Update: 0

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 03/15/2022
Next Scheduled EDR Contact: 06/27/2022
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT: Waste Management Unit Database

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

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

Source: State Water Resources Control Board
Telephone: 916-227-4448
Last EDR Contact: 04/21/2022
Next Scheduled EDR Contact: 08/08/2022
Data Release Frequency: No Update Planned

SWRCY: Recycler Database

A listing of recycling facilities in California.

Date of Government Version: 12/06/2021
Date Data Arrived at EDR: 12/07/2021
Date Made Active in Reports: 02/23/2022
Number of Days to Update: 78

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 03/08/2022
Next Scheduled EDR Contact: 06/20/2022
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing

A listing of registered waste tire haulers.

Date of Government Version: 09/14/2021
Date Data Arrived at EDR: 11/11/2021
Date Made Active in Reports: 11/23/2021
Number of Days to Update: 12

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 02/17/2022
Next Scheduled EDR Contact: 05/23/2022
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands

Location of open dumps on Indian land.

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

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 04/21/2022
Next Scheduled EDR Contact: 08/08/2022
Data Release Frequency: Varies

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations

A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

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

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 04/14/2022
Next Scheduled EDR Contact: 08/01/2022
Data Release Frequency: No Update Planned

ODI: Open Dump Inventory

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

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

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

IHS OPEN DUMPS: Open Dumps on Indian Land

A listing of all open dumps located on Indian Land in the United States.

Date of Government Version: 04/01/2014
Date Data Arrived at EDR: 08/06/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 176

Source: Department of Health & Human Serivces, Indian Health Service
Telephone: 301-443-1452
Last EDR Contact: 01/28/2022
Next Scheduled EDR Contact: 05/09/2022
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL: National Clandestine Laboratory Register

A listing of clandestine drug lab locations that have been removed from the DEAs National Clandestine Laboratory Register.

Date of Government Version: 11/16/2021
Date Data Arrived at EDR: 11/18/2021
Date Made Active in Reports: 02/08/2022
Number of Days to Update: 82

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 02/23/2022
Next Scheduled EDR Contact: 06/06/2022
Data Release Frequency: No Update Planned

HIST CAL-SITES: Calsites Database

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

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

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

SCH: School Property Evaluation Program

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

Date of Government Version: 01/24/2022
Date Data Arrived at EDR: 01/25/2022
Date Made Active in Reports: 04/13/2022
Number of Days to Update: 78

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/25/2022
Next Scheduled EDR Contact: 05/09/2022
Data Release Frequency: Quarterly

CDL: Clandestine Drug Labs

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

Date of Government Version: 12/31/2019
Date Data Arrived at EDR: 01/20/2021
Date Made Active in Reports: 04/08/2021
Number of Days to Update: 78

Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 04/18/2022
Next Scheduled EDR Contact: 07/18/2022
Data Release Frequency: Varies

TOXIC PITS: Toxic Pits Cleanup Act Sites

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

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

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

CERS HAZ WASTE: CERS HAZ WASTE

List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Hazardous Chemical Management, Hazardous Waste Onsite Treatment, Household Hazardous Waste Collection, Hazardous Waste Generator, and RCRA LQ HW Generator programs.

Date of Government Version: 01/18/2022
Date Data Arrived at EDR: 01/19/2022
Date Made Active in Reports: 04/11/2022
Number of Days to Update: 82

Source: CalEPA
Telephone: 916-323-2514
Last EDR Contact: 04/19/2022
Next Scheduled EDR Contact: 08/01/2022
Data Release Frequency: Quarterly

US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 11/16/2021
Date Data Arrived at EDR: 11/18/2021
Date Made Active in Reports: 02/08/2022
Number of Days to Update: 82

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 02/23/2022
Next Scheduled EDR Contact: 06/06/2022
Data Release Frequency: Quarterly

AQUEOUS FOAM: Former Fire Training Facility Assessments Listing

Airports shown on this list are those believed to use Aqueous Film Forming Foam (AFFF), and certified by the Federal Aviation Administration (FAA) under Title 14, Code of Federal Regulations (CFR), Part 139 (14 CFR Part 139). This list was created by SWRCB using information available from the FAA. Location points shown are from the latitude and longitude listed on the FAA airport master record.

Date of Government Version: 02/20/2020
Date Data Arrived at EDR: 12/10/2021
Date Made Active in Reports: 02/25/2022
Number of Days to Update: 77

Source: State Water Resources Control Board
Telephone: 916-341-5455
Last EDR Contact: 03/11/2022
Next Scheduled EDR Contact: 06/20/2022
Data Release Frequency: Varies

PFAS: PFAS Contamination Site Location Listing

A listing of PFAS contaminated sites included in the GeoTracker database.

Date of Government Version: 12/06/2021
Date Data Arrived at EDR: 12/07/2021
Date Made Active in Reports: 02/23/2022
Number of Days to Update: 78

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/08/2022
Next Scheduled EDR Contact: 06/20/2022
Data Release Frequency: Varies

Local Lists of Registered Storage Tanks

SWEEPS UST: SWEEPS UST Listing

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

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

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

HIST UST: Hazardous Substance Storage Container Database

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

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

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

SAN FRANCISCO AST: Aboveground Storage Tank Site Listing

Aboveground storage tank sites

Date of Government Version: 11/04/2021
Date Data Arrived at EDR: 11/05/2021
Date Made Active in Reports: 01/24/2022
Number of Days to Update: 80

Source: San Francisco County Department of Public Health
Telephone: 415-252-3896
Last EDR Contact: 01/28/2022
Next Scheduled EDR Contact: 05/16/2022
Data Release Frequency: Varies

CA FID UST: Facility Inventory Database

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

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

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

CERS TANKS: California Environmental Reporting System (CERS) Tanks

List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Aboveground Petroleum Storage and Underground Storage Tank regulatory programs.

Date of Government Version: 01/18/2022
Date Data Arrived at EDR: 01/19/2022
Date Made Active in Reports: 04/11/2022
Number of Days to Update: 82

Source: California Environmental Protection Agency
Telephone: 916-323-2514
Last EDR Contact: 04/19/2022
Next Scheduled EDR Contact: 08/01/2022
Data Release Frequency: Quarterly

Local Land Records

LIENS: Environmental Liens Listing

A listing of property locations with environmental liens for California where DTSC is a lien holder.

Date of Government Version: 02/24/2022
Date Data Arrived at EDR: 02/25/2022
Date Made Active in Reports: 03/09/2022
Number of Days to Update: 12

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 02/24/2022
Next Scheduled EDR Contact: 06/13/2022
Data Release Frequency: Varies

LIENS 2: CERCLA Lien Information

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

Date of Government Version: 01/25/2022
Date Data Arrived at EDR: 02/03/2022
Date Made Active in Reports: 02/22/2022
Number of Days to Update: 19

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 04/01/2022
Next Scheduled EDR Contact: 07/11/2022
Data Release Frequency: Semi-Annually

DEED: Deed Restriction Listing

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

Date of Government Version: 11/30/2021
Date Data Arrived at EDR: 11/30/2021
Date Made Active in Reports: 02/16/2022
Number of Days to Update: 78

Source: DTSC and SWRCB
Telephone: 916-323-3400
Last EDR Contact: 02/28/2022
Next Scheduled EDR Contact: 06/13/2022
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System

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

Date of Government Version: 12/15/2021
Date Data Arrived at EDR: 12/16/2021
Date Made Active in Reports: 03/10/2022
Number of Days to Update: 84

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 03/21/2022
Next Scheduled EDR Contact: 07/04/2022
Data Release Frequency: Quarterly

CHMIRS: California Hazardous Material Incident Report System

California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 12/31/2021
Date Data Arrived at EDR: 01/19/2022
Date Made Active in Reports: 04/08/2022
Number of Days to Update: 79

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 04/19/2022
Next Scheduled EDR Contact: 08/01/2022
Data Release Frequency: Semi-Annually

LDS: Land Disposal Sites Listing (GEOTRACKER)

Land Disposal sites (Landfills) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 12/06/2021
Date Data Arrived at EDR: 12/07/2021
Date Made Active in Reports: 02/23/2022
Number of Days to Update: 78

Source: State Water Qualilty Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/08/2022
Next Scheduled EDR Contact: 06/20/2022
Data Release Frequency: Quarterly

MCS: Military Cleanup Sites Listing (GEOTRACKER)

Military sites (consisting of: Military UST sites; Military Privatized sites; and Military Cleanup sites [formerly known as DoD non UST]) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 12/06/2021
Date Data Arrived at EDR: 12/07/2021
Date Made Active in Reports: 02/23/2022
Number of Days to Update: 78

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/08/2022
Next Scheduled EDR Contact: 06/20/2022
Data Release Frequency: Quarterly

SPILLS 90: SPILLS90 data from FirstSearch

Spills 90 includes those spill and release records available exclusively from FirstSearch databases. Typically, they may include chemical, oil and/or hazardous substance spills recorded after 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 90.

Date of Government Version: 06/06/2012
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 02/22/2013
Number of Days to Update: 50

Source: FirstSearch
Telephone: N/A
Last EDR Contact: 01/03/2013
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Other Ascertainable Records

RCRA NonGen / NLR: RCRA - Non Generators / No Longer Regulated

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 02/28/2022
Date Data Arrived at EDR: 03/02/2022
Date Made Active in Reports: 03/17/2022
Number of Days to Update: 15

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/06/2022
Next Scheduled EDR Contact: 07/04/2022
Data Release Frequency: Quarterly

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 10/26/2021
Date Data Arrived at EDR: 11/16/2021
Date Made Active in Reports: 02/08/2022
Number of Days to Update: 84

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 02/15/2022
Next Scheduled EDR Contact: 05/30/2022
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 06/07/2021
Date Data Arrived at EDR: 07/13/2021
Date Made Active in Reports: 03/09/2022
Number of Days to Update: 239

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 04/12/2022
Next Scheduled EDR Contact: 07/25/2022
Data Release Frequency: Varies

FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 04/02/2018
Date Data Arrived at EDR: 04/11/2018
Date Made Active in Reports: 11/06/2019
Number of Days to Update: 574

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 04/05/2022
Next Scheduled EDR Contact: 07/18/2022
Data Release Frequency: N/A

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 01/01/2017
Date Data Arrived at EDR: 02/03/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 63

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 02/08/2022
Next Scheduled EDR Contact: 05/23/2022
Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 12/13/2021
Date Data Arrived at EDR: 12/17/2021
Date Made Active in Reports: 03/17/2022
Number of Days to Update: 90

Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 03/21/2022
Next Scheduled EDR Contact: 07/04/2022
Data Release Frequency: Quarterly

EPA WATCH LIST: EPA WATCH LIST

EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 08/30/2013
Date Data Arrived at EDR: 03/21/2014
Date Made Active in Reports: 06/17/2014
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 02/01/2022
Next Scheduled EDR Contact: 05/16/2022
Data Release Frequency: Quarterly

2020 COR ACTION: 2020 Corrective Action Program List

The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 09/30/2017
Date Data Arrived at EDR: 05/08/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 73

Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 02/03/2022
Next Scheduled EDR Contact: 05/16/2022
Data Release Frequency: Varies

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 06/17/2020
Date Made Active in Reports: 09/10/2020
Number of Days to Update: 85

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 03/18/2022
Next Scheduled EDR Contact: 06/27/2022
Data Release Frequency: Every 4 Years

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 08/14/2020
Date Made Active in Reports: 11/04/2020
Number of Days to Update: 82

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 02/18/2022
Next Scheduled EDR Contact: 05/30/2022
Data Release Frequency: Annually

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 01/19/2022
Date Data Arrived at EDR: 01/19/2022
Date Made Active in Reports: 04/11/2022
Number of Days to Update: 82

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 04/20/2022
Next Scheduled EDR Contact: 08/01/2022
Data Release Frequency: Annually

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 01/25/2022
Date Data Arrived at EDR: 02/03/2022
Date Made Active in Reports: 02/22/2022
Number of Days to Update: 19

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 04/01/2022
Next Scheduled EDR Contact: 06/13/2022
Data Release Frequency: Annually

RMP: Risk Management Plans

When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: 10/20/2021
Date Data Arrived at EDR: 11/05/2021
Date Made Active in Reports: 11/12/2021
Number of Days to Update: 7

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 04/18/2022
Next Scheduled EDR Contact: 08/01/2022
Data Release Frequency: Varies

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

PRP: Potentially Responsible Parties
A listing of verified Potentially Responsible Parties

Date of Government Version: 01/25/2022
Date Data Arrived at EDR: 02/03/2022
Date Made Active in Reports: 02/25/2022
Number of Days to Update: 22

Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 04/01/2022
Next Scheduled EDR Contact: 05/16/2022
Data Release Frequency: Quarterly

PADS: PCB Activity Database System
PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 01/20/2022
Date Data Arrived at EDR: 01/20/2022
Date Made Active in Reports: 03/25/2022
Number of Days to Update: 64

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 04/08/2022
Next Scheduled EDR Contact: 07/18/2022
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System
The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 11/18/2016
Date Data Arrived at EDR: 11/23/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 79

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 03/31/2022
Next Scheduled EDR Contact: 07/18/2022
Data Release Frequency: Quarterly

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: No Update Planned

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: No Update Planned

MLTS: Material Licensing Tracking System
MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 07/29/2021
Date Data Arrived at EDR: 08/24/2021
Date Made Active in Reports: 11/19/2021
Number of Days to Update: 87

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 04/18/2022
Next Scheduled EDR Contact: 08/01/2022
Data Release Frequency: Quarterly

COAL ASH DOE: Steam-Electric Plant Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2020
Date Data Arrived at EDR: 11/30/2021
Date Made Active in Reports: 02/22/2022
Number of Days to Update: 84
Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 02/28/2022
Next Scheduled EDR Contact: 06/13/2022
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List
A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 01/12/2017
Date Data Arrived at EDR: 03/05/2019
Date Made Active in Reports: 11/11/2019
Number of Days to Update: 251
Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 02/28/2022
Next Scheduled EDR Contact: 06/13/2022
Data Release Frequency: Varies

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 09/13/2019
Date Data Arrived at EDR: 11/06/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 96
Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 02/04/2022
Next Scheduled EDR Contact: 05/16/2022
Data Release Frequency: Varies

RADINFO: Radiation Information Database
The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 07/01/2019
Date Data Arrived at EDR: 07/01/2019
Date Made Active in Reports: 09/23/2019
Number of Days to Update: 84
Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 03/28/2022
Next Scheduled EDR Contact: 07/11/2022
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing
A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40
Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing
A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 01/02/2020
Date Data Arrived at EDR: 01/28/2020
Date Made Active in Reports: 04/17/2020
Number of Days to Update: 80

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 01/24/2022
Next Scheduled EDR Contact: 05/08/2022
Data Release Frequency: Quarterly

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 12/31/2021
Date Data Arrived at EDR: 01/14/2022
Date Made Active in Reports: 03/25/2022
Number of Days to Update: 70

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 04/04/2022
Next Scheduled EDR Contact: 07/18/2022
Data Release Frequency: Varies

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2019
Date Data Arrived at EDR: 03/02/2022
Date Made Active in Reports: 03/25/2022
Number of Days to Update: 23

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 03/02/2022
Next Scheduled EDR Contact: 07/04/2022
Data Release Frequency: Biennially

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 07/14/2015
Date Made Active in Reports: 01/10/2017
Number of Days to Update: 546

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 04/05/2022
Next Scheduled EDR Contact: 07/18/2022
Data Release Frequency: Semi-Annually

FUSRAP: Formerly Utilized Sites Remedial Action Program

DOE established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations.

Date of Government Version: 07/26/2021
Date Data Arrived at EDR: 07/27/2021
Date Made Active in Reports: 10/22/2021
Number of Days to Update: 87

Source: Department of Energy
Telephone: 202-586-3559
Last EDR Contact: 01/31/2022
Next Scheduled EDR Contact: 05/16/2022
Data Release Frequency: Varies

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 08/30/2019
Date Data Arrived at EDR: 11/15/2019
Date Made Active in Reports: 01/28/2020
Number of Days to Update: 74

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 02/17/2022
Next Scheduled EDR Contact: 05/30/2022
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites

A listing of former lead smelter site locations.

Date of Government Version: 01/25/2022
Date Data Arrived at EDR: 02/03/2022
Date Made Active in Reports: 02/22/2022
Number of Days to Update: 19

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 05/03/2022
Next Scheduled EDR Contact: 07/11/2022
Data Release Frequency: Varies

LEAD SMELTER 2: Lead Smelter Sites

A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931and 1964. These sites may pose a threat to public health through ingestion or inhalation of contaminated soil or dust

Date of Government Version: 04/05/2001
Date Data Arrived at EDR: 10/27/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 36

Source: American Journal of Public Health
Telephone: 703-305-6451
Last EDR Contact: 12/02/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem (AFS)

The database is a sub-system of Aerometric Information Retrieval System (AIRS). AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. Action, air program, air program pollutant, and general level plant data. It is used to track emissions and compliance data from industrial plants.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US AIRS MINOR: Air Facility System Data

A listing of minor source facilities.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

MINES VIOLATIONS: MSHA Violation Assessment Data

Mines violation and assessment information. Department of Labor, Mine Safety & Health Administration.

Date of Government Version: 03/21/2022
Date Data Arrived at EDR: 03/22/2022
Date Made Active in Reports: 03/25/2022
Number of Days to Update: 3

Source: DOL, Mine Safety & Health Admi
Telephone: 202-693-9424
Last EDR Contact: 03/14/2022
Next Scheduled EDR Contact: 06/13/2022
Data Release Frequency: Quarterly

US MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 11/02/2021
Date Data Arrived at EDR: 11/22/2021
Date Made Active in Reports: 02/14/2022
Number of Days to Update: 84

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 02/23/2022
Next Scheduled EDR Contact: 06/06/2022
Data Release Frequency: Semi-Annually

US MINES 2: Ferrous and Nonferrous Metal Mines Database Listing

This map layer includes ferrous (ferrous metal mines are facilities that extract ferrous metals, such as iron ore or molybdenum) and nonferrous (Nonferrous metal mines are facilities that extract nonferrous metals, such as gold, silver, copper, zinc, and lead) metal mines in the United States.

Date of Government Version: 05/06/2020
Date Data Arrived at EDR: 05/27/2020
Date Made Active in Reports: 08/13/2020
Number of Days to Update: 78

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 02/24/2022
Next Scheduled EDR Contact: 06/06/2022
Data Release Frequency: Varies

US MINES 3: Active Mines & Mineral Plants Database Listing

Active Mines and Mineral Processing Plant operations for commodities monitored by the Minerals Information Team of the USGS.

Date of Government Version: 04/14/2011
Date Data Arrived at EDR: 06/08/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 97

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 02/24/2022
Next Scheduled EDR Contact: 06/06/2022
Data Release Frequency: Varies

ABANDONED MINES: Abandoned Mines

An inventory of land and water impacted by past mining (primarily coal mining) is maintained by OSMRE to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The inventory contains information on the location, type, and extent of AML impacts, as well as, information on the cost associated with the reclamation of those problems. The inventory is based upon field surveys by State, Tribal, and OSMRE program officials. It is dynamic to the extent that it is modified as new problems are identified and existing problems are reclaimed.

Date of Government Version: 12/14/2021
Date Data Arrived at EDR: 12/15/2021
Date Made Active in Reports: 03/10/2022
Number of Days to Update: 85

Source: Department of Interior
Telephone: 202-208-2609
Last EDR Contact: 03/04/2022
Next Scheduled EDR Contact: 06/20/2022
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 11/04/2021
Date Data Arrived at EDR: 11/22/2021
Date Made Active in Reports: 02/25/2022
Number of Days to Update: 95

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 02/28/2022
Next Scheduled EDR Contact: 06/13/2022
Data Release Frequency: Quarterly

UXO: Unexploded Ordnance Sites

A listing of unexploded ordnance site locations

Date of Government Version: 12/31/2020
Date Data Arrived at EDR: 01/11/2022
Date Made Active in Reports: 02/14/2022
Number of Days to Update: 34

Source: Department of Defense
Telephone: 703-704-1564
Last EDR Contact: 04/12/2022
Next Scheduled EDR Contact: 07/25/2022
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

DOCKET HWC: Hazardous Waste Compliance Docket Listing
A complete list of the Federal Agency Hazardous Waste Compliance Docket Facilities.

Date of Government Version: 05/06/2021
Date Data Arrived at EDR: 05/21/2021
Date Made Active in Reports: 08/11/2021
Number of Days to Update: 82
Source: Environmental Protection Agency
Telephone: 202-564-0527
Last EDR Contact: 02/22/2022
Next Scheduled EDR Contact: 06/06/2022
Data Release Frequency: Varies

ECHO: Enforcement & Compliance History Information
ECHO provides integrated compliance and enforcement information for about 800,000 regulated facilities nationwide.

Date of Government Version: 01/01/2022
Date Data Arrived at EDR: 01/04/2022
Date Made Active in Reports: 01/10/2022
Number of Days to Update: 6
Source: Environmental Protection Agency
Telephone: 202-564-2280
Last EDR Contact: 04/05/2022
Next Scheduled EDR Contact: 07/18/2022
Data Release Frequency: Quarterly

FUELS PROGRAM: EPA Fuels Program Registered Listing
This listing includes facilities that are registered under the Part 80 (Code of Federal Regulations) EPA Fuels Programs. All companies now are required to submit new and updated registrations.

Date of Government Version: 11/15/2021
Date Data Arrived at EDR: 11/15/2021
Date Made Active in Reports: 02/01/2022
Number of Days to Update: 78
Source: EPA
Telephone: 800-385-6164
Last EDR Contact: 02/17/2022
Next Scheduled EDR Contact: 05/30/2022
Data Release Frequency: Quarterly

CA BOND EXP. PLAN: Bond Expenditure Plan
Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/1989
Date Data Arrived at EDR: 07/27/1994
Date Made Active in Reports: 08/02/1994
Number of Days to Update: 6
Source: Department of Health Services
Telephone: 916-255-2118
Last EDR Contact: 05/31/1994
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CORTESE: "Cortese" Hazardous Waste & Substances Sites List
The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites).

Date of Government Version: 12/16/2021
Date Data Arrived at EDR: 12/16/2021
Date Made Active in Reports: 03/03/2022
Number of Days to Update: 77
Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 03/21/2022
Next Scheduled EDR Contact: 07/04/2022
Data Release Frequency: Quarterly

CUPA LIVERMORE-PLEASANTON: CUPA Facility Listing
list of facilities associated with the various CUPA programs in Livermore-Pleasanton

Date of Government Version: 05/01/2019
Date Data Arrived at EDR: 05/14/2019
Date Made Active in Reports: 07/17/2019
Number of Days to Update: 64
Source: Livermore-Pleasanton Fire Department
Telephone: 925-454-2361
Last EDR Contact: 02/08/2022
Next Scheduled EDR Contact: 05/23/2022
Data Release Frequency: Varies

DRYCLEAN AVAQMD: Antelope Valley Air Quality Management District Drycleaner Listing
A listing of dry cleaners in the Antelope Valley Air Quality Management District.

Date of Government Version: 11/29/2021
Date Data Arrived at EDR: 11/29/2021
Date Made Active in Reports: 02/14/2022
Number of Days to Update: 77

Source: Antelope Valley Air Quality Management District
Telephone: 661-723-8070
Last EDR Contact: 02/24/2022
Next Scheduled EDR Contact: 06/13/2022
Data Release Frequency: Varies

DRYCLEANERS: Cleaner Facilities

A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

Date of Government Version: 08/27/2021
Date Data Arrived at EDR: 09/01/2021
Date Made Active in Reports: 11/19/2021
Number of Days to Update: 79

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 02/07/2022
Next Scheduled EDR Contact: 06/13/2022
Data Release Frequency: Annually

DRYCLEAN SOUTH COAST: South Coast Air Quality Management District Drycleaner Listing

A listing of dry cleaners in the South Coast Air Quality Management District

Date of Government Version: 11/17/2021
Date Data Arrived at EDR: 11/18/2021
Date Made Active in Reports: 02/07/2022
Number of Days to Update: 81

Source: South Coast Air Quality Management District
Telephone: 909-396-3211
Last EDR Contact: 02/17/2022
Next Scheduled EDR Contact: 06/06/2022
Data Release Frequency: Varies

EMI: Emissions Inventory Data

Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/2019
Date Data Arrived at EDR: 06/10/2021
Date Made Active in Reports: 08/27/2021
Number of Days to Update: 78

Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 03/18/2022
Next Scheduled EDR Contact: 06/27/2022
Data Release Frequency: Varies

ENF: Enforcement Action Listing

A listing of Water Board Enforcement Actions. Formal is everything except Oral/Verbal Communication, Notice of Violation, Expedited Payment Letter, and Staff Enforcement Letter.

Date of Government Version: 11/10/2021
Date Data Arrived at EDR: 11/11/2021
Date Made Active in Reports: 02/03/2022
Number of Days to Update: 84

Source: State Water Resoruces Control Board
Telephone: 916-445-9379
Last EDR Contact: 04/19/2022
Next Scheduled EDR Contact: 08/01/2022
Data Release Frequency: Varies

Financial Assurance 1: Financial Assurance Information Listing

Financial Assurance information

Date of Government Version: 01/13/2022
Date Data Arrived at EDR: 01/14/2022
Date Made Active in Reports: 04/08/2022
Number of Days to Update: 84

Source: Department of Toxic Substances Control
Telephone: 916-255-3628
Last EDR Contact: 04/18/2022
Next Scheduled EDR Contact: 08/01/2022
Data Release Frequency: Varies

Financial Assurance 2: Financial Assurance Information Listing

A listing of financial assurance information for solid waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 11/18/2021
Date Data Arrived at EDR: 11/19/2021
Date Made Active in Reports: 02/07/2022
Number of Days to Update: 80

Source: California Integrated Waste Management Board
Telephone: 916-341-6066
Last EDR Contact: 02/17/2022
Next Scheduled EDR Contact: 05/23/2022
Data Release Frequency: Varies

HAZNET: Facility and Manifest Data

Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method. This database begins with calendar year 1993.

Date of Government Version: 12/31/2019
Date Data Arrived at EDR: 04/15/2020
Date Made Active in Reports: 07/02/2020
Number of Days to Update: 78

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 04/08/2022
Next Scheduled EDR Contact: 07/18/2022
Data Release Frequency: Annually

ICE: ICE

Contains data pertaining to the Permitted Facilities with Inspections / Enforcements sites tracked in Envirostor.

Date of Government Version: 11/15/2021
Date Data Arrived at EDR: 11/15/2021
Date Made Active in Reports: 02/03/2022
Number of Days to Update: 80

Source: Department of Toxic Subsances Control
Telephone: 877-786-9427
Last EDR Contact: 02/15/2022
Next Scheduled EDR Contact: 05/30/2022
Data Release Frequency: Quarterly

HIST CORTESE: Hazardous Waste & Substance Site List

The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

Date of Government Version: 04/01/2001
Date Data Arrived at EDR: 01/22/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/22/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

HWP: EnviroStor Permitted Facilities Listing

Detailed information on permitted hazardous waste facilities and corrective action ("cleanups") tracked in EnviroStor.

Date of Government Version: 11/15/2021
Date Data Arrived at EDR: 11/15/2021
Date Made Active in Reports: 02/03/2022
Number of Days to Update: 80

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 02/15/2022
Next Scheduled EDR Contact: 05/30/2022
Data Release Frequency: Quarterly

HWT: Registered Hazardous Waste Transporter Database

A listing of hazardous waste transporters. In California, unless specifically exempted, it is unlawful for any person to transport hazardous wastes unless the person holds a valid registration issued by DTSC. A hazardous waste transporter registration is valid for one year and is assigned a unique registration number.

Date of Government Version: 01/03/2022
Date Data Arrived at EDR: 01/04/2022
Date Made Active in Reports: 03/18/2022
Number of Days to Update: 73

Source: Department of Toxic Substances Control
Telephone: 916-440-7145
Last EDR Contact: 04/05/2022
Next Scheduled EDR Contact: 07/18/2022
Data Release Frequency: Quarterly

MINES: Mines Site Location Listing
A listing of mine site locations from the Office of Mine Reclamation.

Date of Government Version: 12/06/2021
Date Data Arrived at EDR: 12/07/2021
Date Made Active in Reports: 02/23/2022
Number of Days to Update: 78
Source: Department of Conservation
Telephone: 916-322-1080
Last EDR Contact: 03/08/2022
Next Scheduled EDR Contact: 06/20/2022
Data Release Frequency: Quarterly

MWMP: Medical Waste Management Program Listing
The Medical Waste Management Program (MWMP) ensures the proper handling and disposal of medical waste by permitting and inspecting medical waste Offsite Treatment Facilities (PDF) and Transfer Stations (PDF) throughout the state. MWMP also oversees all Medical Waste Transporters.

Date of Government Version: 11/18/2021
Date Data Arrived at EDR: 11/30/2021
Date Made Active in Reports: 02/17/2022
Number of Days to Update: 79
Source: Department of Public Health
Telephone: 916-558-1784
Last EDR Contact: 02/28/2022
Next Scheduled EDR Contact: 06/13/2022
Data Release Frequency: Varies

NPDES: NPDES Permits Listing
A listing of NPDES permits, including stormwater.

Date of Government Version: 11/09/2021
Date Data Arrived at EDR: 11/09/2021
Date Made Active in Reports: 01/27/2022
Number of Days to Update: 79
Source: State Water Resources Control Board
Telephone: 916-445-9379
Last EDR Contact: 02/08/2022
Next Scheduled EDR Contact: 05/23/2022
Data Release Frequency: Quarterly

PEST LIC: Pesticide Regulation Licenses Listing
A listing of licenses and certificates issued by the Department of Pesticide Regulation. The DPR issues licenses and/or certificates to: Persons and businesses that apply or sell pesticides; Pest control dealers and brokers; Persons who advise on agricultural pesticide applications.

Date of Government Version: 11/30/2021
Date Data Arrived at EDR: 11/30/2021
Date Made Active in Reports: 02/17/2022
Number of Days to Update: 79
Source: Department of Pesticide Regulation
Telephone: 916-445-4038
Last EDR Contact: 02/28/2022
Next Scheduled EDR Contact: 06/13/2022
Data Release Frequency: Quarterly

PROC: Certified Processors Database
A listing of certified processors.

Date of Government Version: 11/29/2021
Date Data Arrived at EDR: 11/29/2021
Date Made Active in Reports: 02/11/2022
Number of Days to Update: 74
Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 03/08/2022
Next Scheduled EDR Contact: 06/20/2022
Data Release Frequency: Quarterly

NOTIFY 65: Proposition 65 Records
Listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency.

Date of Government Version: 12/13/2021
Date Data Arrived at EDR: 12/14/2021
Date Made Active in Reports: 03/03/2022
Number of Days to Update: 79
Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 03/09/2022
Next Scheduled EDR Contact: 06/26/2022
Data Release Frequency: No Update Planned

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

UIC: UIC Listing
A listing of wells identified as underground injection wells, in the California Oil and Gas Wells database.

Date of Government Version: 12/03/2021
Date Data Arrived at EDR: 12/07/2021
Date Made Active in Reports: 02/24/2022
Number of Days to Update: 79
Source: Deaprtment of Conservation
Telephone: 916-445-2408
Last EDR Contact: 03/08/2022
Next Scheduled EDR Contact: 06/20/2022
Data Release Frequency: Varies

UIC GEO: Underground Injection Control Sites (GEOTRACKER)
Underground control injection sites

Date of Government Version: 12/06/2021
Date Data Arrived at EDR: 12/07/2021
Date Made Active in Reports: 02/23/2022
Number of Days to Update: 78
Source: State Water Resource Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/08/2022
Next Scheduled EDR Contact: 06/20/2022
Data Release Frequency: Varies

WASTEWATER PITS: Oil Wastewater Pits Listing
Water officials discovered that oil producers have been dumping chemical-laden wastewater into hundreds of unlined pits that are operating without proper permits. Inspections completed by the Central Valley Regional Water Quality Control Board revealed the existence of previously unidentified waste sites. The water boards review found that more than one-third of the region's active disposal pits are operating without permission.

Date of Government Version: 02/11/2021
Date Data Arrived at EDR: 07/01/2021
Date Made Active in Reports: 09/29/2021
Number of Days to Update: 90
Source: RWQCB, Central Valley Region
Telephone: 559-445-5577
Last EDR Contact: 04/08/2022
Next Scheduled EDR Contact: 07/18/2022
Data Release Frequency: Varies

WDS: Waste Discharge System
Sites which have been issued waste discharge requirements.

Date of Government Version: 06/19/2007
Date Data Arrived at EDR: 06/20/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 9
Source: State Water Resources Control Board
Telephone: 916-341-5227
Last EDR Contact: 02/11/2022
Next Scheduled EDR Contact: 05/30/2022
Data Release Frequency: No Update Planned

WIP: Well Investigation Program Case List
Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 07/03/2009
Date Data Arrived at EDR: 07/21/2009
Date Made Active in Reports: 08/03/2009
Number of Days to Update: 13
Source: Los Angeles Water Quality Control Board
Telephone: 213-576-6726
Last EDR Contact: 03/16/2022
Next Scheduled EDR Contact: 07/04/2022
Data Release Frequency: No Update Planned

MILITARY PRIV SITES: Military Privatized Sites (GEOTRACKER)
Military privatized sites

Date of Government Version: 12/06/2021
Date Data Arrived at EDR: 12/07/2021
Date Made Active in Reports: 02/23/2022
Number of Days to Update: 78
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/08/2022
Next Scheduled EDR Contact: 06/20/2022
Data Release Frequency: Varies

PROJECT: Project Sites (GEOTRACKER)
Projects sites

Date of Government Version: 12/06/2021
Date Data Arrived at EDR: 12/07/2021
Date Made Active in Reports: 02/23/2022
Number of Days to Update: 78

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/08/2022
Next Scheduled EDR Contact: 06/20/2022
Data Release Frequency: Varies

WDR: Waste Discharge Requirements Listing

In general, the Waste Discharge Requirements (WDRs) Program (sometimes also referred to as the "Non Chapter 15 (Non 15) Program") regulates point discharges that are exempt pursuant to Subsection 20090 of Title 27 and not subject to the Federal Water Pollution Control Act. Exemptions from Title 27 may be granted for nine categories of discharges (e.g., sewage, wastewater, etc.) that meet, and continue to meet, the preconditions listed for each specific exemption. The scope of the WDRs Program also includes the discharge of wastes classified as inert, pursuant to section 20230 of Title 27.

Date of Government Version: 12/06/2021
Date Data Arrived at EDR: 12/07/2021
Date Made Active in Reports: 02/23/2022
Number of Days to Update: 78

Source: State Water Resources Control Board
Telephone: 916-341-5810
Last EDR Contact: 03/08/2022
Next Scheduled EDR Contact: 06/20/2022
Data Release Frequency: Quarterly

CIWQS: California Integrated Water Quality System

The California Integrated Water Quality System (CIWQS) is a computer system used by the State and Regional Water Quality Control Boards to track information about places of environmental interest, manage permits and other orders, track inspections, and manage violations and enforcement activities.

Date of Government Version: 11/30/2021
Date Data Arrived at EDR: 11/30/2021
Date Made Active in Reports: 02/16/2022
Number of Days to Update: 78

Source: State Water Resources Control Board
Telephone: 866-794-4977
Last EDR Contact: 02/28/2022
Next Scheduled EDR Contact: 06/13/2022
Data Release Frequency: Varies

CERS: CalEPA Regulated Site Portal Data

The CalEPA Regulated Site Portal database combines data about environmentally regulated sites and facilities in California into a single database. It combines data from a variety of state and federal databases, and provides an overview of regulated activities across the spectrum of environmental programs for any given location in California. These activities include hazardous materials and waste, state and federal cleanups, impacted ground and surface waters, and toxic materials

Date of Government Version: 01/18/2022
Date Data Arrived at EDR: 01/19/2022
Date Made Active in Reports: 04/08/2022
Number of Days to Update: 79

Source: California Environmental Protection Agency
Telephone: 916-323-2514
Last EDR Contact: 04/19/2022
Next Scheduled EDR Contact: 08/01/2022
Data Release Frequency: Varies

NON-CASE INFO: Non-Case Information Sites (GEOTRACKER)

Non-Case Information sites

Date of Government Version: 12/06/2021
Date Data Arrived at EDR: 12/07/2021
Date Made Active in Reports: 02/23/2022
Number of Days to Update: 78

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/08/2022
Next Scheduled EDR Contact: 06/20/2022
Data Release Frequency: Varies

OTHER OIL GAS: Other Oil & Gas Projects Sites (GEOTRACKER)

Other Oil & Gas Projects sites

Date of Government Version: 12/06/2021
Date Data Arrived at EDR: 12/07/2021
Date Made Active in Reports: 02/23/2022
Number of Days to Update: 78

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/08/2022
Next Scheduled EDR Contact: 06/20/2022
Data Release Frequency: Varies

PROD WATER PONDS: Produced Water Ponds Sites (GEOTRACKER)
Produced water ponds sites

Date of Government Version: 12/06/2021
Date Data Arrived at EDR: 12/07/2021
Date Made Active in Reports: 02/23/2022
Number of Days to Update: 78

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/08/2022
Next Scheduled EDR Contact: 06/20/2022
Data Release Frequency: Varies

SAMPLING POINT: Sampling Point ? Public Sites (GEOTRACKER)
Sampling point - public sites

Date of Government Version: 12/06/2021
Date Data Arrived at EDR: 12/07/2021
Date Made Active in Reports: 02/23/2022
Number of Days to Update: 78

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/08/2022
Next Scheduled EDR Contact: 06/20/2022
Data Release Frequency: Varies

WELL STIM PROJ: Well Stimulation Project (GEOTRACKER)
Includes areas of groundwater monitoring plans, a depiction of the monitoring network, and the facilities, boundaries, and subsurface characteristics of the oilfield and the features (oil and gas wells, produced water ponds, UIC wells, water supply wells, etc?) being monitored

Date of Government Version: 12/06/2021
Date Data Arrived at EDR: 12/07/2021
Date Made Active in Reports: 02/23/2022
Number of Days to Update: 78

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/08/2022
Next Scheduled EDR Contact: 06/20/2022
Data Release Frequency: Varies

PCS ENF: Enforcement data
No description is available for this data

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 02/05/2015
Date Made Active in Reports: 03/06/2015
Number of Days to Update: 29

Source: EPA
Telephone: 202-564-2497
Last EDR Contact: 03/31/2022
Next Scheduled EDR Contact: 07/18/2022
Data Release Frequency: Varies

HWTS: Hazardous Waste Tracking System
DTSC maintains the Hazardous Waste Tracking System that stores ID number information since the early 1980s and manifest data since 1993. The system collects both manifest copies from the generator and destination facility.

Date of Government Version: 07/13/2021
Date Data Arrived at EDR: 07/14/2021
Date Made Active in Reports: 10/06/2021
Number of Days to Update: 84

Source: Department of Toxic Substances Control
Telephone: 916-324-2444
Last EDR Contact: 04/05/2022
Next Scheduled EDR Contact: 07/18/2022
Data Release Frequency: Varies

PCS INACTIVE: Listing of Inactive PCS Permits
An inactive permit is a facility that has shut down or is no longer discharging.

Date of Government Version: 11/05/2014
Date Data Arrived at EDR: 01/06/2015
Date Made Active in Reports: 05/06/2015
Number of Days to Update: 120

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 03/31/2022
Next Scheduled EDR Contact: 07/18/2022
Data Release Frequency: Semi-Annually

PCS: Permit Compliance System
PCS is a computerized management information system that contains data on National Pollutant Discharge Elimination System (NPDES) permit holding facilities. PCS tracks the permit, compliance, and enforcement status of NPDES facilities.

Date of Government Version: 07/14/2011
Date Data Arrived at EDR: 08/05/2011
Date Made Active in Reports: 09/29/2011
Number of Days to Update: 55

Source: EPA, Office of Water
Telephone: 202-564-2496
Last EDR Contact: 03/31/2022
Next Scheduled EDR Contact: 07/18/2022
Data Release Frequency: Semi-Annually

MINES MRDS: Mineral Resources Data System
Mineral Resources Data System

Date of Government Version: 04/06/2018
Date Data Arrived at EDR: 10/21/2019
Date Made Active in Reports: 10/24/2019
Number of Days to Update: 3

Source: USGS
Telephone: 703-648-6533
Last EDR Contact: 02/24/2022
Next Scheduled EDR Contact: 06/06/2022
Data Release Frequency: Varies

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP: EDR Proprietary Manufactured Gas Plants
The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Hist Auto: EDR Exclusive Historical Auto Stations
EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Hist Cleaner: EDR Exclusive Historical Cleaners
EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF: Recovered Government Archive Solid Waste Facilities List

The EDR Recovered Government Archive Landfill database provides a list of landfills derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Resources Recycling and Recovery in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/13/2014
Number of Days to Update: 196

Source: Department of Resources Recycling and Recovery
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

RGA LUST: Recovered Government Archive Leaking Underground Storage Tank

The EDR Recovered Government Archive Leaking Underground Storage Tank database provides a list of LUST incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the State Water Resources Control Board in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 12/30/2013
Number of Days to Update: 182

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

COUNTY RECORDS

ALAMEDA COUNTY:

CS ALAMEDA: Contaminated Sites

A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 01/09/2019
Date Data Arrived at EDR: 01/11/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 53

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 03/31/2022
Next Scheduled EDR Contact: 07/18/2022
Data Release Frequency: Semi-Annually

UST ALAMEDA: Underground Tanks

Underground storage tank sites located in Alameda county.

Date of Government Version: 12/28/2021
Date Data Arrived at EDR: 12/28/2021
Date Made Active in Reports: 03/18/2022
Number of Days to Update: 80

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 04/18/2022
Next Scheduled EDR Contact: 07/18/2022
Data Release Frequency: Semi-Annually

AMADOR COUNTY:

CUPA AMADOR: CUPA Facility List
Cupa Facility List

Date of Government Version: 11/01/2021
Date Data Arrived at EDR: 11/02/2021
Date Made Active in Reports: 01/24/2022
Number of Days to Update: 83

Source: Amador County Environmental Health
Telephone: 209-223-6439
Last EDR Contact: 01/28/2022
Next Scheduled EDR Contact: 05/16/2022
Data Release Frequency: Varies

BUTTE COUNTY:

CUPA BUTTE: CUPA Facility Listing
Cupa facility list.

Date of Government Version: 04/21/2017
Date Data Arrived at EDR: 04/25/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 106

Source: Public Health Department
Telephone: 530-538-7149
Last EDR Contact: 03/31/2022
Next Scheduled EDR Contact: 07/18/2022
Data Release Frequency: No Update Planned

CALVERAS COUNTY:

CUPA CALVERAS: CUPA Facility Listing
Cupa Facility Listing

Date of Government Version: 12/28/2021
Date Data Arrived at EDR: 12/28/2021
Date Made Active in Reports: 03/18/2022
Number of Days to Update: 80

Source: Calveras County Environmental Health
Telephone: 209-754-6399
Last EDR Contact: 03/17/2022
Next Scheduled EDR Contact: 07/04/2022
Data Release Frequency: Quarterly

COLUSA COUNTY:

CUPA COLUSA: CUPA Facility List
Cupa facility list.

Date of Government Version: 04/06/2020
Date Data Arrived at EDR: 04/23/2020
Date Made Active in Reports: 07/10/2020
Number of Days to Update: 78

Source: Health & Human Services
Telephone: 530-458-0396
Last EDR Contact: 01/28/2022
Next Scheduled EDR Contact: 05/16/2022
Data Release Frequency: Semi-Annually

CONTRA COSTA COUNTY:

SL CONTRA COSTA: Site List
List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 01/24/2022
Date Data Arrived at EDR: 01/25/2022
Date Made Active in Reports: 04/14/2022
Number of Days to Update: 79

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 04/21/2022
Next Scheduled EDR Contact: 08/08/2022
Data Release Frequency: Semi-Annually

DEL NORTE COUNTY:

CUPA DEL NORTE: CUPA Facility List
Cupa Facility list

Date of Government Version: 01/10/2022
Date Data Arrived at EDR: 01/26/2022
Date Made Active in Reports: 04/14/2022
Number of Days to Update: 78

Source: Del Norte County Environmental Health Division
Telephone: 707-465-0426
Last EDR Contact: 04/21/2022
Next Scheduled EDR Contact: 08/08/2022
Data Release Frequency: Varies

EL DORADO COUNTY:

CUPA EL DORADO: CUPA Facility List
CUPA facility list.

Date of Government Version: 11/30/2021
Date Data Arrived at EDR: 12/01/2021
Date Made Active in Reports: 02/16/2022
Number of Days to Update: 77

Source: El Dorado County Environmental Management Department
Telephone: 530-621-6623
Last EDR Contact: 04/21/2022
Next Scheduled EDR Contact: 08/08/2022
Data Release Frequency: Varies

FRESNO COUNTY:

CUPA FRESNO: CUPA Resources List
Certified Unified Program Agency. CUPA's are responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

Date of Government Version: 06/28/2021
Date Data Arrived at EDR: 12/21/2021
Date Made Active in Reports: 03/03/2022
Number of Days to Update: 72

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 03/31/2022
Next Scheduled EDR Contact: 07/11/2022
Data Release Frequency: Semi-Annually

GLENN COUNTY:

CUPA GLENN: CUPA Facility List
Cupa facility list

Date of Government Version: 01/22/2018
Date Data Arrived at EDR: 01/24/2018
Date Made Active in Reports: 03/14/2018
Number of Days to Update: 49

Source: Glenn County Air Pollution Control District
Telephone: 830-934-6500
Last EDR Contact: 04/14/2022
Next Scheduled EDR Contact: 08/01/2022
Data Release Frequency: No Update Planned

HUMBOLDT COUNTY:

CUPA HUMBOLDT: CUPA Facility List
CUPA facility list.

Date of Government Version: 08/12/2021
Date Data Arrived at EDR: 08/12/2021
Date Made Active in Reports: 11/08/2021
Number of Days to Update: 88

Source: Humboldt County Environmental Health
Telephone: N/A
Last EDR Contact: 02/11/2022
Next Scheduled EDR Contact: 05/30/2022
Data Release Frequency: Semi-Annually

IMPERIAL COUNTY:

CUPA IMPERIAL: CUPA Facility List
Cupa facility list.

Date of Government Version: 01/13/2022
Date Data Arrived at EDR: 01/14/2022
Date Made Active in Reports: 04/06/2022
Number of Days to Update: 82

Source: San Diego Border Field Office
Telephone: 760-339-2777
Last EDR Contact: 04/18/2022
Next Scheduled EDR Contact: 08/01/2022
Data Release Frequency: Varies

INYO COUNTY:

CUPA INYO: CUPA Facility List
Cupa facility list.

Date of Government Version: 04/02/2018
Date Data Arrived at EDR: 04/03/2018
Date Made Active in Reports: 06/14/2018
Number of Days to Update: 72

Source: Inyo County Environmental Health Services
Telephone: 760-878-0238
Last EDR Contact: 02/11/2022
Next Scheduled EDR Contact: 05/30/2022
Data Release Frequency: Varies

KERN COUNTY:

CUPA KERN: CUPA Facility List
A listing of sites included in the Kern County Hazardous Material Business Plan.

Date of Government Version: 11/10/2021
Date Data Arrived at EDR: 11/12/2021
Date Made Active in Reports: 02/02/2022
Number of Days to Update: 82

Source: Kern County Public Health
Telephone: 661-321-3000
Last EDR Contact: 01/28/2022
Next Scheduled EDR Contact: 05/16/2022
Data Release Frequency: Varies

UST KERN: Underground Storage Tank Sites & Tank Listing
Kern County Sites and Tanks Listing.

Date of Government Version: 11/10/2021
Date Data Arrived at EDR: 11/12/2021
Date Made Active in Reports: 02/02/2022
Number of Days to Update: 82

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 01/28/2022
Next Scheduled EDR Contact: 05/16/2022
Data Release Frequency: Quarterly

KINGS COUNTY:

CUPA KINGS: CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 12/03/2020
Date Data Arrived at EDR: 01/26/2021
Date Made Active in Reports: 04/14/2021
Number of Days to Update: 78

Source: Kings County Department of Public Health
Telephone: 559-584-1411
Last EDR Contact: 03/24/2022
Next Scheduled EDR Contact: 05/30/2022
Data Release Frequency: Varies

LAKE COUNTY:

CUPA LAKE: CUPA Facility List
Cupa facility list

Date of Government Version: 11/04/2021
Date Data Arrived at EDR: 11/05/2021
Date Made Active in Reports: 01/24/2022
Number of Days to Update: 80

Source: Lake County Environmental Health
Telephone: 707-263-1164
Last EDR Contact: 04/11/2022
Next Scheduled EDR Contact: 07/25/2022
Data Release Frequency: Varies

LASSEN COUNTY:

CUPA LASSEN: CUPA Facility List
Cupa facility list

Date of Government Version: 07/31/2020
Date Data Arrived at EDR: 08/21/2020
Date Made Active in Reports: 11/09/2020
Number of Days to Update: 80

Source: Lassen County Environmental Health
Telephone: 530-251-8528
Last EDR Contact: 04/14/2022
Next Scheduled EDR Contact: 08/01/2022
Data Release Frequency: Varies

LOS ANGELES COUNTY:

AOCONCERN: Key Areas of Concerns in Los Angeles County
San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office. Date of Government Version: 3/30/2009 Exide Site area is a cleanup plan of lead-impacted soil surrounding the former Exide Facility as designated by the DTSC. Date of Government Version: 7/17/2017

Date of Government Version: 03/30/2009
Date Data Arrived at EDR: 03/31/2009
Date Made Active in Reports: 10/23/2009
Number of Days to Update: 206

Source: N/A
Telephone: N/A
Last EDR Contact: 03/10/2022
Next Scheduled EDR Contact: 06/27/2022
Data Release Frequency: No Update Planned

HMS LOS ANGELES: HMS: Street Number List
Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 04/04/2022
Date Data Arrived at EDR: 04/05/2022
Date Made Active in Reports: 04/13/2022
Number of Days to Update: 8

Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 04/04/2022
Next Scheduled EDR Contact: 07/18/2022
Data Release Frequency: Semi-Annually

LF LOS ANGELES: List of Solid Waste Facilities
Solid Waste Facilities in Los Angeles County.

Date of Government Version: 01/10/2022
Date Data Arrived at EDR: 01/11/2022
Date Made Active in Reports: 04/04/2022
Number of Days to Update: 83

Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 04/12/2022
Next Scheduled EDR Contact: 07/25/2022
Data Release Frequency: Varies

LF LOS ANGELES CITY: City of Los Angeles Landfills
Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 01/01/2022
Date Data Arrived at EDR: 01/21/2022
Date Made Active in Reports: 04/11/2022
Number of Days to Update: 80

Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 04/08/2022
Next Scheduled EDR Contact: 07/25/2022
Data Release Frequency: Varies

LOS ANGELES AST: Active & Inactive AST Inventory
A listing of active & inactive above ground petroleum storage tank site locations, located in the City of Los Angeles.

Date of Government Version: 06/01/2019
Date Data Arrived at EDR: 06/25/2019
Date Made Active in Reports: 08/22/2019
Number of Days to Update: 58

Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 03/23/2022
Next Scheduled EDR Contact: 07/04/2022
Data Release Frequency: Varies

LOS ANGELES CO LF METHANE: Methane Producing Landfills
This data was created on April 30, 2012 to represent known disposal sites in Los Angeles County that may produce and emanate methane gas. The shapefile contains disposal sites within Los Angeles County that once accepted degradable refuse material. Information used to create this data was extracted from a landfill survey performed by County Engineers (Major Waste System Map, 1973) as well as historical records from CalRecycle, Regional Water Quality Control Board, and Los Angeles County Department of Public Health

Date of Government Version: 01/10/2022
Date Data Arrived at EDR: 01/12/2022
Date Made Active in Reports: 04/04/2022
Number of Days to Update: 82

Source: Los Angeles County Department of Public Works
Telephone: 626-458-6973
Last EDR Contact: 04/13/2022
Next Scheduled EDR Contact: 07/25/2022
Data Release Frequency: No Update Planned

LOS ANGELES HM: Active & Inactive Hazardous Materials Inventory
A listing of active & inactive hazardous materials facility locations, located in the City of Los Angeles.

Date of Government Version: 04/19/2021
Date Data Arrived at EDR: 06/17/2021
Date Made Active in Reports: 06/28/2021
Number of Days to Update: 11

Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 03/21/2022
Next Scheduled EDR Contact: 07/04/2022
Data Release Frequency: Varies

LOS ANGELES UST: Active & Inactive UST Inventory
A listing of active & inactive underground storage tank site locations and underground storage tank historical sites, located in the City of Los Angeles.

Date of Government Version: 04/19/2021
Date Data Arrived at EDR: 06/17/2021
Date Made Active in Reports: 09/14/2021
Number of Days to Update: 89

Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 03/21/2022
Next Scheduled EDR Contact: 07/04/2022
Data Release Frequency: Varies

SITE MIT LOS ANGELES: Site Mitigation List
Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 05/26/2021
Date Data Arrived at EDR: 07/09/2021
Date Made Active in Reports: 09/29/2021
Number of Days to Update: 82

Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 04/14/2022
Next Scheduled EDR Contact: 07/25/2022
Data Release Frequency: Annually

UST EL SEGUNDO: City of El Segundo Underground Storage Tank
Underground storage tank sites located in El Segundo city.

Date of Government Version: 01/21/2017
Date Data Arrived at EDR: 04/19/2017
Date Made Active in Reports: 05/10/2017
Number of Days to Update: 21

Source: City of El Segundo Fire Department
Telephone: 310-524-2236
Last EDR Contact: 04/08/2022
Next Scheduled EDR Contact: 07/25/2022
Data Release Frequency: No Update Planned

UST LONG BEACH: City of Long Beach Underground Storage Tank
Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 04/22/2019
Date Data Arrived at EDR: 04/23/2019
Date Made Active in Reports: 06/27/2019
Number of Days to Update: 65

Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 04/14/2022
Next Scheduled EDR Contact: 08/01/2022
Data Release Frequency: Varies

UST TORRANCE: City of Torrance Underground Storage Tank
Underground storage tank sites located in the city of Torrance.

Date of Government Version: 02/02/2021
Date Data Arrived at EDR: 04/28/2021
Date Made Active in Reports: 07/13/2021
Number of Days to Update: 76

Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 04/18/2022
Next Scheduled EDR Contact: 08/01/2022
Data Release Frequency: Semi-Annually

MADERA COUNTY:

CUPA MADERA: CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 08/10/2020
Date Data Arrived at EDR: 08/12/2020
Date Made Active in Reports: 10/23/2020
Number of Days to Update: 72

Source: Madera County Environmental Health
Telephone: 559-675-7823
Last EDR Contact: 02/11/2022
Next Scheduled EDR Contact: 05/30/2022
Data Release Frequency: Varies

MARIN COUNTY:

UST MARIN: Underground Storage Tank Sites
Currently permitted USTs in Marin County.

Date of Government Version: 09/26/2018
Date Data Arrived at EDR: 10/04/2018
Date Made Active in Reports: 11/02/2018
Number of Days to Update: 29

Source: Public Works Department Waste Management
Telephone: 415-473-6647
Last EDR Contact: 03/23/2022
Next Scheduled EDR Contact: 07/11/2022
Data Release Frequency: Semi-Annually

MENDOCINO COUNTY:

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

Date of Government Version: 09/22/2021
Date Data Arrived at EDR: 11/18/2021
Date Made Active in Reports: 11/22/2021
Number of Days to Update: 4

Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 02/17/2022
Next Scheduled EDR Contact: 06/06/2022
Data Release Frequency: Annually

MERCED COUNTY:

CUPA MERCED: CUPA Facility List
CUPA facility list.

Date of Government Version: 11/24/2021
Date Data Arrived at EDR: 11/29/2021
Date Made Active in Reports: 02/11/2022
Number of Days to Update: 74

Source: Merced County Environmental Health
Telephone: 209-381-1094
Last EDR Contact: 02/11/2022
Next Scheduled EDR Contact: 05/30/2022
Data Release Frequency: Varies

MONO COUNTY:

CUPA MONO: CUPA Facility List
CUPA Facility List

Date of Government Version: 02/22/2021
Date Data Arrived at EDR: 03/02/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 78

Source: Mono County Health Department
Telephone: 760-932-5580
Last EDR Contact: 03/17/2022
Next Scheduled EDR Contact: 06/06/2022
Data Release Frequency: Varies

MONTEREY COUNTY:

CUPA MONTEREY: CUPA Facility Listing
CUPA Program listing from the Environmental Health Division.

Date of Government Version: 10/04/2021
Date Data Arrived at EDR: 10/06/2021
Date Made Active in Reports: 12/29/2021
Number of Days to Update: 84

Source: Monterey County Health Department
Telephone: 831-796-1297
Last EDR Contact: 04/04/2022
Next Scheduled EDR Contact: 07/11/2022
Data Release Frequency: Varies

NAPA COUNTY:

LUST NAPA: Sites With Reported Contamination
A listing of leaking underground storage tank sites located in Napa county.

Date of Government Version: 01/09/2017
Date Data Arrived at EDR: 01/11/2017
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 50

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 02/17/2022
Next Scheduled EDR Contact: 06/06/2022
Data Release Frequency: No Update Planned

UST NAPA: Closed and Operating Underground Storage Tank Sites
Underground storage tank sites located in Napa county.

Date of Government Version: 09/05/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 10/31/2019
Number of Days to Update: 52

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 02/17/2022
Next Scheduled EDR Contact: 06/06/2022
Data Release Frequency: No Update Planned

NEVADA COUNTY:

CUPA NEVADA: CUPA Facility List
CUPA facility list.

Date of Government Version: 01/25/2022
Date Data Arrived at EDR: 01/26/2022
Date Made Active in Reports: 04/14/2022
Number of Days to Update: 78

Source: Community Development Agency
Telephone: 530-265-1467
Last EDR Contact: 04/21/2022
Next Scheduled EDR Contact: 08/08/2022
Data Release Frequency: Varies

ORANGE COUNTY:

IND_SITE ORANGE: List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 01/14/2022
Date Data Arrived at EDR: 02/03/2022
Date Made Active in Reports: 04/14/2022
Number of Days to Update: 70

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 01/31/2022
Next Scheduled EDR Contact: 05/16/2022
Data Release Frequency: Annually

LUST ORANGE: List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 10/08/2021
Date Data Arrived at EDR: 11/02/2021
Date Made Active in Reports: 01/24/2022
Number of Days to Update: 83

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 01/31/2022
Next Scheduled EDR Contact: 05/16/2022
Data Release Frequency: Quarterly

UST ORANGE: List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 01/14/2022
Date Data Arrived at EDR: 02/01/2022
Date Made Active in Reports: 04/18/2022
Number of Days to Update: 76

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 10/29/2021
Next Scheduled EDR Contact: 05/16/2022
Data Release Frequency: Quarterly

PLACER COUNTY:

MS PLACER: Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 12/01/2021
Date Data Arrived at EDR: 12/02/2021
Date Made Active in Reports: 02/25/2022
Number of Days to Update: 85

Source: Placer County Health and Human Services
Telephone: 530-745-2363
Last EDR Contact: 02/24/2022
Next Scheduled EDR Contact: 06/13/2022
Data Release Frequency: Semi-Annually

PLUMAS COUNTY:

CUPA PLUMAS: CUPA Facility List
Plumas County CUPA Program facilities.

Date of Government Version: 03/31/2019
Date Data Arrived at EDR: 04/23/2019
Date Made Active in Reports: 06/26/2019
Number of Days to Update: 64

Source: Plumas County Environmental Health
Telephone: 530-283-6355
Last EDR Contact: 04/14/2022
Next Scheduled EDR Contact: 08/01/2022
Data Release Frequency: Varies

RIVERSIDE COUNTY:

LUST RIVERSIDE: Listing of Underground Tank Cleanup Sites
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 03/31/2022
Date Data Arrived at EDR: 03/31/2022
Date Made Active in Reports: 04/08/2022
Number of Days to Update: 8

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 03/14/2022
Next Scheduled EDR Contact: 06/27/2022
Data Release Frequency: Quarterly

UST RIVERSIDE: Underground Storage Tank Tank List
Underground storage tank sites located in Riverside county.

Date of Government Version: 03/31/2022
Date Data Arrived at EDR: 03/31/2022
Date Made Active in Reports: 04/08/2022
Number of Days to Update: 8

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 03/14/2022
Next Scheduled EDR Contact: 06/27/2022
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

CS SACRAMENTO: Toxic Site Clean-Up List
List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 06/18/2021
Date Data Arrived at EDR: 09/28/2021
Date Made Active in Reports: 12/14/2021
Number of Days to Update: 77

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 03/31/2022
Next Scheduled EDR Contact: 07/11/2022
Data Release Frequency: Quarterly

ML SACRAMENTO: Master Hazardous Materials Facility List
Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 08/02/2021
Date Data Arrived at EDR: 08/04/2021
Date Made Active in Reports: 11/02/2021
Number of Days to Update: 90

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 03/31/2022
Next Scheduled EDR Contact: 07/11/2022
Data Release Frequency: Quarterly

SAN BENITO COUNTY:

CUPA SAN BENITO: CUPA Facility List
Cupa facility list

Date of Government Version: 11/04/2021
Date Data Arrived at EDR: 11/05/2021
Date Made Active in Reports: 01/24/2022
Number of Days to Update: 80

Source: San Benito County Environmental Health
Telephone: N/A
Last EDR Contact: 01/28/2022
Next Scheduled EDR Contact: 05/16/2022
Data Release Frequency: Varies

SAN BERNARDINO COUNTY:

PERMITS SAN BERNARDINO: Hazardous Material Permits
This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 12/01/2021
Date Data Arrived at EDR: 12/02/2021
Date Made Active in Reports: 02/17/2022
Number of Days to Update: 77

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 01/31/2022
Next Scheduled EDR Contact: 05/16/2022
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

HMMD SAN DIEGO: Hazardous Materials Management Division Database

The database includes: HE58 - This report contains the business name, site address, business phone number, establishment 'H' permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 11/30/2021
Date Data Arrived at EDR: 11/30/2021
Date Made Active in Reports: 02/16/2022
Number of Days to Update: 78

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 02/28/2022
Next Scheduled EDR Contact: 06/13/2022
Data Release Frequency: Quarterly

LF SAN DIEGO: Solid Waste Facilities

San Diego County Solid Waste Facilities.

Date of Government Version: 10/01/2020
Date Data Arrived at EDR: 11/23/2020
Date Made Active in Reports: 02/08/2021
Number of Days to Update: 77

Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 04/14/2022
Next Scheduled EDR Contact: 08/01/2022
Data Release Frequency: Varies

SAN DIEGO CO LOP: Local Oversight Program Listing

A listing of all LOP release sites that are or were under the County of San Diego's jurisdiction. Included are closed or transferred cases, open cases, and cases that did not have a case type indicated. The cases without a case type are mostly complaints; however, some of them could be LOP cases.

Date of Government Version: 07/22/2021
Date Data Arrived at EDR: 10/19/2021
Date Made Active in Reports: 01/13/2022
Number of Days to Update: 86

Source: Department of Environmental Health
Telephone: 858-505-6874
Last EDR Contact: 04/18/2022
Next Scheduled EDR Contact: 08/01/2022
Data Release Frequency: Varies

SAN DIEGO CO SAM: Environmental Case Listing

The listing contains all underground tank release cases and projects pertaining to properties contaminated with hazardous substances that are actively under review by the Site Assessment and Mitigation Program.

Date of Government Version: 03/23/2010
Date Data Arrived at EDR: 06/15/2010
Date Made Active in Reports: 07/09/2010
Number of Days to Update: 24

Source: San Diego County Department of Environmental Health
Telephone: 619-338-2371
Last EDR Contact: 02/24/2022
Next Scheduled EDR Contact: 06/13/2022
Data Release Frequency: No Update Planned

SAN FRANCISCO COUNTY:

CUPA SAN FRANCISCO CO: CUPA Facility Listing

Cupa facilities

Date of Government Version: 02/03/2022
Date Data Arrived at EDR: 02/04/2022
Date Made Active in Reports: 02/11/2022
Number of Days to Update: 7

Source: San Francisco County Department of Environmental Health
Telephone: 415-252-3896
Last EDR Contact: 01/28/2022
Next Scheduled EDR Contact: 05/16/2022
Data Release Frequency: Varies

LUST SAN FRANCISCO: Local Oversite Facilities
A listing of leaking underground storage tank sites located in San Francisco county.

Date of Government Version: 09/19/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 09/29/2008
Number of Days to Update: 10

Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920
Last EDR Contact: 01/28/2022
Next Scheduled EDR Contact: 05/16/2022
Data Release Frequency: No Update Planned

UST SAN FRANCISCO: Underground Storage Tank Information
Underground storage tank sites located in San Francisco county.

Date of Government Version: 11/10/2021
Date Data Arrived at EDR: 11/11/2021
Date Made Active in Reports: 02/02/2022
Number of Days to Update: 83

Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 01/28/2022
Next Scheduled EDR Contact: 05/16/2022
Data Release Frequency: Quarterly

SAN JOAQUIN COUNTY:

UST SAN JOAQUIN: San Joaquin Co. UST
A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 06/22/2018
Date Data Arrived at EDR: 06/26/2018
Date Made Active in Reports: 07/11/2018
Number of Days to Update: 15

Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 03/10/2022
Next Scheduled EDR Contact: 06/27/2022
Data Release Frequency: Semi-Annually

SAN LUIS OBISPO COUNTY:

CUPA SAN LUIS OBISPO: CUPA Facility List
Cupa Facility List.

Date of Government Version: 11/15/2021
Date Data Arrived at EDR: 11/16/2021
Date Made Active in Reports: 02/03/2022
Number of Days to Update: 79

Source: San Luis Obispo County Public Health Department
Telephone: 805-781-5596
Last EDR Contact: 02/11/2022
Next Scheduled EDR Contact: 05/23/2022
Data Release Frequency: Varies

SAN MATEO COUNTY:

BI SAN MATEO: Business Inventory
List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 02/20/2020
Date Data Arrived at EDR: 02/20/2020
Date Made Active in Reports: 04/24/2020
Number of Days to Update: 64

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 03/11/2022
Next Scheduled EDR Contact: 06/20/2022
Data Release Frequency: Annually

LUST SAN MATEO: Fuel Leak List
A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 03/29/2019
Date Data Arrived at EDR: 03/29/2019
Date Made Active in Reports: 05/29/2019
Number of Days to Update: 61

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 03/02/2022
Next Scheduled EDR Contact: 06/20/2022
Data Release Frequency: Semi-Annually

SANTA BARBARA COUNTY:

CUPA SANTA BARBARA: CUPA Facility Listing
CUPA Program Listing from the Environmental Health Services division.

Date of Government Version: 09/08/2011
Date Data Arrived at EDR: 09/09/2011
Date Made Active in Reports: 10/07/2011
Number of Days to Update: 28

Source: Santa Barbara County Public Health Department
Telephone: 805-686-8167
Last EDR Contact: 02/11/2022
Next Scheduled EDR Contact: 05/30/2022
Data Release Frequency: No Update Planned

SANTA CLARA COUNTY:

CUPA SANTA CLARA: Cupa Facility List
Cupa facility list

Date of Government Version: 11/19/2021
Date Data Arrived at EDR: 11/22/2021
Date Made Active in Reports: 02/07/2022
Number of Days to Update: 77

Source: Department of Environmental Health
Telephone: 408-918-1973
Last EDR Contact: 02/11/2022
Next Scheduled EDR Contact: 05/30/2022
Data Release Frequency: Varies

HIST LUST SANTA CLARA: HIST LUST - Fuel Leak Site Activity Report
A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

Date of Government Version: 03/29/2005
Date Data Arrived at EDR: 03/30/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 22

Source: Santa Clara Valley Water District
Telephone: 408-265-2600
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

LUST SANTA CLARA: LOP Listing
A listing of leaking underground storage tanks located in Santa Clara county.

Date of Government Version: 03/03/2014
Date Data Arrived at EDR: 03/05/2014
Date Made Active in Reports: 03/18/2014
Number of Days to Update: 13

Source: Department of Environmental Health
Telephone: 408-918-3417
Last EDR Contact: 02/17/2022
Next Scheduled EDR Contact: 06/06/2022
Data Release Frequency: No Update Planned

SAN JOSE HAZMAT: Hazardous Material Facilities
Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 11/03/2020
Date Data Arrived at EDR: 11/05/2020
Date Made Active in Reports: 01/26/2021
Number of Days to Update: 82

Source: City of San Jose Fire Department
Telephone: 408-535-7694
Last EDR Contact: 02/24/2022
Next Scheduled EDR Contact: 05/16/2022
Data Release Frequency: Annually

SANTA CRUZ COUNTY:

CUPA SANTA CRUZ: CUPA Facility List
CUPA facility listing.

Date of Government Version: 01/21/2017
Date Data Arrived at EDR: 02/22/2017
Date Made Active in Reports: 05/23/2017
Number of Days to Update: 90

Source: Santa Cruz County Environmental Health
Telephone: 831-464-2761
Last EDR Contact: 02/11/2022
Next Scheduled EDR Contact: 05/30/2022
Data Release Frequency: Varies

SHASTA COUNTY:

CUPA SHASTA: CUPA Facility List
Cupa Facility List.

Date of Government Version: 06/15/2017
Date Data Arrived at EDR: 06/19/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 51

Source: Shasta County Department of Resource Management
Telephone: 530-225-5789
Last EDR Contact: 02/11/2022
Next Scheduled EDR Contact: 05/30/2022
Data Release Frequency: Varies

SOLANO COUNTY:

LUST SOLANO: Leaking Underground Storage Tanks
A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 06/04/2019
Date Data Arrived at EDR: 06/06/2019
Date Made Active in Reports: 08/13/2019
Number of Days to Update: 68

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 02/24/2022
Next Scheduled EDR Contact: 06/13/2022
Data Release Frequency: Quarterly

UST SOLANO: Underground Storage Tanks
Underground storage tank sites located in Solano county.

Date of Government Version: 09/15/2021
Date Data Arrived at EDR: 09/16/2021
Date Made Active in Reports: 12/09/2021
Number of Days to Update: 84

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 02/24/2022
Next Scheduled EDR Contact: 06/13/2022
Data Release Frequency: Quarterly

SONOMA COUNTY:

CUPA SONOMA: Cupa Facility List
Cupa Facility list

Date of Government Version: 07/02/2021
Date Data Arrived at EDR: 07/06/2021
Date Made Active in Reports: 07/14/2021
Number of Days to Update: 8

Source: County of Sonoma Fire & Emergency Services Department
Telephone: 707-565-1174
Last EDR Contact: 03/16/2022
Next Scheduled EDR Contact: 07/04/2022
Data Release Frequency: Varies

LUST SONOMA: Leaking Underground Storage Tank Sites
A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 06/30/2021
Date Data Arrived at EDR: 06/30/2021
Date Made Active in Reports: 09/24/2021
Number of Days to Update: 86

Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 03/16/2022
Next Scheduled EDR Contact: 07/04/2022
Data Release Frequency: Quarterly

STANISLAUS COUNTY:

CUPA STANISLAUS: CUPA Facility List
Cupa facility list

Date of Government Version: 11/09/2021
Date Data Arrived at EDR: 11/11/2021
Date Made Active in Reports: 02/02/2022
Number of Days to Update: 83

Source: Stanislaus County Department of Ennvironmental Protection
Telephone: 209-525-6751
Last EDR Contact: 04/11/2022
Next Scheduled EDR Contact: 07/25/2022
Data Release Frequency: Varies

SUTTER COUNTY:

UST SUTTER: Underground Storage Tanks
Underground storage tank sites located in Sutter county.

Date of Government Version: 11/23/2021
Date Data Arrived at EDR: 11/29/2021
Date Made Active in Reports: 02/11/2022
Number of Days to Update: 74

Source: Sutter County Environmental Health Services
Telephone: 530-822-7500
Last EDR Contact: 02/24/2022
Next Scheduled EDR Contact: 06/13/2022
Data Release Frequency: Semi-Annually

TEHAMA COUNTY:

CUPA TEHAMA: CUPA Facility List
Cupa facilities

Date of Government Version: 01/13/2021
Date Data Arrived at EDR: 01/14/2021
Date Made Active in Reports: 04/06/2021
Number of Days to Update: 82

Source: Tehama County Department of Environmental Health
Telephone: 530-527-8020
Last EDR Contact: 03/08/2022
Next Scheduled EDR Contact: 05/16/2022
Data Release Frequency: Varies

TRINITY COUNTY:

CUPA TRINITY: CUPA Facility List
Cupa facility list

Date of Government Version: 01/13/2022
Date Data Arrived at EDR: 01/14/2022
Date Made Active in Reports: 04/06/2022
Number of Days to Update: 82

Source: Department of Toxic Substances Control
Telephone: 760-352-0381
Last EDR Contact: 04/18/2022
Next Scheduled EDR Contact: 08/01/2022
Data Release Frequency: Varies

TULARE COUNTY:

CUPA TULARE: CUPA Facility List
Cupa program facilities

Date of Government Version: 04/26/2021
Date Data Arrived at EDR: 04/28/2021
Date Made Active in Reports: 07/13/2021
Number of Days to Update: 76

Source: Tulare County Environmental Health Services Division
Telephone: 559-624-7400
Last EDR Contact: 04/14/2022
Next Scheduled EDR Contact: 05/16/2022
Data Release Frequency: Varies

TUOLUMNE COUNTY:

CUPA TUOLUMNE: CUPA Facility List
Cupa facility list

Date of Government Version: 04/23/2018
Date Data Arrived at EDR: 04/25/2018
Date Made Active in Reports: 06/25/2018
Number of Days to Update: 61

Source: Divison of Environmental Health
Telephone: 209-533-5633
Last EDR Contact: 04/14/2022
Next Scheduled EDR Contact: 08/01/2022
Data Release Frequency: Varies

VENTURA COUNTY:

BWT VENTURA: Business Plan, Hazardous Waste Producers, and Operating Underground Tanks
The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 12/27/2021
Date Data Arrived at EDR: 01/20/2022
Date Made Active in Reports: 04/08/2022
Number of Days to Update: 78

Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 04/18/2022
Next Scheduled EDR Contact: 08/01/2022
Data Release Frequency: Quarterly

LF VENTURA: Inventory of Illegal Abandoned and Inactive Sites
Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 12/01/2011
Date Data Arrived at EDR: 12/01/2011
Date Made Active in Reports: 01/19/2012
Number of Days to Update: 49

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 03/23/2022
Next Scheduled EDR Contact: 07/11/2022
Data Release Frequency: No Update Planned

LUST VENTURA: Listing of Underground Tank Cleanup Sites
Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 05/29/2008
Date Data Arrived at EDR: 06/24/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 37

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 02/07/2022
Next Scheduled EDR Contact: 05/23/2022
Data Release Frequency: No Update Planned

MED WASTE VENTURA: Medical Waste Program List
To protect public health and safety and the environment from potential exposure to disease causing agents, the Environmental Health Division Medical Waste Program regulates the generation, handling, storage, treatment and disposal of medical waste throughout the County.

Date of Government Version: 12/27/2021
Date Data Arrived at EDR: 01/20/2022
Date Made Active in Reports: 04/11/2022
Number of Days to Update: 81

Source: Ventura County Resource Management Agency
Telephone: 805-654-2813
Last EDR Contact: 04/18/2022
Next Scheduled EDR Contact: 08/01/2022
Data Release Frequency: Quarterly

UST VENTURA: Underground Tank Closed Sites List
Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 11/29/2021
Date Data Arrived at EDR: 12/07/2021
Date Made Active in Reports: 02/24/2022
Number of Days to Update: 79

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 03/08/2022
Next Scheduled EDR Contact: 06/20/2022
Data Release Frequency: Quarterly

YOLO COUNTY:

UST YOLO: Underground Storage Tank Comprehensive Facility Report
Underground storage tank sites located in Yolo county.

Date of Government Version: 12/27/2021
Date Data Arrived at EDR: 01/04/2022
Date Made Active in Reports: 03/18/2022
Number of Days to Update: 73

Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 03/24/2022
Next Scheduled EDR Contact: 07/11/2022
Data Release Frequency: Annually

YUBA COUNTY:

CUPA YUBA: CUPA Facility List
CUPA facility listing for Yuba County.

Date of Government Version: 01/26/2022
Date Data Arrived at EDR: 01/27/2022
Date Made Active in Reports: 04/14/2022
Number of Days to Update: 77

Source: Yuba County Environmental Health Department
Telephone: 530-749-7523
Last EDR Contact: 04/21/2022
Next Scheduled EDR Contact: 08/08/2022
Data Release Frequency: Varies

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data
Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 11/11/2021
Date Data Arrived at EDR: 11/12/2021
Date Made Active in Reports: 02/01/2022
Number of Days to Update: 81

Source: Department of Energy & Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 02/11/2022
Next Scheduled EDR Contact: 05/23/2022
Data Release Frequency: No Update Planned

NJ MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 04/10/2019
Date Made Active in Reports: 05/16/2019
Number of Days to Update: 36

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 04/07/2022
Next Scheduled EDR Contact: 07/18/2022
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data
Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 01/01/2019
Date Data Arrived at EDR: 10/29/2021
Date Made Active in Reports: 01/19/2022
Number of Days to Update: 82

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 01/28/2022
Next Scheduled EDR Contact: 05/09/2022
Data Release Frequency: Quarterly

PA MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 06/30/2018
Date Data Arrived at EDR: 07/19/2019
Date Made Active in Reports: 09/10/2019
Number of Days to Update: 53

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 04/08/2022
Next Scheduled EDR Contact: 07/25/2022
Data Release Frequency: Annually

RI MANIFEST: Manifest information
Hazardous waste manifest information

Date of Government Version: 12/31/2020
Date Data Arrived at EDR: 11/30/2021
Date Made Active in Reports: 02/18/2022
Number of Days to Update: 80

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 02/14/2022
Next Scheduled EDR Contact: 05/30/2022
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 05/31/2018
Date Data Arrived at EDR: 06/19/2019
Date Made Active in Reports: 09/03/2019
Number of Days to Update: 76

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 03/02/2022
Next Scheduled EDR Contact: 06/20/2022
Data Release Frequency: Annually

Oil/Gas Pipelines
Source: Endeavor Business Media
Petroleum Bundle (Crude Oil, Refined Products, Petrochemicals, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)) N = Natural Gas Bundle (Natural Gas, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)). This map includes information copyrighted by Endeavor Business Media. This information is provided on a best effort basis and Endeavor Business Media does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of Endeavor Business Media.

Electric Power Transmission Line Data
Source: Endeavor Business Media
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Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.
Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 916-657-4041

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish and Wildlife
Telephone: 916-445-0411

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

STREET AND ADDRESS INFORMATION

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GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

C3-9046
NOT REPORTED
WINCHESTER, CA 92596

TARGET PROPERTY COORDINATES

Latitude (North):	33.703257 - 33ˆ 42’ 11.73’’
Longitude (West):	117.131402 - 117ˆ 7’ 53.05’’
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	487823.0
UTM Y (Meters):	3729068.8
Elevation:	1446 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	12015913 ROMOLAND, CA
Version Date:	2018
East Map:	12015933 WINCHESTER, CA
Version Date:	2018

EDR’s GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

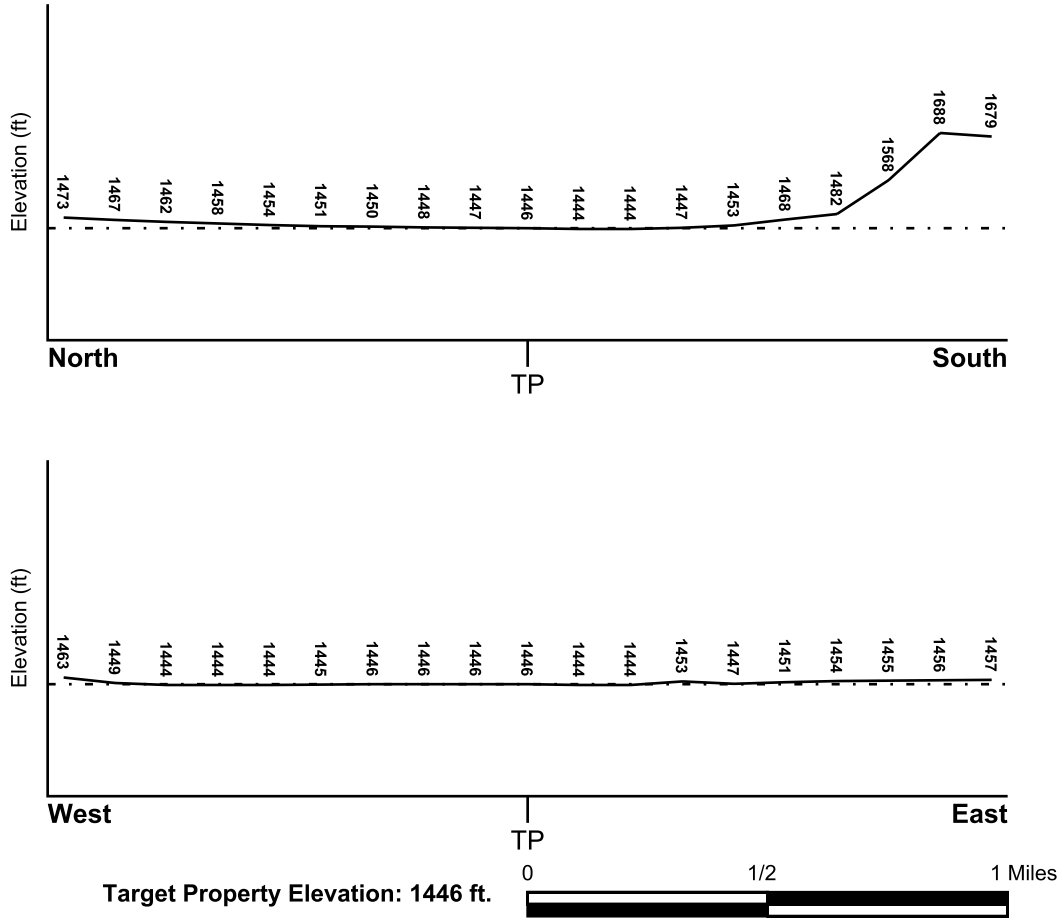
TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General SSE

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Flood Plain Panel at Target Property	FEMA Source Type
06065C2060H	FEMA FIRM Flood data

Additional Panels in search area:	FEMA Source Type
06065C2080G	FEMA FIRM Flood data

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
NOT AVAILABLE	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius:	1.25 miles
Status:	Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

* ©1996 Site-specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

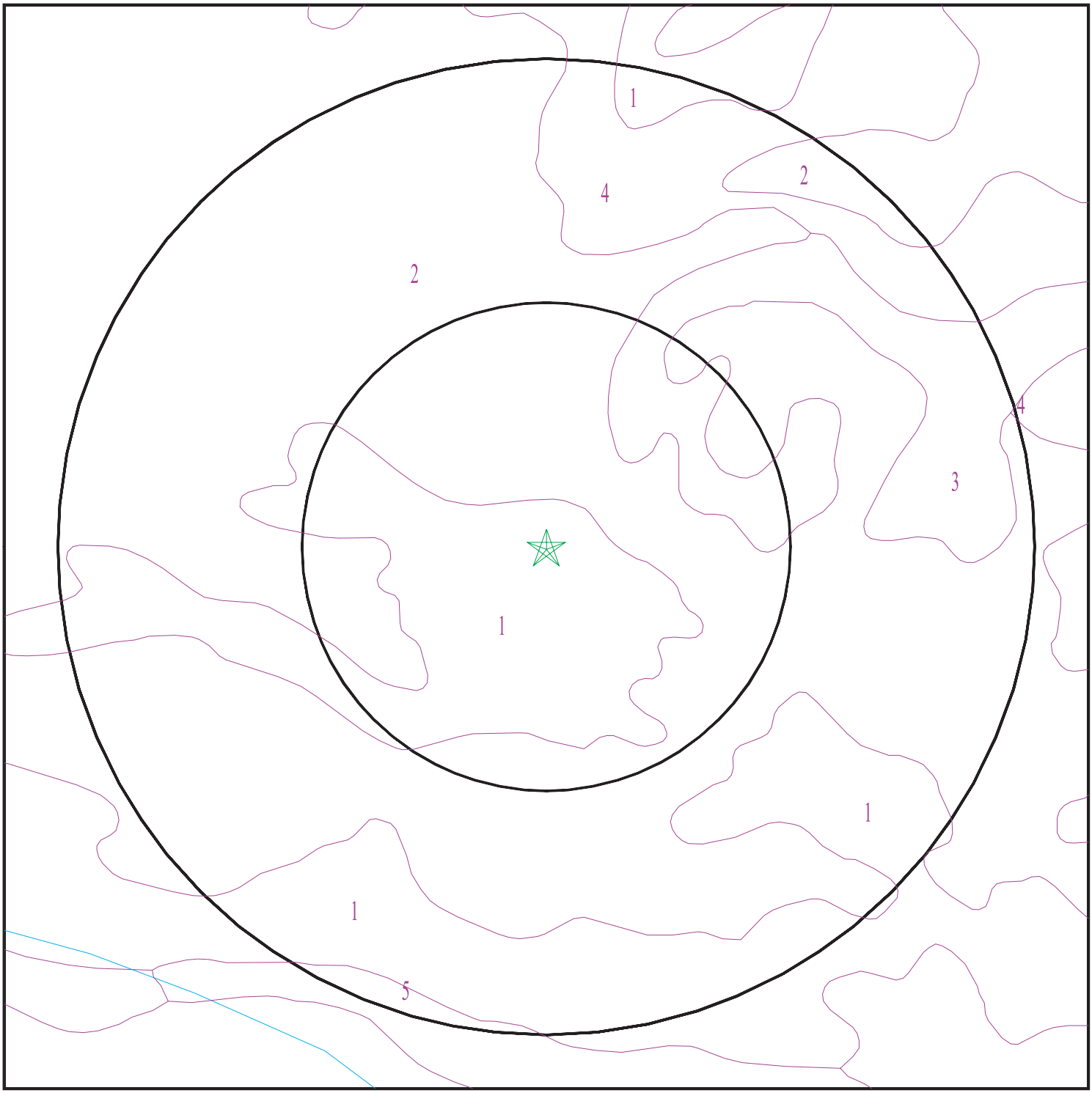
Era:	Mesozoic
System:	Cretaceous
Series:	Cretaceous granitic rocks
Code:	Kg *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Plutonic and Intrusive Rocks

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 06952499.2r



Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

SITE NAME:	C3-9046	CLIENT:	Hillmann Environmental Co.
ADDRESS:	Not Reported Winchester CA 92596	CONTACT:	Alyssa Berry
		INQUIRY #:	06952499.2r
LAT/LONG:	33.703257 / 117.131402	DATE:	April 22, 2022 4:08 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: DOMINO

Soil Surface Texture: silt loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Moderately well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	14 inches	silt loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 4 Min: 1.4	Max: 9 Min: 7.9
2	14 inches	27 inches	silt loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 4 Min: 1.4	Max: 9 Min: 7.9
3	27 inches	35 inches	cemented	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 4 Min: 1.4	Max: 9 Min: 7.9
4	35 inches	62 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 4 Min: 1.4	Max: 9 Min: 7.9

Soil Map ID: 2

Soil Component Name: DOMINO

Soil Surface Texture: silt loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Moderately well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	14 inches	silt loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 4 Min: 1.4	Max: 9 Min: 7.9
2	14 inches	27 inches	silt loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 4 Min: 1.4	Max: 9 Min: 7.9
3	27 inches	35 inches	cemented	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 4 Min: 1.4	Max: 9 Min: 7.9
4	35 inches	62 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 4 Min: 1.4	Max: 9 Min: 7.9

Soil Map ID: 3

Soil Component Name: EXETER

Soil Surface Texture: sandy loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	16 inches	sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 4 Min: 1.4	Max: 8.4 Min: 7.4
2	16 inches	37 inches	sandy clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 4 Min: 1.4	Max: 8.4 Min: 7.4
3	37 inches	50 inches	indurated	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 4 Min: 1.4	Max: 8.4 Min: 7.4
4	50 inches	59 inches	stratified sandy loam to silt loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 4 Min: 1.4	Max: 8.4 Min: 7.4

Soil Map ID: 4

Soil Component Name: DOMINO

Soil Surface Texture: fine sandy loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Moderately well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	14 inches	fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 4 Min: 1.4	Max: 9 Min: 7.9
2	14 inches	27 inches	silt loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 4 Min: 1.4	Max: 9 Min: 7.9
3	27 inches	35 inches	cemented	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 4 Min: 1.4	Max: 9 Min: 7.9
4	35 inches	62 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 4 Min: 1.4	Max: 9 Min: 7.9

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Map ID: 5

Soil Component Name: WILLOWS

Soil Surface Texture: silty clay

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Poorly drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	9 inches	silty clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Fat Clay.	Max: 0.42 Min: 0.01	Max: 9 Min: 8.5
2	9 inches	59 inches	clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Fat Clay.	Max: 0.42 Min: 0.01	Max: 9 Min: 8.5

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A3	USGS40000137124	1/4 - 1/2 Mile NE
B8	USGS40000137178	1/2 - 1 Mile NNE
C11	USGS40000137123	1/2 - 1 Mile ENE
D15	USGS40000137219	1/2 - 1 Mile NNE
E19	USGS40000137122	1/2 - 1 Mile ENE
G22	USGS40000137109	1/2 - 1 Mile WNW
H24	USGS40000137245	1/2 - 1 Mile North
F27	USGS40000137145	1/2 - 1 Mile ENE
I29	USGS40000137240	1/2 - 1 Mile NNE
M35	USGS40000137239	1/2 - 1 Mile NNE
J36	USGS40000136107	1/2 - 1 Mile NNW
K39	USGS40000136956	1/2 - 1 Mile ESE
L41	USGS40000137197	1/2 - 1 Mile NE

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

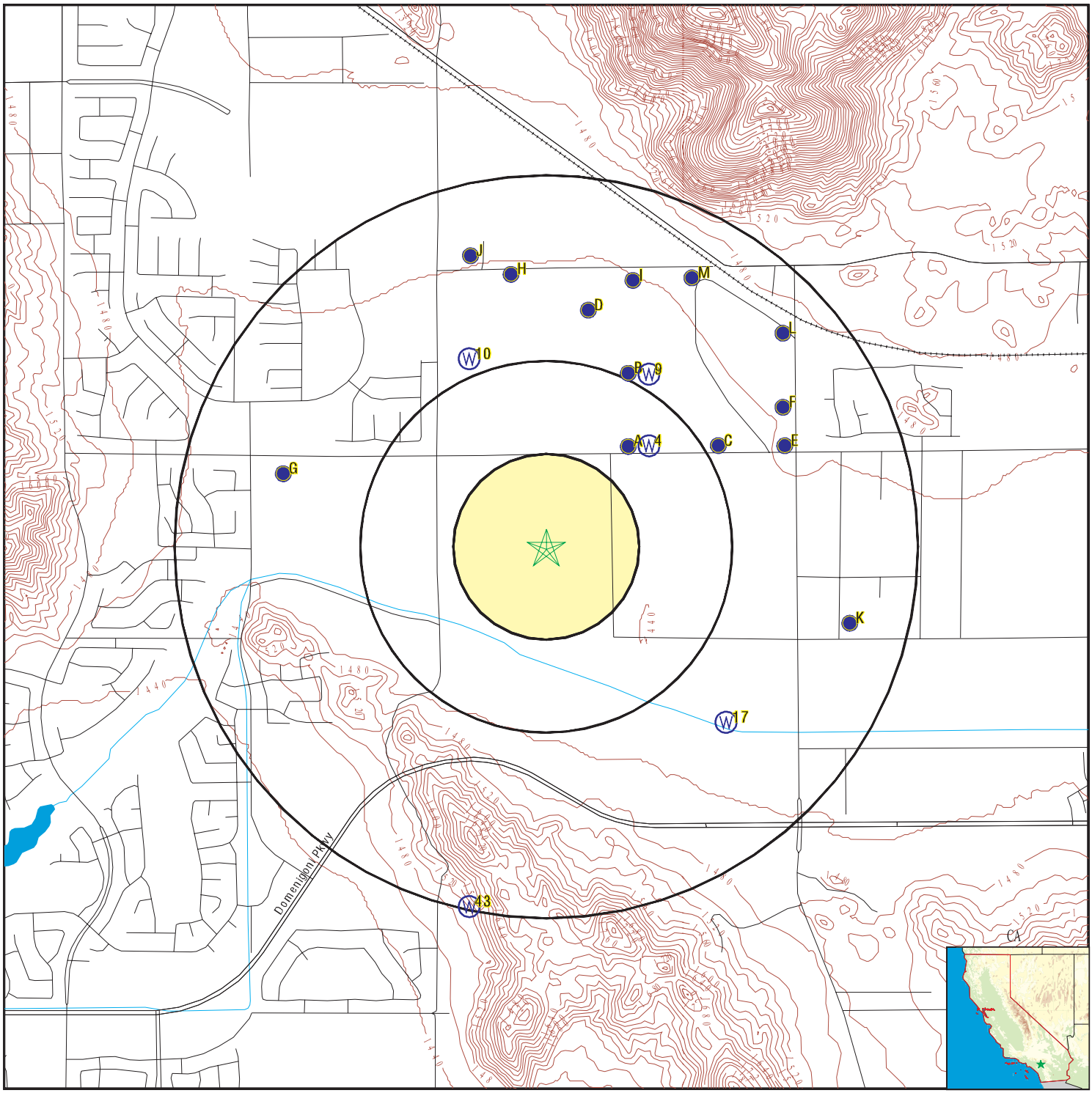
MAP ID	WELL ID	LOCATION FROM TP
A1	CADWR9000005046	1/4 - 1/2 Mile NE
A2	CADWR9000005052	1/4 - 1/2 Mile NE
4	CAUSGSN00012079	1/4 - 1/2 Mile NE
B5	CADWR9000005080	1/2 - 1 Mile NNE
C6	CADWR9000005051	1/2 - 1 Mile ENE
B7	CADWR9000005081	1/2 - 1 Mile NNE
9	CAUSGSN00010574	1/2 - 1 Mile NNE
10	CADWR0000009263	1/2 - 1 Mile NNW
C12	CADWR9000005050	1/2 - 1 Mile ENE
D13	CADWR9000005104	1/2 - 1 Mile North
D14	CAUSGSN00008359	1/2 - 1 Mile NNE
E16	CADWR9000005049	1/2 - 1 Mile ENE
17	CADWR0000037534	1/2 - 1 Mile SE

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
F18	CADWR9000005065	1/2 - 1 Mile ENE
E20	CAUSGSN00018678	1/2 - 1 Mile ENE
E21	CADWR9000005048	1/2 - 1 Mile ENE
H23	CAUSGSN00008746	1/2 - 1 Mile North
I25	CADWR9000005111	1/2 - 1 Mile NNE
G26	CADWR9000005044	1/2 - 1 Mile WNW
F28	CADWR9000005070	1/2 - 1 Mile ENE
J30	CADWR0000008090	1/2 - 1 Mile NNW
J31	CADWR9000005121	1/2 - 1 Mile NNW
K32	CADWR9000004982	1/2 - 1 Mile ESE
L33	CADWR9000005094	1/2 - 1 Mile NE
M34	CADWR9000005110	1/2 - 1 Mile NNE
J37	CADWR0000005061	1/2 - 1 Mile NNW
K38	CADWR0000029442	1/2 - 1 Mile ESE
K40	CAUSGSN00009641	1/2 - 1 Mile ESE
L42	CADWR9000005098	1/2 - 1 Mile NE
43	CADWR0000007845	1/2 - 1 Mile SSW

PHYSICAL SETTING SOURCE MAP - 06952499.2r



- County Boundary
- Major Roads
- Contour Lines
- Earthquake Fault Lines
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons

- Groundwater Flow Direction
- GI Indeterminate Groundwater Flow at Location
- GV Groundwater Flow Varies at Location
- HD Closest Hydrogeological Data
- Oil, gas or related wells

SITE NAME:	C3-9046	CLIENT:	Hillmann Environmental Co.
ADDRESS:	Not Reported Winchester CA 92596	CONTACT:	Alyssa Berry
		INQUIRY #:	06952499.2r
LAT/LONG:	33.703257 / 117.131402	DATE:	April 22, 2022 4:08 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

A1
NE
1/4 - 1/2 Mile
Higher | **CA WELLS** | **CADWR9000005046**

State Well #:	Not Reported	Station ID:	48327
Well Name:	EMWD12697	Basin Name:	San Jacinto
Well Use:	Observation	Well Type:	Single Well
Well Depth:	70	Well Completion Rpt #:	478869

A2
NE
1/4 - 1/2 Mile
Higher | **CA WELLS** | **CADWR9000005052**

State Well #:	05S02W30G002S	Station ID:	28633
Well Name:	Not Reported	Basin Name:	San Jacinto
Well Use:	Unknown	Well Type:	Unknown
Well Depth:	0	Well Completion Rpt #:	Not Reported

A3
NE
1/4 - 1/2 Mile
Higher | **FED USGS** | **USGS40000137124**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	005S002W30G002S	Type:	Well
Description:	Not Reported	HUC:	18070202
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	19921221	Well Depth:	69.65
Well Depth Units:	ft	Well Hole Depth:	73
Well Hole Depth Units:	ft		

Ground water levels,Number of Measurements:	3	Level reading date:	1995-09-13
Feet below surface:	9.84	Feet to sea level:	Not Reported
Note:	Not Reported		
Level reading date:	1995-07-07	Feet below surface:	6.95
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1995-05-23	Feet below surface:	5.65
Feet to sea level:	Not Reported	Note:	Not Reported

4
NE
1/4 - 1/2 Mile
Higher | **CA WELLS** | **CAUSGSN00012079**

Well ID:	USGS-334226117073301	Well Type:	UNK
Source:	United States Geological Survey		

Other Name:	USGS-334226117073301	GAMA PFAS Testing:	Not Reported
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=USGSNEW&samp_date=&global_id=&assigned_name=USGS-334226117073301&store_num=		
GeoTracker Data:	Not Reported		

B5
NNE
1/2 - 1 Mile
Higher

CA WELLS **CADWR9000005080**

State Well #:	05S02W30G003S	Station ID:	6292
Well Name:	Not Reported	Basin Name:	San Jacinto
Well Use:	Unknown	Well Type:	Unknown
Well Depth:	0	Well Completion Rpt #:	Not Reported

C6
ENE
1/2 - 1 Mile
Higher

CA WELLS **CADWR9000005051**

State Well #:	05S02W30H003S	Station ID:	6294
Well Name:	Not Reported	Basin Name:	San Jacinto
Well Use:	Unknown	Well Type:	Unknown
Well Depth:	0	Well Completion Rpt #:	Not Reported

B7
NNE
1/2 - 1 Mile
Higher

CA WELLS **CADWR9000005081**

State Well #:	Not Reported	Station ID:	48328
Well Name:	EMWD12698	Basin Name:	San Jacinto
Well Use:	Observation	Well Type:	Single Well
Well Depth:	70	Well Completion Rpt #:	Not Reported

B8
NNE
1/2 - 1 Mile
Higher

FED USGS **USGS40000137178**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	005S002W30G003S	Type:	Well
Description:	Not Reported	HUC:	18070202
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	19921221	Well Depth:	71.4
Well Depth Units:	ft	Well Hole Depth:	75
Well Hole Depth Units:	ft		

Ground water levels,Number of Measurements:	3	Level reading date:	1995-09-13

Feet below surface:	13.33	Feet to sea level:	Not Reported
Note:	Not Reported		
Level reading date:	1995-07-06	Feet below surface:	8.00
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1995-05-23	Feet below surface:	6.96
Feet to sea level:	Not Reported	Note:	Not Reported

9
NNE **CA WELLS** **CAUSGSN00010574**
1/2 - 1 Mile
Higher

Well ID:	USGS-334236117073301	Well Type:	UNK
Source:	United States Geological Survey		
Other Name:	USGS-334236117073301	GAMA PFAS Testing:	Not Reported
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=USGSNEW&samp_date=&global_id=&assigned_name=USGS-334236117073301&store_num=		
GeoTracker Data:	Not Reported		

10
NNW **CA WELLS** **CADWR0000009263**
1/2 - 1 Mile
Higher

Well ID:	05S02W30E001S	Well Type:	UNK
Source:	Department of Water Resources		
Other Name:	05S02W30E001S	GAMA PFAS Testing:	Not Reported
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=DWR&samp_date=&global_id=&assigned_name=05S02W30E001S&store_num=		
GeoTracker Data:	Not Reported		

C11
ENE **FED USGS** **USGS40000137123**
1/2 - 1 Mile
Higher

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	005S002W30H003S	Type:	Well
Description:	Not Reported	HUC:	18070202
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	19921221	Well Depth:	70.9
Well Depth Units:	ft	Well Hole Depth:	73
Well Hole Depth Units:	ft		

Ground water levels,Number of Measurements:	3	Level reading date:	1995-09-11
Feet below surface:	12.93	Feet to sea level:	Not Reported
Note:	Not Reported		
Level reading date:	1995-07-06	Feet below surface:	5.65
Feet to sea level:	Not Reported	Note:	Not Reported

Level reading date:	1995-05-23	Feet below surface:	5.10
Feet to sea level:	Not Reported	Note:	Not Reported

C12
ENE
1/2 - 1 Mile
Higher

CA WELLS **CADWR9000005050**

State Well #:	Not Reported	Station ID:	48331
Well Name:	EMWD12701	Basin Name:	San Jacinto
Well Use:	Observation	Well Type:	Single Well
Well Depth:	70	Well Completion Rpt #:	Not Reported

D13
North
1/2 - 1 Mile
Higher

CA WELLS **CADWR9000005104**

State Well #:	05S02W30C001S	Station ID:	39993
Well Name:	Not Reported	Basin Name:	San Jacinto
Well Use:	Unknown	Well Type:	Unknown
Well Depth:	0	Well Completion Rpt #:	Not Reported

D14
NNE
1/2 - 1 Mile
Higher

CA WELLS **CAUSGSN00008359**

Well ID:	USGS-334245117074201	Well Type:	UNK
Source:	United States Geological Survey		
Other Name:	USGS-334245117074201	GAMA PFAS Testing:	Not Reported
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=USGSNEW&samp_date=&global_id=&assigned_name=USGS-334245117074201&store_num=		
GeoTracker Data:	Not Reported		

D15
NNE
1/2 - 1 Mile
Higher

FED USGS **USGS40000137219**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	005S002W30C001S	Type:	Well
Description:	ORIGINAL DEPTH 370 FT, SOUNDED 355.75 5/16/95		
HUC:	18070202	Drainage Area:	Not Reported
Drainage Area Units:	Not Reported	Contrib Drainage Area:	Not Reported
Contrib Drainage Area Unts:	Not Reported	Aquifer:	California Coastal Basin aquifers
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	19800916	Well Depth:	355.75
Well Depth Units:	ft	Well Hole Depth:	370
Well Hole Depth Units:	ft		

Ground water levels,Number of Measurements:	2	Level reading date:	1995-09-13
Feet below surface:	15.12	Feet to sea level:	Not Reported

Note:	Not Reported		
Level reading date:	1995-05-16	Feet below surface:	8.50
Feet to sea level:	Not Reported	Note:	Not Reported

E16
ENE **CA WELLS** **CADWR9000005049**
1/2 - 1 Mile
Higher

State Well #:	05S02W30H002S	Station ID:	28634
Well Name:	Not Reported	Basin Name:	San Jacinto
Well Use:	Unknown	Well Type:	Unknown
Well Depth:	0	Well Completion Rpt #:	Not Reported

17
SE **CA WELLS** **CADWR0000037534**
1/2 - 1 Mile
Higher

Well ID:	05S02W31H001S	Well Type:	UNK
Source:	Department of Water Resources		
Other Name:	05S02W31H001S	GAMA PFAS Testing:	Not Reported
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=DWR&samp_date=&global_id=&assigned_name=05S02W31H001S&store_num=		
GeoTracker Data:	Not Reported		

F18
ENE **CA WELLS** **CADWR9000005065**
1/2 - 1 Mile
Higher

State Well #:	05S02W30H001S	Station ID:	6293
Well Name:	Not Reported	Basin Name:	San Jacinto
Well Use:	Unknown	Well Type:	Unknown
Well Depth:	0	Well Completion Rpt #:	Not Reported

E19
ENE **FED USGS** **USGS40000137122**
1/2 - 1 Mile
Higher

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	005S002W30H002S	Type:	Well
Description:	Not Reported	HUC:	18070202
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	19921221	Well Depth:	69.9
Well Depth Units:	ft	Well Hole Depth:	73
Well Hole Depth Units:	ft		

Ground water levels,Number of Measurements:	2	Level reading date:	1995-09-11
Feet below surface:	16.59	Feet to sea level:	Not Reported
Note:	Not Reported		
Level reading date:	1995-05-11	Feet below surface:	9.2
Feet to sea level:	Not Reported	Note:	Not Reported

E20
ENE **CA WELLS** **CAUSGSN00018678**
1/2 - 1 Mile
Higher

Well ID:	USGS-334226117070901	Well Type:	UNK
Source:	United States Geological Survey		
Other Name:	USGS-334226117070901	GAMA PFAS Testing:	Not Reported
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=USGSNEW&samp_date=&global_id=&assigned_name=USGS-334226117070901&store_num=		
GeoTracker Data:	Not Reported		

E21
ENE **CA WELLS** **CADWR9000005048**
1/2 - 1 Mile
Higher

State Well #:	Not Reported	Station ID:	48330
Well Name:	EMWD12700	Basin Name:	San Jacinto
Well Use:	Observation	Well Type:	Single Well
Well Depth:	70	Well Completion Rpt #:	Not Reported

G22
WNW **FED USGS** **USGS40000137109**
1/2 - 1 Mile
Higher

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	005S003W25K001S	Type:	Well
Description:	Not Reported	HUC:	18070202
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	35
Well Depth Units:	ft	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

Ground water levels,Number of Measurements:	8	Level reading date:	1995-09-13
Feet below surface:	18.81	Feet to sea level:	Not Reported
Note:	Not Reported		
Level reading date:	1995-06-23	Feet below surface:	16.50
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1994-11-17	Feet below surface:	21.37
Feet to sea level:	Not Reported	Note:	Not Reported

Level reading date:	1994-06-16	Feet below surface:	19.18
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1994-02-10	Feet below surface:	18.78
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1993-12-30	Feet below surface:	27.40
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1993-05-13	Feet below surface:	18.05
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1992-12-30	Feet below surface:	27.40
Feet to sea level:	Not Reported	Note:	Not Reported

H23
North
1/2 - 1 Mile
Higher

CA WELLS **CAUSGSN00008746**

Well ID:	USGS-334250117075601	Well Type:	UNK
Source:	United States Geological Survey		
Other Name:	USGS-334250117075601	GAMA PFAS Testing:	Not Reported
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=USGSNEW&samp_date=&global_id=&assigned_name=USGS-334250117075601&store_num=		
GeoTracker Data:	Not Reported		

H24
North
1/2 - 1 Mile
Higher

FED USGS **USGS40000137245**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	005S002W30D002S	Type:	Well
Description:	Not Reported	HUC:	18070202
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	355
Well Depth Units:	ft	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

I25
NNE
1/2 - 1 Mile
Higher

CA WELLS **CADWR9000005111**

State Well #:	05S02W30B002S	Station ID:	28632
Well Name:	EMWD11120	Basin Name:	San Jacinto
Well Use:	Observation	Well Type:	Single Well
Well Depth:	70	Well Completion Rpt #:	Not Reported

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

G26
WNW
1/2 - 1 Mile
Higher

CA WELLS **CADWR9000005044**

State Well #:	05S03W25K001S	Station ID:	27790
Well Name:	Not Reported	Basin Name:	San Jacinto
Well Use:	Unknown	Well Type:	Unknown
Well Depth:	0	Well Completion Rpt #:	Not Reported

F27
ENE
1/2 - 1 Mile
Higher

FED USGS **USGS40000137145**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	005S002W30H001S	Type:	Well
Description:	Not Reported	HUC:	18070202
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	19921221	Well Depth:	69.1
Well Depth Units:	ft	Well Hole Depth:	70
Well Hole Depth Units:	ft		

Ground water levels,Number of Measurements:	3	Level reading date:	1995-09-11
Feet below surface:	19.53	Feet to sea level:	Not Reported
Note:	Not Reported		
Level reading date:	1995-07-06	Feet below surface:	12.56
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1995-05-11	Feet below surface:	9.56
Feet to sea level:	Not Reported	Note:	Not Reported

F28
ENE
1/2 - 1 Mile
Higher

CA WELLS **CADWR9000005070**

State Well #:	Not Reported	Station ID:	48329
Well Name:	EMWD12699	Basin Name:	San Jacinto
Well Use:	Observation	Well Type:	Single Well
Well Depth:	70	Well Completion Rpt #:	Not Reported

I29
NNE
1/2 - 1 Mile
Higher

FED USGS **USGS40000137240**

Organization ID:	USGS-CA
Organization Name:	USGS California Water Science Center

Monitor Location:	005S002W30B002S	Type:	Well
Description:	Not Reported	HUC:	18070202
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	70.7
Well Depth Units:	ft	Well Hole Depth:	73
Well Hole Depth Units:	ft		

Ground water levels,Number of Measurements:	3	Level reading date:	1995-09-13
Feet below surface:	12.37	Feet to sea level:	Not Reported
Note:	Not Reported		
Level reading date:	1995-07-06	Feet below surface:	10.64
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1995-06-02	Feet below surface:	10.37
Feet to sea level:	Not Reported	Note:	Not Reported

J30
NNW
1/2 - 1 Mile
Higher

CA WELLS **CADWR0000008090**

Well ID:	05S02W30D003S	Well Type:	UNK
Source:	Department of Water Resources		
Other Name:	05S02W30D003S	GAMA PFAS Testing:	Not Reported
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=DWR&samp_date=&global_id=&assigned_name=05S02W30D003S&store_num=		
GeoTracker Data:	Not Reported		

J31
NNW
1/2 - 1 Mile
Higher

CA WELLS **CADWR9000005121**

State Well #:	05S02W19N001S	Station ID:	6136
Well Name:	EMWD14400	Basin Name:	San Jacinto
Well Use:	Observation	Well Type:	Single Well
Well Depth:	0	Well Completion Rpt #:	Not Reported

K32
ESE
1/2 - 1 Mile
Higher

CA WELLS **CADWR9000004982**

State Well #:	05S02W29N001S	Station ID:	6290
Well Name:	Not Reported	Basin Name:	San Jacinto
Well Use:	Unknown	Well Type:	Unknown
Well Depth:	0	Well Completion Rpt #:	Not Reported

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

L33
NE
1/2 - 1 Mile
Higher

CA WELLS **CADWR9000005094**

State Well #:	05S02W30A001S	Station ID:	28631
Well Name:	Not Reported	Basin Name:	San Jacinto
Well Use:	Unknown	Well Type:	Unknown
Well Depth:	0	Well Completion Rpt #:	Not Reported

M34
NNE
1/2 - 1 Mile
Lower

CA WELLS **CADWR9000005110**

State Well #:	05S02W30B001S	Station ID:	6291
Well Name:	EMWD11119	Basin Name:	San Jacinto
Well Use:	Observation	Well Type:	Single Well
Well Depth:	70	Well Completion Rpt #:	Not Reported

M35
NNE
1/2 - 1 Mile
Higher

FED USGS **USGS40000137239**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	005S002W30B001S	Type:	Well
Description:	Not Reported	HUC:	18070202
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	19921221	Well Depth:	70.4
Well Depth Units:	ft	Well Hole Depth:	73
Well Hole Depth Units:	ft		

Ground water levels,Number of Measurements:	3	Level reading date:	1995-09-13
Feet below surface:	20.92	Feet to sea level:	Not Reported
Note:	Not Reported		

Level reading date:	1995-07-06	Feet below surface:	16.24
Feet to sea level:	Not Reported	Note:	Not Reported

Level reading date:	1995-05-23	Feet below surface:	14.63
Feet to sea level:	Not Reported	Note:	Not Reported

J36
NNW
1/2 - 1 Mile
Higher

FED USGS **USGS40000136107**

Organization ID:	USGS-CA
Organization Name:	USGS California Water Science Center

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Monitor Location:	005S002W19N001S	Type:	Well
Description:	ORIGINAL DEPTH 358 FT, SOUNDED 290.5 FT, 5-3-95		
HUC:	18070202	Drainage Area:	Not Reported
Drainage Area Units:	Not Reported	Contrib Drainage Area:	Not Reported
Contrib Drainage Area Unts:	Not Reported	Aquifer:	California Coastal Basin aquifers
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	19530618	Well Depth:	358
Well Depth Units:	ft	Well Hole Depth:	358
Well Hole Depth Units:	ft		

Ground water levels,Number of Measurements:	17	Level reading date:	1994-11-18
Feet below surface:	32.77	Feet to sea level:	Not Reported
Note:	Not Reported		

Level reading date:	1994-03-15	Feet below surface:	33.25
Feet to sea level:	Not Reported	Note:	Not Reported

Level reading date:	1994-02-10	Feet below surface:	33.70
Feet to sea level:	Not Reported	Note:	Not Reported

Level reading date:	1993-12-29	Feet below surface:	40.03
Feet to sea level:	Not Reported		
Note:	Foreign substance was present on the surface of the water.		

Level reading date:	1993-09-10	Feet below surface:	34.34
Feet to sea level:	Not Reported	Note:	Not Reported

Level reading date:	1993-05-13	Feet below surface:	37.53
Feet to sea level:	Not Reported		
Note:	Foreign substance was present on the surface of the water.		

Level reading date:	1993-03-30	Feet below surface:	37.63
Feet to sea level:	Not Reported	Note:	The site had been pumped recently.

Level reading date:	1992-09-03	Feet below surface:	42.47
Feet to sea level:	Not Reported	Note:	Not Reported

Level reading date:	1992-03-18	Feet below surface:	37.79
Feet to sea level:	Not Reported	Note:	Not Reported

Level reading date:	1991-09-17	Feet below surface:	40.49
Feet to sea level:	Not Reported	Note:	The site had been pumped recently.

Level reading date:	1991-04-15	Feet below surface:	38.05
Feet to sea level:	Not Reported	Note:	The site had been pumped recently.

Level reading date:	1990-09-28	Feet below surface:	40.67
Feet to sea level:	Not Reported	Note:	The site had been pumped recently.

Level reading date:	1990-03-19	Feet below surface:	34.68
Feet to sea level:	Not Reported	Note:	The site had been pumped recently.

Level reading date:	1989-09-06	Feet below surface:	34.51
Feet to sea level:	Not Reported	Note:	The site had been pumped recently.

Level reading date:	1989-04-21	Feet below surface:	32.56
Feet to sea level:	Not Reported	Note:	The site had been pumped recently.

Level reading date:	1988-09-15	Feet below surface:	31.39
Feet to sea level:	Not Reported	Note:	The site had been pumped recently.

Level reading date:	1987-09-18	Feet below surface:	29.40
Feet to sea level:	Not Reported	Note:	Not Reported

J37
NNW **CA WELLS** **CADWR0000005061**
1/2 - 1 Mile
Higher

Well ID:	05S02W19N001S	Well Type:	UNK
Source:	Department of Water Resources		
Other Name:	05S02W19N001S	GAMA PFAS Testing:	Not Reported
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=DWR&samp_date=&global_id=&assigned_name=05S02W19N001S&store_num=		
GeoTracker Data:	Not Reported		

K38
ESE **CA WELLS** **CADWR0000029442**
1/2 - 1 Mile
Higher

Well ID:	05S02W29N001S	Well Type:	UNK
Source:	Department of Water Resources		
Other Name:	05S02W29N001S	GAMA PFAS Testing:	Not Reported
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=DWR&samp_date=&global_id=&assigned_name=05S02W29N001S&store_num=		
GeoTracker Data:	Not Reported		

K39
ESE **FED USGS** **USGS40000136956**
1/2 - 1 Mile
Higher

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	005S002W29N001S	Type:	Well
Description:	Not Reported	HUC:	18070202
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	113.85
Well Depth Units:	ft	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

Ground water levels,Number of Measurements:	7	Level reading date:	1995-09-13
Feet below surface:	8.16	Feet to sea level:	Not Reported
Note:	Not Reported		
Level reading date:	1995-07-12	Feet below surface:	6.83
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1995-06-23	Feet below surface:	6.39
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1994-11-17	Feet below surface:	8.57
Feet to sea level:	Not Reported	Note:	Not Reported

Level reading date:	1994-02-10	Feet below surface:	8.00
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1993-05-13	Feet below surface:	5.64
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1992-12-30	Feet below surface:	15.02
Feet to sea level:	Not Reported	Note:	Not Reported

K40
ESE **CA WELLS** **CAUSGSN00009641**
1/2 - 1 Mile
Higher

Well ID:	USGS-334201117065801	Well Type:	UNK
Source:	United States Geological Survey		
Other Name:	USGS-334201117065801	GAMA PFAS Testing:	Not Reported
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=USGSNEW&samp_date=&global_id=&assigned_name=USGS-334201117065801&store_num=		
GeoTracker Data:	Not Reported		

L41
NE **FED USGS** **USGS40000137197**
1/2 - 1 Mile
Higher

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	005S002W30A001S	Type:	Well
Description:	Not Reported	HUC:	18070202
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	19921221	Well Depth:	71.2
Well Depth Units:	ft	Well Hole Depth:	73
Well Hole Depth Units:	ft		

Ground water levels,Number of Measurements:	3	Level reading date:	1995-09-13
Feet below surface:	30.35	Feet to sea level:	Not Reported
Note:	Not Reported		
Level reading date:	1995-07-06	Feet below surface:	23.08
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1995-05-23	Feet below surface:	18.79
Feet to sea level:	Not Reported	Note:	Not Reported

L42
NE **CA WELLS** **CADWR9000005098**
1/2 - 1 Mile
Higher

State Well #:	Not Reported	Station ID:	48326
Well Name:	EMWD11118	Basin Name:	San Jacinto
Well Use:	Observation	Well Type:	Single Well
Well Depth:	70	Well Completion Rpt #:	Not Reported

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

43
SSW
1/2 - 1 Mile
Higher | **CA WELLS** | **CADWR0000007845**

Well ID:	05S02W31N001S	Well Type:	UNK
Source:	Department of Water Resources		
Other Name:	05S02W31N001S	GAMA PFAS Testing:	Not Reported
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=DWR&samp_date=&global_id=&assigned_name=05S02W31N001S&store_num=		
GeoTracker Data:	Not Reported		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

Federal EPA Radon Zone for RIVERSIDE County: 2

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for RIVERSIDE COUNTY, CA

Number of sites tested: 12

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.117 pCi/L	100%	0%	0%
Living Area - 2nd Floor	0.450 pCi/L	100%	0%	0%
Basement	1.700 pCi/L	100%	0%	0%

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

HYDROLOGIC INFORMATION

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish and Wildlife
Telephone: 916-445-0411

HYDROGEOLOGIC INFORMATION

AQUIFLOW^{R} Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Service, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

OTHER STATE DATABASE INFORMATION

Groundwater Ambient Monitoring & Assessment Program
State Water Resources Control Board
Telephone: 916-341-5577
The GAMA Program is Californias comprehensive groundwater quality monitoring program. GAMA collects data by testing the untreated, raw water in different types of wells for naturally-occurring and man-made chemicals. The GAMA data includes Domestic, Monitoring and Municipal well types from the following sources, Department of Water Resources, Department of Heath Services, EDF, Agricultural Lands, Lawrence Livermore National Laboratory, Department of Pesticide Regulation, United States Geological Survey, Groundwater Ambient Monitoring and Assessment Program and Local Groundwater Projects.

Water Well Database
Source: Department of Water Resources
Telephone: 916-651-9648

California Drinking Water Quality Database
Source: Department of Public Health
Telephone: 916-324-2319
The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

California Oil and Gas Well Locations
Source: Dept of Conservation, Geologic Energy Management Division
Telephone: 916-323-1779
Oil and Gas well locations in the state.

California Earthquake Fault Lines
Source: California Division of Mines and Geology
The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

RADON

State Database: CA Radon
Source: Department of Public Health
Telephone: 916-210-8558
Radon Database for California

PHYSICAL SETTING SOURCE RECORDS SEARCHED

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

California Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

STREET AND ADDRESS INFORMATION

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APPENDIX F

OTHER DOCUMENTS

HILLMANN
CONSULTING

April 22, 2022

State of California
Regional Water Quality Control Board – Santa Ana Region (8)
3737 Main Street, Suite #500
Riverside, CA 92501-3339
Phone (951) 782-4130
Fax (951) 781-6288
FileReview8@waterboards.ca.gov

RE: Environmental Files:

APN: 333-200-062;461-150-010;461-150-017; 461-160-017; 461-160-037; 461-160-050; 461-160-038 and 461-160-039 (appx. 312.54 acres)
Menifee, County California 92545

Dear RWQCB:

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

Sincerely,

Alyssa Berry
Environmental Technician
Hillmann Consulting, LLC
aberry@hillmanngroup.com

County of Riverside
DEPARTMENT OF ENVIRONMENTAL HEALTH

www.rivcoeh.org

REQUEST FOR RECORDS

To help expedite your request, mark the program for which you are requesting records (Call 951-358-5172 if you are uncertain):

☐ Hazardous Materials / Underground Storage Tanks

☒ Land Use / Water Resources / Body Art / Medical Waste / Solid Waste

☐ Food facility / Public Pools and Water Features / Retail Tobacco

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- For access to electronic records available online, visit the public information section at www.rivcoeh.org for more details.

NAME OF REQUESTING PARTY: Alyssa Berry	DATE OF REQUEST: 4/22/22	
BUSINESS NAME (IF ANY): Hillmann Consulting	TELEPHONE NUMBER: ( ) (714) 438-9946	
RETURN LEGAL MAILING ADDRESS: 1745 W. Orangewood Ave, STE 201	EMAIL ADDRESS: dtang@hillmannconsulting.com	
CITY: Orange	STATE: CA	ZIP: 92868

The following information is required. **List each street address separately.**

INFORMATION REQUESTED: Any records on septic systems, envrionmental concerns	PERIOD OF TIME TO BE RESEARCHED (If applicable) FROM:	TO:
SITE STREET ADDRESS (1): Simpson Road and Briggs Road	CITY: Menifee	
SITE STREET ADDRESS (2):	CITY:	
SITE STREET ADDRESS (3):	CITY:	
SITE STREET ADDRESS (4):	CITY:	
SITE STREET ADDRESS (5):	CITY:	
SITE STREET ADDRESS (6):	CITY:	
APN (**For Land Use and Water Resources ONLY**): 461160039		

Email this completed form to:

Land Use/Water Resources: landuserecords@rivco.org

Hazardous Materials: DEHRecordsMgmt@rivco.org

All other programs: dehwebmaster@rivco.org

To mail this form, go to http://rivcoeh.org/Contactus for the address of the DEH office closest to the requested location(s).

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County of Riverside
DEPARTMENT OF ENVIRONMENTAL HEALTH

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REQUEST FOR RECORDS

To help expedite your request, mark the program for which you are requesting records (Call 951-358-5172 if you are uncertain):

☐ Hazardous Materials / Underground Storage Tanks

☒ Land Use / Water Resources / Body Art / Medical Waste / Solid Waste

☐ Food facility / Public Pools and Water Features / Retail Tobacco

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SITE STREET ADDRESS (3):	CITY:	
SITE STREET ADDRESS (4):	CITY:	
SITE STREET ADDRESS (5):	CITY:	
SITE STREET ADDRESS (6):	CITY:	
APN (**For Land Use and Water Resources ONLY**): 461160038		

Email this completed form to:

Land Use/Water Resources: landuserecords@rivco.org

Hazardous Materials: DEHRecordsMgmt@rivco.org

All other programs: dehwebmaster@rivco.org

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CITY: Orange	STATE: CA	ZIP: 92868

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INFORMATION REQUESTED: Any records on septic systems, envrionmental concerns	PERIOD OF TIME TO BE RESEARCHED (If applicable) FROM:	TO:
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SITE STREET ADDRESS (3):	CITY:	
SITE STREET ADDRESS (4):	CITY:	
SITE STREET ADDRESS (5):	CITY:	
SITE STREET ADDRESS (6):	CITY:	
APN (**For Land Use and Water Resources ONLY**): 461160050		

Email this completed form to:

Land Use/Water Resources: landuserecords@rivco.org

Hazardous Materials: DEHRecordsMgmt@rivco.org

All other programs: dehwebmaster@rivco.org

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SITE STREET ADDRESS (4):	CITY:	
SITE STREET ADDRESS (5):	CITY:	
SITE STREET ADDRESS (6):	CITY:	
APN (**For Land Use and Water Resources ONLY**): 461160037		

Email this completed form to:

Land Use/Water Resources: landuserecords@rivco.org

Hazardous Materials: DEHRecordsMgmt@rivco.org

All other programs: dehwebmaster@rivco.org

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SITE STREET ADDRESS (4):	CITY:	
SITE STREET ADDRESS (5):	CITY:	
SITE STREET ADDRESS (6):	CITY:	
APN (**For Land Use and Water Resources ONLY**): 461015017		

Email this completed form to:

Land Use/Water Resources: landuserecords@rivco.org

Hazardous Materials: DEHRecordsMgmt@rivco.org

All other programs: dehwebmaster@rivco.org

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SITE STREET ADDRESS (4):	CITY:	
SITE STREET ADDRESS (5):	CITY:	
SITE STREET ADDRESS (6):	CITY:	
APN (**For Land Use and Water Resources ONLY**): 461150010		

Email this completed form to:

Land Use/Water Resources: landuserecords@rivco.org

Hazardous Materials: DEHRecordsMgmt@rivco.org

All other programs: dehwebmaster@rivco.org

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SITE STREET ADDRESS (4):	CITY:	
SITE STREET ADDRESS (5):	CITY:	
SITE STREET ADDRESS (6):	CITY:	
APN (**For Land Use and Water Resources ONLY**): 333200062		

Email this completed form to:

Land Use/Water Resources: landuserecords@rivco.org

Hazardous Materials: DEHRecordsMgmt@rivco.org

All other programs: dehwebmaster@rivco.org

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HILLMANN
CONSULTING

April 22, 2022

Riverside County Fire Department
210 West San Jacinto Avenue
Perris, CA 92570
Phone (951) 940-6900
Fax (951) 940-6910
rrurecords@fire.ca.gov

RE: Underground Storage Tank/Hazardous Materials Files:

APN: 333-200-062;461-150-010;461-
150-017; 461-160-017; 461-160-037;
461-160-050; 461-160-038 and
461-160-039 (appx. 312.54 acres)
Menifee, County California 92545

Dear Sir/Madam:

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

Sincerely,

Alyssa Berry
Environmental Technician
Hillmann Consulting, LLC
aberry@hillmanngroup.com

Property Detail Report

For Property Located At :
,, CA

CoreLogic RealQuest

Owner Information

Owner Name:	**SALT CREEK II**
Mailing Address:	**PO BOX 13037, NEWPORT BEACH CA 92658-5083 B073 C/O ROBERT L SATTLER**
Vesting Codes:	/ / CO

Location Information

Legal Description:	**20.72 ACRES M/L IN POR NW 1/4 OF SEC 31 T5S R2W FOR TOTAL DESCRIPTION SEE ASSESSORS MAPS**		
County:	RIVERSIDE, CA	APN:	461-160-039
Census Tract / Block:	427.26 / 1	Alternate APN:	461-160-039
Township-Range-Sect:	5S-2W-31	Subdivision:	
Legal Book/Page:		Map Reference:	/
Legal Lot:		Tract #:	
Legal Block:		School District:	HEMET
Market Area:	227	School District Name:	HEMET
Neighbor Code:		Munic/Township:	HEMET SCHOOL DIST

Owner Transfer Information

Recording/Sale Date:	07/15/2010 / 07/09/2010	Deed Type:	TRUSTEE'S DEED(TRANSFER)
Sale Price:		1st Mtg Document #:	
Document #:	332950		

Last Market Sale Information

Recording/Sale Date:	/	1st Mtg Amount/Type:	/
Sale Price:		1st Mtg Int. Rate/Type:	/
Sale Type:		1st Mtg Document #:	
Document #:		2nd Mtg Amount/Type:	/
Deed Type:		2nd Mtg Int. Rate/Type:	/
Transfer Document #:		Price Per SqFt:	
New Construction:		Multi/Split Sale:	
Title Company:			
Lender:			
Seller Name:			

Prior Sale Information

Prior Rec/Sale Date:	/	Prior Lender:	
Prior Sale Price:		Prior 1st Mtg Amt/Type:	/
Prior Doc Number:		Prior 1st Mtg Rate/Type:	/
Prior Deed Type:			

Property Characteristics

Year Built / Eff:	/	Total Rooms/Offices		Garage Area:	
Gross Area:		Total Restrooms:		Garage Capacity:	
Building Area:		Roof Type:		Parking Spaces:	
Tot Adj Area:		Roof Material:		Heat Type:	
Above Grade:		Construction:		Air Cond:	
# of Stories:		Foundation:		Pool:	
Other Improvements:	Building Permit	Exterior wall:		Quality:	
		Basement Area:		Condition:	

Site Information

Zoning:	R-R	Acres:	20.72	County Use:	VACANT LAND - PREDOMINATE RESI (BL8)
Lot Area:	902,563	Lot Width/Depth:	x	State Use:	R07
Land Use:	VACANT LAND (NEC)	Res/Comm Units:	/	Water Type:	NONE
Site Influence:				Sewer Type:	NONE

Tax Information

Total Value:	$35,770	Assessed Year:	2021	Property Tax:	$10,387.16
Land Value:	$35,770	Improved %:		Tax Area:	071050
Improvement Value:		Tax Year:	2021	Tax Exemption:	
Total Taxable Value:	$35,770				

Property Detail Report

For Property Located At :
,, CA

CoreLogic RealQuest

Owner Information

Owner Name:	**RANCHO DE LOS CAZADORES**
Mailing Address:	**1950 SKYCREST DR, FULLERTON CA 92831-1935 C001**
Vesting Codes:	/ /

Location Information

Legal Description:	**13.61 ACRES M/L IN POR NW 1/4 OF SEC 31 T5S R2W FOR TOTAL DESCRIPTION SEE ASSESSORS MAPS**		
County:	RIVERSIDE, CA	APN:	461-160-038
Census Tract / Block:	427.26 / 1	Alternate APN:	461-160-038
Township-Range-Sect:	5S-2W-31	Subdivision:	
Legal Book/Page:		Map Reference:	/
Legal Lot:		Tract #:	
Legal Block:		School District:	HEMET
Market Area:	227	School District Name:	HEMET
Neighbor Code:		Munic/Township:	HEMET SCHOOL DIST

Owner Transfer Information

Recording/Sale Date:	/	Deed Type:	
Sale Price:		1st Mtg Document #:	
Document #:			

Last Market Sale Information

Recording/Sale Date:	/	1st Mtg Amount/Type:	/
Sale Price:		1st Mtg Int. Rate/Type:	/
Sale Type:		1st Mtg Document #:	
Document #:		2nd Mtg Amount/Type:	/
Deed Type:		2nd Mtg Int. Rate/Type:	/
Transfer Document #:		Price Per SqFt:	
New Construction:		Multi/Split Sale:	
Title Company:			
Lender:			
Seller Name:			

Prior Sale Information

Prior Rec/Sale Date:	/	Prior Lender:	
Prior Sale Price:		Prior 1st Mtg Amt/Type:	/
Prior Doc Number:		Prior 1st Mtg Rate/Type:	/
Prior Deed Type:			

Property Characteristics

Year Built / Eff:	/	Total Rooms/Offices		Garage Area:	
Gross Area:		Total Restrooms:		Garage Capacity:	
Building Area:		Roof Type:		Parking Spaces:	
Tot Adj Area:		Roof Material:		Heat Type:	
Above Grade:		Construction:		Air Cond:	
# of Stories:		Foundation:		Pool:	
Other Improvements:	Building Permit	Exterior wall:		Quality:	
		Basement Area:		Condition:	

Site Information

Zoning:	R-R	Acres:	13.61	County Use:	AGRICULTURAL LAND - MOUNTAIN (AA3)
Lot Area:	592,852	Lot Width/Depth:	x	State Use:	Y03
Land Use:	AGRICULTURAL LAND	Res/Comm Units:	/	Water Type:	NONE
Site Influence:				Sewer Type:	NONE

Tax Information

Total Value:	$3,703	Assessed Year:	2021	Property Tax:	$934.34
Land Value:	$3,703	Improved %:		Tax Area:	071050
Improvement Value:		Tax Year:	2021	Tax Exemption:	
Total Taxable Value:	$3,703				

Property Detail Report

For Property Located At :
,, CA

CoreLogic RealQuest

Owner Information

Owner Name:	**RANCHO DE LOS CAZADORES**
Mailing Address:	**1950 SKYCREST DR, FULLERTON CA 92831-1935 C001**
Vesting Codes:	/ /

Location Information

Legal Description:	**21.98 ACRES M/L IN POR NW 1/4 OF SEC 31 T5S R2W FOR TOTAL DESCRIPTION SEE ASSESSORS MAPS**		
County:	RIVERSIDE, CA	APN:	461-160-037
Census Tract / Block:	427.26 / 1	Alternate APN:	461-160-037
Township-Range-Sect:	5S-2W-31	Subdivision:	
Legal Book/Page:		Map Reference:	/
Legal Lot:		Tract #:	
Legal Block:		School District:	HEMET
Market Area:	227	School District Name:	HEMET
Neighbor Code:		Munic/Township:	HEMET SCHOOL DIST

Owner Transfer Information

Recording/Sale Date:	/	Deed Type:	
Sale Price:		1st Mtg Document #:	
Document #:			

Last Market Sale Information

Recording/Sale Date:	/	1st Mtg Amount/Type:	/
Sale Price:		1st Mtg Int. Rate/Type:	/
Sale Type:		1st Mtg Document #:	
Document #:		2nd Mtg Amount/Type:	/
Deed Type:		2nd Mtg Int. Rate/Type:	/
Transfer Document #:		Price Per SqFt:	
New Construction:		Multi/Split Sale:	
Title Company:			
Lender:			
Seller Name:			

Prior Sale Information

Prior Rec/Sale Date:	/	Prior Lender:	
Prior Sale Price:		Prior 1st Mtg Amt/Type:	/
Prior Doc Number:		Prior 1st Mtg Rate/Type:	/
Prior Deed Type:			

Property Characteristics

Year Built / Eff:	/	Total Rooms/Offices		Garage Area:	
Gross Area:		Total Restrooms:		Garage Capacity:	
Building Area:		Roof Type:		Parking Spaces:	
Tot Adj Area:		Roof Material:		Heat Type:	
Above Grade:		Construction:		Air Cond:	
# of Stories:		Foundation:		Pool:	
Other Improvements:	Building Permit	Exterior wall:		Quality:	
		Basement Area:		Condition:	

Site Information

Zoning:	R-R	Acres:	21.98	County Use:	VACANT LAND - PREDOMINATE RESI (BL8)
Lot Area:	957,449	Lot Width/Depth:	x	State Use:	R07
Land Use:	VACANT LAND (NEC)	Res/Comm Units:	/	Water Type:	NONE
Site Influence:				Sewer Type:	NONE

Tax Information

Total Value:	$48,298	Assessed Year:	2021	Property Tax:	$10,024.16
Land Value:	$48,298	Improved %:		Tax Area:	071050
Improvement Value:		Tax Year:	2021	Tax Exemption:	
Total Taxable Value:	$48,298				

Property Detail Report

For Property Located At :
,, CA

CoreLogic RealQuest

Owner Information

Owner Name:	**SALT CREEK II**
Mailing Address:	**PO BOX 13037, NEWPORT BEACH CA 92658-5083 B073 C/O ROBERT L SATTLER**
Vesting Codes:	/ / CO

Location Information

Legal Description:	**4.84 ACRES M/L IN POR NW 1/4 OF SEC 31 T5S R2W FOR TOTAL DESCRIPTION SEE ASSESSORS MAPS**		
County:	RIVERSIDE, CA	APN:	461-160-017
Census Tract / Block:	427.26 / 1	Alternate APN:	461-160-017
Township-Range-Sect:	5S-2W-31	Subdivision:	
Legal Book/Page:		Map Reference:	/
Legal Lot:		Tract #:	
Legal Block:		School District:	HEMET
Market Area:	227	School District Name:	HEMET
Neighbor Code:		Munic/Township:	HEMET SCHOOL DIST

Owner Transfer Information

Recording/Sale Date:	07/15/2010 / 07/09/2010	Deed Type:	TRUSTEE'S DEED(TRANSFER)
Sale Price:		1st Mtg Document #:	
Document #:	332950		

Last Market Sale Information

Recording/Sale Date:	/	1st Mtg Amount/Type:	/
Sale Price:		1st Mtg Int. Rate/Type:	/
Sale Type:		1st Mtg Document #:	
Document #:		2nd Mtg Amount/Type:	/
Deed Type:		2nd Mtg Int. Rate/Type:	/
Transfer Document #:		Price Per SqFt:	
New Construction:		Multi/Split Sale:	
Title Company:			
Lender:			
Seller Name:			

Prior Sale Information

Prior Rec/Sale Date:	/	Prior Lender:	
Prior Sale Price:		Prior 1st Mtg Amt/Type:	/
Prior Doc Number:		Prior 1st Mtg Rate/Type:	/
Prior Deed Type:			

Property Characteristics

Year Built / Eff:	/	Total Rooms/Offices		Garage Area:	
Gross Area:		Total Restrooms:		Garage Capacity:	
Building Area:		Roof Type:		Parking Spaces:	
Tot Adj Area:		Roof Material:		Heat Type:	
Above Grade:		Construction:		Air Cond:	
# of Stories:		Foundation:		Pool:	
Other Improvements:	Building Permit	Exterior wall:		Quality:	
		Basement Area:		Condition:	

Site Information

Zoning:	R-R	Acres:	4.84	County Use:	NON-IRRIGATED FARMLAND (AW2)
Lot Area:	210,830	Lot Width/Depth:	x	State Use:	A02
Land Use:	FARMS	Res/Comm Units:	/	Water Type:	NONE
Site Influence:				Sewer Type:	NONE

Tax Information

Total Value:	$8,272	Assessed Year:	2021	Property Tax:	$2,391.48
Land Value:	$8,272	Improved %:		Tax Area:	071050
Improvement Value:		Tax Year:	2021	Tax Exemption:	
Total Taxable Value:	$8,272				

Property Detail Report

For Property Located At :
,, CA

CoreLogic RealQuest

Owner Information

Owner Name:	**SALT CREEK I**
Mailing Address:	**PO BOX 13037, NEWPORT BEACH CA 92658-5083 B073 C/O ROBERT L SATTLER**
Vesting Codes:	/ /

Location Information

Legal Description:	**105.21 ACRES M/L IN POR SW 1/4 OF SEC 30 T5S R2W FOR TOTAL DESCRIPTION SEE ASSESSORS MAPS**		
County:	RIVERSIDE, CA	APN:	461-150-017
Census Tract / Block:	427.26 / 1	Alternate APN:	461-150-017
Township-Range-Sect:	5S-2W-30	Subdivision:	
Legal Book/Page:		Map Reference:	/
Legal Lot:		Tract #:	
Legal Block:		School District:	
Market Area:		School District Name:	
Neighbor Code:		Munic/Township:	ROMOLAND SCHOOL DIST

Owner Transfer Information

Recording/Sale Date:	/	Deed Type:	
Sale Price:		1st Mtg Document #:	
Document #:			

Last Market Sale Information

Recording/Sale Date:	/	1st Mtg Amount/Type:	/
Sale Price:		1st Mtg Int. Rate/Type:	/
Sale Type:		1st Mtg Document #:	
Document #:		2nd Mtg Amount/Type:	/
Deed Type:		2nd Mtg Int. Rate/Type:	/
Transfer Document #:		Price Per SqFt:	
New Construction:		Multi/Split Sale:	
Title Company:			
Lender:			
Seller Name:			

Prior Sale Information

Prior Rec/Sale Date:	/	Prior Lender:	
Prior Sale Price:		Prior 1st Mtg Amt/Type:	/
Prior Doc Number:		Prior 1st Mtg Rate/Type:	/
Prior Deed Type:			

Property Characteristics

Year Built / Eff:	/	Total Rooms/Offices		Garage Area:	
Gross Area:		Total Restrooms:		Garage Capacity:	
Building Area:		Roof Type:		Parking Spaces:	
Tot Adj Area:		Roof Material:		Heat Type:	
Above Grade:		Construction:		Air Cond:	
# of Stories:		Foundation:		Pool:	
Other Improvements:	Building Permit	Exterior wall:		Quality:	
		Basement Area:		Condition:	

Site Information

Zoning:		Acres:	105.21	County Use:	NON-IRRIGATED FARMLAND (AW2)
Lot Area:	4,582,948	Lot Width/Depth:	x	State Use:	A02
Land Use:	FARMS	Res/Comm Units:	/	Water Type:	NONE
Site Influence:				Sewer Type:	NONE

Tax Information

Total Value:	$277,832	Assessed Year:	2021	Property Tax:	$53,743.46
Land Value:	$277,832	Improved %:		Tax Area:	089014
Improvement Value:		Tax Year:	2021	Tax Exemption:	
Total Taxable Value:	$277,832				

Property Detail Report

For Property Located At :
,, CA

CoreLogic RealQuest

Owner Information

Owner Name:	**RANCHO DE LOS CAZADORES**
Mailing Address:	**1950 SKYCREST DR, FULLERTON CA 92831-1935 C001**
Vesting Codes:	/ /

Location Information

Legal Description:	**31.81 ACRES M/L IN POR SW 1/4 OF SEC 30 T5S R2W FOR TOTAL DESCRIPTION SEE ASSESSORS MAPS**		
County:	RIVERSIDE, CA	APN:	461-150-010
Census Tract / Block:	427.26 / 1	Alternate APN:	461-150-010
Township-Range-Sect:	5S-2W-30	Subdivision:	
Legal Book/Page:		Map Reference:	/
Legal Lot:		Tract #:	
Legal Block:		School District:	PERRIS UN
Market Area:	226	School District Name:	PERRIS UN
Neighbor Code:		Munic/Township:	ROMOLAND SCHOOL DIST

Owner Transfer Information

Recording/Sale Date:	07/1968 /	Deed Type:	DEED (REG)
Sale Price:		1st Mtg Document #:	
Document #:	72263		

Last Market Sale Information

Recording/Sale Date:	/	1st Mtg Amount/Type:	/
Sale Price:		1st Mtg Int. Rate/Type:	/
Sale Type:		1st Mtg Document #:	
Document #:		2nd Mtg Amount/Type:	/
Deed Type:		2nd Mtg Int. Rate/Type:	/
Transfer Document #:		Price Per SqFt:	
New Construction:		Multi/Split Sale:	
Title Company:			
Lender:			
Seller Name:			

Prior Sale Information

Prior Rec/Sale Date:	/	Prior Lender:	
Prior Sale Price:		Prior 1st Mtg Amt/Type:	/
Prior Doc Number:		Prior 1st Mtg Rate/Type:	/
Prior Deed Type:			

Property Characteristics

Year Built / Eff:	/	Total Rooms/Offices		Garage Area:	
Gross Area:		Total Restrooms:		Garage Capacity:	
Building Area:		Roof Type:		Parking Spaces:	
Tot Adj Area:		Roof Material:		Heat Type:	
Above Grade:		Construction:		Air Cond:	
# of Stories:		Foundation:		Pool:	
Other Improvements:	Building Permit	Exterior wall:		Quality:	
		Basement Area:		Condition:	

Site Information

Zoning:	R-R	Acres:	31.81	County Use:	NON-IRRIGATED FARMLAND (AW2)
Lot Area:	1,385,644	Lot Width/Depth:	x	State Use:	A02
Land Use:	FARMS	Res/Comm Units:	/	Water Type:	TYPE UNKNOWN
Site Influence:				Sewer Type:	NONE

Tax Information

Total Value:	$108,094	Assessed Year:	2021	Property Tax:	$16,515.48
Land Value:	$108,094	Improved %:		Tax Area:	089014
Improvement Value:		Tax Year:	2021	Tax Exemption:	
Total Taxable Value:	$108,094				

Property Detail Report

For Property Located At :
,, CA

CoreLogic RealQuest

Owner Information

Owner Name:	**RANCHO DE LOS CAZADORES**
Mailing Address:	**1950 SKYCREST DR, FULLERTON CA 92831-1935 C001**
Vesting Codes:	/ /

Location Information

Legal Description:	**58.34 ACRES M/L IN POR SE 1/4 OF SEC 25 T5S R3W FOR TOTAL DESCRIPTION SEE ASSESSORS MAPS**		
County:	RIVERSIDE, CA	APN:	333-200-062
Census Tract / Block:	427.26 / 2	Alternate APN:	333-200-062
Township-Range-Sect:	5S-3W-25	Subdivision:	
Legal Book/Page:		Map Reference:	/
Legal Lot:		Tract #:	
Legal Block:		School District:	PERRIS UN
Market Area:	225	School District Name:	PERRIS UN
Neighbor Code:		Munic/Township:	CITY OF MENIFEE

Owner Transfer Information

Recording/Sale Date:	07/1968 /	Deed Type:	DEED (REG)
Sale Price:		1st Mtg Document #:	
Document #:	72263		

Last Market Sale Information

Recording/Sale Date:	/	1st Mtg Amount/Type:	/
Sale Price:		1st Mtg Int. Rate/Type:	/
Sale Type:		1st Mtg Document #:	
Document #:		2nd Mtg Amount/Type:	/
Deed Type:		2nd Mtg Int. Rate/Type:	/
Transfer Document #:		Price Per SqFt:	
New Construction:		Multi/Split Sale:	
Title Company:			
Lender:			
Seller Name:			

Prior Sale Information

Prior Rec/Sale Date:	/	Prior Lender:	
Prior Sale Price:		Prior 1st Mtg Amt/Type:	/
Prior Doc Number:		Prior 1st Mtg Rate/Type:	/
Prior Deed Type:			

Property Characteristics

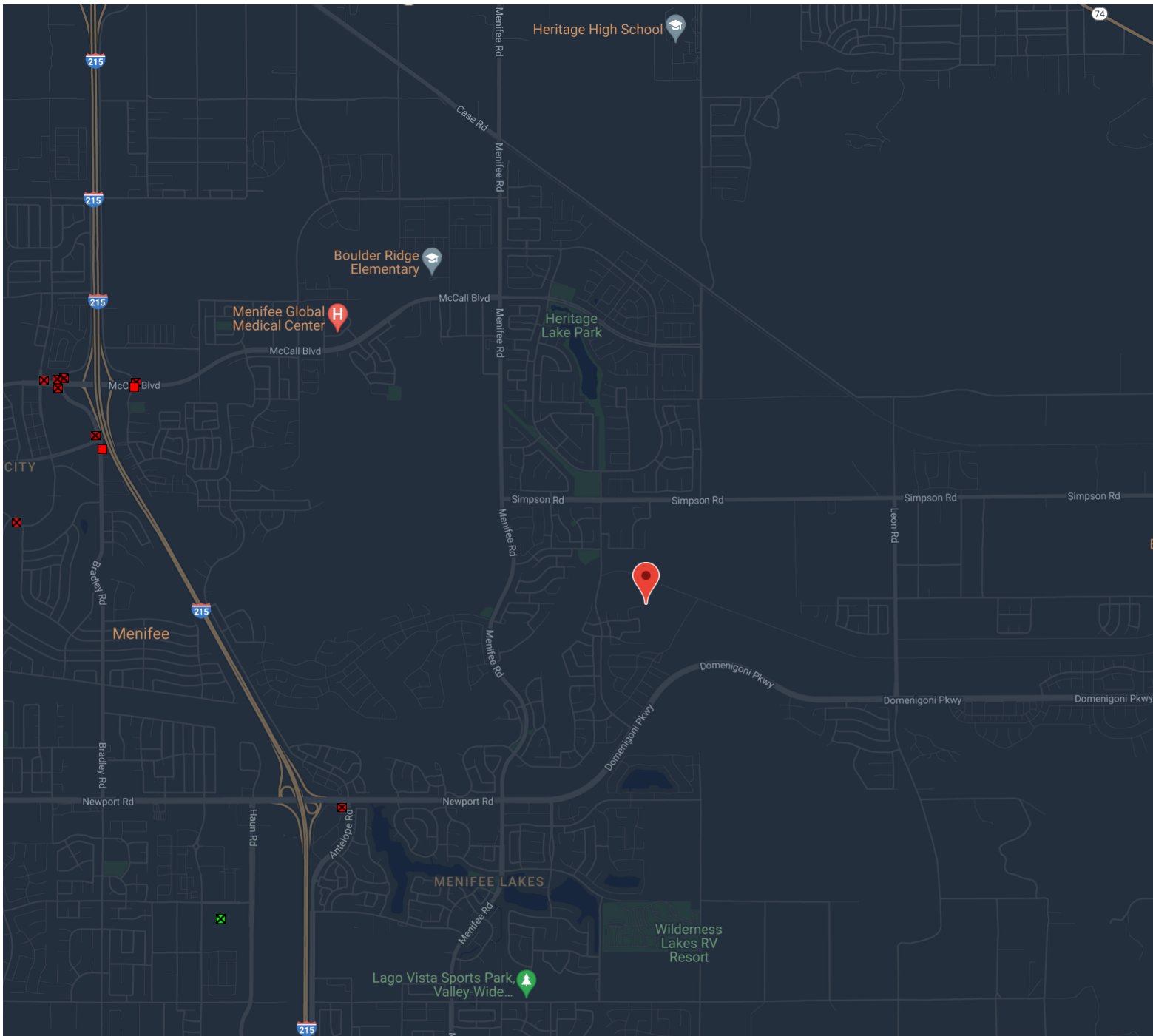
Year Built / Eff:	1970 /	Total Rooms/Offices		Garage Area:	
Gross Area:		Total Restrooms:		Garage Capacity:	
Building Area:		Roof Type:		Parking Spaces:	
Tot Adj Area:		Roof Material:		Heat Type:	
Above Grade:		Construction:		Air Cond:	
# of Stories:		Foundation:		Pool:	
Other Improvements:	Building Permit	Exterior wall:		Quality:	
		Basement Area:		Condition:	

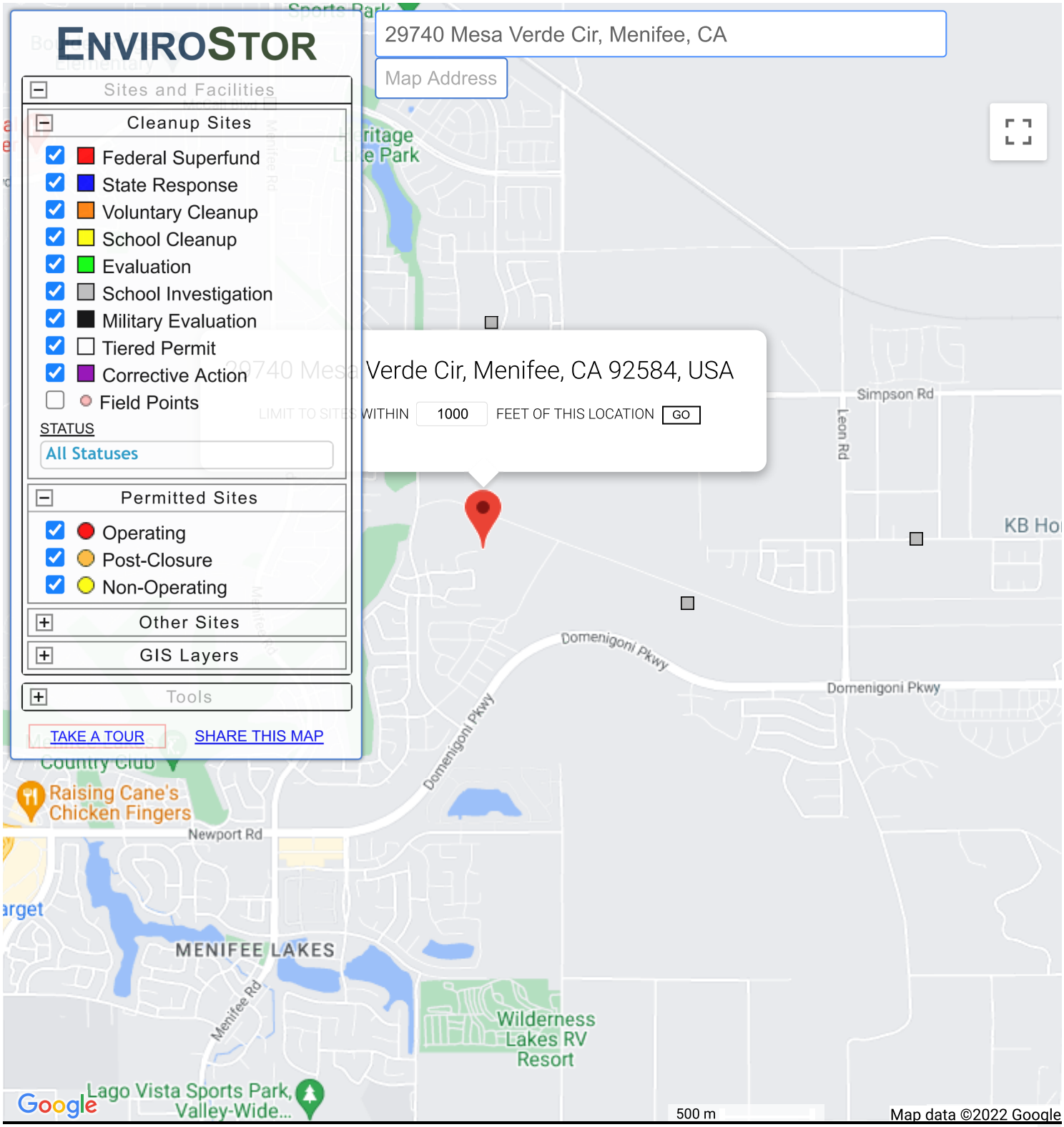
Site Information

Zoning:	R-R	Acres:	58.34	County Use:	IRRIGATED FARMLAND (AR3)
Lot Area:	2,541,290	Lot Width/Depth:	x	State Use:	X01
Land Use:	FARMS	Res/Comm Units:	/	Water Type:	TYPE UNKNOWN
Site Influence:				Sewer Type:	NONE

Tax Information

Total Value:	$197,018	Assessed Year:	2021	Property Tax:	$3,253.38
Land Value:	$195,380	Improved %:	1%	Tax Area:	026192
Improvement Value:	$1,638	Tax Year:	2021	Tax Exemption:	
Total Taxable Value:	$197,018				


Heritage High School
Menifee Rd
Case Rd
215
74
Boulder Ridge Elementary
McCall Blvd
Menifee Global Medical Center
Heritage Lake Park
CITY
Simpson Rd
Leon Rd
Bradley Rd
Menifee
Domenigoni Pkwy
Newport Rd
Haun Rd
Antelope Rd
MENIFEE LAKES
Wilderness Lakes RV Resort
Lago Vista Sports Park, Valley-Wide...



SITES CURRENTLY VISIBLE ON MAP — 11 SITES LISTED — EXPORT THIS LIST TO EXCEL

PROJECT NAME	STATUS	PROJECT TYPE	ADDRESS	CITY
ELEMENTARY SCHOOL #13	NO ACTION REQUIRED	SCHOOL INVESTIGATION	CHAMBERS AVENUE/ANTELOPE ROAD	SUN CITY
ELEMENTARY SCHOOL NO. 10	NO FURTHER ACTION	SCHOOL INVESTIGATION	BEELER ROAD/PATTON AVENUE	WINCHESTER
HERITAGE LAKE SCHOOL #2	NO FURTHER ACTION	SCHOOL INVESTIGATION	HERITAGE LAKE DRIVE AND GRAND AVENUE	ROMOLAND
MCCALL MESA K-8 SCHOOL	NO FURTHER ACTION	SCHOOL INVESTIGATION	MCCALL BOULEVARD/JUNIPERO ROAD	ROMOLAND
MENIFEE PROPOSED ELEMENTARY SCHOOL NO. 14	NO ACTION REQUIRED	SCHOOL INVESTIGATION	NEAR DERBY HILL DRIVE AND STAGE COACH ROAD	MENIFEE
MENIFEE VALLEY RANCH	NO FURTHER ACTION	SCHOOL INVESTIGATION	MCCALL BOULEVARD/MENIFEE LOOP	ROMOLAND

Department of Toxic Substances Control

Meredith Williams, Ph.D., Director
8800 Cal Center Drive
Sacramento, California 95826-3200

Jared Blumenfeld
Secretary for
Environmental Protection

Gavin Newsom
Governor

April 28, 2022

Alyssa Berry
Hillmann Consulting, LLC
Aberry@hillmanngroup.com

Public Records Request Number: 1-042222-05
Location(s): 333-200-062;461-150-010;461-150-017; 461-160-017; 461-160-037; 461-160-050; 461-160-038 and 461-160-039 (appx. 312.54 acres) Menifee, County California 92545

Dear Requestor:

On April 22, 2022, the Department of Toxic Substances Control (DTSC) received your email of April 22, 2022, requesting records under the Public Records Act. We were unable to locate an address in the county database using the APNs provided and we are unable to search our records using APNs as our databases do not include this information. If you have a specific address or cross streets, please let us know.

A large number of our records are available on EnviroStor, an online database that provides non-confidential, public access to DTSCs data management system. It tracks our cleanup, permitting, enforcement, and investigation efforts at hazardous waste facilities and sites with known or suspected contamination issues. EnviroStor is available 24/7, 365 days a year. The data reflects the latest updates as they are entered in the system. Access it from your computer or smartphone, the local library – anywhere Internet access is available. Just go to www.envirostor.dtsc.ca.gov. You'll find a step-by-step tour of EnviroStor under the "How to Use EnviroStor" menu on the website.

If you have any questions or would like further information regarding your request, please contact me at 916-255-6449 or via email at PubReqAct@DTSC.ca.gov

Sincerely,
Wyatt Mallory
Wyatt Mallory
Regional Records Coordinator

HILLMANN
CONSULTING

April 22, 2022

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

RE: DTSC Files:

APN: 333-200-062;461-150-010;461-150-017; 461-160-017; 461-160-037; 461-160-050; 461-160-038 and 461-160-039 (appx. 312.54 acres)
Menifee, County California 92545

Dear Sir/Madam:

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

Sincerely,

Alyssa Berry
Environmental Technician
Hillmann Consulting, LLC
aberry@hillmanngroup.com

APPENDIX G

PROJECT PERSONNEL QUALIFICATIONS

HILLMANN
CONSULTING

CONTACT INFORMATION

720 26th Street
Sacramento, CA 95816

(559) 905-6744

jterwilliger@hillmannconsulting.com

EDUCATION

B.S. Environmental Science, University of Southern California, Los Angeles, CA

CERTIFICATIONS

Cal-OSHA Certified Asbestos Consultant

CDPH Accredited Lead Inspector/Assessor/ Project Monitor

CA Certified Site Surveillance Technician

OSHA 40 - Hr HAZWOPER

WITH HILLMANN SINCE 2016

JOHN "RYAN" TERWILLIGER

West Coast Regional Manager
Environmental Health & Safety

PROFESSIONAL EXPERIENCE

Mr. Terwilliger is responsible for business operations, fiscal management, and field staff management for Hillmann's Orange, CA office. He also performs asbestos surveys and investigations to identify asbestos and lead materials associated with occupational hazards. He supervises work practices and controls in accordance with job specifications, current EPA, OSHA, and State Regulations for asbestos remediation projects in commercial, industrial and multi-family residential buildings. Mr. Terwilliger also performs IAQ and mold and moisture investigations in commercial, industrial, and residential settings nationwide. Additionally, he conducts awareness training on environmental topics such as asbestos, lead and mold and provides litigation support consultation.

RELEVANT PROJECT EXPERIENCE

Tishman Speyer Properties | Various Locations
Hillmann has provided the complete environmental program for Tishman Speyer properties since 1987. Our services include environmental health and safety, industrial hygiene, phase I environmental site assessments, asbestos surveys, air monitoring, bid administration, O&M programs and indoor air quality programs on various commercial, industrial and multi-family residential properties.

Westfield | Various Locations
Since 2000, Hillmann has been providing an environmental program encompassing environmental health and safety, phase I environmental site assessments, asbestos and lead surveys, air monitoring, bid administration and O&M programs, industrial hygiene and indoor air quality programs, and hazardous materials assessments on their mall properties throughout the county.

Brookfield Office Properties | Various Locations
Hillmann has been providing hazardous materials surveys, development abatement specifications, and managing the oversight activities during the abatement activities at various Brookfield sites throughout California.

Verizon | Various Locations
Hillmann conducted hazardous materials surveys, development abatement specifications, and project monitoring during abatement at various Verizon locations throughout California.

HILLMANN
CONSULTING

RELEVANT PROJECT EXPERIENCE CONTINUED

California Department of Transportation | Central Valley & Northern California

Hillmann has been performing asbestos and lead-based paint surveys for the California Department of Transportation (DOT). IN doing so, we perform comprehensive asbestos containing materials and lead-based paint surveys of residential and commercial buildings that are slated for demolition and generated a report of findings in order to aid the DOT in facilitating the road improvement programs and building renovations throughout the Central Valley and Northern California areas. Also, during the abatement of asbestos from DOT-owned buildings, we provide contractor oversight and air monitoring services for regulatory compliance.

Public Storage | Los Angeles, CA

Hillman preformed comprehensive asbestos, lead-based paint, and universal waste materials survey of commercial and industrial buildings throughout Southern California. Hazardous materials surveys were conducted prior to renovation. Mr. Terwilliger developed abatement specifications and managed the abatement oversight during the renovation of the buildings.

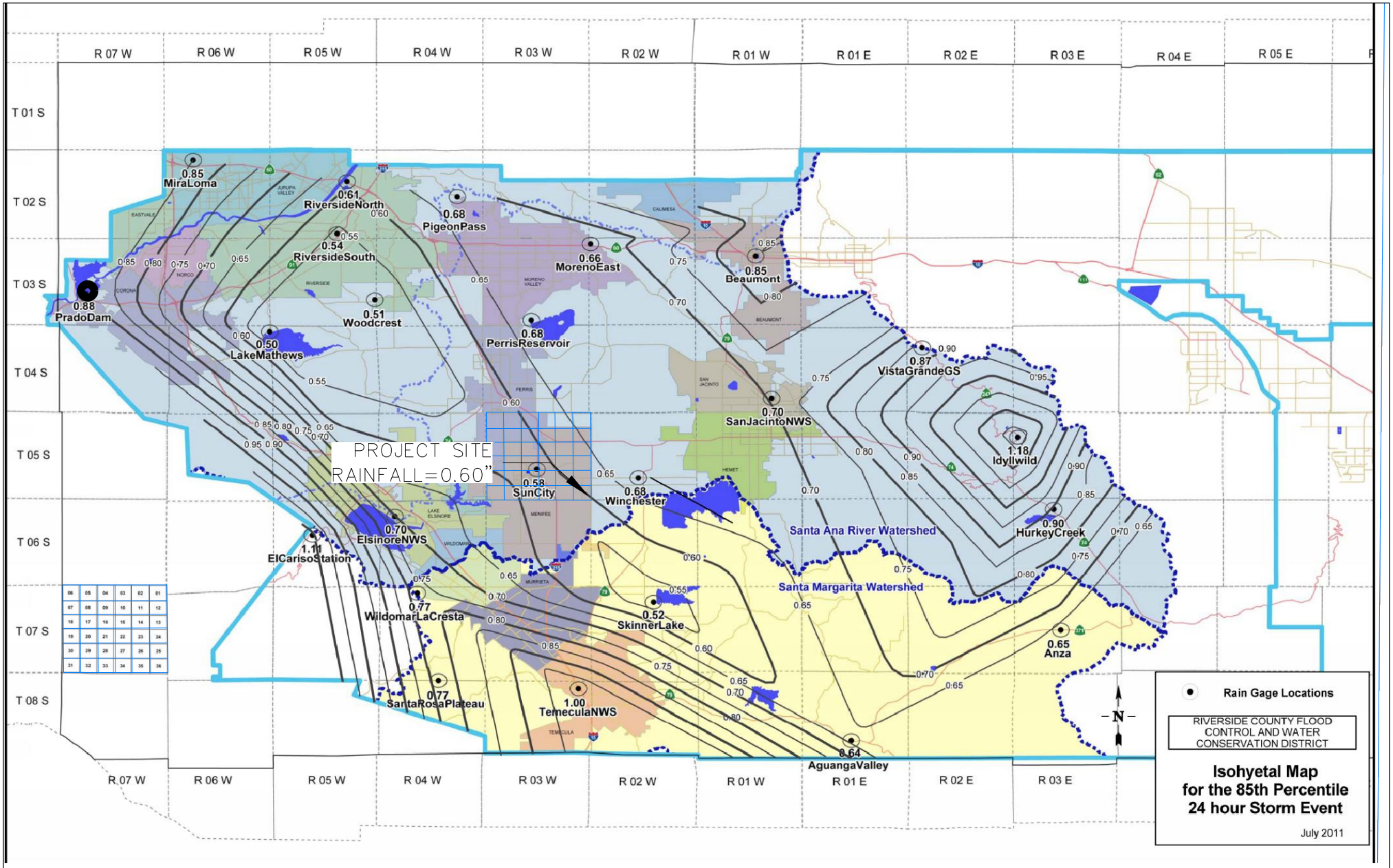
Appendix 5: LID Infeasibility

LID Technical Infeasibility Analysis

Appendix 6: BMP Design Details

BMP Sizing, Design Details and other Supporting Documentation

85th Percentile 24-Hour Rainfall Map



85TH PERCENTILE 24 HOUR STORM EVENT MAP

JLC Engineering & Consulting, Inc.
41660 IVY STREET, SUITE A
MURRIETA, CA 92562
PH. 951.304.9552 FAX 951.304.3568

Santa Ana Watershed BMP Design Volume Spreadsheet

Santa Ana Watershed - BMP Design Volume, V_{BMP}

(Rev. 10-2011)

Legend: Required Entries / Calculated Cells

*(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)*

Company Name	JLC Engineering and Consulting, Inc.	Date	4/14/2023
Designed by	Matthew Hunt	Case No	
Company Project Number/Name	Tract Map 38625		

BMP Identification

BMP NAME / ID: Basin B (ASSUMES 60% IMPERVIOUS)

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

85th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E

D_{85} = 0.60 inches

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
B	*767,875.68*	*Concrete or Asphalt*	*1*	*0.89*	*684945.1*			
B	*511,917.12*	*Ornamental Landscaping*	*0.1*	*0.11*	*56545.3*			

Santa Ana Watershed - BMP Design Volume, V_{BMP}

(Rev. 10-2011)

Legend: Required Entries / Calculated Cells

*(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)*

Company Name	JLC Engineering and Consulting, Inc.	Date	4/14/2023
Designed by	Joseph Castaneda	Case No	Tr 38625
Company Project Number/Name	TRACT MAP 38625		

BMP Identification

BMP NAME / ID: Basin A / DMA A (ASSUMES 60% IMPERVIOUS)

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

85th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E

D_{85}= 0.60 inches

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
A	*565060.32*	*Concrete or Asphalt*	*1*	*0.89*	*504033.8*			
A	*376706.88*	*Ornamental Landscaping*	*0.1*	*0.11*	*41610.3*			

Basin Outlet Weir Design

BASIN A STRUCTURE

Weir Calculation

$$Q=CLH^{3/2}$$

Q_{100}= Discharge from On-site 100 Year Rational Method Study

C= Discharge Coefficent

L = Weir Length

H=Hydraulic Head

Storm Drain System	Q (cfs)	C	L (ft)	H (ft)	Weir Opening Elevation (ft)	WSE
BASIN A SRUCTURE	43.60	3.1	8	1.46	1441.00	1442.5

BASIN B STRUCTURE

Weir Calculation

$$Q=CLH^{3/2}$$

Q_{100}= Discharge from On-site 100 Year Rational Method Study

C= Discharge Coefficent

L = Weir Length

H=Hydraulic Head

Storm Drain System	Q (cfs)	C	L (ft)	H (ft)	Weir Opening Elevation (ft)	WSE
BASIN A SRUCTURE	50.70	3.1	46.23899	0.50	1440.50	1441.0

Basin Storage Spreadsheet

BASIN A

Contour Elevation	Contour Area (sf)	Contour Area (ac)	Contour Interval Volume (ac-ft)	Total Basin Volume (ac-ft)	Total Basin Volume (ft^3)
1438.0	9684.2	0.222		0	0
			0.242		
1439.0	11388.78	0.261		0.242	10524.97
			0.282		
1440.0	13188.03	0.303		0.523	22802.38
			0.324		
1441.0	15081.95	0.346		0.848	36926.78
			0.369		
1442.0	17070.57	0.392		1.217	52992.78

WQ Volume (ft^3)	WQ Volume (Ac-ft)	WQ Ponded Elev.	Drawdown Time (hr)	WQ Drawdown Flow Rate (CFS)
27,282.20	0.626	1440.32	48	0.1579

BASIN B

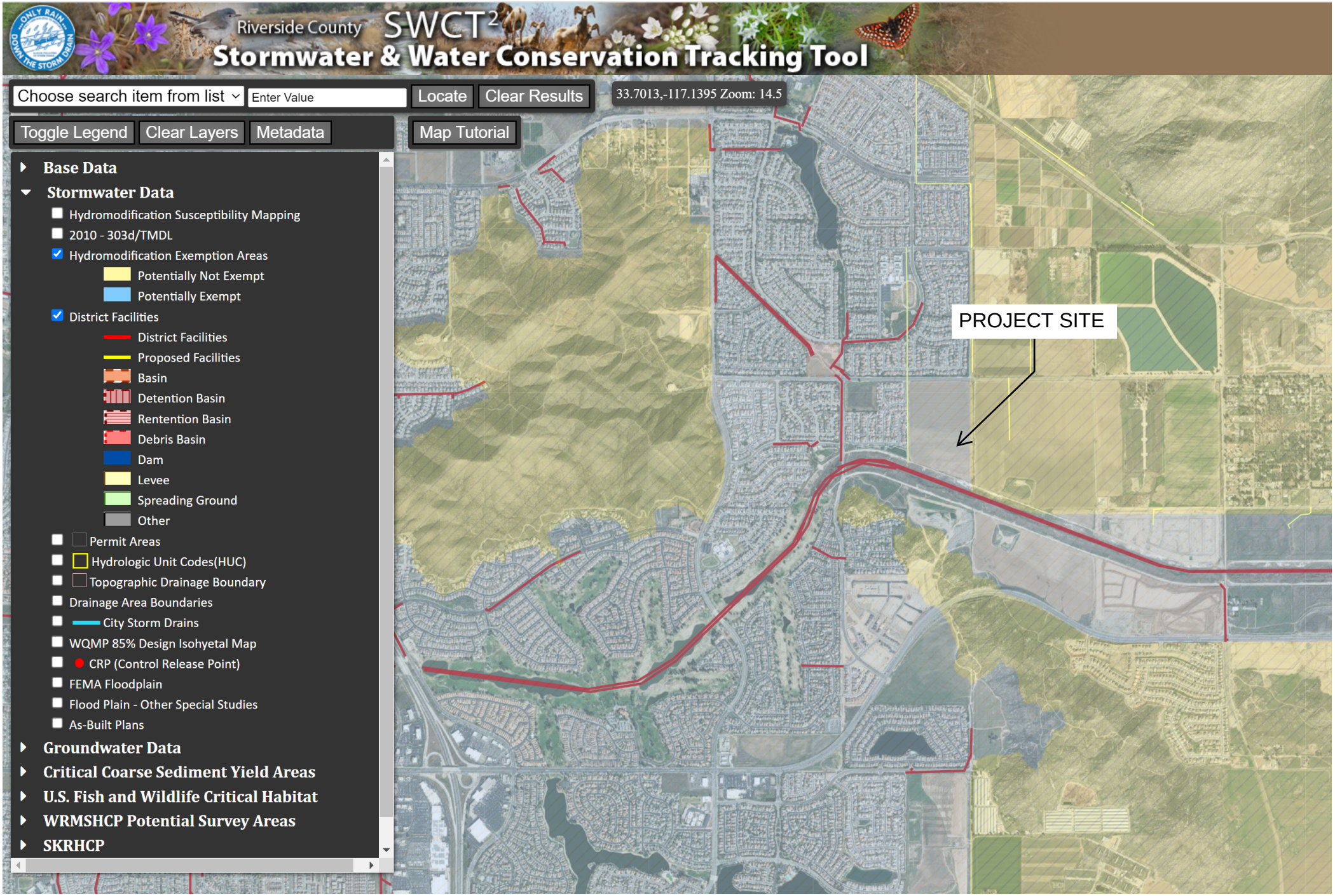
Contour Elevation	Contour Area (sf)	Contour Area (ac)	Contour Interval Volume (ac-ft)	Total Basin Volume (ac-ft)	Total Basin Volume (ft^3)
1438.0	17759.5	0.408		0	0
			0.422		
1439.0	19028.4	0.437		0.422	18390.28
			0.452		
1440.0	20329.6	0.467		0.874	38065.70
			0.497		
1441.0	23029.5	0.529		1.371	59731.22
			0.545		
1442.0	24428.7	0.561		1.916	83456.88

WQ Volume (ft^3)	WQ Volume (Ac-ft)	WQ Ponded Elev.	Drawdown Time (hr)	WQ Drawdown Flow Rate (CFS)
37,074.50	0.851	1439.95	48	0.2146

Appendix 7: Hydromodification

Supporting Detail Relating to Hydrologic Conditions of Concern

Project discharges into the Salt Creek Channel which is exempt from hydromodifications according to the Riverside County Storm Water and Conservation Tracking Tool (SWCTT). As shown below.


Riverside County SWCT²
Stormwater & Water Conservation Tracking Tool
Choose search item from list
Enter Value
Locate
Clear Results
33.7013,-117.1395 Zoom: 14.5
Toggle Legend
Clear Layers
Metadata
Map Tutorial
Base Data
Stormwater Data
Hydromodification Susceptibility Mapping
2010 - 303d/TMDL
Hydromodification Exemption Areas
Potentially Not Exempt
Potentially Exempt
District Facilities
District Facilities
Proposed Facilities
Basin
Detention Basin
Rentention Basin
Debris Basin
Dam
Levee
Spreading Ground
Other
Permit Areas
Hydrologic Unit Codes(HUC)
Topographic Drainage Boundary
Drainage Area Boundaries
City Storm Drains
WQMP 85% Design Isohyetal Map
CRP (Control Release Point)
FEMA Floodplain
Flood Plain - Other Special Studies
As-Built Plans
Groundwater Data
Critical Coarse Sediment Yield Areas
U.S. Fish and Wildlife Critical Habitat
WRMSHCP Potential Survey Areas
SKRHCP
PROJECT SITE

Appendix 8: Source Control

Pollutant Sources/Source Control Checklist

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

How to use this worksheet (also see instructions in Section G of the WQMP Template):

1. Review Column 1 and identify which of these potential sources of stormwater pollutants apply to your site. Check each box that applies.
2. Review Column 2 and incorporate all of the corresponding applicable BMPs in your WQMP Exhibit.
3. Review Columns 3 and 4 and incorporate all of the corresponding applicable permanent controls and operational BMPs in your WQMP. Use the format shown in Table G.1on page 23 of this WQMP Template. Describe your specific BMPs in an accompanying narrative, and explain any special conditions or situations that required omitting BMPs or substituting alternative BMPs for those shown here.

IF THESE SOURCES WILL BE ON THE PROJECT SITE …	… THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 **Potential Sources of Runoff Pollutants**	**2** **Permanent Controls—Show on WQMP Drawings**	**3** **Permanent Controls—List in WQMP Table and Narrative**	**4** **Operational BMPs—Include in WQMP Table and Narrative**
☒ **A.** On-site storm drain inlets	☒ Locations of inlets.	☒ Mark all inlets with the words "Only Rain Down the Storm Drain" or similar. Catch Basin Markers may be available from the Riverside County Flood Control and Water Conservation District, call 951.955.1200 to verify.	☒ Maintain and periodically repaint or replace inlet markings. ☒ Provide stormwater pollution prevention information to new site owners, lessees, or operators. ☒ See applicable operational BMPs in Fact Sheet SC-44, "Drainage System Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com ☒ Include the following in lease agreements: "Tenant shall not allow anyone to discharge anything to storm drains or to store or deposit materials so as to create a potential discharge to storm drains."
❑ **B.** Interior floor drains and elevator shaft sump pumps		☒ State that interior floor drains and elevator shaft sump pumps will be plumbed to sanitary sewer.	☒ Inspect and maintain drains to prevent blockages and overflow.
❑ **C.** Interior parking garages		❑ State that parking garage floor drains will be plumbed to the sanitary sewer.	❑ Inspect and maintain drains to prevent blockages and overflow.

IF THESE SOURCES WILL BE ON THE PROJECT SITE …	… THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 **Potential Sources of Runoff Pollutants**	2 **Permanent Controls—Show on WQMP Drawings**	3 **Permanent Controls—List in WQMP Table and Narrative**	4 **Operational BMPs—Include in WQMP Table and Narrative**
☒ **D1.** Need for future indoor & structural pest control		☒ Note building design features that discourage entry of pests.	❑ Provide Integrated Pest Management information to owners, lessees, and operators.
☒ **D2.** Landscape/ Outdoor Pesticide Use	❑ Show locations of native trees or areas of shrubs and ground cover to be undisturbed and retained. ❑ Show self-retaining landscape areas, if any. ☒ Show stormwater treatment and hydrograph modification management BMPs. (See instructions in Chapter 3, Step 5 and guidance in Chapter 5.)	State that final landscape plans will accomplish all of the following. ❑ Preserve existing native trees, shrubs, and ground cover to the maximum extent possible. ☒ Design landscaping to minimize irrigation and runoff, to promote surface infiltration where appropriate, and to minimize the use of fertilizers and pesticides that can contribute to stormwater pollution. ☒ Where landscaped areas are used to retain or detain stormwater, specify plants that are tolerant of saturated soil conditions. ☒ Consider using pest-resistant plants, especially adjacent to hardscape. ☒ To ensure successful establishment, select plants appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions.	☒ Maintain landscaping using minimum or no pesticides. ☒ See applicable operational BMPs in **"What you should know for…..Landscape and Gardening"** at http://rcflood.org/stormwater/**Error! Hyperlink reference not valid.** ☒ Provide IPM information to new owners, lessees and operators.

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

IF THESE SOURCES WILL BE ON THE PROJECT SITE …	… THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 **Potential Sources of Runoff Pollutants**	2 **Permanent Controls—Show on WQMP Drawings**	3 **Permanent Controls—List in WQMP Table and Narrative**	4 **Operational BMPs—Include in WQMP Table and Narrative**
☒ **E.** Pools, spas, ponds, decorative fountains, and other water features.	❑ Show location of water feature and a sanitary sewer cleanout in an accessible area within 10 feet. (Exception: Public pools must be plumbed according to County Department of Environmental Health Guidelines.)	If the Co-Permittee requires pools to be plumbed to the sanitary sewer, place a note on the plans and state in the narrative that this connection will be made according to local requirements.	❑ See applicable operational BMPs in "Guidelines for Maintaining Your Swimming Pool, Jacuzzi and Garden Fountain" at http://rcflood.org/stormwater/
❑ **F.** Food service	☒ For restaurants, grocery stores, and other food service operations, show location (indoors or in a covered area outdoors) of a floor sink or other area for cleaning floor mats, containers, and equipment. ☒ On the drawing, show a note that this drain will be connected to a grease interceptor before discharging to the sanitary sewer.	☒ Describe the location and features of the designated cleaning area. ☒ Describe the items to be cleaned in this facility and how it has been sized to insure that the largest items can be accommodated.	☒ See the brochure, "The Food Service Industry Best Management Practices for: Restaurants, Grocery Stores, Delicatessens and Bakeries" at http://rcflood.org/stormwater/ Provide this brochure to new site owners, lessees, and operators.
☒ **G.** Refuse areas	☒ Show where site refuse and recycled materials will be handled and stored for pickup. See local municipal requirements for sizes and other details of refuse areas. ☒ If dumpsters or other receptacles are outdoors, show how the designated area will be covered, graded, and paved to prevent run-on and show locations of berms to prevent runoff from the area. ❑ Any drains from dumpsters, compactors, and tallow bin areas shall be connected to a grease removal device before discharge to sanitary sewer.	☒ State how site refuse will be handled and provide supporting detail to what is shown on plans. ☒ State that signs will be posted on or near dumpsters with the words "Do not dump hazardous materials here" or similar.	☒ State how the following will be implemented: Provide adequate number of receptacles. Inspect receptacles regularly; repair or replace leaky receptacles. Keep receptacles covered. Prohibit/prevent dumping of liquid or hazardous wastes. Post "no hazardous materials" signs. Inspect and pick up litter daily and clean up spills immediately. Keep spill control materials available on-site. See Fact Sheet SC-34, "Waste Handling and Disposal" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 **Potential Sources of Runoff Pollutants**	2 **Permanent Controls—Show on WQMP Drawings**	3 **Permanent Controls—List in WQMP Table and Narrative**	4 **Operational BMPs—Include in WQMP Table and Narrative**
❑ **H.** Industrial processes.	❑ Show process area.	❑ **If industrial processes are to be located on site, state: "All process activities to be performed indoors. No processes to drain to exterior or to storm drain system."**	❑ **See Fact Sheet SC-10, "Non-Stormwater Discharges" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com** See the brochure "Industrial & Commercial Facilities Best Management Practices for: Industrial, Commercial Facilities" at http://rcflood.org/stormwater/

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 **Potential Sources of Runoff Pollutants**	**2** **Permanent Controls—Show on WQMP Drawings**	**3** **Permanent Controls—List in WQMP Table and Narrative**	**4** **Operational BMPs—Include in WQMP Table and Narrative**
❑ **I.** Outdoor storage of equipment or materials. (See rows J and K for source control measures for vehicle cleaning, repair, and maintenance.)	❑ Show any outdoor storage areas, including how materials will be covered. Show how areas will be graded and bermed to prevent run-on or run-off from area. ❑ Storage of non-hazardous liquids shall be covered by a roof and/or drain to the sanitary sewer system, and be contained by berms, dikes, liners, or vaults. ❑ Storage of hazardous materials and wastes must be in compliance with the local hazardous materials ordinance and a Hazardous Materials Management Plan for the site.	Include a detailed description of materials to be stored, storage areas, and structural features to prevent pollutants from entering storm drains. Where appropriate, reference documentation of compliance with the requirements of Hazardous Materials Programs for: ▪ Hazardous Waste Generation ▪ Hazardous Materials Release Response and Inventory ▪ California Accidental Release (CalARP) ▪ Aboveground Storage Tank ▪ Uniform Fire Code Article 80 Section 103(b) & (c) 1991 ▪ Underground Storage Tank www.cchealth.org/groups/hazmat/	❑ See the Fact Sheets SC-31, "Outdoor Liquid Container Storage" and SC-33, "Outdoor Storage of Raw Materials " in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 **Potential Sources of Runoff Pollutants**	2 **Permanent Controls—Show on WQMP Drawings**	3 **Permanent Controls—List in WQMP Table and Narrative**	4 **Operational BMPs—Include in WQMP Table and Narrative**
☒ **J.** Vehicle and Equipment Cleaning	❑ Show on drawings as appropriate: **(1) Commercial/industrial facilities having vehicle/equipment cleaning needs shall either provide a covered, bermed area for washing activities or discourage vehicle/equipment washing by removing hose bibs and installing signs prohibiting such uses.** **(2) Multi-dwelling complexes shall have a paved, bermed, and covered car wash area (unless car washing is prohibited on-site and hoses are provided with an automatic shut-off to discourage such use).** **(3) Washing areas for cars, vehicles, and equipment shall be paved, designed to prevent run-on to or runoff from the area, and plumbed to drain to the sanitary sewer.** **(4) Commercial car wash facilities shall be designed such that no runoff from the facility is discharged to the storm drain system. Wastewater from the facility shall discharge to the sanitary sewer, or a wastewater reclamation system shall be installed.**	❑ **If a car wash area is not provided, describe any measures taken to discourage on-site car washing and explain how these will be enforced.**	**Describe operational measures to implement the following (if applicable):** ❑ **Washwater from vehicle and equipment washing operations shall not be discharged to the storm drain system.** Refer to "Outdoor Cleaning Activities and Professional Mobile Service Providers" for many of the Potential Sources of Runoff Pollutants categories below. Brochure can be found at http://rcflood.org/stormwater/ ❑**Car dealerships and similar may rinse cars with water only.**

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

IF THESE SOURCES WILL BE ON THE PROJECT SITE …	… THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 **Potential Sources of Runoff Pollutants**	**2** **Permanent Controls—Show on WQMP Drawings**	**3** **Permanent Controls—List in WQMP Table and Narrative**	**4** **Operational BMPs—Include in WQMP Table and Narrative**
☒ **K.** Vehicle/Equipment Repair and Maintenance	❑ Accommodate all vehicle equipment repair and maintenance indoors. Or designate an outdoor work area and design the area to prevent run-on and runoff of stormwater. ❑ Show secondary containment for exterior work areas where motor oil, brake fluid, gasoline, diesel fuel, radiator fluid, acid-containing batteries or other hazardous materials or hazardous wastes are used or stored. Drains shall not be installed within the secondary containment areas. ❑ Add a note on the plans that states either (1) there are no floor drains, or (2) floor drains are connected to wastewater pretreatment systems prior to discharge to the sanitary sewer and an industrial waste discharge permit will be obtained.	❑ State that no vehicle repair or maintenance will be done outdoors, or else describe the required features of the outdoor work area. ❑ State that there are no floor drains or if there are floor drains, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements. ❑ State that there are no tanks, containers or sinks to be used for parts cleaning or rinsing or, if there are, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements.	In the Stormwater Control Plan, note that all of the following restrictions apply to use the site: ❑ No person shall dispose of, nor permit the disposal, directly or indirectly of vehicle fluids, hazardous materials, or rinsewater from parts cleaning into storm drains. ❑ No vehicle fluid removal shall be performed outside a building, nor on asphalt or ground surfaces, whether inside or outside a building, except in such a manner as to ensure that any spilled fluid will be in an area of secondary containment. Leaking vehicle fluids shall be contained or drained from the vehicle immediately. ❑ No person shall leave unattended drip parts or other open containers containing vehicle fluid, unless such containers are in use or in an area of secondary containment. Refer to "Automotive Maintenance & Car Care Best Management Practices for Auto Body Shops, Auto Repair Shops, Car Dealerships, Gas Stations and Fleet Service Operations". Brochure can be found at http://rcflood.org/stormwater/ Refer to Outdoor Cleaning Activities and Professional Mobile Service Providers for many of the Potential Sources of Runoff Pollutants categories below. Brochure can be found at http://rcflood.org/stormwater/

IF THESE SOURCES WILL BE ON THE PROJECT SITE …	… THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
❑ **L.** Fuel Dispensing Areas	❑ Fueling areas[6] shall have impermeable floors (i.e., portland cement concrete or equivalent smooth impervious surface) that are: a) graded at the minimum slope necessary to prevent ponding; and b) separated from the rest of the site by a grade break that prevents run-on of stormwater to the maximum extent practicable. ❑ Fueling areas shall be covered by a canopy that extends a minimum of ten feet in each direction from each pump. [Alternative: The fueling area must be covered and the cover's minimum dimensions must be equal to or greater than the area within the grade break or fuel dispensing area[1].] The canopy [or cover] shall not drain onto the fueling area.		❑ The property owner shall dry sweep the fueling area routinely. ❑ See the Fact Sheet SD-30 , "Fueling Areas" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com

[6] The fueling area shall be defined as the area extending a minimum of 6.5 feet from the corner of each fuel dispenser or the length at which the hose and nozzle assembly may be operated plus a minimum of one foot, whichever is greater.

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
❑ **M.** Loading Docks	❑ Show a preliminary design for the loading dock area, including roofing and drainage. Loading docks shall be covered and/or graded to minimize run-on to and runoff from the loading area. Roof downspouts shall be positioned to direct stormwater away from the loading area. Water from loading dock areas shall be drained to the sanitary sewer, or diverted and collected for ultimate discharge to the sanitary sewer. ❑ Loading dock areas draining directly to the sanitary sewer shall be equipped with a spill control valve or equivalent device, which shall be kept closed during periods of operation. ❑ Provide a roof overhang over the loading area or install door skirts (cowling) at each bay that enclose the end of the trailer.		❑ Move loaded and unloaded items indoors as soon as possible. ❑ See Fact Sheet SC-30, "Outdoor Loading and Unloading," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

IF THESE SOURCES WILL BE ON THE PROJECT SITE …	… THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 **Potential Sources of Runoff Pollutants**	2 **Permanent Controls—Show on WQMP Drawings**	3 **Permanent Controls—List in WQMP Table and Narrative**	4 **Operational BMPs—Include in WQMP Table and Narrative**
☒ **N.** Fire Sprinkler Test Water		☒ Provide a means to drain fire sprinkler test water to the sanitary sewer.	☒ See the note in Fact Sheet SC-41, "Building and Grounds Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com
O. Miscellaneous Drain or Wash Water or Other Sources ❑ Boiler drain lines ❑ Condensate drain lines ❑ Rooftop equipment ❑ Drainage sumps ☒ Roofing, gutters, and trim. ❑ Other sources		❑ Boiler drain lines shall be directly or indirectly connected to the sanitary sewer system and may not discharge to the storm drain system. ❑ Condensate drain lines may discharge to landscaped areas if the flow is small enough that runoff will not occur. Condensate drain ☒ lines may not discharge to the storm drain system. Rooftop equipment with potential to produce pollutants shall be ❑ roofed and/or have secondary containment. Any drainage sumps on-site shall ❑ feature a sediment sump to reduce the quantity of sediment in pumped water. ☒ Avoid roofing, gutters, and trim made of copper or other unprotected metals that may leach into runoff. Include controls for other sources as specified by local reviewer.	

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 **Potential Sources of Runoff Pollutants**	2 **Permanent Controls—Show on WQMP Drawings**	3 **Permanent Controls—List in WQMP Table and Narrative**	4 **Operational BMPs—Include in WQMP Table and Narrative**
❑ **P.** Plazas, sidewalks, and parking lots.			❑ Sweep plazas, sidewalks, and parking lots regularly to prevent accumulation of litter and debris. Collect debris from pressure washing to prevent entry into the storm drain system. Collect washwater containing any cleaning agent or degreaser and discharge to the sanitary sewer not to a storm drain.

Appendix 9: O&M

Operation and Maintenance Plan and Documentation of Finance, Maintenance and Recording Mechanisms

Operation and Management documentation will be provided with the final design report.

Appendix 10: Educational Materials

BMP Fact Sheets, Maintenance Guidelines and Other End-User BMP Information

Education Materials documentation will be provided with the final design report.

Stormwater and the Construction Industry

Protect Natural Features

Bad

Good

- Minimize clearing.
- Minimize the amount of exposed soil.
- Identify and protect areas where existing vegetation, such as trees, will not be disturbed by construction activity.
- Protect streams, stream buffers, wild woodlands, wetlands, or other sensitive areas from any disturbance or construction activity by fencing or otherwise clearly marking these areas.

Construction Phasing

- Sequence construction activities so that the soil is not exposed for long periods of time.
- Schedule or limit grading to small areas.
- Install key sediment control practices before site grading begins.
- Schedule site stabilization activities, such as landscaping, to be completed immediately after the land has been graded to its final contour.

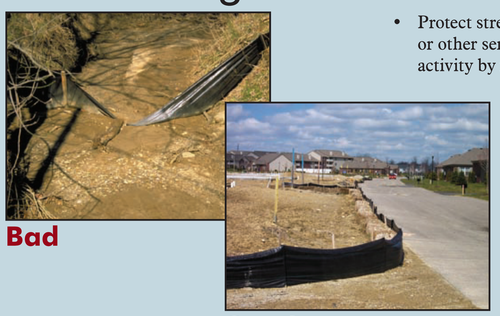
Vegetative Buffers

Bad

Good

- Protect and install vegetative buffers along waterbodies to slow and filter stormwater runoff.
- Maintain buffers by mowing or replanting periodically to ensure their effectiveness.

Silt Fencing



Bad

Good

- Inspect and maintain silt fences after each rainstorm.
- Make sure the bottom of the silt fence is buried in the ground.
- Securely attach the material to the stakes.
- Don't place silt fences in the middle of a waterway or use them as a check dam.
- Make sure stormwater is not flowing around the silt fence.

Maintain your BMPs!

IN RIVERSIDE COUNTY....Call 1-800-506-2555

TO REPORT ILLEGAL STORMDRAIN DISPOSAL

E-mail: Flood.fcnpdes@co.riverside.ca.us

Visit our website: www.floodcontrol.co.riverside.ca.us

Brought to you by the Storm Water/Clean Water Pollution Protection Program.....

REMEMBER, ONLY RAIN IN THE STORMDRAIN!

Site Stabilization

Bad

Good

- Vegetate, mulch, or otherwise stabilize all exposed areas as soon as land alterations have been completed.

Construction Entrances

Bad

Good

- Remove mud and dirt from the tires of construction vehicles before they enter a paved roadway.
- Properly size entrance BMPs for all anticipated vehicles.
- Make sure that the construction entrance does not become buried in soil.

Slopes

Bad

Good

- Rough grade or terrace slopes.
- Break up long slopes with sediment barriers, or under drain, or divert stormwater away from slopes.

Dirt Stockpiles

Bad

Good

- Cover or seed all dirt stockpiles.

Storm Drain Inlet Protection

Bad

Good

- Use rock or other appropriate material to cover the storm drain inlet to filter out trash and debris.
- Make sure the rock size is appropriate (usually 1 to 2 inches in diameter).
- If you use inlet filters, maintain them regularly.

www.epa.gov/npdes/menuofbmps

Stormwater and the Construction Industry

Planning and Implementing Erosion and Sediment Control Practices

The construction industry is a critical participant in the nation's efforts to protect streams, rivers, lakes, wetlands, and oceans. Through the use of best management practices (BMPs), construction site operators are the key defense against erosion and sedimentation.

As stormwater flows over a construction site, it picks up pollutants like sediment, debris, and chemicals. High volumes of stormwater can also cause stream bank erosion, and destroy downstream aquatic habitat. Preventing soil erosion and sedimentation is an important responsibility at all construction sites.

In addition to the environmental impact, uncontrolled erosion can have a significant financial impact on a construction project. It costs money and time to repair gullies, replace vegetation, clean sediment-clogged storm drains, replace poorly installed BMPs, and mitigate damage to other people's property or to natural resources.

Best Management Practice (BMP)
A BMP is a method used to prevent or control stormwater runoff and the discharge of pollutants, including sediment, into local waterbodies. Silt fences, inlet protection, and site-stabilization techniques are typical BMPs on a construction site.

Operator
An operator is someone who has control over and the ability to modify construction plans and specifications (e.g. owner, general contractor)

or

Someone who has control over the day-to-day operations at a site (e.g., owner, general contractor) that are necessary to ensure compliance with the permit requirements. It is the responsibility of a construction site owner or operator to contain stormwater runoff and prevent erosion during **all** stages of a project.

There may be more than one person at a site who meets these definitions and must apply for permit coverage. (States may have different definitions of the term "operator.")

So what's being done about polluted runoff?

The Clean Water Act includes the National Pollutant Discharge Elimination System (NPDES) permitting program. As of January 2003, 44 states and territories are authorized to issue NPDES stormwater permits. If your state isn't authorized to operate the NPDES stormwater permit program, EPA issues the permits. Permits vary from state to state, so contact your state or EPA for specific information. Your permitting authority has specific information on your state's NPDES stormwater permit program. In general, construction permits require construction operators to do all of the following:

- Develop and implement a stormwater pollution prevention plan
- Submit a permit application or notice of intent (NOI)
- Comply with the permit, including maintaining BMPs and inspecting the site

Under the NPDES program, construction activities that disturb 1 or more acres are required to obtain stormwater permit coverage. States have different names for the plans that construction operators must develop, such as

- Stormwater pollution prevention plan
- Erosion and sediment control plan
- Erosion control and stormwater management plan
- Stormwater management plan
- Water pollution control plan
- Pollution prevention plan

This document uses the term "*Plan*."

I think I need a permit... Where do I start?

All land-disturbing activities, including clearing, grading, and excavation, that disturb **1 or more acres** are required to be covered under a state or EPA-issued NPDES construction stormwater permit **prior to land disturbance**. Permit requirements vary by state. Begin by researching the specific requirements in your state. You might already be subject to local erosion and sediment control requirements, but that doesn't release you from the requirements of the NPDES program at the state or EPA level. Although you must comply with both sets of requirements, in most cases they have been designed to be complementary. Contact your permitting authority to find out exactly what you need to do. A good place to start your search is the Construction Industry Compliance Assistance web site at http://www.envcap.org/cica.

The NPDES permit requirements include small construction activities that are part of a larger common plan of development or sale, such as a single lot within a larger subdivision. For developments with multiple operators, all operators must have permit coverage for their individual parts of the larger development, no matter how large or small each operation happens to be. When there are multiple operators at one site, they're encouraged to develop and share one comprehensive Plan and obtain permit coverage as co-permitees.

The **owner or operator** of the construction site is responsible for complying with the requirements of the permit. Responsibilities include developing a Plan, obtaining permit coverage, implementing BMPs, and stabilizing the site at the end of the construction activity.

Construction sites that discharge unpermitted stormwater are in violation of the Clean Water Act and may be subject to fines of up to $27,500 a day per violation.

Determine your eligibility

All construction activity that disturbs 1 or more acres of land, as well as activity that disturbs less than 1 acre but is part of a larger common plan of development, must obtain permit coverage.

Read and understand your stormwater permit requirements

Get a copy of the permit for construction activities and a permit application (or notice of intent form) from your state or EPA permitting authority.

Develop a Plan

Most states do not require you to submit your Plan. However, you do need to keep the Plan on site. If that's impractical, you may post a notice that tells where the Plan is kept so it can be accessed by the permitting authority and other interested parties.

You'll need to post a copy of your completed application on site. Put it in a place where the public can see it so they'll know your site is covered by an NPDES permit!

Apply for permit coverage

Once you understand your permit requirements and have developed a Plan, you can submit a stormwater permit application (or notice of intent) to your permitting authority. This must be done before beginning any land disturbance on the site. Some states require a few days of lead time, so check with your permitting authority. Once you've submitted the application, you must satisfy the conditions of the permit.

Implement the Plan

Be prepared to implement the BMPs in your Plan before construction begins. Ensure that BMPs are properly maintained, and upgrade and repair them as necessary.

Developing and Implementing a Plan

You must have a Plan that includes erosion and sediment control and pollution prevention BMPs. These Plans require

- Advance planning and training to ensure proper implementation of the BMPs
- Erosion and sediment control BMPs in place until the area is permanently stabilized
- Pollution prevention BMPs to keep the construction site "clean"
- Regular inspection of the construction site to ensure proper installation and maintenance of BMPs

Fortunately, the practices and measures that must be included in your Plan are already part of the standard operating procedures at many construction sites.

Six steps are associated with developing and implementing a stormwater Plan. There's a wealth of information available on developing pollution prevention plans. Please contact your permitting authority for help in finding additional guidance materials, or visit www.epa.gov/npdes/stormwater. A sample construction plan is available at www.epa.gov/npdes/pubs/sample_swppp.pdf.

1. *Site Evaluation and Design Development*

- **Collect site information**
- **Develop site plan design**
- **Prepare pollution prevention site map**

The first step in preparing a Plan is to define the characteristics of the site and the type of construction that will occur. This involves collecting site information, identifying natural features that should be protected, developing a site plan design, describing the nature of the construction activity, and preparing a pollution prevention site map.

2. *Assessment*

- **Measure the site area**
- **Determine the drainage areas**
- **Calculate the runoff coefficient**

The next step is assessing the impact the project will have on stormwater runoff. Determine the drainage areas and estimate the runoff amounts and velocities. For more information on calculatng the runoff coefficient, go to www.epa.gov/npdes/pubs/chap02_conguide.pdf, page 11.

3. *Control Selection and Plan Design*

- **Review and incorporate state or local requirements**
- **Select erosion and sediment controls**
- **Select other controls**
- **Select stormwater management controls**
- **Indicate the location of controls on the site map**
- **Prepare an inspection and maintenance plan**
- **Coordinate controls with construction activity**
- **Prepare sequence of major activities**

In the third step you'll actually document your procedures to prevent and control polluted stormwater runoff. You must delineate areas that will not be disturbed, including critical natural areas like streamside areas, floodplains, and trees. You must also identify the measures (or BMPs) you'll use to protect these areas.

Phasing your project to minimize the amount of exposed soil at any given time is a highly effective way to prevent erosion. Erosion control measures designed to prevent soil from being mobilized include diversions to route stormwater away from exposed soils and stabilization with vegetation, mulch, and geotextiles. Sedimentation control measures designed to remove sediment from stormwater or prevent it from leaving the site include silt fences, sediment traps, and diversions.

You'll need to select erosion and sediment controls—including stabilization measures for protecting disturbed areas and structural controls for diverting run-off and removing sediment—that are appropriate for your particular site. The appropriateness of the control measures will depend on several factors, but will be influenced most directly by the site characteristics. Some stabilization measures you might consider are temporary seeding, permanent seeding, and mulching. Structural control measures include earth dikes, silt fences, and sediment traps. No single BMP will meet all of the erosion and sedimentation control needs of a construction site. A combination of BMPs is necessary. For more information on the types of BMPs appropriate for your construction site, see the BMP fact sheet series available at www.epa.gov/npdes/menuofbmps.

Soil erosion control tips...

- Design the site to infiltrate stormwater into the ground and to keep it out of storm drains. Eliminate or minimize the use of stormwater collection and conveyance systems while maximizing the use of stormwater infiltration and bioretention techniques.
- Minimize the amount of exposed soil on site.
  - To the extent possible, plan the project in stages to minimize the amount of area that is bare and subject to erosion. The less soil exposed, the easier and cheaper it will be to control erosion.
  - Vegetate disturbed areas with permanent or temporary seeding immediately upon reaching final grade.
  - Vegetate or cover stockpiles that will not be used immediately.
- Reduce the velocity of stormwater both onto and away from the project area.
  - Interceptors, diversions, vegetated buffers, and check dams are a few of the BMPs that can be used to slow down stormwater as it travels across and away from the project site.
  - Diversion measures can also be used to direct flow away from exposed areas toward stable portions of the site.
  - Silt fences and other types of perimeter filters should never be used to reduce the velocity of runoff.
- Protect defined channels immediately with measures adequate to handle the storm flows expected.
  - Sod, geotextile, natural fiber, riprap, or other stabilization measures should be used to allow the channels to carry water without causing erosion. Use softer measures like geotextile or vegetation where possible to prevent downstream impacts.
- Keep sediment on site.
  - Place aggregate or stone at construction site vehicle exits to accommodate at least two tire revolutions of large construction vehicles. Much of the dirt on the tires will fall off before the vehicle gets to the street.
  - Regular street sweeping at the construction entrance will prevent dirt from entering storm drains. Do not hose paved areas.
  - Sediment traps and basins are temporary structures and should be used in conjunction with other measures to reduce the amount of erosion.
- Maintaining all BMPs is critical to ensure their effectiveness during the life of the project.
  - Regularly remove collected sediment from silt fences, berms, traps, and other BMPs.
  - Ensure that geotextiles and mulch remain in place until vegetation is well established.
  - Maintain fences that protect sensitive areas, silt fences, diversion structures, and other BMPs.

Other BMPs and Activities to Control Polluted Runoff

You'll need to select other controls to address potential pollutant sources on your site. Construction materials, debris, trash, fuel, paint, and stockpiles become pollution sources when it rains. Basic pollution prevention practices can significantly reduce the amount of pollution leaving construction sites. The following are some simple practices that should be included in the Plan and implemented on site:

- Keep potential sources of pollution out of the rain as practicable (e.g., inside a building, covered with plastic or tarps, or sealed tightly in a leak-proof container).
- Clearly identify a protected, lined area for concrete truck washouts. This area should be located away from streams, storm drain inlets, or ditches and should be cleaned out periodically.
- Park, refuel, and maintain vehicles and equipment in one area of the site to minimize the area exposed to possible spills and fuel storage. This area should be well away from streams, storm drain inlets, or ditches. Keep spill kits close by and clean up any spills or leaks immediately, including spills on pavement or earthen surfaces.
- Practice good housekeeping. Keep the construction site free of litter, construction debris, and leaking containers. Keep all waste in one area to minimize cleaning.
- Never hose down paved surfaces to clean dust, debris, or trash. This water could wash directly into storm drains or streams. Sweep up materials and dispose of them in the trash. Never bury trash or debris!
- Dispose of hazardous materials properly.

4. *Certification and Notification*

- **Certify the Plan**
- **Submit permit application or notice of intent**

Once the Plan has been developed, an authorized representative must sign it. Now is the time to submit the permit application or notice of intent. Your permit might require that the Plan be kept on site, so be sure to keep it available for the staff implementing the Plan.

Erosion and sedimentation control practices are only as good as their installation and maintenance.

5. *Implementing and Maintaining a Plan*

- **Implement controls**
- **Inspect and maintain controls**
- **Update/change the Plan**
- **Report releases of hazardous materials**

A Plan describes the practices and activities you'll use to prevent stormwater contamination and meet the NPDES permit requirements. Make sure that the Plan is implemented and that the Plan is updated as necessary to reflect changes on the site.

Erosion and sedimentation control practices are only as good as their installation and maintenance. Train the contractors that will install the BMPs and inspect immediately to ensure that the BMPs have been installed correctly.

Regularly inspect the BMPs (especially before and after rain events) and perform any necessary repairs or maintenance immediately. Many BMPs are designed to handle a limited amount of sediment. If not maintained, they'll become ineffective and a source of sediment pollution.

It's also important to keep records of BMP installation, implementation, and maintenance. Keep track of major grading activities that occur on the site, when construction activities cease (temporarily or permanently), and when a site is temporarily or permanently stabilized.

If construction plans change at any time, or if more appropriate BMPs are chosen for the site, update the Plan accordingly.

6. *Completing the Project: Final Stabilization and Termination of the Permit*

- **Final stabilization**
- **Notice of Termination**
- **Record retention**

Many states and EPA require a Notice of Termination (NOT) or other notification signifying that the construction activity is completed. An NOT is required when

- Final stabilization has been achieved on all portions of the site for which the permittee is responsible.
- Another operator has assumed control over all areas of the site that have not been finally stabilized. That operator would need to submit a new permit application to the permitting authority.
- For residential construction only, temporary stabilization of a lot has been completed prior to transference of ownership to the homeowner, with the homeowner being made aware of the need to perform final stabilization.

Permittees must keep a copy of their permit application and their Plan for at least 3 years following final stabilization. This period may be longer depending on state and local requirements.

Preconstruction Checklist

- A site description, including
  - Nature of the activity
  - Intended sequence of major construction activities
  - Total area of the site
  - Existing soil type and rainfall runoff data
  - A site map with:
    - Drainage patterns
    - Approximate slopes after major grading
    - Area of soil disturbance
    - Outline of areas which will not be disturbed
    - Location of major structural and nonstructural soil erosion controls
    - Areas where stabilization practices are expected to occur
    - Surface waters
    - Stormwater discharge locations
  - Name of the receiving water(s)
- A description of controls:
  - Erosion and sediment controls, including
    - Stabilization practices for all areas disturbed by construction
    - Structural practices for all drainage/discharge locations
  - Stormwater management controls, including
    - Measures used to control pollutants occurring in stormwater discharges after construction activities are complete
    - Velocity dissipation devices to provide nonerosive flow conditions from the discharge point along the length of any outfall channel
  - Other controls, including
    - Waste disposal practices that prevent discharge of solid materials
    - Measures to minimize offset tracking of sediments by construction vehicles
    - Measures to ensure compliance with state or local waste disposal, sanitary sewer, or septic system regulations
  - Description of the timing during the construction when measures will be implemented
- State or local requirements incorporated into the Plan
- Inspection and maintenance procedures for control measures identified in the Plan
- Contractor certification and Plan certification

Implementation Checklist

- Maintain records of construction activities, including
  - Dates when major grading activities occur
  - Dates when construction activities temporarily cease on the site or a portion of the site
  - Dates when construction activities permanently cease on the site or a portion of the site
  - Dates when stabilization measures are completed on the site
- Prepare inspection reports summarizing
  - Name of person conducting BMP inspections
  - Qualifications of person conducting BMP inspections
  - BMPs/areas inspected
  - Observed conditions
  - Necessary changes to the Plan
- Report releases of reportable quantities of oil or hazardous materials
  - Notify the National Response Center at 800-424-8802 immediately
  - Report releases to your permitting authority immediately, or as specified in your permit. You must also provide a written report within 14 days.
  - Modify the Plan to include
    - The date of release
    - Circumstances leading to the release
    - Steps taken to prevent reoccurrence of the release
- Modify Plan as necessary
  - Incorporate requests of the permitting authority to bring the Plan into compliance
  - Address changes in design, construction operation, or maintenance that affect the potential for discharge of pollutants

An ounce of prevention is worth a pound of cure! It's far more efficient and cost-effective to prevent pollution than it is to try to correct problems later. Installing and maintaining simple BMPs and pollution prevention techniques on site can greatly reduce the potential for stormwater pollution and can also save you money!

Visit www.epa.gov/npdes/stormwater for more information.

StormWater CleanWater PROTECTION PROGRAM

Resources

State Water Resources Control Board
Division of Water Quality
1001 I Street
Sacramento CA 95814
(916) 341-5455
www.swrcb.ca.gov/stormwtr/

Colorado River Basin Regional Water
Quality Control Board - Region 7
73-720 Fred Waring Drive, Suite 100
Palm Desert, CA 92260
(760) 346-7491
www.swrcb.ca.gov/~rwqcb7/

Santa Ana Regional Water
Quality Control Board - Region 8
3737 Main Street, Suite 500
Riverside, CA 92501-3348
(909) 782-4130
www.swrcb.ca.gov/~rwqcb8/

San Diego Regional Water
Quality Control Board - Region 9
9771 Clairemont Mesa Blvd., Suite A
San Diego, CA 92124
(858) 467-2952
www.swrcb.ca.gov/~rwqcb9/

To report a hazardous materials spill, call:

Riverside County Hazardous Materials
Emergency Response Team
(909) 358-5055 8:00 a.m. – 5:00 p.m.
(909) 358-5245 after 5:00 p.m.

In an emergency call: **911**

For recycling and hazardous waste disposal, call:

(909) 358-5055

To report an illegal dumping or a clogged storm drain, call:

1-800-506-2555

To order additional brochures or to obtain information on other pollution prevention activities, please call (909) 955-1200 or visit the StormWater/CleanWater Protection Program website at:
www.co.riverside.ca.us/depts/flood/waterquality npdes.asp

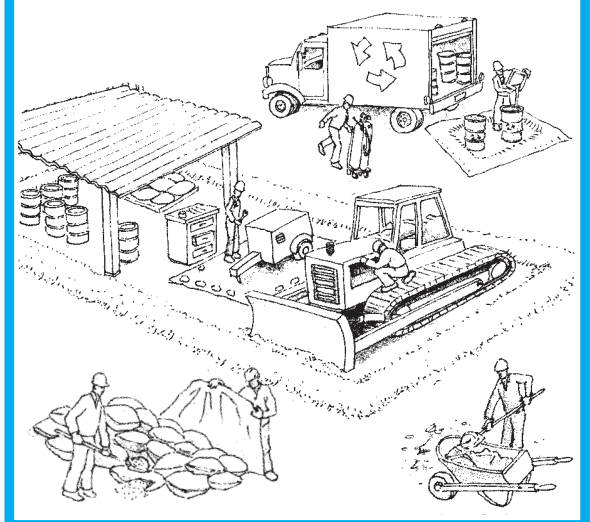
StormWater CleanWater
PROTECTION PROGRAM

The StormWater/CleanWater Protection Program gratefully acknowledges the Santa Clara Valley Nonpoint Pollution Control Program, Alameda Countywide CleanWater Program and the City of Los Angeles Stormwater Management Division for information provided in this brochure.

StormWater Pollution

What you should know for...

GENERAL CONSTRUCTION & SITE SUPERVISION



Best Management Practices (BMPs) for:

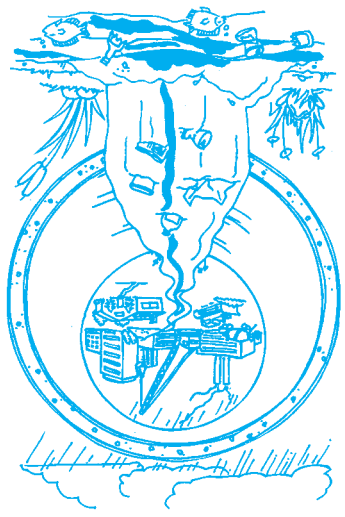
- Developers
- General Contractors
- Home Builders
- Construction Inspectors
- Anyone in the construction business

StormWater Pollution . . . What You Should Know

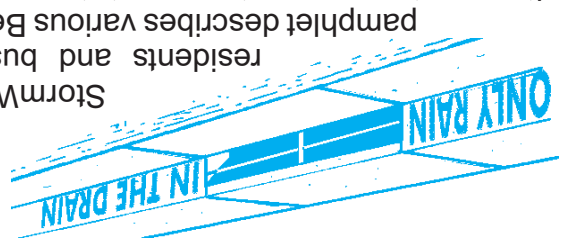
Riverside County has two drainage systems - sewers and storm drains. The storm drain system was designed to reduce flooding by carrying excess rainwater away from streets and developed areas. Since the storm drain system does not provide for water treatment, it also serves the *unintended* function of transporting pollutants directly to our local waterways.

Unlike sanitary sewers, storm drains are not connected to a wastewater treatment plant – they flow directly to our local streams, rivers and lakes.

Stormwater runoff is a part of the natural hydrologic process. However, land development and construction activities can significantly alter natural drainage processes and introduce pollutants into stormwater runoff. Polluted stormwater runoff from construction sites has been identified as a major source of water pollution in California. It jeopardizes the quality of our local waterways and can pose a serious threat to the health of our aquatic ecosystems.



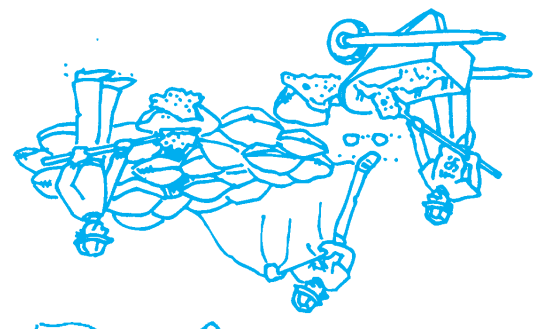
The Cities and County of Riverside StormWater/CleanWater Protection Program

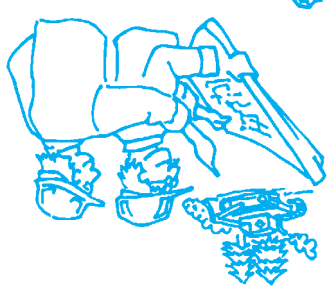


Because preventing pollution is much easier and less costly than cleaning up "after the fact," the Cities and County of Riverside StormWater/CleanWater Protection Program informs residents and businesses on pollution prevention activities. This pamphlet describes various Best Management Practices (BMPs) that construction site operators can use to prevent stormwater pollution.

In accordance with applicable federal and state law, the Cities and County of Riverside have adopted ordinances for stormwater management and discharge control that **prohibit** the discharge of pollutants into the storm drain system or local surface water. This includes discharges from construction sites containing sediment, concrete, mortar, paint, solvents, lubricants, vehicle fluids, fuel, pesticides, and construction debris.

PLEASE NOTE: The Federal, State and local regulations strictly prohibit the discharge of sediment and pollutants into the streets, the storm drain system or waterways. As an owner, operator or supervisor of a construction site, you may be held financially responsible for any environmental damage caused by your subcontractors or employees.





STORMWATER POLLUTION FROM CONSTRUCTION ACTIVITIES

The two most common sources of stormwater pollution problems associated with construction activities are ***erosion*** and ***sedimentation***. Failure to maintain adequate erosion and sediment controls at construction sites often results in sediment discharges into the storm drain system, creating multiple problems once it enters local waterways.

Construction vehicles and heavy equipment can also track significant amounts of mud and sediment onto adjacent streets. Additionally, wind may transport construction materials and wastes into streets storm drains, or directly into our local waterways.

What Should You Do?

Advance Planning to Prevent Pollution

- ❑ Remove existing vegetation only as needed.
- ❑ Schedule excavation, grading, and paving operations for dry weather periods, if possible.
- ❑ Designate a specific area of the construction site, well away from storm drain inlets or watercourses, for material storage and equipment maintenance.
- ❑ Develop and implement an effective combination of erosion and sediment controls for the construction site.
- ❑ Practice source reduction by ordering only the amount of materials that are needed to finish the project.
- ❑ Educate your employees and subcontractors about stormwater management requirements and their pollution prevention responsibilities.
- ❑ Control the amount of surface runoff at the construction site by impeding internally generated flows and using berms or drainage ditches to direct incoming offsite flows to go around the site. ***Note:*** *Consult local drainage policies for more information.*

Best Management Practices

The following Best Management Practices (BMPs) can significantly reduce pollutant discharges from your construction site. Compliance with stormwater regulations can be as simple as minimizing stormwater contact with potential pollutants by providing covers and secondary containment for construction materials, designating areas away from storm drain systems for storing equipment and materials and implementing good housekeeping practices at the construction site.

- ❑ Protect all storm drain inlets and streams located near the construction site to prevent sediment-laden water from entering the storm drain system.
- ❑ Limit access to and from the site. Stabilize construction entrances/exits to minimize the track out of dirt and mud onto adjacent streets. Conduct frequent street sweeping.
- ❑ Protect stockpiles and construction materials from winds and rain by storing them under a roof, secured impermeable tarp or plastic sheeting.
- ❑ Avoid storing or stockpiling materials near storm drain inlets, gullies or streams.
- ❑ Phase grading operations to limit disturbed areas and duration of exposure.
- ❑ Perform major maintenance and repairs of vehicles and equipment offsite.
- ❑ Wash out concrete mixers only in designated washout areas at the construction site.
- ❑ Set-up and operate small concrete mixers on tarps or heavy plastic drop cloths.
- ❑ Keep construction sites clean by removing trash, debris, wastes, etc. on a regular basis.
- ❑ Clean-up spills immediately using dry clean-up methods (e.g., absorbent materials such as cat litter, sand or rags for liquid spills; sweeping for dry spills such as cement, mortar or fertilizer) and by removing the contaminated soil from spills on dirt areas. .
- ❑ Prevent erosion by implementing any or a combination of soil stabilization practices such as mulching, surface roughening, permanent or temporary seeding.
- ❑ Maintain all vehicles and equipment in good working condition. Inspect frequently for leaks, and repair promptly.
- ❑ Practice proper waste disposal. Many construction materials and wastes, including solvents, water-based paint, vehicle fluids, broken asphalt and concrete, wood, and cleared vegetation can be recycled. Materials that cannot be recycled must be taken to an appropriate landfill or disposed of as hazardous waste.
- ❑ Cover open dumpsters with secured tarps or plastic sheeting. Never clean out a dumpster by washing it down on the construction site.
- ❑ Arrange for an adequate debris disposal schedule to insure that dumpsters do not overflow.

General Construction Activities Stormwater Permit

(Construction Activities General Permit)

The State Water Resources Control Board (SWRCB) adopted a new Construction Activities General Permit (WQ Order No. 99-08DWQ) on August 19, 1999, superseding the now expired SWRCB statewide General Permit (WQ Order No. 92-08DWQ). This permit is administered and enforced by the SWRCB and the local Regional Water Quality Control Boards (RWQCB). The updated Construction Activities General Permit establishes a number of new stormwater management requirements for construction site operator.

NOTE: *Some construction activies stormwater permits are issued on a regional basis. Consult your local RWQCB to find out if your project requires coverage under any of these permits.*

Frequently Asked Questions:

Does my construction site require coverage under the Construction Activities General Permit?

Yes, if construction activity results in the disturbance of five or more acres of total land area or is part of a common plan of development that results in the disturbance of five or more acres.

How do I obtain coverage under the Construction Activities General Permit?

Obtain the permit package and submit the completed Notice of Intent (NOI) form to the SWRCB prior to grading or disturbing soil at the construction site. For ongoing construction activity involving a change of ownership, the new owner must submit a new NOI within 30 days of the date of change of ownership. The completed NOI along with the required fee should be mailed to the SWRCB.

What must I do to comply with the requirements of the Construction Activities General Permit?

- ● Implement BMPs for non-stormwater discharges year-round.
- ● Prepare and implement a Stormwater Pollution Prevention Plan (SWPPP) prior to commencing construction activities.
- ● Keep a copy of the SWPPP at the construction site for the entire duration of the project.
- ● Calculate the anticipated stormwater run-off.
- ● Implement an effective combination of erosion and sediment control on all soil disturbed areas.
- ● Conduct site inspections prior to anticipated storm events, every 24-hours during extended storm events, and after actual storm event.
- ● Perform repair and maintenance of BMPs as soon as possible after storm events depending upon worker safety.
- ● Update the SWPPP as needed, to manage pollutants or reflect changes in site conditions.
- ● Include description of post construction BMPs at the construction site, including parties responsible for long-term maintenance.

NOTE: *Please refer to the Construction Activities General Permit for detailed information. You may contact the SWRCB, your local RWQCB, or visit the SWRCB website at www.swrcb.ca.gov/stormwtr/ to obtain a State Construction Activities Stormwater General Permit packet.*

How long is this Construction Activities General Permit in effect?

The Permit coverage stays in effect untilyou submit a Notice of Termination (NOT) to the SWRCB. For the purpose of submitting a NOT, all soil disturbing activities have to be completed and one of the three following criteria has to be met:

1. Change of ownership;
2. A uniform vegetative cover with 70 percent coverage has been established; or,
3. Equivalent stabilization measures such as the use of reinforced channel liners, soil cement, fiber matrices, geotextiles, etc., have been employed.

Stormwater Pollution

What you should know for...

Industrial & Commercial Facilities

Best Management Practices (BMPS) for:

- Industrial Facilities
- Commercial Facilities

Riverside County Stormwater Program Members

City of Banning
(951) 922-3105

City of Beaumont
(951) 769-8520

City of Calimesa
(909) 795-9801

City of Canyon Lake
(951) 244-2955

City of Cathedral City
(760) 770-0340

City of Coachella
(760) 398-3502

City of Corona
(951) 736-2447

City of Desert Hot Springs
(760) 329-6411

City of Eastvale
(951) 361-0900

City of Hemet
(951) 765-2300

City of Indian Wells
(760) 346-2489

City of Indio
(760) 391-4000

City of Jurupa Valley
(951) 332-6464

City of Lake Elsinore
(951) 674-3124

City of La Quinta
(760) 777-7000

City of Menifee
(951) 672-6777

City of Moreno Valley
(951) 413-3000

City of Murrieta
(951) 304-2489

City of Norco
(951) 270-5607

City of Palm Desert
(760) 346-0611

City of Palm Springs
(760) 323-8299

City of Perris
(951) 943-6100

City of Rancho Mirage
(760) 324-4511

City of Riverside
(951) 826-5311

City of San Jacinto
(951) 487-7330

City of Temecula
(951) 694-6444

City of Wildomar
(951) 677-7751

Coachella Valley Water District
(760) 398-2651

County of Riverside
(951) 955-1000

Riverside County Flood Control District
(951) 955-1200

YOU can prevent Stormwater Pollution following these practices...

Industrial and Commercial Facilities

The Riverside County Stormwater Program has identified a number of Best Management Practices (BMPs) for Industrial and Commercial Facilities. These BMPs control and reduce stormwater pollutants from reaching our storm drain system and ultimately our local water bodies. City and County ordinances require businesses to use these BMPs to protect our water quality. Local cities and the County are required to verify implementation of these BMPs by performing regular facility inspections.

Prohibited Discharges

Discontinue all non-stormwater discharges to the storm drain system. It is *prohibited* to discharge any chemicals, paints, debris, wastes or wastewater into the gutter, street or storm drain.

Outdoor Storage BMPs

- Install covers and secondary containment areas for all hazardous materials and wastes stored outdoors in accordance with County and/or City standards.
- Keep all temporary waste containers covered, at all times when not in use.
- Sweep outdoor areas instead of using a hose or pressure washer.
- Move all process operations including vehicle/equipment maintenance inside of the building or under a covered and contained area.
- Wash equipment and vehicles in a contained and covered wash bay which is closed-loop or connected to a clarifier sized to local standards and discharged to a sanitary sewer or take them to a commercial car wash.

Spills and Clean Up BMPs

- Keep the work site clean and orderly. Remove debris in a timely fashion. Sweep up the area.
- Clean up spills immediately when they occur, using dry clean up methods such as absorbent materials or sweep followed by proper disposal of materials.
- Always have a spill kit available near chemical loading dock doors and vehicle maintenance and fueling areas.
- Follow your Business Emergency Plan, as filed with the local Fire Department.
- Report all prohibited discharges and non-implementation of BMPs to your local Stormwater Coordinator as listed on the back of this pamphlet.
- Report hazardous materials spills to 951-358-5055 or call after hours to 951-782-2973 or, if an emergency, call the Fire Department's Haz Mat Team at 911.

Plastic Manufacturing Facilities BMPs

AB 258 requires plastic product manufacturers to use BMPs, such as safe storage and clean-up procedures to prevent plastic pellets (nurdles) from entering the waterway. The plastic pellets are released into the environment during transporting, packaging and processing and migrate to waterways through the storm drain system. AB 258 will help protect fish and wildlife from the hazards of plastic pollution.

Training BMPs

As prescribed by your City and County Stormwater Ordinance(s), train employees in spill procedures and prohibit non-stormwater discharges to the storm drain system. Applicable BMP examples can be found at www.cabmphandbooks.com.

Permitting

Stormwater discharges associated with specific categories for industrial facilities are regulated by the State Water Resources Control Board through an Industrial Stormwater General Permit. A copy of this General Permit and application forms are available at: www.waterboards.ca.gov, select stormwater then the industrial quick link.

To report illegal dumping or for more information on stormwater pollution prevention call: 1-800-506-2555 or e-mail us at: fcnpdes@rcflood.org.

Landscaping and garden maintenance activities can be major contributors to water pollution. Soils, yard wastes, over-watering and garden chemicals become part of the urban runoff mix that winds its way through streets, gutters and storm drains before entering lakes, rivers, streams, etc. Urban runoff pollution contaminates water and harms aquatic life!

In Riverside County, report illegal discharges into the storm drain, call
1-800-506-2555
"Only Rain Down the Storm Drain"

Important Links:

Riverside County Household Hazardous Waste Collection Information
1-800-304-2226 or www.rivcowm.org

Riverside County Backyard Composting Program
1-800-366-SAVE

Integrated Pest Management (IPM) Solutions
www.ipm.ucdavis.edu

California Master Gardener Programs
www.mastergardeners.org
www.camastergardeners.ucdavis.edu

California Native Plant Society
www.cnps.org

The Riverside County "Only Rain Down the Storm Drain" Pollution Prevention Program gratefully acknowledges Orange County's Storm Water Program for their contribution to this brochure.

...Only Rain Down ...the Storm Drain

What you should know for... Landscape and Gardening

Best Management tips for:

- Professionals
- Novices
- Landscapers
- Gardeners
- Cultivators

Tips for Landscape & Gardening

This brochure will help you to get the most of your lawn and gardening efforts and keep our waterways clean. Clean waterways provide recreation, establish thriving fish habitats, secure safe sanctuaries for wildlife, and add beauty to our communities. NEVER allow gardening products or waste water to enter the street, gutter or storm drain.

General Landscaping Tips

- Protect stockpiles and materials from wind and rain by storing them under tarps or secured plastic sheeting.
- Prevent erosion of slopes by planting fast-growing, dense ground covering plants. These will shield and bind the soil.

- Plant native vegetation to reduce the amount of water, fertilizers and pesticides applied to the landscape.
- Never apply pesticides or fertilizers when rain is predicted within the next 48 hours.

Garden & Lawn Maintenance

- Do not overwater. Use irrigation practices such as drip irrigation, soaker hoses or micro-spray systems. Periodically inspect and fix leaks and misdirected sprinklers.
- Do not rake or blow leaves, clippings or pruning waste into the street, gutter or storm drain. Instead, dispose of green waste by composting, hauling it to a permitted landfill, or recycling it through your city's program.

- Consider recycling your green waste and adding "nature's own fertilizer" to your lawn or garden.
- Read labels and use only as directed. Do not over-apply pesticides or fertilizers. Apply to spots as needed, rather than blanketing an entire area.
- Store pesticides, fertilizers and other chemicals in a dry covered area to prevent exposure that may result in the deterioration of containers and packaging.
- Rinse empty pesticide containers and re-use rinse water as you would use the product. Do not dump rinse water down storm drains or sewers. Dispose of empty containers in the trash.
- When available, use non-toxic alternatives to traditional pesticides, and use pesticides specifically designed to control the pest you are targeting.
- Try natural long-term common sense solutions first. Integrated Pest Management (IPM) can provide landscaping guidance and solutions, such as:
  - **Physical Controls** - Try hand picking, barriers, traps or caulking holes to control weeds and pests.
  - **Biological Controls** - Use predatory insects to control harmful pests.
  - **Chemical Controls** - Check out www.ipm.ucdavis.edu before using chemicals. Remember, all chemicals should be used cautiously and in moderation.
- If fertilizer is spilled, sweep up the spill before irrigating. If the spill is liquid, apply an absorbent material such as cat litter, and then sweep it up and dispose of it in the trash.
- Take unwanted pesticides to a Household Waste Collection Center to be recycled.
- *Dumping toxics into the street, gutter or storm drain is illegal!*

www.bewaterwise.com Great water conservation tips and drought tolerant garden designs.

www.ourwaterourworld.com Learn how to safely manage home and garden pests.

Additional information can also be found on the back of this brochure.

Living on the Edge

Your community preserves habitat for important native plants and animals. By habitat, we mean homes; food, water, and places with space to live. The habitat is managed as part of a ***biological conservation easement*****,** a legal agreement that permanently limits its use.

Many conservation easements include a waterway or wetland because plants and animals need clean, fresh water, the most limited resource in our dry Southern California climate. A waterway (also called watercourse, arroyo, wash) conveys a flowing creek, stream, or river, which provides drinking water for local and migrating wildlife.

Not all of our waterways have visible flowing water year-round. Some creeks and streams continue to flow underground, while others flow for a short time after a storm (ephemeral). The small, and often dry washes are important to wildlife because they provide habitat and their periodic flows drain into larger waterways. It's essential that people do not degrade the quality of any water that reaches local waterways.

Water supports an abundance of vegetation and a variety of life, or *biodiversity.* Streamside vegetation, along dry or flowing waterways, is referred to as *riparian.* **Native** riparian plants provide **native** animals with suitable food, shelter, nesting sites and escape-cover from predators.

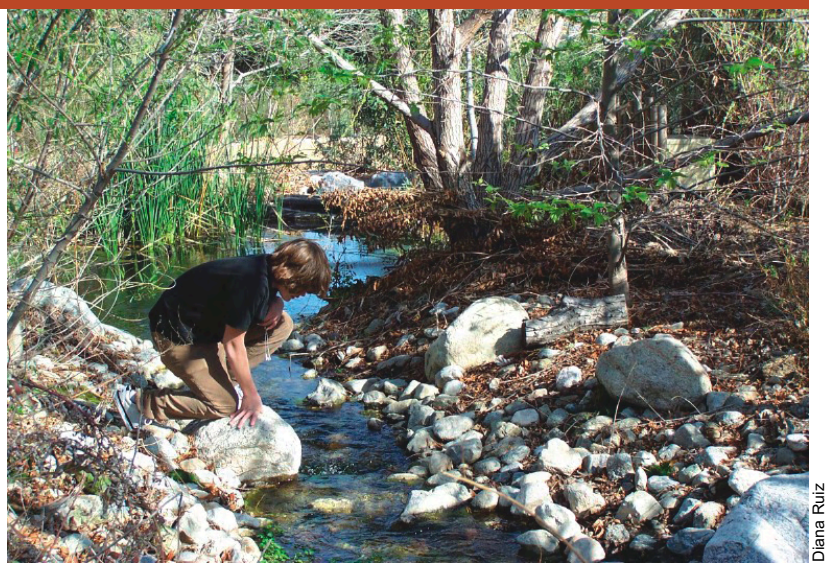
Help Your Wild Next-Door Neighbors

The purpose of this publication is to help homeowners become *habitat-friendly* neighbors for nearby habitat lands. The *Resources Directory*, inserted inside this booklet, provides helpful websites and contact information for agencies, organizations, gardens, and native plant nurseries.

Gerald & Buff Crosi, California Academy of Sciences

Unfortunately, our modern-day lifestyles have negative impacts on the environment around us. Human activity in, or near waterways can damage the capacity of the habitat to support some kinds of plant and animal life, especially species that do not adapt to urban/suburban conditions. Here are some ways to prevent and reduce negative impacts and help restore habitat to healthy conditions.

Reduce Impacts on Native Wildlife



Diana Ruiz

Prevent light, noise, and activity in, and adjacent to wetlands.

- If you wish to observe wildlife, please watch from afar, especially during the breeding and nesting season, from March to September. Most wild animals are naturally fearful of human contact. Human activity near a nest or den may frighten adult animals away from young and jeopardize their survival.
- When visiting natural areas, disturb as little as possible. Avoid walking or riding in a stream course or on channel banks. Heavy foot traffic, horses, and off-road vehicles may cause channel banks to collapse, accelerating erosion and increasing water-born sediment and turbidity.
- Help control entry into habitat areas. Close unessential roadways to prevent access for illegal dumping, trespass, and off-road vehicle use.
- Leave nothing behind.
- Focus necessary lighting downward and inward toward your home, yard, and buildings.
- To report poaching or polluting call CalTIP, Californians Turn In Poachers and Polluters, a confidential secret witness program. The toll free telephone number operates 24 hours a day, 7 days a week. (See the *Resources Directory* insert for contact information.)

USDA Natural Resources Conservation Service

Do not allow pets to roam in habitat land where they will disturb and hunt native wildlife. Keep pets on a leash and droppings out of waterways. Cats and dogs stress or kill wildlife and prevent natural ecosystems from supporting their own predators, such as hawks, coyotes, foxes, and bobcats. Conversely, domesticated animals face hazards in wild areas. Pets may be attacked by predators, such as coyotes and rattlesnakes, or may contract disease, fleas, and ticks.

Do not release unwanted animals into the wild. Abandoned cats, dogs, birds, reptiles and fish can have significant impacts on populations of native species, either through disease, predation or competition for food and space.

Lee Karney/ U.S. Fish and Wildlife Service

Brown-headed Cowbird

- Exotic invaders crowd out native species both on land and in water. Do not place fish, frogs, crayfish, turtles, or aquatic plants into creeks, streams or lakes. Some non-native species are not only able to survive, but also reproduce explosively due to a lack of natural predators. For example, the brown-headed cowbird is overwhelming riparian habitats. The cowbird lays its eggs in another bird's nest to the detriment of the host's young.

Mark A. Chappell

The endangered Least Bell's Vireo is threatened by the Brown-headed Cowbird.

- Pets are usually unable to survive in wildlands. They starve to death or are eaten. If you cannot find a home for a pet, contact animal control, your local animal shelter, or the Humane Society.

Respect and protect wild animals by keeping them wild. In some instances, being a good neighbor means protecting your living area by excluding certain kinds of wildlife, mainly mammals. The *human habitat* includes home sites, buildings, yards, gardens, and regularly used outdoor areas. Install fencing around the human habitat portion of your property and secure enclosures to protect children, pets, and farm animals.

- Do not take small animals, such as tortoises, tadpoles, frogs, snakes, birds, lizards or eggs from the wild. Never attempt to "adopt" or domesticate a wild animal.

- Discourage dangerous predators from penetrating human habitat areas. Install fencing that will exclude predators. Place sensors that trigger sprinklers and lights to deter predators and mammals from entering areas of human activity.

- Prevent mammals from living in and near your home by closing entries, filling holes, and removing brush, junk, and woodpiles near buildings.

- Don't feed human food to wildlife. Do not leave pet food outside. Prevent garbage from becoming a food source for wild mammals by sealing trash can lids. If you compost, use closed-containers or turn piles regularly. Compost plant material only; meat scraps should not be mixed in a compost pile.

R. H. Barrett/ U. S. Fish and Wildlife Service

For more information, contact the California Department of Fish and Game.
(See the *Resources Directory* insert for contact information.)

Reduce Impacts on Native Plants

Remove invasive, non-native plants from home landscaping and adjacent habitat lands, especially those that quickly spread through waterways, displacing important native species.

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Invasive Giant Reed (*Arrundo donax)* is being removed from Temescal Creek.

DO NOT PLANT

Giant reed	*Arundo donax*
Salt Cedar	*Tamarix chinensis*
Tree of Heaven	*Ailanthus altissima*
Red apple, heartleaf iceplant	*Aptenia cordifolia*
Fountain grass (yellow)	*Pennisetum setaceum*
Castor bean	*Ricinus communis*
Periwinkle	*Vinca major*
Peruvian (Calif.) pepper tree	*Schinus molle*
Brazilian pepper tree	*Schinus terebinthifolius*
Mexican fan palm	*Washingtonia robusta*
Sweet fennel	*Foeniculum vulgare*
Pampas grass/Jubata grass	*Cortaderia jubata/selloana*
Common iceplant	*Mesembryanthemum crystallinum*
Myoporum species	

Contact your local Resource Conservation District for help identifying invasive species and for removal of exotic weeds from waterways. Visit the California Invasive Plant Council web site for suggested plants to replace invasives. (See the *Resources Directory* insert for contact information.)

Protect Water Quality

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Make sure that the water that flows off your property is clean.

- Prevent trash, debris, and waste of any kind from washing off homesites and streets into gutters, storm drains, and dry washes. These drainage-ways empty into streams that flow to the Santa Ana River, and ultimately, the ocean.
- Evaluate the flow of runoff over your property. Place manure, barnyard bedding, and debris in areas where water does not pool or flow, or reuse the waste as fertilizer or mulch. Check with your local municipality for ordinances concerning the disposal of manure and bedding.
- Use care when applying fertilizers, pesticides, and herbicides on your property. Read labels “before you buy and before you apply” for directions, application rates, and disposal. Apply the correct amount at the proper time, for example, not during plant dormancy.

Praying mantis

Ladybird beetle

Lacewing

Photos by Greg Balmer

- Reduce or eliminate the use of pesticides by using “beneficial insects” (ladybugs, praying mantids, lacewings, etc.) If you must use a pesticide, use one with a *least-toxic* rating, such as insecticidal soaps, horticultural oils, pyrethrin-based insecticides, and insect growth regulators.
- Control erosion to prevent sediment from entering runoff.
- If you have a septic system, inspect and maintain it. Poorly placed and neglected septic systems contaminate groundwater and streams.

Pollutants that flow from residential and urban areas contaminate surface water and the water that percolates into underground water basins (aquifers). Much of our local water supply is pumped from underground aquifers, so keeping runoff clean is essential.

To report any non-emergency crime, such as dumping, please call your City Police or County Sheriff Departments. To report illegal grading or dumping in waterways, contact your City or County Code Enforcement Department. (See the *Resources Directory* insert for contact numbers.)

Dispose of waste in its proper place.

- Read product labels, and dispose of household hazardous wastes (oil based paints, pesticides, antifreeze, motor oil, batteries, flourescent bulbs, etc.) in prescribed ways and at designated disposal sites or community collection events, not on the ground or in a storm drain inlet. Whenever possible, reduce the use of hazardous materials in and around your home. Call the *Only Rain Down the Storm Drain* program for disposal dates and locations. (See the *Resources Directory* insert for contact numbers.) You can also recycle automotive fluids, tires, and batteries at car repair businesses.
- Dispose of trash at sanitary landfills.
- Compost yard and other organic wastes.

Diana Ruiz

Better yet:

Reduce,
Reuse,
Recycle.

Provide Space for Habitat, Fire, and Flood Protection

Robert Calvo

Siting Homes Near Waterways
If you are building next to a waterway, leave a buffer between the waterway and your *human habitat* area of graded pads, structures, and ornamental landscaping. *Wildlife habitat* land includes areas beyond buildings, yards, and defensible space (fire safety zones), generally to be left undisturbed for wildlife. A buffer between the human habitat and a waterway provides space for habitat, flood waters, and for wildlife escape during high water.

The buffer or "setback" distance will vary according to site conditions, however a minimum 100-foot setback from the **top edge** of a waterway, not from the water itself, is recommended. This allows space for creek/stream meander and high water flows. The banks of creeks and streams "meander", which means they are constantly "wandering" or relocating. Meander naturally occurs when flows cause erosion of channel banks and deposition of sediment.

As land is converted to urban uses, the volume of flow in waterways increases. Impervious surfaces from streets, roofs, and parking lots increase the amount of runoff, erosion and pollutants that degrade water quality.

Frank Heyming

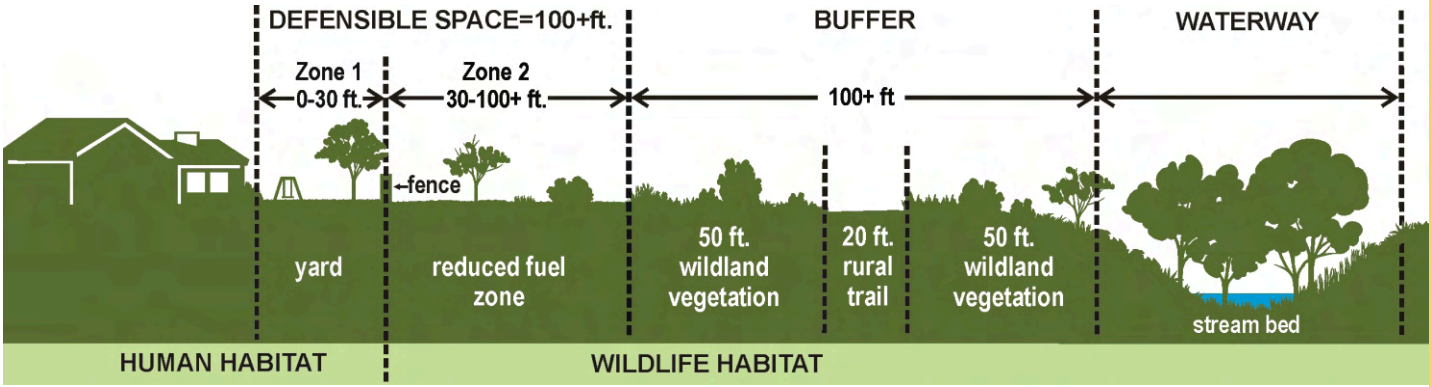
A house pad fills an important tributary to an waterway.

Many people are not aware of the vulnerability of natural ecosystems, nor are they aware that it is illegal to grade or alter a waterway without an assessment and permits from resource agencies and municipalities. If you propose an activity that will impact a stream, river, or lake, the California Department of Fish and Game (DFG) requires completion of a Streambed Alteration Agreement. Depending on the activity you are proposing, you may need to obtain a permit, agreement, or other authorization from one or more government agencies. Notify DFG, U.S. Army Corps of Engineers, and the Santa Ana Regional Water Quality Control Board during early planning, prior to beginning a project that will:

- use material from a streambed;
- divert, obstruct, or change the natural flow or the bed, channel, or bank of any river, stream, or lake;
- result in the disposal or deposition of debris, waste, or other natural material where it can pass into any river, stream, or lake.

A Streambed Alteration Agreement is also required for streams that flow intermittently, such as dry washes and waterways with subsurface flow.

It is essential that landowners do not confine, or encroach on waterways. Keep buildings, septic systems, horses, livestock, fencing, agricultural and ornamental plantings out of waterways and away from channel banks.



When building homes In fire-prone areas, avoid ridge tops and canyons. Set buildings back from the edge of steep slopes. Create a minimum distance of 100-feet of *defensible space,* a managed area around a home, where the amount of fuel (dead plants, dry leaves, wood) has been reduced. Consult with your local fire department or the California Department of Forestry and Fire Protection for fire safety and weed abatement information.
(Please see *Resources Directory* insert).

Habitat-friendly Yards

Len Nunney

Landscape with Locals. Not just any California native plant is suitable for landscapes near habitat lands. Local native plants are the safest because they have unique characteristics that have helped them survive in their specific environments. Gardening with local flora helps maintain the *genetic integrity* of local plants and ecosystems. It helps maintain regional variation in vegetation and wildlife.

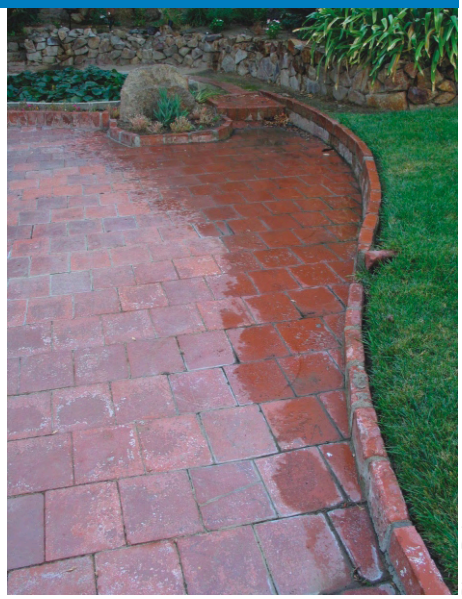
Why is regional variation important? If plants from other areas crossbreed with local natives, scientists fear that local populations would lose some of the unique characteristics that are important for success in this region. Their genetic material would no longer be unique and regionally identifiable. Plant interbreeding could reduce biological diversity, *biodiversity*, in the gene pool. There are important interactions between native plants, microorganisms, and the animals that use them, some of which are critical to the reproduction and survival of native plants and animals.

Create habitat in your yard for urban-adapted wildlife. Even if you live in the heart of a city, consider gardening for urban-adapted wildlife by providing a reliable water source and **local** native plants that provide food, shelter, and nesting sites. Each small patch of yard provides a stepping-stone of habitat from wildlands across the city. A patchwork of *habitat-yards* creates an urban ecosystem that more closely mimics our predevelopment, native landscape. When linked together, those patches cumulatively support biodiversity. To host a variety of native birds and butterflies in your yard, select plants that flower and fruit at different times of the year. Prune trees and shrubs in fall and early winter, rather than spring, to avoid destroying bird nests.

Benefits of landscaping with local native plants:

- **Most native plants are drought tolerant, so they require less water.**
- **Natives rarely require fertilizers.**
- **Patches of habitat support urban-adapted wildlife, such as birds, bats and insects that help pollinate plants.**
- **Natives rarely require pesticides. Native plants provide their own natural pest control by attracting beneficial insects that prey on troublesome bugs.**
- **Local natives help preserve *genetic diversity* and the integrity of local ecosystems.**

Water-wise Landscapes Conserve Water



Diana Ruiz

Reduce water-use by replacing unnecessary lawn areas with native or drought-tolerant plants and with hardscape (hard surfaces), such as walkways and patios of concrete, brick, stone, decomposed granite, and permeable paving. For places where you do need a lawn, such as play areas, plant a low water-use turf variety.

When selecting a plant, find out:

- Is it water-thirsty or drought-tolerant?
- When is its growing season; when will it need water?

Most* local native plants are dormant or slow-growing during the hot, dry summers; their growth occurs during our rainy season. Once established, many survive with rainfall alone. This is the opposite for non-native, ornamental landscapes that grow slowly, or not at all during winter, but require irrigation throughout the summer.

- Group plants with similar watering needs together, and install water-saving irrigation systems (drip, micro-sprayers) to apply the correct amount for each *hydro-zone* or plant grouping. Trees require deep irrigation and may need separate irrigation lines.
- Readjust your irrigation schedule for season and weather conditions. Turn off automatic systems when it's raining. Don't run sprinklers when the wind is blowing. Water deeply and only when needed. Water plants in the early morning or evening. Adjust irrigation systems to water soil, not concrete and pavement.
- Apply mulch (bark, compost, sawdust, gravel) to reduce evaporation from the soil surface and to control weeds.

For information about conserving water in landscapes and using native and drought tolerant plants, refer to plant databases, such as the one at bewaterwise.com. The website will also help you create a customized watering schedule for your yard. (See the *Resources Directory* insert for booklist and websites.)

*Not all native plants are dormant during summer: local riparian plants are the exception. They need water year round, as they are suited for waterways. Streamside vegetation, along dry or flowing waterways, is referred to as riparian.

Fire-wise Landscaping

Create a minimum distance of 100 ft. of *defensible space*, a landscape that deprives fire of fuel. Use fire-resistant plants and remove plants that are highly volatile.

Zone 1: Lean, Clean and Green

Zone 1 is from 0-30 ft. out from buildings. (See diagram on prior page.)
Grow plants that are small or succulent, such as irrigated lawns or ground covers and low growing, high-moisture shrubs. If you use native plants, use those that can be trimmed back during the dry season or that stay small with little trimming. Native plants that tolerate summer watering (see native plant lists) should be kept well hydrated.*

- Keep plants well hydrated to help them resist fire. Well-trimmed and watered plants are less likely to ignite than desiccated plants that have a buildup of dry stems and leaves.
- Fire needs fuel to burn, so remove any unnecessary plant materials. Prune dead wood and clean the landscape of dead plants, dry leaves, dry brush, firewood, and combustibles.
- Strategically place hard surfaces in your landscape, such as concrete, brick, or stone patios, driveways, pools, walls, and non-flammable decks, to interrupt the spread of fire to buildings.

Zone 2: Reduced Fuel

Create the reduced fuel zone beginning 30 ft. from buildings and extending 100 ft. or more, depending on steepness of slope and type/density of vegetation.

- Selectively remove large shrubby plants and dense groupings. Thin overcrowded plants. Mow grasses and weedy vegetation while they are green.
- Carefully remove excess plants without disturbing the soil; mow instead of disc, to prevent erosion and invasion of non-native plants.
- In chaparral plant communities, after thinning, reduce old, woody growth by cutting plants to their bases every few years, during the summer dormancy. Young plant tissues have higher moisture content and are less flammable. The heavy pruning eliminates mature, highly flammable vegetation but maintains root systems to protect the soil from erosion.
- Low branches and plants growing under trees create “ladders” for fire to climb. Eliminate ladder fuels, plants that serve as a link between grass and treetops. Prune the lower branches from the lower 1/3 of trees and shrubs. For trees or shrubs taller than 18 feet, prune the lower branches 6 feet above the ground. Remove dead leaves, twigs, and branches.
- In general, remove shrubs that are growing below trees, unless there is a space between the top of the shrub to the lowest branch of the tree that is three times the height of the shrub.

Remove plants that ignite easily and burn hot, such as those with volatile oils (sages) and those that accumulate fine woody branches or many small, dry leaves (chamise). In Zone 1, remove highly volatile plants (partial list below). In Zone 2, remove or widely space volatile plant types, including:

Chamise, *Adenostoma fasciculata*
Brittlebrush, *Encelia farinosa*
California buckwheat, *Eriogonum fasciculatum*
White sage, *Salvia apiana*
Some Eucalyptus and Acacia

Black sage, *Salvia mellifera*
Woolly blue curls, *Trichostema lanatum*
Mountain blue curls, *Trichostema parishii*
Red Shank, *Adenostoma sparsifolium*
All Pine, Cypress, Juniper, and Cedar species.

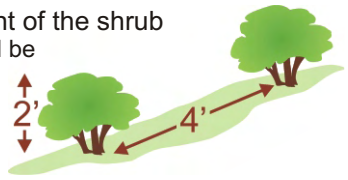
*For best results with native plants, water on overcast days during summer and fall.

Create Space Between Plants

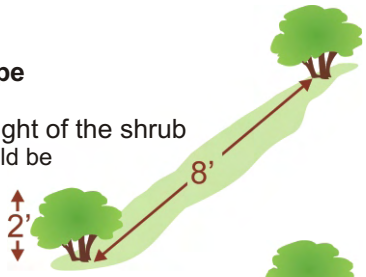
Shrubs

From edge of one shrub to the edge of the next.

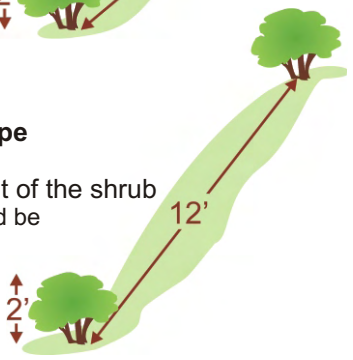
Flat to mild slope
(0% to 20% slope)
Two times (2x) the height of the shrub
(Two shrubs 2' high should be spaced 4' apart)



Mild to moderate slope
(20% to 40% slope)
Four times (4x) the height of the shrub
(Two shrubs 2' high should be spaced 8' apart)



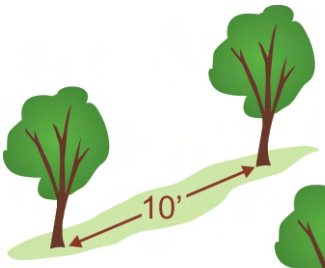
Moderate to steep slope
(greater than 40% slope)
Six times (6x) the height of the shrub
(Two shrubs 2' high should be spaced 12' apart)



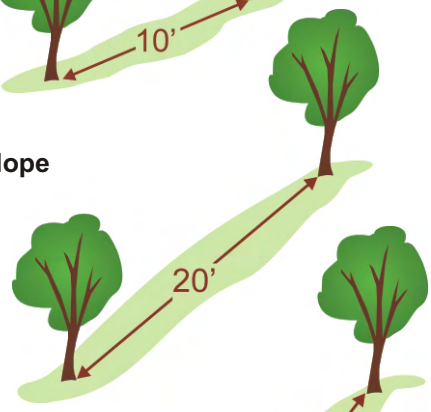
Trees

From edge of one tree canopy to the edge of the next.

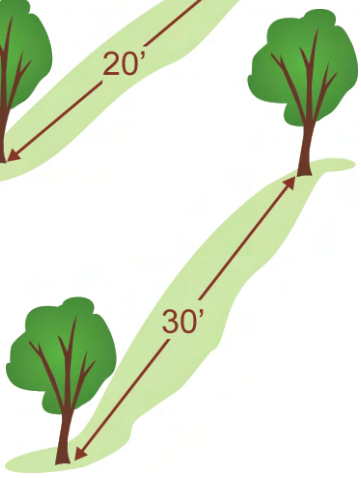
Flat to mild slope
(0% to 20% slope)



Mild to moderate slope
(20% to 40% slope)



Moderate to steep slope
(greater than 40% slope)



Horizontal clearance information from the California Department of Forestry and Fire Protection.

Prevent erosion and stabilize eroding areas. If you have exposed soil surfaces, cover with mulch, and landscape as soon as possible. (Plants break the impact of falling rain, and their roots hold soil in place.) Eroding soil becomes sediment in runoff water, which pollutes waterways. Disturbed soil also encourages the growth of non-native weed species.

Retain thinned, deep-rooted native plants to anchor the soil and maintain slope stability. Generally, tall plants have deep, broad root systems. A goal of fire-wise landscaping is to maximize rooting depth while minimizing fuel volume.

Diana Ruiz

For site-specific advice, contact your local Resource Conservation District (RCD) or the USDA Natural Resources Conservation Service (NRCS). For recommendations of native grasses for erosion control, contact the California Native Grasslands Society. (See the *Resources Directory* insert for contact information.)

Native Plants for Defensible Space Landscaping in the Inland Empire

If you prefer to create a landscape of native, low water-use plants, use these lists to design a yard that is fire-wise. Maintenance is essential; dead and dry plant material must be removed during dry, summer dormancy. Some native plants cannot tolerate irrigation during their summer dormancy, so may die if watered too frequently. Some need only infrequent, deep watering to remain hydrated during the dry summer and fall. The low-growing, low-fuel volume plants are suitable for Zone 1 (0-30 ft.) and beyond. Larger shrubs and trees, for Zone 2 (30-100+ ft.), must be widely spaced (see diagram on previous page).

Shrubs for Zone 2

Shrubs that need or tolerate water during summer.

Carpenteria, *Carpenteria californica*
Western redbud, *Cercis occidentalis*
Toyon, *Heteromeles arbutifolia*
Nevin's barberry, *Mahonia nevinii*
Coffeeberry, *Rhamnus californica*
Golden current, *Ribes aureum.*
California wild rose, *Rosa californica*
Western bridalwreath, *Spiraea douglasii*
Squawbush, *Rhus trilobata*

UDSA-NRCS PLANTS Database
Coffeeberry

Shrubs that do not usually tolerate water during summer.

Low shrubs

Bladder pod, *Isomeris arborea*
Bush monkeyflower, *Mimulus aurantiacus*
Chaparral honeysuckle, *Lonicera subspicata*
Hollyleaf redberry, *Rhamnus illicifolia*
Redberry, *Rhamnus crocea*
Yellow bush-penstemon, *Keckiella antirrhinoides*

Paul Aigner
Yellow bush-penstemon

Tall, deep-rooted shrubs that stay green during summer.

Bigberry manzanita, *Arctostaphylos glauca*
Thick-leaved lilac, *Ceanothus crassifolius*
Buck brush, *Ceanothus cuneatus*
Hairy California lilac, *Ceanothus oliganthus*
Mountain mahogany, *Cercocarpus betuloides*
Laurel sumac, *Malosma laurina*
Scrub oak, *Quercus berberidifolia*
Sugarbush, *Rhus ovata*
Lemonade berry, *Rhus integrifolia*
California Flannel bush, *Fremontodendron californicum*

Arlee M.Montalvo
Sugarbush

Trees for Zone 2

Trees that tolerate occasional water during summer.

Catalina cherry, *Prunus illicifolia* ssp. *Lyonii*
Coast live oak, *Quercus agrifolia*
Valley oak, *Quercus lobata*
Engelman oak, *Quercus engelmannii*

Trees that need water during summer.

Big leaf maple, *Acer macrophyllum*
White alder, *Alnus rombifolia*
So. California walnut, *Juglans californica*
California sycamore, *Platanus racemosa*
California black oak, *Quercus kelloggii*
Canyon live oak, *Quercus chrysolepis*
Willows: *Salix laevigata, S. gooddingii*
California bay laurel, *Umbellularia californica*

J. S. Peterson @ UDSA-NRCS
Big leaf maple

Low-growing, (low fuel volume) Plants for Zones 1 and 2

Perennial herbs that tolerate or need water during summer

Yarrow, *Achillea millifolium*
Columbine, *Aquilegia formosa*
Douglas iris, *Iris douglasiana*
Deer grass, *Muhlenbergia rigens*
Calif. blue-eyed grass, *Sisyrinchium bellum*
Meadow rue, *Thalictrum fendleri* var. *polycarpum*
Yerba mansa, *Anemopsis californica*
Coral bells, *Heuchera* ssp.
Common monkey flower, *Mimulus guttatus*
Scarlet bugler, *Penstemon centranthifolius*
California goldenrod, *Solidago californica*
Hedge nettle, *Stachys bullata*
Slender sedge, *Carex praegracilis*
Narrow-leaved milkweed, *Asclepias fascicularis*

Arlee M.Montalvo
Narrow-leaved milkweed

Succulents, Ground Covers, and Low Shrubs

Keep hydrated; if needed, water monthly during summer.

San Diego sedge, *Carex spissa*
Wild lilac, *Ceanothus griseus 'horizontalis'*
California fuchsia, *Epilobium canum =Zauschneria*
Golden yarrow, *Eriophyllum confertiflorum*
Lance-leaved live-forever, *Dudleya lanceolata*
Chalk dudleya, *Dudleya pulverulenta*
Parry's nolina, *Nolina parryi*
Creeping sage, *Salvia sonomensis*
Creeping snowberry, *Symphoricarpos mollis*
Chaparral yucca, *Yucca whipplei = Hesperoyucca whipplei*
Valley cholla, *Opuntia parryi*
Coastal prickly pear, *Opuntia littoralis*

Arlee M.Montalvo
Chaparral yucca

Annuals or summer-dormant perennials

No need for water during summer. There is little, if any, plant material above ground to burn.

California poppy, *Eschscholzia californica*
Larkspurs, delphinium, *Delphinium parryi, D.cardinale*
Wild Canterbury-bell, *Phacelia minor*
California figwort, *Scrophularia californica*
Baby blue eyes, *Nemophila menziesii*
Royal penstemon, *Penstemon spectabilis*
Lupine, *Lupinus* species *(L. bicolor, L. succulentus, L. truncatus, L. sparsiflorus*)

Arlee M.Montalvo
Baby blue eyes

Habitat Land Stewards

If you live near conservation easement land or a waterway, there are ways that you can help. Be observant of activities that might be harmful to your nearby habitat lands, or form a *habitat-watch* group in your neighborhood. Like a neighborhood-watch, property owners help look out for neighborhood habitat and waterways, report illegal activity, and help educate neighbors about human impacts. For help forming a *habitat-watch* group, contact your local Resource Conservation District or the Riverside Land Conservancy.

RCRCD
RIVERSIDE-CORONA RESOURCE CONSERVATION DISTRICT

This publication was developed by the Riverside-Corona Resource Conservation District. www.RCRCD.com
1-07

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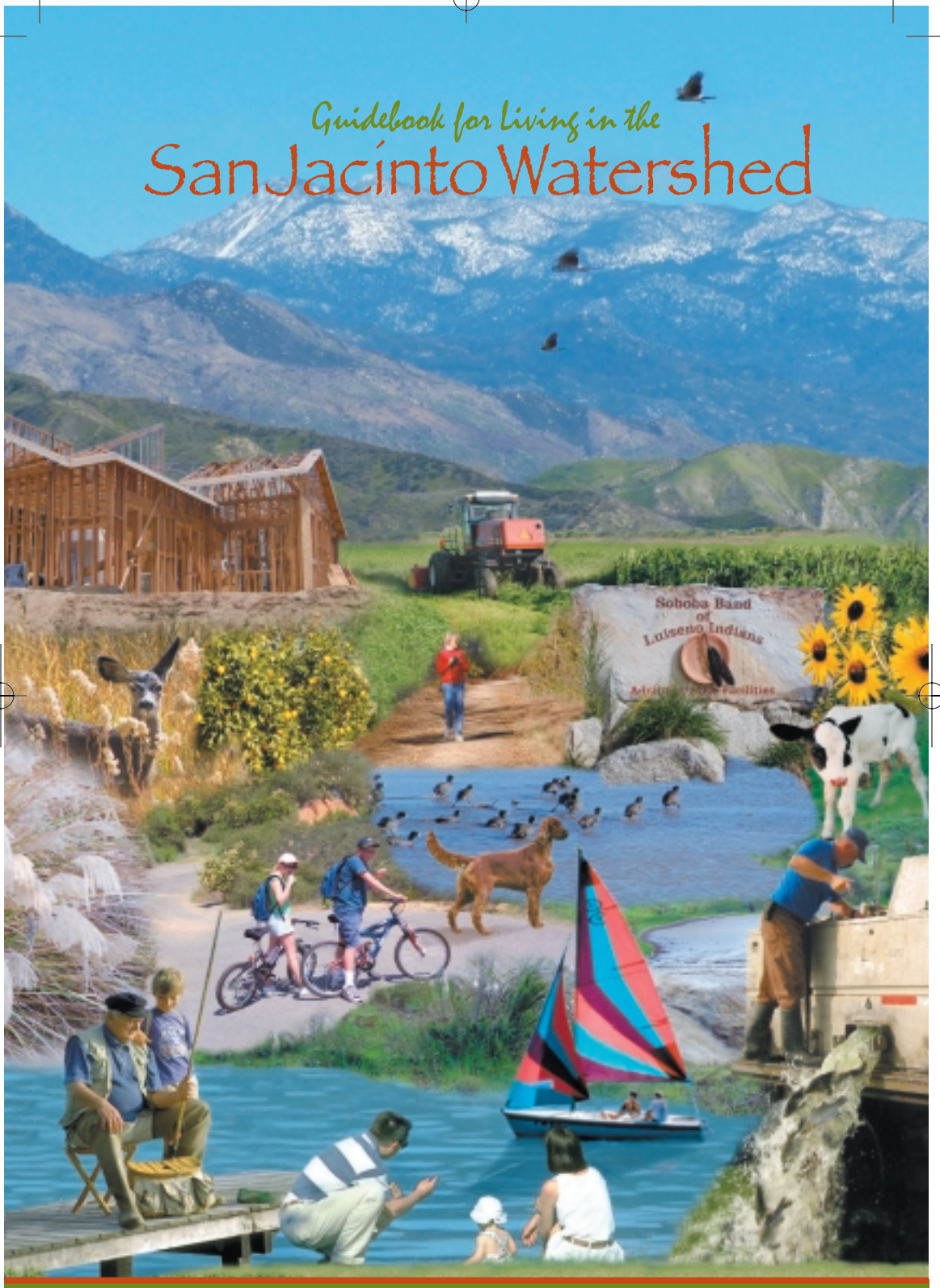
Guidebook for Living in the San Jacinto Watershed



A Guide for Residents of the
San Jacinto Watershed and Surrounding Communities

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The San Jacinto River Watershed Council recognizes the following organizations and agencies as partners in creating *The Guidebook for Living in the San Jacinto Watershed, A Guide for Residents of the San Jacinto Watershed and Surrounding Communities*. From providing funding to lending technical expertise, these organizations have contributed to preserving the natural resources of the San Jacinto Watershed:

Bureau of Reclamation, California Environmental Protection Agency Environmental Justice Small Grants Program • City of Lake Elsinore • Eastern Municipal Water District • Elsinore Valley Municipal Water District • Lake Elsinore and San Jacinto Watersheds Authority • Lewis Planned Communities and the Garrett Group • Milk Producers Environmental Fund • Riverside County Farm Bureau • Riverside County Flood Control and Water Conservation District, Santa Ana Watershed Association, Santa Ana Watershed Project Authority • Soboba Band of Luiseño Indians and Western Municipal Water District.

The San Jacinto Guidebook is based upon the Arroyo Seco "Living Lightly in Our Watersheds: A Guide for Residents of Arroyo Seco and surrounding communities." The Arroyo Seco book was based upon earlier concepts from the Topanga Watershed Committee and the Malibu Creek Advisory Council. We wish to thank the Topanga Watershed Committee, the Malibu Creek Watershed Advisory Council, and the Arroyo Seco Watershed Committee.

Adaptation of text reprinted from the "Living Lightly In Our Watersheds Guide" with permission from the Arroyo Seco Watershed Committee.

This book is also available in Spanish. Please contact the San Jacinto River Watershed Council for additional information.

Prepared by:
The San Jacinto River Watershed Council

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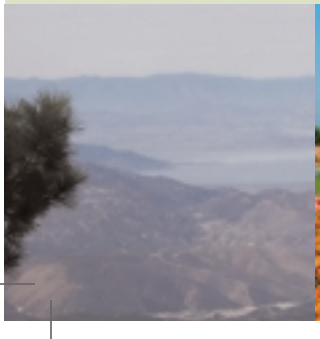

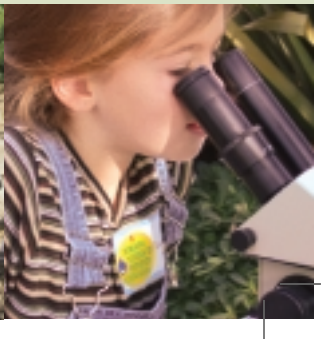

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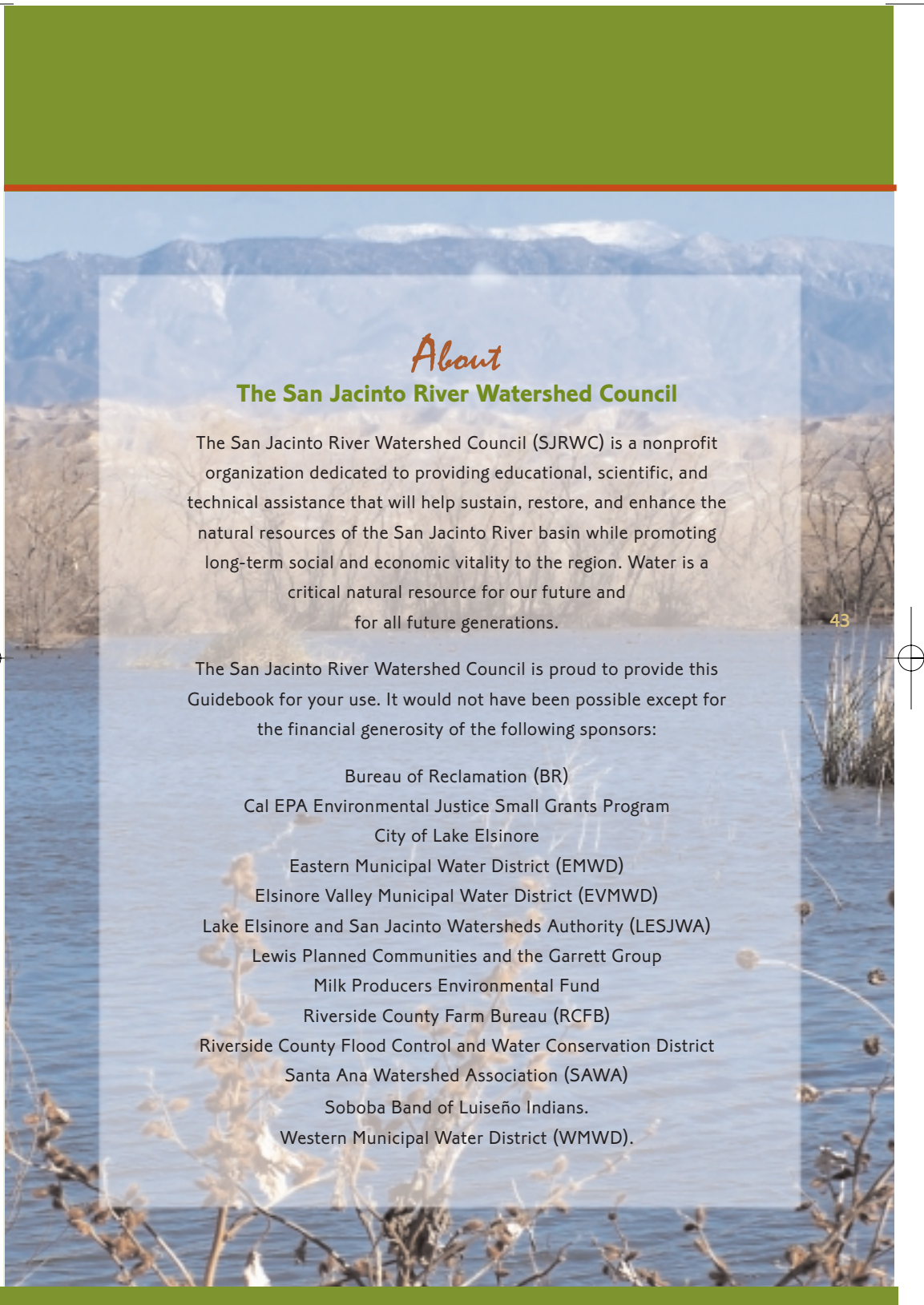

About
The San Jacinto River Watershed Council

The San Jacinto River Watershed Council (SJRWC) is a nonprofit organization dedicated to providing educational, scientific, and technical assistance that will help sustain, restore, and enhance the natural resources of the San Jacinto River basin while promoting long-term social and economic vitality to the region. Water is a critical natural resource for our future and for all future generations.

The San Jacinto River Watershed Council is proud to provide this Guidebook for your use. It would not have been possible except for the financial generosity of the following sponsors:

Bureau of Reclamation (BR)
Cal EPA Environmental Justice Small Grants Program
City of Lake Elsinore
Eastern Municipal Water District (EMWD)
Elsinore Valley Municipal Water District (EVMWD)
Lake Elsinore and San Jacinto Watersheds Authority (LESJWA)
Lewis Planned Communities and the Garrett Group
Milk Producers Environmental Fund
Riverside County Farm Bureau (RCFB)
Riverside County Flood Control and Water Conservation District
Santa Ana Watershed Association (SAWA)
Soboba Band of Luiseño Indians.
Western Municipal Water District (WMWD).

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Guidebook for Living in the

San Jacinto Watershed

SJRWC

San Jacinto River Watershed Council
P.O. Box 1378
San Jacinto, CA 92581-1378

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Welcome to

The Guidebook for Living in the San Jacinto Watershed

Dear Friends,

There's a spot along the Ernie Maxwell Scenic Hiking Trail, just east of Idyllwild, where much of the San Jacinto River Watershed may be taken in at a single glance. Here in the shadow of Tahquitz Peak, the mountains, ridges and hilltops that form the upper boundaries of our watershed surround you. Lake Hemet and Garner Valley lie just south. Below the Lake lies the canyon of the south fork of the San Jacinto River winding northwest toward the Soboba Indian Reservation, the Badlands and that ephemeral jewel, Mystic Lake. Along the trace of the Canyon and just west of Mystic Lake are the dairy lands and the San Jacinto Wildlife Area, one of the best indicators of the health of our watershed. Further west and just beyond our view lie Canyon Lake and Lake Elsinore, where much of how we all live is reflected in the quality of those aquatic environments.

These stops along the energy highway that comprise our watershed are but a glimpse of the real complexity that underlies the environment in which we all live and work. It's the droplets of water, particles of soil, molecules of oxygen, photons of sunlight, bacteria, insects, flowering plants, birds, mountain lions and all of us – all are related, connected by lifelines and knotted together in a network. We now better understand that when we work together locally for environmental quality, the integrity of the network can be maintained and we can achieve stability, the most fundamental property of a functioning watershed and sustainable communities.

And we have come together: citizens, local, state and federal agencies as members of the non-profit San Jacinto River Watershed Council to coordinate efforts and share resources to develop and implement watershed management strategies that will make western Riverside County a great place to live and work.

This booklet, Guidebook for Living in the San Jacinto Watershed, was developed to inform you of the work of all of our members, what you can do to help reduce pollution and conserve resources, and how you can become involved in and support the work of the Council.

Enjoy!!

Jim Gilmore, President
San Jacinto River Watershed Council

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Wendy Kolk

Dear Friends of the San Jacinto River:

Among the many reasons to reside in or visit Riverside County is the high quality of life available to an active population. Within that portion of just the San Jacinto River Watershed, the variety of activities offered takes a lifetime to enjoy fully. You can hike high in the cool mountains. You can water-ski, fish or sail on several lakes. You can tour public gardens or grow your own flower and herb gardens year-round. You can be as active or passive as you prefer.

The San Jacinto River Watershed has it all. The best way to enjoy your lifestyle is to "live lightly" in our communities. That's what this guidebook offers you—opportunities for enjoyment and the obligation to be part of the conservation ethic that reduces pollution, keeps our air and water clean, and endorses our priority to maintain bountiful green space. We can all do our parts to ensure that the watershed will be a valued destination for new generations.

Many individuals from private, governmental and volunteer organizations contributed their expertise to this guidebook. We know you'll find this guidebook helpful in understanding the San Jacinto River Watershed and appreciating what it has to offer.

Sincerely,

Bob Buster, Chairman
Supervisor, First District

Jeff Stone
Supervisor, Third District

Marion Ashley
Supervisor, Fifth District

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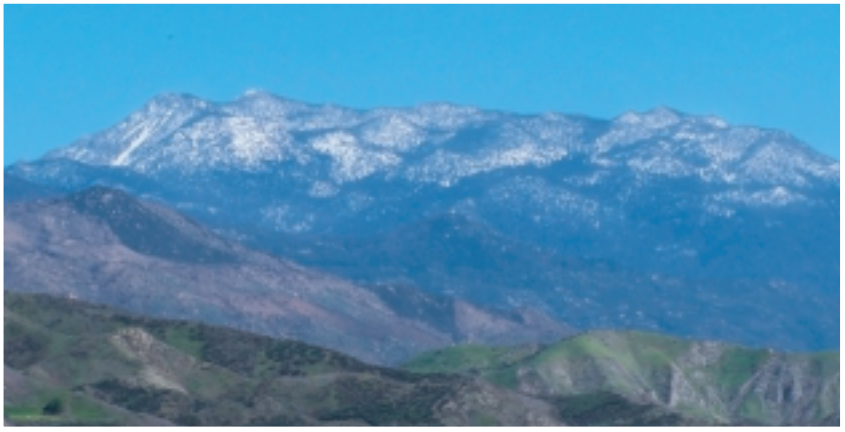
Imagine The San Jacinto Watershed

as a clean and protected environment that is the source of community pride. Parks, bicycle trails, places to walk under a green canopy of trees, clean air, water and wildlife habitat are all a part of what the future holds for the watershed.

With your support, the vision is becoming a reality.



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What is a Watershed?

A watershed is an area of land from which all rainfall drains to a common point. All land is part of a watershed. As rainwater and melting snow run downhill, they carry sediment and other materials into our streams, lakes and groundwater.

The San Jacinto Watershed upstream of Canyon Lake covers 718 square miles in the western half of Riverside County. There are two main watercourses in the watershed, San Jacinto River and Salt Creek.

The San Jacinto drains the western slopes of the San Jacinto Mountains and flows through the communities of San Jacinto and Perris before entering Canyon Lake. Salt Creek is tributary to the San Jacinto River and flows into Canyon Lake from the east. Discharges from the Canyon Lake Dam flow southwest in the San Jacinto River to Lake Elsinore and, then flows northwest in Temescal Wash to the Santa Ana River, which flows to the Pacific Ocean.

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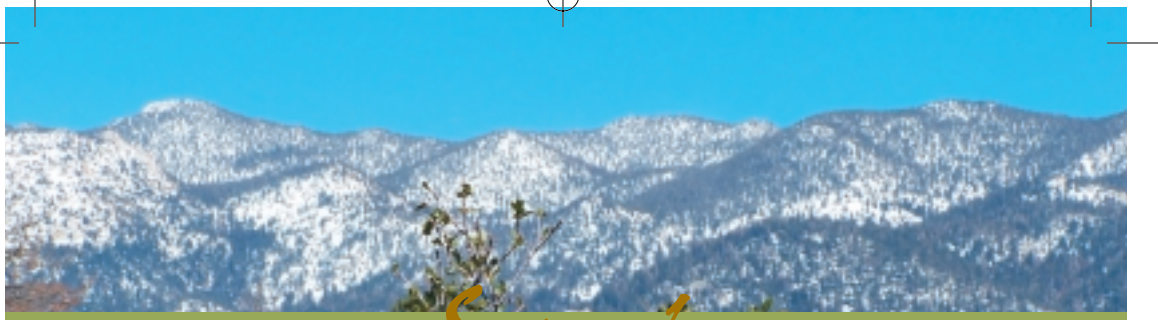

Section 1

OUR WATERSHED

The earth's surface acts as an amazing sponge and filter, allowing moisture, minerals, and organic materials to be used and reused by all life. In developing our cities and communities, we have changed the underlying conditions of the land on which they are built. Where once water, air, and nutrients could enter the soil and circulate freely, we now have increasingly larger areas of hard surfaces that rapidly concentrate rain and pollutants. We have also introduced plants and animals into areas where they were not previously found , thus dramatically changing the make-up of our region's biological communities. Learning to work with the natural cycles that have sustained the earth will help ensure that food, clean air, and water, and beautiful green open space will be available to future generations.

"To keep every cog and wheel is the first precaution of intelligent tinkering."

– Aldo Leopold

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A Watershed Approach

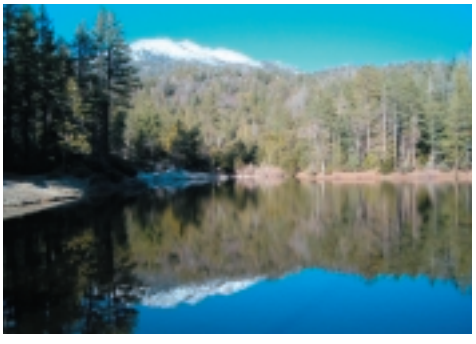
People working together to protect public health and the environment - community by community, watershed by watershed.

Carol M. Browner, Administrator
U.S. Environmental Protection Agency
June 1996

Mystic Lake after a large storm event

Rainfall travels from the mountains to the ocean. Water, air, plants and animals move freely across political boundaries. Strategies for improving water quality and availability, increasing flood protection, protecting our lakes and preserving open space for recreation and wildlife are more effective when pursued collectively over a whole watershed. Agencies, organizations, politicians, and individuals should cross over city lines, joining together with neighbors in their watersheds to work toward these important goals. This watershed-based approach not only promises better and more cost-effective results, it also serves to unite neighborhoods, further enriching our lives.

To this end, The San Jacinto River Watershed Council has produced this environmental guide, *"Guidebook for Living in the San Jacinto Watershed,"* for communities in and around the San Jacinto watershed.



Foster Lake

CONTACT

FOR MORE INFORMATION ON WATERSHEDS:

- The San Jacinto River Watershed Council- www.sawpa.org/sjrwc/
- LESJWA- www.mywatersheds.com

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The San Jacinto Watershed

The San Jacinto Watershed is a 780 square mile watershed with diverse and unique geographical, cultural, and ecological significance. Let's take a journey (see map page vi) to better understand how water flows through our watershed.

At the top of our watershed, in the San Jacinto Mountain communities of Idyllwild, Pine Cove Fern Valley and Garner Valley, rain and snow fall on steep, rocky slopes. Water and sediments wash from the slopes, and move down the mountain and canyons into the headwaters of the San Jacinto River. Lake Hemet, on the South Fork of the river, captures significant quantities of mountain runoff. In wetter years, Lake Hemet overflows, drastically increasing the flow in the river as it exits the mountains into the San Jacinto Valley near the community of Valle Vista.

East of the city of San Jacinto, in the rolling foothills of the San Jacinto Mountains, is the 7,000 acre Soboba Indian Reservation, home of the Soboba Band of Luiseño Indians. The reservation extends into the broad level floodplain at the southeast edge of the San Jacinto Valley. Two other mountain streams, Indian Creek and Poppet Creek, flow through the reservation. Water is and always has been a cornerstone of the Soboba band.

The San Jacinto Valley holds a rich and diverse agricultural history. On the south end of the valley are several thousand acres of citrus orchards located in the foothills near Bautista Creek. On the northern half of the San Jacinto Valley the San Jacinto River flows through a large dairy and agricultural community. In the early 1900's, farmers co-opted in building a leveed diversion channel to keep the river from flooding into a large depression at the north edge of the valley known as Mystic Lake. During heavy storm events the levees are overwhelmed, and the river breaks out to flow into Mystic Lake.

Today, Mystic Lake is part of the 19,100 acre San Jacinto Wildlife Area owned by the California

The 8,828-foot Tahquitz Peak, a granite dome in the San Jacinto Wilderness is a favorite with climbers.

Soboba Pow wow

Argriculture in the San Jacinto Valley

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Department of Fish and Game. This conservation area is comprised of the 9,100 acre Potrero Unit, on the Potrero Creek Drainage east of Lamb Canyon Road, and the 10,000 acre Davis Road Unit, which surrounds Mystic Lake in the northern San Jacinto Valley. When Mystic Lake fills and overflows just east of Lake Perris, water flows into the lower reach of the San Jacinto River, which cuts southwesterly across the Perris Valley. Urban runoff from Moreno Valley, Perris, and the communities of Lakeview, Nuevo, Romoland adds to the flow of the water in the river as it makes its way westward toward Canyon Lake.

Salt Creek, a major San Jacinto River tributary, collects runoff from the southern portion of our watershed which includes Hemet, San Jacinto, and the Winchester, Menifee Valley, and Sun City communities. These flows are conveyed to the east bay of Canyon Lake. Runoff from communities near Quail Valley also flows into Canyon Lake.

Canyon Lake, surrounded by a private gated community, flows over its dam during moderate and wet storm seasons. Spillway flows then traverses a short reach of the San Jacinto River within Railroad Canyon until they reach the river's final destination - Lake Elsinore. Lake Elsinore, with the spectacular Cleveland National Forest as a mountain backdrop, is the largest natural freshwater lake in Southern California.

On average, every 7 to 14 years, large storm events occur on our watershed. Spectacular views of the river result, but also flooding. Sediment and pollution, if not controlled, move down its course, seriously impacting the health of the downstream lakes. It is with this in mind that we remind everyone to treat this naturally fragile watershed system with care and respect as you enjoy its miles of ever changing beauty.

Duck pond on the San Jacinto Wildlife area.

Railroad Canyon Lake Dam, built in 1928, created Canyon Lake, a water supply reservoir.

Lake Elsinore with the Cleveland National Forest as a mountain backdrop.

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Parks and Public Space

The quality of life for the residents who call the San Jacinto watershed their home relies upon the presence of beautiful, peaceful parks, and abundant open space.

Fishing at Lake Perris.

WHAT YOU CAN DO

to keep our parks safe and beautiful:

- Keep your dogs on a leash and clean up after them.
- Do not feed the wildlife. Human food is not healthy for birds, squirrels, and other animals.
- Take only pictures, leave only footprints.
- No fires in undesignated areas. Follow all other local rules and regulations.
- If you live near an open, green space, park or hillside, keep your cat indoors. Chances are they will live longer and the birds, bugs and lizards will thank you!

Slow down and take some time to get to know and enjoy the treasures of our region. *See the fold-out map, page vii.*

Lake Perris State Recreation Area and the San Jacinto Wildlife area are two wildlife treasures in the upper watershed full of outdoor activities for you and your family.

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Environmental Challenges

Stormwater Pollution

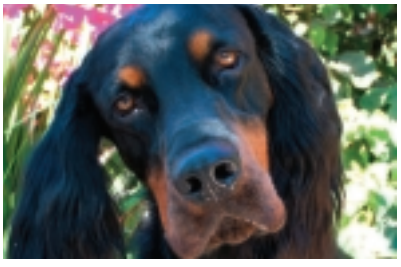
Trash, bacteria, pesticides, fertilizers and oil wash into streets and storm drains and contaminate our streams, groundwater, and lakes. Fertilizers and other non-natural sources of nutrients such as grass clippings stimulate the growth of plants, disrupt local water- and land-based communities of plants, and cause severe impairment of our lakes. Each person, simply by changing a few every-day habits, can effect positive change across the watershed.

WHAT YOU CAN DO

to reduce stormwater pollution:

- Pick up trash and litter around your yard and home.
- Sweep rather than hose down driveways.
- Reduce use of toxic chemicals in and around your home and use only as directed on the label.
- Dispose of unwanted household hazardous wastes, antifreeze, batteries, oil and paint at official collection stations. Call (800) 506-2555.
- Clean up pet waste.
- Wash your car at a car wash to keep detergents out of the streets.
- Report illegal dumping and stormwater pollution to (800) 506-2555.

Why clean up after your pet?



Pet waste that is left exposed to the elements eventually washes into the storm drains, channels and creeks and down to the lakes .

Pet waste degrades the environment and water quality by:

- Increasing nitrogen and phosphorus in the water, resulting in excessive algae growth.
- Increasing the amount of bacteria and viruses in the water.
- Making neighborhoods and parks less healthy and enjoyable for all users.

PLEASE CLEAN UP AFTER YOUR PET!

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Invasive Plants

Ever since Spanish colonial times, mankind has brought foreign plants, "exotics," to the New World, sometimes by accident, but more usually as fodder or ornament. In our watershed, many drought-tolerant ornamentals are well-behaved, but some escape our yards and create problems. Once growing in the wild, all of them, however attractive, such as Scotch broom in the mountains and fountain grass on the roadside, crowd out native plants to which our native birds and insects are adapted.

A very invasive plant. Arundo Donax

Other plants not only out-compete the natives, but do further damage, Invasive annual grasses grow quickly and dry to tinder, making meadows and scrubland more prone to fire. Eucalyptus grow fast, are brittle, extremely flammable and prone to disease, as are oleanders. Castor-oil plant is poisonous, and tocolote has many irritating burrs.

Tamarisk

Possibly the worst invasives in the watershed are the giant reed, Arundo, and the Tamarisk tree. These water-thirsty foreigners deplete the water table and form monoculture stands where no bird sings. There is a current effort underway – at a cost of millions of dollars – to eradicate Arundo from the Santa Ana and San Jacinto watersheds.

WHAT YOU CAN DO

to control invasive plants:

- Get to know the plants that are problematic in your area and avoid using them.
- Use native plants from our local area. (See page 15 for species.)
- When you see problem exotics for sale in the nurseries, tell them why you want natives instead.

DID YOU KNOW?

The National Parks Conservation Association considers the invasion of national parks by non-native species among the most significant causes of biodiversity loss in parks.

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Section 2

GREEN LIVING

In southern California's gentle weather we are able to live and enjoy much of our lives outdoors. Many of our homes are designed to take full advantage of this gift, with living areas brought outside into the garden and the outdoors carefully framed for viewing from indoors. In the San Jacinto watershed, we share a rich cultural diversity and various lifestyles- mountain communities, rural agriculture influences, and growing urban communities. What a perfect setting in which to consider how the environment is affected daily by the choices we make in building and maintaining our homes, gardens, and style of living.

"Start by doing what's necessary, then do what's possible and suddenly you are doing the impossible."

St. Francis of Assisi

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Water Conservation

An effective way to minimize environmental damage and promote a safe and reliable water supply is through conservation. This is particularly important since over half of our drinking water is brought in from distant places such as northern California and the Colorado River. Water conservation efforts add up, reducing our need to import water and increasing the availability and quality of local water resources. Water-conserving appliances and plumbing fixtures save water *and* money.

WHAT YOU CAN DO

to conserve household water:

- Replace high volume flush toilets. *Savings*: up to 8,500 gallons per year for the average single-family household.
- Use a low-flow showerhead. *Savings*: more than 14,600 gallons a year per household.
- When it's time for a new washing machine or dishwasher, buy a water-saving model. Water-wise machines use 1/3 less water and half the energy, and require less detergent and washing additives.
- Fix all leaky faucets and plumbing joints.
- Run your dishwasher and clothes washer only when fully loaded.

Outdoor Water Conservation

Our yearly rainfall averages from fifteen to twenty inches but can be as little as eight inches. Most rain falls between October and March with long, hot, dry summers. This amount and seasonal cycle of moisture simply cannot sustain most traditional landscapes and lawns. According to the Western Municipal Water District, more than 60% of residential water use is for outdoor landscaping and pools in the inland region.

CONTACT

ASK YOUR CITY OR WATER PROVIDER FOR ADDITIONAL CONSERVATION TIPS AND REBATES

- Eastern Municipal Water District, www.emwd.org
- Elsinore Valley Municipal Water District www.evmwd.com
- Idyllwild Water District www.idyllwildwater.org
- Lake Hemet Municipal Water District, www.lhmwd.org
- Nuevo Water Company 951-928-1832
- Western Municipal Water District, www.wmwd.org www.bewaterwise.com

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WHAT YOU CAN DO

to conserve landscape water:

- Consider using a weather-based irrigation controller that irrigates according to historic or real-time weather patterns in your neighborhood.
- During the winter, turn your controller off and water only when winter rains are infrequent.
- During the hotter and drier seasons, water less frequently and more deeply to encourage stronger, healthier plants.
- Check for broken and misaligned sprinkler heads often. This problem causes excessive runoff and landscape failures.
- Lawns are very thirsty. Use them for functional areas only.
- Consider using native plants best adapted to the southern California climate. (see page 15).
- Use drip and low-volume irrigation for garden beds and pots. Group plants with similar water needs.
- Sweep paths and driveways rather than using a hose.
- Place mulch and clippings from your own garden around your plants and trees to reduce evaporation and keep the roots cooler.
- Do not cut your lawn too low – taller grass reduces evaporation.
- Water your yard at cooler and less windy times of the day to reduce water loss through evaporation. Early morning is best.

Use drip irrigation.

The beautiful green lawn in front of EVMWD's office is artificial turf. No water required! A great way to conserve water.

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Landscaping

Another important way to help the environment and save water is by creating a 'California-friendly' yard. There are many drought-tolerant plants that will help with the latter, but amongst these, California natives from local stock have several advantages.

WHAT YOU CAN DO

- Good habitat for native birds, butterflies and other animals – food, water, shelter and nest materials – is best provided by species that have evolved together. Welcome a wide variety of local wildlife by using native plants.
- Carefully chosen native plants require little or no supplemental water once established. They can co-exist with local pests, so that they seldom need chemical treatments or fertilizer, both of which can pollute. Chemical compounds can endanger your family's health, as well as killing beneficial insects and birds, and cause stormwater pollution.
- Native plants require only an occasional clean-up pruning to thrive.
- Gardening with natives may help support declining local communities if the plants selected are grown from local parent stock – the specialist nurseries mentioned on page 13 can help you with your selection. California has more rare and threatened species than any other state except Hawaii.

Why Use Natives?

Our sense of belonging increases with an appreciation for the remarkable adjustments the native plants and animals have made to the home we share. The colors of the mountains, slopes and valley – the deep green of the forests, the grey-greens of the sages and the grey-brown of the rocks – all contribute to a special sense of place.

Tortoiseshell Butterfly on Sunflower.

Bee Pollinating Plants.

Toyon

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Compared to natives, exotic plants (from outside our region) have not evolved with our native birds, butterflies and insects. As a result, they can be devastated by pests or disease or, conversely, spread out of control and reduce native diversity. They do not provide the natural food sources that the native plants do for our local insects, and, if these decline, we lose the building blocks of the local food web, causing in turn the decline of the many local birds which depend on them.

Other Things You Can Do:

- Use permeable surfaces for walkways, patios and driveways that let water soak into the ground; this replenishes the water table and reduce runoff.
- Reduce green waste by choosing plants that will not grow larger than the amount of space you have for them.
- Use clippings from your own garden as use a mulch or in your own compost pile.

Ceanothus, California Lilac

Fremontia

Holly-leaved Cherry

CONTACT

- California Native Plant Society www.cnps.org
- Rancho Santa Ana Botanic Garden Claremont (909) 625-8767 www.rsabg.org
- UC Riverside Botanic Gardens Riverside (951) 787-4650 www.gardens.ucr.edu
- Mockingbird Nurseries, Inc. Riverside (951) 780-3571
- Tree of Life Nursery San Juan Capistrano (949) 728-0685 www.treeoflifenursery.com
- Western Municipal Water District Landscapes Southern California Style (951) 789-5987

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Trees and Urban Forestry

Why are our cities so hot? The average temperatures in cities can be between 2 and 10 degrees hotter than the surrounding countryside. This phenomenon is called the urban heat island effect and is due to the replacement of plants with asphalt, concrete, and building surfaces that absorb and store heat. Planting trees is an effective way to help beautify and cool our cities and homes, reducing our dependence on fossil fuels.

Trees improve air quality by collecting and filtering dust and other pollution particles, absorbing carbon dioxide, and releasing oxygen. They improve water quality and reduce flooding by intercepting rainfall and increasing its absorption into the ground.

WHAT YOU CAN DO

to have healthy trees

- Plan ahead carefully when planting trees, considering the mature size of the tree.
- Allow leaf litter to accumulate and even add more mulch to the surrounding soil, but do not let it pile up against the trunk, which can lead to disease.
- Loosen ties and stakes as soon as you plant, and remove them as soon as possible.
- Protect the trunk from damage, such as from a weed trimmer.
- Never cut main branches or the central stem back to stubs. This practice, though common in our area, severely stresses and can injure a tree.

Trees improve the health of our watershed. Trees increase groundwater infiltration, filter particulates from the air, shade our homes and provide many other benefits.

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California Native Plants for Your Home Garden:

COMMON NAME	SCIENTIFIC NAME
Trees	
Western Redbud	*Cercis occidentalis*
Western Sycamore	*Platanus racemosa*
Coast Live Oak	*Quercus agrifolia*
Elderberry	*Sambucus mexicana*
California Bay	*Umbellularia californica*
Mesa Oak	*Quercus engelmannii*
Shrubs	
Chamise	*Artemisia californica*
Manzanita	*Arctostaphylos species eg. glauca*
California Lilac	*Ceanothus species eg. crassifolius*
California Sunflowers	*Encelia californica or E. farinosa*
Fremontia, Flannel Bush	*Fremontodendron californica*
Toyon	*Heteromeles arbutifolia*
Holly-leafed Cherry	*Prunus ilicifolia*
Coffeeberry	*Rhamnus californica*
Lemonadeberry	*Rhus integrifolia*
Sugar Bush	*Rhus ovata*
Perennials and Groundcovers	
Manzanita (low)	*Arctostaphylos eg. uva-ursi*
California Lilac (low)	*Ceanothus eg. 'Emerald Carpet'*
California Fuchsia	*Epilobium canum or Zauschneria californica*
Wild Buckwheat	*Eriogonum fasciculatum*
Coral Bells	*Heuchera species*
Douglas Iris	*Iris douglasiana*
Sticky Monkeyflower	*Mimulus aurantiacus*
Deer Grass	*Muhlenbergia rigens*
Showy Penstemon	*Penstemon spectabilis*
California Sages	*Salvia apiana or S. mellifera*
Wild Grape	*Vitis californica*
Annuals	
California Poppy	*Eschscholzia californica*
Arroyo Lupine	*Lupinus succulentus*
Desert Bells	*Phacelia minor*
Chia	*Salvia columbariae*

Note: *Most of these thrive in Inland Empire sun and with little supplemental water, though many will look better in summer with monthly irrigation in the early morning. Take care, however, some nursery-bred varieties of these species may need regular garden water.*

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Fire Safety and Fuel Modification

In southern California, fires are always a serious concern. If you live in a canyon or on a slope, the risk is even higher, especially if your property is adjacent to natural space. Be sure to follow local fire department clearance regulations and safety practices.

WHAT YOU CAN DO

to reduce fire risk:

- Keep brush clear around all structures.
- Keep roof and gutters clear of leaves and plants.
- Trim trees away from your roof or chimney.
- Branches should not come within 10' of the house.
- Space trees and shrubs that are near structures.
- Prune tall trees to remove branches near the ground.
- Water plants adequately; water trees and shrubs deeply every 20-30 days during fire season.
- Stack firewood outside.
- Plant fire-resistant plants and trees. Plant a deciduous tree, which will lower the energy bill by shading the house in the summer.
- Stabilize slopes by planting deep-rooted, woody ground covers. Add widely-spaced taller shrubs and trees to maximize slope stability.
- Do not plant Cypress, Eucalyptus, or Junipers close to the house as they contain oils that can cause fire to spread rapidly.

CONTACT

- California Dept. of Forestry & Fire Protection, www.fire.ca.gov
- California Fire Safe Council www.firesafecouncil.org
- Firewise, sponsored by the National Wildfire Coordinating Group, www.firewise.org
- Smokey Bear Fire Prevention Materials, www.smokeybear.com

FOR ALL FIRE EMERGENCIES CALL 911

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Air Quality, Automobiles, and Energy

Electricity generation and the use of fossil fuels for transportation are major sources of air pollution in the United States, contributing to smog, acid rain and global warming. One of the single most effective ways to improve air quality and help the environment is to reduce dependence on cars and gasoline. Conservation can make a difference!

Ride a Bike.

WHAT YOU CAN DO

to help clear the air:

- Carpool, ride the bus, walk, or ride a bike.
- Make your next vehicle purchase an electric or a hybrid car.
- Combine multiple errands into one trip.
- Take the kids bicycling, walking or roller-skating to form healthy habits and develop an understanding of the impact their actions have on air quality.
- Turn off all appliances and lights when not in use.
- Change incandescent bulbs to compact fluorescent.
- Install energy-efficient (Energy-Star) appliances.
- Switch to solar energy.
- Plant a tree. Trees lower energy bills by shading the house.
- Install a whole house fan rather than an air conditioner.
- Close curtains on sunny windows to reduce heat gain.
- Minimize use of wood stoves or fireplaces.
- Use a dry cleaner that does not use perchlorate.

CONTACT

WEBSITES WITH ENERGY SAVING TIPS

- Flex Your Power
  www.flexyourpower.ca.gov
- Earth911
  www.earth911.org
- US Department of Energy
  www.eere.energy.gov

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WHAT YOU CAN DO

to help when you must drive:

- Make your next vehicle cleaner-fueled and more efficient. Electric, natural gas, and hybrid-electric vehicles pollute less and reduce our dependence on oil.
- Combine multiple errands into a single trip.
- Maintain your vehicle, especially tire pressure. Excessive exhaust is harmful to you and the people around you.
- When getting gas, do not top off your tank and wait before removing the nozzle. Fuel spillage adds to air pollution.
- Park in the shade of a building or tree to reduce the evaporation of gasoline from your car.
- Use your ashtray if you are a smoker. Cigarette butts take up to five years to break down in the ocean and can kill fish, birds, seals, and other marine life.

Green Electricity

Green electricity is derived from clean, renewable energy sources such as solar, wind, biomass, and geothermal. Most electricity in the United States comes from coal, oil, nuclear, large hydroelectric, and natural gas plants. The burning of non-renewable fossil fuels contributes to air quality problems and global warming.

WHAT YOU CAN DO

- Use less energy.
- Wear a sweater when it's cool.
- Contact your utility company to learn about your green energy options.
- Let your representatives know that renewable energy sources should be a priority.

EDUCATE YOURSELF:

- Go Green Power www.gogreenpower.org
- Global green USA www.globalgreen.org
- GreenE, www.green-e.org
- California Energy Commission www.energy.ca.gov
- US Department of Energy www.eere.energy.gov

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Buying Green

The best way to reduce our impact on the environment is to limit our use of resources. It is helpful to purchase products whose production and use have a reduced impact on the environment. Small changes by many people can make a big difference!

WHAT YOU CAN DO

Purchase products that:

- Use minimal packaging.
- Contain recycled material.
- Contain raw materials derived from renewable sources.
- Can be reused or recycled.
- Are produced locally.
- Do not use products that require special disposal.

SAFE ALTERNATIVES TO COMMON HOUSEHOLD CLEANERS

Try:	Instead of:
• borax and water or baking soda	chlorine bleach
• ½ c. vinegar + 1 qt. water	glass cleaner
• ½ lemon dipped in borax or baking soda	abrasive cleanser
• 1 part lemon juice + 2 parts vegetable oil	furniture polish
• toothpaste or baking soda polish	silver polish

SOURCE: American Oceans Campaign (www.americanoceans.org)

Buy local products.

Using recycled water.

Buy local produce.

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Green Housing Construction

When building or modifying a home keep sound environmental practices in mind. Green construction improves energy efficiency, resource conservation, indoor air quality, and protects the health of your family. In addition to helping the environment, a "green" house can save you money and provide you with a healthier, quieter, and more comfortable home.

Generally, building greener involves one or more of the following:

- Planning to preserve the natural environment
- Site development which reduces erosion, minimizes paved surfaces, and protects vegetation
- Water conservation indoors and outdoors
- Energy efficiency
- Using recyclable materials and air conditioning costs.

Permeable Surfaces

Permeable surfaces such as decomposed (crushed) granite, broken concrete, gravel, mulch and grass or other plants allow water to pass through and soak into the soil beneath, as opposed to running off your yard and contributing to stormwater pollution and flooding.

WHAT YOU CAN DO:

- Use bricks, stones, broken concrete, crushed granite or gravel for driveways, paths, and patios.
- Use a contractor who knows and follows regulations concerning construction runoff. Even a small remodel can contribute a large amount of gravel, dirt, and hazardous materials to the storm drain system.
- Investigate the installation of a 'gray water' system–to collect your household's washing water for re-use in the landscape or for flushing toilets–with your local building department officials to determine if they allow residential use of reclaimed water.

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WHAT YOU CAN DO:

to increase sustainability in your home:

- Add insulation to your home.
- Use innovative, engineered wood products.
- Use recycled-content building materials whenever possible and ask your contractor to recycle their demolition waste.
- Use adhesives, paints, and cleaners with low volatile organic compounds (VOC) to reduce indoor air pollution.
- Use light colored roofing to reduce home heat absorption, or consider new "green roofs."
- Use double-glazed windows to save on heating and air conditioning costs.
- When building a house use the sun. Orient your house and plan your landscaping to take advantage of winter sun and summer shade.
- Use ceiling fans, whole house fans, and attic ventilation to affordably keep your home comfortable.

Light–Tiled roof

Whole–House fan

Choose a smart sprinkler controller for your home

- A smart sprinkler controller automatically adjusts irrigation schedules in response to changing weather conditions.
- They are also called “weather–based irrigation controllers.”
- Smart controllers are a new technology & can be difficult to find.

For more information log onto www.bewaterwise.com for a listing of manufacturers & websites

LEARN MORE:

- Ecohome Network www.ecohome.org
- National Association of Home Builders www.nahb.org
- Home Builders Association www.hba.org
- Urban Land Institute www.uli.org/

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Trash and Recycling

Recycle, Recycle,Recycle.

Reduce, Reuse, Recycle

As populations grow, cities face increasing problems with waste disposal. Finding ways to dispose of our waste becomes increasingly difficult and expensive. Trash that washes into storm drains is a leading contributor to unhealthy water in our streams, rivers and lakes.

DID YOU KNOW:

- Nearly half of the world's annual commercial wood harvest is used to produce paper.
- Recycling aluminum saves 95% of the energy required to produce it from virgin materials.
- Over 30% of California's solid waste consists of organic materials. Most of this ends up in a landfill, even though it could be composted.
- Materials in landfills can take hundreds of years to degrade.
- Although plastic carries a recycling symbol, very little of it is actually recycled. Discarded plastic washes into the ocean and chokes and kills marine animals including turtles, sea horses, fish, seals, and birds.

Be creative – reuse or recycle products. This old tree became a work of art.

Household Hazardous Waste includes metals, chemicals, batteries, and electronics, such as computers and stereos, that can be used or stored in your kitchen, workshop, garage, garden, or bathroom. It is illegal to dispose of household hazardous waste anywhere but at authorized Household Hazardous Waste and/or Antifreeze, Batteries, Oil and Paint (HHW/ABOP) collecton centers. The County of Riverside and local cities sponsor several free collection events throughout the year in the San Jacinto watershed. You can learn more about HHW/ABOP, disposal, and free collection events as www.rivcoeh.org or by calling (800) 506-2555.

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WHAT YOU CAN DO

to help reduce waste and consume less:

- Use canvas bags or re-use plastic bags when shopping.
- Purchase products with minimal packaging material.
- Buy products that use recycled materials.
- Use both sides of paper. Make your own notepads by saving one-sided scrap paper or mail, cutting in half and securing with a re-usable clip.
- Avoid using plastic unless it is something, like a sturdy cup or bag, that you can re-use.
- Recycle.
- Give away or garage sale useful unwanted items.
- Dispose of hazardous household waste properly (call 800-506-2555 for HHW/ABOP disposal days). Remember that this includes paint, many common cleansers, car fluids, and electronic equipment.
- Use tap water or wash, refill, and reuse water bottles.
- Join a neighborhood clean-up.
- PUT IT IN THE CAN! Pick up a little litter wherever you are, whether in the city or on the trail.

to help reduce green waste:

- Leave grass clippings on your lawn, sometimes called “grasscycling”. They provide important nutrients and reduce water loss.
- Choose plants that will be the desired size at maturity to minimize pruning.
- Compost garden and household fruit and vegetable waste.
- Chip clippings, prunings, and raked leaves. They all make great mulch.

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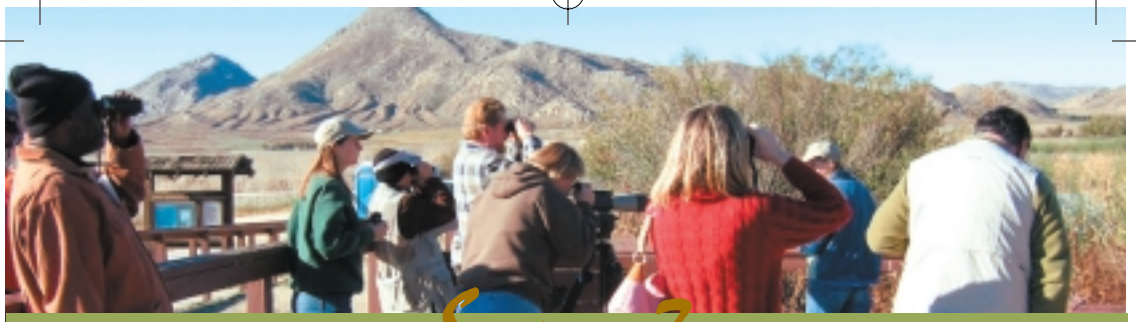

Section 3

GET INVOLVED

The following is a list of some of the local environmental organizations and exciting things that are happening in and around the San Jacinto watershed. As a volunteer, you can take direct action to preserve the quality of life for our communities and the natural beauty and benefits of our watershed. Stay aware of what is being planned for the future of your own neighborhood and express your opinions.

"Never doubt that a small group of thoughtful, committed individuals can change the world, indeed it's the only thing that ever has."

– Margaret Mead

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Volunteer Opportunities

California Native Plant Society
Preservation of native plants and habitat, www.cnps.org.

Center For Community Action and Environmental Justice. P.O. Box 33124 Riverside, CA 92519
Ph. (951) 360-8451, http://www.ccaej.org/

Friends of the Northern San Jacinto Valley
Hiking, reforestation, park clean ups
P.O. Box 9097, Moreno, Valley 92552
Ph. (951) 928-3698, http://www.northfriends.org/

Friends of Nuevo Community Council
PO Box 647, Nuevo CA 92567
http://www.foncee.net/, and info@foncc.net

Lake Elsinore Citizen Committee, Contact: Donna Frances, Ph. (951) 674-1989. Lake Elsinore, *focuses on the recreation and preservation of the lake.

National Wildlife Federation
Backyard and schoolyard habitat program, www.nwf.org.

San Bernardino Valley Audubon Society
P.O. Box 10973, San Bernardino, CA 92423
http://www.sbvas.org

San Jacinto River Watershed Council
Non-profit watershed council
Contact: Pat Boldt, Ph. (951) 808-8531

Santa Rosa Plateau Ecological Reserve/Nature Conservatory, Location: outskirts of Murrieta
Contact: Carol Bell, Ph. (951) 677-6951

Santa Ana Watershed Association, Education, cleanups, Contact: Renee Latu (909) 799-7407 Ext. 105

Sierra Club
San Gorgonio Chapter of environmental activism, hiking,
4079 Mission Inn Ave., Riverside, CA 92501
Ph. (951) 684-6203
http://www.sangorgonio.sierraclub.org/

Western Riverside County Agriculture Coalition
Coalition addresses agricultural environmental issues in the watershed. Comprised of agricultural operators, dairy, and land owners. Contact: Bruce Scott
Ph. (951) 654-5096 or wrcac_mail@yahoo.com

What's Happening in and Around Your Watershed

There are many exciting things happening in and around your watershed. Here are several important developments and projects.

The San Jacinto River Watershed Council

The San Jacinto Watershed Council, a 501 (c) 3 non-profit, grass roots organization, is an open forum of the entire watershed, upper and lower, and strives to represent all stakeholders. The Council Board consists of water agency, County, federal/regional, tribal, dairy, agriculture, environmental and 2 at-large representatives. The Council may be characterized as broad-based in its representation and holistic in its approach to issues of watershed management and planning. Current activities include:

- Prop 50, Chapter 8 Planning Grant for the Development of an Integrated Regional Watershed Management Plan for the San Jacinto Watershed (funded by the State of California, Department of Water Resources)
- Assistance with TMDL Implementation (page 28)
- Education and Outreach…this Guidebook!
- Applying for grants that will help address water resource and water quality problems
- Coordination and integration of other regional studies and plans, and their impacts on the watershed.
- Development of work groups to address critical issues
- Assist development of strategies to control nutrients and pathogens negatively impacting water bodies.

For more information visit our website at www.sawpa.org/sjrwc/, or contact Pat Boldt, SJRWC Executive Director at Mpboldt@aol.com.

San Jacinto River Watershed Volunteer opportunities

Prop 50 Planning Grants.

The San Jacinto "GAP" area.

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What is a TMDL?

In our watershed, there are two impaired lakes that do not meet expected water quality standards. Under the Clean Water Act, the Santa Ana Regional Water Quality Control Board (RWQCB) has identified Canyon Lake and Lake Elsinore as needing water quality improvement. Excessive nutrients and pathogens are the primary problems affecting the lakes.

To control the level of nutrient and pathogens entering the lakes, RWQCB has established a new water quality regulation called a Total Maximum Daily Load (TMDL). The TMDL provides an assessment and planning framework for identifying nutrient and pathogen sources, achieving load reductions, and taking actions that are needed to attain the water quality standards. The TMDL also sets target dates for when the water quality standards must be met and an implementation plan to attain it. By compliance to these water quality standards, aquatic life, drinking water and other beneficial uses at the lakes will be protected.

A stakeholder TMDL Task Force has been formed to address the TMDL's affecting our watershed. Specific tasks have been identified to start the process of improving water quality in these two lakes and work is underway. However, the solution will ultimately be dependent on controlling watershed residents contributions of nutrients and pathogens to the lakes.

If you would like additional information regarding the TMDL, please visit www.mywatersheds.com.

Stocking fish in Lake Elsinore.

Lake Elsinore

Canyon Lake

The goal of the TMDL is to restore benefical uses to Canyon Lake and Lake Elsinore.

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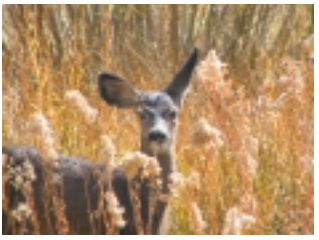
The Multi-Species Habitat Conservation Plan

When Western Riverside County revised its General Plan, the Multi-Species Habitat Conservation Plan (MSHCP) was an important part. Finalized in June 2004, it aims to address the dissatisfaction that all sectors of our County felt with the long and complicated process developers had had to go through to get clearance to build, and the haphazard way species were protected.

Certain areas are considered important to keep as open space, besides those lands already in public hands. This conserves the habitats for some of our most beautiful and threatened species of wild life and to provide linkages among the conserved areas.

The San Jacinto River is a vital corridor in this Habitat Conservation Plan. Starting in the San Jacinto mountain range, it passes through the Mystic Lake wetlands, then agricultural flood plain, which has been for centuries home to native creatures and the hawks and owls that prey on them. The river flows to the base of the Cleveland range and then, into Lake Elsinore, which is gradually being restored as home for native fish and recreation for humans.



As development continues in our watershed, we must ensure that enough of the “criteria areas” of the MSHCP are conserved, to ensure that our river continues to meander in winter across the valley, nourishing rare plants that are found nowhere else, providing a haven for large and small wildlife, and replenishing our underground water.

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Lake Elsinore And San Jacinto Watersheds Authority

LESJWA improves and maintains the waters within Lake Elsinore, Canyon Lake, and the San Jacinto River Watershed.

LESJWA's membership includes representatives from five member agencies in the area (listed below) working together to improve water quality at Lake Elsinore and Canyon Lake.

- Santa Ana Watershed Project Authority
- City of Lake Elsinore
- City of Canyon Lake
- Elsinore Valley Municipal Water District
- County of Riverside

A few of LESJWA's projects are as follows:

LESJWA's mascot Bessie the Bass explains what a watershed is at the Temecula Water Festival.

Dredging machine at Canyon Lake

Island Wells water flow at Lake Elsinore.

LAKE ELSINORE

- **Supplemental Lake Water** – Improvements made to existing lake supply wells and recycled water treatment will provide supplemental water that will replenish low lake water levels, when necessary.
- **Lake Mixing System** – Large amounts of algae in Lake Elsinore decrease healthy oxygen levels, in turn killing fish and damaging recreational opportunities. Lake mixing helps evenly distribute oxygen throughout the lake to keep it vibrant and healthy.
- **Aeration System** – This subsurface aeration system bubbles air into the water column from pipes on the bottom of the lake to increase lake oxygen levels, which helps lower the amount of algae throughout the lake.
- **Carp Removal** – Carp is a bottom dwelling fish that stirs up silt and unwanted nutrients from lake floors that contribute to the growth of alga blooms which can be harmful to water quality. The removal of carp is vital to the overall health of a lake.

CANYON LAKE

- **Dredging System** – Dredging removes sediment levels from the lake bottom with the use of a self-propelled platform whose suction vacuum sweeps the bottom of the lake floor which improves water quality and water supply.

For additional information visit www.mywatersheds.com

Ten Fun Ways to Enjoy your Watershed

1. **Take a Hike**…a jaunt, a trek, a strut…just get out and see, hear and smell the world in your back yard.
2. **Stop and Smell the Roses**…the mountains, the hills, the valley, Lupine, Poppies, and Sage.
3. **Spend Some Quality Time with your Pet**…leash your dog or cat (bring a bag for pet wastes). Ride a horse or a mule! Check out the trails together.
4. **Play in the Garden**…add native plants to your garden—Manzanita, California lilac, Toyon, and Sage. Use biological controls instead of pesticides, Conserve water.
5. **Get Down and Dirty**…volunteer with other organizations. Help plant trees, restore habitat, and clean-up your watershed.
6. **Tap into Watershed Consciousness**… the big picture! Remember your street and storm drains lead to the ocean.
7. **Sing, Shout, Get the Word Out!**…let friends, family and officials know how you feel about preserving and restoring the San Jacinto.
8. **Explore your Watershed**…discover the San Jacinto watershed, all 780 miles of diverse plantlife, animals, its human communities, and wonderful cultural gems.
9. **Plan a Bright Future**…participate in San Jacinto watershed planning efforts. Bring a friend. Log onto www.sawpa.org/sjrwc/
10. **You Can Make A Difference!**…embrace our natural resources. Protect habitat and enjoy your watershed.

I
MAKE
EVERY
DROP
COUNT

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Section 4

RESOURCES IN YOUR COMMUNITY

We hope you have found this guidebook educational, informative and full of simple actions that you can take to help protect our water supply and preserve our open spaces for your enjoyment and the enjoyment of future generations. We put together the following resources and contacts to help you become more involved in your communities and in the health of your watershed. Remember that your government representatives at all levels—from local to the national—work for you and want to know what you think—express your opinion!

"Hope is the thing with feathers - that perches in the soul - and sings the tune without words - and never stops, at all."

– Emily Dickinson

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Parks and Open Space

PARKS

Lake Perris State Recreation Area
17801 Lake Perris Drive, Perris, CA 92571
Ph: (951) 657-0676
www.parks.ca.gov/default.asp?page_is+651

Mount San Jacinto State Park
PO Box 308
25905 Highway 243
Idyllwild, CA 92549
Ph: (951) 659-2607
wilderness permits 951-659-2607
www.parks.ca.gov/default.asp?page_id+36

The San Bernardino National Forest
54270 Pinecrest
P.O. Box 518, Idyllwild CA 92549
Ph: (951) 382-2921
wilderness permits 951-659-2117
www.fs.us/r5/sanbernardino
Visitor Information Center
(Corner of Pine Crest and Highway 243 in Idyllwild)
www.parks.ca.gov/default.asp?page_is+651

San Jacinto Wildlife Area
PO Box 1254, 17050 Davis Road
Nuevo, CA 92567
Ph: (951) 928-0580

Riverside County Regional Park & Open Space District
4600 Crestmore Road, Riverside, CA 92509
Ph: (951) 955-4310
reservations 1-800-234-7275 (park)
www.riversidecountyparks.org/

McCall Memorial Park
28500 McCall Park Road
Mountain Center, CA 92561
(951) 659-2311

Lawler Alpine Cabins (youth group lodging only)
19751 Hwy 243 Idyllwild, CA 92549
Ph: (951) 955-4397

Idyllwild Nature Center
25222 Hwy 243, Idyllwild, CA 92549
Ph: (951) 659-3850

Idyllwild Park
5400 Riverside County Playground Rd.,
Idyllwild, CA 92549
Ph: (951) 659-2656

Hurkey Park
56375 Highway 74
Mountain Center, CA 92561
Ph: (951) 659-2050

Simpson Park
28505 Rawlings Road
Hemet, CA
www.cityofhemet.org/parks.htm#simpson

Lakes/Recreation Areas

Diamond Valley Reservoir Recreation Area
Now open for boaters and anglers. Additional recreational activities are planned. A Visitor's Center highlighting paleontological discoveries and a scenic viewpoint will be open on varying schedules.
Ph: (800) 211-9863 for days, hours and directions.

Lake Elsinore Recreation Area (LERA)
The lake offers boating, camping and day use areas.
General Lake information: (951) 674-7730
LERA Campground: Ph: (951) 471-1212
LERA Campground reservations: Ph: (800) 416-6992
Seaport Boat launch: Ph: (951) 245-9308
Camping information: Ph: (800) 416-4992

Lake Perris State Recreation Area
Lake Perris offers a variety of water recreation activities including swimming, fishing (shore, pier, and boating), water craft use, sailing, waterskiing and even scuba diving.
17801 Lake Perris Drive, Perris CA 92571
Ph: (951) 657-0676
www.parks.ca.gov/default.asp?page_is+651

EQUESTRIAN TRAILS

Diamond Valley Reservoir Recreation Area
*not currently available/future plans

Lake Perris Recreation Area
17801 Lake Perris Drive
Perris, CA 92571
Ph: (951) 657-0676
www.parks.ca.gov/default.asp?page_is+651

AGRICULTURAL RESOURCES

Milk Producer's Council
Bill Van Dam Ph: (909) 628-6018

Riverside County Farm Bureau
Contact: Steve Pastor Ph: (951) 684-6732
www.riversidecfb.com
pastor@riversidecfb.com

Western Riverside County Agriculture Coalition
Contact: Bruce Scott at (951) 654-5096 or
wrcac_mail@yahoo.com

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Educational Programs and Workshops:

Santa Ana Watershed Association (SAWA)
Provides on-site education, clean up days, and other educational activities, For more information contact: Renee Latu Ph: (909) 799-7407, Ext. 105

The San Jacinto Center for Environmental Education
Provides environmental education at the San Jacinto Wildlife area, Contact: Sue Nash Ph: (909) 228-6710

San Jacinto Basin Resource Conservation District
(951) 654-7733

Western Municipal Water District
Landscapes Southern California Style-A one-acre water conservation demonstration garden, via a self-guided tour of over 250+ plant species and 50 educational stations. Additional information at www.wmwd.com, School educational tours available. Ph: (951) 789-5987

Home and Garden

Green Building:

National Association of Home Builders www.nahb.org

Home Builders Association www.hba.org

Urban Land Institute www.uli.org/

Ecohome Network, Ph: (323) 662-5207, www.ecohome.org

Garden-Native Plants and Invasive Species:

Backyard Composting Program, Ph: (951) 486-3200, for times and locations

California Native Plant Society, www.cnps.org

California Invasive Plant Council, Ph: (510) 525-1502, www.caleppc.org

Riverside County Agricultural Commissioner, Ph: (951) 955-3000

Metropolitan Water District, Heritage Garden Program, www.bewaterwise.com

National Wildlife Federation, Backyard Wildlife Habitat Program Ph: (619) 296-8353, www.nwf.org

Rancho Santa Ana Botanic Garden, Ph: (909) 625-8767 www.rsabg.org

Theodore Payne Foundation Nursery, Ph: (818) 768-1802 www.theodorepayne.org

Tree of Life Nursery, San Juan Capistrano, Ph: (949) 728-0685 www.treeoflifenursery.com

Fire Departments
FOR ALL FIRE EMERGENCIES CALL 911!

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Air, Water and Land Resource Agencies and Organizations

GOVERNMENTAL AGENCIES:

South Coast Air Quality Management District (SCAQMD), Regional air quality or to lodge a pollution complaint, Ph: (800) CUT SMOG (288-7664). SCAQMD, list of non-toxic cleaners in our area, [www.aqmd.gov]

California EPA, Air Resources Board, Ph: (800) 363-7664 for pollution complaints and to find out about the health effects of indoor and outdoor air pollution, Ph: (916) 322-2990 for info on air quality programs.

US Environmental Protection Agency, Region 9 Office, Potential sources of indoor air pollution and ways to improve indoor air quality, Ph: (415) 972-3102, (800) 438-4318.

Non-profit Organizations:

Communities for a Better Environment, strategies for improving and protecting air quality, www.cbemw.org.

Environmental Defense Scorecard, air quality and polluters in your community, [www.scorecard.org].

Natural Resources Defense Council, air and energy programs, federal legislation, and publications on air quality, www.nrdc.org.

Websites with Energy Saving Tips:

Flex Your Power, www.flexyourpower.ca.gov
Earth911, www.earth911.org
US Department of Energy, www.eere.energy.gov

Local Electricity and Gas Providers:

Southern California Electric, Ph: (800) 655-4555
Southern California Gas Company, Ph: (800) 427-2000

Air, Water and Land Resource Agencies and Organizations

Renewable Energy Information:

Go Green Power, www.gogreenpower.org
Global Green USA, www.globalgreen.org
GreenE, www.green-e.org
California Energy Commission, www.energy.ca.gov
US Department of Energy, www.eere.energy.gov

Waste, Stormwater and Watershed Management

Lake Elsinore and San Jacinto Watersheds Authority
www.mywatersheds.com

Riverside County Environmental Health Dept. Call 1 (800) 304-2226 for dates and times of free collection events throughout Riverside County, This Department can help you with hazardous waste disposal and pollution issues.

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Santa Ana Watershed Project Authority, www.sawpa.org/

Riverside County Flood Control and Water Conservation District
(951) 955-1200, http://www.floodcontrol.co.riverside.ca.us. This Department can help you with flooding concerns and reporting of storm water pollution.

Riverside County Waste Management Department
Ph: (800) 366-SAVE or (951) 486-3200, http://www.rivcowm.org. This Department can assist you with information about landfills, recycling, and the composting programs.

Riverside County Water Task Force, Supervisor Marion Ashley
Ph: (951) 955-1050, www.district5@rcb05.org

California Regional Water Quality Control Board, Santa Ana Region
Ph: (951) 782-4130, region8info@waterboards.ca.gov

The San Jacinto River Watershed Council
Ph: (951) 808-8531, www.sawpa.org/sjrwc

Bureau of Reclamation
Reclamation is the largest wholesale water supplier in the United States, and the nation's second largest producer of hydroelectric power. Its facilities also provide substantial flood control, recreation, and fish and wildlife benefits. Visit their website at http://www.usbr.gov
Southern California area office, Ph: (951) 695-5310

Government Representatives

UNITED STATES LEGISLATURE:

To find out who your representative and senators are, either call your local city hall, check your telephone book or enter your zip code in the following website: www.congress.org, Federal and State Elected Officials, Cities in Watershed

STATE OF CALIFORNIA

Governor

Arnold Schwarzenegger
Ph: (916) 445-2841 or (213) 897-0322, e-mail: governor@governor.ca.gov

Congressional

Congresswoman Mary Bono, U. S. Congressional District 45
Ph: (202) 225-5330 or (951) 658-2312

Congressman Ken Calvert, U.S. Congressional District 44
Ph: (202) 225-1986 or (951) 784-4300

Congressman Darrell Issa, U. S. Congressional District 49
Ph: (202) 225-3906 or (951) 693-2447

Congressman Jerry Lewis, U.S. Congressional District 41
Ph: (202) 225-5861 or (909) 862-6030

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State Assembly

Bill Emmerson, District 63, Ph: (909) 466-9096

John Benoit, District 64, Ph: (951) 369-6644

Russ Bogh, District 65, Ph: (909) 790-4196

Ray Haynes, District 66, Ph: (951) 699-1113

State Senate

Bob Dutton, District 31, Ph: (909) 466-4180

Dennis Hollingsworth, District 36, Ph: (951) 676-1020

Jim Battin, District 37, Ph: (951) 953-9502

SAN JACINTO WATERSHED CITIES AND COMMUNITIES

Cities

City of Beaumont
Ph: (951) 769-8520
www.ci.beaumont.ca.us

City of Canyon Lake
Ph: (951) 244-2955
www.cityofcanyonlake.com

City of Hemet
Ph: (951) 765-2300
www.cityofhemet.org

City of Lake Elsinore
Ph: (951) 674-3124
www.lake-elsinore.org

City of Moreno Valley
Ph: (951) 413-3000
www.ci.moreno-valley.ca.us

City of Murrieta
Ph: (951) 304-2489
www.murrieta.org

City of Perris
Ph: (951) 943-6100
www.cityofperris.org

City of Riverside
Ph: (951) 826-5311
www.riversideca.gov

City of San Jacinto
Ph: (951) 654-7337
www.ci.san-jacinto.ca.us

Community

Idyllwild
Ph: (951) 659-3259
www.idyllwildchamber.com

Quail Valley
Ph: (951) 672-1991 (Menifee Chamber)

Sun City
Ph: (951) 672-9006

Menifee
Ph: (951) 672-1991
www.menifeevalleychamber.com

Romoland
Ph: (951) 672-1991 (Menifee Chamber)

Soboba Band of Luiseño Indians
(951) 654-2765

Winchester
Ph: (951) 926-8972

CONTACT

WATER SUPPLIERS

- Eastern Municipal Water District, www.emwd.org
- Elsinore Valley Municipal Water District, www.evmwd.com
- Idyllwild Water District www.idyllwildwater.org
- Lake Hemet Municipal Water District, www.lhmwd.org
- Nuevo Water Company Ph: (951) 928-1832
- Western Municipal Water District, www.wmwd.com

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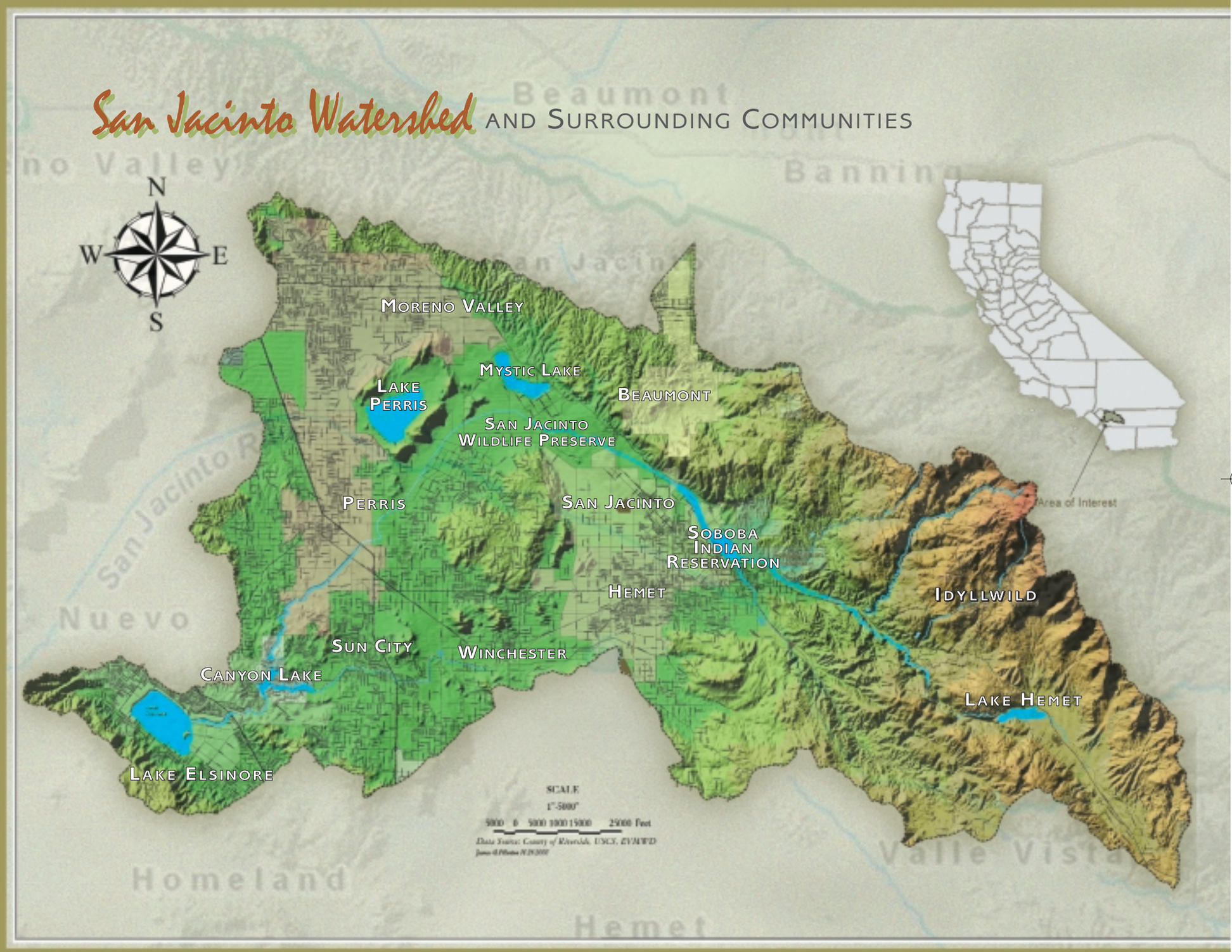
Watershed Map
Elsinore Valley Municipal Water District

Watershed Illustration
LESJWA

SJ MapSpread 2 panels 10/2/06 11:15 AM Page 1

San Jacinto Watershed and Surrounding Communities



Stormwater Pollution Found in Your Area!

This is not a citation.

This is to inform you that our staff found the following pollutants in the storm sewer system in your area. This storm sewer system leads directly to

_____ .

- ❑ Motor oil
- ❑ Oil filters
- ❑ Antifreeze/ transmission fluid
- ❑ Paint
- ❑ Solvent/degreaser
- ❑ Cooking grease
- ❑ Detergent
- ❑ Home improvement waste (concrete, mortar)
- ❑ Pet waste
- ❑ Yard waste (leaves, grass, mulch)
- ❑ Excessive dirt and gravel
- ❑ Trash
- ❑ Construction debris
- ❑ Pesticides and fertilizers
- ❑ Other

_____

For more information or to report an illegal discharge of pollutants, please call:

Riverside County Residents, Call . . .
1-800-506-2555

WHEN IT RAINS
IT DRAINS

EPA
United States
Environmental Protection
Agency

www.epa.gov/npdes/stormwater

EPA 833-F-03-002
April 2003

Stormwater runoff is precipitation from rain or snowmelt that flows over the ground. As it flows, it can pick up debris, chemicals, dirt, and other pollutants and deposit them into a storm sewer system or waterbody.

Anything that enters a storm sewer system is discharged untreated into the waterbodies we use for swimming, fishing, and providing drinking water.

Remember: Only Rain Down the Drain

To keep the stormwater leaving your home or workplace clean, follow these simple guidelines:

- Use pesticides and fertilizers sparingly
- Repair auto leaks.
- Dispose of household hazardous waste, used auto fluids (antifreeze, oil, etc.), and batteries at designated collection or recycling locations.
- Clean up after your pet.
- Use a commercial car wash or wash your car on a lawn or other unpaved surface.
- Sweep up yard debris rather than hosing down areas. Compost or recycle yard waste when possible.
- Clean paint brushes in a sink, not outdoors. Properly dispose of excess paints through a household hazardous waste collection program.
- Sweep up and properly dispose of construction debris like concrete and mortar.

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