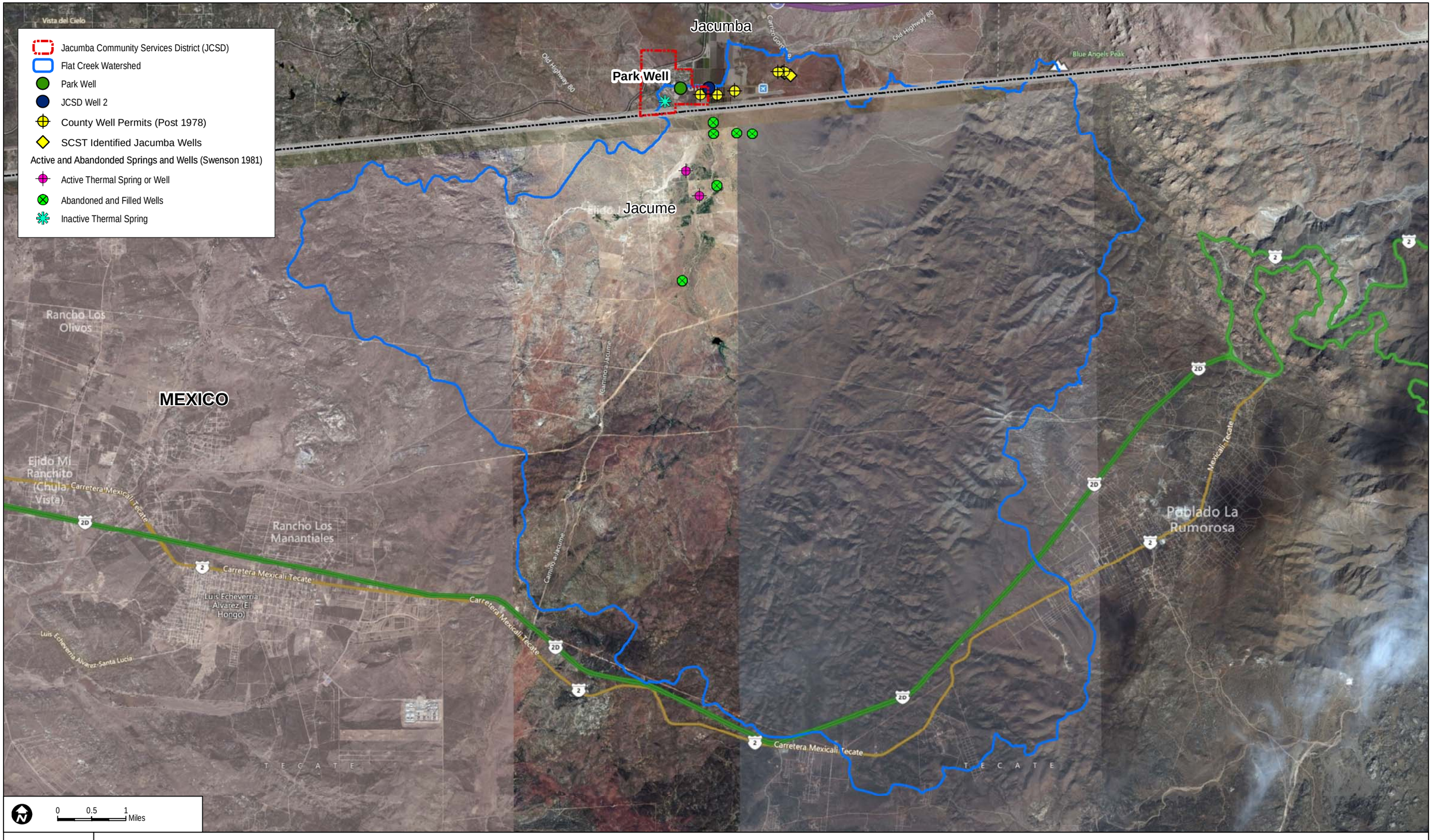



DUDEK

SOURCE: Bing Maps; San Diego County; Swenson 1981

**FIGURE 10**

**Flat Creek Watershed Land Use and Wells**

INTENTIONALLY LEFT BLANK

Jacumba Community Services District (JCSD)
Half-Mile Radius Park Well
Park Well
Well 6
Well 4
Potential Groundwater Dependent Vegetation (SanGIS 1995)
Grasslands, Vernal Pools, Meadows, and Other Herbs
Riparian and Bottomland Habitat

Jacumba
Park Well
Wells 4 and 6
0.5 Mile
Potential Groundwater-Dependent Habitat
Old Highway 80
Boundary Creek Rd
Carrizo Gorge Rd
Seeley Ave
Brawley Ave
Holtville Ave
Calexico Ave
Jacumba St
Railroad St
Carrizo St
Jacumba Airport
MEXICO

0 500 1,000 Feet

SOURCE: Bing Maps, SanGIS

DUDEK

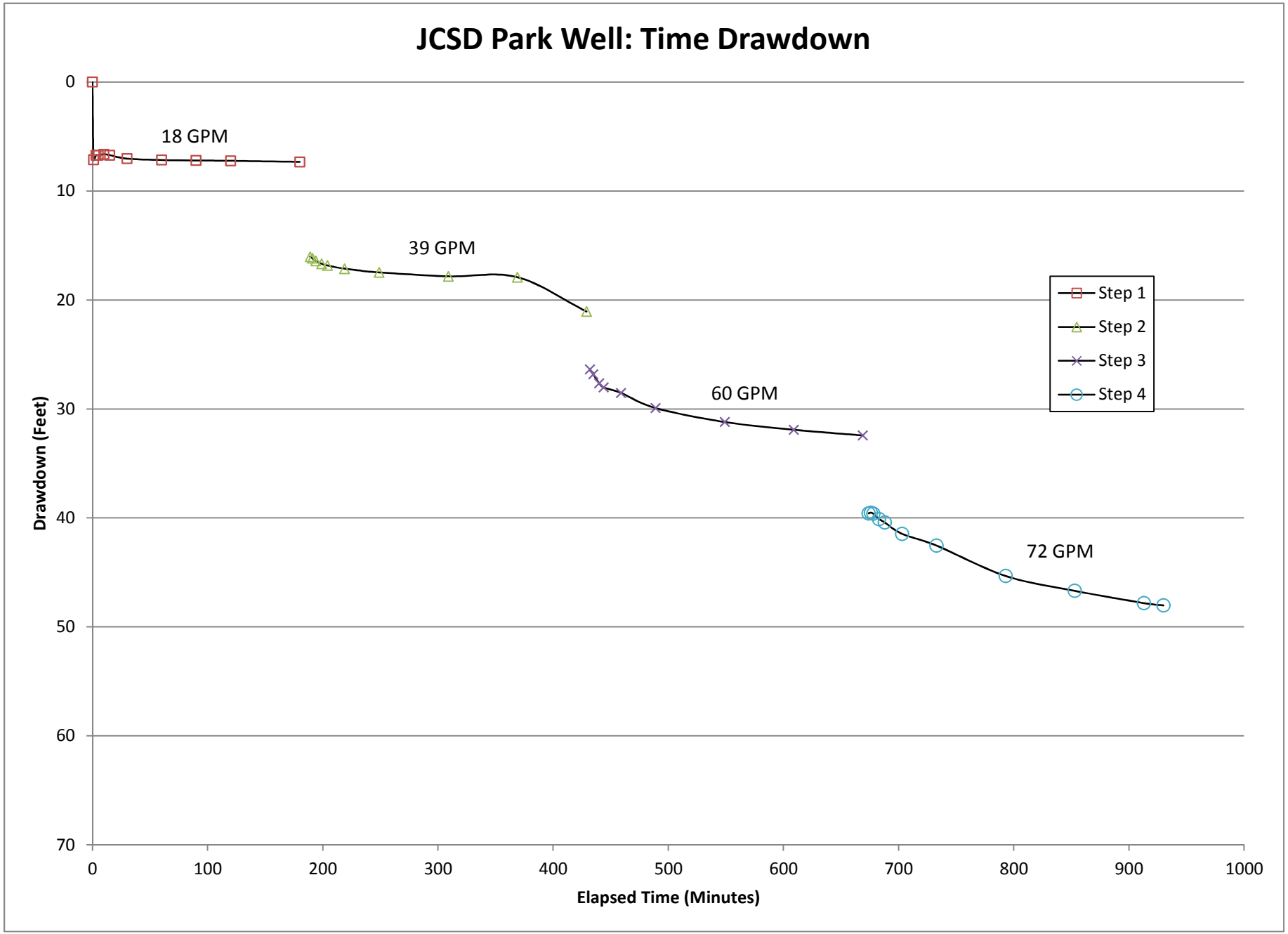
8477
APRIL 2015

**FIGURE 11**
**Potential Groundwater-Dependent Vegetation**

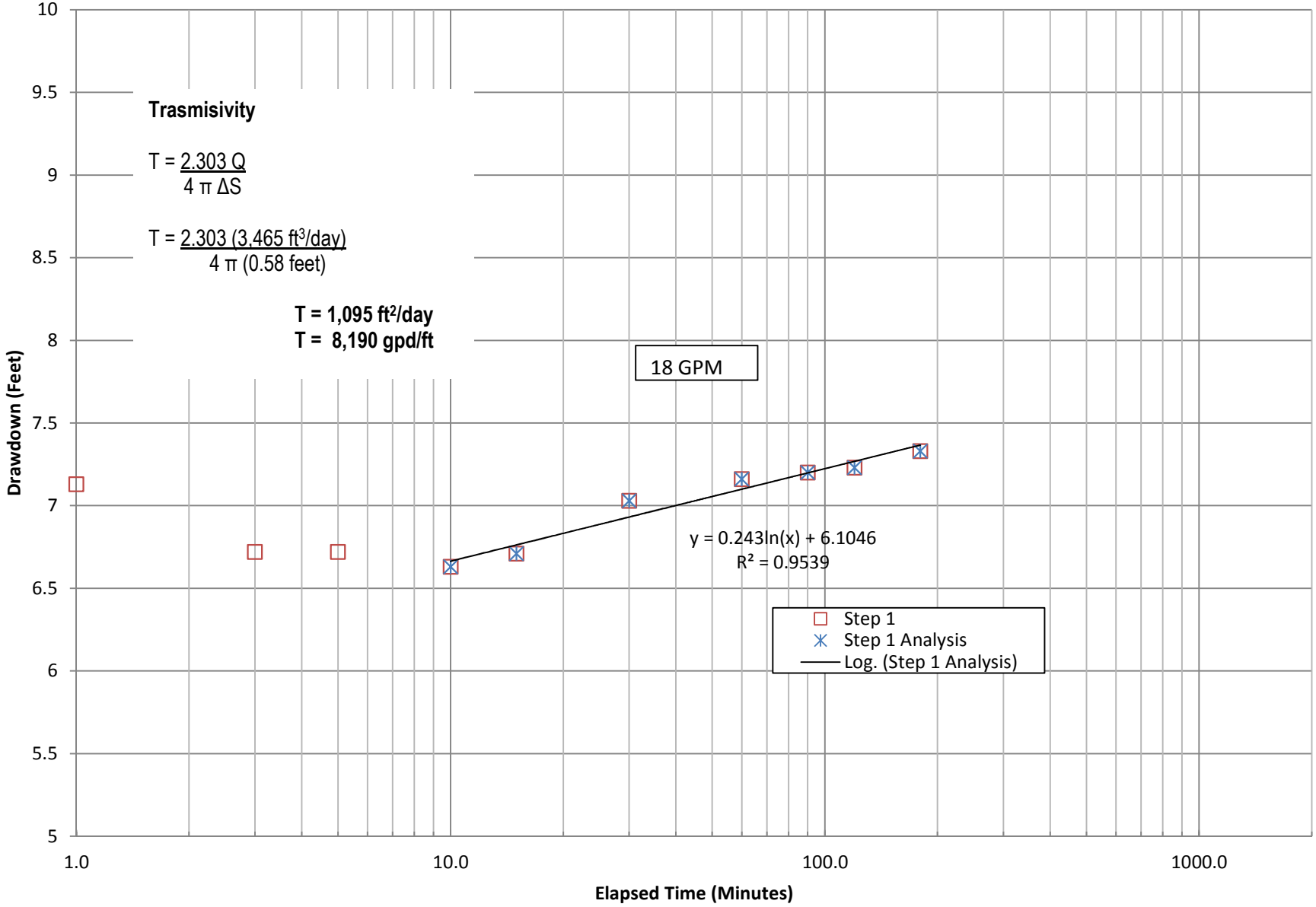
INTENTIONALLY LEFT BLANK

# APPENDIX A

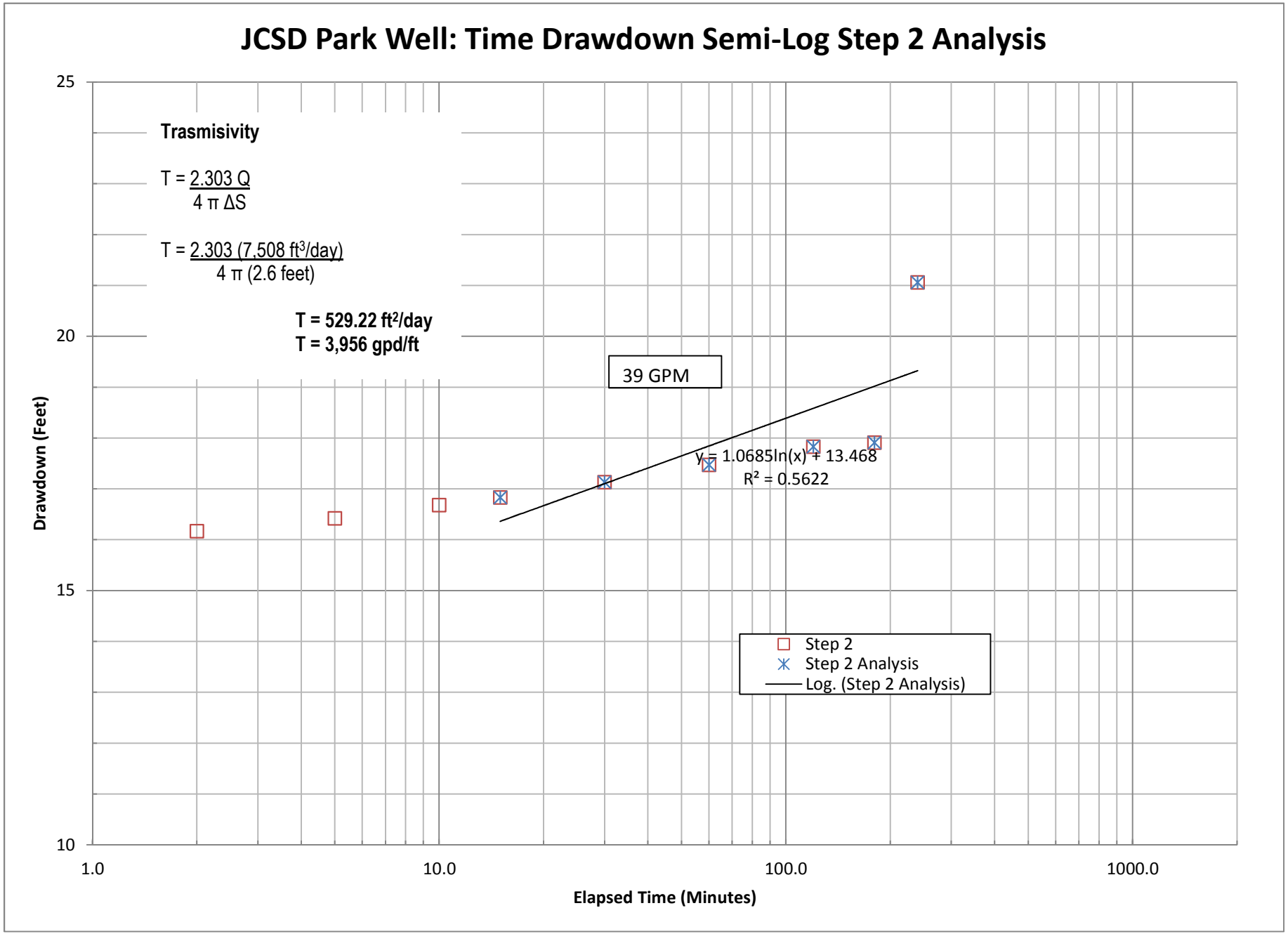
*Park Well Pump Test Results*


JCSD Park Well: Time Drawdown
Drawdown (Feet)
Elapsed Time (Minutes)
0
10
20
30
40
50
60
70
0
100
200
300
400
500
600
700
800
900
1000
18 GPM
39 GPM
60 GPM
72 GPM
Step 1
Step 2
Step 3
Step 4

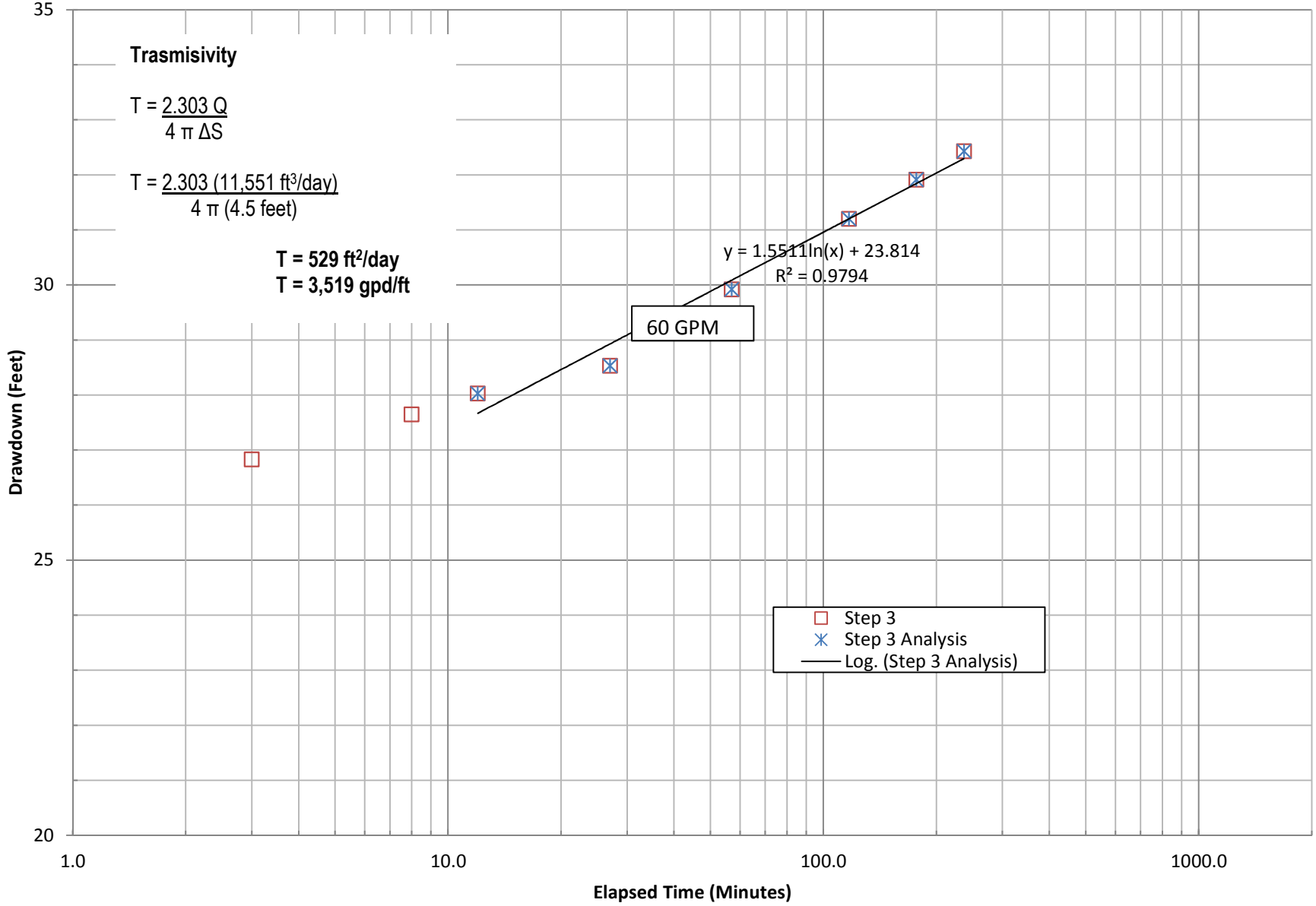
# JCSD Park Well: Time Drawdown Semi-Log - Step 1 Analysis

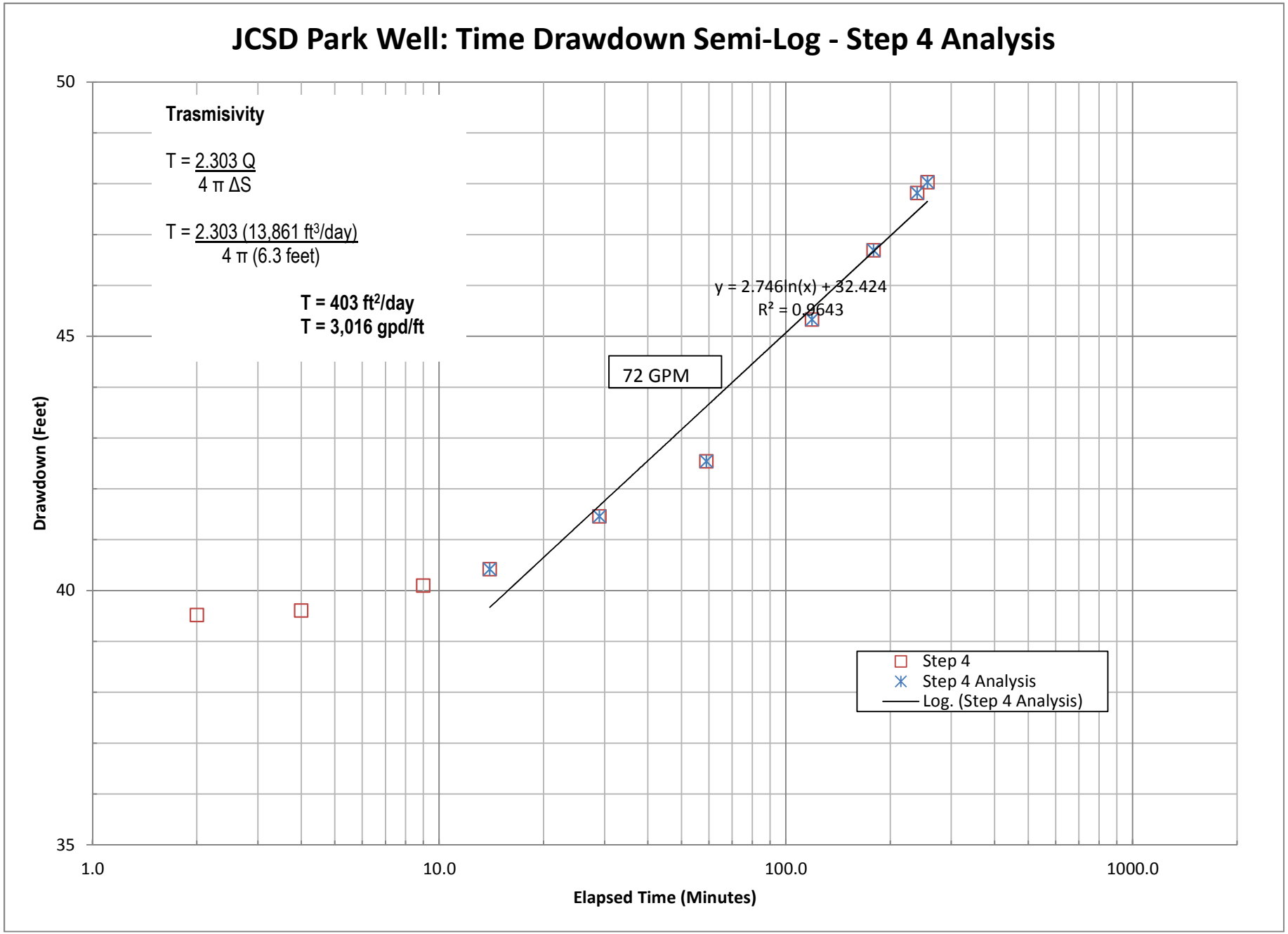


# JCSD Park Well: Time Drawdown Semi-Log Step 2 Analysis

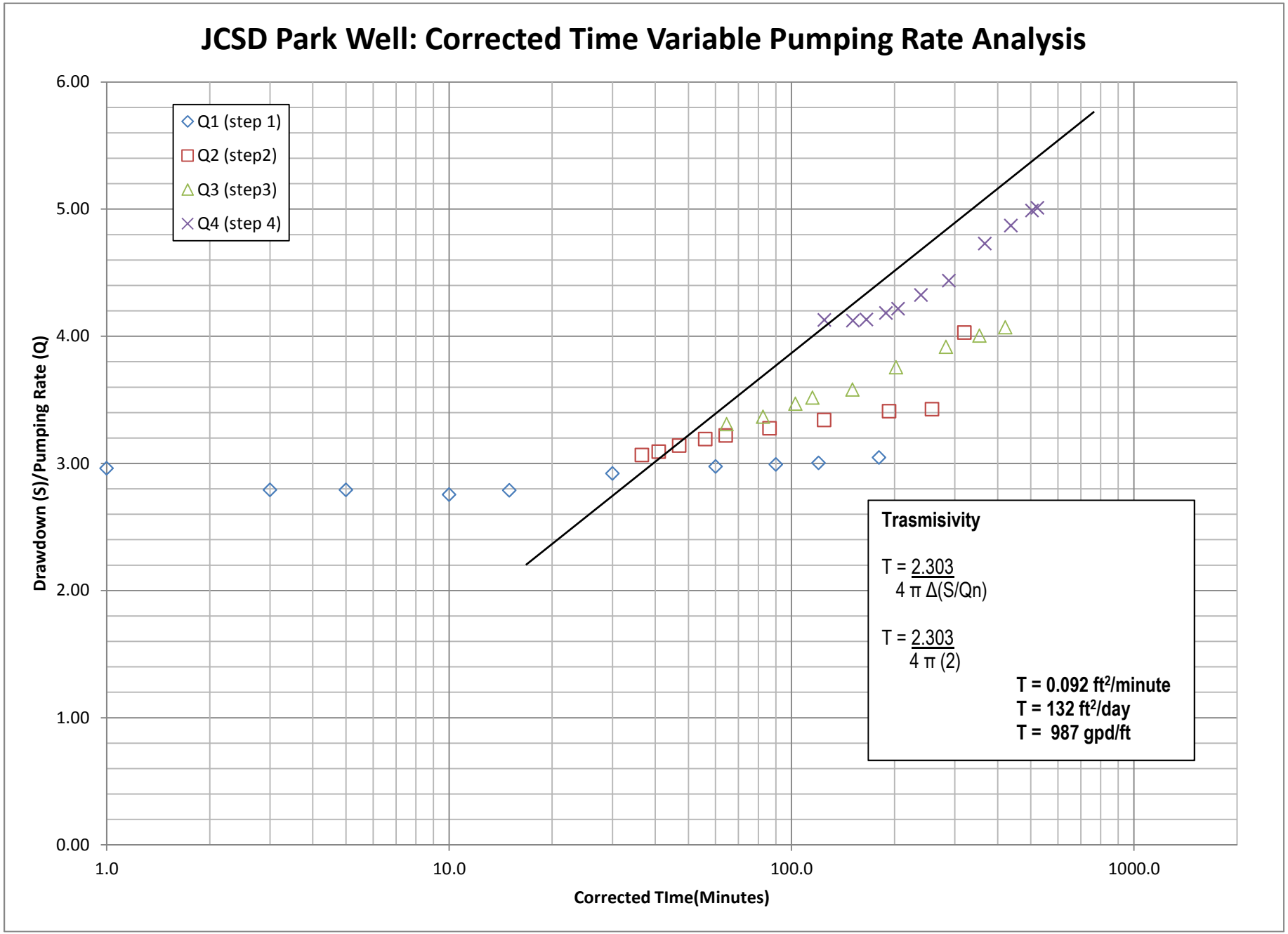


# JCSD Park Well: Time Drawdown Semi-Log - Step 3 Analysis




JCSD Park Well: Time Drawdown Semi-Log - Step 4 Analysis
Trasmisivity
T = 2.303 Q / 4 π ΔS
T = 2.303 (13,861 ft³/day) / 4 π (6.3 feet)
T = 403 ft²/day
T = 3,016 gpd/ft
y = 2.746ln(x) + 32.424
R² = 0.9643
72 GPM
Step 4
Step 4 Analysis
Log. (Step 4 Analysis)
Drawdown (Feet)
Elapsed Time (Minutes)
50
45
40
35
1.0
10.0
100.0
1000.0

# JCSD Park Well: Corrected Time Variable Pumping Rate Analysis



# APPENDIX B

*Park Well Laboratory Water Quality Results*

EnviroMatrix Analytical, Inc.

30 December 2005

PETRA Geotechnical, Inc.
Attn: Chuck Houser
12225 World Trade Drive, Suite P
San Diego, California 92128

**EMA Log #: 0512315**

**Project Name: Jacumba CSD**

Enclosed are the results of analyses for samples received by the laboratory on 12/20/05 07:29. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that this data is in compliance both technically and for completeness.

**Dan Verdon**
**Laboratory Director**

CA ELAP Certification #: 2564

Client Name: PETRA Geotechnical, Inc.
Project Name: Jacumba CSD

**EMA Log #: 0512315**

## ANALYTICAL REPORT FOR SAMPLES

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date Received |
|---|---|---|---|---|
| MW-1 | 0512315-01 | Water | 12/19/05 12:50 | 12/20/05 07:29 |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

Client Name: PETRA Geotechnical, Inc.
Project Name: Jacumba CSD

**EMA Log #: 0512315**

## Conventional Chemistry Parameters by Standard/EPA Methods

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **MW-1 (0512315-01) Water** | **Sampled: 12/19/05 12:50** | **Received: 12/20/05 07:29** | | | | | | | |
| **Chloride** | **90.0** | 0.05 | mg/l | 1 | 5122220 | 12/22/05 | 12/27/05 | SM4500 Cl C | |
| **Fluoride** | **1.9** | 0.1 | " | " | 5122204 | 12/22/05 | 12/22/05 | SM4500 F C | |
| **Nitrate as N** | **0.05** | 0.05 | " | " | 5122032 | 12/20/05 | 12/20/05 | SM4500 NO3 E | |
| **pH** | **6.92** | 0.10 | pH Units | " | 5122101 | 12/20/05 | 12/20/05 | EPA 150.1 | |
| **Total Dissolved Solids** | **452** | 20 | mg/l | " | 5122111 | 12/20/05 | 12/22/05 | SM2540 C | |
| **Sulfate as SO4** | **103** | 25.0 | " | 5 | 5122702 | 12/27/05 | 12/27/05 | SM4500 SO4 E | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

Client Name: PETRA Geotechnical, Inc.
Project Name: Jacumba CSD

**EMA Log #: 0512315**

## Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 5122032** | | | | | | | | | | |
| **Blank (5122032-BLK1)** | | | | Prepared & Analyzed: 12/20/05 | | | | | | |
| Nitrate as N | ND | 0.05 | mg/l | | | | | | | |
| **LCS (5122032-BS1)** | | | | Prepared & Analyzed: 12/20/05 | | | | | | |
| Nitrate as N | 0.50 | 0.05 | mg/l | 0.500 | | 100 | 80-120 | | | |
| **LCS Dup (5122032-BSD1)** | | | | Prepared & Analyzed: 12/20/05 | | | | | | |
| Nitrate as N | 0.51 | 0.05 | mg/l | 0.500 | | 102 | 80-120 | 2 | 20 | |
| **Duplicate (5122032-DUP1)** | | Source: 0512315-01 | | Prepared & Analyzed: 12/20/05 | | | | | | |
| Nitrate as N | 0.06 | 0.05 | mg/l | | 0.05 | | | 18 | 20 | |
| **Matrix Spike (5122032-MS1)** | | Source: 0512315-01 | | Prepared & Analyzed: 12/20/05 | | | | | | |
| Nitrate as N | 0.53 | 0.05 | mg/l | 0.500 | 0.05 | 96 | 80-120 | | | |
| **Matrix Spike Dup (5122032-MSD1)** | | Source: 0512315-01 | | Prepared & Analyzed: 12/20/05 | | | | | | |
| Nitrate as N | 0.56 | 0.05 | mg/l | 0.500 | 0.05 | 102 | 80-120 | 6 | 20 | |
| **Reference (5122032-SRM1)** | | | | Prepared & Analyzed: 12/20/05 | | | | | | |
| Nitrate as N | 4.32 | 0.50 | mg/l | 4.32 | | 100 | 87-113 | | | |
| **Batch 5122101** | | | | | | | | | | |
| **Duplicate (5122101-DUP1)** | | Source: 0512315-01 | | Prepared & Analyzed: 12/20/05 | | | | | | |
| pH | 6.89 | 0.10 | pH Units | | 6.92 | | | 0.4 | 20 | |
| **Reference (5122101-SRM1)** | | | | Prepared & Analyzed: 12/20/05 | | | | | | |
| pH | 8.83 | 0.10 | pH Units | 9.10 | | 97 | 97-103 | | | |

Client Name: PETRA Geotechnical, Inc.
Project Name: Jacumba CSD

**EMA Log #: 0512315**

## Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 5122111** | | | | | | | | | | |
| **Duplicate (5122111-DUP1)** | | **Source: 0512228-02** | | Prepared: 12/20/05 Analyzed: 12/22/05 | | | | | | |
| Total Dissolved Solids | 760 | 20 | mg/l | | 785 | | | 3 | 20 | |
| **Duplicate (5122111-DUP2)** | | **Source: 0512266-02** | | Prepared: 12/20/05 Analyzed: 12/29/05 | | | | | | |
| Total Dissolved Solids | 3750 | 20 | mg/l | | 3760 | | | 0.3 | 20 | |
| **Reference (5122111-SRM1)** | | | | Prepared: 12/20/05 Analyzed: 12/22/05 | | | | | | |
| Total Dissolved Solids | 242 | 20 | mg/l | 216 | | 112 | 86-114 | | | |
| **Batch 5122204** | | | | | | | | | | |
| **Blank (5122204-BLK1)** | | | | Prepared & Analyzed: 12/22/05 | | | | | | |
| Fluoride | ND | 0.1 | mg/l | | | | | | | |
| **LCS (5122204-BS1)** | | | | Prepared & Analyzed: 12/22/05 | | | | | | |
| Fluoride | 0.9 | 0.1 | mg/l | 1.00 | | 90 | 80-120 | | | |
| **LCS Dup (5122204-BSD1)** | | | | Prepared & Analyzed: 12/22/05 | | | | | | |
| Fluoride | 0.9 | 0.1 | mg/l | 1.00 | | 90 | 80-120 | 0 | 20 | |
| **Duplicate (5122204-DUP1)** | | **Source: 0512315-01** | | Prepared & Analyzed: 12/22/05 | | | | | | |
| Fluoride | 1.9 | 0.1 | mg/l | | 1.9 | | | 0 | 20 | |
| **Matrix Spike (5122204-MS1)** | | **Source: 0512315-01** | | Prepared & Analyzed: 12/22/05 | | | | | | |
| Fluoride | 2.8 | 0.1 | mg/l | 1.00 | 1.9 | 90 | 80-120 | | | |
| **Matrix Spike Dup (5122204-MSD1)** | | **Source: 0512315-01** | | Prepared & Analyzed: 12/22/05 | | | | | | |
| Fluoride | 2.8 | 0.1 | mg/l | 1.00 | 1.9 | 90 | 80-120 | 0 | 20 | |

Client Name: PETRA Geotechnical, Inc.
Project Name: Jacumba CSD

**EMA Log #: 0512315**

## Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 5122204** | | | | | | | | | | |
| **Reference (5122204-SRM1)** | | | | Prepared & Analyzed: 12/22/05 | | | | | | |
| Fluoride | 4.5 | 0.1 | mg/l | 4.73 | | 95 | 86-114 | | | |
| **Batch 5122220** | | | | | | | | | | |
| **Blank (5122220-BLK1)** | | | | Prepared: 12/22/05 Analyzed: 12/29/05 | | | | | | |
| Chloride | ND | 0.05 | mg/l | | | | | | | |
| **LCS (5122220-BS1)** | | | | Prepared: 12/22/05 Analyzed: 12/27/05 | | | | | | |
| Chloride | 202 | 0.05 | mg/l | 200 | | 101 | 80-120 | | | |
| **LCS Dup (5122220-BSD1)** | | | | Prepared: 12/22/05 Analyzed: 12/27/05 | | | | | | |
| Chloride | 204 | 0.05 | mg/l | 200 | | 102 | 80-120 | 1 | 20 | |
| **Duplicate (5122220-DUP1)** | | **Source: 0512264-01** | | Prepared: 12/22/05 Analyzed: 12/27/05 | | | | | | |
| Chloride | 266000 | 12.5 | mg/l | | 264000 | | | 0.8 | 20 | |
| **Matrix Spike (5122220-MS1)** | | **Source: 0512264-01** | | Prepared: 12/22/05 Analyzed: 12/27/05 | | | | | | |
| Chloride | 315000 | 12.5 | mg/l | 50000 | 264000 | 102 | 80-120 | | | |
| **Matrix Spike Dup (5122220-MSD1)** | | **Source: 0512264-01** | | Prepared: 12/22/05 Analyzed: 12/27/05 | | | | | | |
| Chloride | 314000 | 12.5 | mg/l | 50000 | 264000 | 100 | 80-120 | 0.3 | 20 | |
| **Batch 5122702** | | | | | | | | | | |
| **Blank (5122702-BLK1)** | | | | Prepared & Analyzed: 12/27/05 | | | | | | |
| Sulfate as SO4 | ND | 5.0 | mg/l | | | | | | | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

Client Name: PETRA Geotechnical, Inc.
Project Name: Jacumba CSD

**EMA Log #: 0512315**

## Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 5122702** | | | | | | | | | | |
| **LCS (5122702-BS1)** | | | | Prepared & Analyzed: 12/27/05 | | | | | | |
| Sulfate as SO4 | 8.8 | 5.0 | mg/l | 10.0 | | 88 | 80-120 | | | |
| **LCS Dup (5122702-BSD1)** | | | | Prepared & Analyzed: 12/27/05 | | | | | | |
| Sulfate as SO4 | 8.9 | 5.0 | mg/l | 10.0 | | 89 | 80-120 | 1 | 20 | |
| **Duplicate (5122702-DUP1)** | | **Source: 0512315-01** | | Prepared & Analyzed: 12/27/05 | | | | | | |
| Sulfate as SO4 | 101 | 25.0 | mg/l | | 103 | | | 2 | 20 | |
| **Matrix Spike (5122702-MS1)** | | **Source: 0512315-01** | | Prepared & Analyzed: 12/27/05 | | | | | | |
| Sulfate as SO4 | 149 | 25.0 | mg/l | 50.0 | 103 | 92 | 80-120 | | | |
| **Matrix Spike Dup (5122702-MSD1)** | | **Source: 0512315-01** | | Prepared & Analyzed: 12/27/05 | | | | | | |
| Sulfate as SO4 | 146 | 25.0 | mg/l | 50.0 | 103 | 86 | 80-120 | 2 | 20 | |

*he results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

## Notes and Definitions

| | |
|---|---|
| ND | Analyte NOT DETECTED at or above the reporting limit |
| NR | Not Reported |
| dry | Sample results reported on a dry weight basis |
| RPD | Relative Percent Difference |

# CHAIN-OF-CUSTODY RECORD

EnviroMatrix Analytical, Inc.
4340 Viewridge Ave., Ste. A • San Diego, CA 92123 • Phone (858) 560-7717 • Fax (858) 560-7763

**EMA LOG #:** 0512315

**EMA DATE/TIME STAMP**

Client: Petra Geotechnical
Address: 12225 World Trade Dr., Ste P
San Diego, CA 92128
Attn: Chuck Houser Phone: (858) 485-5530
Sampled by: Chuck Houser Fax: (858) 485-8215
Billing Address: 3185-A Airway Ave
Costa Mesa, CA
Project: Jacumba CSD PO #:

**REQUESTED ANALYSIS**

| EMA ID # | Client Sample ID | Sample Date | Sample Time | Sample Matrix | Container(s) # | Container(s) Type* | 418.1 (TRPH) | Oil & Grease 413.1__ 413.2__ 1664__ | TPH (8015B) Gas__ Diesel__ | TPH-Extended 8015B__ ASTM D2887__ | 602 / 8021 BTXE__ MTBE__ | 601 / 8021 (Purgeable Halocarbons) | 608 / 8081 (Pesticides) | 608 / 8082 (PCB's) | 624 / 8260 (Volatile Organics) | 625 / 8270 (Semi Volatile Organics) | TTLC Metals (CAC Title 22) | STLC Metals (CAC Title 22) | TCLP (RCRA) Metals__ Organics__ | Cd Cr Cu Pb Ni Ag Zn | pH EC TSS TDS | TDS | Chloride | Nitrate | Sulfate | pH | Fluoride | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | MW-1 | 12/19/05 | 12:50 | Water | | | | | | | | | | | | | | | | | | X | X | X | X | X | X | | |
| 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

*Container Types: B=Brass Tube; V=VOA; G=Glass; P=Plastic; O=Other (list)

Tamper-Proof Seals Intact: Yes No N/A  Correct Containers: Yes No

Sample(s): Cold Ambient Warm  VOAs w/ZHS: Yes No N/A

All Samples Properly Preserved: Yes No N/A

Disposal: N/C (aqueous) *EMA (@$5.00/sample) Return Hold

Turnaround Time: 24 hr 48 hr 3 day 4 day 5 day (Normal)

Comments: T = 10°C

| RELINQUISHED BY | DATE/TIME | RECEIVED BY |
|---|---|---|
| Signature | 12/20/05 7:29 | Signature |
| Print: Chuck Houser | | Print: Vassilka Vatcarska |
| Company: Petra | | Company: EMA |
| Signature | 12/20/05 7:29 | Signature |
| Print | | Print |
| Company: | | Company: |
| Signature | | Signature |
| Print | | Print |
| Company: | | Company: |

*EMA reserves the right to return samples that do not match our waste profile.

White - EMA  Canary - Accounting  Pink - Client (w/Report)  Goldenrod - Client (Relinquish Samples)

# ENVIRONMENTAL ENGINEERING LABORATORY, INC.

3538 Hancock St. San Diego, CA 92110 | P:(619)298-6131 | F:(619)298-6141 | ELAP Cert.#2616


| | | | | |
|---|---|---|---|---|
| **Recipient:** | Tom Lindenmeyer | **Matrix:** | WATER | |
| | JACUMBA COMM.SERVICE DIST. | **Sampled:** | 03/15/2006 | 6:05 |
| | BOX 425 | **Received:** | 03/15/2006 | 11:45 |
| | JACUMBA, CA 92034 | **Collection Address:** | | |
| **Reference:** | 0631270 | **Sample Location:** | MW-1 | |
| **Lab ID:** | 0631270-001 | **Description:** | | |
| **Sample #:** | | **Date Started:** | 03/15/2006 | |
| **Project#:** | | **Date Completed:** | 04/11/2006 | |
| **Comment:** | VOC analyzed past holding time | **PS Code:** | WAT | |

**Analyzed:** 3/24/2006 @ 13:32 **Method:** EPA 504.1
**Analyst:** BSK **Dilution Factor:** 1

## *EDB And DBCP By EPA 504*

| Parameter | Result % | MCL % | RL % |
|---|---|---|---|
| Bromoform | **120** | - | - |
| Dibromochloropropane (DBCP) | **ND** | 0.2 | 0.01 |
| Ethylene Dibromide (EDB) | **ND** | 0.05 | 0.02 |

**Report Date:** 04/11/2006

**Approval:** _____
Director

RECEIVED
MAY 24 2006

RL = Reporting Limit MCL = Maximum Contaminant Level MDL = Method Detection Limit N/A = Not Applicable

# ENVIRONMENTAL ENGINEERING LABORATORY, INC.

3538 Hancock St. San Diego, CA 92110 | P:(619)298-6131 | F:(619)298-6141 | ELAP Cert.#2616


| | | | |
|---|---|---|---|
| **Recipient:** | Tom Lindenmeyer | **Matrix:** | WATER |
| | JACUMBA COMM.SERVICE DIST. | **Sampled:** | 03/15/2006 6:05 |
| | BOX 425 | **Received:** | 03/15/2006 11:45 |
| | JACUMBA, CA 92034 | **Collection Address:** | |
| **Reference:** | 0631270 | **Sample Location:** | MW-1 |
| **Lab ID:** | 0631270-001 | **Description:** | |
| **Sample #:** | | **Date Started:** | 03/15/2006 |
| **Project#:** | | **Date Completed:** | 04/11/2006 |
| **Comment:** | VOC analyzed past holding time | **PS Code:** | WAT |

**Analyzed:** 4/5/2006 @ 14:34 **Method:** EPA 524.2

**Analyst:** **Dilution Factor:** 1

## *VOC By EPA 502.2/524.2*

| Parameter | Result ug/L | MCL ug/L | RL ug/L | Parameter | Result ug/L | MCL ug/L | RL ug/L |
|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | 80 | 0.5 | Chloroethane | ND | 80 | 0.5 |
| 1,1,1-Trichloroethane | ND | 200 | 0.5 | Chloroform | ND | 80 | 0.5 |
| 1,1,2,2-Tetrachloroethane | ND | 1 | 0.5 | Chloromethane | ND | 80 | 0.5 |
| 1,1,2-Trichloroethane | ND | 5 | 0.5 | Cis-1,2-Dichloroethylene | ND | 6 | 0.5 |
| 1,1-Dichloroethane | ND | 5 | 0.5 | Cis-1,3-Dichloropropene | ND | 80 | 0.5 |
| 1,1-Dichloroethylene | ND | 6 | 0.5 | Dibromochloromethane | ND | 80 | 0.5 |
| 1,1-Dichloropropene | ND | 80 | 0.5 | Dibromomethane | ND | 80 | 0.5 |
| 1,2 Dichlorobenzene (o-DCB) | ND | 600 | .5 | Dichlorodifluoromethane | ND | 80 | 0.5 |
| 1,2,3-Trichlorobenzene | ND | 80 | 0.5 | Dichloromethane(Methylenchlor) | ND | 5 | 0.5 |
| 1,2,3-Trichloropropane | ND | - | 0.5 | Ethylbenzene | 0.50 | 300 | 0.5 |
| 1,2,4-Trichlorobenzene | ND | 5 | 0.5 | Hexachlorobutadiene | ND | 80 | 0.5 |
| 1,2,4-Trimethylbenzene | 0.50 | 80 | 0.5 | Isopropylbenzene (Cumene) | ND | 80 | 0.5 |
| 1,2-Dichloroethane | ND | 0.5 | 0.5 | Methyl Ethyl Ketone | ND | - | 5 |
| 1,2-Dichloropropane | ND | 5 | 0.5 | Methyl Tert-butyl Ether (MTBE) | ND | 5 | 1.0 |
| 1,3,5-Trimethylbenzene | ND | 80 | 0.5 | Monochlorobenzene | ND | 70 | 0.5 |
| 1,3-Dichlorobenzene | ND | 80 | 0.5 | Napthalene | ND | 80 | 0.5 |
| 1,3-Dichloropropane | ND | 80 | 0.5 | N-butylbenzene | ND | 80 | 0.5 |
| 1,3-Dichloropropene | ND | 0.5 | 0.5 | Nitrobenzene | ND | - | 0.5 |
| 1,4-Dichlorobenzene (p-DCB) | ND | 5 | 0.5 | N-propylbenzene | ND | 80 | 0.5 |
| 2,2-Dichloropropane | ND | 80 | 0.5 | Pentachlorothane | ND | - | 0.5 |
| 2-Chlorotoluene | ND | 80 | 0.5 | P-isopropyltoluene | ND | 80 | 0.5 |
| 4-Chlorotoluene | ND | 80 | 0.5 | Sec-butylbenzene | ND | 80 | 0.5 |
| Benzene | 0.70 | 1.0 | 0.5 | Styrene | ND | 100 | 0.5 |
| Bromobenzene | ND | 80 | 0.5 | Tert-butylbenzene | ND | 80 | 0.5 |
| Bromochloromethane | ND | 80 | 0.5 | Tetrachloroethylene (PCE) | ND | 5 | 0.5 |
| Bromodichloromethane | ND | 80 | 0.5 | Toluene | 291 | 150 | 0.5 |
| Bromoform | ND | 80 | 0.5 | Total Trihalomethanes | ND | 80 | 0.5 |
| Bromomethane | ND | 80 | 0.5 | Trans-1,2-dichloroethylene | ND | 10 | 0.5 |
| Carbon Tetrachloride | ND | 0.5 | 0.5 | Trans-1,3-dichloropropene | ND | 80 | 0.5 |

**Report Date:** 04/11/2006

**Approval:** _____
Director

RL = Reporting Limit MCL = Maximum Contaminant Level MDL = Method Detection Limit N/A = Not Applicable

EEL Analytical

# ENVIRONMENTAL ENGINEERING LABORATORY, INC.

3538 Hancock St. San Diego, CA 92110 | P:(619)298-6131 | F:(619)298-6141 | ELAP Cert.#2616

| | | | | |
|---|---|---|---|---|
| **Recipient:** | Tom Lindenmeyer<br>JACUMBA COMM.SERVICE DIST.<br>BOX 425<br>JACUMBA, CA 92034 | **Matrix:** | WATER | |
| | | **Sampled:** | 03/15/2006 | 6:05 |
| | | **Received:** | 03/15/2006 | 11:45 |
| | | **Collection Address:** | | |
| **Reference:** | 0631270 | **Sample Location:** | MW-1 | |
| **Lab ID:** | 0631270-001 | **Description:** | | |
| **Sample #:** | | **Date Started:** | 03/15/2006 | |
| **Project#:** | | **Date Completed:** | 04/11/2006 | |
| **Comment:** | VOC analyzed past holding time | **PS Code:** | WAT | |

**Analyzed:** 4/5/2006 @ 14:34 **Method:** EPA 524.2

**Analyst:** **Dilution Factor:** 1

## *VOC By EPA 502.2/524.2*

| Parameter | Result ug/L | MCL ug/L | RL ug/L | Parameter | Result ug/L | MCL ug/L | RL ug/L |
|---|---|---|---|---|---|---|---|
| Trichloroethylene (TCE) | ND | 5 | 0.5 | | | | |
| Trichlorofluoromethane | ND | 150 | 5.00 | | | | |
| Trichlorotrifluoromethane | ND | 1200 | 10.0 | | | | |
| Vinyl Chloride | ND | 0.5 | 0.5 | | | | |
| Xylenes | ND | 1750 | 0.5 | | | | |

| Surrogates | % Recovered | QC Limits (%) | |
|---|---|---|---|
| 4-Bromofluorobenzene | 70% | 40 | 140 |

**Report Date:** 04/11/2006

**Approval:** _____ Director

RL = Reporting Limit MCL = Maximum Contaminant Level MDL = Method Detection Limit N/A = Not Applicable

# ENVIRONMENTAL ENGINEERING LABORATORY, INC.

3538 Hancock St. San Diego, CA 92110 | P:(619)298-6131 | F:(619)298-6141 | ELAP Cert.#2616


| | | | | |
|---|---|---|---|---|
| **Recipient:** | Tom Lindenmeyer | **Matrix:** | WATER | |
| | JACUMBA COMM.SERVICE DIST. | **Sampled:** | 03/15/2006 | 6:05 |
| | BOX 425 | **Received:** | 03/15/2006 | 11:45 |
| | JACUMBA, CA 92034 | **Collection Address:** | | |
| **Reference:** | 0631270 | **Sample Location:** | MW-1 | |
| **Lab ID:** | 0631270-001 | **Description:** | | |
| **Sample #:** | | **Date Started:** | 03/15/2006 | |
| **Project#:** | | **Date Completed:** | 04/11/2006 | |
| **Comment:** | VOC analyzed past holding time | **PS Code:** | WAT | |

***Carbamates By 531.1***

| Parameter | Result | Units | RL | MCL | Dilution Factor | Method | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| 3-Hydroxycarbofuran | ND | µg/L | 3 | NA | 1 | EPA 531.1 | 03/27/2006 13:34 | BSK |
| Aldicarb | ND | µg/L | 3 | NA | 1 | EPA 531.1 | 03/27/2006 13:34 | BSK |
| Aldicarb Sulfoxide | ND | µg/L | 3 | NA | 1 | EPA 531.1 | 03/27/2006 13:34 | BSK |
| Aldicard Sulfone | ND | µg/L | 2 | NA | 1 | EPA 531.1 | 03/27/2006 13:34 | BSK |
| BDMC | 100 | % | - | - | 1 | EPA 531.1 | 03/27/2006 13:34 | BSK |
| Carbaryl | ND | µg/L | 5 | NA | 1 | EPA 531.1 | 03/27/2006 13:34 | BSK |
| Carbofuran | ND | µg/L | 5 | 18 | 1 | EPA 531.1 | 03/27/2006 13:34 | BSK |
| Methomyl | ND | µg/L | 2 | NA | 1 | EPA 531.1 | 03/27/2006 13:34 | BSK |
| Oxamyl | ND | µg/L | 20 | 50 | 1 | EPA 531.1 | 03/27/2006 13:34 | BSK |

***Coliform Total (1) Colilert***

| Parameter | Result | Units | RL | MCL | Dilution Factor | Method | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Chlorine Residual | NA | mg/L | 0.1 | | 1 | SM4500G | 03/15/2006 13:50 | MEH |
| Coliform, E. Coli. | Absent | None | 0 | 0 | 1 | SM 9223 | 03/15/2006 13:50 | MEH |
| Total Coliform | Absent | None | 0 | 0 | 1 | SM 9223 | 03/15/2006 13:50 | MEH |

***General Physical***

| Parameter | Result | Units | RL | MCL | Dilution Factor | Method | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Color, Visual | <4 | UNITS | 3 | 15 | 1 | SM 2120B | 03/20/2006 16:16 | FN |
| Odor | ND | TON | 1 | | 1 | SM 2150 | 03/20/2006 16:16 | FN |
| Turbidity | 4.08 | NTU | 0.10 | 1.0 | 1 | SM2130B | 03/16/2006 17:01 | FN |

***Gross Alpha and Beta***

| Parameter | Result | Units | RL | MCL | Dilution Factor | Method | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Gross Alpha Counting Error | 0.710 | pCi/L | 0 | 0 | 1 | EPA900.0 | 03/30/2006 14:32 | TLI |
| Gross Beta Counting Error | 0.660 | pCi/L | 0 | 0 | 1 | EPA900.0 | 03/30/2006 14:32 | TLI |
| Radioactivity, Gross Alpha | 0.00 | pCi/L | 0 | 15 | 1 | EPA900.0 | 03/30/2006 14:32 | TLI |
| Radioactivity, Gross Beta | 1.29 | pCi/L | 0 | 0 | 1 | EPA900.0 | 03/30/2006 14:32 | TLI |

RL = Reporting Limit MCL = Maximum Contaminant Level MDL = Method Detection Limit N/A = Not Applicable

EEL Analytical

# ENVIRONMENTAL ENGINEERING LABORATORY, INC.

3538 Hancock St. San Diego, CA 92110 | P:(619)298-6131 | F:(619)298-6141 | ELAP Cert.#2616

| | | | | | |
|---|---|---|---|---|---|
| **Recipient:** | Tom Lindenmeyer | | **Matrix:** | WATER | |
| | JACUMBA COMM.SERVICE DIST. | | **Sampled:** | 03/15/2006 | 6:05 |
| | BOX 425 | | **Received:** | 03/15/2006 | 11:45 |
| | JACUMBA, CA 92034 | | **Collection Address:** | | |
| **Reference:** | 0631270 | | **Sample Location:** | MW-1 | |
| **Lab ID:** | 0631270-001 | | **Description:** | | |
| **Sample #:** | | | **Date Started:** | 03/15/2006 | |
| **Project#:** | | | **Date Completed:** | 04/11/2006 | |
| **Comment:** | VOC analyzed past holding time | | **PS Code:** | WAT | |

***Herbicides by EPA 515.1***

| Parameter | Result | Units | RL | MCL | Dilution Factor | Method | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| 2,4-D (Dichlorophenoxy) Acetic Acid | ND | µg/L | 10 | 70 | 1 | EPA 515.1 | 03/21/2006 13:33 | MEH |
| 2.4.5-T | ND | µg/L | 1 | NA | 1 | EPA 515.1 | 03/21/2006 13:33 | BSK |
| Bentazon | ND | µg/L | 2 | 18 | 1 | EPA 515.1 | 03/21/2006 13:33 | BSK |
| Dalapon | ND | µg/L | 10 | 200 | 1 | EPA 515.3 | 03/21/2006 13:33 | BSK |
| Dicamba | ND | µg/L | 1.5 | NA | 1 | EPA 515.1 | 03/21/2006 13:33 | BSK |
| Dinoseb | ND | µg/L | 2 | 7 | 1 | EPA 515.1 | 03/21/2006 13:33 | BSK |
| Pentachlorophenol | ND | µg/L | 0.2 | 1 | 1 | EPA 515.1 | 03/21/2006 13:33 | BSK |
| Picloram | ND | µg/L | 1 | 500 | 1 | EPA 515.1 | 03/21/2006 13:33 | BSK |
| Silvex | ND | µg/L | 1 | 50 | 1 | EPA 515.1 | 03/21/2006 13:33 | BSK |

***Pesticides and PCBs by EPA 505***

| Parameter | Result | Units | RL | MCL | Dilution Factor | Method | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Aldrin | ND | µg/L | 0.075 | NA | 1 | EPA 505 | 03/20/2006 13:32 | BSK |
| Chlordane | ND | µg/L | 0.1 | 0.1 | 1 | EPA 505 | 03/20/2006 13:32 | BSK |
| Chlorothalonil (Daconil, Bravo) | ND | µg/L | 5.0 | NA | 1 | EPA 505 | 03/20/2006 13:32 | BSK |
| Dieldrin | ND | µg/L | 0.02 | NA | 1 | EPA 505 | 03/20/2006 13:32 | BSK |
| Endrin | ND | µg/L | 0.1 | 2 | 1 | EPA 505 | 03/20/2006 13:32 | BSK |
| Heptachlor | ND | µg/L | 0.01 | 0.01 | 1 | EPA 505 | 03/20/2006 13:32 | BSK |
| Heptachlor epoxide | ND | µg/L | 0.01 | 0.01 | 1 | EPA 505 | 03/20/2006 13:32 | BSK |
| Hexachlorobenzene | ND | µg/L | 0 | 1 | 1 | EPA 505 | 03/20/2006 13:32 | BSK |
| Hexachlorocyclopentadiene | ND | µg/L | 1 | 50 | 1 | EPA 505 | 03/20/2006 13:32 | BSK |
| Lindane (BHC gamma isomer) | ND | µg/L | 0.2 | 0.2 | 1 | EPA 505 | 03/20/2006 13:32 | BSK |
| Methoxychlor | ND | µg/L | 10 | 30 | 1 | EPA 505 | 03/20/2006 13:32 | BSK |
| PCBs: Arolchlor Screen | ND | µg/L | 0.2 | 0.5 | 1 | EPA 505 | 03/20/2006 13:32 | BSK |
| Toxaphene | ND | µg/L | 1 | 3 | 1 | EPA 505 | 03/20/2006 13:32 | BSK |
| Trifluralin | ND | µg/L | 1 | NA | 1 | EPA 505 | 03/20/2006 13:32 | BSK |

RL = Reporting Limit MCL = Maximum Contaminant Level MDL = Method Detection Limit N/A = Not Applicable

ENVIRONMENTAL ENGINEERING LABORATORY, INC.
3538 Hancock St. San Diego, CA 92110 | P:(619)298-6131 | F:(619)298-6141 | ELAP Cert.#2616

**Recipient:** Tom Lindenmeyer
JACUMBA COMM.SERVICE DIST.
BOX 425
JACUMBA, CA 92034
**Reference:** 0631270
**Lab ID:** 0631270-001
**Sample #:**
**Project#:**
**Comment:** VOC analyzed past holding time

**Matrix:** WATER
**Sampled:** 03/15/2006 6:05
**Received:** 03/15/2006 11:45
**Collection Address:**
**Sample Location:** MW-1
**Description:**
**Date Started:** 03/15/2006
**Date Completed:** 04/11/2006
**PS Code:** WAT

***SVOCs By EPA 525.2 (Full List)***

| Parameter | Result | Units | RL | MCL | Dilution Factor | Method | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| 1,3-Dimethyl-2-nitrobenzene | 110 | % | - | - | 1 | EPA 525.2 | 04/04/2006 13:34 | BSK |
| Alachlor | ND | µg/L | 1 | 2 | 1 | EPA 525.2 | 04/04/2006 13:34 | BSK |
| Atrazine | ND | µg/L | 0.5 | 1 | 1 | EPA 525.2 | 04/04/2006 13:34 | BSK |
| Benzo (a) Pyrene | ND | µg/L | 0.1 | 0.2 | 1 | EPA 525.2 | 04/04/2006 13:34 | BSK |
| Bis(2-ethylhexyl)adipate | ND | µg/L | 3 | 400 | 1 | EPA 525.2 | 04/04/2006 13:34 | BSK |
| Bis(2-ethylhexyl)phthalate | ND | µg/L | 3 | 4 | 1 | EPA 525.2 | 04/04/2006 13:34 | BSK |
| Bromacil (Hyvar) | ND | µg/L | 10 | NA | 1 | EPA 525.2 | 04/04/2006 13:34 | BSK |
| Butachlor | ND | µg/L | 0.38 | NA | 1 | EPA 525.2 | 04/04/2006 13:34 | BSK |
| Diazinon | ND | µg/L | 0.25 | NA | 1 | EPA 525.2 | 04/04/2006 13:34 | BSK |
| Dimethoate (Cygon) | ND | µg/L | 10 | NA | 1 | EPA 525.2 | 04/04/2006 13:34 | BSK |
| Metolachlor | ND | µg/L | 0.5 | NA | 1 | EPA 525.2 | 04/04/2006 13:34 | BSK |
| Metribuzin | ND | µg/L | 0.5 | NA | 1 | EPA 525.2 | 04/04/2006 13:34 | BSK |
| Molinate (Ordram) | ND | µg/L | 2 | 20 | 1 | EPA 525.2 | 04/04/2006 13:34 | BSK |
| Prometryn (Caparol) | ND | µg/L | 2 | NA | 1 | EPA 525.2 | 04/04/2006 13:34 | BSK |
| Propachlor | ND | µg/L | 0.5 | NA | 1 | EPA 525.2 | 04/04/2006 13:34 | BSK |
| Simazine | ND | µg/L | 1 | 4 | 1 | EPA 525.2 | 04/04/2006 13:34 | BSK |
| Thiobencarb (Bolero) | ND | µg/L | 1 | 70 | 1 | EPA 525.2 | 04/04/2006 13:34 | BSK |

***Test Parameters***

| Parameter | Result | Units | RL | MCL | Dilution Factor | Method | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Diquat By EPA 549 | ND | ug/L | 4.0 | 20 | 1 | 549 | 03/17/2006 13:31 | BSK |
| Endothall By EPA 548 | ND | ug/L | 45 | 100 | 1 | 548.1 | 03/20/2006 13:31 | BSK |
| Glyphosate By EPA 547 | ND | ug/L | 25 | 700 | 1 | 547 | 03/17/2006 13:31 | BSK |
| Uranium | ND | pCi/L | 2.0 | 20 | 1 | EPA 908.0 | 03/28/2006 | BSK |

RL = Reporting Limit MCL = Maximum Contaminant Level MDL = Method Detection Limit N/A = Not Applicable

EEL Analytical

# ENVIRONMENTAL ENGINEERING LABORATORY, INC.

3538 Hancock St. San Diego, CA 92110 | P:(619)298-6131 | F:(619)298-6141 | ELAP Cert.#2616

| | | | | |
|---|---|---|---|---|
| **Recipient:** | Tom Lindenmeyer | **Matrix:** | WATER | |
| | JACUMBA COMM.SERVICE DIST. | **Sampled:** | 03/15/2006 | 6:05 |
| | BOX 425 | **Received:** | 03/15/2006 | 11:45 |
| | JACUMBA, CA 92034 | **Collection Address:** | | |
| **Reference:** | 0631270 | **Sample Location:** | MW-1 | |
| **Lab ID:** | 0631270-001 | **Description:** | | |
| **Sample #:** | | **Date Started:** | 03/15/2006 | |
| **Project#:** | | **Date Completed:** | 04/11/2006 | |
| **Comment:** | VOC analyzed past holding time | **PS Code:** | WAT | |

***Title 22 Primary Inorganic Chemicals***

| Parameter | Result | Units | RL | MCL | Dilution Factor | Method | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Aluminum | 770 | ug/L | 50.0 | 1000 | 1 | SM 3120B | 03/29/2006 10:43 | JLA |
| Antimony | ND | ug/L | 6.0 | 6 | 1 | SM 3113B | 03/29/2006 10:44 | JLA |
| Arsenic | ND | ug/L | 2.0 | 50 | 1 | SM 3120B | 03/29/2006 10:44 | JLA |
| Barium | 180 | ug/L | 100.0 | 1000 | 1 | SM 3120B | 03/29/2006 10:44 | JLA |
| Beryllium | ND | ug/L | 1.0 | 4 | 1 | SM 3120B | 03/29/2006 10:44 | JLA |
| Cadmium | ND | ug/L | 1.0 | 5 | 1 | SM 3120B | 03/29/2006 10:44 | JLA |
| Chromium, Total (screen) | ND | µg/L | 1.0 | - | 1 | SM 3120B | 03/29/2006 10:44 | MEH |
| Cyanide, Total | ND | ug/L | 100 | 150 | 1 | SM4500E | 03/21/2006 | MEH |
| Fluoride | 1.96 | mg/L | 0.1 | 2.0 | 1 | EPA 300.0 | 03/15/2006 16:49 | MEH |
| Lead | ND | ug/L | 5.0 | 15 | 1 | SM 3113B | 03/29/2006 10:44 | JLA |
| Mercury | ND | ug/L | 1.0 | 2 | 1 | SM3112B | 03/29/2006 10:44 | JLA |
| Nickel | ND | ug/L | 10 | 100 | 1 | SM 3120B | 03/29/2006 10:44 | JLA |
| Nitrate + Nitrite (as N) | ND | µg/L | 400 | 10,000 | 1 | EPA 300.0 | 03/15/2006 10:43 | MEH |
| Nitrogen, Nitrate (as NO3) | ND | mg/L | 2.0 | 45 | 1 | EPA 300.0 | 03/15/2006 14:38 | MEH |
| Nitrogen, Nitrite (as N) | ND | ug/L | 400 | 1000 | 1 | EPA 300.0 | 03/15/2006 14:38 | MEH |
| Selenium | ND | ug/L | 5.0 | 50 | 1 | SM 3113B | 03/29/2006 10:44 | JLA |
| Thallium | ND | ug/L | 1.0 | 2 | 1 | EPA 200.9 | 03/29/2006 10:44 | JLA |

**Report Date:** 04/11/2006

**Approval:** _____
Director

RL = Reporting Limit MCL = Maximum Contaminant Level MDL = Method Detection Limit N/A = Not Applicable

EEL Analytical

ENVIRONMENTAL ENGINEERING LABORATORY, INC.
3538 Hancock St. San Diego, CA 92110 | P:(619)298-6131 | F:(619)298-6141 | ELAP Cert.#2616

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| | | | | |
|---|---|---|---|---|
| **Recipient:** | Tom Lindenmeyer | **Matrix:** | WATER | |
| | JACUMBA COMM.SERVICE DIST. | **Sampled:** | 04/18/2006 | |
| | BOX 425 | **Received:** | 04/18/2006 | 2:40 |
| | JACUMBA, CA 92034 | **Collection Address:** | | |
| **Reference:** | 0631569 | **Sample Location:** | Old Hwy 80 | |
| **Lab ID:** | 0631569-001 | **Description:** | | |
| **Sample #:** | | **Date Started:** | 04/18/2006 | |
| **Project#:** | | **Date Completed:** | 05/03/2006 | |
| **Comment:** | | **PS Code:** | WAT | |

**Analyzed:** 4/28/2006 @ **Method:** EPA 524.2
**Analyst:** **Dilution Factor:** 1

## *VOC By EPA 502.2/524.2*

| Parameter | Result ug/L | MCL ug/L | RL ug/L | Parameter | Result ug/L | MCL ug/L | RL ug/L |
|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | 80 | 0.5 | Chloroethane | 0.60 | 80 | 0.5 |
| 1,1,1-Trichloroethane | ND | 200 | 0.5 | Chloroform | ND | 80 | 0.5 |
| 1,1,2,2-Tetrachloroethane | ND | 1 | 0.5 | Chloromethane | ND | 80 | 0.5 |
| 1,1,2-Trichloroethane | ND | 5 | 0.5 | Cis-1,2-Dichloroethylene | ND | 6 | 0.5 |
| 1,1-Dichloroethane | ND | 5 | 0.5 | Cis-1,3-Dichloropropene | ND | 80 | 0.5 |
| 1,1-Dichloroethylene | ND | 6 | 0.5 | Dibromochloromethane | ND | 80 | 0.5 |
| 1,1-Dichloropropene | ND | 80 | 0.5 | Dibromomethane | ND | 80 | 0.5 |
| 1,2 Dichlorobenzene (o-DCB) | ND | 600 | .5 | Dichlorodifluoromethane | ND | 80 | 0.5 |
| 1,2,3-Trichlorobenzene | ND | 80 | 0.5 | Dichloromethane(Methylenchlor) | ND | 5 | 0.5 |
| 1,2,3-Trichloropropane | ND | - | 0.5 | Ethylbenzene | ND | 300 | 0.5 |
| 1,2,4-Trichlorobenzene | ND | 5 | 0.5 | Hexachlorobutadiene | ND | 80 | 0.5 |
| 1,2,4-Trimethylbenzene | ND | 80 | 0.5 | Isopropylbenzene (Cumene) | ND | 80 | 0.5 |
| 1,2-Dichloroethane | ND | 0.5 | 0.5 | Methyl Ethyl Ketone | ND | - | 5 |
| 1,2-Dichloropropane | ND | 5 | 0.5 | Methyl Tert-butyl Ether (MTBE) | ND | 5 | 1.0 |
| 1,3,5-Trimethylbenzene | ND | 80 | 0.5 | Monochlorobenzene | ND | 70 | 0.5 |
| 1,3-Dichlorobenzene | ND | 80 | 0.5 | Napthalene | ND | 80 | 0.5 |
| 1,3-Dichloropropane | ND | 80 | 0.5 | N-butylbenzene | ND | 80 | 0.5 |
| 1,3-Dichloropropene | ND | 0.5 | 0.5 | Nitrobenzene | ND | - | 0.5 |
| 1,4-Dichlorobenzene (p-DCB) | ND | 5 | 0.5 | N-propylbenzene | ND | 80 | 0.5 |
| 2,2-Dichloropropane | ND | 80 | 0.5 | Pentachlorothane | ND | - | 0.5 |
| 2-Chlorotoluene | ND | 80 | 0.5 | P-isopropyltoluene | ND | 80 | 0.5 |
| 4-Chlorotoluene | ND | 80 | 0.5 | Sec-butylbenzene | ND | 80 | 0.5 |
| Benzene | 0.70 | 1.0 | 0.5 | Styrene | ND | 100 | 0.5 |
| Bromobenzene | ND | 80 | 0.5 | Tert-butylbenzene | ND | 80 | 0.5 |
| Bromochloromethane | ND | 80 | 0.5 | Tetrachloroethylene (PCE) | ND | 5 | 0.5 |
| Bromodichloromethane | ND | 80 | 0.5 | Toluene | 199 | 150 | 0.5 |
| Bromoform | ND | 80 | 0.5 | Total Trihalomethanes | ND | 80 | 0.5 |
| Bromomethane | ND | 80 | 0.5 | Trans-1,2-dichloroethylene | ND | 10 | 0.5 |
| Carbon Tetrachloride | ND | 0.5 | 0.5 | Trans-1,3-dichloropropene | ND | 80 | 0.5 |

**Report Date:** 05/03/2006

**Approval:** _____
Director

RL = Reporting Limit MCL = Maximum Contaminant Level MDL = Method Detection Limit N/A = Not Applicable

EEL Analytical

# ENVIRONMENTAL ENGINEERING LABORATORY, INC.

3538 Hancock St. San Diego, CA 92110 | P:(619)298-6131 | F:(619)298-6141 | ELAP Cert.#2616

| | | | | |
|---|---|---|---|---|
| **Recipient:** | Tom Lindenmeyer | **Matrix:** | WATER | |
| | JACUMBA COMM.SERVICE DIST. | **Sampled:** | 04/18/2006 | |
| | BOX 425 | **Received:** | 04/18/2006 | 2:40 |
| | JACUMBA, CA 92034 | **Collection Address:** | | |
| **Reference:** | 0631569 | **Sample Location:** | Old Hwy 80 | |
| **Lab ID:** | 0631569-001 | **Description:** | | |
| **Sample #:** | | **Date Started:** | 04/18/2006 | |
| **Project#:** | | **Date Completed:** | 05/03/2006 | |
| **Comment:** | | **PS Code:** | WAT | |

**Analyzed:** 4/28/2006 @ **Method:** EPA 524.2
**Analyst:** **Dilution Factor:** 1

## *VOC By EPA 502.2/524.2*

| Parameter | Result ug/L | MCL ug/L | RL ug/L | Parameter | Result ug/L | MCL ug/L | RL ug/L |
|---|---|---|---|---|---|---|---|
| Trichloroethylene (TCE) | ND | 5 | 0.5 | | | | |
| Trichlorofluoromethane | ND | 150 | 5.00 | | | | |
| Trichlorotrifluoromethane | ND | 1200 | 10.0 | | | | |
| Vinyl Chloride | ND | 0.5 | 0.5 | | | | |
| Xylenes | ND | 1750 | 0.5 | | | | |

| Surrogates | % Recovered | QC Limits (%) | |
|---|---|---|---|
| 4-Bromofluorobenzene | 69% | 40 | 140 |

**Report Date:** 05/03/2006

**Approval:** _____
Director

RL = Reporting Limit MCL = Maximum Contaminant Level MDL = Method Detection Limit N/A = Not Applicable

MOBILE GEOCHEMISTRY

H&P

20 April 2006

Ms. Melissa Monti
Petra Geotechnical
12225 World Trade Drive, Suite P
San Diego, CA 92128

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RE: PG041906-31

Enclosed are the results of analyses for samples received by the laboratory on 19-Apr-06 . If you have any questions concerning this report, please feel free to contact me.

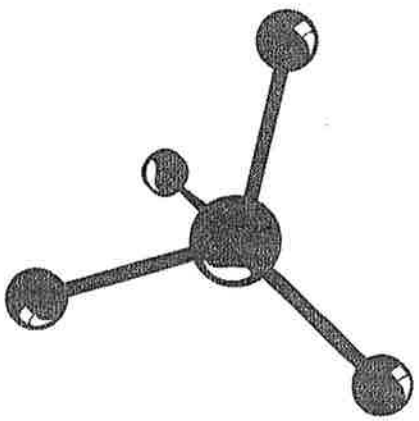
Sincerely,

Rebecca L Johnson for

Tamara Davis
Laboratory Director

H&P Mobile Geochemistry operates under CA Environmental Lab Accreditation Program Numbers 1317, 1561, 1667, 1745, 1746, 1839, 2088, 2278, 2530, 2543, 2579 and 2595.

432 North Cedros Avenue, Solana Beach, California 92075 | 858 793.0401 — Fax 858 793.0404
148 South Vinewood Street, Escondido, California 92029 | 760 735.3208 — Fax 760 735.2469
3825 Industry Avenue, Lakewood, California 90712 | 562 426.6991 — Fax 562 426.6995
www.HandPmg.com | 1-800-834-9888



MOBILE GEOCHEMISTRY
H&P

| | | |
|---|---|---|
| Petra Geotechnical<br>12225 World Trade Drive, Suite P<br>San Diego CA, 92128 | Project: PG041906-31<br>Project Number: Jacumba Community Service District<br>Project Manager: Ms. Melissa Monti | Reported:<br>20-Apr-06 |

## ANALYTICAL REPORT FOR SAMPLES

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date Received |
|---|---|---|---|---|
| MW-1 | E604068-01 | Water | 18-Apr-06 | 19-Apr-06 |

MOBILE GEOCHEMISTRY

H&P

| | | |
|---|---|---|
| Petra Geotechnical | Project: PG041906-31 | |
| 12225 World Trade Drive, Suite P | Project Number: Jacumba Community Service District | Reported: |
| San Diego CA, 92128 | Project Manager: Ms. Melissa Monti | 20-Apr-06 |

## Volatile Organic Compounds by EPA Method 8260B/5030

### H&P Mobile Geochemistry

| Analyte | Result | Reporting Limit | Units | Dilution Factor | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **MW-1 (E604068-01) Water Sampled: 18-Apr-06 Received: 19-Apr-06** | | | | | | | | | |
| Dichlorodifluoromethane | ND | 1.0 | ug/l | 0.1 | ED61905 | 19-Apr-06 | 19-Apr-06 | EPA 8260B | |
| Chloromethane | ND | 1.0 | " | " | " | " | " | " | |
| Vinyl chloride | ND | 1.0 | " | " | " | " | " | " | |
| Bromomethane | ND | 1.0 | " | " | " | " | " | " | |
| Chloroethane | ND | 1.0 | " | " | " | " | " | " | |
| Trichlorofluoromethane | ND | 1.0 | " | " | " | " | " | " | |
| 1,1-Dichloroethene | ND | 1.0 | " | " | " | " | " | " | |
| Methylene chloride | ND | 1.0 | " | " | " | " | " | " | |
| Methyl tert-butyl ether | ND | 1.0 | " | " | " | " | " | " | |
| trans-1,2-Dichloroethene | ND | 1.0 | " | " | " | " | " | " | |
| Di-isopropyl ether | ND | 1.0 | " | " | " | " | " | " | |
| 1,1-Dichloroethane | ND | 1.0 | " | " | " | " | " | " | |
| Ethyl tert-butyl ether | ND | 1.0 | " | " | " | " | " | " | |
| 2,2-Dichloropropane | ND | 1.0 | " | " | " | " | " | " | |
| cis-1,2-Dichloroethene | ND | 1.0 | " | " | " | " | " | " | |
| Chloroform | ND | 1.0 | " | " | " | " | " | " | |
| Bromochloromethane | ND | 1.0 | " | " | " | " | " | " | |
| 1,1,1-Trichloroethane | ND | 1.0 | " | " | " | " | " | " | |
| 1,1-Dichloropropene | ND | 1.0 | " | " | " | " | " | " | |
| Carbon tetrachloride | ND | 1.0 | " | " | " | " | " | " | |
| 1,2-Dichloroethane | ND | 1.0 | " | " | " | " | " | " | |
| Tert-amyl methyl ether | ND | 1.0 | " | " | " | " | " | " | |
| Benzene | ND | 0.5 | " | " | " | " | " | " | |
| Trichloroethene | ND | 1.0 | " | " | " | " | " | " | |
| 1,2-Dichloropropane | ND | 1.0 | " | " | " | " | " | " | |
| Bromodichloromethane | ND | 1.0 | " | " | " | " | " | " | |
| Dibromomethane | ND | 1.0 | " | " | " | " | " | " | |
| cis-1,3-Dichloropropene | ND | 1.0 | " | " | " | " | " | " | |
| **Toluene** | 520 | 5.0 | " | 1 | " | " | 19-Apr-06 | " | |
| trans-1,3-Dichloropropene | ND | 1.0 | " | 0.1 | " | " | 19-Apr-06 | " | |
| 1,1,2-Trichloroethane | ND | 1.0 | " | " | " | " | " | " | |
| 1,2-Dibromoethane (EDB) | ND | 1.0 | " | " | " | " | " | " | |
| 1,3-Dichloropropane | ND | 1.0 | " | " | " | " | " | " | |
| Tetrachloroethene | ND | 1.0 | " | " | " | " | " | " | |
| Dibromochloromethane | ND | 1.0 | " | " | " | " | " | " | |
| Chlorobenzene | ND | 1.0 | " | " | " | " | " | " | |
| Ethylbenzene | ND | 0.5 | " | " | " | " | " | " | |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | " | " | " | " | " | " | |

MOBILE GEOCHEMISTRY

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|---|---|---|
| Petra Geotechnical | Project: PG041906-31 | |
| 12225 World Trade Drive, Suite P | Project Number: Jacumba Community Service District | Reported: |
| San Diego CA, 92128 | Project Manager: Ms. Melissa Monti | 20-Apr-06 |

## Volatile Organic Compounds by EPA Method 8260B/5030

### H&P Mobile Geochemistry

| Analyte | Result | Reporting Limit | Units | Dilution Factor | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **MW-1 (E604068-01) Water Sampled: 18-Apr-06 Received: 19-Apr-06** | | | | | | | | | |
| m,p-Xylene | ND | 1.0 | ug/l | 0.1 | ED61905 | 19-Apr-06 | 19-Apr-06 | EPA 8260B | |
| o-Xylene | ND | 0.5 | " | " | " | " | " | " | |
| Styrene | ND | 1.0 | " | " | " | " | " | " | |
| Bromoform | ND | 1.0 | " | " | " | " | " | " | |
| Isopropylbenzene | ND | 1.0 | " | " | " | " | " | " | |
| 1,1,2,2-Tetrachloroethane | ND | 1.0 | " | " | " | " | " | " | |
| 1,2,3-Trichloropropane | ND | 1.0 | " | " | " | " | " | " | |
| n-Propylbenzene | ND | 1.0 | " | " | " | " | " | " | |
| Bromobenzene | ND | 1.0 | " | " | " | " | " | " | |
| 1,3,5-Trimethylbenzene | ND | 1.0 | " | " | " | " | " | " | |
| 2-Chlorotoluene | ND | 1.0 | " | " | " | " | " | " | |
| 4-Chlorotoluene | ND | 1.0 | " | " | " | " | " | " | |
| tert-Butylbenzene | ND | 1.0 | " | " | " | " | " | " | |
| 1,2,4-Trimethylbenzene | ND | 1.0 | " | " | " | " | " | " | |
| sec-Butylbenzene | ND | 1.0 | " | " | " | " | " | " | |
| p-Isopropyltoluene | ND | 1.0 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 1.0 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 1.0 | " | " | " | " | " | " | |
| n-Butylbenzene | ND | 1.0 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 1.0 | " | " | " | " | " | " | |
| 1,2-Dibromo-3-chloropropane | ND | 1.0 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 1.0 | " | " | " | " | " | " | |
| Hexachlorobutadiene | ND | 1.0 | " | " | " | " | " | " | |
| Naphthalene | ND | 1.0 | " | " | " | " | " | " | |
| 1,2,3-Trichlorobenzene | ND | 1.0 | " | " | " | " | " | " | |
| Tert-butyl alcohol | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *90.2 %* | *75-125* | | " | " | " | " | |
| *Surrogate: 1,2-Dichloroethane-d4* | | *92.4 %* | *62-139* | | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *88.2 %* | *75-125* | | " | " | " | " | |
| *Surrogate: 4-Bromofluorobenzene* | | *95.2 %* | *75-125* | | " | " | " | " | |

MOBILE GEOCHEMISTRY
H&P

| | | |
|---|---|---|
| Petra Geotechnical | Project: PG041906-31 | |
| 12225 World Trade Drive, Suite P | Project Number: Jacumba Community Service District | Reported: |
| San Diego CA, 92128 | Project Manager: Ms. Melissa Monti | 20-Apr-06 |

## Volatile Organic Compounds by EPA Method 8260B/5030 - Quality Control
## H&P Mobile Geochemistry

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch ED61905 - EPA 5030** | | | | | | | | | | |
| **Blank (ED61905-BLK1)** | | | | Prepared & Analyzed: 19-Apr-06 | | | | | | |
| Dichlorodifluoromethane | ND | 1.0 | ug/l | | | | | | | |
| Chloromethane | ND | 1.0 | " | | | | | | | |
| Vinyl chloride | ND | 1.0 | " | | | | | | | |
| Bromomethane | ND | 1.0 | " | | | | | | | |
| Chloroethane | ND | 1.0 | " | | | | | | | |
| Trichlorofluoromethane | ND | 1.0 | " | | | | | | | |
| 1,1-Dichloroethene | ND | 1.0 | " | | | | | | | |
| Methylene chloride | ND | 1.0 | " | | | | | | | |
| Methyl tert-butyl ether | ND | 1.0 | " | | | | | | | |
| trans-1,2-Dichloroethene | ND | 1.0 | " | | | | | | | |
| Di-isopropyl ether | ND | 1.0 | " | | | | | | | |
| 1,1-Dichloroethane | ND | 1.0 | " | | | | | | | |
| Ethyl tert-butyl ether | ND | 1.0 | " | | | | | | | |
| 2,2-Dichloropropane | ND | 1.0 | " | | | | | | | |
| cis-1,2-Dichloroethene | ND | 1.0 | " | | | | | | | |
| Chloroform | ND | 1.0 | " | | | | | | | |
| Bromochloromethane | ND | 1.0 | " | | | | | | | |
| 1,1,1-Trichloroethane | ND | 1.0 | " | | | | | | | |
| 1,1-Dichloropropene | ND | 1.0 | " | | | | | | | |
| Carbon tetrachloride | ND | 1.0 | " | | | | | | | |
| 1,2-Dichloroethane | ND | 1.0 | " | | | | | | | |
| Tert-amyl methyl ether | ND | 1.0 | " | | | | | | | |
| Benzene | ND | 0.5 | " | | | | | | | |
| Trichloroethene | ND | 1.0 | " | | | | | | | |
| 1,2-Dichloropropane | ND | 1.0 | " | | | | | | | |
| Bromodichloromethane | ND | 1.0 | " | | | | | | | |
| Dibromomethane | ND | 1.0 | " | | | | | | | |
| cis-1,3-Dichloropropene | ND | 1.0 | " | | | | | | | |
| Toluene | ND | 0.5 | " | | | | | | | |
| trans-1,3-Dichloropropene | ND | 1.0 | " | | | | | | | |
| 1,1,2-Trichloroethane | ND | 1.0 | " | | | | | | | |
| 1,2-Dibromoethane (EDB) | ND | 1.0 | " | | | | | | | |
| 1,3-Dichloropropane | ND | 1.0 | " | | | | | | | |
| Tetrachloroethene | ND | 1.0 | " | | | | | | | |

MOBILE GEOCHEMISTRY
H&P

| | | |
|---|---|---|
| Petra Geotechnical | Project: PG041906-31 | |
| 12225 World Trade Drive, Suite P | Project Number: Jacumba Community Service District | Reported: |
| San Diego CA, 92128 | Project Manager: Ms. Melissa Monti | 20-Apr-06 |

## Volatile Organic Compounds by EPA Method 8260B/5030 - Quality Control
## H&P Mobile Geochemistry

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch ED61905 - EPA 5030** | | | | | | | | | | |
| **Blank (ED61905-BLK1)** | | | | Prepared & Analyzed: 19-Apr-06 | | | | | | |
| Dibromochloromethane | ND | 1.0 | ug/l | | | | | | | |
| Chlorobenzene | ND | 1.0 | " | | | | | | | |
| Ethylbenzene | ND | 0.5 | " | | | | | | | |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | " | | | | | | | |
| m,p-Xylene | ND | 1.0 | " | | | | | | | |
| o-Xylene | ND | 0.5 | " | | | | | | | |
| Styrene | ND | 1.0 | " | | | | | | | |
| Bromoform | ND | 1.0 | " | | | | | | | |
| Isopropylbenzene | ND | 1.0 | " | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 1.0 | " | | | | | | | |
| 1,2,3-Trichloropropane | ND | 1.0 | " | | | | | | | |
| n-Propylbenzene | ND | 1.0 | " | | | | | | | |
| Bromobenzene | ND | 1.0 | " | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 1.0 | " | | | | | | | |
| 2-Chlorotoluene | ND | 1.0 | " | | | | | | | |
| 4-Chlorotoluene | ND | 1.0 | " | | | | | | | |
| tert-Butylbenzene | ND | 1.0 | " | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 1.0 | " | | | | | | | |
| sec-Butylbenzene | ND | 1.0 | " | | | | | | | |
| p-Isopropyltoluene | ND | 1.0 | " | | | | | | | |
| 1,3-Dichlorobenzene | ND | 1.0 | " | | | | | | | |
| 1,4-Dichlorobenzene | ND | 1.0 | " | | | | | | | |
| n-Butylbenzene | ND | 1.0 | " | | | | | | | |
| 1,2-Dichlorobenzene | ND | 1.0 | " | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 1.0 | " | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 1.0 | " | | | | | | | |
| Hexachlorobutadiene | ND | 1.0 | " | | | | | | | |
| Naphthalene | ND | 1.0 | " | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 1.0 | " | | | | | | | |
| Tert-butyl alcohol | ND | 5.0 | " | | | | | | | |
| *Surrogate: Dibromofluoromethane* | *4.61* | | " | *5.00* | | *92.2* | *75-125* | | | |
| *Surrogate: 1,2-Dichloroethane-d4* | *4.86* | | " | *5.00* | | *97.2* | *62-139* | | | |
| *Surrogate: Toluene-d8* | *4.46* | | " | *5.00* | | *89.2* | *75-125* | | | |

MOBILE GEOCHEMISTRY

H&P

| | | |
|---|---|---|
| Petra Geotechnical | Project: PG041906-31 | |
| 12225 World Trade Drive, Suite P | Project Number: Jacumba Community Service District | Reported: |
| San Diego CA, 92128 | Project Manager: Ms. Melissa Monti | 20-Apr-06 |

## Volatile Organic Compounds by EPA Method 8260B/5030 - Quality Control
## H&P Mobile Geochemistry

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch ED61905 - EPA 5030** | | | | | | | | | | |
| **Blank (ED61905-BLK1)** | | | | Prepared & Analyzed: 19-Apr-06 | | | | | | |
| *Surrogate: 4-Bromofluorobenzene* | *5.59* | | *ug/l* | *5.00* | | *112* | *75-125* | | | |
| **LCS (ED61905-BS1)** | | | | Prepared & Analyzed: 19-Apr-06 | | | | | | |
| 1,1-Dichloroethene | 6.00 | 1.0 | ug/l | 5.00 | | 120 | 75-125 | | | |
| Benzene | 5.60 | 0.5 | " | 5.00 | | 112 | 75-125 | | | |
| Trichloroethene | 5.60 | 1.0 | " | 5.00 | | 112 | 75-125 | | | |
| Toluene | 5.37 | 0.5 | " | 5.00 | | 107 | 74-125 | | | |
| Chlorobenzene | 5.57 | 1.0 | " | 5.00 | | 111 | 75-125 | | | |
| *Surrogate: Dibromofluoromethane* | *4.77* | | *"* | *5.00* | | *95.4* | *75-125* | | | |
| *Surrogate: 1,2-Dichloroethane-d4* | *4.98* | | *"* | *5.00* | | *99.6* | *75-125* | | | |
| *Surrogate: Toluene-d8* | *4.25* | | *"* | *5.00* | | *85.0* | *75-125* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *4.87* | | *"* | *5.00* | | *97.4* | *75-125* | | | |
| **LCS Dup (ED61905-BSD1)** | | | | Prepared & Analyzed: 19-Apr-06 | | | | | | |
| 1,1-Dichloroethene | 5.91 | 1.0 | ug/l | 5.00 | | 118 | 75-125 | 1.51 | 20 | |
| Benzene | 5.50 | 0.5 | " | 5.00 | | 110 | 75-125 | 1.80 | 20 | |
| Trichloroethene | 5.51 | 1.0 | " | 5.00 | | 110 | 75-125 | 1.62 | 20 | |
| Toluene | 5.17 | 0.5 | " | 5.00 | | 103 | 74-125 | 3.80 | 20 | |
| Chlorobenzene | 5.28 | 1.0 | " | 5.00 | | 106 | 75-125 | 5.35 | 20 | |
| *Surrogate: Dibromofluoromethane* | *4.83* | | *"* | *5.00* | | *96.6* | *75-125* | | | |
| *Surrogate: 1,2-Dichloroethane-d4* | *5.56* | | *"* | *5.00* | | *111* | *75-125* | | | |
| *Surrogate: Toluene-d8* | *4.39* | | *"* | *5.00* | | *87.8* | *75-125* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *5.16* | | *"* | *5.00* | | *103* | *75-125* | | | |

MOBILE GEOCHEMISTRY
H&P

| | | |
|---|---|---|
| Petra Geotechnical | Project: PG041906-31 | |
| 12225 World Trade Drive, Suite P | Project Number: Jacumba Community Service District | Reported: |
| San Diego CA, 92128 | Project Manager: Ms. Melissa Monti | 20-Apr-06 |

## Notes and Definitions

| | |
|---|---|
| DET | Analyte DETECTED |
| ND | Analyte NOT DETECTED at or above the reporting limit |
| NR | Not Reported |
| dry | Sample results reported on a dry weight basis |
| RPD | Relative Percent Difference |

# CHAIN-OF-CUSTODY RECORD

MOL: PG041706-31

MOBILE ONE LABORATORIES INC.

148 So. Vinewood Street, Escondido, CA 92029-1921 (760) 735-3208 FAX (760) 735-2469

Date: 4/19/06 Page 1 of 1

Client: Petra Geotechnical, Inc

Site Address: 12225 World Trade Dr, Ste P
San Diego, CA 92128

Project: Jacumba Community Service District

Sampler (signature): Melissa Monti

Turnaround Requested:
- ☐ Onsite/24-48 hrs.
- ☐ Offsite
- ☒ Other Std

Analysis Requested

| Sample ID | Date | Time | Location | TPHg+d-8015M | TPHg-8015M (P&T) | BTEX-8020 | TPHg/BTEX-8015M/8020 | TRPH-418.1 | 8260 (VOC's-8240) | 8260 VOC - Full (Scan (+ oxy) | Matrix: Soil (S), Sludge (SL), Aqueous (W) | Number of containers |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-1 | 4/18/06 | 12:45 | | | | | | | X | | W | 5 |

| 1. RELINQUISHED BY: | Date: | 2. RELINQUISHED BY: | Date: | 3. RELINQUISHED BY: | Date: |
|---|---|---|---|---|---|
| Signature:* Melissa Monti | | Signature:* | | Signature:* | |
| Printed Name: Melissa Monti | Time: | Printed Name: | Time: | Printed Name: | Time: |
| Company: Petra Geotechnical | | Company: | | Company: | |
| **1. RECEIVED BY:** | Date: 4/19/06 | **2. RECEIVED BY:** | Date: | **3. RECEIVED BY:** | Date: |
| Signature:* Ann Kim | | Signature:* | | Signature:* | |
| Printed Name: Ann Kim | Time: 10:20am | Printed Name: | Time: | Printed Name: | Time: |
| Company: H+P | | Company: | | Company: | |

*Signature constitutes authorization to proceed with analysis and acceptance of conditions on back.

Sample Receipt
Intact: (Yes) No
Seal Intact: Yes No (N/A)
Cold: (Yes) No
N/A (Received on site)

Special Instructions

# DRAFT

## Groundwater Monitoring and Mitigation Plan – Flat Creek Watershed Analysis Jacumba Community Services District Jacumba Hot Springs, San Diego County, California

*Lead Agency:*


**County of San Diego**
**Planning and Development Services**
5510 Overland Avenue
San Diego, California 92123
*Contact: Ashely Gungle*


*Project Proponent:*


**Jacumba Community Services District**
P.O. Box 425
Jacumba Hot Springs, California 91934
*Contact: Debby Troutt*


*Prepared by:*


DUDEK
605 Third Street
Encinitas, California 92024



*Stephen K. Dickey, PG, CHG, CEG*

# APRIL 2015

Printed on 30% post-consumer recycled material.

# TABLE OF CONTENTS



## FIGURES



## TABLE

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# 1 INTRODUCTION

Jacumba Community Services District (JCSD) is proposing the use of the Park Well and the potential development and use of replacement well(s) as a secondary source of groundwater to serve JCSD customers (the Project). This Groundwater Monitoring and Mitigation Plan (GMMP) has been prepared by Dudek in order to provide protection of nearby groundwater dependent habitat and ensure adequate groundwater supply for other groundwater users in the area.

As described in the Groundwater Resources Investigation Report – Flat Creek Watershed for the Jacumba Community Services District (Dudek, 2015), JCSD is proposing to develop additional production capacity of 100 acre-feet per year of groundwater from the Park Well and/or replacement well(s) yet to be completed. These wells are intended to serve as a redundant backup supply in the event JCSD's main potable supply well goes offline as well as to increase the reliability and versatility of JCSD's water supply system. In addition, JCSD intends to use these wells to supplement its sales of non-potable water from Well 6 for construction related uses in the region. To facilitate sales of water suitable for construction-related uses, water will be extracted from the Park Well using a new submersible pump and discharged to a 12,000 gallon water tower. The Park Well is located at the east end of downtown Jacumba Hot Springs on assessor's parcel number (APN) 660-140-07 (Figure 1).

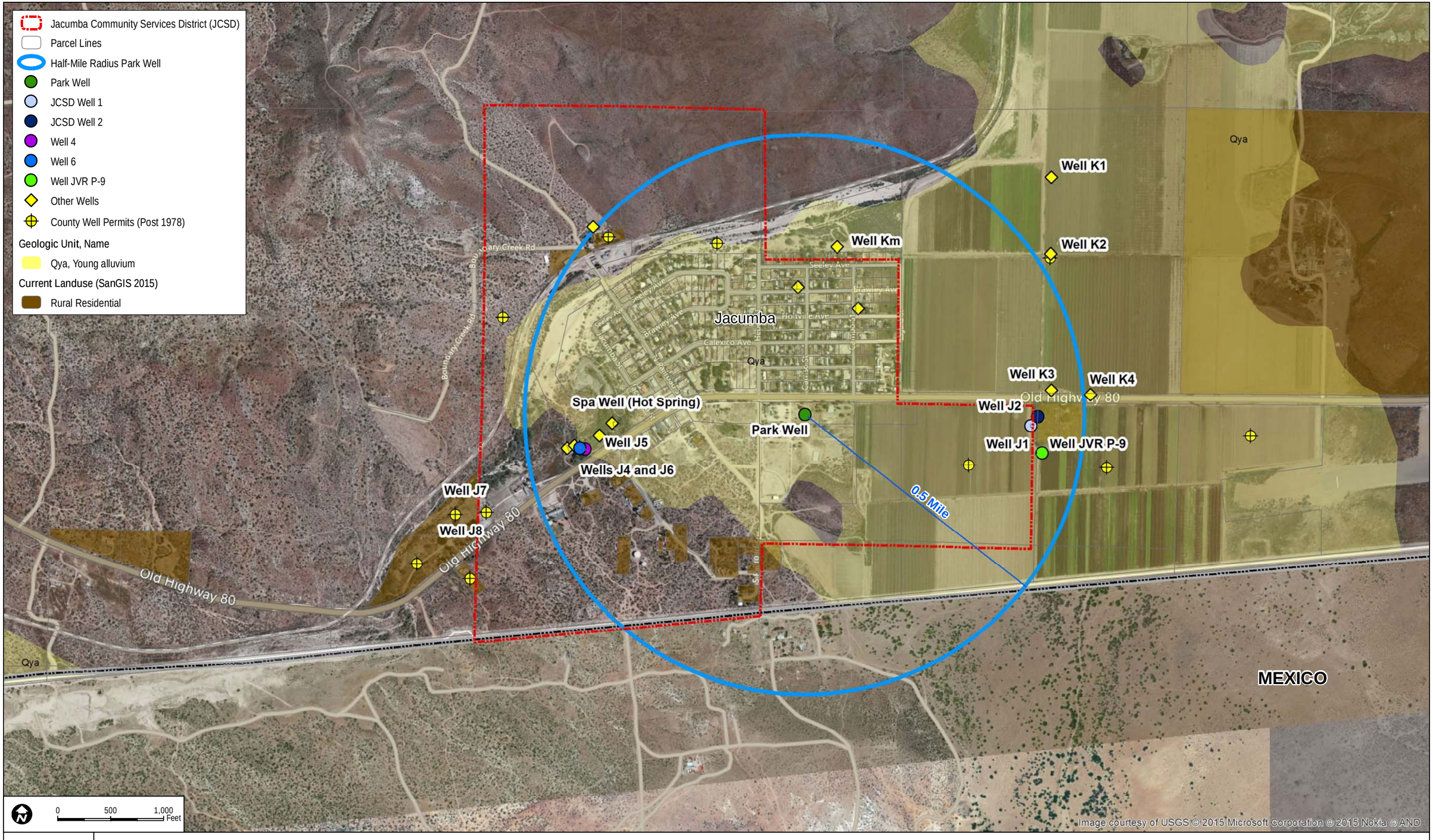
In order to provide a conservative analysis, the Groundwater Resources Investigation Report – Flat Creek Watershed for the Jacumba Community Services District assumed that the Park Well would supply up to 100 acre-feet per year. Results of the Groundwater Resources Investigation indicate that short-term pumping of the Park Well and replacement well(s) to meet water demand would result in a less than significant impact to groundwater storage. Assuming a maximum groundwater extraction rate up to 200 gallons per minute continuously over a 90 day period (25.9 million gallons or 80 acre-feet) from the Park Well, the estimated drawdown at the nearest well (Well Km) is 0.58 feet based on the Theis semi-log approximation (Dudek, 2015). If pumping is amortized over 1 year at a production rate of 100 acre-feet per year, predicted drawdown is 1.36 feet at Well Km. Amortizing pumping over 5 years at an annual pumping rate of 100 acre-feet per year results in predicted drawdown at Well Km of 3.79 feet. This is less than the County of San Diego well interference threshold guidance for alluvial wells of 5 feet.

The drawdown at the nearest groundwater dependent habitat, riparian and bottomland habitat associated with Boundary Creek located approximately 1,620 feet north of the Park Well, as a result of extraction of groundwater is estimated after 90 days, 1 year and 5 years is predicted to be 0.69 feet, 1.46 feet, and 3.92 feet, respectively (Dudek 2015). The Project is unlikely to draw down the groundwater table to the detriment of groundwater-dependent habitat, typically a drop of 3 feet

or more from historical low groundwater levels as Boundary Creek represents as recharge boundary. Thus, impacts to groundwater dependent habitat would be less than significant.

Because actual conditions during groundwater extraction for the Projects may vary from conditions assumed in the Groundwater Resources Investigation (Dudek, 2105) this GMMP has been prepared for the JCSD. This GMMP establishes protective groundwater drawdown thresholds for off-site well interference and groundwater-dependent habitat.

This GMMP also describes the monitoring, mitigation and reporting procedures by which the County of San Diego Planning and Development Services (PDS) can ensure that the conditions and criteria for the Project's groundwater extraction activities are continually being upheld. A 5-year monitoring period is proposed to assess the impact of groundwater extractions.




DUDEK

8477

APRIL 2015

SOURCE: JCSD; SanGIS 2003

**FIGURE 1**

**On-Site and Off-Site Well Locations**

GROUNDWATER MONITORING AND MITIGATION PLAN - JACUMBA COMMUNITY SERVICES DISTRICT

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# 2 ESTABLISHMENT OF GROUNDWATER THRESHOLDS

According to the County of San Diego Guidelines for Determining Significance and Report Format Content Requirements (County of San Diego, 2007), this Project-related groundwater extraction would incur a significant well interference impact if after a five year projection of drawdown, the results indicate a decrease in water level of 5 feet or more in the off-site wells. If site-specific data indicates alluvium or sedimentary rocks exist which substantiate a saturated thickness greater than 100 feet in off-site wells, a decrease in saturated thickness of 5% or more in the off-site wells would be considered a significant impact. The County's Guidelines for Determining Significance for Biological Resources (County of San Diego, 2010) defines a project-related drawdown of 3 feet below historical low groundwater levels as causing a significant impact to riparian habitat of a groundwater sensitive natural community. Additionally, groundwater resources for proposed projects requiring a potable water source must not exceed the Primary State or Federal Maximum Contaminant Levels (MCLs) for applicable contaminants. The thresholds established below incorporate these guidelines and represent a conservative basis for monitoring and mitigating potential groundwater impacts related to the Project.

## 2.1 Potential Off-Site Well Interference

As described in the Groundwater Resources Investigation Report – Flat Creek Watershed (Dudek, 2015), wells identified near the pumping well (Park Well) include Well Km Well K3, Spa Well and JCSD Wells 1, 2, 4, 5 and 6 (Figure 1).

Four existing JCSD groundwater wells (Wells 2, 4, 5 and 6) will be included in the groundwater monitoring program (Figure 1). Additionally, Jacumba Valley Ranch Wells Km and K3, and piezometer P-9 will be included if property access is granted. Accessible wells will be fitted with pressure transducers prior to the onset of Project pumping. The pressure transducers will record the water level in the wells at 15 minute intervals for approximately 1 month prior to the onset of Project related groundwater extraction. Transducer accuracy will be confirmed through manual water level measurements recorded with a sounder. Manual water levels will also be recorded for JCSD Wells 2, 4, 5 and 6 and the Park Monitoring Well on a weekly basis during Project pumping.

An additional three wells were identified within a 0.5 mile radius of the Park Well and are indicated in Table 1.

**Table 1**
**JCSD Wells within 0.5 Mile Radius of Well 6**

| Well Number | Use | Distance from Park Well (feet) |
|---|---|---|
| **Jacumba Community Service District Wells** | | |
| Well 1 | Public/Inactive | 2,136 |
| Well 2 | Public/Inactive | 2,195 |
| Well 4 | Public/Active | 2,147 |
| Well 5 | Public/Inactive | 1,906 |
| Well 6 | Public/Active (Non-Potable) | 2,206 |
| **Jacumba Ranch Wells** | | |
| Well Km | Small Water System/Active | 1,688 |
| Well K3 | Irrigation | 2,136 |
| Piezometer P-9 | Monitoring Point | 2,256 |
| **Other Wells** | | |
| Spa Well | Private/Active Hot Well | 1,829 |

The measurements collected from the JCSD wells will be used to establish a water level baseline and capture water level patterns generated by pumping of these wells. An understanding of these patterns will allow for their continued use as monitoring wells despite the possibility that they may be pumped over the duration of the Projects. During pumping at the Park Well, a maximum drawdown of 5 feet below the water level baseline at Well Km will be allowed. This threshold is protective of a maximum drawdown of 5 feet at the closest property with a Small Water System well located within 0.5 mile feet from the pumping well. If Well Km is not accessible for water level monitoring, a maximum drawdown of 3.85 feet and 3.93 feet below the water level baseline will be allowed at JCSD Wells 2 and 4 to ensure that water level threshold of 5 feet is not exceeded at Well Km.

Results of the off-site well interference analysis detailed in the Groundwater Resources Investigation Report conclude that well interference is not anticipated to pose a significant impact. A groundwater monitoring program will be implemented in order to establish a water level baseline in the JCSD wells and characterize change in water levels due to potable and non-potable water system pumping.

## 2.2 Groundwater Dependent Habitat

Groundwater-dependent vegetation communities mapped approximately 1,620 feet north of the Park Well that may depend on groundwater include riparian and bottomland habitat associated with Boundary Creek (Figure 2). Drawdown at the closest groundwater dependent habitat as a

result of pumping from the Park Well after 90 days, 1 year and 5 years is predicted to be 0.69 feet, 1.46 feet, and 3.92 feet, respectively. The Project is unlikely to draw down the groundwater table to the detriment of groundwater-dependent habitat, typically a drop of 3 feet or more from historical low groundwater levels as Boundary Creek represents a recharge boundary.

Therefore, project-related groundwater production from the Park Well is not anticipated to result in drawdown of the groundwater table to the detriment of this groundwater-dependent habitat.

Due to the limited potential for impacts to groundwater dependent habitat Dudek recommends no initial monitoring of the groundwater dependent habitat. Monitoring of the groundwater dependent habitat would be required in the event that water levels in Well 4 drop below historical low groundwater levels, which were recorded at 23 feet below ground surface. Aquifer water level monitoring for the duration of pumping at the Park Well for the Project is proposed. Biological monitoring procedures are described below in Section 3.2.

## 2.3 Water Quality

Water quality testing performed in 2005 and 2006 on the Park Well indicated elevated concentrations of toluene at 291 µg/L, 199 µg/L and 520 µg/L, which are above the drinking water MCL of 150 µg/L. Sampling of monitoring wells located to the west of the Park Well at Former Chevron Service Station No. 20-5934 in 2014 detected low concentrations of hydrocarbons (AECOM 2015).

Water quality impacts to groundwater resources could potentially by significant if resampling of the Park Well indicates concentrations of VOCs and hydrocarbons above drinking water MCLs. Mitigation consisting of wellhead treatment will be required if current concentrations of VOCs and hydrocarbons exceed drinking water MCLs as discussed in Section 3.

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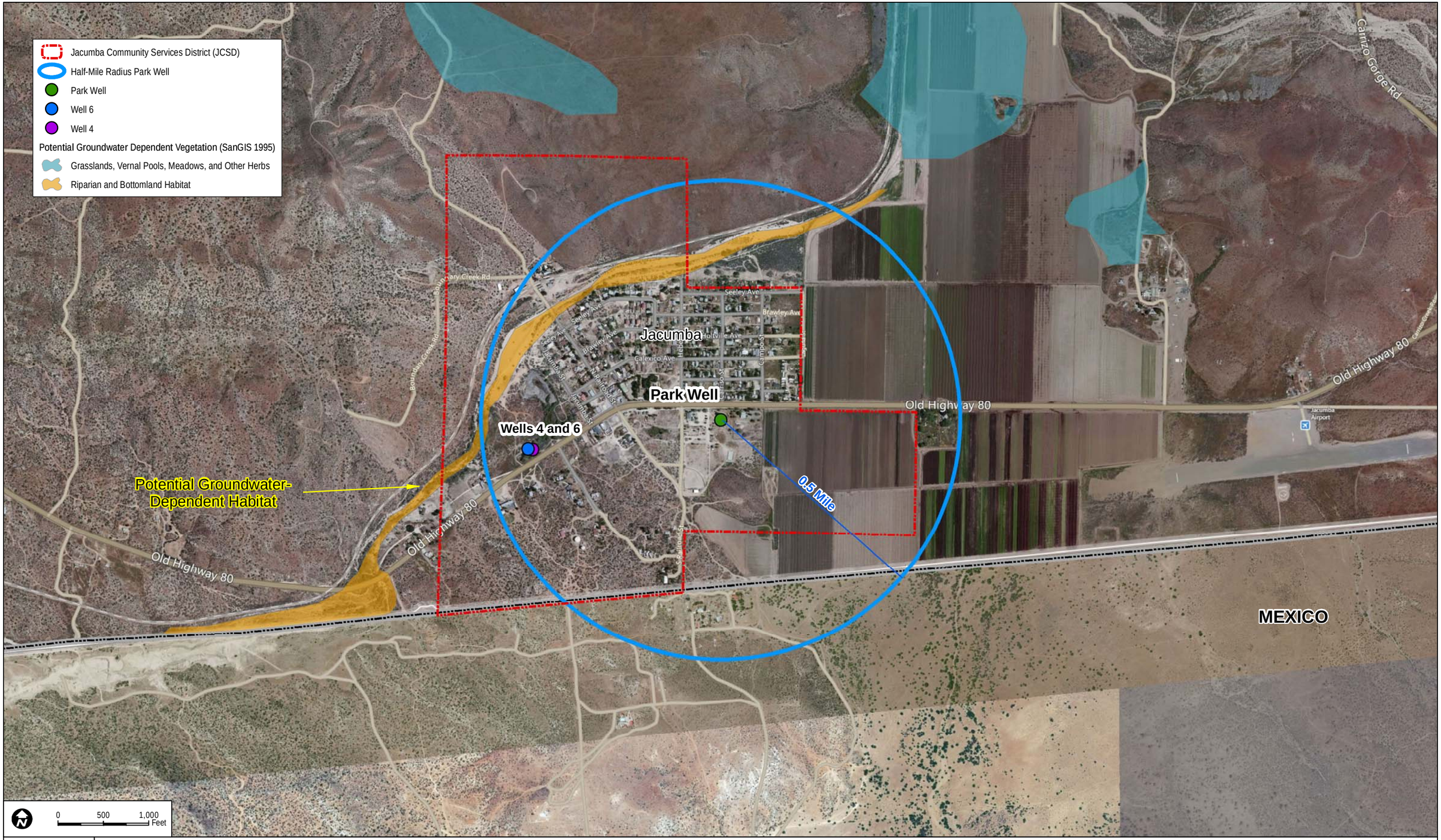


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SOURCE: Bing Maps; SanGIS 1995

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**FIGURE 2**
**Potential Groundwater-Dependent Vegetation**

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# 3 MONITORING PROCEDURES AND MITIGATION CRITERIA

The groundwater monitoring, water quality monitoring and, if necessary, biological monitoring procedures, and mitigation criteria outlined below will be followed during pumping at the Park Well. The groundwater monitoring program defined herein will be carried out under the direction of a Certified Hydrogeologist registered in the State of California.

## 3.1 Groundwater Production and Water Level Monitoring

Pressure transducers will be maintained in a network of the four JCSD groundwater wells (Well 2, Well 4, Well 5 and Well 6, Figure 1) as well as in the production well (Park Well). Additionally, Jacumba Valley Ranch Wells Km and K3, and piezometer P-9 will be included if property access is granted. The pressure transducers will be programed to record the water level every 15 minutes. In addition, ambient barometric pressure and temperature will be recorded at 15 minute intervals with a barometric logger. Manual water level measurements may be required for wells where a pressure transducer cannot initially be fitted in the well due to lack of appropriately sized port or sounding tube.

Transducer data will be downloaded on a weekly basis at all the instrumented wells for 1 month prior to the onset of Project related groundwater extraction. Transducer data will also be downloaded weekly during periods of pumping for non-potable construction water supply to the Projects. Cumulative groundwater usage will be monitored at the Park Well using an instantaneous flow meter. Flow rate and volume measurements will be recorded daily during pumping for the Projects.

## 3.2 Groundwater Dependent Habitat Monitoring

The following monitoring program will be carried out for groundwater dependent habitat if water levels in Well 4 drop below the established threshold. The goal would be to determine if the project's use of groundwater is impacting groundwater dependent habitat in the vicinity of the production well.

### 3.2.1 Monitoring

Baseline data will be collected within a 0.5 mile radius of the Park Well and confined to groundwater dependent habitat; specifically the riparian corridor associated with Boundary Creek. Potentially affected native trees within the study area would be evaluated for overall physical condition and attributes. The trees would be inventoried by an ISA Certified Arborist or Registered Professional Forester with specific experience evaluating riparian dominant species such as cottonwoods and willows.

The baseline monitoring evaluations would include the following:

- Establishment of 18 equidistant plots or transects within the riparian and bottomland habitat within 0.5 mile of the Park Well. Sample plots/transects would include the range of existing habitat conditions, including elevation, slope and aspect, proximity to roads and other land uses.
- Tagging of trees and recording species, tag number, trunk diameter at breast height (dbh) (in.), height (ft.) and dominance (i.e., whether the tree is under the canopy of another tree or forms the uppermost canopy). Slope, aspect, and elevation of each tree location, existing understory species (including proportion of natives to exotics), presence of debris and litter, and soil type, depth, and parent material will be noted for each tree or plot/transect.
- Assessment of tree status, including documentation of:
    - Dbh measured at 4.5 feet above ground (according to standard practices)
    - Number of stems
    - Overall tree height (based on ocular estimates)
    - Tree crown spread (measurement in each cardinal direction, based on ocular estimate)
    - Overall tree health condition (Good, Fair, Poor, Dead)
    - Overall tree structural condition (Good, Fair, Poor, Dead)
    - Pest presence (Type, Extent – minimal, moderate, high)
    - Disease presence (Type, Extent – minimal, moderate, high)
    - Other specific comments
- Assessment of seedling establishment and sapling tree densities and conditions
- The data collection procedure will include full data collection at each plot/transect so that consistency is maintained among sampling plots.
- Creation of database using GIS or similar application

## 3.3 Water Quality

The Park Well will be re-sampled for hydrocarbons and VOCs to determine current concentrations prior to use. If hydrocarbons or VOCs are detected, wellhead treatment will be provided.

### 3.3.1 Sampling

The Park Well will be resampled using established protocols as generally outlined in U.S. Environmental Protection Agency (EPA) *Field Sampling Guidance #1220 Groundwater Well Sampling* (EPA 2004). A minimum of three purge volumes (136 gallons based on 2014 water levels) will be pumped form the Park Well in order to collect a representative sample of water quality. Field water quality parameters will be monitored and have stabilized prior to sample collection.

Water quality samples will be submitted to a California accredited laboratory for chemical analysis of total petroleum hydrocarbons as gasoline (TPH-g) and total petroleum hydrocarbons as diesel (TPH-d) by (EPA) Method 8015B (M), and of benzene, toluene, ethylbenzene, total xylenes (collectively referred to as BTEX), and fuel oxygenate compounds: methyl-t-butyl ether (MTBE), tert-amyl-methyl ether, tert-butyl alcohol (TBA), diisopropyl ether, ethyl-t-butyl ether, and ethanol by EPA Method 8260B.

### 3.3.2 Mitigation

If water quality results from resampling of the Park Well indicate concentrations of VOCs or hydrocarbons detected above drinking water MCLs, wellhead treatment will be required. Final system design will be based on updated water quality results. Conceptual wellhead treatment design to remove VOCs and hydrocarbons includes the following equipment: 20,000 gallon Baker tank, filter skid for pre-filtration, liquid phase carbon vessels to remove VOCs and hydrocarbons, discharge header to 12,000 gallon water tower(s), automated controls and water level switches. All equipment would be installed and maintained by a commercial vendor such as Drewelow Remediation Equipment, Inc. (http://www.dre-equip.com) who has provided initial conceptual design and cost estimate (Pers. comm. David Drewelow, March 27, 2015). This would include system prove out, periodic water quality sampling and system maintenance. Final design and standard operating procedures including periodic water quality monitoring will prepared by a licensed California Professional Engineer.

## 3.4 Groundwater Mitigation Criteria

The following mitigation criteria will be established to protect groundwater resources and groundwater-dependent habitat in the Project area:

- If the groundwater levels at Jacumba Valley Ranch Well Km drops 5 feet below the baseline water level, groundwater pumping at the Park Well will cease until the water level at the well that experienced the threshold exceedance has increased above the threshold and remained there for at least 30 continuous days. Additionally, written permission from the County Planning and Development Services (PDS) must be obtained

before production may be resumed. If Well Km is not accessible, than the well interference threshold will be 3.85 feet at Well 2 and 3.93 feet at Well 4 in order to ensure that Well Km does not exceed the maximum drawdown of 5 feet.

- If groundwater levels at Well 4 drops more than 23 feet below ground surface, than monitoring of the groundwater dependent habitat would be triggered.
- If the groundwater levels exceed historical low water levels in Well 4 (lowest recorded static water level in Well 4 is 23 bgs) and there is evidence of deteriorating riparian habitat health by the Arborist or Forester, there may be a temporary or permanent cessation of pumping at the Park Well.

# 4 REPORTING REQUIREMENTS

A groundwater monitoring report will be completed by a Certified Hydrogeologist registered in the State of California and submitted to the County PDS annually for groundwater extraction from the Park Well no later than 28 days following the end of the calendar year. The reports will include the following information:

- Water level hydrographs and tabulated water level data for each monitoring well.
- Tabulated groundwater production volumes from each production well.
- Documentation of groundwater drawdown at JCSD Wells 2, 4, 5, 6 and Park Monitoring Well included in the groundwater monitoring program.
- Documentation of any threshold-included curtailment of groundwater production.
- Documentation of groundwater dependent habitat monitoring, if necessary, as described above.

If the baseline water levels at the JCSD wells included in the groundwater monitoring program are exceeded by 5 feet, the County PDS will be notified via letter and electronic mail within one working day of the exceedance. Additionally, if water level thresholds at the off-site wells are exceeded by their respective thresholds, pumping of the Park Well shall cease and the County PDS notified via letter and electronic mail within one working day.

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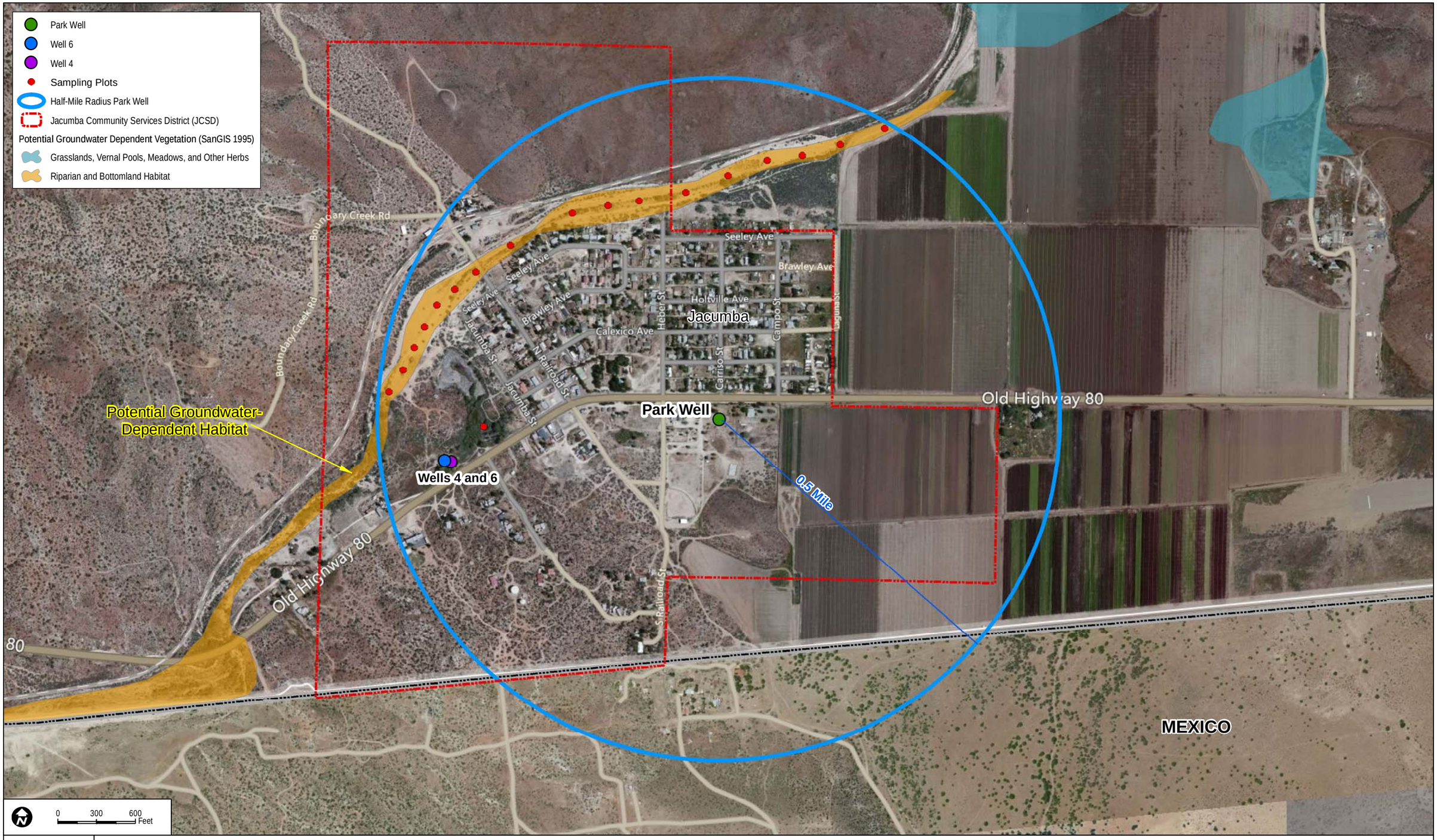


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SOURCE: Bing Maps; SanGIS 1995

**FIGURE 3**
**Potential Groundwater-Dependent Vegetation Monitoring Locations**

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# 5 REFERENCES

AECOM. 2015. Second Semiannual 2014 Groundwater Monitoring Report Former Chevron Service Station 205934, 44485 Old Highway 80, Jacumba, California SDDEH Case No. H29832-002. January 30, 2015.

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David Drewelow, 2015. Park Well Remediation Conceptual Design and Costs. March 27, 2015.

Dudek. 2015. Jacumba Community Services District Groundwater Resources Investigation Report – Flat Creek Watershed. Prepared for Jacumba Community Services District. April 2015.

U.S. Environmental Protection Agency (EPA). 2004. Field Sampling Guidance Document #1220 Groundwater Well Sampling. Revision 1. September 2004.

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# 6 LIST OF PREPARERS

This GMMP was prepared by Dudek Hydrogeologist, Trey Driscoll, PG, CHG. Dudek arborist, Michael S. Huff prepared the monitoring program for the groundwater dependent habitat. Dudek Hydrogeologist Stephen K. Dickey, PG, CHG, CEG, provided review assistance and coordination with the County as the County-approved hydrogeologist.

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