Aquifer Testing Results, 24.29-Acre Lot on Skyline Truck Trail (Hamilton TPM 21060) APN: 522-080-49 Jamul, California

Project Proponent:
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Jamul, CA 91935

Prepared for:
County of San Diego

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GLOSSARY OF ACRONYMS AND ABBREVIATIONS

afy – Acre-feet per year

bgs – Below ground surface

CD – Compact disc

CEQA – California Environmental Quality Act

CGA – California Groundwater Association

gpm – Gallons per minute

MCL – Maximum contaminant level

MPN – Most probable number

msl – Mean sea level

PVC – Polyvinyl chloride (plastic) pipe

t/t' – Time since pumping started divided by time since pumping stopped

TDS – Total dissolved solids

EXECUTIVE SUMMARY

Earth Tech conducted a 24-hour aquifer test of an existing well on the 24.29-acre property located at 15882 Skyline Truck Trail in the community of Jamul, in south central San Diego County, California (Figure 1). The project proposes to subdivide the property into two residential lots. Water will be supplied by individual wells. Wastewater will be disposed by individual septic systems. Based on the results of our aquifer test, the well meets the County's requirements.

1.0 INDRODUCTION

1.1 Purpose of the Report

The purpose of this report is to conduct aquifer testing and groundwater quality testing on an existing well.

1.2 Project Location and Description

The 24.29-acre property is located along Skyline Truck Trail, about 4 miles east of Highway 94, in the community of Jamul, in south central San Diego County, California. Elevations on the site range from approximately 1,850 to 2,325 feet above mean sea level (msl). The project proposes approximately 16 acres for Parcel 1 and 8 acres for Parcel 2. The majority of both parcels are proposed as biological open space easements. The site generally drains west towards a canyon. Based on a water usage estimate of 0.5 acre-feet per year (afy) per home, this project is estimated to use a total of one afy.

Two existing wells (Wells 1 and 2) are located on proposed Parcel 1 at an elevation of about 2,130 and 1,880 feet above msl, respectively. A project site location map is presented as Figure 2. Well logs were not available for either well. Well 1, located near the existing house, is reported to produce less than 2 gpm and drilled to a depth of about 600 feet below ground surface (bgs). The depth of this well was not confirmed since our sounder got stuck at about 350 feet bgs. Well 2, located near the western property boundary, reportedly produces more than 15 gpm and was drilled to a depth of 400 feet bgs. The depth of Well 2 was not confirmed since the pump was set at about 280 feet bgs

and that prevented our electric water level probe from measuring below that depth. The locations of existing and proposed wells and septic systems are provided on Figure 3.

1.3 Applicable Groundwater Regulations

Since the California Environmental Quality Act (CEQA) requires that environmental impacts be assessed for each project, and since development is a potential impact to groundwater, this project is guided by CEQA. The aquifer test was done in conformance with the *County of San Diego (County) Groundwater Ordinance* and the County's *Guidelines for Determining Significance and Report Format and Content Requirements – Groundwater Resources.* The guidelines for determining significance include well interference, low well yield, groundwater-dependent habitat, and water quality. These guidelines are outlined in the following sections.

2.0 WELL TESTING IMPACT ANALYSIS

2.1 Guidelines for Determining Significance

2.1.1 Well Interference in Fractured Rock

"As an initial screening tool, offsite well interference will be considered a significant impact if after a five year projection of drawdown, the results indicate a decrease in water level of 20 feet or more in the offsite wells. If site-specific data indicates water bearing fractures exist which substantiate an interval of more than 400 feet between the static water level in each offsite well and the deepest major water bearing fracture in the well(s), a decrease in saturated thickness of 5% or more in the offsite wells would be considered a significant impact" (County 2007).

2.1.2 Low Well Yield

"Proposed projects requiring groundwater resources for uses associated with single-family residences require well production during the well test to be no less than 3 gallons per minute (gpm) for each well tested. Proposed projects that cannot meet this requirement will be considered to have a significant impact."

"Where analysis of a residential well test indicates that greater than 0.5 feet of residual drawdown is projected, the project will be considered to have a significant impact."

"The analysis of the residential well test must indicate that the amount of drawdown predicted to occur in the well after five years of continual pumping at the rate of projected water demand (a) will not interfere with the continued production of sufficient water to meet the needs of the anticipated residential use(s), and (b) must be less than the saturated depth of water above the pump intake or 100 feet, whichever is less. (The pump intake is assumed to be 50 feet above the bottom of the well). Proposed projects that cannot meet this guideline will be considered to have a significant impact (County 2007)."

2.1.3 Groundwater-Dependent Habitat

For projects that have groundwater-dependent habitat on or near the project site, the County considers a drop in water levels of three feet or more in the vicinity of groundwater-dependent habitat to be a significant impact.

2.2 Methodology

2.2.1 Well Test Description

The aquifer test proposal (Appendix C) was approved by the County Groundwater Geologist in an e-mail dated October 2, 2007.

Well 2 was used for aquifer testing. Water levels were measured with an electric water level probe and a pressure transducer. Flow was measured with an in-line flowmeter and confirmed with a 5-gallon bucket and digital watch. Water was discharged downgradient of the production well. Drawdown and recovery data are presented in graphical format in Figures 4 through 6. Raw data are provided on a CD in Appendix A.

Earth Tech performed a 24-hour test from January 16 through 17, 2008. The initial water level was 237.6 feet bgs. Since the nearest known offsite well is more than about 1,000 feet away and since Well 1 was inaccessible, no other wells were monitored during testing. The average flowrate for the test was 3.4 gpm. The total volume pumped during the 24-hour test was about 4,896 gallons. With a 6-inch diameter well, this represents approximately 20½ well-bore volumes.

2.2.2 Well Test Analysis

After 24 hours of pumping, the maximum drawdown was 18.1 feet, which equals a specific capacity of 0.19 gpm per foot. The specific capacity after eight hours of pumping was 0.26 gpm per foot. The water level recovered about 98 percent within 24 hours after pumping ceased.

The results of pump testing are summarized on Table 1 and presented graphically in Figures 4 through 6. Since aquifer thickness and transmissivity do not remain constant with time in an unconfined aquifer, the Jacob correction (Appendix A) was used to correct measured drawdown during pumping and recovery. These corrected drawdown data are plotted against the logarithm of time since pumping started. Corrected recovery data are plotted against the ratio of time since pumping started divided by time since pumping stopped (t/t').

Aquifer transmissivity (i.e., the capacity to transmit water) can be estimated using the Cooper-Jacobs approximation to the Theis equation (Cooper-Jacobs 1946) that is provided in Appendix A.

Based on this equation, we calculated transmissivity values of 14 and 26 square feet per day for the drawdown and recovery of this well, respectively (Table 2). A steepening of the drawdown curve was noted for about the last 30 minutes of pumping. Although a slight increase in flowrate was recorded during the latter part of the test, it may not explain the magnitude of this slope increase. The steepening may indicate dewatering of a fracture. The slope that prevailed throughout most of the test (Figure 4) was used for our calculations. Despite the change in slope near the end of the test, the well should be adequate for its proposed usage.

Recovery data were evaluated to assess long-term affects to the groundwater aquifers. The plot of residual drawdown versus t/t' was evaluated to assess impacts to storage from pumping. At t/t' equal to 1 (infinite time), a residual drawdown would indicate permanent aquifer dewatering. No residual drawdown was indicated. Therefore, it indicates no permanent dewatering.

A continuation of the actual drawdown plot was used to estimate drawdown in the production well after 5 years of continuous pumping at a rate of 0.31 gpm (0.5 afy). The estimated drawdown was about 4.5 feet.

Using the Theis equation and the calculated transmissivity averaged from drawdown and recovery (Appendix A), we predict about 1½ additional feet of drawdown in Well 2 resulting from a future well located on the proposed Parcel 2, about 1,025 feet east of Well 2 assuming similar hydraulic characteristics. The nearest future offsite well would likely be no closer than 1,000 feet from Well 2. Offsite well interference, at a distance of about 1,000 feet as a result of this well, is expected to be about 1½ feet. Although Well 1 provides some water to the existing home, the majority of water is provided by Well 2. While impacts from multiple wells are additive, the impact from Well 1 on other wells is expected to be insignificant due to its limited capacity and total extraction is not expected to exceed 0.5 afy for each lot. Calculations are provided in Appendix A.

2.3 Significance of Impacts Prior to Mitigation

Based on the criteria of low well yield, well interference, and groundwater-dependent habitat; impacts to groundwater are not anticipated to be significant for this project.

2.4 Mitigation Measures and Design Considerations

No groundwater mitigation measures are proposed for this project.

2.5 Conclusions

Both onsite and offsite well interference is not anticipated to be a significant impact for this project since predicted drawdown, at a distance of about 1,000 feet as a result of the pumped well, is expected to be about 1½ feet.

Low well yield is not anticipated to be a significant impact for this project since the pump-tested well was (1) capable of producing at least 3 gpm; (2) had less than 0.5 feet of residual drawdown; and (3) the predicted drawdown in the production well after five years of continually pumping at 0.5 afy was about 4.5 feet, which is less than the saturated depth and will not interfere with continued production in that well. Failure to

meet any of the above criteria would have been considered a significant impact according to the County's guidelines.

Groundwater-dependent habitat was not evaluated for this project and is not part of the current scope. However, since on-site static water levels were around 240 feet bgs, potential impacts to shallow groundwater-dependent habitat are not anticipated to be significant.

Based on the criteria of well interference, low well yield, and groundwater-dependent habitat, impacts to groundwater are less than significant.

3.0 WATER QUALITY IMPACT ANALYSIS

3.1 Guidelines for Determination of Significance

"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. Proposed projects that cannot demonstrate compliance with applicable MCLs will be considered to have a significant impact.

3.2 Methodology

3.2.1 Sampling Procedures

Earth Tech personnel obtained groundwater samples from the pumped well on October 9, 2007 at 2025 and again on January 17, 2008 at 0800 after at least two well-bore volumes had been pumped from the well. The samples were collected in laboratory-provided bottles, kept on ice, and sent via courier to TestAmerica (a California-certified laboratory). The first sample was analyzed for gross alpha, uranium, total dissolved solids (TDS), total and fecal coliform, and nitrate (as N). The initial laboratory results indicated the presence of total coliform so the well was disinfected with chlorine[1], resampled and again analyzed for total and fecal coliform. Laboratory analytical methods and preservation methods are provided on Table 3.

[1] Per CGA guidance.

3.2.2 Sampling Analysis

After the well was disinfected, no groundwater samples exceeded the MCLs listed on Table 3. All samples were analyzed within prescribed holding times.

3.3 Significance of Impacts Prior to Mitigation

Based on the criteria of compliance with applicable MCLs, impacts to water quality are not anticipated to be significant for this project.

3.4 Mitigation Measures and Design Considerations

No mitigation measures are proposed.

3.5 Conclusions

Water quality meets the relevant drinking water standards for the required parameters tested, therefore, this project is considered to have a less than significant impact.

4.0 SUMMARY OF PROJECT IMPACTS AND MITIGATION

Based on the well testing and the water quality analyses, the project is not expected to exceed any of the appropriate thresholds of significance. Therefore, the impacts resulting from this project are considered less than significant.

4.1 Recommendations

- We recommend that onsite production wells be located as far as possible and upgradient of septic systems.
- Since open wells could provide a conduit for groundwater contamination and could present a safety hazard, the existing (and any future) onsite wells should be secured with locking covers. This may help to prevent future coliform contamination.

5.0 REFERENCES

1. California Division of Mines and Geology. 1962. Geologic Map of California, San Diego – El Centro Sheet. Scale 1:250,000.
2. California Groundwater Association (CGA). 1995. Article 500 – Well Disinfection. CGA Standard Practice Series.
3. Cooper, H.H., Jr. and C.E. Jacobs. 1946. A Generalized Graphical Method for Evaluating Formation Constants and Summarizing Well Field History. *Transactions, American Geophyscial Union 27:526-34.*
4. County of San Diego. March 2007. Guidelines for Determining Significance and Report Format and Content Requirements – Groundwater Resources.
5. County of San Diego. October 1991. San Diego County Groundwater Ordinance Number 7994. Sections 67.701 through 67.750.
6. National Geographic. 2000. California Seamless USGS Topographic Maps on CD-ROM (California TOPO!)
7. Theis, C.V. 1936. Estimating the Transmissivity of a Water Table Aquifer from the Specific Capacity of a Well. U.S. Geological Survey Water Supply Paper 1536-I:332-336.

6.0 LIST OF PREPARERS

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Senior Program Director
Earth Tech

Leanne Crow, PG 8300
Project Geologist
Earth Tech

TABLES

Table 1. Aquifer Test of Well 2

Test Start Day	Average Discharge (gpm)	Pumping Period (hours)	Water Depth Prior to Pumping (feet bgs)	Maximum Water Depth (feet bgs)	Well Depth (feet bgs)	Maximum Drawdown (feet)	Recovery After 24 Hours (feet)/Percent of total drawdown
01/15/08	3.4	24	237.6	255.66	400	18.1	17.7/98

Table 2. Calculated Transmissivity

Data Set Used	Transmissivity (feet^2/day)
Drawdown	14
Recovery	26

Table 3. Laboratory Data

Analyte	Analytical Method	Container	Preservative	MCL	Result	Unit
Sampled on October 10, 2007						
Gross Alpha	EPA 900.0	1 L Poly	HNO_3	15[∞]	ND[§]	pCi/L
Uranium	EPA 200.8	500 mL Poly	HNO_3	20	<1.0	pCi/L
TDS	EPA 160.0	1 L Poly	None	1,000* (500* recommended)	390	mg/L
Nitrate-N	EPA 300.0	500 mL Poly	None	10	0.54	mg/L
Total Coliform	SM9223B	100 mL Poly	None	Detectable	Present	MPN/100 mL
Fecal Coliform	SM9223B	100 mL Poly	None	Detectable	<0.9	MPN/100 mL
Sampled on January 17, 2008						
Total Coliform	SM9223B	100 mL Poly	None	Detectable	ND	MPN/100 mL
Fecal Coliform	SM9223B	100 mL Poly	None	Detectable	ND	MPN/100 mL

[∞] MCL compliant when gross alpha minus uranium is less than 15 pCi/L.

*Secondary MCL

[§] Non detect (at reporting limits)

FIGURES

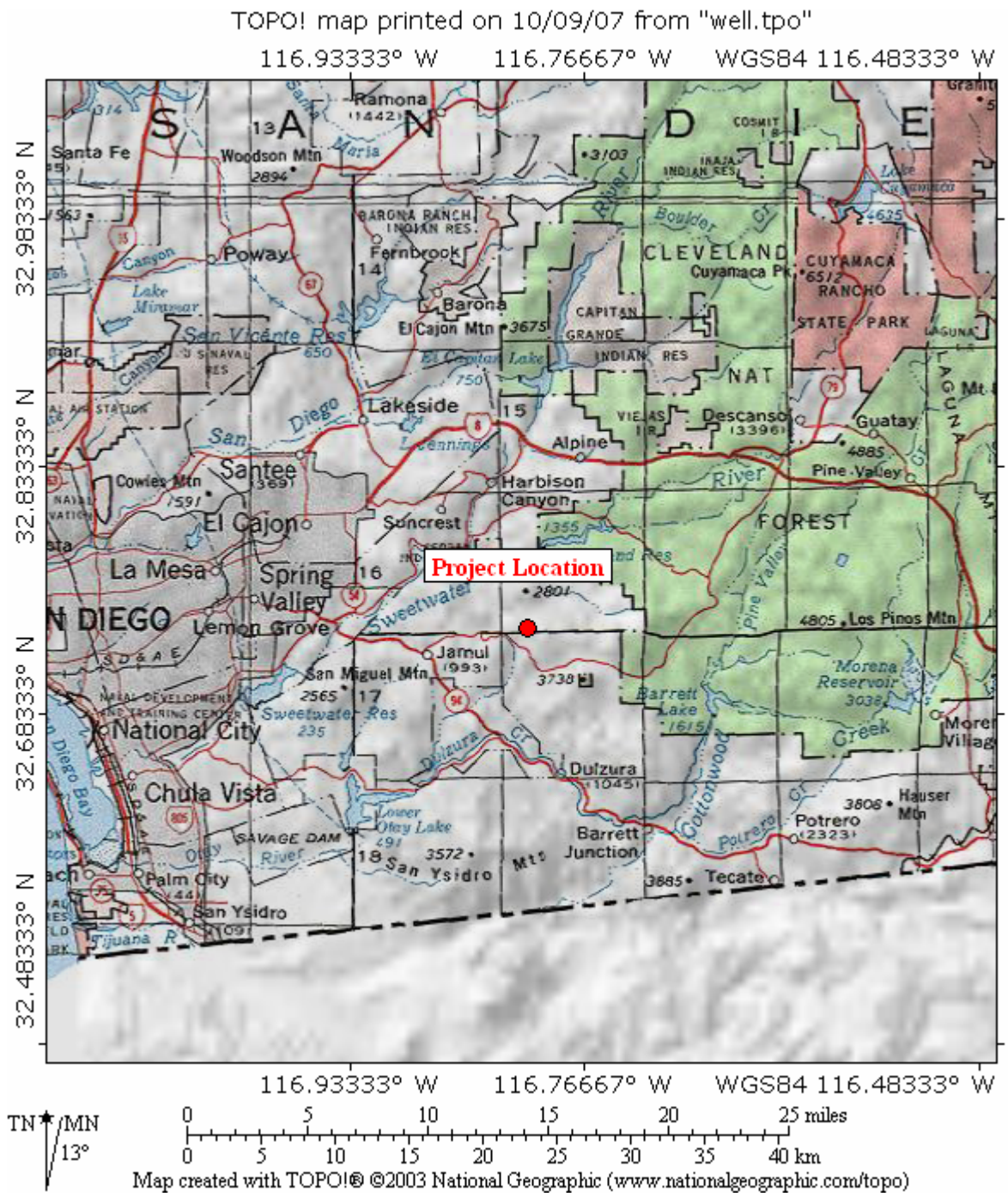

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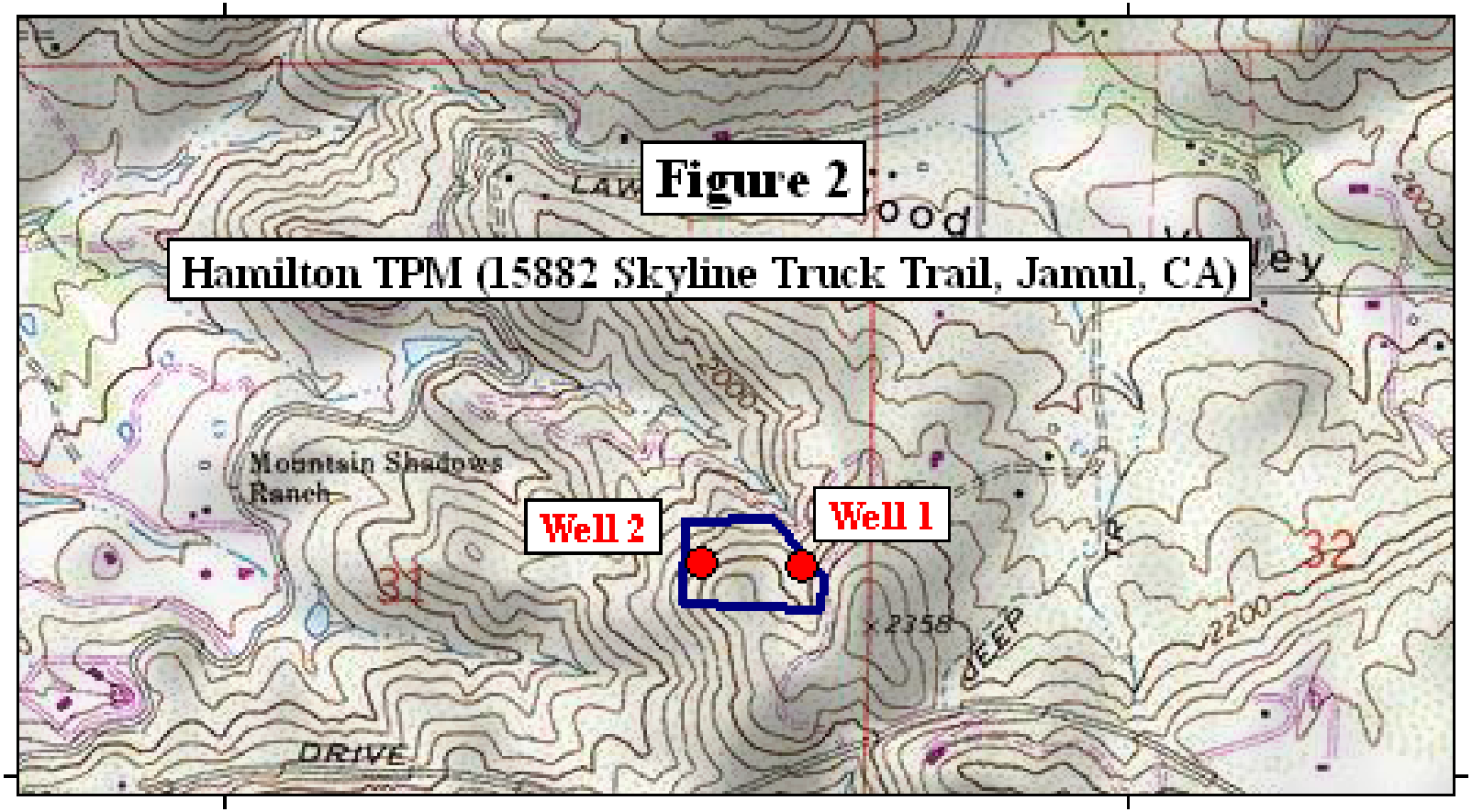
Figure 1
VICINITY MAP
Hamilton TPM, Jamul, San Diego County, California
March 2008
Project No. 102099

TOPO! map printed on 10/19/07 from "hamilton wells.tpo"

116.81667° W WGS84 116.80000° W



32.73333° N 32.73333° N

116.81667° W WGS84 116.80000° W

TN MN 13°

0 .5 1 MILE

0 1000 FEET 0 500 1000 METERS

Map created with TOPO!® ©2003 National Geographic (www.nationalgeographic.com/top

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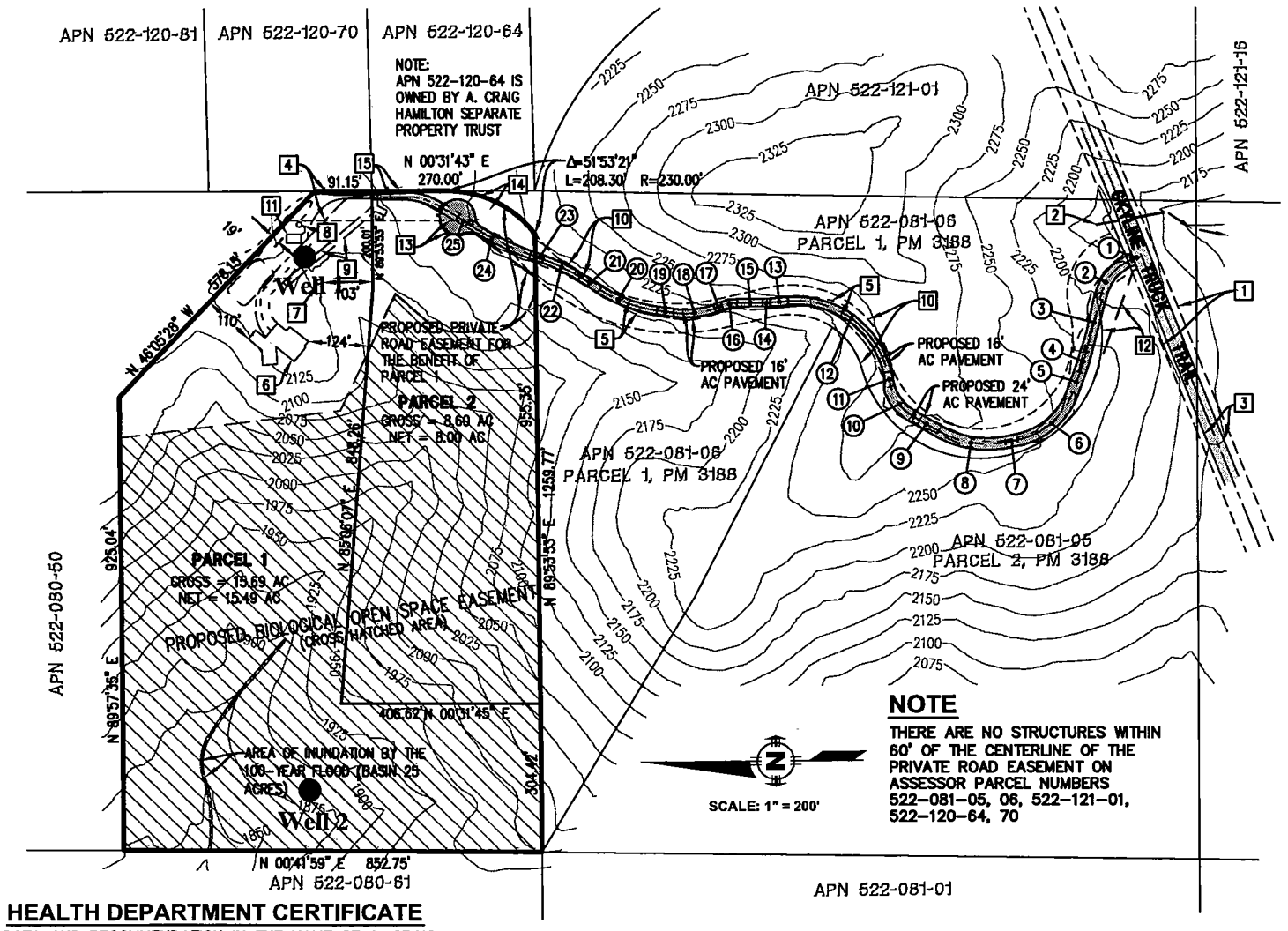
Figure 3-1

TENTATIVE PARCEL MAP 21060 RPL 2



NOTES

1. 60' PUBLIC ROAD EASEMENT PER DOC. RECORDED DECEMBER 23, 1965 AS FILE NO. 231062
2. EXISTING 24" CMP STORM DRAIN PIPE
3. EXISTING 32'± AC PAVEMENT
4. 60' PRIVATE ROAD EASEMENT PER DOC. RECORDED DECEMBER 23, 1982 AS FILE NO. 82-392780
5. EXISTING DIRT ROAD
6. EXISTING HOUSE TO REMAIN
7. EXISTING 82 S.F. SHED TO REMAIN
8. EXISTING WATER TANK TO REMAIN
9. EASEMENT FOR PUBLIC UTILITIES PER DOCUMENT RECORDED APRIL 4, 1989 AS FILE NO. 1989-0172335, O.R.
10. 60' PRIVATE ROAD EASEMENT PER DOC. RECORDED OCTOBER 25, 2005 AS FILE NO. 2005-0922135 AND DOC. RECORDED AUGUST 22, 2007 AS FILE NO. 2007-0559404
11. EXISTING 520 S.F SHED TO BE REMOVED
12. PRIVATE ROAD EASEMENT PER DOC. REC. AUGUST 22, 2007 AS FILE NO. 2007-0559405
13. PROPOSED PRIVATE ROAD EASEMENT FOR THE BENEFIT OF PARCEL 1 (R=38')
14. PROPOSED 20' WIDE TRAIL EASEMENT
15. PROPOSED 16' WIDE AC PRIVATE ROAD (20' GRADED) PER SECTION 3.13 OF THE SAN DIEGO COUNTY STANDARDS FOR PRIVATE ROADS

NOTE

THERE ARE NO STRUCTURES WITHIN 60' OF THE CENTERLINE OF THE PRIVATE ROAD EASEMENT ON ASSESSOR PARCEL NUMBERS 522-081-05, 06, 522-121-01, 522-120-64, 70

LAND DIVISION STATEMENT / OWNER'S CERTIFICATE

I HEREBY CERTIFY THAT I AM THE RECORD OWNER, AS SHOWN ON THE LATEST EQUALIZED COUNTY ASSESSMENT, OF THE PROPERTY SHOWN ON THE TENTATIVE PARCEL MAP. ALL OF MY CONTIGUOUS OWNERSHIP WITHIN AND BEYOND THE BOUNDARIES OF THE TENTATIVE PARCEL MAP ARE SHOWN. THE BASIS OF CREATION OF THE LOTS IN MY OWNERSHIP (e.g. PARCEL MAP, FINAL MAP, CERTIFICATE OF COMPLIANCE, RECORDED DEED BEFORE 2/1/72) IS INDICATED ON THE TENTATIVE PARCEL MAP. I UNDERSTAND THAT PROPERTY IS CONSIDERED AS CONTIGUOUS EVEN IF IT IS SEPARATED BY ROADS, STREETS, UTILITY EASEMENTS OR RAILROAD RIGHT-OF-WAY. "FREEWAY" AS DEFINED IN SECTION 23.5 OF THE STREETS AND HIGHWAY CODE, SHALL NOT BE CONSIDERED AS ROADS OR STREETS.

I FURTHER CERTIFY THAT I WILL NOT, BY THIS APPLICATION, CREATE OR CAUSE TO BE CREATED, OR WILL NOT HAVE PARTICIPATED IN THE CREATION OF MORE THAN FOUR PARCELS ON CONTIGUOUS PROPERTY UNLESS SUCH CONTIGUOUS PARCELS WERE CREATED BY MAJOR SUBDIVISION. FOR PURPOSES OF THIS CERTIFICATION, THE TERM "PARTICIPATED" MEANS HAVING COOPERATED WITH OR ACTED IN A PLANNING, COORDINATING OR DECISION-MAKING CAPACITY IN ANY FORMAL OR INFORMAL ASSOCIATION OR PARTNERSHIP FOR THE PURPOSE OF DIVIDING REAL PROPERTY.
I CERTIFY UNDER PENALTY OF PERJURY THAT THE FOREGOING IS TRUE AND CORRECT.
EXECUTED THIS ____ DAY OF_____, 2008 AT SAN DIEGO, CALIFORNIA.

_____
A. CRAIG HAMILTON SEPARATE PROPERTY TRUST
A. CRAIG HAMILTON, TRUSTEE
15882 SKYLINE TRUCK TRAIL
JAMUL, CA 91935
(619) 666-1998

1. TAX ASSESSOR'S PARCEL NUMBER/TAX RATE AREA: 522-080-49/79011
2. ABBREVIATED LEGAL DESCRIPTION: PARCEL 3 OF PM 3188
3. GENERAL PLAN REGIONAL CATEGORY: RDA
4. GENERAL PLAN LAND USE DESIGNATION: 18
5. COMMUNITY PLAN AREA: JAMUL-DULZURA
6. EXISTING/PROPOSED ZONING:

ZONE	
USE REGULATIONS	A72
ANIMAL REGULATIONS	0
DENSITY	.125
LOT SIZE	8AC
BUILDING TYPE	C
MAXIMUM FLOOR AREA	--
FLOOR AREA RATIO	--
HEIGHT	G
LOT COVERAGE	--
SETBACK	C
OPEN SPACE	--
SPECIAL AREA REGULATIONS	--

7.

GENERAL PLAN SLOPE ANALYSIS TABLE	
AVERAGE SLOPE	MIN. PARCEL SIZE
< 25%	4 AC
> 25% AND < 50%	8 AC
> 50%	20 AC

	PARCEL 1	PARCEL 2
AVERAGE SLOPE	28.6%	37.7%
MIN. PARCEL SIZE	8 AC	8 AC

8. LOCATION AND STATUS OF EXISTING LEGAL ACCESS TO SUBJECT PROPERTY FROM A PUBLICLY MAINTAINED ROAD: 60' PRIVATE ROAD EASEMENT PER PARCEL MAP 3188 CONNECTING TO SKYLINE TRUCK TRAIL (A PUBLICLY MAINTAINED ROAD)
9. ASSOCIATED PERMITS: NONE
10. ALL LOTS WITHIN THIS SUBDIVISION HAVE A MINIMUM 100 SQUARE FEET OF SOLAR ACCESS FOR EACH FUTURE DWELLING UNIT ALLOWED BY THIS SUBDIVISION
11. SEWER: SEPTIC
12. WATER: WELLS
13. FIRE: SAN DIEGO RURAL FIRE PROTECTION DISTRICT
14. SCHOOL DISTRICT(S): GROSSMONT UNION HIGH SCHOOL DISTRICT
    JAMUL DULZURA ELEMENTARY SCHOOL DISTRICT
15. GRADING: CUT =5,400 CY FILL = 2,400 CY
    SHRINKAGE (10% ±) = 500 CY EXPORT = 2,500 CY
16. SOURCE OF TOPOGRAPHY: SAN DIEGO COUNTY 200 SCALE TOPO MAP 206-1827, SUPPLEMENTED WITH FILED SURVEY CONDUCTED BY WALSH ENGINEERING & SURVEYING, INC. DATED APRIL 4, 8, MAY 26 AND SEPTEMBER 26, 2006

PREPARED BY:

LAWRENCE W. WALSH RCE 46316 DATE

Walsh Engineering & Surveying, Inc.
607 Aldwych Road, El Cajon, CA 92020
(619) 588-6747 (619) 792-1232 Fax

REGISTERED PROFESSIONAL ENGINEER
LAWRENCE W. WALSH
No. C 46316
Exp. 12-31-08
CIVIL
STATE OF CALIFORNIA

HEALTH DEPARTMENT CERTIFICATE

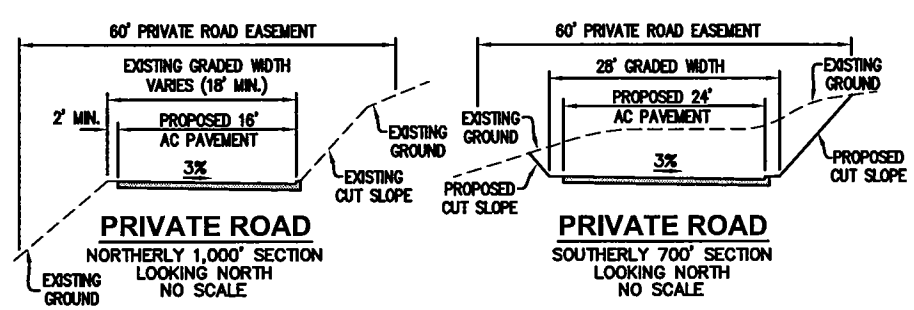
DATA AND RECOMMENDATION IN THE NAME OF A. CRAIG HAMILTON BY LARRY NEWCOMB, REHS

PARCEL NUMBER	LEACH LINE FOOTAGE	TRENCH DEPTH FOOTAGE	ROCK UNDER PIPE FOOTAGE	
1	400 FT	3 FT	1	EXISTING 4 BR
2	420 FT	3 FT	1	4 BR

ALL PARCEL TO HAVE 100% RESERVE. WATER FOR ALL PARCELS BY INDIVIDUAL WELLS.

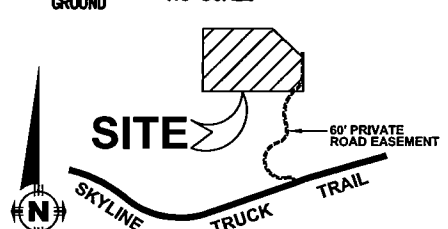
GARY ERBECK, DIRECTOR, DEPARTMENT OF ENVIRONMENTAL HEALTH
BY: LANCE DECLUE DATE: 2-14-07 VPM: 331

THIS CERTIFICATION DOES NOT IMPLY ALL CONDITIONS PURSUANT TO THE RESOURCE PROTECTION ORDINANCE AND THE GROUNDWATER ORDINANCE HAVE BEEN MET. THE DEPARTMENT OF PLANNING AND LAND USE SHOULD BE CONSULTED REGARDING THE APPLICATION OF THESE ORDINANCES RELATIVE TO THIS PROJECT. ANY RESULTANT CHANGES TO THE SEPTIC SYSTEM DESIGN(S) MUST BE RE-EVALUATED BY THE DEPARTMENT OF ENVIRONMENTAL HEALTH.
ALL PARCELS SHALL HAVE A LAYOUT OF THE SEWAGE DISPOSAL SYSTEM PROPOSED STRUCTURES, CUT AND FILLS APPROVED BY THE SAN DIEGO DEPARTMENT OF ENVIRONMENTAL HEALTH PRIOR TO THE APPROVAL OF THE BUILDING PERMIT AND/OR ISSUANCE OF A SEPTIC TANK PERMIT. AN ADDITIONAL EXPANSION AREA OF 100% OF THE INITIAL TILE AREA SHALL BE PROVIDED BY THE GRAVITY FLOW FOR THE POTENTIAL EXPANSION IN THE EVENT OF FAILURE.
EACH PARCEL SHALL HAVE AN INDIVIDUAL WELL APPROVED BY THE DEPARTMENT OF ENVIRONMENTAL HEALTH PRIOR TO APPROVAL OF A BUILDING PERMIT AND/OR ISSUANCE OF A SEPTIC TANK PERMIT. A LAYOUT SHOWING THE LOCATION OF THE SEWAGE SYSTEM AND THE WELL SHALL BE APPROVED PRIOR TO APPROVAL OF PERMITS.

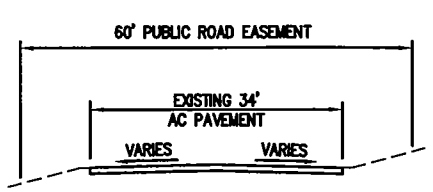


PRIVATE ROAD
NORTHERLY 1,000' SECTION
LOOKING NORTH
NO SCALE

PRIVATE ROAD
SOUTHERLY 700' SECTION
LOOKING NORTH
NO SCALE



VICINITY MAP
NO SCALE
THOMAS BROS MAP PG.1273, G-6



SKYLINE TRUCK TRAIL
(CIRCULATION ELEMENT ROAD)
TYPICAL SECTION
NO SCALE

CENTERLINE DATA

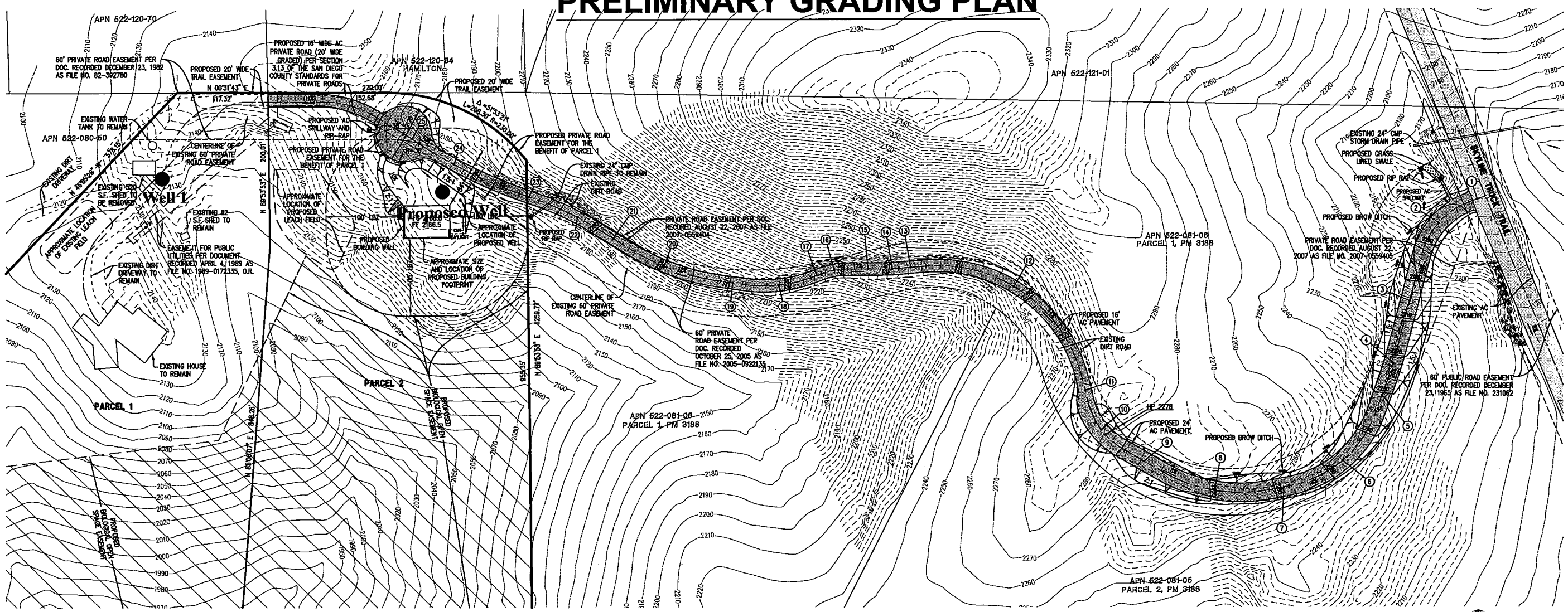
1. N 20°34'08" W 23.14'
2. Δ=54°07'11" L=94.46' R=100.00'
3. N 74°41'19" W 122.64'
4. Δ=4°57'55" L=43.33' R=500.00'
5. N 69°43'24" W 44.03'
6. Δ=59°27'11" L=155.65' R=150.00'
7. N 10°16'13" W 25.18'
8. Δ=40°36'14" L=141.73' R=200.00'
9. N 30°20'01" E 56.97'
10. Δ=46°24'17" L=80.99' R=100.00'
11. N 76°44'18" E 29.97'
12. Δ=80°49'53" L=270.87' R=192.00'
13. N 04°05'35" W 35.75'
14. Δ=4°20'47" L=15.17' R=200.00'
15. N 00°15'13" E 50.70'
16. Δ=19°44'45" L=34.46' R=100.00'
17. N 19°29'32" W 14.33'
18. Δ=27°58'00" L=85.42' R=175.00'
19. N 08°28'27" E 33.40'
20. Δ=24°01'07" L=125.76' R=300.00'
21. N 32°29'34" E 48.06'
22. Δ=12°19'14" L=83.86' R=390.00'
23. N 20°10'20" E 26.92'
24. Δ=13°35'52" L=144.29' R=608.00'
25. N 33°46'12" E 23.90'

L:\Projects\06518\dwg\06518-BASE.dwg 12/1/2008 11:30:25 AM PST(

EarthTech
A tyco International Ltd. Company

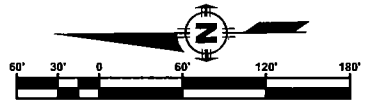
Figure 3-2

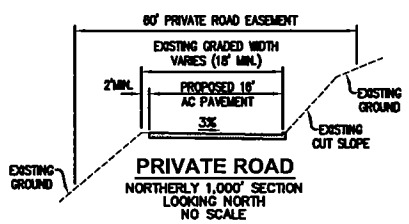
PRELIMINARY GRADING PLAN



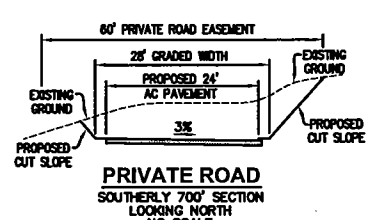
NOTE

PLAN SHOWS ALL PROPOSED GRADING



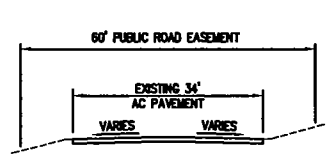


PRIVATE ROAD
NORTHERLY 1,000' SECTION
LOOKING NORTH
NO SCALE



PRIVATE ROAD
SOUTHERLY 700' SECTION
LOOKING NORTH
NO SCALE

VICINITY MAP
NO SCALE
THOMAS BROS MAP PG.1273, G-6



SKYLINE TRUCK TRAIL
(CIRCULATION ELEMENT ROAD)
TYPICAL SECTION
NO SCALE

CENTERLINE DATA

1. N 20°34'08" W 23.14'
2. Δ=54°07'11" L=94.46' R=100.00'
3. N 74°41'19" W 122.64'
4. Δ=4°57'55" L=43.33' R=500.00'
5. N 69°43'24" W 44.03'
6. Δ=59°27'11" L=155.65' R=150.00'
7. N 10°16'13" W 25.18'
8. Δ=40°36'14" L=141.73' R=200.00'
9. N 30°20'01" E 56.97'
10. Δ=46°24'17" L=80.99' R=100.00'
11. N 76°44'18" E 29.97'
12. Δ=80°49'53" L=270.87' R=192.00'
13. N 04°05'35" W 35.75'
14. Δ=4°20'47" L=15.17' R=200.00'
15. N 00°15'13" E 50.70'
16. Δ=19°44'45" L=34.46' R=100.00'
17. N 19°29'32" W 14.33'
18. Δ=27°58'00" L=85.42' R=175.00'
19. N 08°28'27" E 33.40'
20. Δ=24°01'07" L=125.76' R=300.00'
21. N 32°29'34" E 48.06'
22. Δ=12°19'14" L=83.86' R=390.00'
23. N 20°10'20" E 26.92'
24. Δ=13°35'52" L=144.29' R=608.00'
25. N 33°46'12" E 23.90'

EARTHWORK:

AREA	CUT (CY)	FILL (CY)
PARCEL 1	0	0
PARCEL 2	1,200	180
PRIVATE ROAD	4,200	2,180
SUBTOTAL	5,400	2,400
SHRINKAGE (10% ±)	500	–
TOTAL	4,900	2,400
EXPORT	2,500	

SOURCE OF TOPOGRAPHY:
SAN DIEGO COUNTY 200 SCALE 206-1827, SUPPLEMENTED WITH FILED SURVEY CONDUCTED BY WALSH ENGINEERING & SURVEYING, INC. DATED APRIL 4, 8, MAY 28 AND SEPTEMBER 28, 2006

ASSESSOR'S PARCEL NUMBER:
522-080-49

OWNER:
A. CRAIG HAMILTON SEPERATE PROPERTY TRUST
A. CRAIG HAMILTON, TRUSTEE
15882 SKYLINE TRUCK TRAIL
JAMUL, CA 91935
(619) 666-1998

PREPARED BY:

NOTE

THERE ARE NO STRUCTURES WITHIN 60' OF THE CENTERLINE OF THE PRIVATE ROAD EASEMENT ON ASSESSOR PARCEL NUMBERS 522-081-05, 06, 522-121-01, 522-120-84, 70

NOTE

THIS PLAN IS PROVIDED TO ALLOW FOR FULL AND ADEQUATE DISCRETIONARY REVIEW OF A PROPOSED DEVELOPMENT PROJECT. THE PROPERTY OWNER ACKNOWLEDGES THAT ACCEPTANCE OR APPROVAL OF THIS PLAN DOES NOT CONSTITUTE AN APPROVAL TO PERFORM ANY GRADING SHOWN HEREON, AND AGREES TO OBTAIN VALID GRADING PERMISSIONS BEFORE COMMENCING SUCH ACTIVITY.

REGISTERED PROFESSIONAL ENGINEER
LAWRENCE W. WALSH
No. C 46316
Exp. 12-31-08
CIVIL
STATE OF CALIFORNIA

LAWRENCE W. WALSH RCE 46316 DATE

Walsh Engineering & Surveying, Inc.
607 Aldwych Road, El Cajon, CA 92020
(619) 588-6747 (619) 792-1232 Fax

L:\Projects\06316\dwg\06316-BASE.dwg 12/1/2008 11:30:23 AM PST(

Figure 4. Drawdown Graph
Hamilton 24-Hour Pump Test (January 16, 2008)

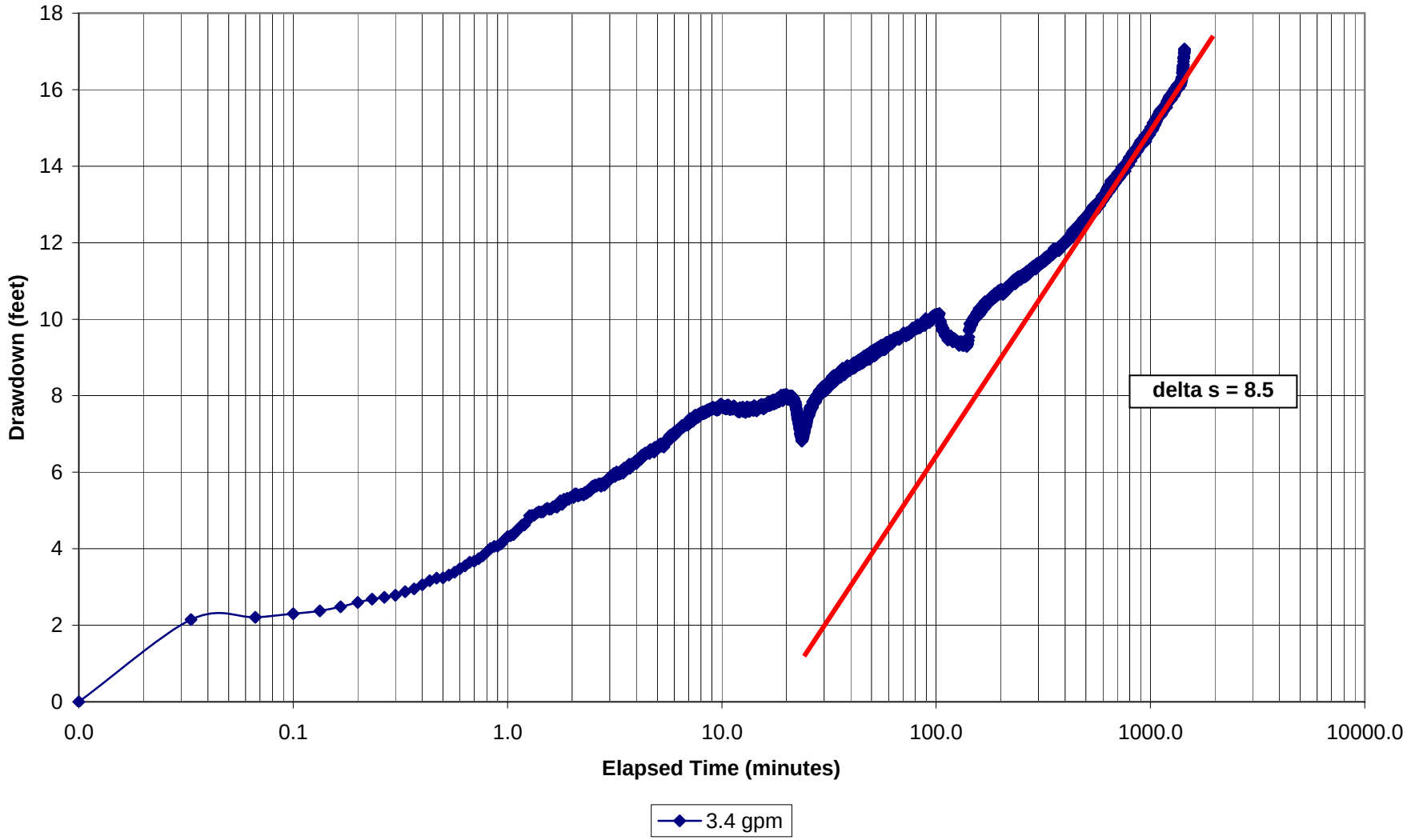


Figure 5. Recovery Graph
Hamilton Pump Test Recovery (24-hour test)

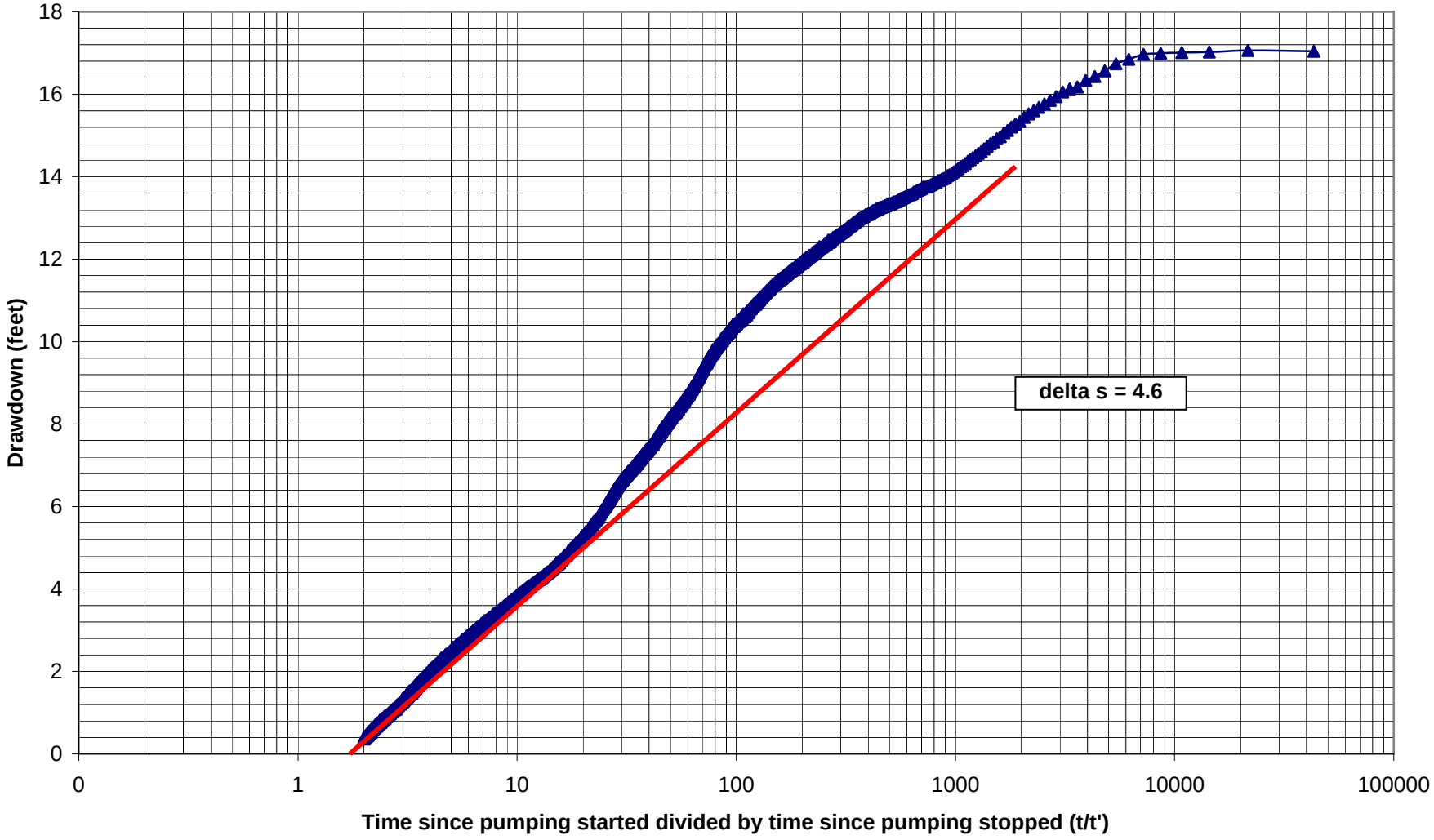
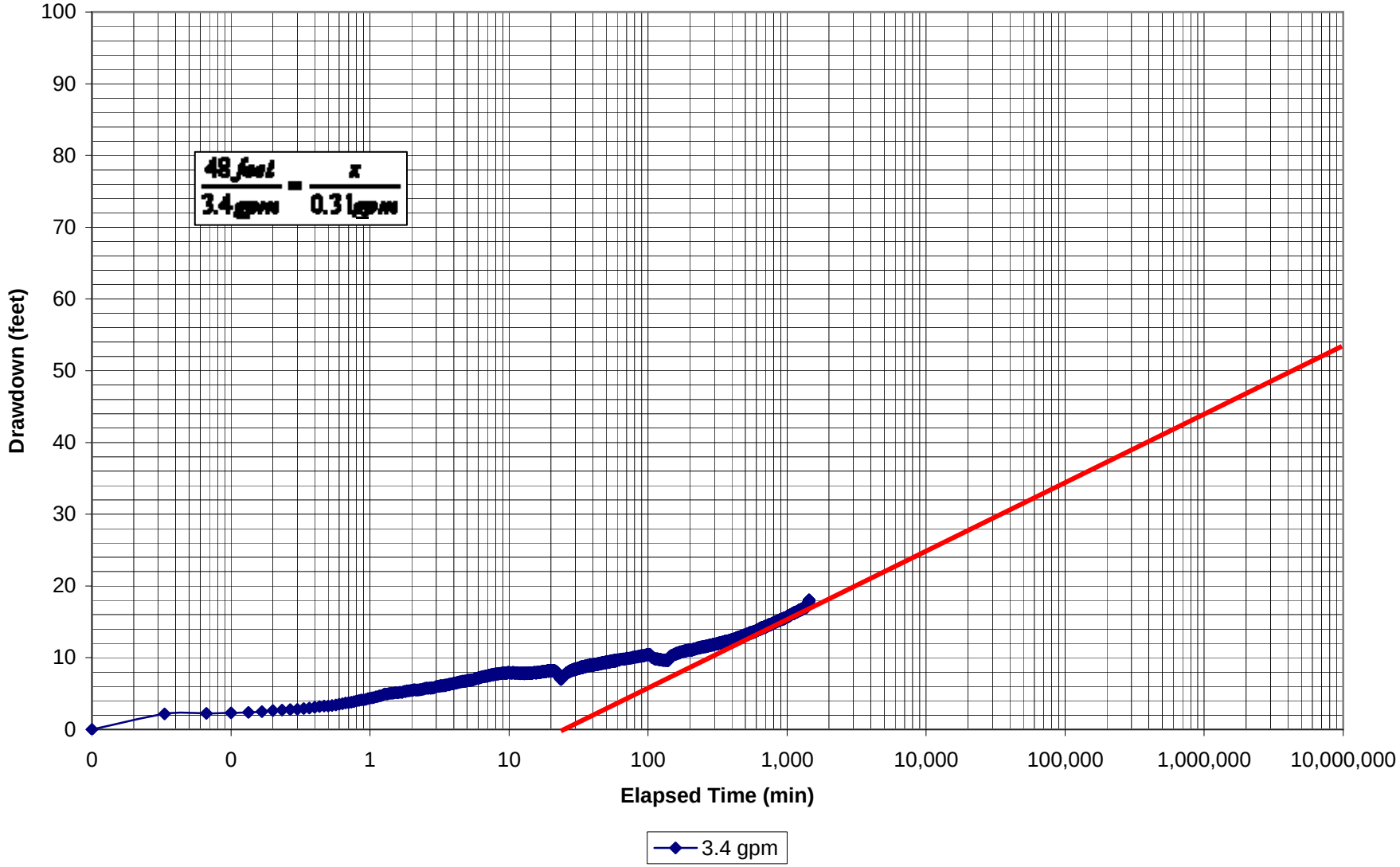


Figure 6. Predicted Drawdown after 5 Years



TECHNICAL APPENDICES/ATTACHMENTS

A. Raw Well Testing Data

Compact Disc

CD provided in original report only

Calculations

Cooper-Jacobs approximation to Theis equation

$$T = \frac{2.3Q}{4\pi\Delta s}$$

Where:

T	=	Transmissivity (feet^2/day)
Q	=	Discharge rate (feet^3/day) = 3.4 gpm = 654 feet^3/day
Δs	=	Drawdown (or residual drawdown) over 1 logarithmic cycle = 8.5 feet (for drawdown) and 4.6 feet (for recovery)

[For drawdown data]

$$T = \frac{2.3 \times 654\ feet^3/day}{4\pi \times 8.5\ feet}$$

$$T = 14\ feet^2/day$$

[For recovery data]

$$T = \frac{2.3 \times 654\ feet^3/day}{4\pi \times 4.6\ feet}$$

$$T = 26\ feet^2/day$$

Theis equation

$$s = \frac{0.183Q}{T} \times \log \frac{2.25Tt}{r^2 S}$$

s	=	Predicted drawdown (feet) [at 1,000 feet from Well 2]
Q	=	0.5 afy = 0.31 gpm = 60 feet^3/day
T	=	20 feet^2/day
t	=	Time (days) = 5 years = 1,825 days
r	=	Distance from pumping well (feet) = 1,000 feet
S	=	Storativity (dimensionless) = 0.0001 [assumed value for fractured rock]

$$s = \frac{0.183x60\ feet^3/day}{20\ feet^2/day} \times \log \frac{2.25x25\ feet^2/day \times 1{,}825 days}{(1{,}000\ feet)^2 \times 0.0001}$$

$$s = 1.6\ feet$$

Jacobs Correction (for unconfined aquifer)

$$s' = s - \frac{s^2}{2b}$$

s'	=	Corrected drawdown (feet) [at maximum]
s	=	Measured drawdown (feet) [at maximum]
b	=	Original aquifer thickness (feet)

B. Well Logs (Unavailable)

C. Well Test Plan

EarthTech
A tyco International Ltd. Company

9675 Businesspark Avenue
San Diego, California 92131

T 858.536.5610
F 858.536.5620
www.earthtech.com

September 21, 2007 Proj. 102099

Jim Bennett, Groundwater Geologist
County of San Diego
Department of Planning and Land Use
5201 Ruffin Road, Suite B
MS O-650
San Diego, CA 92123

Subject: Pump Test Plan for the Hamilton Property located at 15882 Skyline Truck Trail (TPM 21060), Jamul, California.

Dear Mr. Bennett;

Earth Tech is proposing to conduct a pump test on an existing onsite well located on the 24.29-acre Hamilton property on Skyline Truck Trail in Jamul, California. The pump test will be performed in conformance with the San Diego County Groundwater Ordinance and the County's Guidelines for Performing Residential Well Tests. The project proposes to subdivide the property into two residential lots averaging about 12 acres for each lot.

There are two wells located on the subject property. Well 1, located near the existing house at an elevation of about 2,130 feet above mean sea level (msl), is reported to have a depth of 600 feet below ground surface (bgs). Well 2 is located about 1,800 feet west of Well 1 and near the western property boundary at an elevation of about 1,890 feet above msl. Well logs were not available for either onsite well. Refer to the attached figures for onsite well locations.

Earth Tech is proposing to pump test Well 2 at a minimum rate of 3 gallons per minute (gpm) for a period of 8 or 24 hours depending upon specific capacity. The specific capacity of the well will be measured after at least two full well bore volumes of water have been removed from the well and at least 8 hours into the production interval. If the specific capacity is determined to be greater than 0.5 gallons per minute/per foot of drawdown, the pump test will be stopped. A flowmeter will be used to measure instantaneous and cumulative flow and the flow will be maintained at a constant rate. Water level measurements will be obtained with a water-level meter and pressure transducer throughout the test and during the recovery period for Wells 1 and 2. The duration of the recovery period will coincide with the duration of the pumping period. Water will be discharged to the ground surface approximately 100 feet downgradient from the well. If available, water levels will be measured with a water level meter in nearby offsite well(s) during the testing and recovery periods. A groundwater sample will be obtained near the end of pump testing and sent to a state-certified laboratory to be analyzed for gross alpha, uranium, nitrate, total dissolved solids, and total coliform.

The anticipated start date for the test is October 2007. Pump-test data will be plotted to estimate transmissivity and predict drawdown after five years. Recovery data will be used to project residual drawdown. The results of pump testing will be provided in a letter report for this project.

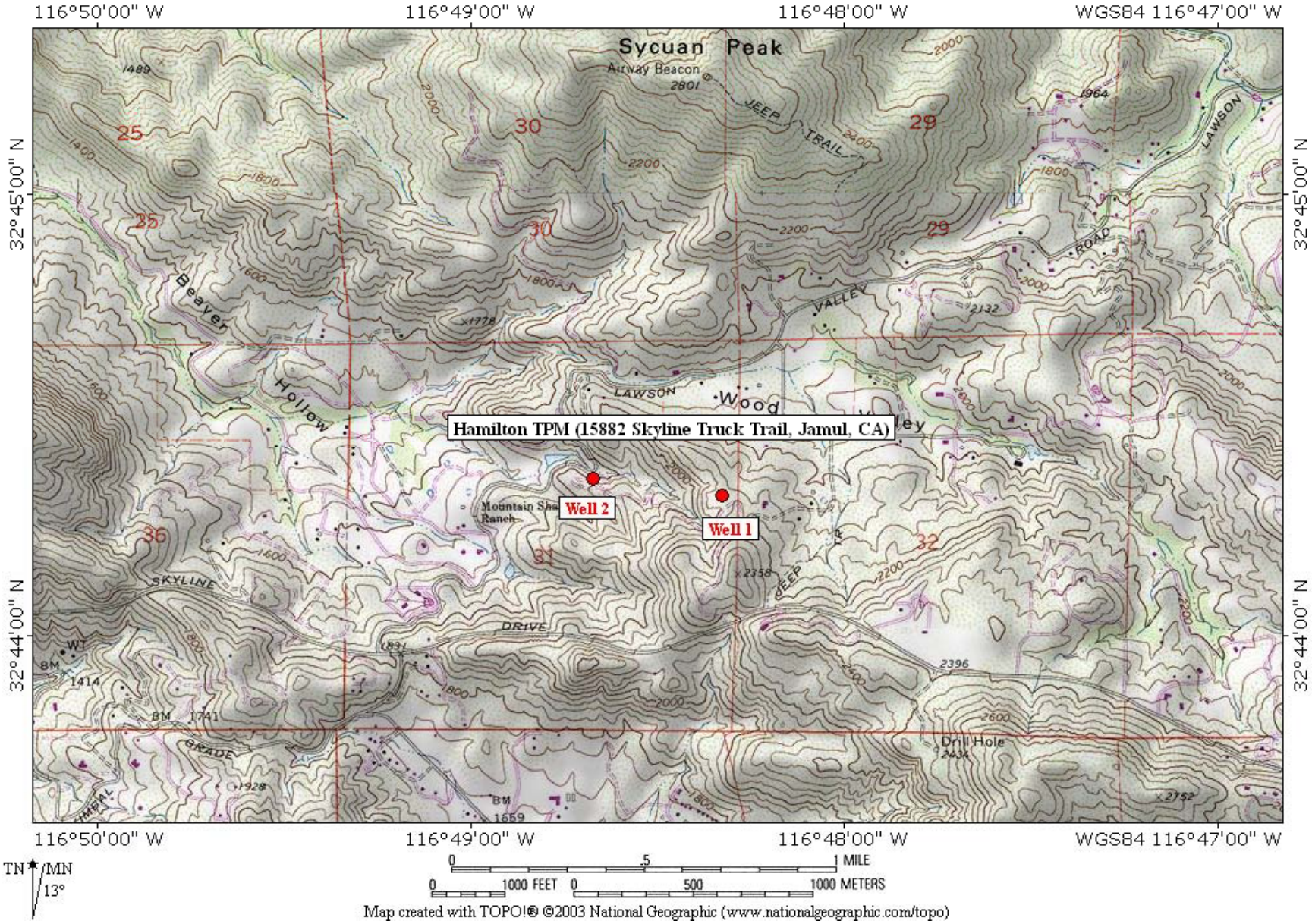
If you have any questions or require additional information, please let me know. Thank you.

Sincerely,

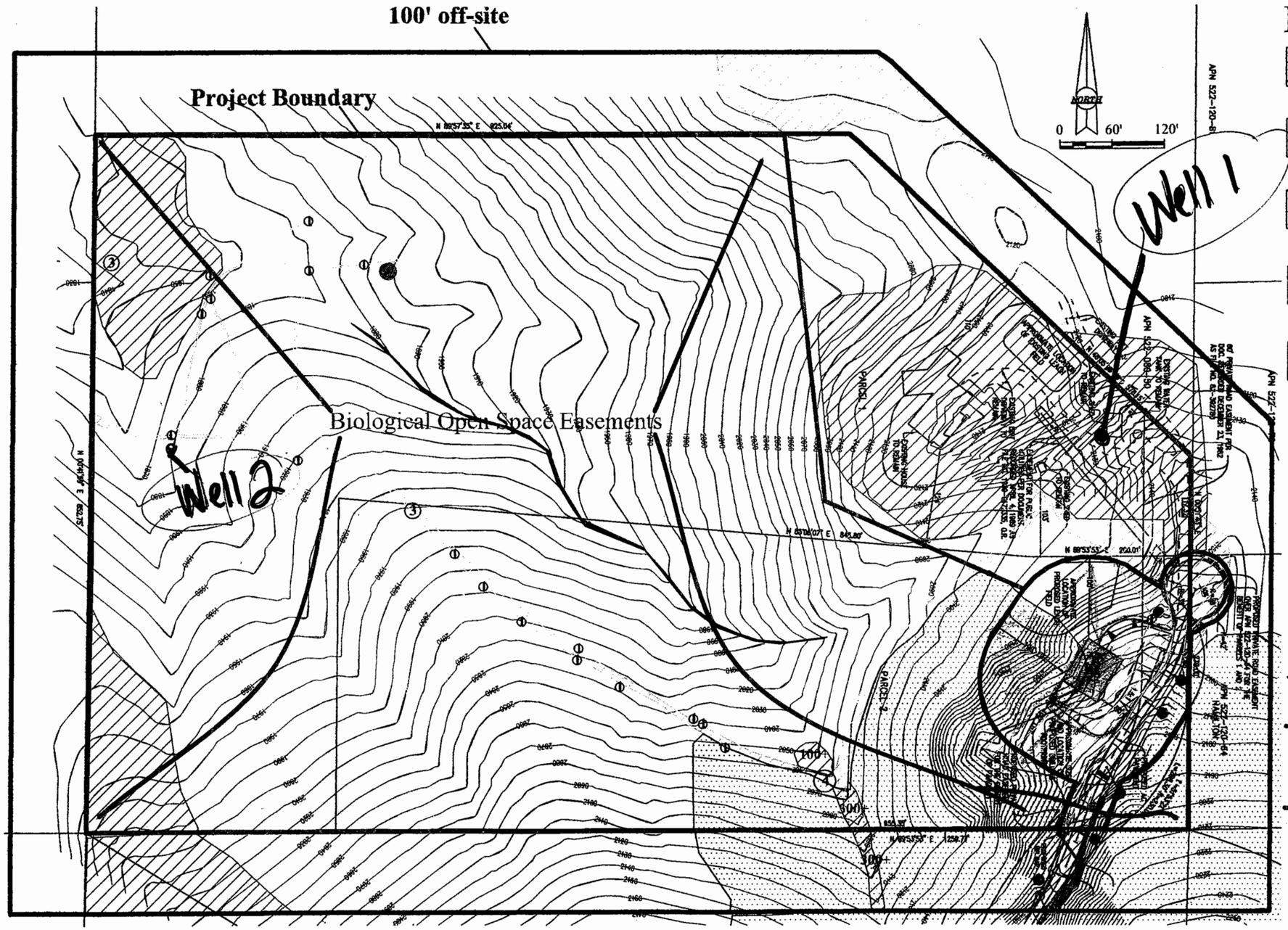
Leanne Crow, PG #8300
Project Geologist

Attachments: Topographic Map
Open Space Map with Well Locations

TOPO! map printed on 09/20/07 from "well.tpo"



Map created with TOPO!® ©2003 National Geographic (www.nationalgeographic.com/topo)



Legend:

- Coastal Sage-Chaparral Scrub Habitat Code: 37G00 (1.27 acres)
- Mafic Southern Mixed Chaparral Habitat Code: 37122 (19.5 acres)
- Parry's Tetracoccus Dominant SMC (*Tetracoccus dioicus*)
- Disturbed Habitat Code: 11300 (0.97 acres)
- Developed Hsbitat Code: 12000 (2.55 acres)
- Felt-leaved Monardella (*Monardella hypoleuca lanata*) 400+ individuals
- (#) Observed Hermes Copper Butterflies (*Lycaena hermes*) 29 total
- Observed San Diego Horned Lizard (*Phrynosoma coronatum blainvillei*)
- CDFG & ACOE ephemeral drainage
- Limits of Impact-Including grading and fire clearing (1.34 acres on-site, 0.08 acres off-site)
- Limits of Proposed Open Space Easements (19.28 acres total)

Robin Church-County Certified Biologist

RC Biological Consulting, Inc.	**Open Space Map for the Hamilton Property APN: 522-080-49**	**Figure 6**

D. Laboratory Analytical Reports

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

LABORATORY REPORT

Prepared For: Earth Tech - San Diego
9675 Business Park Avenue
San Diego, CA 92131
Attention: Leanne Crow

Project: 102099 Hamilton

Sampled: 10/09/07
Received: 10/10/07
Issued: 10/17/07 16:52

NELAP #01108CA California ELAP#1197 CSDLAC #10256

The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of TestAmerica and its client. This report shall not be reproduced, except in full, without written permission from TestAmerica. The Chain of Custody, 1 page, is included and is an integral part of this report.
This entire report was reviewed and approved for release.

CASE NARRATIVE

SAMPLE RECEIPT:	Samples were received intact, at 5°C, on ice and with chain of custody documentation.
HOLDING TIMES:	All samples were analyzed within prescribed holding times and/or in accordance with the TestAmerica Sample Acceptance Policy unless otherwise noted in the report.
PRESERVATION:	Samples requiring preservation were verified prior to sample analysis.
QA/QC CRITERIA:	All analyses met method criteria, except as noted in the report with data qualifiers.
COMMENTS:	No significant observations were made.
SUBCONTRACTED:	Refer to the last page for specific subcontract laboratory information included in this report.

LABORATORY ID	CLIENT ID	MATRIX
IQJ1112-01	100907	Water

Reviewed By:

TestAmerica - Irvine, CA

Patty Mata
Project Manager

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Earth Tech - San Diego	Project ID:	102099 Hamilton	
9675 Business Park Avenue			Sampled: 10/09/07
San Diego, CA 92131	Report Number:	IQJ1112	Received: 10/10/07
Attention: Leanne Crow			

METALS

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IQJ1112-01 (100907 - Water)								
Reporting Units: pCi/L								
Uranium pCi/L (CA)	EPA 200.8	7J12072	1.0	ND	1	10/12/2007	10/16/2007	

TestAmerica - Irvine, CA

Patty Mata
Project Manager

The results pertain only to the samples tested in the laboratory. This report shall not be reproduced, except in full, without written permission from TestAmerica.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Earth Tech - San Diego	Project ID: 102099 Hamilton	
9675 Business Park Avenue		Sampled: 10/09/07
San Diego, CA 92131	Report Number: IQJ1112	Received: 10/10/07
Attention: Leanne Crow		

INORGANICS

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IQJ1112-01 (100907 - Water)								
Reporting Units: mg/l								
Nitrate-N	EPA 300.0	7J10059	0.11	**0.54**	1	10/10/2007	10/10/2007	
Total Dissolved Solids	EPA 160.1	7J12117	10	**390**	1	10/12/2007	10/12/2007	

TestAmerica - Irvine, CA

Patty Mata
Project Manager

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TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Earth Tech - San Diego 9675 Business Park Avenue San Diego, CA 92131 Attention: Leanne Crow	Project ID: 102099 Hamilton Report Number: IQJ1112	Sampled: 10/09/07 Received: 10/10/07

COLIFORMS BY CHROMOGENIC SUBSTRATE - P/A (SM9223B)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IQJ1112-01 (100907 - Water)								
Reporting Units: Present/Absent								
Total Coliform	SM9223B	C7J1030	0.90	**Present**	1	10/10/2007	10/11/2007	
E. Coli	SM9223B	C7J1030	0.90	Absent	1	10/10/2007	10/11/2007	

TestAmerica - Irvine, CA

Patty Mata
Project Manager

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TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Earth Tech - San Diego	Project ID:	102099 Hamilton	
9675 Business Park Avenue			Sampled: 10/09/07
San Diego, CA 92131	Report Number:	IQJ1112	Received: 10/10/07
Attention: Leanne Crow			

SHORT HOLD TIME DETAIL REPORT

	Hold Time (in days)	Date/Time Sampled	Date/Time Received	Date/Time Extracted	Date/Time Analyzed
Sample ID: 100907 (IQJ1112-01) - Water					
EPA 300.0	2	10/09/2007 20:25	10/10/2007 16:55	10/10/2007 18:00	10/10/2007 18:58
SM9223B	1	10/09/2007 20:25	10/10/2007 16:55	10/10/2007 19:31	10/11/2007 13:31

TestAmerica - Irvine, CA

Patty Mata
Project Manager

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TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Earth Tech - San Diego	Project ID:	102099 Hamilton	
9675 Business Park Avenue			Sampled: 10/09/07
San Diego, CA 92131	Report Number:	IQJ1112	Received: 10/10/07
Attention: Leanne Crow			

METHOD BLANK/QC DATA

METALS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 7J12072 Extracted: 10/12/07										
Blank Analyzed: 10/13/2007 (7J12072-BLK1)										
Uranium pCi/L (CA)	ND	1.0	pCi/L							
LCS Analyzed: 10/13/2007 (7J12072-BS1)										
Uranium pCi/L (CA)	55.7	1.0	pCi/L	53.6		104	85-115			
Matrix Spike Analyzed: 10/15/2007 (7J12072-MS1)					**Source: IQJ0539-01**					
Uranium pCi/L (CA)	49.0	1.0	pCi/L	53.6	0.645	90	70-130			
Matrix Spike Analyzed: 10/13/2007 (7J12072-MS2)					**Source: IQJ1220-01**					
Uranium pCi/L (CA)	56.3	1.0	pCi/L	53.6	0.233	105	70-130			
Matrix Spike Dup Analyzed: 10/13/2007 (7J12072-MSD1)					**Source: IQJ0539-01**					
Uranium pCi/L (CA)	57.9	1.0	pCi/L	53.6	0.645	107	70-130	17	20	

TestAmerica - Irvine, CA

Patty Mata
Project Manager

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TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Earth Tech - San Diego	Project ID:	102099 Hamilton	
9675 Business Park Avenue			Sampled: 10/09/07
San Diego, CA 92131	Report Number:	IQJ1112	Received: 10/10/07
Attention: Leanne Crow			

METHOD BLANK/QC DATA

INORGANICS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 7J10059 Extracted: 10/10/07										
Blank Analyzed: 10/10/2007 (7J10059-BLK1)										
Nitrate-N	ND	0.11	mg/l							
LCS Analyzed: 10/10/2007 (7J10059-BS1)										
Nitrate-N	1.18	0.11	mg/l	1.13		105	90-110			
Matrix Spike Analyzed: 10/10/2007 (7J10059-MS1)					**Source: IQJ0973-09**					
Nitrate-N	3.63	0.11	mg/l	1.13	2.39	109	80-120			
Matrix Spike Dup Analyzed: 10/10/2007 (7J10059-MSD1)					**Source: IQJ0973-09**					
Nitrate-N	3.60	0.11	mg/l	1.13	2.39	107	80-120	1	20	
Batch: 7J12117 Extracted: 10/12/07										
Blank Analyzed: 10/12/2007 (7J12117-BLK1)										
Total Dissolved Solids	ND	10	mg/l							
LCS Analyzed: 10/12/2007 (7J12117-BS1)										
Total Dissolved Solids	998	10	mg/l	1000		100	90-110			
Duplicate Analyzed: 10/12/2007 (7J12117-DUP1)					**Source: IQJ0930-01**					
Total Dissolved Solids	1510	10	mg/l		1520			0	10	

TestAmerica - Irvine, CA

Patty Mata
Project Manager

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TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Earth Tech - San Diego 9675 Business Park Avenue San Diego, CA 92131 Attention: Leanne Crow	Project ID: 102099 Hamilton Report Number: IQJ1112	Sampled: 10/09/07 Received: 10/10/07

DATA QUALIFIERS AND DEFINITIONS

ND Analyte NOT DETECTED at or above the reporting limit or MDL, if MDL is specified.

RPD Relative Percent Difference

TestAmerica - Irvine, CA

Patty Mata
Project Manager

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TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Earth Tech - San Diego 9675 Business Park Avenue San Diego, CA 92131 Attention: Leanne Crow	Project ID: 102099 Hamilton Report Number: IQJ1112	Sampled: 10/09/07 Received: 10/10/07

Certification Summary

TestAmerica - Irvine, CA

Method	Matrix	Nelac	California
EPA 160.1	Water	X	X
EPA 200.8	Water	X	X
EPA 300.0	Water	X	X

Nevada and NELAP provide analyte specific accreditations. Analyte specific information for TestAmerica may be obtained by contacting the laboratory or visiting our website at www.testamericainc.com

Subcontracted Laboratories

STL - Richland, WA (Sub)

2800 George Washington Way - Richland, WA 99354

Analysis Performed: Gross Alpha

Samples: IQJ1112-01

TestAmerica - Ontario, CA *California Cert #1169, Arizona Cert #AZ0062, Nevada Cert #CA-242*

1014 E. Cooley Drive, Suite AB - Colton, CA 92324

Method Performed: SM9223B

Samples: IQJ1112-01

TestAmerica - Irvine, CA

Patty Mata
Project Manager

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1014 E. Cooley Dr., Suite A, Colton, CA 92324 (909) 370-4667 FAX (909) 370-1046
4630 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851
2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

TestAmerica
ANALYTICAL TESTING CORPORATION

CHAIN OF CUSTODY FORM

IQJ1112

Page 1 of 1

Client Name/Address: Earth Tech, 9675 Business Park Ave, San Diego CA 92131

Project/PO Number: 102099 Hamilton

Project Manager: Leanne Crow

Phone Number: 858-536-5610

Sampler: Rob Schumann

Fax Number: 858-536-5620

Analysis Required

Sample Description	Sample Matrix	Container Type	# of Cont.	Sampling Date	Sampling Time	Preservatives	Gross Alpha (900.0)	Uranium (200.8)	TDS 160.1	Nitrate-N 300	Total coliform ~~E. coli~~					Special Instructions
100907	H_2O	poly	4	10-09-07	2025	See Bottle	X	X	X	X	X					

RECEIVED FROM OFFICE

Relinquished By:	Date/Time:	Received By:	Date/Time:
[signature]	10/10/07 0900	Rick Sheridan	10-10-07 1430
Rick Sheridan	10-10-07 1655		
		Received in Lab By: [signature]	10-10-07 1655

Turnaround Time: (Check)
same day ____ 72 hours ____
24 hours ____ 5 days X
48 hours ____ normal ____

Sample Integrity: (Check)
intact X on ice X 4.8°C

AP 1735 10/10/07

Note: By relinquishing samples to TestAmerica, client agrees to pay for the services requested on this chain of custody form and any additional analyses performed on this project. Payment for services is due within 30 days from the date of invoice. Sample(s) will be disposed of after 30 days.

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TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

17461 Derian Avenue. Suite 100, Irvine, CA 92614 (949) 261-1022 Fax:(949) 260-3297

LABORATORY REPORT

Prepared For: Earth Tech - San Diego
9675 Business Park Avenue
San Diego, CA 92131
Attention: Leanne Crow

Project: 102099-01

Sampled: 01/17/08
Received: 01/17/08
Issued: 01/25/08 16:03

NELAP #01108CA California ELAP#1197 CSDLAC #10256

The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of TestAmerica and its client. This report shall not be reproduced, except in full, without written permission from TestAmerica. The Chain of Custody, 1 page, is included and is an integral part of this report.
This entire report was reviewed and approved for release.

CASE NARRATIVE

SAMPLE RECEIPT: Samples were received intact, at 1°C, on ice and with chain of custody documentation.

HOLDING TIMES: All samples were analyzed within prescribed holding times and/or in accordance with the TestAmerica Sample Acceptance Policy unless otherwise noted in the report.

PRESERVATION: Samples requiring preservation were verified prior to sample analysis.

QA/QC CRITERIA: All analyses met method criteria, except as noted in the report with data qualifiers.

COMMENTS: No significant observations were made.

SUBCONTRACTED: Refer to the last page for specific subcontract laboratory information included in this report.

LABORATORY ID	CLIENT ID	MATRIX
IRA1518-01	1 HAM Jan 1708	Water
IRA1518-02	2 HAM Jan 1708	Water

Reviewed By:

TestAmerica Irvine

Patty Mata
Project Manager

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

17461 Derian Avenue. Suite 100, Irvine, CA 92614 (949) 261-1022 Fax:(949) 260-3297

Earth Tech - San Diego
9675 Business Park Avenue
San Diego, CA 92131
Attention: Leanne Crow

Project ID: 102099-01
Report Number: IRA1518

Sampled: 01/17/08
Received: 01/17/08

Microbiological Parameters by Standard Methods

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IRA1518-01 (1 HAM Jan 1708 - Water)								
Reporting Units: MPN/100 ml								
Total Coliforms	SM 9221 B, E	8011808	2	ND	1	1/17/2008	1/21/2008	
Fecal Coliforms	SM 9221 B, E	8011808	2	ND	1	1/17/2008	1/20/2008	
Sample ID: IRA1518-02 (2 HAM Jan 1708 - Water)								
Reporting Units: MPN/100 ml								
Total Coliforms	SM 9221 B, E	8011808	2	ND	1	1/17/2008	1/19/2008	
Fecal Coliforms	SM 9221 B, E	8011808	2	ND	1	1/17/2008	1/19/2008	

TestAmerica Irvine

Patty Mata
Project Manager

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Earth Tech - San Diego
9675 Business Park Avenue
San Diego, CA 92131
Attention: Leanne Crow

Project ID: 102099-01

Report Number: IRA1518

Sampled: 01/17/08
Received: 01/17/08

SHORT HOLD TIME DETAIL REPORT

	Hold Time (in days)	Date/Time Sampled	Date/Time Received	Date/Time Extracted	Date/Time Analyzed
Sample ID: 1 HAM Jan 1708 (IRA1518-01) - Water					
SM 9221 B, E	0	01/17/2008 08:00	01/17/2008 10:27	01/17/2008 11:30	01/20/2008 10:08
Sample ID: 2 HAM Jan 1708 (IRA1518-02) - Water					
SM 9221 B, E	0	01/17/2008 08:05	01/17/2008 10:27	01/17/2008 11:30	01/19/2008 09:30

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Earth Tech - San Diego	Project ID: 102099-01	
9675 Business Park Avenue		Sampled: 01/17/08
San Diego, CA 92131	Report Number: IRA1518	Received: 01/17/08
Attention: Leanne Crow		

DATA QUALIFIERS AND DEFINITIONS

ND Analyte NOT DETECTED at or above the reporting limit or MDL, if MDL is specified.

RPD Relative Percent Difference

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Project Manager

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Earth Tech - San Diego	Project ID: 102099-01	
9675 Business Park Avenue		Sampled: 01/17/08
San Diego, CA 92131	Report Number: IRA1518	Received: 01/17/08
Attention: Leanne Crow		

Certification Summary

Subcontracted Laboratories

EnviroMatrix Analytical, Inc.

4340 Viewridge Avenue, Suite A - San Diego, CA 92123

Method Performed: SM 9221 B, E

Samples: IRA1518-01, IRA1518-02

EnviroMatrix Analytical, Inc. - Sub

4340 Viewridge Avenue, Suite A - San Diego, CA 92123

Analysis Performed: 9221 (MTF) Total/Fecal/E.Coli DMAC

Samples: IRA1518-01, IRA1518-02

TestAmerica Irvine

Patty Mata
Project Manager

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THE LEADER IN ENVIRONMENTAL TESTING

17461 Derian Ave., #100, Irvine, CA 92614 (949) 261-1022 FAX (949) 260-9699
1014 E. Cooley Dr., Suite A, Colton, CA 92324 (909) 370-4667 FAX (909) 370-1046
9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851
2520 E. Sunset Rd., #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

CHAIN OF CUSTODY FORM

IRA1518

TAL 0013(1007)

Client Name/Address: EARTH TECH 9675 Business Park Ave ~~10681 BERNARDO DR~~ SAN DIEGO CA 92131

Project/PO Number: 102099-01

Project Manager: LEANNE CROW

Phone Number: 858-536-5610

Sampler: ROB SCHUMANN

Fax Number: 858-536-5620

Sample Description	Sample Matrix	Container Type	# of Cont.	Sampling Date	Sampling Time	Preservatives	Total Coliform Fecal									Special Instructions
1 HAMJAN1708	H_2O	poly	1	1/17/08	0800	–	X									
2 HAMJAN1708	H_2O	poly	1	1/17/08	0805	–	X									

RECEIVED from office

Relinquished By:	Date/Time:	Received By:	Date/Time:	Turnaround Time: (Check)
[signature]	1/17/08 09:44	[signature]	1-17-08 10:00	same day ____ 72 hours ____
Relinquished By:	Date/Time:	Received By:	Date/Time:	24 hours ____ 5 days ____
				48 hours ____ normal X
Relinquished By:	Date/Time:	Received in Lab By:	Date/Time:	Sample Integrity: (Check)
				intact ____ on ice ____

Note: By relinquishing samples to TestAmerica, client agrees to pay for the services requested on this chain of custody form and any additional analyses performed on this project. Payment for services is due within 30 days from the date of invoice. Sample(s) will be disposed of after 30 days.