March 15, 2011

Jerry Wickham, CEG
Senior Hazardous Materials Specialist
Alameda County Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Subject: **Interim Remedial Action Plan**
Sunol Tree Gas
3004 Andrade Road, Sunol
Fuel Leak Case No. RO0002448

Dear Mr. Wickham:

This *Interim Remedial Action Plan (IRAP)* for the subject site dated March 15, 2011 is submitted in response to our meeting of March 9, 2011. I declare under penalty of perjury that the information and/or recommendations contained in the attached report are true and correct to the best of my knowledge.

Please call Tim Cook at Cook Environmental Services at (925) 478-8390 if you have questions or comments in regards to the technical content of this report.

Very truly yours,

Khan Petroleum, Inc.

Obaid Abdullah
President

cc: Jennifer Rice, Esq
Tim Cook, Cook Environmental Services, Inc.

COOK ENVIRONMENTAL SERVICES, INC.
A GENERAL ENGINEERING CONTRACTOR #921387

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Jerry Wickham, CEG
Senior Hazardous Materials Specialist
Alameda County Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Subject: **Interim Remedial Action and Pilot Test Work Plan**
Sunol Tree Gas
3004 Andrade Road, Sunol
Fuel Leak Case No. RO0002448

Dear Mr. Wickham:

This *Interim Remedial Action and Pilot Test Work Plan* (IRAP) for Sunol Tree Gas ("the Site") located at 3004 Andrade Road in Sunol, Alameda County (**Figure 1**) is submitted in response to our meeting of March 9, 2011. In this meeting we agreed to conduct a pilot test using ozone sparge technology to address low level MtBE contamination at the Site.

Rationale

The purpose of this IRAP is to describe methods and procedures for a pilot test to evaluate the effectiveness of ozone sparging in reducing MtBE concentrations. As a demonstration, we selected the intermediate water-bearing zone (30-45 fbg) upgradient of Transect A-A' for the installation of additional monitoring wells and ozone sparge wells. The locations chosen are upgradient of the highest MtBE concentrations in groundwater previously observed along Transect A-A' (**Figure 2**). Cone penetrometer (CPT) borings will be used to accurately locate the depth interval associated with the intermediate water-bearing zone such that the ozone sparge wells and multiple completion wells will be properly constructed. Groundwater monitoring data will determine the success (or failure) of the pilot test. Additionally, monitoring data will determine if toxic daughter products (e.g. bromated and hexavalent chromium) are formed from ozone oxidation. The contingency plan provided will be implemented if toxic daughter products threaten downgradient water quality.

Scope of Work

The scope of work for this pilot test includes the following tasks:

- Obtaining approval of the pilot test IRAP from ACEH;
- Obtain well permits from Alameda County Public Works Agency;
- Notify USA Alert of well locations and obtain underground utility clearance;
- Advance cone penetrometer borings to accurately locate the intermediate water-bearing zone so that the depth to construct the ozone sparge wells and multi chamber wells can be selected.

- Install two additional multi-chamber monitoring wells downgradient of the proposed ozone sparge wells and upgradient of the existing monitoring well transect;
- Install two ozone sparge wells;
- Survey new monitoring and ozone sparge wells;
- Install mobile ozone sparge system, including electrical and plumbing hookups;
- Perform startup activities;
- Perform operation and maintenance activities on the ozone sparge system for three months;
- Collect groundwater samples from the two downgradient multi-chamber wells and analyze for dissolved oxygen, total chromium, hexavalent chromium, bromide, bromated and fuel oxygenates;
- Prepare a *Pilot Test Report* for submittal to ACEH;
- Submit survey data, lab data, and the *Pilot Test Report* to the ACEH FTP site and the SWRCB Geotracker database.

Planning

Upon approval of this IRAP by Alameda County Environmental Health (ACEH), Cook Environmental Services, Inc. (CES) will obtain well permits from Alameda County Public Works, contract with a C-57 licensed drilling contractor, and notify USA Alert of the proposed drilling locations so that a utility location survey will be completed. A site specific Health and Safety Plan for the fieldwork will be prepared in compliance with 29 CFR 1910.120.

Field Work

The drilling contractor will advance CPT borings and construct multiple completion monitoring wells CMT-13 and CMT-14 in the locations shown on **Figure 3**. These wells will be located approximately 40 upgradient of CMT-4 and CMT-7, respectively and will have sample intervals in the shallow, intermediate and deep water-bearing zones as determined by the CPT boring logs. The intermediate water-bearing zone in wells CMT-4 and CMT-7 yielded the highest MtBE concentrations during the April 2010 sampling event. Well construction will be similar to construction of wells CMT-1 through CMT-12 which screen the shallow, intermediate and deep water bearing zone at approximately 20, 40 and 50 fbg. Each micro well will be approximately 3/8-inch in diameter. Dedicated sampling tubing (1/4-inch od, 1/8-inch id) will be installed in each sampling point. The annular space through the water-bearing zones will backfilled with #2/12 sand and approximately two feet of bentonite pellets will be place on top of the sand to seal off each water-bearing zone. The remainder of the annulus will be filled with neat cement slurry.

Ozone sparge wells O-1 and O-2 will be located approximately 15 feet upgradient of CMT-13 and CMT-14, respectively and the sparge points will be placed within the intermediate water-bearing zone as defined in the CPT boring logs. Sparge wells will have a 30-inch long sparge diffuser that will be surrounded by #60 sugar sand. Approximately 2 feet of bentonite slurry will be placed above the sand to seal the diffuser and prevent short-circuiting of ozone to the surface via the well annulus. The remainder of the annulus will be sealed with neat cement slurry. A ¾-inch diameter riser will extend from the surface to the sparge diffuser. Surface completion of the sparge wells will be in a traffic box. Check valves will prevent the backflow of ozone to the

ozone generator. Wellhead adapters and HDPE tubing will connect the sparge wells to the ozone treatment unit.

A licensed well surveyor will survey the latitude, longitude and top of casing elevations for CMT-13 and CMT-14. Likewise, the latitude and longitude of ozone sparge wells O-1 and O-2 will be surveyed. Survey coordinates will be uploaded to the ACEH ftp site and the Geotracker database.

The ozone treatment unit will be trailer mounted and capable of producing at least 0.5 pounds of ozone per day. The initial treatment cycle will pump ozone to each sparge well at 30 minute intervals and will run for 22 hours per day. The unit will derive electrical power from a 20 amp circuit subpanel on the main power panel at the Sunol Tree Gas Station. Since the pilot test is temporary a flexible SO cord will provide power from the subpanel to the treatment system.

Monitoring

Constituents to be monitored in wells CMT-13 and CMT-14 include dissolved oxygen (DO), oxidation potential (eH), total petroleum hydrocarbons as gasoline (TPH-g), benzene, toluene, ethylbenzene and total xylenes (BTEX), fuel oxygenates (MtBE, tBA, EtBE, TAME and DIPE), bromide ion (Br^-), bromate (BrO_3^-), total chromium (Cr) and hexavalent chromium (Cr^{+6}). Samples will be collected immediately prior to the pilot test and bi-weekly during the pilot test. Sampling protocols and handling procedures will follow EPA guidance. Electronic copies of sample results will be uploaded to the ACEH ftp site and the Geotracker database within one week of receipt.

Contingency Plan

If toxic daughter products (Cr^{+6} and BrO_3^-) in wells CMT-13 and CMT-14 exceed environmental screening levels (ESLs) established for drinking water aquifers with residential land use then additional samples for Cr^{+6} and BrO_3^-will be collected from three sampling points in wells CMT-4 and CMT-7 (located 40 feet downgradient). If Cr^{+6} and BrO_3^- are detected in these wells the ozone treatment system will be shut down. Confirmation samples will be collected from CMT-4, CMT-7, CMT-13 and CMT-14 on a weekly basis until these constituents drop below their respective ESLs.

Duration

The pilot test will last for three months from startup. At the end of that time the trailer mounted ozone treatment unit will be demobilized from the site. The results will be evaluated and the findings will be transmitted to ACEH in a *Pilot Test Report*.

Reporting

A Pilot Test Report will be submitted to ACEH within four weeks of concluding the pilot test. The report will contain methods and procedures used to install the monitoring wells, sparge wells and ozone sparge system, monitoring results, descriptions of detections of toxic daughter products and descriptions of any contingency measures employed. In addition, recommendations will be made with respect to a final remediation plan (FRP) for the Site.

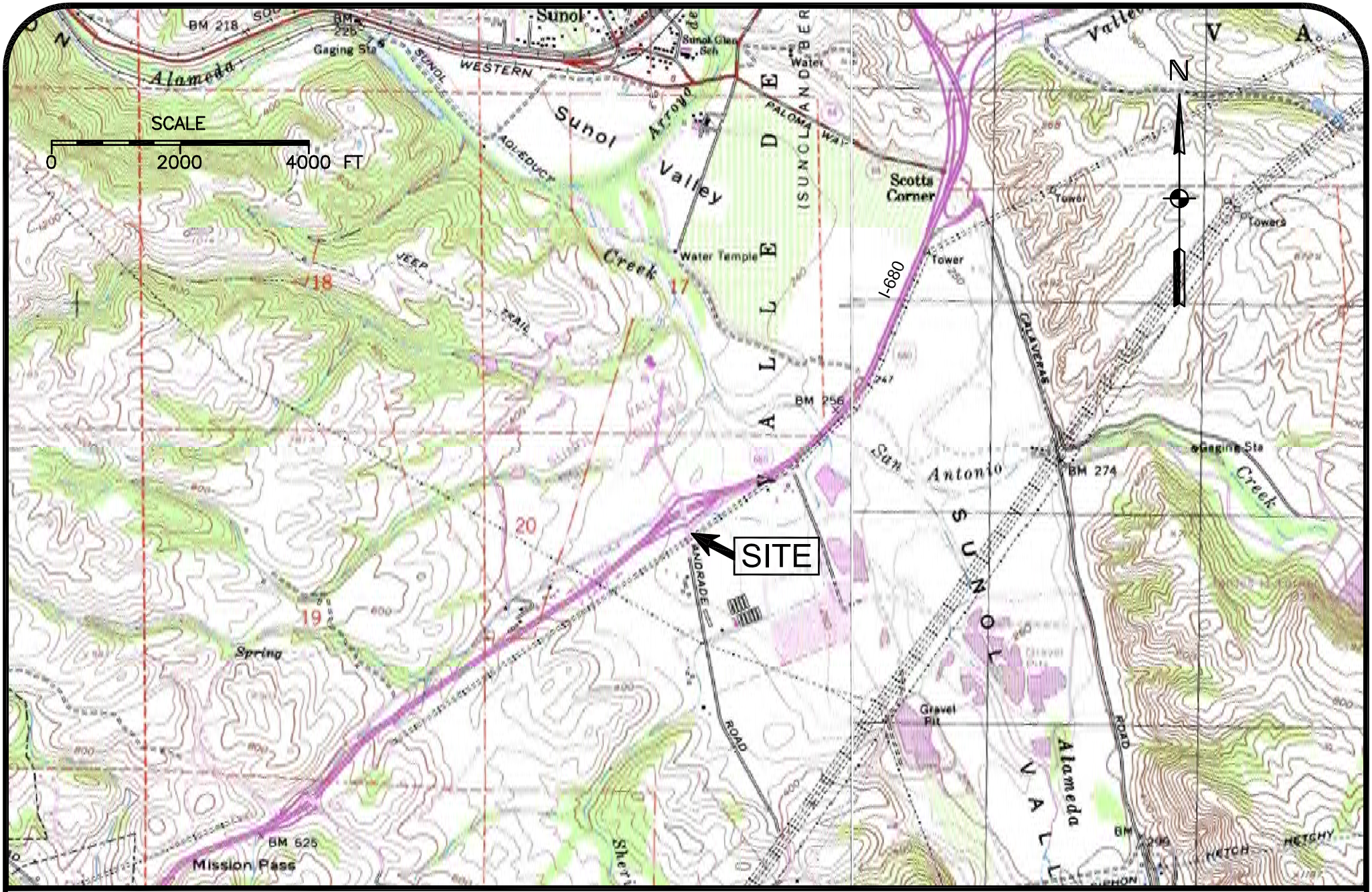
We request that you respond with your comments to this IRAP within three weeks to ensure the timely implementation of this plan. Please call me at (925) 478-8390 if you have questions or comments in regards to the technical content of this document.

Very truly yours,

Cook Environmental Services, Inc.

Tim Cook, P.E.
President

cc: Jennifer Rice, Esq
Obaid Abdullah, Kahn Petroleum



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Sunol Tree Gas Station
Site Location Map

3004 Andrade Road
Sunol, CA 94586

Project: 1024	Figure: 1
Date: 3/15/11	
Scale: 1" = 2000 '	

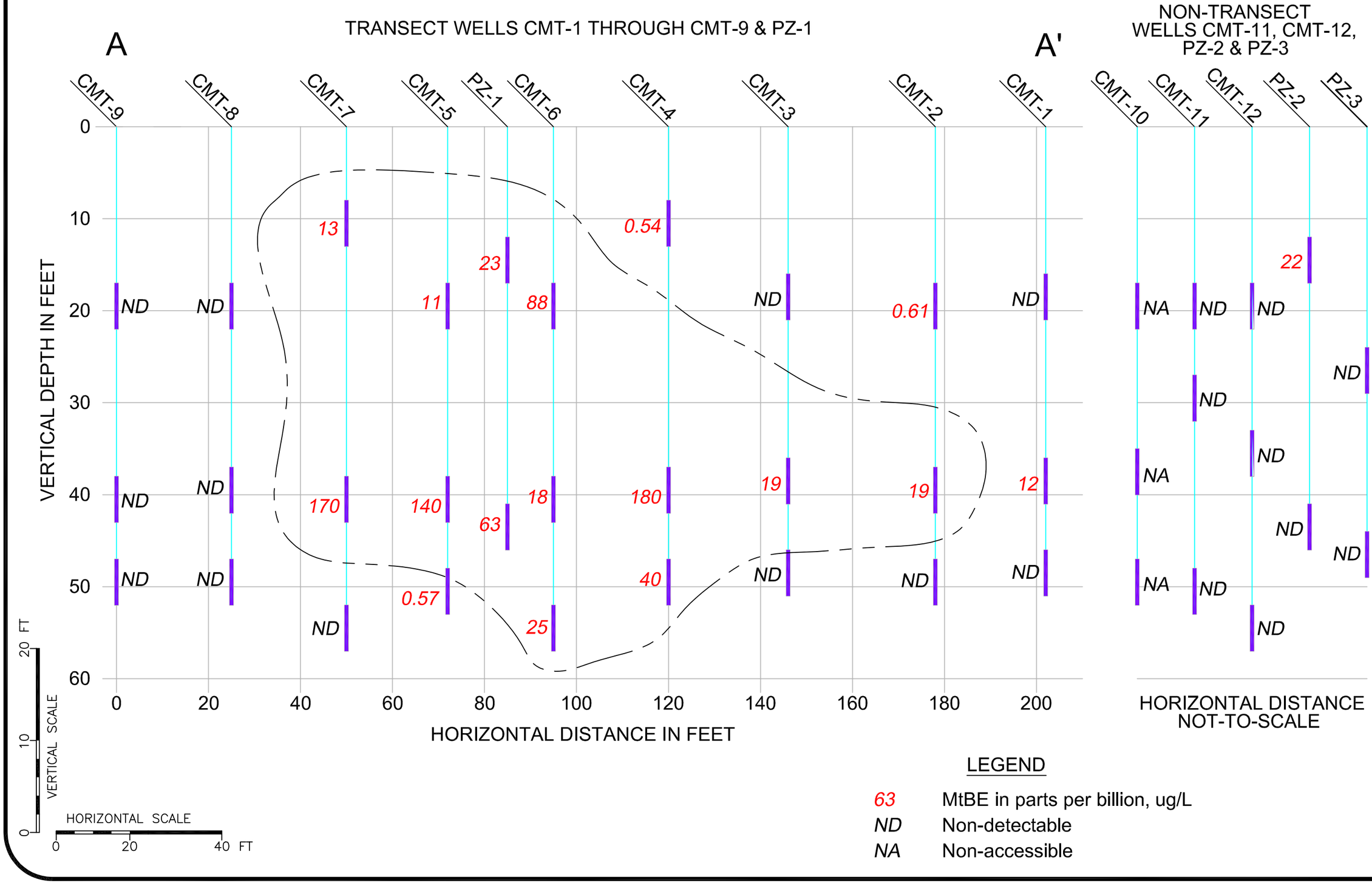

Figure: 2

Project : 1024

Date: 3/15/11

Scale: as shown

Sunol Tree Gas Station
MtBE Concentrations in Transect A-A'

3004 Andrade Road
Sunol, CA 94586

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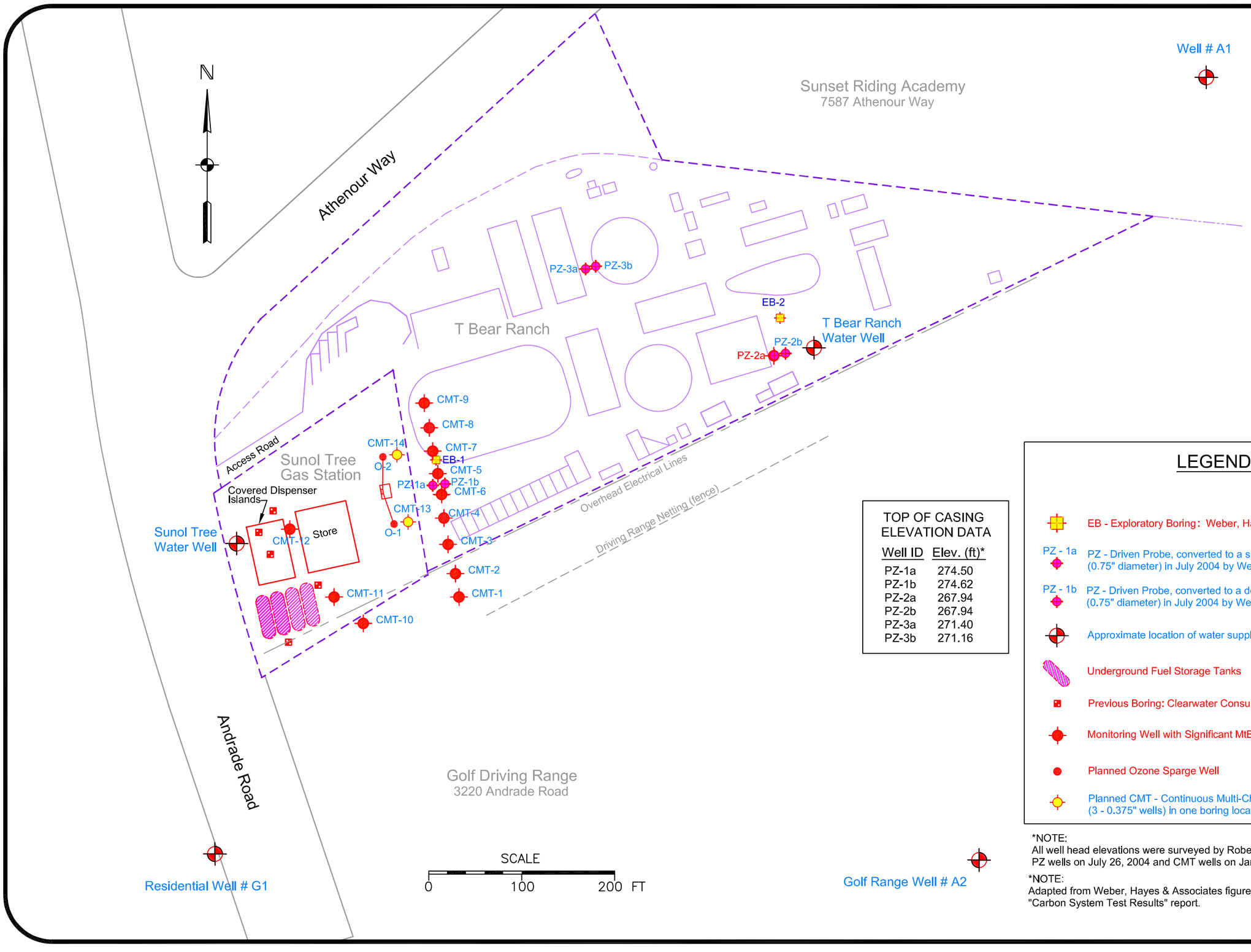

TOP OF CASING ELEVATION DATA

Well ID	Elev. (ft)*
PZ-1a	274.50
PZ-1b	274.62
PZ-2a	267.94
PZ-2b	267.94
PZ-3a	271.40
PZ-3b	271.16

LEGEND

- EB - Exploratory Boring: Weber, Hayes & Associates
- PZ - 1a — PZ - Driven Probe, converted to a shallow Piezometer Well (0.75" diameter) in July 2004 by Weber, Hayes & Associates
- PZ - 1b — PZ - Driven Probe, converted to a deep Piezometer Well (0.75" diameter) in July 2004 by Weber, Hayes & Associates
- Approximate location of water supply well
- Underground Fuel Storage Tanks
- Previous Boring: Clearwater Consultants, 2002
- Monitoring Well with Significant MtBE Concentration
- Planned Ozone Sparge Well
- Planned CMT - Continuous Multi-Chamber Tubing Wells (3 - 0.375" wells) in one boring location

*NOTE:
All well head elevations were surveyed by Robert McGregor (Lic. #5946); PZ wells on July 26, 2004 and CMT wells on January 21, 2005.

*NOTE:
Adapted from Weber, Hayes & Associates figures in their June 30, 2008 "Carbon System Test Results" report.

Sunol Tree Gas Station
Ozone Sparge Pilot Test Layout
3004 Andrade Road
Sunol, CA 94586

Figure: 3

Project : 1024
Date: 3/15/11
Scale: 1" = 100'

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