R0199

January 9, 2006

Mr. Don Hwang
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Re: **Interim Remedial Action Plan – Addendum No. 2**
Connell Automotive Dealership
3093 Broadway
Oakland, California
StID #469

Dear Mr. Hwang:

On behalf of the Hill Family Trust and the Linden Broadway Property Trust, Pangea Environmental Services, Inc. (Pangea), prepared this Addendum No. 2 to the *Interim Remedial Action Plan (IRAP)* dated November 11, 2004. (IRAP Addendum). You verbally requested this second IRAP addendum during our meeting at your agency on January 6, 2006. This second addendum proposes shorter well screen intervals for the proposed monitoring wells, to comply with recent preferences of the Alameda County Environmental Health (ACEH).

PROPOSED MONITORING WELLS

This section pertains to Comment No. 3 from the *IRAP Addendum* of December 8, 2006. Wells MW-16 and MW-17 are proposed for monitoring the lateral extent of groundwater during site remediation. These two wells were initially proposed to be screened from 15 to 40 ft below grade surface (bgs), similar to existing wells MW-14 and MW-15. Based on your verbal comments on January 6, 2006, Pangea proposes to install two wells at different depths at each location. The shallow and deeper wells will be installed in their own boreholes and not nested.

Pangea now proposes the installation of monitoring well MW-16A screened from 20 to 30 ft bgs and monitoring well MW-16B screened from 35 to 40 ft bgs. Similarly, Pangea proposes the installation of monitoring well MW-17A screened from 20 to 30 ft bgs and monitoring well MW-17B screened from 35 to 40 ft bgs. The final well screen intervals will be based on field observations. Given the approximate depth to water of 23 ft bgs during recent monitoring events, the proposed shallow well screen will allow monitoring of the vadose zone and approximately 7 ft of the saturated zone. The deeper well screen will allow monitoring of deeper groundwater.

Wells MW-16 and MW-17 will be located where shown in the IRAP Addendum. The well installation procedures are also described in the IRAP Addendum.

CLOSING

Pangea respectfully requests that the ACEH quickly approve the IRAP and Addendums to facilitate system installation and operation during the upcoming. Plan approval is required soon since several months of permitting and system installation will be necessary before system startup. Please understand that the initial IRAP was submitted over one year ago and the responsible parties are eager to commence site remediation.

Thank you for meeting with me on January 6, 2006 to discuss the IRAP and Addendum. If you have any questions or comments, please contact me at (510) 435-8664 or briddell@pangeaenv.com.

I declare, under penalty of perjury, that information and/or recommendations contained in this document or any attached documents are true and correct to the best of my knowledge.

Sincerely,
Pangea Environmental Services, Inc.

Bob Clark-Riddell

Bob Clark-Riddell, P.E.
Principal Engineer

CC: George Hill, 305 Sheridan Ave., Piedmont, CA 94611
Gordon Linden, 150 La Salle Avenue, Piedmont, California 94611
Paul Kibel, Fitzgerald, Abbott & Beardsley, LLP, 1221 Broadway, 21st Floor, Oakland, CA 94612
Leroy Griffin, Hazardous Materials Manager, Fire Department - OES, 1605 MLK Jr. Way, Oakland, CA 94612

Re 199

FITZGERALD ABBOTT & BEARDSLEY LLP
ATTORNEYS AT LAW

1221 Broadway, 21st Floor Oakland, CA 94612
reply to: P.O. Box 12867 Oakland, CA 94604-2867

tel 510.451.3300
fax 510.451.1527
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December 8, 2005

Mr. Don Hwang
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Re: **Connell Automobile Dealership –**
Addendum to Interim Remedial Action Plan
3093 Broadway
Oakland, California

Dear Mr. Hwang:

The Hill Family Trust & Linden Broadway Property Trust (Trusts) have retained Pangea Environmental Services, Inc. (Pangea) to provide environmental consulting services for corrective action at the site referenced above. Pangea is submitting the attached report on behalf of the Trusts.

I, Paul Kibel of Fitzgerald Abbot & Beardsley, am a legal representative of the Trusts. I declare, under penalty of perjury, that the information and/or recommendations contained in the attached report is true and correct to the best of my knowledge.

Sincerely,

FITZGERALD ABBOTT & BEARDSLEY LLP

Paul S. Kibel

December 6, 2005

Mr. Don Hwang
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Re: **Addendum to Interim Remedial Action Plan**
Connell Automotive Dealership
3093 Broadway
Oakland, California
StID #469

Dear Mr. Hwang:

On behalf of the Hill Family Trust and the Linden Broadway Property Trust, Pangea Environmental Services, Inc. (Pangea), prepared this Addendum to the *Interim Remedial Action Plan (IRAP)* dated November 11, 2004. (IRAP Addendum). You verbally requested this IRAP Addendum after reviewing Pangea's April 9, 2005 letter responding to your April 7, 2005 letter. This Addendum discusses comments and concerns of the Alameda County Environmental Health (ACEH), and presents proposed IRAP modifications to address ACEH concerns. To facilitate ACEH review, Pangea also presents revised figures and a summary of the proposed DPE/AS approach.

CONCEPTUAL APPROVAL OF IRAP APPROACH

The ACEH agrees that implementation of appropriate remedial techniques is merited to remediate subsurface contaminants. The ACEH is primarily concerned about the anticipated effectiveness of the proposed approach of dual-phase extraction and air sparging (DPE/AS). The ACEH would like additional information and modified plans for implementing and monitoring the proposed approach, and to ensure remediation of deeper contamination identified in soil from borings for wells MW-1 and MW-14. Our response to the specific ACEH comments and concerns is presented below.

ACEH COMMENTS

Comment #1 – Will the Proposed Approach Work?

Pangea is very confident that the proposed approach will 'work' for significantly remediating subsurface contaminants for the following reasons:

- DPE/AS is best available technology for petroleum hydrocarbon contamination.
- DPE/AS is a very aggressive technique.
- Large DPE equipment is proposed (25-hp vacuum pump versus prior 15-hp pump) in response to ACEH concerns.

- The approach is flexible and cost effective. Pangea will prepare monthly status reports and after six months of system operation, Pangea will prepare a System Performance Evaluation Report. If merited based on system effectiveness monitoring, Pangea will propose additional wells, larger equipment, or enhanced groundwater extraction. The system will be designed to include groundwater extraction via submersible wells, in the event enhanced groundwater drawdown is merited and required.

While considered 'interim', Pangea anticipates that the proposed approach will remediate contaminants to the point where residual contaminants will attenuate to below water quality objectives in a reasonable timeframe.

Comment #2 – Does the Proposed Approach target the Vertical Extent of Contaminants, and is Additional Vertical Delineation Merited?

The ACEH was specifically concerned about well MW-1 where 5,500 mg/kg TPHg and 16.3 mg/kg benzene were detected at 30.5 ft below grade surface (bgs). The ACEH also mentioned concern about vertical contamination at well MW-14. The ACEH wondered if the air sparging wells were deep enough in the upper portion of the site.

In response to this concern, Pangea prepared Figure 6 to illustrate the proposed wells and approach for targeting the vertical extent of contamination. The vertical extent of contamination at MW-1 was adequately defined by the deeper sample at 34.5 ft bgs, where no benzene and only 2 mg/kg TPHg was detected. Nearby boring B-1 (located beneath the former UST excavation) delineated soil down to 43 ft bgs, where no TPHg and trace BTEX concentrations were detected. No TPHg or BTEX was detected in soil from borings for wells MW-14 and MW-15, except for trace BTEX concentrations at 21 ft bgs in well MW-14. The boring log for MW-14 indicated strong hydrocarbon odor at 20 ft bgs, but did not mention odors at greater depths. While heaving sands at 34 ft bgs in well MW-14 prevented sample collection at this depth or deeper, the proposed air sparge wells will further define deeper conditions (and will facilitate their remediation if significantly impacted).

Pangea finds that the vertical extent of contamination is adequately defined, and that sampling during installation of the proposed wells will help confirm this conclusion. Prior investigation results suggest that the hydrocarbon mass at the upper portion of the site is primarily located at depths ranging from approximately 23 to 30 ft bgs. This impact depth will be targeted by dual-phase extraction from well MW-1 (screened from down to 35 ft bgs), well MW-14 (screened from 10 to 40 ft bgs), well MW-15 (screened from 15-40 ft bgs), and well RW-1 (to be screened from 15 to 35 ft bgs). The impact depth will also be targeted by the proposed air sparge wells, which will be deep enough to target known contamination. Wells AS-1A and AS-2A will target the capillary fringe and shallower groundwater, and will be screened from 27-30 ft bgs in shallower clayey gravel. Wells AS-1B and AS-2B will target deeper groundwater and will be screened from 35 to 38 ft bgs, which may be in the well-graded sand unit found during installation of well MW-14.

As with proposed wells AS-1A/B, AS-2A/B and RW-1, additional assessment will be provided in the upper portion of the site during installation and sampling of newly proposed monitoring wells (VE-1, MW-16 and MW-17). Pangea proposes to install these additional wells in response to ACEH question #3 below.

Comment #3 – With many Site Wells converted to Extraction Wells, is the proposed well network sufficient to monitor remedial effectiveness and any lateral migration of dissolved contamination and free product?

In response to ACEH concerns, Pangea proposes three additional wells at the upper portion of the site. Wells MW-16 and MW-17 are proposed for monitoring the lateral extent of groundwater during site remediation. These two wells will be screened from 15 to 40 ft bgs, similar to existing wells MW-14 and MW-15. Well VE-1 is proposed adjacent to well MW-1. This well will allow vapor extraction from VE-1 with groundwater monitoring from nearby MW-1 (MW-1 will be used intermittently for monitoring and extraction).

At the lower portion of the site, groundwater monitoring will be performed by wells MW-4, MW-7, MW-8 and MW-9. If the ACEH requires additional monitoring at the lower portion of the site, monitoring could be resumed from wells MW-3 and MW-5 (these wells were dropped from the monitoring program in 1998).

For additional monitoring, Pangea will analyze groundwater from the monitoring wells temporarily converted to remediation wells (MW-1, MW-6, MW-10, MW-14 and MW-15). Specific monitoring plans are described below in the 'System Operation and Monitoring' section.

Comment #4 - How does the extraction and monitoring network ensure capture of hydrocarbon vapors and free product? What air sparge rates are proposed?

The DPE/AS approach will be conducted in phases to help ensure capture of hydrocarbons. The first phase will involve extraction from DPE wells to target removal of free product. Upon removal of measurable free product, air sparging will be commenced using very low flow rates of approximately 1 cubic feet per minute per well. The DPE extraction wells are located around the air sparge wells to capture any lateral hydrocarbon migration due to air sparging. Vacuum influence and depth-to-water monitoring in site monitoring wells will help confirm the system's capture of hydrocarbons. Groundwater monitoring of site wells will also determine if air sparging is causing lateral hydrocarbon migration. Higher air sparge flow rates will only be used if system monitoring demonstrates sufficient capture.

Comment #5 – The ACEH has concerns about the proposed nesting of air sparge wells. Has Pangea considered installing wells in separate boreholes?

In response to ACEH concerns, Pangea will install the proposed air sparge wells in separate boreholes (e.g., a well cluster) rather than nested in a single borehole.

Comment #6 – Will the proposed approach provide sufficient drawdown?

In response to the ACEH's concerns, Pangea proposes to use larger DPE equipment than proposed in the IRAP. Pangea proposes to use a 25-hp liquid-ring vacuum pump capable of over 400 actual cubic feet per minute (acfm) and an applied vacuum of 28 inches of mercury. The equipment includes a thermal oxidizer to process elevated hydrocarbon concentrations and over 500 pounds per day of hydrocarbons. Equipment specifications are described below.

Given the prevalence of low permeability materials at the upper of the site, the proposed DPE equipment should easily provide sufficient drawdown for effective hydrocarbon removal. At the lower portion of the site, DPE can be performed on one well at a time if needed for enhanced drawdown. Initial DPE will focus on wells with free product – wells MW-1, MW-14 and MW-15 at the upper portion of the site, and well MW-6 at the lower portion of the site. Pangea will be prepared to supplement groundwater extraction at the lower portion of the site via a submersible pump in well MW-6 or nearby proposed well RW-3. Therefore, the proposed approach of DPE with contingent submersible pumps will be able to provide sufficient drawdown. Additional drawdown information is discussed within comment #7 below.

Comment #7 – Provide equipment specifications and calculations to substantiate anticipated effectiveness of the proposed approach.

Pangea proposes to use a 25-hp liquid-ring vacuum pump capable of over 400 acfm and an applied vacuum of 28 inches of mercury. This is a common equipment size offered by equipment manufacturers for DPE applications. Equipment specifications for the proposed size and type of DPE equipment are included in Attachment A. Actual equipment selection will be based on a cost comparison of comparable equipment upon regulatory approval of the proposed IRAP.

Historical site data suggests that approximately six feet of drawdown is required to expose the gravelly sand unit in MW-6 where residual free product may be primarily located. During the 8-hour DPE feasibility testing on well MW-6 in September 2000, a small (5-hp positive displacement) vacuum blower achieved a 2.8 ft drawdown in well MW-6 and an average water extraction rate of 0.79 gallons per minute (gpm). During DPE testing at another site with similar interbedded low and high permeability saturated soils, a 25-hp liquid-ring vacuum pump unit achieved a drawdown of approximately 6 ft with an extraction rate of 6 gpm while extracting on three wells simultaneously. Therefore, the proposed 25-hp liquid-ring pump should easily achieve the estimated drawdown and water extraction rate to target the unit of concern.

Feasibility testing on MW-1 by the 5-hp vacuum pump achieved a drawdown of 4.6 ft. With the free product apparently not submerged at the upper portion of the site near MW-1, this was ample drawdown to volatilize the separate-phase hydrocarbons. The very limited groundwater recovery rates (<0.02 gpm) from the low permeability soil at the upper portion of the site during DPE also indicate that the proposed DPE equipment will be more than sufficient to target subsurface hydrocarbons.

During the 2000 feasibility testing, the cumulative vapor flow rate and hydrocarbon removal rate from wells MW-1, MW-6, MW-14 and MW-15 were 148 cfm and 168 pounds per day (ppd), respectively. This yields approximate average rates per well of 37 cfm vapor flow and 42 ppd hydrocarbon removal. For the proposed eight DPE wells, the cumulative vapor flow and hydrocarbon removal rates would be approximately 300 cfm and 335 ppd, respectively. These flow and hydrocarbon recovery rates are within the proposed equipment's capacity of 400 acfm and over 500 ppd destruction capacity. The above information indicates that the proposed equipment will provide effective remediation of the site.

To sparge within the proposed four shallow and four deep air sparge wells, Pangea proposes to use a 5-hp reciprocating-piston air compressor with an 80-gallon air storage tank. The compressor would be capable of providing up to 25 standard cubic feet per minute (scfm) of air and achieving air pressures up to 125 pounds per square inch (psi). For safety purposes, the injected air will be regulated to lower pressures compatible with piping, hose and well materials. Air flow will be controlled with a valve and flow meter on each air sparge line. Initial air flow rates will be limited to approximately 1 standard cubic feet per minute (scfm). Air flow rates may be increased to a maximum of 5 scfm per well after removal of free product and demonstration of capture of hydrocarbon vapor by system monitoring. With the proposed equipment, eight sparge wells can be operated simultaneously with injection rates of approximately 3 scfm each.

SUMMARY OF PROPOSED DPE/AS APPROACH

To help facilitate regulatory review, Pangea prepared this summary of the modified IRAP and our proposed operation and monitoring plan. In response to ACEH concerns, Pangea modified the IRAP by adding one source area SVE well, including two additional borings/groundwater monitoring wells, and proposing greater capacity DPE equipment. Figure 5A, Figure 6 and Table 1 were prepared to illustrate the modified IRAP and the anticipated well construction for the proposed wells.

System Design and Features

Our modified DPE/AS approach consists of the following:

- DPE using a 25-horsepower liquid-ring vacuum pump capable of vapor flows of 400 acfm and a vacuum of 28 inches of mercury vacuum. The equipment will include a thermal oxidizer to treat over 500 pounds of hydrocarbons per day. Proposed equipment specifications included in Attachment A.

- DPE from eight wells, including four wells at the upper portion of the site (MW-1, MW-14, MW-15 and RW-1) and four wells at the lower portion of the site (MW-6, MW-10, RW-2 and RW-3).

- SVE from one vadose zone well (VE-1) to target the hydrocarbon source area adjacent MW-1 (the well log for MW-1 references 'very strong petroleum odor' in the vadose zone within clayey sand).

- AS in eight wells, with four shallow and four deeper wells. At the upper portion of the site, shallow wells AS-1A and AS-2A will target the capillary fringe and shallower groundwater, and will be screened from 27 to 30 ft bgs in shallower clayey gravel. Wells AS-1B and AS-2B will target deeper groundwater and will be screened from 35 to 38 ft bgs. At the lower portion of the site, wells AS-3A and AS-4A will be screened from 26 to 29 ft bgs and wells AS-3B and AS-4B will be screened from 33 to 36 ft bgs. AS will be performed with a 7.5-hp, reciprocating-piston air compressor capable of 125 psi and 25 scfm. The compressor will include an air storage tank of approximately 80 gallons.

- Installation of two additional groundwater monitoring wells (MW-16 and MW-17) at the upper portion of the site, screened from 15 to 40 ft bgs.

- Monitoring groundwater and system performance in wells MW-1, MW-16 and MW-17 at the upper portion of the site, and in wells MW-4, MW-7, MW-8 and MW-9 at the lower portions of the site. For additional monitoring, Pangea will analyze groundwater from the monitoring wells temporarily converted to remediation wells (MW-1, MW-6, MW-10, MW-14 and MW-15).

- A contingency to extract groundwater with submersible pumps from wells MW-6 and RW-3. Subsurface piping will be installed from these wells to the equipment compound for pumping, if needed.

- An equipment compound located near well MW-9. The compound will include electrical service and groundwater discharge piping to the sanitary sewer. Subsurface and aboveground piping, valves, and a manifold will be installed to facilitate control of DPE, SVE and AS within each respective well. Noise abatement materials or a fully enclosed container will be provided to minimize the noise impact on the tenant's customers and the surrounding community.

The proposed system layout is shown on Figure 5A. Figure 6 is a cross section illustrating the proposed well screens, estimated hydrocarbon distribution, and initial extraction/sparge areas.

Well Installation and Soil Sampling

Specifications for the proposed (and existing) wells are shown on Table 1. As requested by the ACEH, the proposed wells will be installed within their own borehole and not nested. The proposed two-inch diameter wells will be installed with 8-inch diameter, hollow-stem augers. Proposed four-inch diameter well RW-3 will be installed with 10-inch diameter, hollow-stem augers; this well is proposed as four-inches in diameter to facilitate contingent groundwater extraction. The actual well screen intervals will be based on field observations. The well screen intervals will be selected to facilitate site remediation, and to avoid screening across a low permeability unit and into shallower and deeper higher permeability units. For example, well RW-3 will be screened from 28 to 35 ft bgs to target gravelly sand below the clayey soil present at

approximately 26 to 28 ft bgs according to the log for MW-6. Air sparge well AS-3A will be screened from approximately 26 to 28 ft bgs to target the capillary fringe and shallow saturated soil, and will not be screened through the bottom of the anticipated clay unit. Well AS-3B will be screened from approximately 33 to 36 ft bgs to target the deeper gravelly sand. The wells will be constructed of 0.010-inch slotted screen. Each well will be protected by a traffic-rated vault. Pangea's *Standard Field Procedures for Well Installation* are included in Attachment B.

During well installation, soil samples from the capillary fringe and saturated zone will be analyzed every five feet. Soil samples from vadose zone soil will only be analyzed from the boring for source area well VE-1, and from other borings if elevated (>100 parts per million) readings are detected by soil sample screening with a PID. Soil samples will be analyzed for petroleum hydrocarbons by EPA Method 8015m/8021.

After well installation, all new wells will be developed prior to use for remediation or groundwater monitoring. Prior to initiating site remediation, Pangea will conduct groundwater monitoring and sampling of all new wells to establish pre-remediation baseline conditions. Pangea will inspect for separate-phase hydrocarbons (SPH), measure the depth to water, measure dissolved oxygen, and submit samples for analysis for petroleum hydrocarbons by EPA Method EPA Method 8015m/8021.

System Operation and Monitoring

The DPE/AS system will operated and monitored as described below.

1. Dual Phase Extraction: The first phase will involve extraction from DPE wells to target removal of free product. Initial DPE will focus on wells with free product – wells MW-1, MW-14 and MW-15 at the upper portion of the site, and well MW-6 at the lower portion of the site. DPE will also commence on other site wells with highest removal rates to enhance hydrocarbon removal and utilize available equipment capacity. During this phase SVE will also commence on VE-1. Pangea will monitor the following for each extraction well: applied vacuum, hydrocarbon concentrations in extracted water and extracted vapor, and depth to water. For nearby monitoring wells Pangea will monitor vacuum influence, groundwater drawdown and dissolved hydrocarbon concentrations to estimate the capture area. Pangea will also monitor the total system vacuum, vapor extraction flow rate, and groundwater extraction flow rate to calculate hydrocarbon removal rates. This DPE only phase is expected to last approximately 3 months.

2. DPE with Low Flow Air Sparging in *Shallow* Wells: After the initial DPE efforts targeting free product and source area hydrocarbons, air sparging will be commenced using very low flow rates of approximately 1 cubic feet per minute in each *shallow* AS well. DPE will continue from the surrounding extraction wells to capture any lateral hydrocarbon migration encouraged by sparging. Pangea will monitor the air pressure and air flow into each well with dedicated flow meters and gauges. Monitoring nearby site wells for vacuum influence, depth-to-water, dissolved hydrocarbons

and dissolved oxygen will help confirm the system's capture of hydrocarbons. This phase will be conducted for approximately one month.

3. DPE with Low Flow Air Sparging in *Shallow* and *Deep* Wells: After the initial sparing in shallow wells, low flow sparing will also be conducted in the deeper AS wells using very low flow rates of approximately 1 cubic feet per minute in each well. DPE/AS monitoring will be identical to monitoring detailed above for sparging in the shallow wells. This phase will be conducted initially for approximately one month.

4. DPE with Air Sparging (Higher Flow): After low flow sparging, Pangea will increase the air sparge flow rates to approximately 3 to 5 cubic feet per minute per well. Pangea will monitor nearby wells as described above to confirm capture of any lateral migration caused by higher flow air sparging. Field measurements of vacuum/pressure will provide short-term monitoring data. Groundwater concentrations in groundwater monitoring wells will provide longer-term monitoring data. Groundwater monitoring will be conducted on quarterly frequency unless otherwise requested.

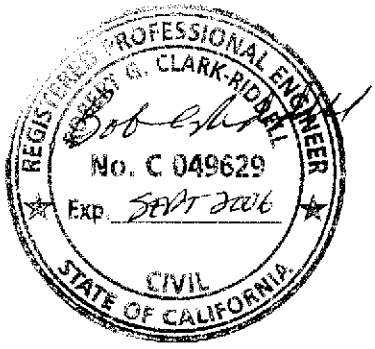
5. System Performance Evaluation: Pangea will submit a system performance evaluation report after completion of approximately six months of operation. This duration should allow for initiation of each phase described above.

6. Monthly Status Reports: Pangea will also provide monthly status reports describing operation and monitoring of the DPE/AS system. The monthly status reports and system performance evaluation report will recommend system modifications, if merited to enhance remedial efforts. To help expedite incorporation of any significant recommendations, Pangea will also contact the lead case worker via email or telephone for comment.

CLOSING

We trust this Addendum addresses your concerns with the IRAP. Upon receipt of regulatory approval, Pangea will commence implementation of the IRAP. Since the IRAP was submitted over one year ago, we respectfully request that the ACEH expedite its review and/or approval of this IRAP and Addendum. If you have any questions or comments, please contact me at (510) 435-8664 or briddell@pangeaenv.com.

I declare, under penalty of perjury, that information and/or recommendations contained in this document or any attached documents are true and correct to the best of my knowledge.



Sincerely,
Pangea Environmental Services, Inc.

Bob Clark-Riddell, P.E.
Principal Engineer

Attachments:

Figure 5A – Revised Interim Remedial Action Plan
Figure 6 - Cross Section with Remediation Well Schematic

Table 1 – Well Construction Details for Existing and Proposed Wells

Attachment A – DPE Equipment Specifications
Attachment B – Standard Field Operations for Monitoring Wells

CC: George Hill, 305 Sheridan Ave., Piedmont, CA 94611
Gordon Linden, 150 La Salle Avenue, Piedmont, California 94611
Paul Kibel, Fitzgerald, Abbott & Beardsley, LLP, 1221 Broadway, 21st Floor, Oakland, CA 94612
Leroy Griffin, Hazardous Materials Manager, Fire Department - OES, 1605 MLK Jr. Way, Oakland, CA 94612

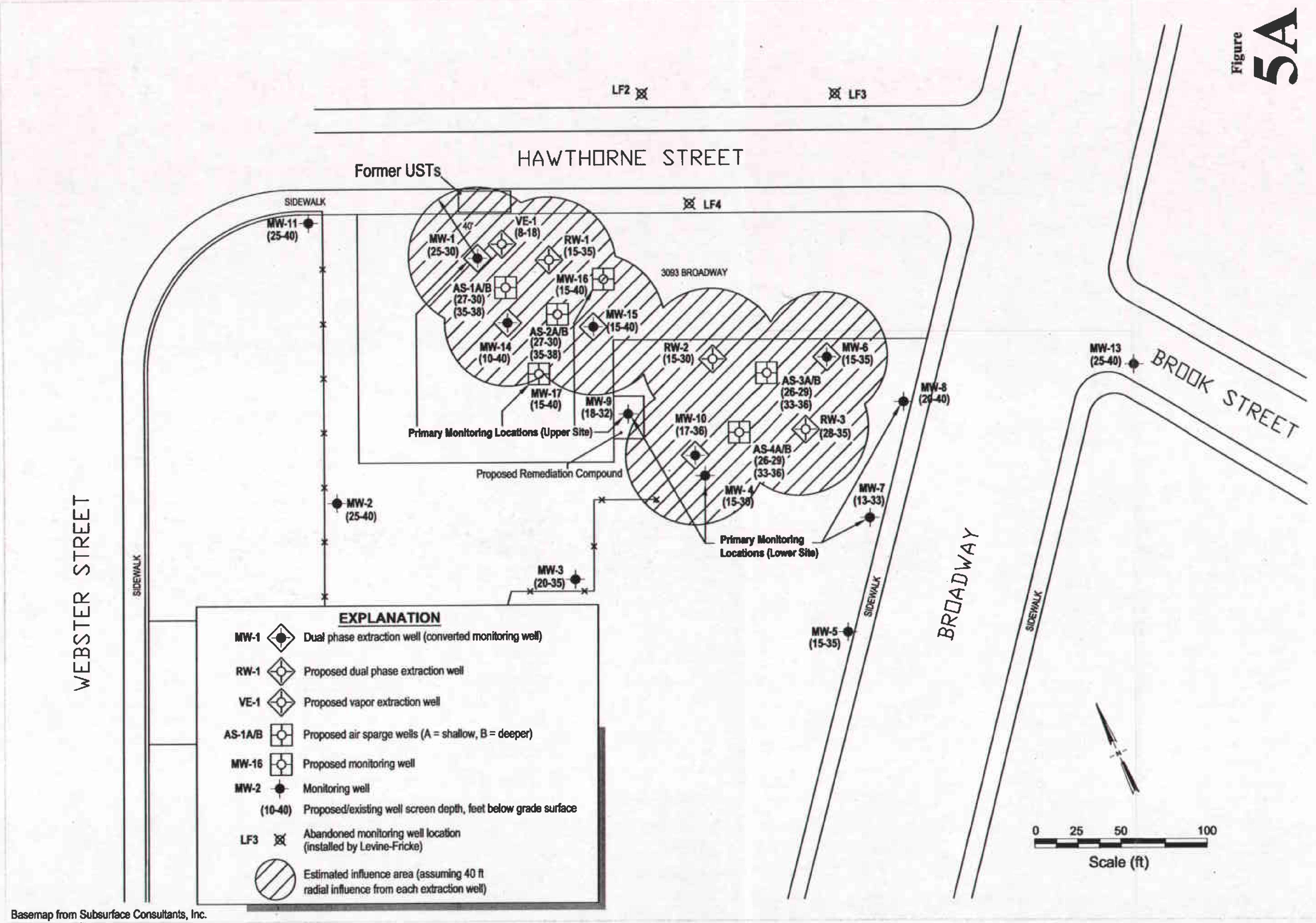


Figure **5A**

Interim Remedial Action Plan

Pangea ENVIRONMENTAL SERVICES, INC.

Connell Automobile Dealership
3093 Broadway
Oakland, California

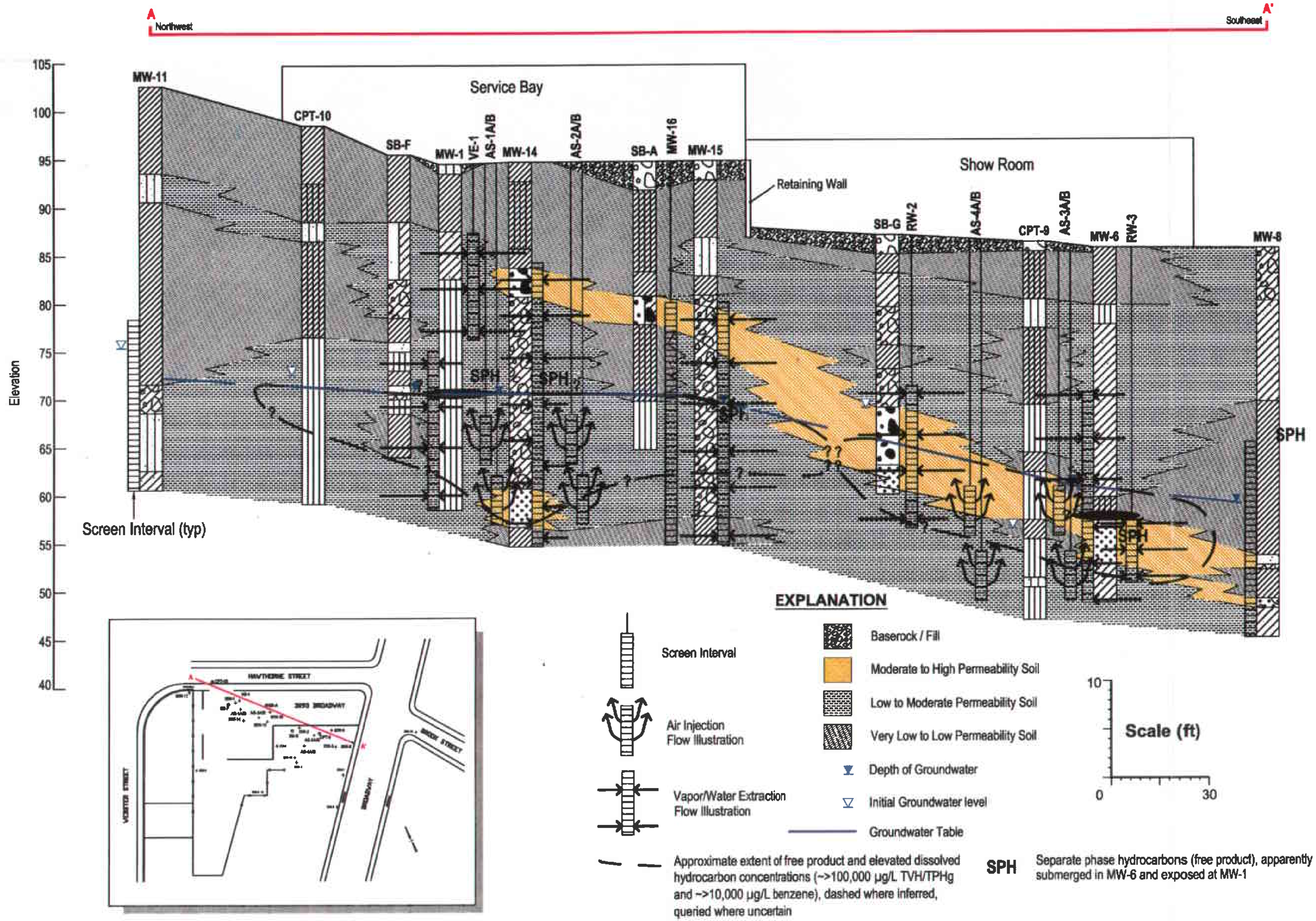


Figure 6

Cross Section with Remediation Well Schematic

Pangea ENVIRONMENTAL SERVICES, INC.

Connell Automobile Dealership
3093 Broadway
Oakland, California

Table 1 - Well Construction Details for Existing and Proposed Wells – 3093 Broadway, Oakland, CA

Well ID	Construction Date	Total Depth of Well (feet bgs)	Screened Interval (ft bgs)	Well Casing Nominal Diameter (inches)	Filter Pack Interval (ft bgs)
Existing Wells					
MW-1	9/28/90	30	19-35	2	19-35
MW-2	2/25/91	40	25-40	2	23-40
MW-3	2/25/91	35	20-35	2	18-35
MW-4	2/25/91	30	15-30	2	13-30
MW-5	3/8/91	35	15-35	2	14-35
MW-6	3/8/91	35	15-35	2	14-35
MW-7	3/8/91	33	13-33	2	12-33
MW-8	10/6/92	40	20-40	6	17-40
MW-9	10/6/92	32	18-32	2	17-32
MW-10	10/6/92	35	17-35	6	15-35
MW-11	10/6/92	40	25-40	2	23-40
MW-13	10/6/92	40	25-40	2	23-40
MW-14	5/16/98	40	10-40	2	8-40
MW-15	5/17/98	40	15-40	2	8-40
Proposed Wells					
MW-16	Future	40	15-40	2	14-40
MW-17	Future	40	15-40	2	14-40
RW-1	Future	35	15-35	2	14-35
RW-2	Future	30	15-30	2	14-30
RW-3	Future	35	28-35	4	27-35
AS-1A	Future	30	27-30	2	26.5-30
AS-1B	Future	38	35-38	2	34.5-38
AS-2A	Future	30	27-30	2	26.5-30
AS-2B	Future	38	35-38	2	34.5-38
AS-3A	Future	29	26-29	2	25.5-29
AS-3B	Future	36	33-36	2	32.5-36
AS-4A	Future	29	26-29	2	25.5-29
AS-4B	Future	36	33-36	2	32.5-36

No Well MW-12 at the site.
bgs = below ground surface (determined from top of well casing)

ATTACHMENT A

DPE EQUIPMENT SPECIFICATIONS

Frontier
Environmental Services, Inc

Our Service Makes The Difference!

MTS Equipment Specifications

Thermal Oxidizer
Complete with 400,000Btu/HR Rated Burner System
Self Contained Supplemental Fuel System (Propane)
NFPA Compliant Supplemental Fuel Control System

Liquid Ring Pump Package
Oil Sealed Pump Head
Flow Rate: Up To 420 ACFM (140 SCFM @ 20"Hg)
Vacuum Rate: Up To 28" Hg

Electrical Generator
Self Contained Electrical System
No requirements for on-site power

Air/Water Separator (Well Connections)
6 Independent Well Connection Ports (1", 1 1/4" Or 2" Camlock Connections)
Water Transfer Pump with debris strainers, flowmeter, and totalizer
Dual discharge ports for connecting to multiple storage vessels

Personal and Equipment Safety
Onsite personnel trained in safety procedures
Onsite safety devices include barricades, cones, safety tape, and traffic markers as needed
Work area identification and personnel identification for public and site safety

Sample Collection
Influent And Effluent Vapor Sample Ports
Influent And Effluent Vapor Concentrations
Influent And Effluent Water Sample Ports

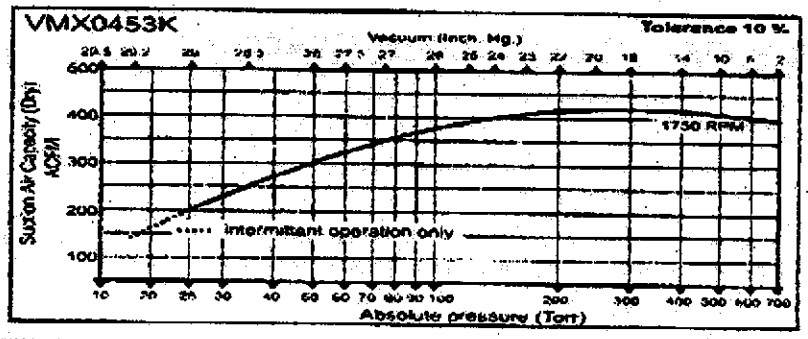
Reporting
On-site Daily Operation Log submitted to Client Upon Project Completion
On-Site Data Collection Log submitted to Client Upon Project Completion

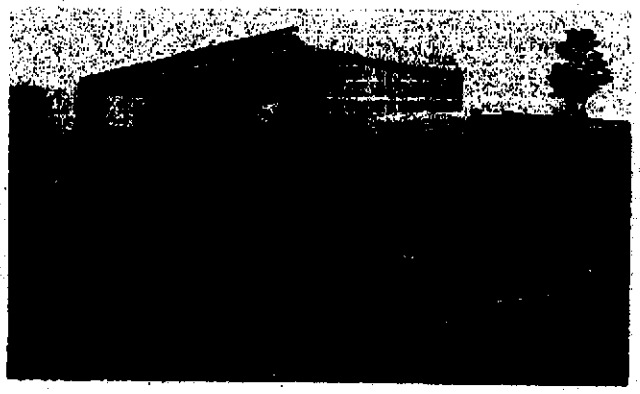
Supplemental Fuel
Supplemental Fuel For Combustion System (Propane)
Supplemental Fuel For Electrical Generator (Diesel)

Chart Recorder: (Data Collected And Sent To Client)
Process Temperature
Oxidizer Temperature
Well Vacuum
Total Flow

On-Site Personnel
Factory trained personnel for equipment operations
Personnel will set-up and operate equipment
Personnel will clean up and relocate from site

Accessories
Up to 4 Sumbersible pumps can be connected to system
Auxilary fuel tanks for longer term projects
Hose Ramps for 1", 1 1/4", and 2" Hose
Auxilary Water storage Vessels





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ATTACHMENT B

STANDARD FIELD PROCEDURES FOR MONITORING WELLS

STANDARD FIELD PROCEDURES FOR MONITORING WELLS

This document describes Pangea Environmental Services' standard field methods for drilling, installing, developing and sampling groundwater monitoring wells. These procedures are designed to comply with Federal, State and local regulatory guidelines. Specific field procedures are summarized below.

Well Construction and Surveying

Groundwater monitoring wells are installed in soil borings to monitor groundwater quality and determine the groundwater elevation, flow direction and gradient. Well depths and screen lengths are based on groundwater depth, occurrence of hydrocarbons or other compounds in the borehole, stratigraphy and State and local regulatory guidelines. Well screens typically extend 10 to 15 feet below and 5 feet above the static water level at the time of drilling. However, the well screen will generally not extend into or through a clay layer that is at least three feet thick.

Well casing and screen are flush-threaded, Schedule 40 PVC. Screen slot size varies according to the sediments screened, but slots are generally 0.010 or 0.020 inches wide. A rinsed and graded sand occupies the annular space between the boring and the well screen to about one to two ft above the well screen. A two feet thick hydrated bentonite seal separates the sand from the overlying sanitary surface seal composed of Portland type I, II cement.

Well-heads are secured by locking well-caps inside traffic-rated vaults finished flush with the ground surface. A stovepipe may be installed between the well-head and the vault cap for additional security. The well top-of-casing elevation is surveyed with respect to mean sea level and the well is surveyed for horizontal location with respect to an onsite or nearby offsite landmark.

Well Development

Wells are generally developed using a combination of groundwater surging and extraction. Surging agitates the groundwater and dislodges fine sediments from the sand pack. After about ten minutes of surging, groundwater is extracted from the well using bailing, pumping and/or reverse air-lifting through an eductor pipe to remove the sediments from the well. Surging and extraction continue until at least ten well-casing volumes of groundwater are extracted and the sediment volume in the groundwater is negligible. This process usually occurs prior to installing the sanitary surface seal to ensure sand pack stabilization. If development occurs after surface seal installation, then development occurs 24 to 72 hours after seal installation to ensure that the Portland cement has set up correctly.

All equipment is steam-cleaned prior to use and air used for air-lifting is filtered to prevent oil entrained in the compressed air from entering the well. Wells that are developed using air-lift evacuation are not sampled until at least 24 hours after they are developed.

Groundwater Sampling

Depending on local regulatory guidelines, three to four well-casing volumes of groundwater are purged prior to sampling. Purging continues until groundwater pH, conductivity, and temperature have stabilized. Groundwater samples are collected using bailers or pumps and are decanted into the appropriate containers supplied by the analytic laboratory. Samples are labeled, placed in protective foam sleeves, stored on crushed ice at or below 4°C, and transported under chain-of-custody to the laboratory. Laboratory-supplied trip blanks accompany the samples and are analyzed to check for cross-contamination. An equipment blank may be analyzed if non-dedicated sampling equipment is used.