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#3337

April 29, 1999

Mr. Barney M. Chan
Alameda County
Environmental Health Services
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Subject: Work Plan for Conducting Subsurface Investigation at
Tony's Express Auto Services, 3609 International Boulevard
(formerly East 14th Street) Oakland, California – StID#3337

Dear Mr. Chan:

The enclosed work plan has been prepared in response to your letter dated April 21, 1999. The work plan includes compiling existing soil and groundwater data, re-evaluating the Site's regulatory status and preparation of a corrective action plan.

Thank you for your time in reviewing our work plan. Meanwhile, please do not hesitate to call me at (925)244-6600, if you have any questions or comments.

Sincerely,

Mansour Sepehr, Ph.D.,P.E.
Principal Hydrogeologist

MS/jb

Enclosure

cc: Mr. Abolghassem Razi
Tony's Express Auto Services

ENVIRONMENTAL ENGINEERING, INC
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# WORK PLAN TO CONDUCT DATA COMPILATION, EVALUATION OF SITE CLEAN UP OBJECTIVE AND PREPARATION OF CORRECTIVE ACTION PLAN AT TONY'S EXPRESS AUTO SERVICES 3609 INTERNATIONAL BOULEVARD OAKLAND, CALIFORNIA

**PROJECT 99-2330**

**APRIL 28, 1999**

**PREPARED FOR**

**Mr. Abolghassem Razi**
**3609 International Boulevard**
**Oakland, CA 94601**

**PREPARED BY**

**SOMA Environmental Engineering, Inc.**
**2680 Bishop Drive. Suite 203**
**San Ramon, California 94583**

- probably could do w/ 1 geophone + 1 well instead of 2 wells
- exp / shrinking plume related to pump tests?
- model results must be verified by spring results.

## INTRODUCTION

This work plan has been prepared by SOMA Environmental Engineering, Inc. (SOMA) on behalf of Mr. Abolghassem Razi, the owner of Tony's Express Auto Services. Tony's Express Auto Services (the "Site) is located at 3609 International Boulevard (formerly known as East 14th Street) Oakland, California, see Figure 1. This work plan has been prepared based on the Alameda County Environmental Health Services (ACEHS) request dated April 21, 1999.

The Site is currently used as a gasoline service station and mechanic shop. The Site is relatively flat, and the surrounding properties are primarily commercial businesses and residential housing. Figure 2 shows the location of the main building, fuel tank areas, on-site and off-site groundwater monitoring wells. Currently, the groundwater monitoring wells are being monitored on a quarterly basis. The results of the groundwater monitoring program have indicated elevated levels of petroleum hydrocarbons in groundwater beneath the Site. The source of petroleum hydrocarbons in the groundwater is believed to be the former under groundwater storage tanks (USTs), which were used to store gasoline at the Site.

The purpose of this work plan is to:

1. Compile existing soil and groundwater data and identify data gaps
2. Re-evaluate the Site's regulatory status (i.e., high risk or low risk)
3. Prepare a corrective action plan (CAP) document by comparing different remedial alternatives.

This work plan discusses the procedure for re-evaluation of the Site's regulatory status and preparation of corrective action plan.

## Background

Currently, the Site is used as a gasoline service station. The environmental investigation at the subject property started since 1992, when Mr. Razi, the property owner retained Soil Tech Engineering, Inc. (STE) of San Jose to conduct a limited subsurface investigation. The purpose of the STE investigation was to determine whether or not the soil near the product lines and underground storage tanks (USTs) have been impacted with petroleum hydrocarbons. STE drilled six soil borings to a depth of 15 feet below the ground (bgs). The results of this investigation revealed elevated levels of petroleum hydrocarbons as TPH-g (up to 460 mg/kg) and detectable levels of benzene, toluene, ethylbenzene and xylenes (BTEX) in soil samples.

In July 1993, STE removed one single-walled 10,000-gallon gasoline tank and one single-walled 6,000-gallon gasoline tank along with a 550-gallon waste oil tank from the Site. These tanks were replaced by double-walled USTs. Currently, there is one 10,000 gallon double-walled gasoline tank and two 6,000 gallon double-walled gasoline tanks beneath the Site. During the USTs upgrade, STE collected soil samples from the bottom and side-walls of excavated pits at 12 and 7 feet depths as well as underneath the piping area and analyzed for TPH-g and BTEX. The results of the laboratory analysis on soil samples collected from the bottom of the excavation showed up to 460 mg/kg TPH-g. However, the samples collected below the piping showed elevated levels of TPH-g (up to 4,100 mg/kg).

Due to the presence of elevated levels of TPH-g, ACEHS requested a work plan for subsurface investigation. In August 1993, STE drilled thirteen soil borings and converted three of them into groundwater monitoring wells of MW-1, MW-2 and MW-3. To allow for future in-situ remediation of impacted soils, STE drilled

four vertical 6-inch diameter soil vapor extraction probes. In addition, two horizontal perforated pipes were installed connecting four soil borings together through a manifold. The manifold was connected to a vault in front of the northeast corner of the site building.

In August 1995, STE installed five additional groundwater monitoring wells (MW-4 through MW-8). In August 1996, STE conducted additional site characterization activities. During this period, STE drilled five soil borings and converted three of them to groundwater monitoring wells of MW-9 through MW-11.

In December 1997, Mr. Razi retained Western Geo-Engineers (WEGE) to conduct an additional investigation including a slug test and risk based corrective action (RBCA) using groundwater monitoring data. The results of slug tests conducted by WEGE indicated that hydraulic conductivity of the saturated sediment ranges between 0.4 and 10.4 feet per day. The results of hydraulic conductivity measurement conducted by WEGE contradict the lithologic logs of the groundwater monitoring wells prepared by STE. As the lithologic logs of the groundwater monitoring wells indicate, the saturated sediments beneath the Site are primarily comprised of fine-grained sediments such as silt and clay.

The RBCA study conducted by WEGE is unrealistic and incomplete. For instance, using shallow groundwater beneath the Site by the future Site's workers and the nearby residents as a drinking water source is very unrealistic. On the other hand, the study does not consider the indoor air concentration for the current and future off-site residents as an exposure media. As a result, the report offers minimal information to the reader and results cannot be used as a decision-making tool.

Since December 1997, Mr. Razi has retained WEGE to conduct groundwater monitoring on a quarterly basis. Today, after almost 6-years of monitoring and

site investigation, the plume of groundwater contaminants are reportedly migrating to off-site areas and impacting the nearby residents. Among the chemicals of potential concern is benzene and MTBE, which reportedly have migrated beyond the property's boundary.

## SCOPE OF WORK

Per Mr. Razi's request on April 21, 1999 a meeting was held at the ACEHS offices. The participants in the meeting were Mr. Barney Chan of ACEHS, Mr. Abolghassem Razi and Mr. Mansour Sepehr of SOMA. The major items discussed in the meeting, are listed below as follows:

1. RBCA Tier 2 analysis conducted by Western Geo-Engineers;
2. Validity of slug tests conducted by Western Geo-Engineers;
3. Installation of a French drain/groundwater extraction system to prevent further migration of chemicals to off-site areas.
4. Preparation of Corrective Action Plan in order to recommend the most effective and yet least costly remedial alternative for groundwater remediation.

Based on the ACEHS request dated April 21, 1999, the following is the scope of the current work plan:

1. Data Compilation and reporting data gaps, if any;
2. Evaluation of the Site's Clean up Objectives;
3. Preparation of Corrective Action Plan (CAP).

The following is a brief description of each component of the proposed work plan.

**Data Compilation:**

SOMA will compile soil and groundwater chemical data in a database and use it for evaluation of chemical source areas, attenuation factors and production of 3-dimensional figures and calculation of the total chemical mass which exists in soil and groundwater beneath the Site. Our preliminary review of the groundwater monitoring data, indicates that groundwater chemical plumes have already migrated beyond the property's boundary. For a better definition of the current groundwater chemical plume, SOMA proposes to install two additional groundwater monitoring wells down gradient from MW-10 and MW-11. The recent groundwater monitoring report by WEGE has shown elevated levels of MTBE at MW-10 (2,800 µg/l). We propose to install one of the monitoring wells (MW-12) a close distance to the MW-10 and install the MW-13 across E. 12th Street upon verification of the presence of MTBE at the MW-12. Figure 3 shows the proposed location of MW-12 and MW-13.

how about 1 temp & 1 permanent well

**Evaluation of Site's Clean up Objective**

State Water Control Board supplemental instructions dated December 8, 1995 entitled "Interim Guidance on Required Clean up at Low Risk Fuel Site", will be followed to define the Site's regulatory status in connection with soil and groundwater contamination. Based on the interim guidance document, the Site can be categorized as a low risk soil/groundwater Site, if the following conditions are met:

1. The leak has been stopped and an on-going source of contamination, including free-product, has been removed or remediated to the extent practicable;
2. The Site has been adequately characterized;

3. The dissolved hydrocarbon plumes are shrinking;
4. No water wells, deeper drinking water aquifers, surface water, or other sensitive receptors are likely to be impacted;
5. The Site presents no significant risks to human health and finally;
6. The Site presents no significant risk to the environment.

As explained earlier, in 1993, the source of contamination has been stopped and old USTs have been upgraded to double-walled tanks. In addition, no significant floating product exists beneath the Site. Therefore, the first item has already been addressed.

In order to evaluate the second item, SOMA will use the results of the first task, which was mentioned earlier. SOMA will compile the existing data and address any data gap that may exist. However, as it was mentioned earlier, in order to delineate the groundwater chemical plume two additional groundwater monitoring wells should be installed down gradient from MW-10 and MW-11.

To evaluate whether or not the chemical plume beneath the Site is a shrinking plume or not, more hydrogeological investigations including a groundwater pumping test or at minimum a series of slug tests are proposed. Unfortunately, the information in WEGE report is not sufficient to check the validity of slug tests. For instance, the volume of slug/water removed from each well has not been given. Additionally, a very short duration of the tests (ranging between 1 to 5 minutes) takes the presented results under serious question. The slug tests are suitable for measurement of hydraulic conductivity in the fine grained aquifers where the aquifer cannot be pumped for an extended period of time. The short duration of the slug test may be the indication of coarser grained material and higher hydraulic conductivity. Our preliminary data review indicates that during the groundwater monitoring events, the flow rates from different groundwater monitoring wells for purging purposes ranged between 1 to 8 gallons per minute (gpm), which is a good indication of the presence of coarse grained sediments

explain ?

beneath the Site. After conducting a pumping test or several slug tests and verification of hydraulic conductivity data presented in the WEGE report, SOMA proposes to conduct a groundwater flow and chemical transport modeling. The results of computer modeling will simulate the future configuration of contaminant plume under different remedial schemes and comment on expanding or shrinking nature of chemical plumes beneath the Site. SOMA proposes to utilize the combination of the U.S. Geological Survey Modular 3-Dimensional Groundwater Flow Model (MODFLOW) and the 3-D Modular Transport Model (MT-3D) of Zhang (1996) for conducting groundwater flow and chemical transport modeling. SOMA will calibrate MODFLOW using site-specific data to design a groundwater extraction system. The effectiveness of such measure will be evaluated in preparation of the corrective action plan document. Such remedial measures will prevent further migration of chemicals to off-site areas by creating a hydraulic barrier. The flow model will be used as a tool to evaluate the effectiveness of the groundwater extraction system under different pumping scenarios, if warranted.

SOMA will conduct a ½-mile radius search to locate sensitive receptors such as water wells, deeper drinking water aquifers, surface water, schools, day care centers, nursing homes or other sensitive receptors, which may likely be impacted by the Site related chemicals. The results of such site-specific evaluations will be used in conducting the RBCA study.

To evaluate the impact of Site related chemicals on on-site workers and off-site residents, SOMA proposes to use the ASTM-RBCA approach. The results of the RBCA study will reveal the impact of Site related chemicals on current Site workers and nearby residents and determine risk-based clean up levels of soil and groundwater, which will protect human health and the environment.

Finally, by taking the above-mentioned steps, SOMA will determine whether or not the Site can be categorized as a "High Risk Soil/Groundwater Site" based on the State Water Board Interim Guidance Document. Such evaluation will

necessitate and justify the need for soil and groundwater remediation in on- and off-site areas.

**Preparation of Corrective Action Plan (CAP)**

If the results of our evaluation will allow us to categorize the Site as a High Risk Soil/Groundwater Site, then the Site remediation will become necessary. As such, SOMA will prepare a Correction Action Plan (CAP) and submit to ACEHS for regulatory review/approval. The CAP will compare different remedial alternatives in terms of their effectiveness, implementability and cost. As a result the most feasible, effective and at the same time least costly alternative will be selected for soil/groundwater remediation in on- and off-site areas for protection of human health and the environment.

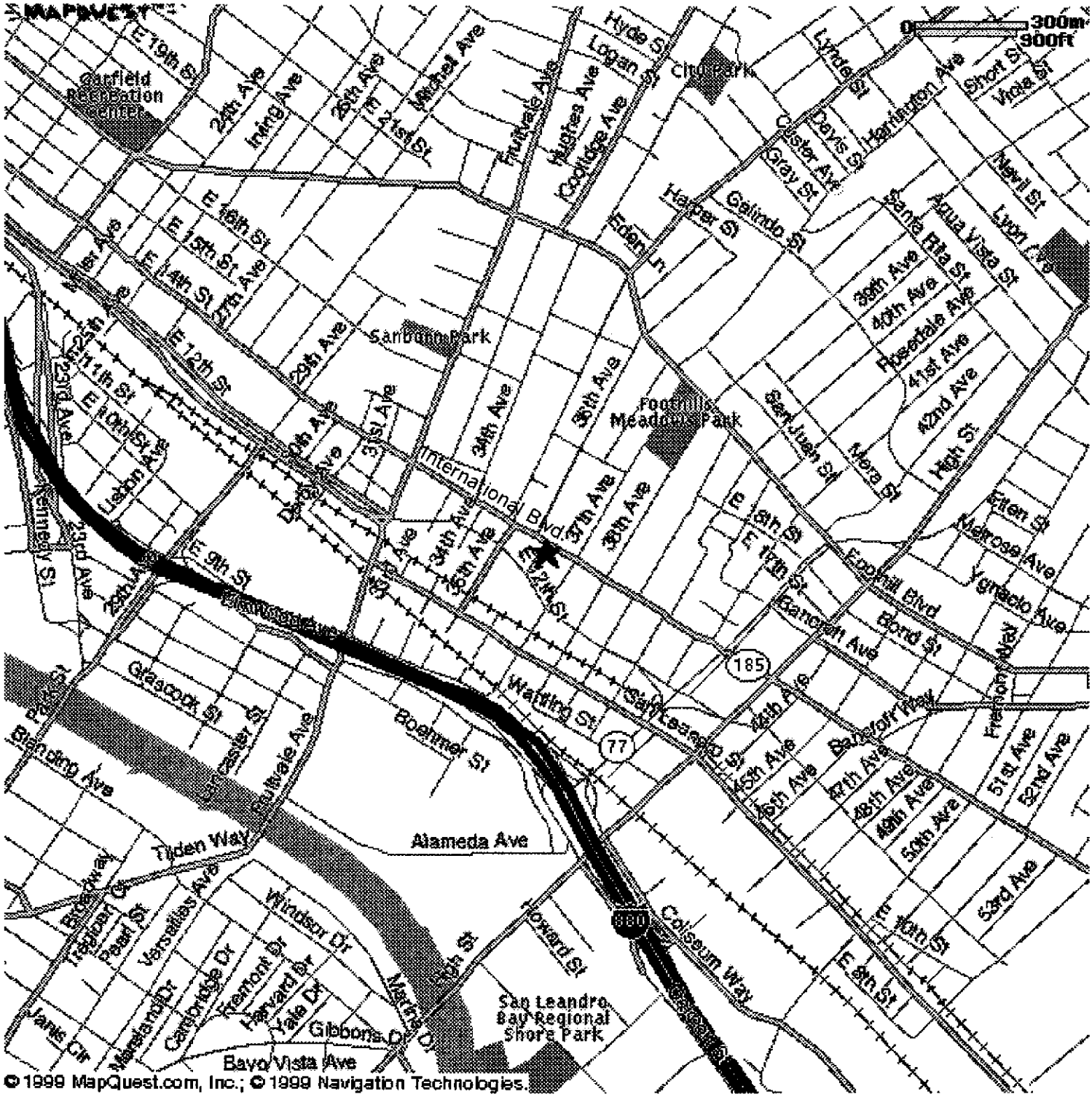


Figure 1: Site Vicinity Map

SOMA ENVIRONMENTAL ENGINEERING, INC.

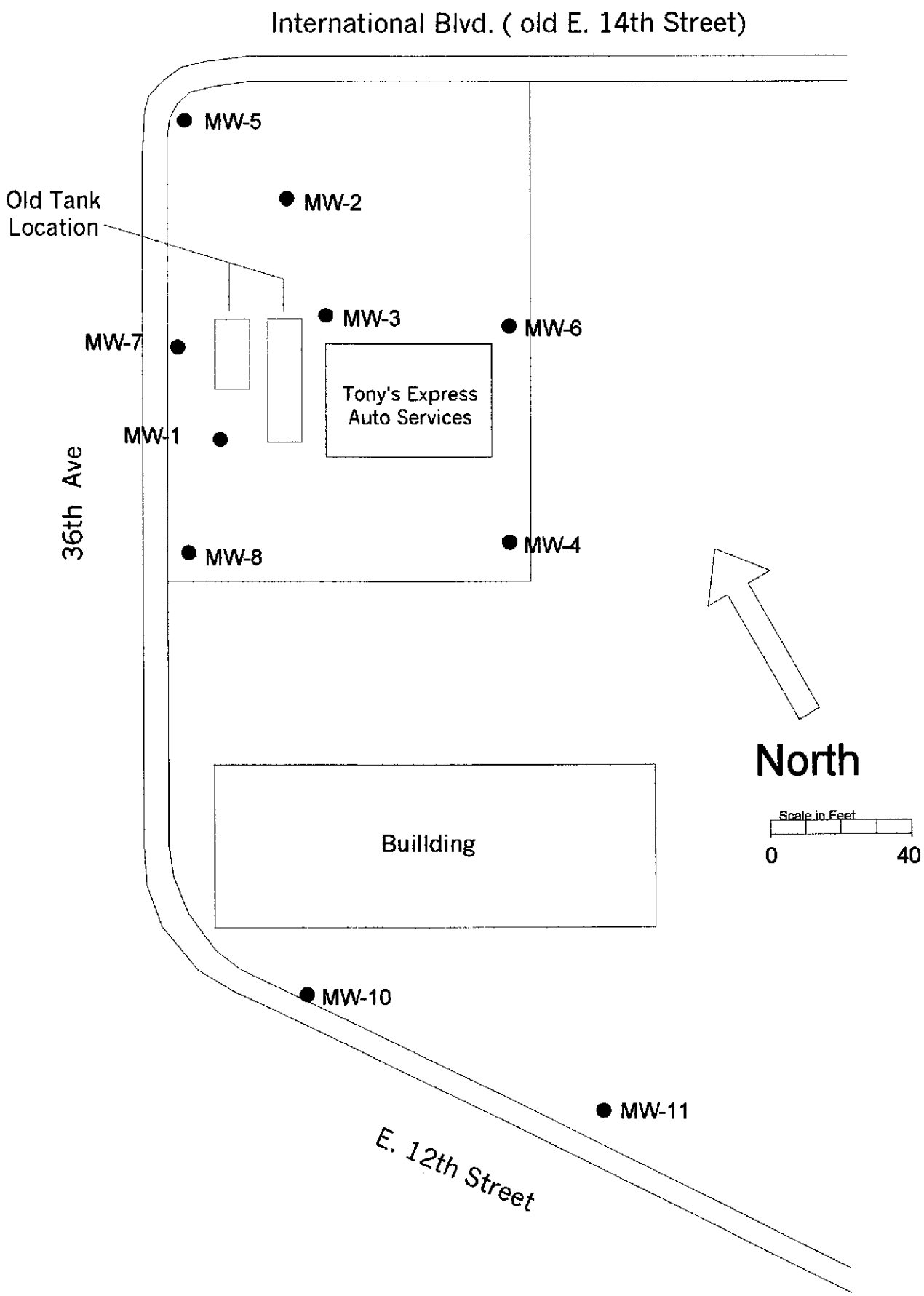


Figure 2: Existing Groundwater Monitoring Well Locations

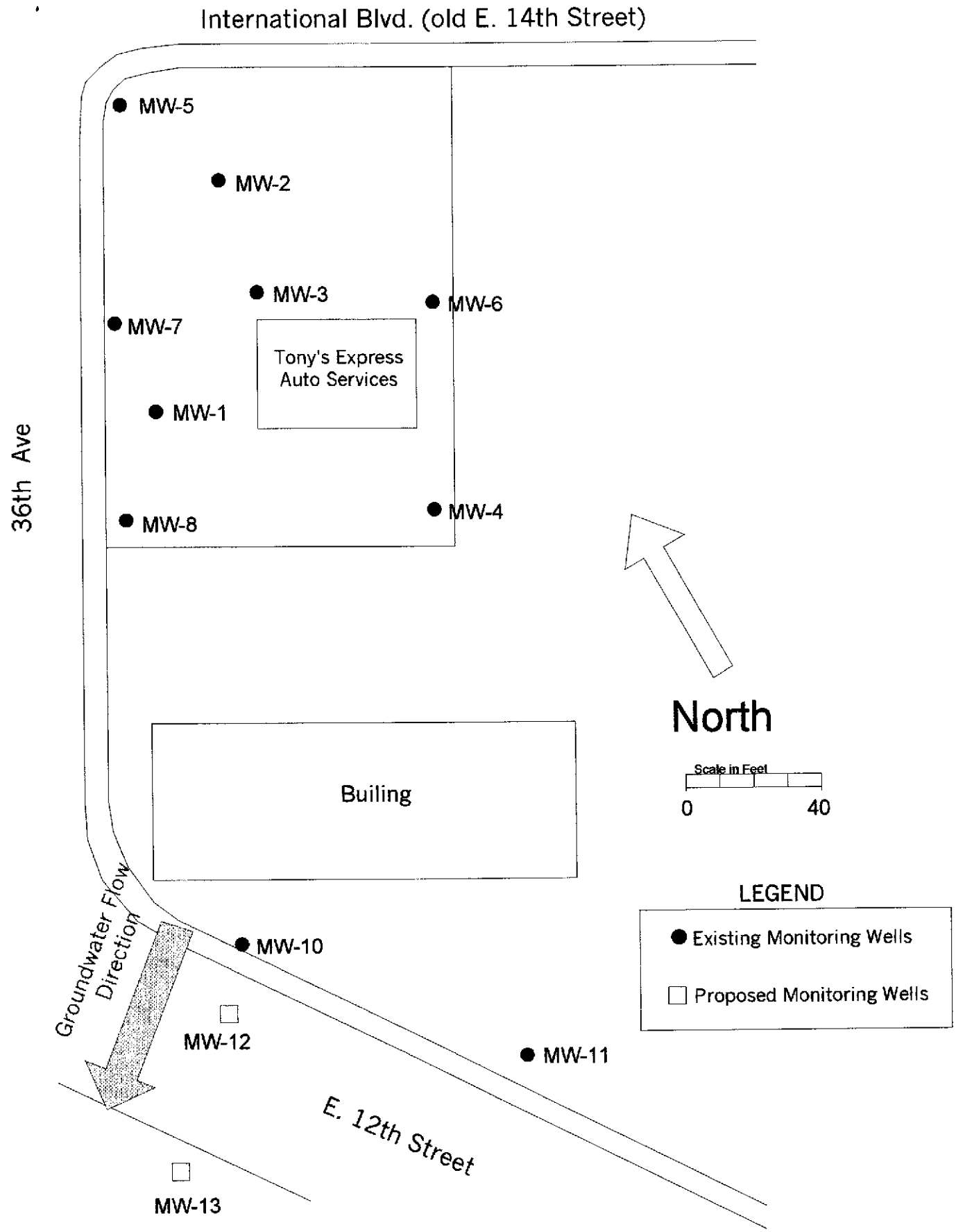


Figure 3: Proposed Groundwater Monitoring Well Locations (MW-12 & MW-13)