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March 27, 1991

Project No. 6-91-5165

Mr. Paul Smith
Alameda County
Department of Environmental Health
Hazardous Materials Program
80 Swan Way, Room 200
Oakland, California 94621

SUBJECT: Workplan for Site Assessment for Broadway Volkswagen, 2740 Broadway Ave., Oakland, California 94612

Dear Mr. Smith:

This workplan is in response to a letter of December 10, 1990 from Alameda County Department of Environmental Health (County) to Vorelco, Inc., owner of the Broadway Volkswagen site located at 2740 Broadway Ave., Oakland, California.

Environmental Science & Engineering, Inc. (ESE) has completed some research regarding the former tank removal operation, ground-water in the vicinity, and reported hazardous material releases in the vicinity. Results of this research is included in this workplan. The site assessment work outlined in this workplan will begin as soon as approval from the County is received.

Please contact Sue Wickham at (415) 685-4053 with any questions concerning this workplan.

Sincerely,

ENVIRONMENTAL SCIENCE & ENGINEERING, INC.

Susan S. Wickham

Susan S. Wickham, RG 3851
Staff Hydrogeologist

SSW:ssb

Attachment - Workplan

WORKPLAN FOR SITE ASSESSMENT
BROADWAY VOLKSWAGEN
2740 BROADWAY
OAKLAND, CALIFORNIA

PREPARED FOR:

ALAMEDA COUNTY
DEPARTMENT OF ENVIRONMENTAL HEALTH
HAZARDOUS MATERIALS PROGRAM
80 SWAN WAY, ROOM 200
OAKLAND, CALIFORNIA 94621

VORELCO, INC.
888 WEST BIG BEAVER
P.O. BOX 7050
TROY, MICHIGAN 48007-7050

PREPARED BY:

ENVIRONMENTAL SCIENCE & ENGINEERING, INC.
4090 NELSON AVENUE, SUITE J
CONCORD, CALIFORNIA 94520

PROJECT NO. 6-91-5165
MARCH 27, 1991

This report, including all related activities, was prepared or conducted by Susan S. Wickham, Staff Hydrogeologist and Director of Geosciences for the Concord office of Environmental Science & Engineering, Inc. Our professional services have been performed using that degree of care and skill ordinarily exercised under similar circumstances by other hydrogeologists and engineers practicing in this field. No other warranty, expressed or implied, is made as to the professional advice in this report.

Susan S. Wickham

Date 3-27-91

Susan S. Wickham
Director of Geosciences
California Registered Geologist No. 3851

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1.0 INTRODUCTION

1.1 BACKGROUND

In August 1988, four underground fuel storage tanks were removed from three areas at the Broadway Volkswagen Facility located at 2740 Broadway, Oakland, Alameda County, California. It is reported that the underground tank removal was witnessed by the Alameda County Department of Environmental Health (County). Engineering Science (ES) of Berkeley California was the environmental consultant involved in the tank removal, and performed the sampling following removal. SEMCO of Modesto California was the tank removal contractor. The site is owned by Vorelco, Inc. of Troy, Michigan.

Environmental Science & Engineering, Inc. (ESE), formerly known as Hunter/Gregg, Inc. (Hunter/Gregg), was retained by SEMCO in November 1988 subsequent to the tank removal to install three ground-water monitoring wells at the site to fulfill a request from the County for ground-water information. At that point the County, SEMCO, and Hunter/Gregg did not have the results of the tank removal sampling. The purpose of the three monitoring wells was to characterize the ground-water downgradient of the former underground tanks and identify the ground-water flow direction at the site. A workplan with the proposed monitoring well locations was submitted to the County by Hunter/Gregg on November 28, 1988. The plan clearly noted that the wells could not be placed directly downgradient of the former underground tank locations because of site constraints (building and utility line locations). The County responded with an approval of the workplan on December 30, 1988. Three monitoring wells were installed by Hunter/Gregg at the site in January 1989, per the approved workplan.

A tank removal report was issued by ES to Vorelco in January 1990 (ES, 1990). It should be noted that the County did not obtain a copy of the ES 1990 tank removal report until October 1990 and ESE (formerly Hunter/Gregg) did not obtain a copy until March 1991. A summary of tank removal sampling based on the ES 1990 report and ground-water monitoring data based on the Hunter/Gregg 1990a report for the three tank areas follows.

1.2 TANK A AREA

Tank A was a 1,000 gallon waste oil tank. Tank A area samples collected during tank removal were nondetectable for Total Petroleum Hydrocarbons (TPH) (Method 8015), Oil and Grease (O&G) (Method 503E) and Benzene, Toluene, Ethylbenzene, and Xylene (BTEX) and Volatile Organics (Method 8240). The tank was reported to be in good condition at the time of removal.

1.3 TANK B AREA

Tank B was reported to be a 550 gallon waste oil tank. Two soil samples were collected from the Tank B area during tank removal in 1989 (ES, 1989). Holes were noted in Tank B at the time of removal. Analytical results from these soil samples showed TPH and O&G concentrations ranging from 56 to 2,400 milligrams per kilogram (mg/Kg). BTEX and Volatile Organics were nondetectable. Monitoring Well MW-2 was installed in 1989 approximately 15 feet southeast of the former tank. Soil and ground-water samples collected during installation of MW-2 reported nondetectable O&G concentrations in the soil and nondetectable TPH and BTEX in the ground water.

1.4 TANK C AND D AREA

Tanks C and D were adjacent to each other on the north side of the building. Tank C was reported to be a 3,000 gallon gasoline tank and Tank D was reported to be a 550 gallon

waste oil tank. Holes were noted in both tanks at the time of removal. Soil samples collected during tank removal showed nondetectable concentrations of TPH and Volatile Organics and BTEX ranging from nondetectable to 1.3 mg/Kg from Tank C. Soil samples collected from Tank D contained TPH ranging from nondetectable to 2,900 mg/Kg, BTEX from nondetectable to 78 mg/Kg, and Volatile Organics as nondetectable. Ground-water samples collected during tank removal showed TPH from 7.2 to 450 mg/Kg, BTEX from 1.1 to 54 milligrams per liter (mg/L), and Volatile Organics nondetectable.

A ground-water monitoring well, MW-1, was installed 15 feet east of the C/D tank area in 1989 (H/G, 1989). Analytical results of soil and ground-water showed nondetectable TPH and O&G in the soil and nondetectable TPH with BTEX 0.008 to 0.05 mg/L in the ground water.

1.5 SITE GROUND-WATER CONDITIONS

A third monitoring well, MW-3, was installed approximately 45 feet west of tank area C/D in order to determine ground-water flow direction and gradient. This well was located in an estimated upgradient position. Soil and ground-water samples collected during installation of MW-3 contained 35 mg/Kg O&G in the soil and 32 mg/L TPH as gasoline with BTEX concentrations ranging from 6.2 to 9.6 mg/L in the ground water.

The site ground-water flow direction, as calculated from ground-water level measurements in the three ground-water monitoring wells in January 1989, varied from the assumed regional ground-water gradient by 90 degrees (Hunter/Gregg, 1989a). The regional ground-water gradient was assumed based on topography and surface drainage. The Hunter/Gregg 1989 report concluded that site water levels may be skewed by perched water zones in the Bay Mud clays.

On March 9, 1989, Mr. Tom Peacock of the County stated in a verbal conversation with Hunter/Gregg staff that additional verification of the ground-water levels in the three monitoring wells was needed. He also stated that once ground-water level confirmation

was received, site closure would be granted by the County. Ground-water levels were verified by Hunter/Gregg and documented to the County in a letter dated March 14, 1989.

On October 22, 1990, Vorelco received a letter from the County. This letter required an investigation into the amount of soil and disposition of soil removed from the former tank areas, further site investigation around tank areas reporting detectable concentrations of petroleum hydrocarbons, and quarterly ground-water monitoring based on detectable concentrations of BTEX in two of the three onsite monitoring wells.

In January 1991, ESE was retained by Vorelco to prepare a workplan addressing the County's request.

2.0 ADDITIONAL INFORMATION

ESE has obtained and evaluated existing data for the area surrounding the subject site. The purpose of the data search was to determine regional hydrogeology, ground-water flow direction, and documented hazardous material releases in the area. Data was obtained from the following sources:

- County of Alameda, Department of Environmental Health
- Regional Water Quality Control Board: UST Fuel Leak List; South Bay Site Management System List
- Department of Water Resources
- Department of Health Services: Abandoned Sites Program Information System List (ASPIS List (7/11/90)); Comprehensive Environmental Response Compensation and Liability Information (CERLIS (Superfund List (10/10/89)); Resource Conservation and Recovery Act Database (RCRA List, 1990); Governors Office of Planning and Research, Hazardous Waste and Substances Sites List (Cortese List)

2.1 SUMMARY OF ADDITIONAL RESEARCH

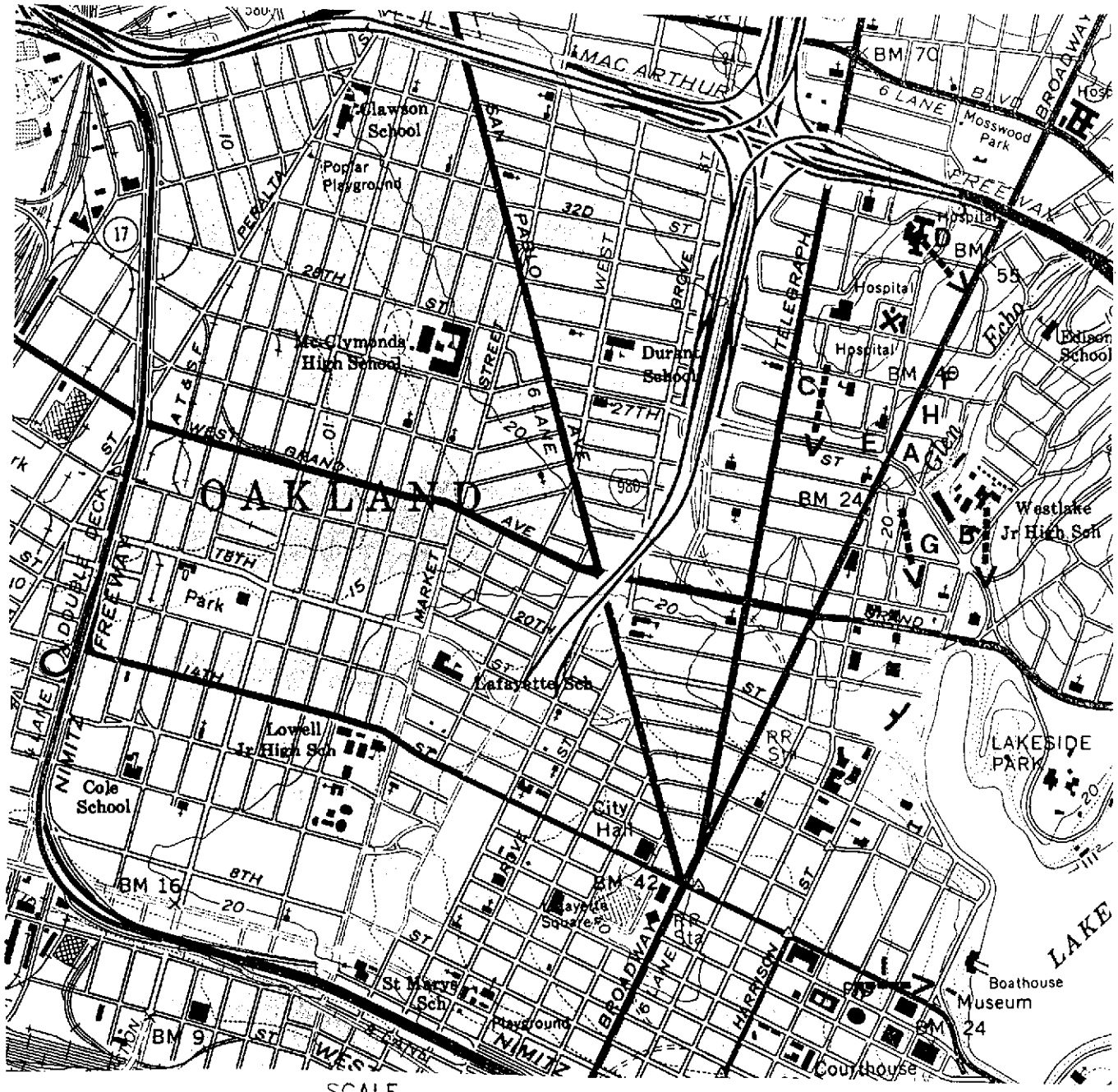
The research showed that there are several sites in the area which handle hazardous materials and have documented leaks. Of the sites in the area, eight sites had available documentation concerning ground-water flow direction. These sites are shown on Table 1 - Ground Water Information in Vicinity. The sites shown on Table 1 are keyed to Figure 1 - Vicinity Map.

In general, the ground-water flow direction follows the topography and flows toward Lake Merritt. Reported depth to ground-water ranges from 5 to 15 feet in the vicinity of the subject site. Based on the topography and ground-water flow directions, ESE concludes that regional ground-water flow direction is probably to the south-southeast at the subject

property.

There were no data indicating that a hazardous material release to the subsurface had been reported immediately to the north (upgradient) of the subject site. The nearest upgradient site is Connel Auto Center (3093 Broadway). No data were on file regarding this site.

ESE has not located any documentation of soil removal from the former tank areas. Soil pile, however, are pictured in the ESE 1989 report.



LEGEND

A / Site Designation on table 1 with ground-water flow direction

N

SOURCE:

USGS Oakland East and Oakland West Quadrangles

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FIGURE 1 VICINITY MAP	

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LWR		

DATE	FILE NAME	PROJ. NO.
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Table 1

Ground-Water Information In Vicinity
Of Broadway Volkswagen, 2740 Broadway, Oakland, California

Site	Description Address	Distance to Broadway VW	Reported Contamination and Date	Ground-Water Depth	Ground-Water Flow Direction
A	Vorelco 2740 Broadway	-	Waste oil, - 1988, 1989	9-11'	south-southeast
B	Oakland Acura 255 27th	1050' south	Gasoline? ground water	5'	south
C	Shell 2800 Telegraph	1200' west	Gasoline? ground water	10-11.5'	south
D	Broadway Medical 3300 Webster	2110' north	ground water (low conc.) 1990	10-15'	southwest
E	Tracy Buick 2735 Broadway	450' west	waste oil - soil 1989	NA	NA
F	Connel Auto 3093 Broadway	750' north	gasoline, soil 1989	NA	NA
G	Oakland Tribune 2302 Valdez	1050' south	gasoline - soil, ground water 1989	14-16'	south
H	European Motors 2915 Broadway	450' north	waste oil, diesel ground water	NA	NA
I	Alameda County Alcopark	4828' south	gasoline ground water	20.5'	east

NA = Information not available

3.0 WORKPLAN

This site investigation workplan is based on data obtained from the surrounding area and an ES tank removal report dated January, 1989 for the subject facility. To date, no additional data is available concerning the disposal of soil from the tank excavation or overexcavation activities. Therefore, one of the purposes of this site investigation is to determine if overexcavation was performed and the extent of contaminated soil in tank areas B and C/D. Tank area A had nondetectable concentrations of petroleum hydrocarbons in the soil at the time of tank removal and does not require further subsurface investigation. A second purpose of this site investigation is to further identify ground-water contamination in the vicinity of the tanks and determine ground-water flow direction at the site.

3.1 TASKS

The following tasks will be performed in accordance with Alameda County and Regional Water Quality Control Board guidelines. Procedures are detailed in Section 3.2 of this report.

3.1.1 Subsurface Investigation

Prior to any subsurface field work, ESE will locate and permit boring locations. Upon approval, a schedule will be prepared, and site personnel and Underground Alert will be notified. Appropriate County personnel will be notified to schedule inspections of well seals, as required. Proposed boring and well locations are shown on Figure 2 - Site Plan.

28th STREET

BROADWAY

MW 3

TANKS C&D
WASTE OIL (550 GAL.)
AND UNLEADED GASOLINE
(3,000 GAL.) TANKS REMOVED

SERVICE
DRIVE

MW 1

TANK B
WASTE OIL (550 GAL.)
TANK REMOVED

TPH g
O&G
BTEX
ICAP

5520 sonication
8015 extractable

TREE

EXISTING
BUILDING

MW 2

UTILITIES

S
S
S

SIDEWALK

ASPHALT
PARKING

PROPERTY LINE

TANK A
1,000 GAL. WASTE
OIL TANK REMOVED.
SITE CLEAN

ELEVATED AREA

27th STREET

LEGEND

MW 1	MONITORING WELL INSTALLED JANUARY, 1989
⊕	PROPOSED SOIL BORING
⊕	PROPOSED MONITORING WELL

SCALE
0 30 FEET

ESE A CALCORP COMPANY
Environmental Science & Engineering, Inc.

BROADWAY VOLKSWAGEN
OAKLAND, CALIFORNIA

FIGURE 2
SITE PLAN

DRAWN BY	APPROVED BY	REVISED
CVS		3/91 CVS
DATE	FILE NAME	PROJ NO
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Tank B Area

Based on the previous reports, the following additional work is proposed in the Tank B area:

- Drill one soil boring within the former tank excavation to determine if overexcavation was performed and if soil containing hydrocarbons remains beneath the former tank.

- Drill a second boring five feet to the north of the former tank area to determine lateral extent of contamination.

Soil samples will be collected at 5-foot intervals and selected soil samples will be analyzed for Total Petroleum Hydrocarbons as gasoline (TPH-g) Method 5030\8015 Modified, Benzene, Toluene, Ethyl Benzene and Xylenes (BTEX) Method 8020, Oil and Grease (O&G) Method 5520, and selected metals Cadmium(Cd), Chromium (Cr), Nickel(Ni), Lead (Pb) and Zinc (Zn).

Tank C/D Area

Based on previous reports, the following additional work is proposed in the tank C/D area:

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- Drill one soil boring within the former tank excavation to determine if any overexcavation was performed and if soil containing hydrocarbons remains beneath the former tank.

- Drill a second soil boring approximately 5 feet to the west of the former tank C/D area to identify any lateral movement of contamination in the unsaturated soil.

- Install one monitoring well inside the building service area within 15 feet of the former tanks to further define ground-water conditions downgradient.

ESE anticipates that a maximum of two and minimum of one soil sample from each well or boring will be submitted for analyses. Soil samples will be analyzed for TPH-g, O&G, BTEX. One soil sample containing the highest detectable concentrations of the analytes will also be analyzed for Cd, Cr, Ni, Pb, and Zn. Ground-water samples will be analyzed for TPH-g, O&G, and BTEX.

3.1.2 Existing Well Monitoring

Ground water in three existing ground-water monitoring wells (MW-1, MW-2 & MW-3) will be measured, purged and sampled. One duplicate ground-water sample and one trip blank prepared by the laboratory will be analyzed for BTEX for quality control and quality assurance. This monitoring will be performed concurrently with other site activities and will be considered the first quarter of site monitoring as requested by the County. Proposed ground-water analyses for quarterly monitoring includes TPH-g, BTEX, and O&G.

3.1.3 Well Surveying

The one proposed and three existing ground-water monitoring wells will be surveyed to 0.01 foot accuracy to determine well reference elevation and location. Ground-water levels in all wells will be measured to the reference point and used to calculate ground-water flow direction and gradient.

3.1.4 Report

A site assessment report will be prepared documenting all site activities and analytical results. The report will include interpretation of the data and recommendations for further work, if necessary.

3.2 PROCEDURES

3.2.1 Soil Borings

Borings will be drilled with hollow stem auger drilling rigs. A SIMCO 2400 rig with 5.5 inch outside diameter (OD) augers and a shortened mast will be used for drilling within the building. A Mobile B-61 will be used for drilling outside the building. The B-61 will use 10.5 inch OD augers for installation of the monitoring wells and 8.75 inch OD augers for soil borings without well installation.

All soil borings will be drilled to a depth of 15 feet or to the top of the ground-water table. Soil samples will be collected at five-foot intervals beginning at a depth of five feet. Soil samples will be collected from split spoon samplers lined with brass rings. Soil samples will be screened for hydrocarbons with an organic vapor meter (OVM). A maximum of two samples per boring with OVM concentrations exceeding 50 ppm above background will be submitted for analysis. If none of the soil samples have OVM concentrations above background, then the sample from the capillary zone, at a depth of approximate 10 feet, will be selected for analysis. Soil samples will be capped with teflon lined caps, sealed with duct tape and labeled. The samples will then be placed in a cooler for cold transport to the laboratory under chain of custody.

Samples will be logged in accordance with Unified Soil Classification System (USCS) protocol and boring logs will be prepared for each boring. All soil borings will be backfilled with grout with a 10 percent bentonite addition.

3.2.2 Ground-Water Monitoring Wells - Installation

The monitoring well will be constructed to meet Alameda County and RWQCB specifications. The proposed ground-water monitoring well will be drilled to an approximate depth of 25 to 30 feet, or 15 feet below the ground-water table. Well installation will conform to California well standards. The well will be 4-inch diameter PVC with the slotted portion extending from two feet above the ground-water table to approximately 15 feet into the ground-water. The slot size will be .02 inch and the casing will be threaded. Anticipated sand size is #2-12 and sand will be installed in the annulus of the wells from total well depth to 2 feet above the slotted portion. A two-foot bentonite seal will be installed above the sand in each well followed by slurry of grout to the surface. A water-tight locking cap will be fitted on each well and a traffic rated well box installed flush-mounted at the surface.

The well will be developed by surging with a large bailer or surge block and evacuating a minimum of three well volumes of water from the well. The development may take place prior to placement of the seal in order to help settle the sand pack. Development will be considered complete when evacuated water is consistently clear.

3.2.3 Ground-Water Monitoring Wells - Purge and Sample

After well development, ground-water will be allowed to return to static level for least 48 hours. Ground-water level measurements will be taken with an electronic interface probe, which will be able to measure free floating product if present. The ESE geologist will subsequently purge and sample the well. Well purging will consist of evacuation of at least three well volumes of water and monitoring of water temperature, pH, and conductivity. When these characteristics have stabilized, well purging will be considered complete.

Sampling will be performed with a disposable PVC bailer. Samples will be stored in appropriate precleaned containers, labeled and immediately placed in a cooler for cold transport to the laboratory under chain of custody.

4.0 REFERENCES

Engineering-Science, 1989, "Removal of Underground Storage Tanks at Broadway Volkswagen, Oakland, California", prepared for Vorelco, Inc, dated January 1989.

Hunter/Gregg. Inc., 1989, letter report "Broadway - Volkswagen, 2740 Broadway, Oakland, California, submitted to County of Alameda, dated February 10, 1989