WORK PLAN
AMERICAN NATIONAL CAN COMPANY
OAKLAND, CALIFORNIA, FACILITY

Prepared for:

American National Can Company
Chicago, Illinois

January 3, 1990

DUNN

Albany, NY
Harrisburg, PA Buffalo, NY
Laconia, NH Atlanta, GA
Chicago, IL Parsippany, NJ

DUNN GEOSCIENCE CORPORATION

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OAKLAND, CALIFORNIA, FACILITY

Prepared for:

AMERICAN NATIONAL CAN COMPANY
CHICAGO, ILLINOIS

Prepared by:

DUNN GEOSCIENCE CORPORATION
12 Metro Park Road
Albany, New York 12205

Date:

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1.0 INTRODUCTION

At the request of American National Can Company (ANCC), Dunn Geoscience Corporation (DUNN) has prepared this work plan to assess possible impact to soil and/or groundwater at the ANCC facility in Oakland, California. The site, shown on Figure 1, is located at 3801 East 8th Street, Oakland, California.

This work plan has been prepared in response to correspondence from the Alameda County Health Care Services Agency dated December 5, and December 7, 1990. The December 5 letter requested the submission of a work plan to investigate groundwater contamination identified in three monitoring wells installed during a previous investigation. The December 7 letter requested a work plan to delineate possible subsurface contamination from an underground gasoline storage tank that was removed on December 4, 1990. ANCC proposes to address these two individual concerns contemporaneously. Therefore, this work plan has been prepared to investigate all site subsurface concerns.

Site History

The subject property has been used exclusively for the manufacturing of steel beverage and food cans since American Can Company began operations in the early 1900s. The merger of National Can Company with American Can Company in 1986 led to the formation of the current site owner, ANCC. In 1988, the manufacturing process was discontinued and thus only warehousing operations are presently conducted at the site.

Typical can manufacturing operations would have utilized various solvent and petroleum-based compounds related to either the manufacturing process, the fueling of vehicles, or the heating of the facility. All known underground storage tanks have been closed through either removal or, as in the case of a small gasoline tank, abandonment in place. The most recent vessel to be so decommissioned was a 500 gallon tank which was removed in December, 1990, under the supervision of DUNN personnel. An investigation of this former tank location, as requested by the Alameda County Health Care Services Agency, is included in this work plan.

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91 OCT 18 PM 1:42

October 15, 1991

Mr. Robert Weston
Hazardous Materials Specialist
Alameda County Health Agency
80 Swan Way, Room 200
Oakland, California 94621

Dear Mr. Weston:

Subject: ANC Oakland Facility, Subsurface Investigation Report

Enclosed is Figure 1-1, Site Location Map, referenced in the subject report dated August, 1991, and inadvertently omitted from inclusion in that report, which was transmitted to your agency on August 6, 1991. Please insert the enclosed copy of Figure 1-1 at the beginning of the Figures section of your copy of the report.

Very truly yours,

DUNN GEOSCIENCE CORPORATION

Edward W. Alusow

Edward W. Alusow
Senior Environmental Scientist
Project Manager
Registered Geologist No. 4282

EWA/me

cc: J. Peters, ANC
J. Moran, ANC
E. So, CRWQCB

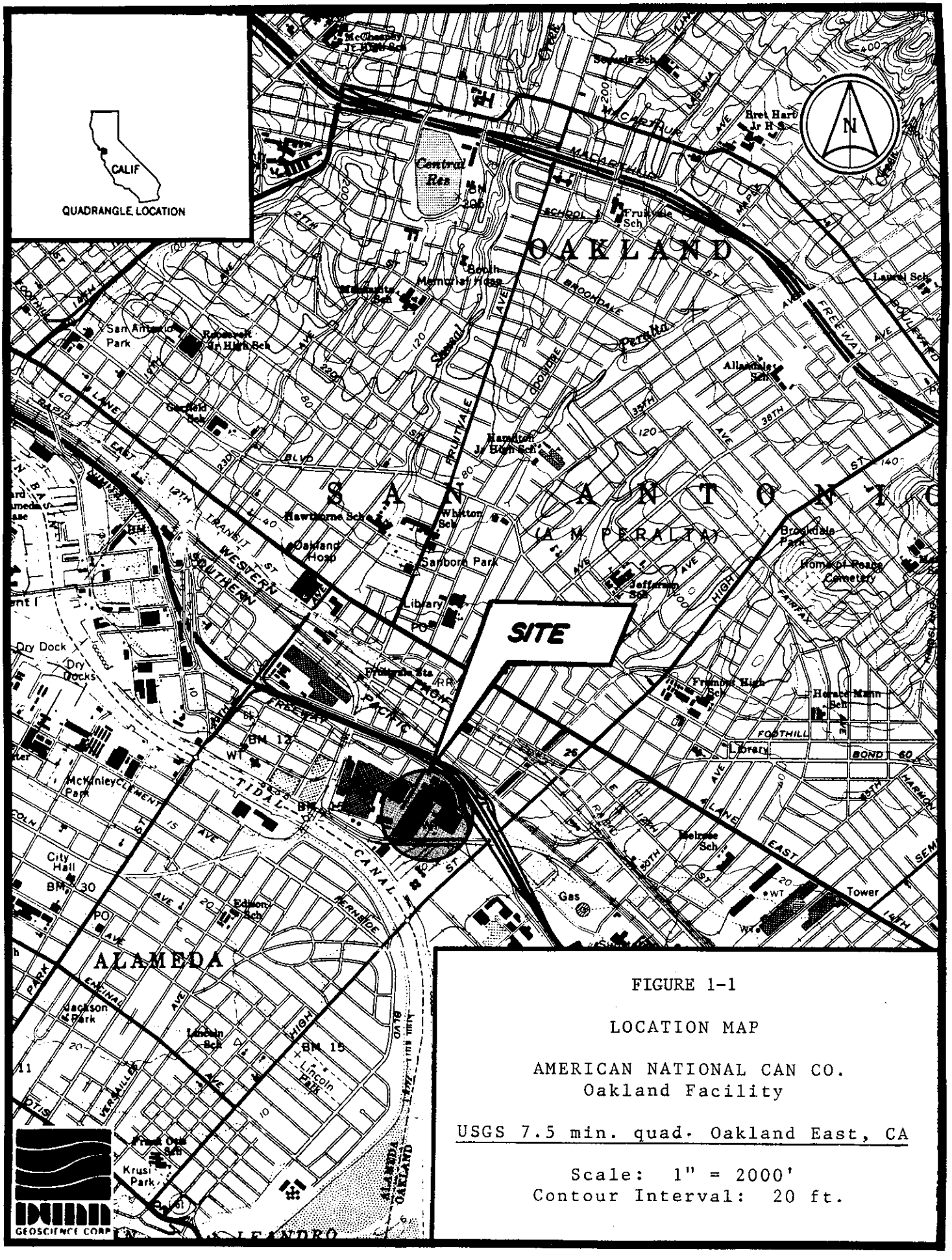


FIGURE 1-1

LOCATION MAP

AMERICAN NATIONAL CAN CO.
Oakland Facility

USGS 7.5 min. quad. Oakland East, CA

Scale: 1" = 2000'
Contour Interval: 20 ft.

GEOSCIENCE CORP

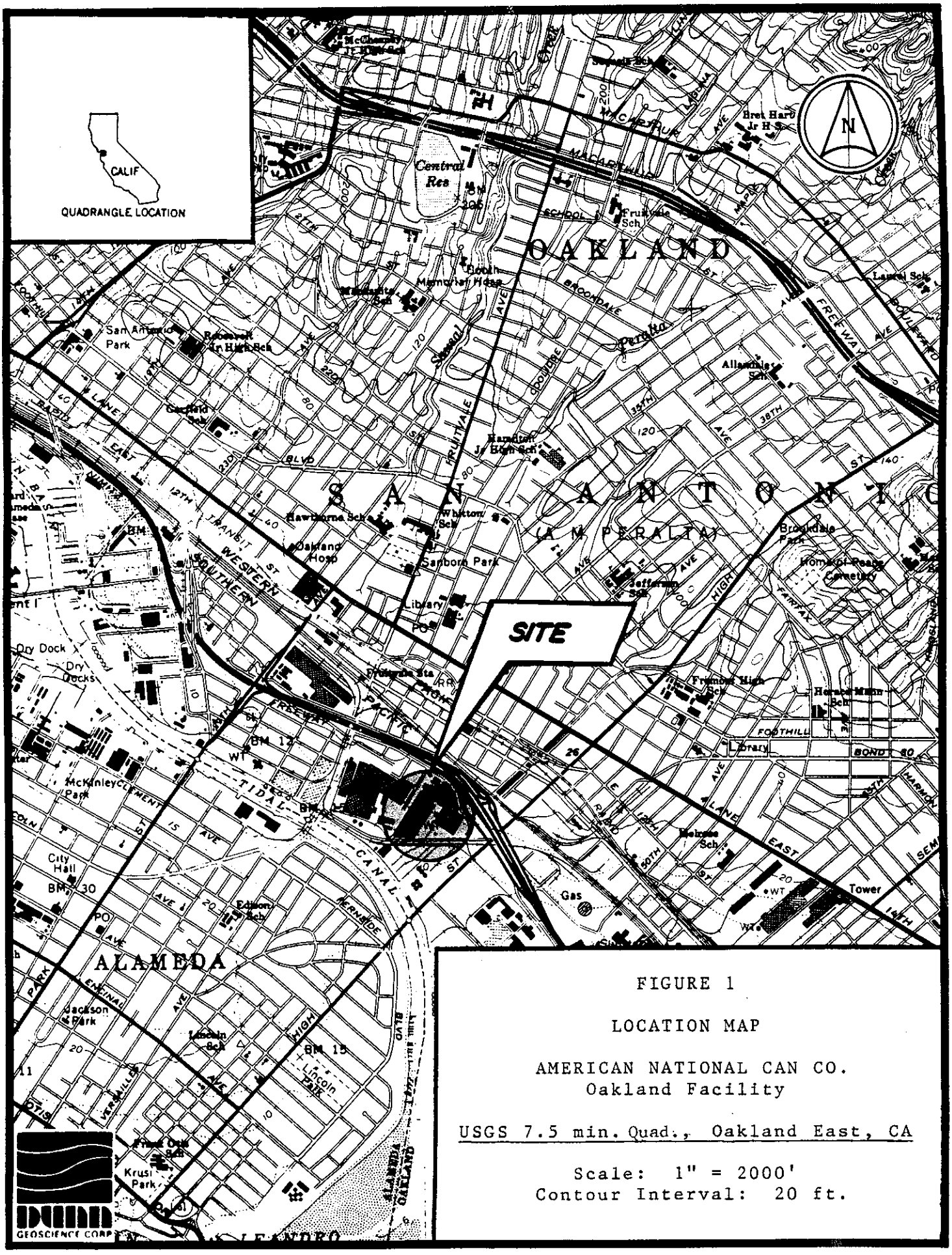


FIGURE 1

LOCATION MAP

AMERICAN NATIONAL CAN CO.
Oakland Facility

USGS 7.5 min. Quad., Oakland East, CA

Scale: 1" = 2000'
Contour Interval: 20 ft.

2.0 SITE DESCRIPTION

Physical Setting

The ANCC facility is located at 3801 East 8th Street, within an industrialized neighborhood in Oakland, California. The property, a triangular shaped parcel bordered by East 8th Street to the northeast, 37th Avenue to the northwest and Alameda Avenue to the south, covers approximately 16 acres of which 80% is covered by a series of interconnected buildings. The remaining land areas are paved and are principally used for vehicle parking and truck loading/unloading. Two railroad spurs entering the southern perimeter of the site were used for the unloading of sheet metal and the distribution of manufactured cans.

Notable off-site features include a tidal canal, one-quarter mile to the southeast, which empties into San Leandro Bay another mile further to the south, and the Ekotek-Lube site which directly adjoins the southwestern perimeter of the property. The Ekotek-Lube site is a former waste oil recycling operation which is currently on the State of California "Superfund" list.

Hydrogeologic Setting

The site occupies a coastal plain depositional environment associated with the San Leandro Bay. Previous subsurface work completed on the site includes a Phase I Environmental Site Investigation performed by Dames and Moore in 1989. Based on the soil sample descriptions included in this Phase I report, the surficial stratigraphy present at the site is composed of a fairly complex network of fluvial sands and gravels which have been deposited non-uniformly above a marine silt and clay.

Groundwater elevations measured from the monitoring wells installed during this Phase I investigation indicate that groundwater flows in a southerly direction across the site, eventually discharging to a tidal canal which intercepts the Bay. Groundwater levels were recorded from the six monitoring wells on December 19, 1990, by a DUNN geologist and these measurements (see Table 1) confirm the groundwater flow direction reported in the Phase I report. Although data is not yet available, it is anticipated that significant groundwater fluctuations occur at the site due to tidal influences.

Prior Subsurface Investigations

In August, 1989, ANCC requested that Dames & Moore initiate a Phase I investigation of the subject property. The final report was issued in February, 1990. This study included the installation of five groundwater monitoring wells and at least eleven shallow soil borings.

TABLE 1

SUMMARY OF GROUNDWATER ELEVATIONS
ANCC OAKLAND, CALIFORNIA FACILITY

DECEMBER 19, 1990

Well	Measuring Point Elevation[1]	Depth to Water	Water Table Elevation
GW-1	15.39	13.52[2]	1.87
GW-2	13.17	11.78	1.39
GW-3	11.63	10.26	1.37
GW-4	11.70	10.49	1.21
GW-5	17.78	10.03	7.75
GW-6	19.82	15.70[3]	4.12

NOTES:

1. Elevations are from Dames & Moore Phase I Study and are reported in feet above mean sea level.

2. Floating product encountered in this well at depth at 13.43', measured thickness of 0.43' ≈ 5"

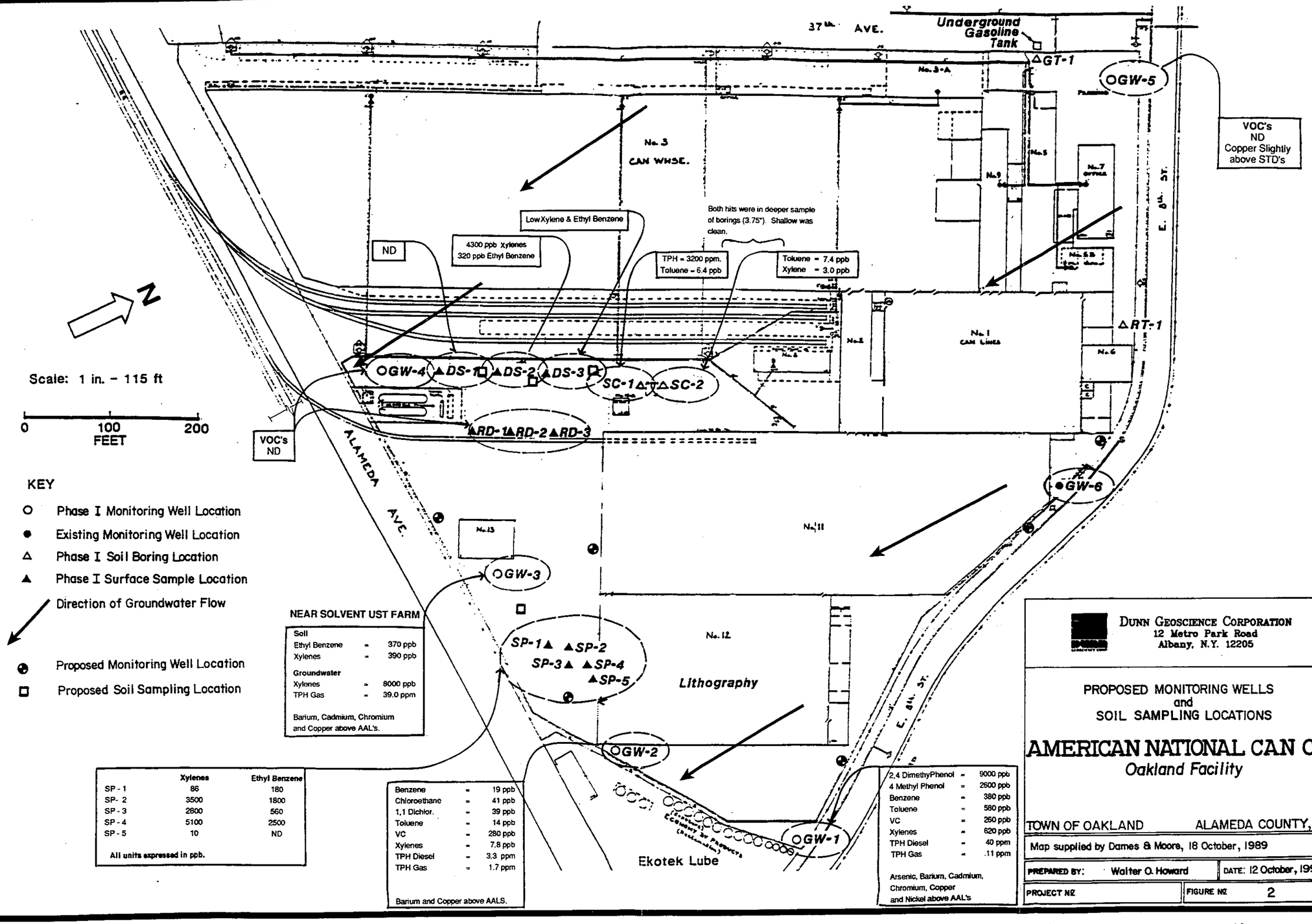
3. Floating product encountered in this well at depth of 15.40', measured thickness at 2.77'

Depth to water was corrected on GW-1 and GW-6 using assumed specific gravity of 0.89.

Three areas of concern, depicted on Figure 2, were identified as a result of the study. They are:

- An area on the northeast perimeter where petroleum product was observed within GW-6, a previously installed groundwater monitoring well;
- The southeastern perimeter of the site adjacent to the Ekotek Lube property; and,
- An area on the southern portion where elevated organics were reported in groundwater monitoring well GW-3

A fourth area of concern was identified when the remaining underground storage tank was recently removed under the supervision of DUNN personnel. Although gasoline-impacted soil within the excavation was removed to below applicable cleanup standards, the lateral extent of contamination, if any, has not been ascertained.


37th AVE.
Underground Gasoline Tank
GT-1
OGW-5
VOC's
ND
Copper Slightly
above STD's
No. 3
CAN WHSE.
Low Xylene & Ethyl Benzene
Both hits were in deeper sample of borings (3.75'). Shallow was clean.
ND
4300 ppb Xylenes
320 ppb Ethyl Benzene
TPH = 3200 ppm.
Toluene = 6.4 ppb
Toluene = 7.4 ppb
Xylene = 3.0 ppb
E. 8th ST.
RT-1
No. 1
CAN LINES
No. 6
OGW-4
DS-1
DS-2
DS-3
SC-1
SC-2
RD-1
RD-2
RD-3
VOC's
ND
ALAMEDA AVE.
No. 13
OGW-3
No. 11
GW-6
SP-1
SP-2
SP-3
SP-4
SP-5
No. 12
Lithography
OGW-2
OGW-1
Ekotek Lube
Scale: 1 in. = 115 ft
0
100
FEET
200
N
KEY
Phase I Monitoring Well Location
Existing Monitoring Well Location
Phase I Soil Boring Location
Phase I Surface Sample Location
Direction of Groundwater Flow
Proposed Monitoring Well Location
Proposed Soil Sampling Location
NEAR SOLVENT UST FARM
Soil
Ethyl Benzene = 370 ppb
Xylenes = 390 ppb
Groundwater
Xylenes = 8000 ppb
TPH Gas = 39.0 ppm
Barium, Cadmium, Chromium and Copper above AAL's.
Xylenes Ethyl Benzene
SP - 1 86 180
SP - 2 3500 1800
SP - 3 2800 560
SP - 4 5100 2500
SP - 5 10 ND
All units expressed in ppb.
Benzene = 19 ppb
Chloroethane = 41 ppb
1,1 Dichlor. = 39 ppb
Toluene = 14 ppb
VC = 280 ppb
Xylenes = 7.8 ppb
TPH Diesel = 3.3 ppm
TPH Gas = 1.7 ppm
Barium and Copper above AALS.
2,4 DimethyPhenol = 9000 ppb
4 Methyl Phenol = 2600 ppb
Benzene = 380 ppb
Toluene = 580 ppb
VC = 260 ppb
Xylenes = 620 ppb
TPH Diesel = 40 ppm
TPH Gas = .11 ppm
Arsenic, Barium, Cadmium, Chromium, Copper and Nickel above AAL's
DUNN GEOSCIENCE CORPORATION
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PROPOSED MONITORING WELLS
and
SOIL SAMPLING LOCATIONS
AMERICAN NATIONAL CAN CO.
Oakland Facility
TOWN OF OAKLAND
ALAMEDA COUNTY, C.A.
Map supplied by Dames & Moore, 18 October, 1989
PREPARED BY: Walter O. Howard
DATE: 12 October, 1990
PROJECT NO
FIGURE NO 2

3.0 PLAN FOR DETERMINING EXTENT OF SOIL CONTAMINATION

As discussed earlier, four areas of the site have been identified which will undergo a subsurface investigation. The following section details the proposed plan for determining the extent of soil contamination at each of these areas. Figure 3 shows the location of all subsurface work proposed in this section.

Area 1

Area 1 represents the immediate vicinity of the former underground gasoline storage tank which was removed on December 4, 1990. At the time the tank was removed, a series of soil samples was collected at the base of the excavation. The initial samples were collected at the base of the former tank (at 10 feet below grade) and at a depth of 12 feet. They exhibited concentrations of Total Petroleum Hydrocarbons (TPH) in excess of 100 ppm. Secondary samples were then collected and analyzed from a depth of approximately 14 feet below grade (just above the water table). Sample analyses showed TPH at less than 5 ppm.

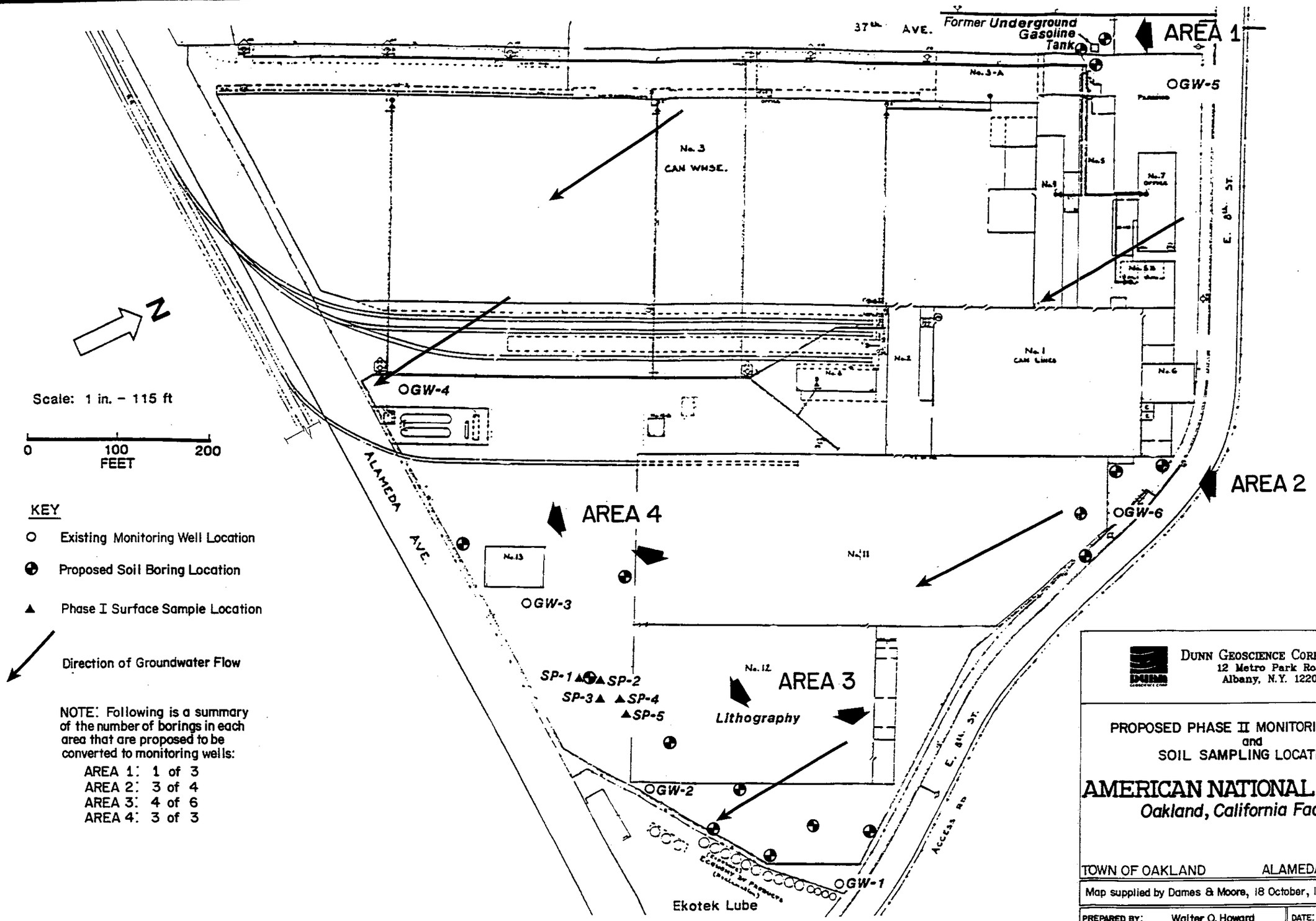
Based on the above analytical results, the vertical extent of contamination beneath the former tank has been determined.

To determine the possible lateral extent of soil contamination associated with this tank, DUNN proposes to advance three soil borings around the perimeter of the former tank excavation. One of the borings will be placed on the upgradient side of the tank and two will be placed on the downgradient side of the tank (based on the water table elevations in Table 1). The borings will be placed within ten feet of the original excavation. Undisturbed soil samples will be collected at a minimum of every five feet depth in the borings or upon changes in lithology. The upgradient soil boring and one of the downgradient borings will be advanced to the top of the water table. The second downgradient boring will be advanced to a depth of approximately 10 feet below the water table and will be used for a groundwater monitoring well.

Selected soil samples in this area will be analyzed for TPH and BTEX based on previous analytical records.

Area 2

Area 2 represents the immediate vicinity surrounding existing monitoring well GW-6. The Phase I study reported that this well contained four feet of a hydrocarbon product floating on the groundwater. DUNN proposes to advance four soil borings in this area to determine the extent of soil contamination. One boring will be placed directly upgradient of well GW-6, two borings are proposed immediately downgradient of well GW-6 and the fourth boring is proposed in a



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PROPOSED PHASE II MONITORING WELL
and
SOIL SAMPLING LOCATIONS

AMERICAN NATIONAL CAN CO.

Oakland, California Facility

TOWN OF OAKLAND — ALAMEDA COUNTY, C.A.

Map supplied by Dames & Moore, 18 October, 1989

PREPARED BY: Walter O. Howard	DATE: 3 January, 1991
PROJECT NO: 02345-01983	FIGURE NO: 3

direction perpendicular to groundwater flow. Borings will be advanced to a depth of approximately ten feet below the top of the water table to allow for the installation of monitoring wells; however, borings which encounter more permeable sands and/or gravels will be advanced to the top of the next unit of reduced permeability so that the possible presence of any dense compounds (SpG > 1.0) can be identified. Selected soil samples collected in this area will be analyzed for the TCL list and CAM metals pending receipt of analyses of free product from GW-6. Three of the four borings will be converted to monitoring wells. In the event that all of the borings exhibit contamination as drilling progresses, wells may be installed at all locations.

Area 3

Area 3 represents that portion of the site in the vicinity of existing monitoring wells GW-1 and GW-2. The Phase I groundwater analyses from these wells revealed several organic and inorganic contaminants. Although wells GW-1 and GW-2 are located on the apparent downgradient side of the site, tidal influences of the adjacent San Leandro Bay and the Tidal Canal area are expected to have a significant impact on site groundwater gradients and hydraulic conditions. Therefore, it is entirely possible that the observed impact at GW-1 and GW-2 is the result of migration from an off-site source to the south. DUNN proposes that six soil borings be advanced in this area to determine the extent of contamination and the source of this contamination. These borings will be advanced to a depth of approximately ten feet below the top of the water table; however, borings which encounter more permeable sands and/or gravels will be advanced to the top of the next unit of reduced permeability so that the possible presence of any dense compounds (SpG > 1.0) can be identified. Selected soil samples collected in this area will be analyzed for full TCL parameters and CAM metals. At this time, a minimum of three of the six soil borings are proposed to be converted to monitoring wells (Section 4.0). However, the actual borings to be converted will be determined during the site investigation, based on visual observations of soil samples and field screening.

Area 4

Area 4 represents the portion of the site in the vicinity of existing monitoring well GW-3 and soil sampling locations SP-1 through SP-5. The Phase I study identified elevated concentrations of xylenes and TPH in the groundwater of well GW-3 and elevated concentrations of xylene and ethyl benzene in soil samples collected at SP-1 through SP-5.

DUNN proposes that three soil borings be advanced to evaluate the extent of subsurface contamination in this vicinity of the site. All three of the borings will be advanced to a depth of ten feet below the water table and converted to groundwater monitoring wells. One of these borings will be installed in a position upgradient to existing well GW-3. The second boring will be installed adjacent to sampling location SP-1 of the Phase I study. The third boring will be

placed east of well GW-3. The two downgradient borings will be in a position to evaluate the lateral extent of groundwater impact noted in well GW-3. Based on the analytical results of the Phase I Study, selected soil samples collected in this area will be analyzed for VOC, CAM metals, and TPH.

Methodology

A truck mounted drilling rig equipped with hollow stem augers will be used to conduct the soil boring program outlined above. A DUNN hydrogeologist will be on-site at all times during the drilling program to examine and describe soil samples as they are retrieved from the borehole and to select samples for laboratory analyses.

Soil samples will be collected following RWQCB protocols. Each sample will be collected by driving a 2 inch split barrel sampler, equipped with an inserted 1 inch diameter by 6 inch long brass tube, into the undisturbed soil below the base of the boring. The sampler will be driven with a 140 pound hammer and the blows required to advance the sampler every 6 inches will be recorded. As the sampler is retrieved from the borehole and opened, the samples will be quickly screened with a photoionization detector for the presence of volatile organic compounds. The ends of the brass tube will be promptly sealed with aluminum foil and capped with polyethylene lids. Selected samples will then be labeled and immediately stored on ice prior to being delivered to the laboratory. Samples will be delivered with a completed chain-of-custody form to a California Certified Laboratory for analysis.

All samples will be visually described according to color, grain size, moisture content and visible evidence of contamination. All samples will be classified by the Unified Soil Classification System and the Burmister Soil Classification System.

In the event that a unit of apparent low permeability composed of silt and or clay is encountered, an undisturbed sample of this unit will be obtained with a shelby tube. After the sample is collected, the tube will be sealed with plastic caps and wax and sent to a geotechnical laboratory for analysis. A permeability test will be performed to estimate the vertical transmissivity of the units sampled.

Decontamination Procedures

All drilling and soil sampling equipment will be steam-cleaned prior to the start of the soil boring program. The equipment will also be steam-cleaned between soil borings to prevent cross contamination. The split barrel sampler will also be washed with dilute liquinox wash water, rinsed with potable water, rinsed in distilled water and then allowed to air dry between each sample.

4.0 DETERMINATION OF GROUNDWATER QUALITY

Several of the soil borings which were described in Section 3.0 will be converted to groundwater monitoring wells to determine the groundwater quality at the site (Figure 4).

Three soil borings are proposed in Area 1. However, because the groundwater flow direction at the site has been determined in the Phase I study, only one of the two downgradient borings will be converted to a monitoring well.

Four soil borings are proposed in Area 2 (vicinity of GW-6). One upgradient and two of the downgradient borings will be converted to groundwater monitoring wells.

Six soil borings are proposed for Area 3 (vicinity of GW-1 and GW-2). DUNN proposes to convert four of these six borings to groundwater monitoring wells based upon visual observation of retrieved soil samples and the results of field screening.

Area 4 represents the portion of the site in the vicinity of existing well GW-3 and soil sampling locations SP-1 through SP-5 which were completed as part of the Dames & Moore Phase I study. DUNN proposes that three soil borings be drilled in this area and subsequently converted into groundwater monitoring wells. The wells will be used to determine the lateral extent of groundwater contamination reported in well GW-3.

All borings which are not converted to monitoring wells will be properly abandoned. This will include backfilling the boring through a tremie pipe with a cement bentonite grout.

All monitoring wells will be designed and constructed to be consistent with RWQCB guidelines and to permit entrance of any free product into the wells. The well screen will be situated with the top portion above the seasonal high water table so as to intercept any floating product. Based on the results of the Phase I study, DUNN proposes the use of a screen slot size of 0.020 inch and will use a filter pack of appropriate grain size. All wells will be surveyed to the nearest 0.01 foot of an established benchmark.

Monitoring wells will be developed following installation to restore natural hydraulic characteristics. Development will continue until a minimum of five well volumes have been removed. Development water will be stored on-site in 55 gallon drums until water samples have been analyzed, and then disposed of properly.

Any wells containing free product will be monitored biweekly to measure the product thickness. Observed product will then be evacuated and temporarily stored in drums.

Existing and proposed wells that do not contain product will be sampled on a quarterly basis.

All wells, other than those installed in Area 1, will be initially analyzed for the full Target Compound List (TCL) including VOCs (EPA Method 8240), semivolatile organic compounds (EPA Method 8270), CAM metals (EPA Method 6010), PCBs (EPA Method 8080) and TPH (DHS extraction method). Following this first round of sampling, a modified list of target compounds will be developed and submitted for regulatory agency approval. Area 1 wells will be analyzed for TPH, BTEX and lead. All groundwater samples will be analyzed by a California Certified Laboratory.

5.0 INTERPRETATION OF HYDROGEOLOGIC DATA

As part of the site investigation, DUNN will monitor static groundwater elevations following development. Static water level measurements will be recorded for use in preparing a groundwater contour map. Following the initial round, water levels will be measured on a quarterly basis.

Groundwater levels are expected to fluctuate in response to tidal action. DUNN proposes to conduct a continual water level monitoring program for several of the wells over an approximate 1-week time span, the program will utilize a multichannel data logger equipped with pressure sensing transducers placed in the selected wells. This program will enable the quantification of water table fluctuations at the site due to diurnal tidal influences.

Water level contour maps showing groundwater gradient direction and free and dissolved product plume definition maps for each contaminant constituent will be prepared and submitted with other sampling results to the Alameda County Health Care Services Agency and to San Francisco Bay Regional Water Quality Control Board.

The hydrogeologic characteristics of the aquifer will be described. An estimate of vertical transmissivity, based on a laboratory permeability test or a pump test, will be made of any unit identified as a clay. Identification of the clay will be verified by particle analysis (ASTM D-442).

The cross sections and groundwater gradients (horizontal and vertical) will be interpreted to explain pollution migration patterns.

6.0 DETERMINATION OF THE TYPES OF BENEFICIAL USES OF THE GROUNDWATER

The types of beneficial uses of the groundwater in the impacted aquifer underlying the facility will be determined in order to establish appropriate cleanup levels.

7.0 SITE SAFETY PLAN

See Appendix A.

8.0 REPORTING

A technical report which presents and interprets the information generated during the initial subsurface site investigation will be submitted within 30 days of completion of the investigation. The report will include, at a minimum, site history information, boring and well construction logs, records of field observations and data, chain-of-custody forms, water level data, water level contour map showing groundwater gradient direction, contaminant plume maps, tabulations of soil and groundwater contaminant concentrations, status of soil contamination characterization, description of any remedial work performed, laboratory-originated analytical results for all soil and groundwater samples analyzed, copies of TSDF-to-Generator manifests for any hazardous wastes hauled off-site, and any recommendations for additional investigation or remedial work.

All reports and proposals will be signed by a California-Registered Geologist. A statement of qualifications will be included in all reports. Borehole and monitoring well installation and logging and impact assessments will be signed by such an individual.

The technical report will be submitted with a cover letter from American National Can Company in a timely manner to be received by the Alameda County Health Are Services Agency by the due data with a copy to the San Francisco Bay Regional Water Quality Control Board. The letter will be signed by a principal executive officer or by an authorized representative of the company.