US Army Corps of Engineers
Jacksonville District

Superfund Five-Year Review Report

Gold Coast Oil Company, Inc.
Miami, Dade County Florida

Prepared for
U S Environmental Protection Agency, Region IV
August 2001

EPA Five-Year Review Signature Cover
Preliminary Information

Site name **Gold Coast Oil Co , Inc.**			EPA ID **FLD071307680**
Region **04**	State **Florida**	City/County **Miami/Dade**	
LTRA* (highlight) Y **N**		Construction completion date: **July 1990**	
Fund/PRP Lead **PRP**			NPL status **Deleted from the NPL**
Lead agency **EPA Region 4**			
Who conducted the review (EPA Region, state, Federal agencies or contractor) **US Army Corps of Engineers, Jacksonville District**			
Dates review conducted From **6/4/01** To **8/27/01**			Date(s) of site visit **6/29/01**
Whether first or successive review **Second Review**			
Circle: **Statutory** Policy		Due date **November 1999*.**	
Trigger for this review (name and date) **Five Years Since Previous Review**			
Recycling, reuse, redevelopment site (highlight) Y **N**			

*Note The official due date of this Five Year Review was November 1999, five years after the signing of the first five-year review The due date for this report assigned by EPA Region 4 to the Jacksonville District is August 27, 2001

Deficiencies:

No deficiencies were identified

Recommendations:

Conclude five-year review process

Protectiveness Statement(s):

The selected ROD remedy currently remains protective of human health and the environment

Other Comments:

None

Signature of EPA Regional Administrator or Division Director, and Date

Mr Richard D Green, Director
Waste Management Division

Date 9/20/01

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Executive Summary

The Gold Coast Oil Superfund Site (GCO) is located within an industrial area on two acres of vacant land at 2835 S W 71st Avenue, Miami, Dade County Florida The GCO Site property is owned by CSX Transportation Corporation, which leased the property to Gold Coast Oil in the early 1970's Gold Coast Oil, along with Solvent Extraction Inc , was in the business of distilling mineral spirits and lacquer thinner and reclaiming solvent All wastes generated by the solvent recovery operations were disposed of or stored on site, no waste was shipped offsite during the 11 years of operation

EPA issued a Record of Decision on September 11, 1987for the GCO Site The remedy provided for the excavation and offsite disposal of hardened waste sludges, and excavation, stabilization, and onsite disposal of surface soils contaminated with volatile organic compounds (VOCs) and metals However, it should be noted that no surface soils were stabilized and disposed of onsite The remedy also provided for the implementation of groundwater recovery, treatment, and disposal system for the remediation of VOCs in the groundwater This component of the remedy included collection of groundwater through recovery wells, onsite treatment through air stripping, and onsite disposal of treated effluent to the Biscayne Aquifer through an injection well

The first GCO Superfund Site Five-Year Review was completed by EPA Region 4 and peer reviewed by EPA Headquarters Staff in November 1994

A Site Closeout Report (SCOR) for Gold Coast Oil NPL Site, dated January 18, 1995 was prepared by EPA and documented the completion of all remedial work as described in the Statement of Work and Record of Decision The SCOR concluded that based on the non-detection of any ROD parameters in any wells, the groundwater remediation of the GCO Site was complete

In response FDEP concurrence with the completion of the cleanup of the GCO Site, EPA Region 4 deleted the Site from the NPL on October 9, 1996 An additional year of groundwater monitoring was conducted, verifying no increase in contaminant levels

EPA Region 4 notified the Remedial Action Coordinator on March 4, 1997, that approval has been given to begin abandonment of all wells with exception of MW-1, MW-8, MW-9, and MW-17

Following a September 1997 sampling event of MW-1, MW-8, MW-9, and MW-17 approval was given by EPA to abandon the remaining four wells on September 27, 1997 EPA Region 4 issued a memorandum of Certification of Completion on October 17, 1997, which stated "In view of the completion of the work and consistent with the terms of the Consent Decree, EPA Region 4 is proceeding with termination of the decree " No additional activity has occurred at the GCO Site

List of Acronyms:

ARARs	Applicable, or Relevant and Appropriate Requirements
BA	Biscayne Aquifer
bls	below land surface
BDL	Below Detection Limits
GCO	Gold Coast Oil Co , Inc
CERCLA	Comprehensive Environmental Response and Liability Act
CD	Consent Decree
COC	Contaminant of Concern
DERM	Dade County Environmental Management
DNAPLs	Dense Non Aqueous Phase Liquids
EPA	Environmental Protection Agency
ESD	Explanation of Significant Differences
FDEP	Florida Department of Environmental Protection
FDER	Florida Department of Environmental Regulation
FS	Feasibility Study
GRTD	Groundwater recovery, treatment and discharge
gpd	gallons per day
LTRA	Long Term Response Actions
MCR	Miami Coastal Ridge
MW	Monitoring Well
NGVD	National Geodetic Vertical Datum
NPL	National Priority List
OSWER	Office of Solid Waste Management and Emergency Response
PRPs	Potential Responsible Parties
PCE	Tetrachloroethelene
POTW	Publicly Owned Treatment Works
QA/QC	Quality Assurance/Quality Control
RA	Remedial Action
RCRA	Resource Conservation and Recover Act
RD	Remedial Design
RD/RA	Remedial Design/Remedial Action
RI	Remedial Investigation
RI/FS	Remedial Investigation/ Feasibility Study
ROD	Record of Decision
SFWMD	South Florida Water Management District
SOW	Statement of Work
TCE	Trichloroethelene
TIER	Technical Impracticability Evaluation Report
TTO	Total Toxic Organics
ug/L	microgram per liter
USACE	United States Army Corps of Engineers
VOCs	Volatile Organic Carbons
WWTP	Wastewater Treatment Plant
WasteLan	The regional database related to CERCLIS

Gold Coast Oil Co., Inc.
Miami, Dade County, Florida
Superfund Five-Year Review Report

I. Introduction and Purpose

General

The U S Army Corps of Engineers, Jacksonville District (USACE), on behalf of the U S Environmental Protection Agency (EPA), Region 4, has conducted a Five-Year Review of the remedial actions implemented at the Gold Coast Oil Site (hereafter the GCO Site) Miami, Dade County, Florida This report documents the methods, findings, and conclusions of the review The purpose of this Five-Year Review is to evaluate whether the remedial actions at the site remain protective of human health and the environment

Authority

Section 121 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), and Section 300 430 (f) (4) (ii) of the National Oil and Hazardous Substance Contingency Plan (NCP), require that periodic (no less than every five years) reviews be conducted for sites where hazardous substances, pollutants or contaminants remain at the site above levels that allow for unlimited use and unrestricted exposure following the completion of remedial actions Since the selected remedy in the Record of Decision included stabilization and onsite disposal of contaminated surface soils, EPA conducted a statutory review of the remedy in 1994 At that time the remedy was ongoing and a recommendation was made that another review be conducted in 1999

Since the initial review, a decision was made not to dispose of any stabilized materials onsite Therefore, five-year reviews are no longer required by statute This second five-year review is being conducted to respond to the recommendation for continued reviews in the first five-year review and to document that all remedial activities are complete and the site is available for unlimited use and unrestricted exposure The review was conducted from June to August 2001

Local Repository

A copy of this Five-Year Review Report will be placed in the EPA's Record Center in Atlanta, GA, as well as the local information repository for the GCO Site located at Florida International Library, Room AT-235, Miami FL 33199

II. Site Background

The background information presented in this section has been obtained from the Record of Decision (ROD) as well as numerous other reports.

Location and Description

The GCO Site is a 2.0-acre parcel of flat, sandy land located at 2845 SW 71st Avenue, Miami, Florida. The Site is located in a mixed commercial, industrial, and residential area in Miami, Florida. It is bordered on the north and west by railroad tracks, on the south by a group of small businesses and on the east by SW 71st Avenue.

The Site has no distinguishable surface drainage and is enclosed by a fence with a locking gate. The Coral Gable Canal is approximately 850 feet south of the Site. The canal drains to the Biscayne Bay and on to the Atlantic Ocean. The Site is within the 100-year flood plain, but flooding from canal overflow is not likely, since the canal flow is regulated.

A Site location map is presented as Figure 1.

Site Layout /Former Operation.

The GCO Site is the former location of an oil and solvent reclamation facility and bulk storage area from the early 1970s to 1982 when the company lost its lease from Seaboard Coast Line Railroad due to regulatory violations. Blowdown from the operations sprayed directly onto the ground. Stillbotton wastes from the distilling operation were stored in a tank truck and 55 gallons drums. There were 2500 corroded and leaking drums containing sludge from the distilling operation, contaminated soils, and paint sludges along with large storage tanks of hazardous waste (see Figure 2). All wastes generated by the solvent recovery operations were disposed or stored onsite; no waste was shipped offsite during the 11 years of operation.

A Record of Decision issued by EPA on September 11, 1987 selected a final remedy for the Site. As a result of remedial actions the site layout was altered as follows:

- The processing area was demolished and is no longer present;
- Hardened waste sludges and contaminated soils were excavated and disposed offsite;
- Waste stored in drums and tank truck were transported to a hazardous waste processing and disposal facility;

- The parcel was filled, graded, and vegetated

Physical Characteristics

SITE CHARACTERISTICS	
Topography	The topography is relatively flat in the vicinity of the Site with a land surface elevation of about 8 feet above mean sea level. The Coral Gable Canal is approximately 850 feet south of the Site (Figure 3).
Site Geology (see Figures 3 & 3A)	The Anastasia underlies the Site from a depth of about 10 feet to about 45 feet. Down to four feet is composed of a thin, black to brown, organic rich soil layer of two to four inches in thickness, underlain by a white to light tan, fine-grained sand.
Site Hydrology	The GCO site is underlain by the Biscayne Aquifer to a depth of about 120 feet. Locally, the Biscayne aquifer is composed of permeable parts of the Miami Oolite and the Anastasia Formation of Pleistocene Age (Figure 2). Collectively these formations are capable of transmitting large amounts of groundwater at high rates under low hydraulic gradients.
Groundwater Elevation and Flow (see Figures 4,4A,4B,4C)	Groundwater in the vicinity of the site is located approximately 7 to 8 feet below land surface (bls) based on quarterly water table measurements. The seasonal fluctuation in the water table, based on water table elevation measurements conducted quarterly at the Site, is approximately 1.5 to 2.0 feet. The hydraulic gradients across the Site, on February 28, 1990 and March 3, 1990 were $5x10^{-5}$ and $7x10^{-5}$ respectively, almost flat suggesting that groundwater movement was insignificant The direction of groundwater flow is generally southwestward from the Site toward the Coral Gable Canal. Groundwater movement at the Site is negligible since there is a lack of a significant driving force to overcome even the slightest resistance to flow.
Land and Resources Use	There are no known private or municipal wells in the path of the contaminant plume, consequently groundwater consumption represents an incomplete exposure route.

III. Site Chronology

Pre-Site Discovery

The GCO property is owned by CSX Transportation Corporation, which leased the property to GCO in the early 1970's. GCO, along with Solvent Extraction, Inc., were in the business of distilling mineral spirits and lacquer thinner and reclaiming solvent. Poor housekeeping practices and improper disposal of wastes resulted in extensive contamination of surface and subsurface soils at levels that posed a threat to human health, welfare and/or the environment. The underlying Biscayne Aquifer source of drinking water for Dade County was also extensively contaminated at levels in excess of Federal and State Drinking Water Standards. Concern for the potential threat to the public and impact to local drinking water supply prompted the inclusion of the Site on the National Priority List (NPL) in September 1983

Five-Year Review – November 1994

As part of the first five-year review, dated November 1994, EPA reviewed the applicable or relevant and appropriate requirements (ARARs) for this Site The clean-up level for lead appeared to be well below levels recommended by EPA Region 4, and was considered protective of human health and the environment. The groundwater cleanup levels appeared to meet all ARARs and, also were considered protective of human health and the environment. EPA did not identify any changes in the ARARs, which would challenge the protectiveness of the remedy selected in the first five-year review.

Superfund Closeout Report (SCOR) – February 1996

February 1996, EPA Region 4 prepared a SCOR which documented that the Potential Responsible Parties (PRPs) had completed all construction activities for the GCO Remedial Action in accordance with the Record of Decision (ROD) dated October 1, 1993. The conclusions of the SCOR were as follows:

- The groundwater remediation of the GCO Site was complete based on the November 1994 sampling event which concluded non-detection of any ROD parameters in any wells

- The Gold Coast Steering Committee requested approval from EPA to abandon all wells except four monitoring wells previously designated for future monitoring on or about February 3, 1997.

- September 27, 1997, all four remaining wells are abandoned; the GCO RA is complete.

Notice of Deletion - July 1996

EPA, in consultation with the FDEP, concluded that the groundwater recovery system had achieved its goal in significantly reducing contaminant levels within the aquifer, and that continued operation of the recovery system would not provide any further reduction in contaminant levels.

The following procedures were used for the deletion of GCO Site.

- EPA, Region 4, recommended deletion and has prepared the relevant documents.
- FDEP concurred with the deletion and has prepared the relevant documents.
- Concurrent with the National Notice to Delete, a local notice was published in local newspaper and was distributed to appropriate Federal, State, and local officials and other interested parties.
- The Region made all relevant documents available in the Regional Office and local site information repository.

NCP Criteria for Deletion

The NCP establishes the criteria that EPA uses to delete sites from the NPL in accordance with 40 CFR Part 300.425(E) In making the determination to delete from the NPL where no further response is appropriate, EPA did consider, in consultation with the State of Florida, whether any of the following subject matters were met:

- Responsible or other parties have implemented all appropriate response actions required.
- All appropriate Fund-financed response under CERCLA had been implemented and no further clean-up by responsible parties was appropriate.
- The remedial investigation has shown that the Site poses no significant threat to public health, welfare, or the environment and, therefore, undertaking of additional remedial measures is not appropriate.

Site Chronology Summary List

Completion Date	Action Name
August 1, 1980	Dade County Department of Environmental Resource Management (DERM) reported the GCO Site to EPA.
June 1982	CSX Transportation evicted Gold Coast Oil from the property and agreed to voluntarily clean up the Site.
August 1, 1982	Completion Preliminary Remedial Investigation
December 30, 1982	Proposal to National Priority List (NPL)
March 1983	EPA, the Florida Department of Environmental Protection (FDEP) requested that EPA takes the lead at the Site,
June 15, 1983	Remedial Action Master Plan was completed.
September 8, 1983	Final Listing on NPL
November 15, 1983	Remedial Investigation/Feasibility Study negotiations.
September 11, 1987	Record of Decision (ROD) issued by EPA Region 4
May 31, 1988	Remedial Design/Remedial Assessment negotiations.
June 31, 1988	Proposed Remedial Design
September 21, 1988	Consent Decree.
March 1989	Soil remediation began.
June 30, 1989	Completion Preliminary Remedial Design.
February 1990	Remediation of the hardened waste sludges and on-site surface soils completed.
June 12, 1990	Final Remedial Design
July 1990	The groundwater remediation system was implemented
July 1991	Two monitoring wells near the center of the plume were enlarged and converted to recovery wells. This approach increased the recovery of contaminated groundwater, and many of the formerly contaminated wells were now within the performance criteria specified in the ROD.
February 1992	The notice of completion and Remedial Action Report, was issued documenting completion of all the remedial action elements except operation and maintenance of the groundwater remediation system.
February 24, 1994.	Technical Impracticability (TI) Evaluation of Further Groundwater Restoration at the GCO NPL Site. The groundwater recovery, treatment and discharge system (GRTD) was complete.
March 15, 1994	EPA concluded that the groundwater recovery system had achieved its goal in significantly reducing contaminant levels within the aquifer, and that continued operation of the recovery system would not provide any further reduction in contaminant levels within the aquifer. The system was deactivated and placed in a monitoring mode.

March through July 1994	Hydrogen peroxide was added to the wells in an effort to oxidize any organic carbon present and facilitate the release of the volatile organic compounds from the formation.
May 1994	EPA viewed remediation of groundwater as complete and a recommendation was made to cease all future pumping and treating, but to continue monitoring.
November 1994	Five-Year Review Report
February 1996	Closeout Report prepared by U S. Environmental Protection Agency
July 8, 1996	The Florida Department of Environmental Protection (FDEP) reviewed the GCO Site Closeout Report and agreed with the EPA 's recommendations to delist the Site from the National Priority List (NPL).
August 21, 1996	The Notice of Intent (NOI) to Delete GCO site was published in the Federal Register
September 20, 1996	Public comment period expired September 20 1996 (NOI). EPA received no comments and therefore did not prepare a Responsiveness Summary. The South Superfund Remedial Branch (SSRB) recommended deletion of GCO site from the NPL.
September 27, 1996	The Regional Administrator USEPA Region 4 signed the Notice of Deletion of GCO Site from the National Priority List. EPA and FDEP determined that the Site poses no significant threat to public health or the environment and therefore response measures pursuant to CERCLA are not appropriate. *
March 4, 1997	EPA approved to proceed with the abandonment of all monitoring wells with the exception of wells MW-1, MW-8, MW-9, and MW-17. Those wells were retained for one additional round of sampling
September 7, 1997	MW-1, MW-8 and MW-17 were sampled; each well was found to be below detection limits. MW-9 was not sampled since it was inaccessible due to being covered with concrete discharge by an unknown source.
September 27, 1997	EPA approves abandonment of monitoring wells MW-1, MW-8, MW-9, and MW-17.
October 17, 1997	EPA Region IV pursuant to Section XXVI of the Consent Decree issues a letter certifying completion of all remedial activities, including operation and maintenance.

* Note: The EPA identifies sites which appear to present a significant risk to public health or the environment, and it maintains the NPL as the list of those sites Sites on the NPL may be the subject of Hazardous Substance Response Trust Fund remedial actions Any site deleted from the NPL remains eligible for Fund-financed remedial actions in the unlikely event that conditions at the site warrant such action Section 301 425(e)(3) of the NCP, states that Fund-financed actions may be taken at sites deleted from the NPL in the unlikely event that conditions at the site warrant such action Deletion of a site from the NPL does not affect responsible party liability or impede agency efforts to recover costs associated with response efforts

IV. Remedial Actions

Remedial Objectives and Goals - Remedy Selection

The general remedial action objective for the GCO Superfund Site is to provide protection of human health and the environment, while complying with federal and state requirements or ARARs

General

EPA has nine criteria for judging the best alternative for providing for protection of human health and the environment These nine criteria consist of two threshold criteria, five primary balancing criteria, and two modifying criteria

Threshold Criteria

- Compliance with ARARs
- Overall Protection of Human Health and the Environment

Primary Balancing Criteria

- Short – Term Effectiveness
- Long -Term Effectiveness
- Implementability
- Reduction of Toxicity, Mobility, or Volume
- Cost

Modifying Criteria

- State Acceptance
- Community Acceptance

Performance Standards

Site-specific clean-up levels were established by EPA and FDEP based on clean-up levels established in the Biscayne Aquifer Study, toxicological information, and Federal and State ARARs The clean-up levels identified in the ROD are as follows

	Contaminant	Cleanup Level, ug/L
Soil	Lead	10,000
Groundwater	1,1-Dichloroethane	5 0
	t-1,2-Dichloroethane	70 0
	Methylene chloride	5 0
	Tetrachloroethylene	0 7
	Toluene	340 0
	Trichloroethylene	3 0

Selected Remedy

All of the alternatives carried through to the detailed analysis stage were evaluated using the nine-criterion mention above

The major components of the selected remedy are as follows

- excavation and offsite disposal of hardened waste sludges and the excavation, stabilization, and onsite disposal of surface soils contaminated with VOCs and metals

- implementation of a groundwater recovery, treatment, and disposal system for the remediation of VOCs in the groundwater This component of the remedy included collection of groundwater through recovery wells, onsite treatment through air stripping, and onsite disposal of treated effluent to the Biscayne aquifer through an injection well

Soil Remediation

Soil remediation began in March 1989, with the excavation and offsite disposal of 683 tons of contaminated soils and hardened waste sludge An additional 200 cubic yards of contaminated soil was excavated and removed for offsite disposal in March 1990 As discussed in the Interim Site Closeout Report, sampling and analysis of soil samples verified compliance with the ROD clean-up criteria No soils were stabilized and disposed of onsite as originally anticipated in the ROD

Groundwater Remediation

The groundwater recovery, treatment and discharge system (GRTD) for the Site was operated for over four years It was designed to treat groundwater to a quality that meets the Biscayne Aquifer water quality standards The heart of the GRTD was two air stripping towers packed with a special lower packing material called IMPAC (manufactured by LANTAC) that improves the stripping of volatile organic compounds (VOCs) from water The GRTD also included a holding tank and a number of pumps and valves arranged to provide maximum system flexibility and optimum groundwater treatment with built-in fail safe systems (see Figure 5)

The groundwater recovery system consisted of 21 wells (see Figure 6) at various screened depths (see Figure 7), of which six were used as recovery wells, and three were used as discharge wells The GRTD operated continuously without any major shutdown The performance of the system was monitored periodically by sampling the stripping towers effluent and sampling a series of monitoring wells also constructed at various depths

After the first year of operation of groundwater treatment system during which over 25 million gallons of groundwater were treated, the COCs were confined primarily to monitoring wells MW-11 and MW13 (see Figure 8)

Subsequent efforts to recover the low-levels of contaminants adsorbed by the formation included a period of scheduled shutdowns of the pumping system to allow time for the contaminants to desorb from the formation The system was shut-down during the period from August 1 until November 15, 1993 and monitoring wells were sampled twice during this period This approach did not have a significant effect on the removal of the low-level of contaminants The PRPs tried adding hydrogen peroxide to the wells, pulse pumping the system, and soil venting in order to improve removal of the remaining contaminants, with no demonstrable improvement in groundwater quality Also, two shallow groundwater recovery wells located near the center of the plume, were reactivated and operated until March 15, 1994

Monitoring of the GCO Site during the period May through November 1994 indicated continued compliance with the groundwater performance criteria, with the exception of periodic exceedances of TCE and PCE in the two shallow wells located near the center of the former plume (see Figure 9, Groundwater Treatment History, MW-13) The remaining TCE and PCE appear to be confined to an area of 200 square feet and limited to a depth of 30 feet below land surface (bls) due to the lack of significant hydraulic gradient and thus essentially no groundwater movement under no pumping conditions

In a final effort to attain permanent compliance with the performance criteria at monitoring wells MW-11 and MW-13, the soil surrounding the wells was excavated below the water table A composite soil sample from each excavated stockpile did not indicate the presence of any TCE or PCE It was theorized that these exceedances could be the result of residual VOC contamination in soil overlying the groundwater However, soil gas analysis conducted in proximity to monitoring wells MW-11 and MW-13, in November 1994, did not indicate the presence of any residual contamination in the unsaturated zone

EPA met with representatives of the PRPs on October 11, 1994, to discuss the options remaining at the GCO Site The following options were identified during the meeting as possible alternatives to continued pumping of groundwater (1) cyclical pumping and treating of groundwater, (2) natural attenuation of TCE and PCE with groundwater monitoring until ARARs are achieved, (3) removal of additional soils in areas where concentrations persist, followed by natural attenuation and groundwater monitoring until ARARs are reached Because the levels of VOCs decreased substantially over the four years of treatment system operation, and because levels remain above detection limits when pumping was continuous, EPA agreed with the PRPs that continuous pumping and treatment of groundwater would serve no further useful purpose at the Site

In summary the groundwater recovery and treatment system recovered and treated approximately 80 million gallons of water Operation of the system reduced contaminant levels by approximately 99 percent and essentially eliminated the dissolved plume Contaminant levels were reduced dramatically within the first year of operation of the treatment system, however several modifications were eventually made to the groundwater recovery system to enhance its effectiveness (see Figures 10,10A,10B,10C,10D,10E)

With the pumping system off, for the duration of six months, a post groundwater treatment database was established With EPA concurrence, the groundwater treatment equipment was removed from the GCO Site

Note

A clean-up criterion of 0 7 ug/l was established for PCE in the ROD based on recommendations from the Biscayne Aquifer study Because of the Biscayne Aquifer's status as a sole source aquifer and susceptibility to contamination, the study recommended groundwater clean-up levels that afforded a high degree of protection However, results from over three years of groundwater remediation indicated that this clean-up level is likely unattainable due to technical limitations Based on the results from the remediation thus far, EPA decided to revise the clean-up criterion for PCE to be consistent with the State of Florida maximum contamination level of 3 0 ug/l This standard was derived using toxicological information and is protective of human health and should result in easier attainment of the groundwater clean-up criteria for this Site Considering the

new information, EPA and FDEP believe that the remedy remains protective of human health and the environment

Demonstration of Quality Assurance/Quality Control (QA/QC) from Cleanup Activities

Activities at the Site were consistent with the ROD, remedial design, and remedial action work plans EPA analytical methods were used for all verification and monitoring samples during the remedial actions Samples were collected in accordance with EPA protocols The QA/QC program used through the RA was vigorous and in conformance with EPA standards, therefore, EPA determined that the construction records and analytical results are of sufficient quality to document the successful completion of construction at the Site

V. Summary of Site Visit and Findings

General

This Five-Year Review consisted of the following activities

1 A review of relevant documents (see Appendix A, Documents Reviewed)
2 Interview with the remedial action coordinator and others listed below
3 Site visit
4 Preparation of the Five-Year Review Report

Interviews

Mr A L Simmons, Remedial Action Coordinator, A L Simmons Consultants, Inc (by telephone) Mr Simmons has had extensive involvement with the site since early 1989 As a remedial action coordinator, Mr Simmons provided valuable information on site history, remedial actions, and current site status He was not aware of any complaints or issues at the community level He stated that the responsiveness and professionalism of the EPA Region 4 RPM was excellent

Florida Department of Environmental Protection at West Palm Beach and Dade County officials were contacted by telephone in order to gather background information on the Site and community

Site Inspection

The Site Inspection for this Five Year Review was performed by Nestor S Sotelo, USACE, Jacksonville District, on June 29, 2001 Mr Sotelo was not accompanied by any other parties on the GCO site visit The weather was mostly cloudy, hot and humid

Site visit inspection was performed on the following items

(1) Visual inspection of the GCO Site to observe the completion of the remedial action work No environmental damage was observed, such as stressed vegetation, discolored earth, or odors

(2) Monitoring Wells/Recovery Wells/Groundwater Treatment System - It was observed that groundwater treatment system had been removed and all wells abandoned Note - The system of extraction wells and the associated air stripping towers were relocated to Airco Plating Co , Inc , Superfund Site

(3) Site Security - A six-foot chain link fence with was observed around the facility The fence was in good condition The access gate was kept locked

(4) Surrounding Area - Land use adjacent to the site is a mixture of industrial, commercial and residential No environmental damage was observed, such as stressed vegetation, discolored earth, or odors

Risk Assessment

Since the GCO Site has been given a Certification of Completion, no risk assessment was performed Furthermore, no endangered or threatened species have been identified in the immediate vicinity of the Site

Data Review

Four perimeter wells (MW-1, MW-8, MW-9, and MW-17) were sampled on October 28, 1996 Those wells were used to monitor for potential changes in water quality at the GCO Site boundary The sampling analysis results were used by EPA to determine whether or not to proceed with the abandonment of wells within the Site boundary

Gold Coast Oil Analyses of Sampling Taken on October 28, 1996			
Sample I D	Parameter	Results	Detection Limit ug/L
MW-1	Toluene	BDL	1 000
	Trans-1,2-Dichloroethene	BDL	1 000
	1,1-Dichloroethene	BDL	1 000
	Trichloroethene	BDL	1 000
	Tetrachloroethene	BDL	1 000
MW-8	Toluene	BDL	1 000
	Trans-1,2-Dichloroethene	BDL	1 000
	1,1-Dichloroethene	BDL	1 000
	Trichloroethene	BDL	1 000

	Tetrachloroethene	BDL	1 000
MW-9	Toluene	BDL	1 000
	Trans-1,2-Dichloroethene	BDL	1 000
	1,1-Dichloroethene	BDL	1 000
	Trichloroethene	BDL	1 000
	Tetrachloroethene	BDL	1 000
MW-17	Toluene	BDL	1 000
	Trans-1,2-Dichloroethene	BDL	1 000
	1,1-Dichloroethene	BDL	1 000
	Trichloroethene	BDL	1 000
	Tetrachloroethene	BDL	1 000

The wells MW-1, MW, 8 and MW-9 were sampled again on September 7, 1997 As stated in the letter dated September 30, 1997 from Mr Edward E Clark, P E to Mr Bradley A Jackson, EPA RPM, each well was found to be below detection limits MW-9 was not sampled since it was inaccessible due to being covered with concrete discharged by an unknown source

VI. Assessment

Effectiveness of the Remedy for Soil Remediation

Soil remediation began in March 1989, with the excavation and offsite disposal of 683 tons of contaminated soils and hardened waste sludge An additional 200 cubic yards of contaminated soil was excavated and removed for offsite disposal in March 1990 As discussed in the Interim Site Closeout Report, sampling and analysis of soil samples verified compliance with the ROD clean-up criteria

Effectiveness of the Remedy for Groundwater Remediation

The selected remedy for groundwater remediation has been effective in accomplishing the remedial objectives Active groundwater pump and treatment in operation from July 1990 until March 1994, was instrumental in reducing toxicity, mobility and volume of groundwater contamination It has been effective in reducing contaminant levels below ROD remediation goals in a time-effective and cost-effective manner The size of the groundwater plume was reduced significantly to the point where it encircles only one, and occasionally two wells (see Figures 10 thru 10E) The concentrations of the most persistent parameters of concern, PCE and TCE, were reduced from a high value of 44,000 ug/l of PCE and 1,700 ug/l of TCE to values that generally reached below detection limits Occasional spikes produced average values above detection limits, PCE of 40 ug/l and TCE of 13 ug/l (see Table1) Projections for the GCO Site showed that the concentrations of TCE and PCE would persist at these low levels for an

indefinite time period in spite of several attempts to enhance the performance of a properly designed and functional groundwater treatment and recovery system As shown in Table 2, TCE and PCE concentrations decreased with time and stabilized at levels within the performance criteria specified in the ROD

On October 28, 1996 MW-1, MW-8, MW-9, and MW-17 were analyzed for ROD parameters PCE and TCE and concentrations were below detection limits On September 19, 1997 the wells were sampled with the exception of MW-9, which was not sampled since it was covered with concrete Each well was found to be below laboratory detection limits

Review of Applicable or Relevant and Appropriate Requirements (ARARs)

As part of the five-year review process, it is necessary to evaluate the effect of newly promulgated or modified standards on the protectiveness of the remedy Newly promulgated or modified standards must be evaluated in order to determine if the cleanup level established in the ROD is still protective

In this five-year review, ARARs listed in the ROD were reviewed and compared to existing standards to see if any changes in the standards have occurred since the signing of the ROD Table 13 of the 1987 ROD (page 51) was used to identify the ARARs established in the ROD The results of the comparison and discussion of changes follow An ARAR review was performed for the site in accordance with the draft EPA guidance document, "Comprehensive Five-Year Review Guidance," OSWER 9355 7-03B-P, July 17, 2001

Documents reviewed for the ARAR analysis are as follows

1 Gold Coast Oil Record of Decision, September 11, 1997
2 Results of sampling perform on October 28, 1996

ARARs Identified in the ROD Requiring Evaluation During the Five-Year Review

1 Section 62-730 180 of F A C
2 Section 62-730 of F A C
3 Section 62-520-400 of F A C for classification of groundwater

Chemical-specific ARARs

The only chemical-specific standards specified in the ROD for alternatives 5 and 7 were Federal Safe Drinking Water Act Maximum Contaminant Levels (MCLs) for drinking water standards The cleanup standards specified in the ROD were as follows

Contaminant of Concern Listed in the ROD	1987 ROD Cleanup Standard	2001 Federal MCL Value (40 CFR 141)
1,1-Dichloroethane	5 ppb	None[1]
trans 1,2-dichloroethylene	70 ppb	100 ppb
methylene chloride	5 ppb	5ppb
trichloroethylene	3 ppb	5 ppb
toluene	340 ppb	1000 ppb
tetrachloroethylene	0 7	5 ppb

[1] – MCL for 1,2-dichloroethane is 5 ppb

As can be seen from the above table, the cleanup goals specified in the ROD are at or below current MCL values

Action-Specific ARARs

No action-specific ARARs identified in the ROD pertain to the protectiveness of the remedy today Clean Air Act (CAA), Department of Transportation (DOT), and Resource Conservation and Recovery Act (RCRA) ARARs specified in the ROD were complied with during construction actions associated with the selected remedy

Location-Specific ARARs

No location-specific ARARs were identified in the ROD

Summary of Site Compliance with ARARs

No ARARs have changed nor have other standards been promulgated since the signing of the GCO Site ROD that would affect the degree of protectiveness of the current remedy

VII. Issues

Issues	Affects Protectiveness (Y/N)	
	Current	Future
None that pose a threat to human health or the environment	N	N

VIII. Recommendations

Recommendations/ Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Follow-up Actions Affects Protectiveness (Y/N)
Conclude the Five-Year review process *	EPA	N/A	N/A	N

* Since all contaminated soil and groundwater has been properly remediated and clean-up objectives met (see protectiveness statement below) at the GCO Site, there is no need to conduct any future Five Year Reviews for this Site

IX. Protectiveness Statement

EPA, in consultation with the FDEP, has determined that all necessary response actions, including final attainment of the groundwater clean-up criteria, have been met as specified in OSWER Directive No 9355 7-03B-P Specifically, confirmatory sampling has verified that the ROD clean-up objectives for the soil and groundwater have been achieved and that the remedy remains protective of public health, welfare and the environment These documents are available for review by calling the Regional Office at (404) 347-2643

X. Next Review

Not Applicable

Attachment A: Site Inspection Checklist

Please note that "O&M" is referred to throughout this document. At sites where Long-Term Response Actions are in progress, O&M activities may be referred to as "system operations" since these sites are not considered to be in the O&M phase while being remediated under the Superfund program

Five-Year Review Site Inspection Checklist (Template)

(Working document for site inspection Information may be completed by hand and attached to the five-year review report as supporting documentation of site status "N/A" refers to "not applicable")

I. SITE INFORMATION	
Site name [illegible] Used Oil Co. Inc	Date of inspection 6/26/01
Location and Region	EPA ID [illegible]
Agency, office or company leading the five-year review	Weather/temperature [illegible] 96°F
Remedy Includes (Check all that apply) ☐ Landfill cover/containment ☐ Groundwater pump and treatment ☐ Surface water collection and treatment ☐ Other [illegible]	
☐ Inspection team roster attached ☒ Site map attached	

II. INTERVIEWS (Check all that apply)

1 O&M site manager A.L. Simmons (Name) RA Coordinator (Title) 6/26/01 (Date)
Interviewed ☐ at site ☐ at office ☒ by phone Phone no ( ) 536-3512
Problems, suggestions, ☐ Report attached _____

2 O&M staff _____ (Name) _____ (Title) _____ (Date)
Interviewed ☐ at site ☐ at office ☐ by phone Phone no _____
Problems, suggestions, ☐ Report attached _____

3 Local regulatory authorities and response agencies (i e , State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc) Fill in all that apply

Agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no
Problems, suggestions, ☐ Report attached _____
_____

Agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no
Problems, suggestions, ☐ Report attached _____
_____

Agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no
Problems, suggestions, ☐ Report attached _____
_____

Agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no
Problems, suggestions, ☐ Report attached _____
_____

4 Other interviews (optional) ☐ Report attached

III. ONSITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)	
1	**O&M Manual and As-Builts** ☐ Readily available ☐ Up to date ☐ N/A ☐ As-builts ☐ Readily available ☐ Up to date ☐ N/A ☐ Maintenance Logs ☐ Readily available ☐ Up to date ☐ N/A Remarks_____
2	**Site Specific Health and Safety Plan** ☐ Readily available ☐ Up to date ☐ N/A ☐ Contingency plan/emergency response plan ☐ Readily available ☐ Up to date ☐ N/A Remarks_____
3.	**O&M and OSHA Training Records** ☐ Readily available ☐ Up to date ☐ N/A Remarks_____
4	**Permits and Service Agreements** ☐ Air discharge permit ☐ Readily available ☐ Up to date ☐ N/A ☐ Effluent discharge ☐ Readily available ☐ Up to date ☐ N/A ☐ Waste disposal, POTW ☐ Readily available ☐ Up to date ☐ N/A ☐ Other permits_____ ☐ Readily available ☐ Up to date ☐ N/A Remarks_____
5	**Gas Generation Records** ☐ Readily available ☐ Up to date ☐ N/A Remarks_____
6	**Settlement Monument Records** ☐ Readily available ☐ Up to date ☐ N/A Remarks See List of Records
7	**Groundwater Monitoring Records** ☐ Readily available ☐ Up to date ☐ N/A Remarks_____
8	**Leachate Extraction Records** ☐ Readily available ☐ Up to date ☐ N/A Remarks_____
9	**Discharge Compliance Records** ☐ Air ☐ Readily available ☐ Up to date ☐ N/A ☐ Water (effluent) ☐ Readily available ☐ Up to date ☐ N/A Remarks_____

10 **Daily Access/Security Logs**
☐ Readily available ☐ Up to date ☐ N/A
Remarks _____

_____

IV. O&M COSTS

1. **O&M Organization**
☐ State in-house ☐ Contractor for State
☐ PRP in-house ☐ Contractor for PRP
☐ Other _____

_____

2 **O&M Cost Records**
☐ Readily available ☐ Up to date
☐ Funding mechanism/agreement in place
Original O&M cost estimate _____ ☐ Breakdown attached

Total annual cost by year for review period if available

From _____ To _____ _____ ☐ Breakdown attached
Dates Total cost
From _____ To _____ _____ ☐ Breakdown attached
Dates Total cost
From _____ To _____ _____ ☐ Breakdown attached
Dates Total cost
From _____ To _____ _____ ☐ Breakdown attached
Dates Total cost
From _____ To _____ _____ ☐ Breakdown attached
Dates Total cost

3 **Unanticipated or Unusually High O&M Costs During Review Period**
Describe costs and reasons _____

_____

_____

_____

_____

_____

V GENERAL SITE CONDITIONS

Whenever possible, actual site conditions should be documented with photographs.

A. Fencing

1	Fencing damaged ☐ Location shown on site map ☐ Gates secured ☐ N/A Remarks_____
B.	**Site Access**
1	Access restrictions, signs, other security measures ☐ Location shown on map ☐ N/A Remarks_____
C.	**Perimeter Roads**
1	Roads damaged ☐ Location shown on site map ☐ Roads adequate ☐ N/A Remarks_____
D.	**General**
1	Vandalism/trespassing ☐ Location shown on site map ☐ No vandalism evident Remarks_____
2	Land use changes onsite ☐ N/A Remarks_____
3	Land use changes offsite ☐ N/A Remarks_____
4	Institutional controls (site conditions imply institutional controls not being enforced) ☐ N/A Agency _____ Contact _____ _____ _____ _____ Name Title Date Phone no Problems, suggestions, ☐ Report attached _____
	VI. LANDFILL COVERS ☐ Applicable ☐ Not applicable
A.	**Landfill Surface**
1	**Settlement** (Low spots) ☐ Location shown on site map ☐ Settlement not evident Areal extent_____ Depth_____ Remarks_____

2	**Cracks** ☐ Location shown on site map ☐ Cracking not evident Lengths_____ Widths_____ Depths_____ Remarks_____
3	**Erosion** ☐ Location shown on site map ☐ Erosion not evident Areal extent_____ Depth_____ Remarks_____
4	**Holes** ☐ Location shown on site map ☐ Holes not evident Areal extent_____ Depth_____ Remarks_____
5	**Vegetative Cover** ☐ Grass ☐ Cover properly established ☐ No signs of stress ☐ Trees/Shrubs (indicate size and locations on a diagram) Remarks_____
6	**Alternative Cover (armored rock, concrete, etc.)** ☐ N/A Remarks_____
7	**Bulges** ☐ Location shown on site map ☐ Bulges not evident Areal extent_____ Height_____ Remarks_____
8	**Wet Areas/Water Damage** ☐ Wet areas/water damage not evident ☐ Wet areas ☐ Location shown on site map Areal extent_____ ☐ Ponding ☐ Location shown on site map Areal extent_____ ☐ Seeps ☐ Location shown on site map Areal extent_____ ☐ Soft subgrade ☐ Location shown on site map Areal extent_____ Remarks_____
9	**Slope Instability** ☐ Slides ☐ Location shown on site map ☐ No evidence of slope instability Areal extent_____ Remarks_____
B	**Benches** ☐ Applicable ☐ Not applicable (Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel)

1	**Flows Bypass Bench** ☐ Location shown on site map ☐ N/A or okay Remarks_____
2	**Bench Breached** ☐ Location shown on site map ☐ N/A or okay Remarks_____
3	**Bench Overtopped** ☐ Location shown on site map ☐ N/A or okay Remarks_____
C.	**Letdown Channels** ☐ Applicable ☐ Not applicable (Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies)
1	**Settlement** ☐ Location shown on site map ☐ No evidence of settlement Areal extent_____ Depth_____ Remarks_____
2	**Material Degradation** ☐ Location shown on site map ☐ No evidence of degradation Material type_____ Areal extent_____ Remarks_____
3	**Erosion** ☐ Location shown on site map ☐ No evidence of erosion Areal extent_____ Depth_____ Remarks_____
4	**Undercutting** ☐ Location shown on site map ☐ No evidence of undercutting Areal extent_____ Depth_____ Remarks_____
5	**Obstructions** Type_____ ☐ No obstructions ☐ Location shown on site map Areal extent_____ Size_____ Remarks_____

6	**Excessive Vegetative Growth** Type_____ ☐ No evidence of excessive growth ☐ Vegetation in channels does not obstruct flow ☐ Location shown on site map Areal extent_____ Remarks_____
D.	**Cover Penetrations** ☐ Applicable ☐ Not applicable
1	**Gas Vents** ☐ Active ☐ Passive ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition ☐ Needs O&M ☐ Evidence of leakage at penetration ☐ N/A Remarks_____
2	**Gas Monitoring Probes** ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition ☐ Needs O&M ☐ Evidence of leakage at penetration ☐ N/A Remarks_____
3	**Monitoring Wells** (within surface area of landfill) ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition ☐ Needs O&M ☐ Evidence of leakage at penetration ☐ N/A Remarks_____
4	**Leachate Extraction Wells** ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition ☐ Needs O&M ☐ Evidence of leakage at penetration ☐ N/A Remarks_____
5	**Settlement Monuments** ☐ Located ☐ Routinely surveyed ☐ N/A Remarks_____
E.	**Gas Collection and Treatment**
1	**Gas Treatment Facilities** ☐ Flaring ☐ Thermal destruction ☐ Collection for reuse ☐ Good condition ☐ Needs O&M Remarks_____

2	**Gas Collection Wells, Manifolds and Piping** ☐ Good condition ☐ Needs O&M Remarks_____
F.	**Cover Drainage Layer** ☐ Applicable ☐ Not applicable
1	**Outlet Pipes Inspected** ☐ Functioning ☐ N/A Remarks_____
2	**Outlet Rock Inspected** ☐ Functioning ☐ N/A Remarks_____
G.	**Detention/Sedimentation Ponds** ☐ Applicable ☐ Not applicable
1	**Siltation** Areal extent_____ Depth_____ ☐ N/A ☐ Siltation not evident Remarks_____
2	**Erosion** Areal extent_____ Depth_____ ☐ Erosion not evident Remarks_____
3	**Outlet Works** ☐ Functioning ☐ N/A Remarks_____
4	**Dam** ☐ Functioning ☐ N/A Remarks_____
H.	**Retaining Walls** ☐ Applicable ☐ Not applicable
1	**Deformations** ☐ Location shown on site map ☐ Deformation not evident Horizontal displacement_____ Vertical displacement_____ Rotational displacement_____ Remarks_____
2	**Degradation** ☐ Location shown on site map ☐ Degradation not evident Remarks_____

I.	**Perimeter Ditches/Off-Site Discharge** ☐ Applicable ☐ Not applicable
1	**Siltation** ☐ Location shown on site map ☐ Siltation not evident Areal extent_____ Depth_____ Remarks_____
2	**Vegetative Growth** ☐ Location shown on site map ☐ N/A ☐ Vegetation does not impede flow Areal extent_____ Type_____ Remarks_____
3	**Erosion** ☐ Location shown on site map ☐ Erosion not evident Areal extent_____ Depth_____ Remarks_____
4	**Discharge Structure** ☐ Functioning ☐ N/A Remarks_____
	VII. VERTICAL BARRIER WALLS ☐ **Applicable** ☐ **Not applicable**
1	**Settlement** ☐ Location shown on site map ☐ Settlement not evident Areal extent_____ Depth_____ Remarks_____
2	**Performance Monitoring** Type of monitoring_____ ☐ Performance not monitored Frequency_____ ☐ Evidence of breaching Remarks_____
	VIII. GROUNDWATER/SURFACE WATER REMEDIES ☐ **Applicable** ☐ **Not applicable**
A.	**Groundwater Extraction Wells, Pumps, and Pipelines** ☐ Applicable ☐ Not applicable (SYSTEM REMOVED)

1 **Pumps, Wellhead Plumbing, and Electrical**
☐ Good condition ☐ All required wells located ☐ Needs O&M ☐ N/A
Remarks_____

2 **Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
☐ Good condition ☐ Needs O&M
Remarks_____

B. Surface Water Collection Structures, Pumps, and Pipelines
☐ Applicable ☐ Not applicable

1 **Collection Structures, Pumps, and Electrical**
☐ Good condition ☐ Needs O&M
Remarks_____

2 **Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
☐ Good condition ☐ Needs O&M
Remarks_____

C. Treatment System ☐ Applicable ☐ Not applicable

1. **Treatment Train** (Check components that apply)
☐ Metals removal ☐ Oil/water separation ☐ Bioremediation
☐ Air stripping ☐ Carbon adsorbers
☐ Filters_____ ☐ Others_____
☐ Good condition ☐ Needs O&M
☐ Sampling ports properly marked and functional
☐ Sampling/maintenance log displayed and up to date
☐ Equipment properly identified
☐ Quantity of groundwater treated annually_____
☐ Quantity of surface water treated annually_____
Remarks_____

2 **Electrical Enclosures and Panels** (properly rated and functional) ☐ N/A
☐ Good condition ☐ Needs O&M
Remarks_____

3 **Tanks, Vaults, Storage Vessels** ☐ N/A
☐ Good condition ☐ Proper secondary containment ☐ Needs O&M
Remarks_____

4	**Discharge Structure and Appurtenances** ☐ N/A ☐ Good condition ☐ Needs O&M Remarks_____
5	**Treatment Building(s)** ☐ N/A ☐ Good condition ☐ Needs repair ☐ Chemicals and equipment properly stored Remarks_____
6	**Monitoring Wells** (pump and treatment remedy) ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition ☐ All required wells located ☐ Needs O&M ☐ N/A Remarks_____
D.	**Monitored Natural Attenuation**
1	**Monitoring Wells** (natural attenuation remedy) ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition ☐ All required wells located ☐ Needs O&M ☐ N/A Remarks_____

IX. OTHER REMEDIES

If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy An example would be soil vapor extraction.

X. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed Begin with a brief statement of what the remedy is to accomplish (i e , to contain contaminant plume, minimize infiltration and gas emission, etc)

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures In particular, discuss their relationship to the current and long-term protectiveness of the remedy

N/A

C.	**Early Indicators of Potential Remedy Failure**
	Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future

D.	**Opportunities for Optimization**
	Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy

Attachment B: Photographs

Photograph 1 - Gold Coast Oil Site

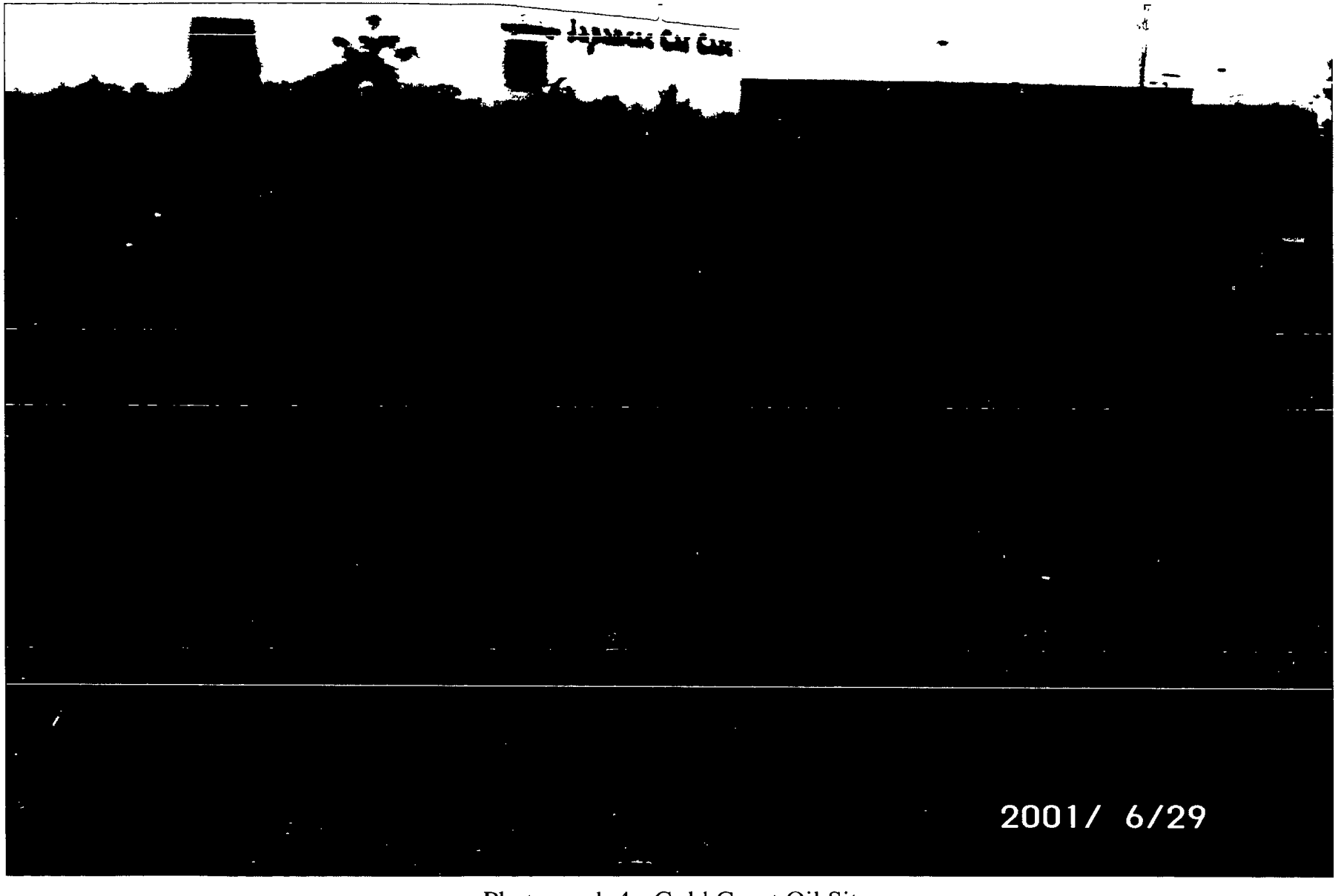
Description: Site Entrance SW 71th Ave.

Photograph 2 - Gold Coast Oil Site

Description: Former Drum & Holding Tank Storage Area

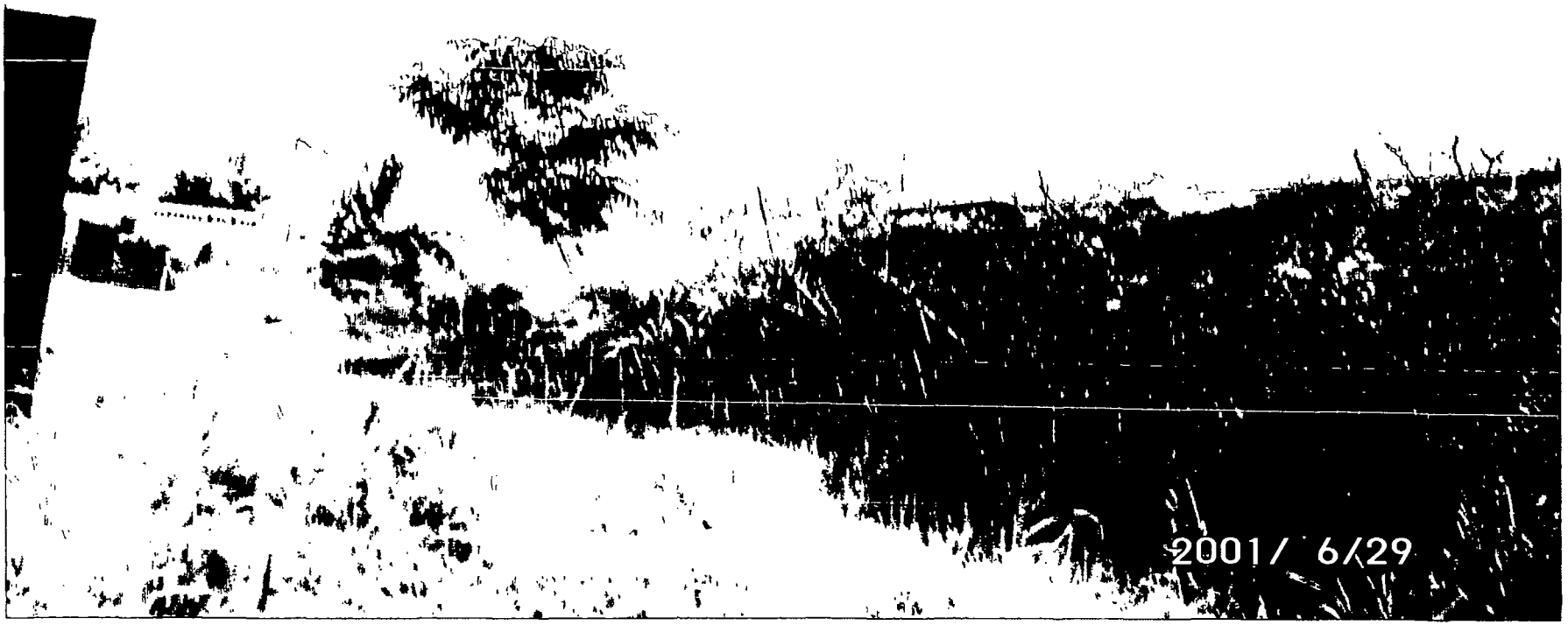
Photograph 3 - Gold Coast Oil Site

Description: Former Boiler Area



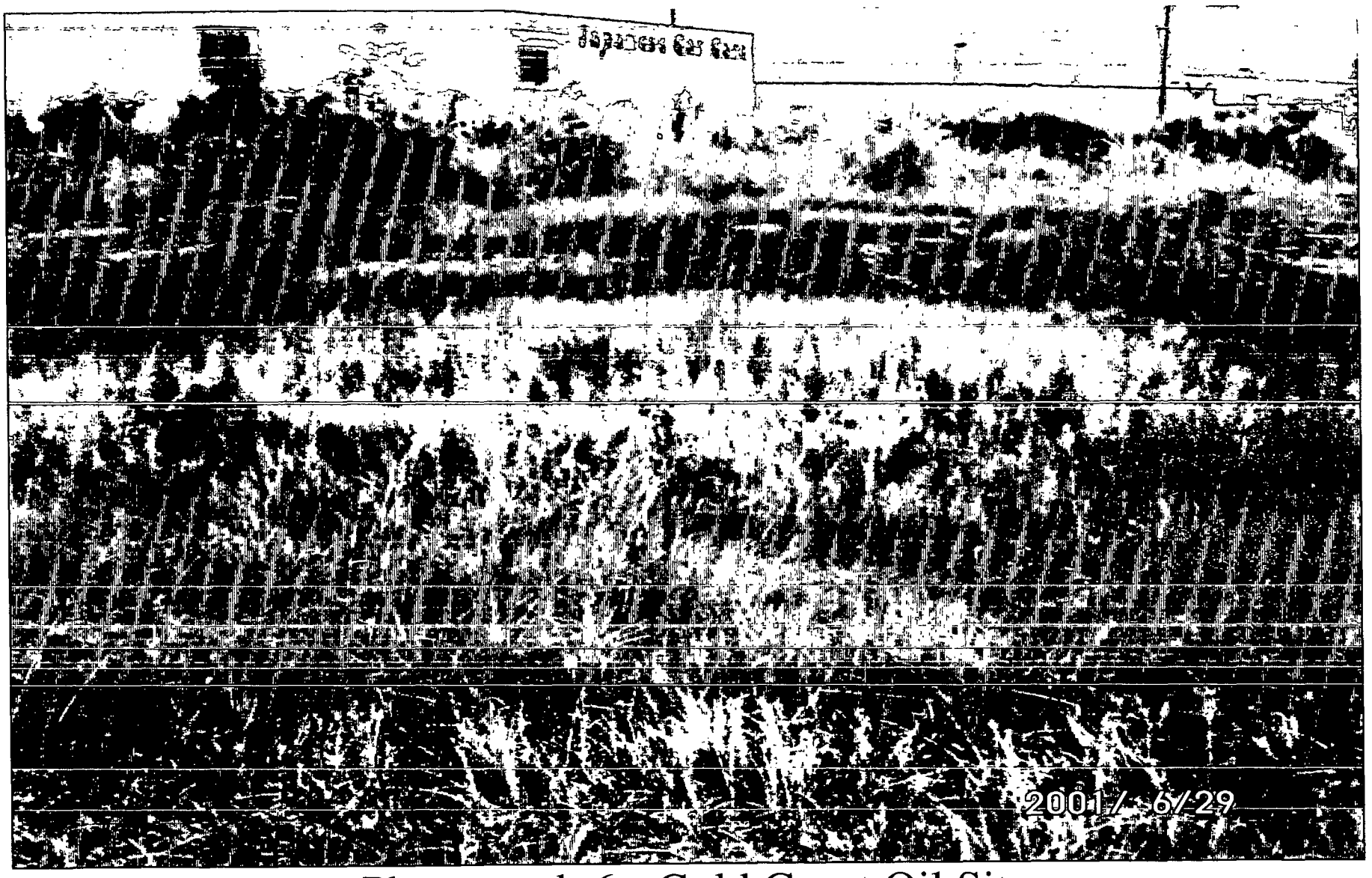
Photograph 4 - Gold Coast Oil Site

Description: Former Distilling Area



Photograph 5 - Gold Coast Oil Site

Description: Former Tank Storage Area



Photograph 6 - Gold Coast Oil Site

Description: Former Distilling Area

TABLES

TABLE 1

Groundwater Treatment History

Gold Coast Oil Site, Miami Florida

Well ID	PRIOR TO SYSTEM START UP — Conc (ug/l) As of 1/1/90						1 YEAR OF SYSTEM OPERATION					2 YEARS OF SYSTEM OPERATION		3 YEARS OF SYSTEM OPERATION				9/1/93 Sampling		11/1/93 Sampling		12/1/93 Sampling		01/14/94 Sampling		2/15/94 Sampling	
							gal pumped	Conc (ug/l) As of 7/24/91				gal pumped	Conc (ug/l) As of 7/24/92	gal pumped	Conc (ug/l) As of 7/29/1993			Concentrations (ug/l)		Concentrations (ug/l)		Concentrations (ug/l)		Concentrations (ug/l)		Concentrations (ug/l)	
	TCE	PCE	DCE	DCA	TOL	METH		TCE	PCE	DCE	DCA		TCE	PCE	TCE	PCE	DCA	TCE	PCE	TCE	PCE	TCE	PCE	TCE	PCE	TCE	PCE
MW-11	8.9	34	1.3	0	0	0	3,593,861	1.3	19	1.6	0	11,377,900	3.3	1	11,377,900	3.99	1.4	0	4.8	1.6	1.5	1						
MW-13	1700	44000	690	0	9.7	65	4,731,857	210	680	0	0	9,923,133	71	250	13,033,144	32.93	5.9	0	0	0	12.9	138	42	0	13.5	31.5	2.96	1.73
MW-16	0	0	4.5	0	0	12	0	0	0	0	0	2,442,300	0	0	3,799,318	6.51	1.0	0	5.6	1.9	1.1	8.2	0	0			0	0
MW-20	1000	9800	870	0	0	0	16,289,394	0	0	5.3	0	29,847,822	11	16	49,282,374	5.15	9	0	2.7	0	3.2	17.5	0	0			0	0
ROD	3	3	70	5	340	5		3	3	70	5		3	3		3	3	5	3	3	3	3	7	3	3	3	3	3
MW-1	0	0	0	0	1.8	0		0	0	0	0		0	0		0	0	0										
MW-2	0	0	14	16	1.9	32		0	0	0	0		0	0		0	0	0										
MW-3	0	0	0	0	0.5	0		0	0	0	0		0	0		0	0	0										
MW-4	0	0	1.7	0	0	0		0	0	2.3	0		0	0		0	0	0										
MW-5	0	1.9	0	0	0	1.1		0	0	0	0		0	0		0	0	0										
MW-6	0	0	0	1.1	0	0		0	0	0	0		0	0		0	0	0										
MW-7	350	2	74	0	0	0		0	0	0	0		0	0		0	0	0										
MW-8	0	0	1.2	1.7	0	0		5.9	0	0	0		4.3	0		1.12	0	0										
MW-9	3.3	3.4	0	0	0	440		0	0	0	0		1.8	0		3.48	0	0.59										
MW-10	6.9	23	1.8	2.4	0	1.1		5.1	1.3	22	1.3		2.1	2.1		0.92	0	0										
MW-12	0	0	0	0	0	9.5		0	0	0	0		0	0		5.38	8	2.1										
MW-14	0	0	25	0	0	8.3										0	0	0										
MW-15	0	1.6	0	0	0	1.7												0										
MW-17	0	0	0	0	0	0		0	0	0	0		0	0														
MW-18	0	2	30	0	0	1.1		0	0	0	0		0	0		0	0											
MW-19	0	0	0	0	0	1.7			0	0	0																	
MW-21													0	0		0	0	0										

Recovery System Shut Down on 3/15/94

Well ID	3/15/94 Sampling — Concentrations (ug/l)		4/15/94 Sampling — Concentrations (ug/l)		5/17/94 Sampling — Concentrations (ug/l)		6/15/94 Sampling — Concentrations (ug/l)		7/15/94 Sampling — Concentrations (ug/l)		8/15/94 Sampling — Concentrations (ug/l)		9/15/94 Sampling — Concentrations (ug/l)		10/14/94 Sampling — Concentrations (ug/l)	
	TCE	PCE	TCE	PCE	TCE	PCE	TCE	PCE	TCE	PCE	TCE	PCE	TCE	PCE	TCE	PCE
MW-11	0	0	0	0	2.7	6.8	1.2	5.9	1.3	7.9	0	14.9	2.88	10.8	1.3	5.9
MW-13	5.2	3.1	1.7	1.7	4.85	13.5	0	0	13.7	20.5	19	41.2	13.9	39.6	24.8	94.0
MW-16							0	0								
MW-20							5.5	12.6	0	0	0	0	0	0		
ROD	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
MW-1																
MW-2																
MW-3																
MW-4																
MW-5																
MW-6							0	0								
MW-7																
MW-8							2.2	0								
MW-9							0	0								
MW-10																
MW-12							0	0								
MW-14							0	0								
MW-15																
MW-17																
MW-18																
MW-19																
MW-21							0	0								

Well ID	EXCAVATION SAMPLING — 11/17/94 Sampling Concentrations (ug/l)		12/13/94 Sampling Concentrations (ug/l)		1/4/95 Sampling Concentrations (ug/l)	
	TCE	PCE	TCE	PCE	TCE	PCE
Pit-11	6.4	19.9	0	0	0	0
Pit-13-20	54.9	86.1	6.14	0	0	0
ROD	3	3	3.1	3	3	3

TCE Trichloroethylene
PCE Tetrachloroethylene
DCE Trans-1,2-Dichloroethylene
DCA 1,1-Dichloroethane
TOL Toluene
METH Methylene Chloride

NOTE All zero (0) values indicate Below Detection Limits (BDLs)
Where ever blank entries appear no samples were taken
Value This value exceeds the ROD limit
Average values were used when duplicate samples were available

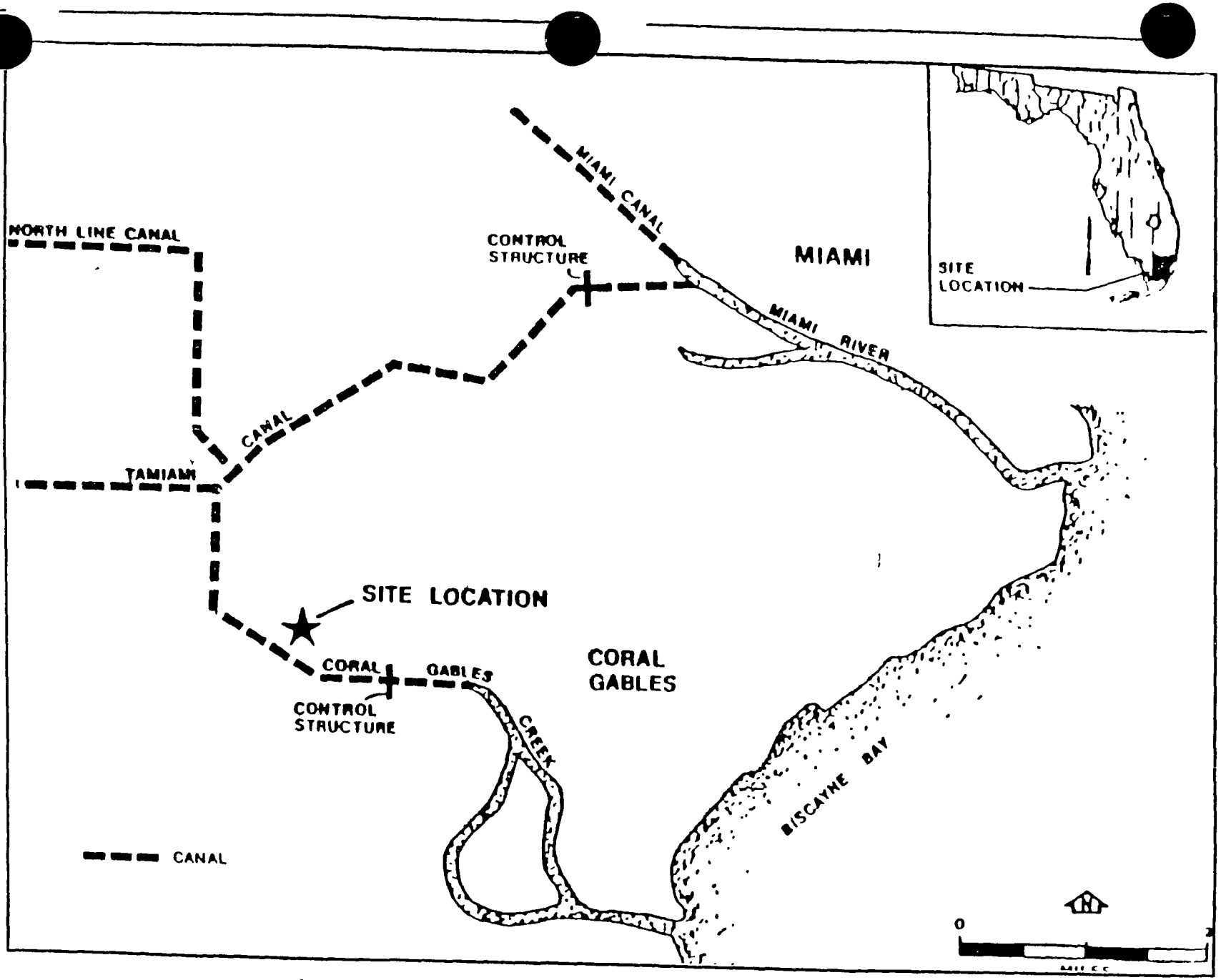
TABLE 2
ANALYTICAL RESULTS FROM GROUNDWATER SAMPLING
EXCAVATIONS 11 AND 13-20
GOLD COAST OIL SITE
MIAMI, FLORIDA

Well ID	Parameter/Concentration (ug/l)									
	11/17/94		12/13/94		12/29/94		01/04/95		01/20/95	
	TCE	PCE	TCE	PCE	TCE	PCE	TCE	PCE	TCE	PCE
Pit-11	6.4	19.9	BDL	BDL	NA	NA	BDL	BDL	BDL	BDL
Pit-13-20	54.8	86.1	6.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL

	02/01/95		02/15/95	
	TCE	PCE	TCE	PCE
Pit-11	BDL	BDL	BDL	BDL
Pit-13-20	BDL	BDL	BDL	BDL

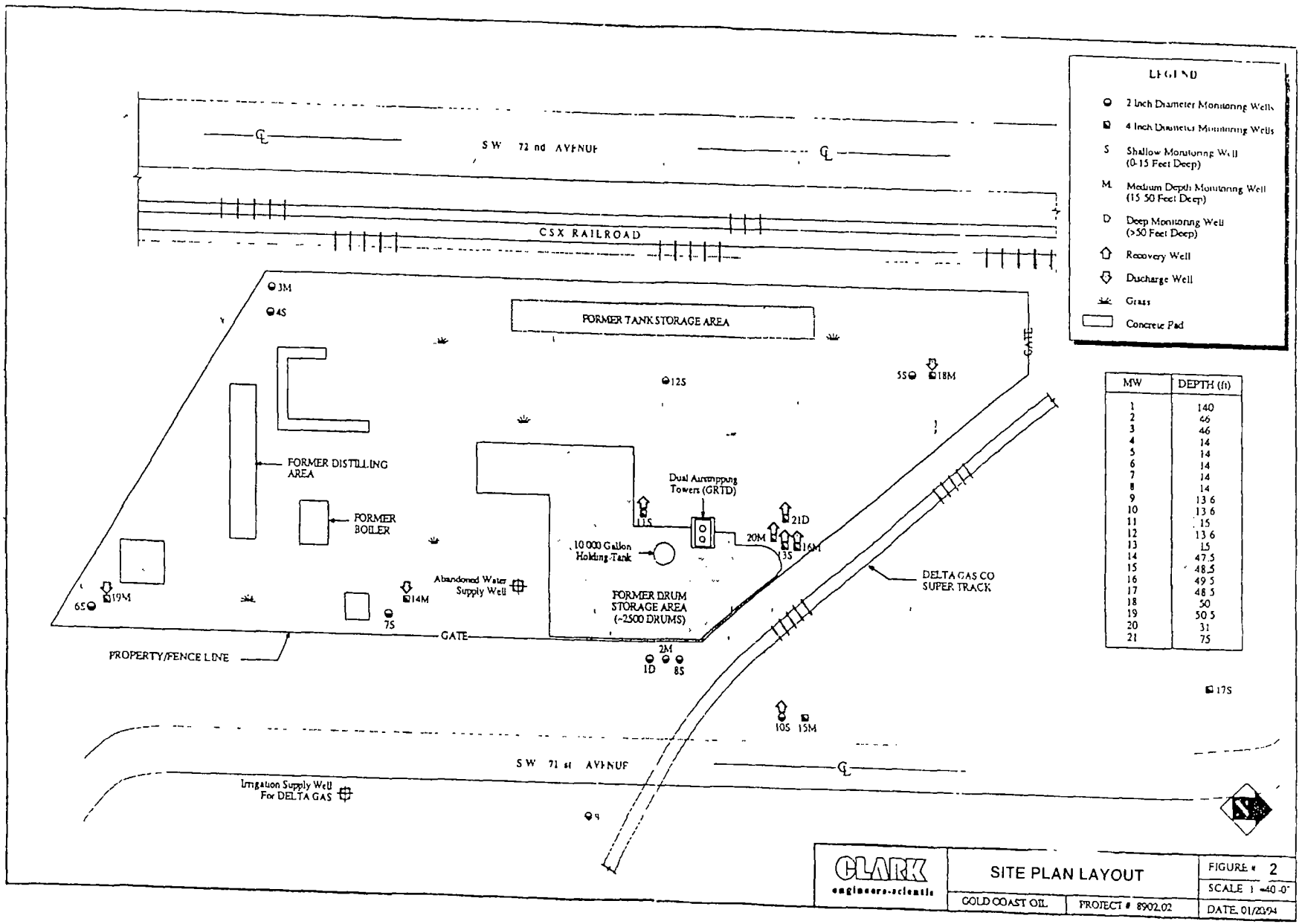
NA - Not Analyzed
BDL - Below Detection Limit (TCE Detection Limit = 1.0; PCE Detection Limit = 0.5)

FIGURES



Source CDM, May 1989

CLARK engineers-scientists	SITE LOCATION		FIGURE # 1
			SCALE
	GOLD COAST OIL	PROJECT # 890202	DATE 01/20/89



MW	DEPTH (ft)
1	140
2	46
3	46
4	14
5	14
6	14
7	14
8	14
9	13.6
10	13.6
11	15
12	13.6
13	15
14	47.5
15	48.5
16	49.5
17	48.5
18	50
19	50.5
20	31
21	75

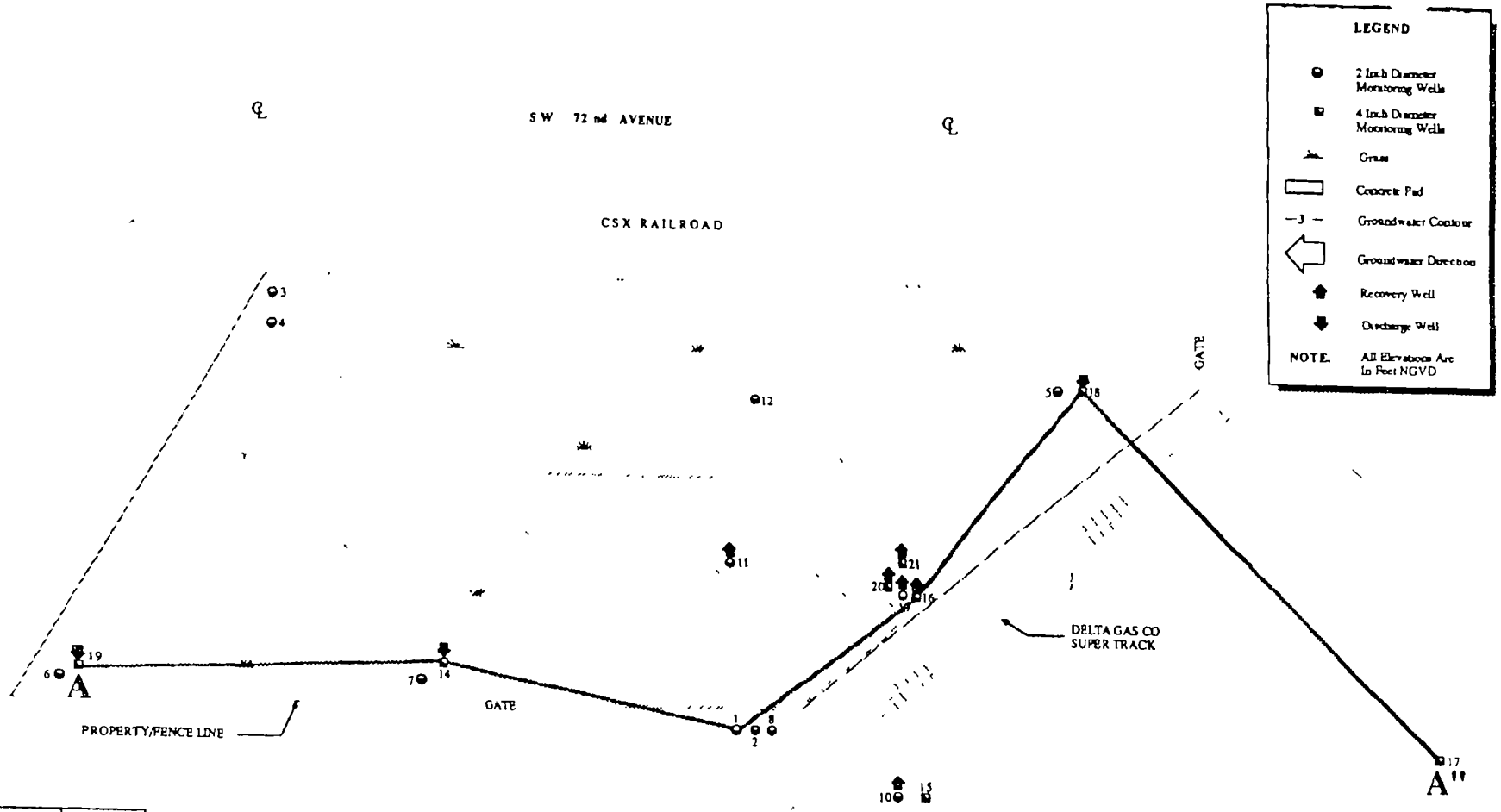
CLARK engineers-scientists

SITE PLAN LAYOUT

FIGURE # 2

SCALE 1 =40'-0"

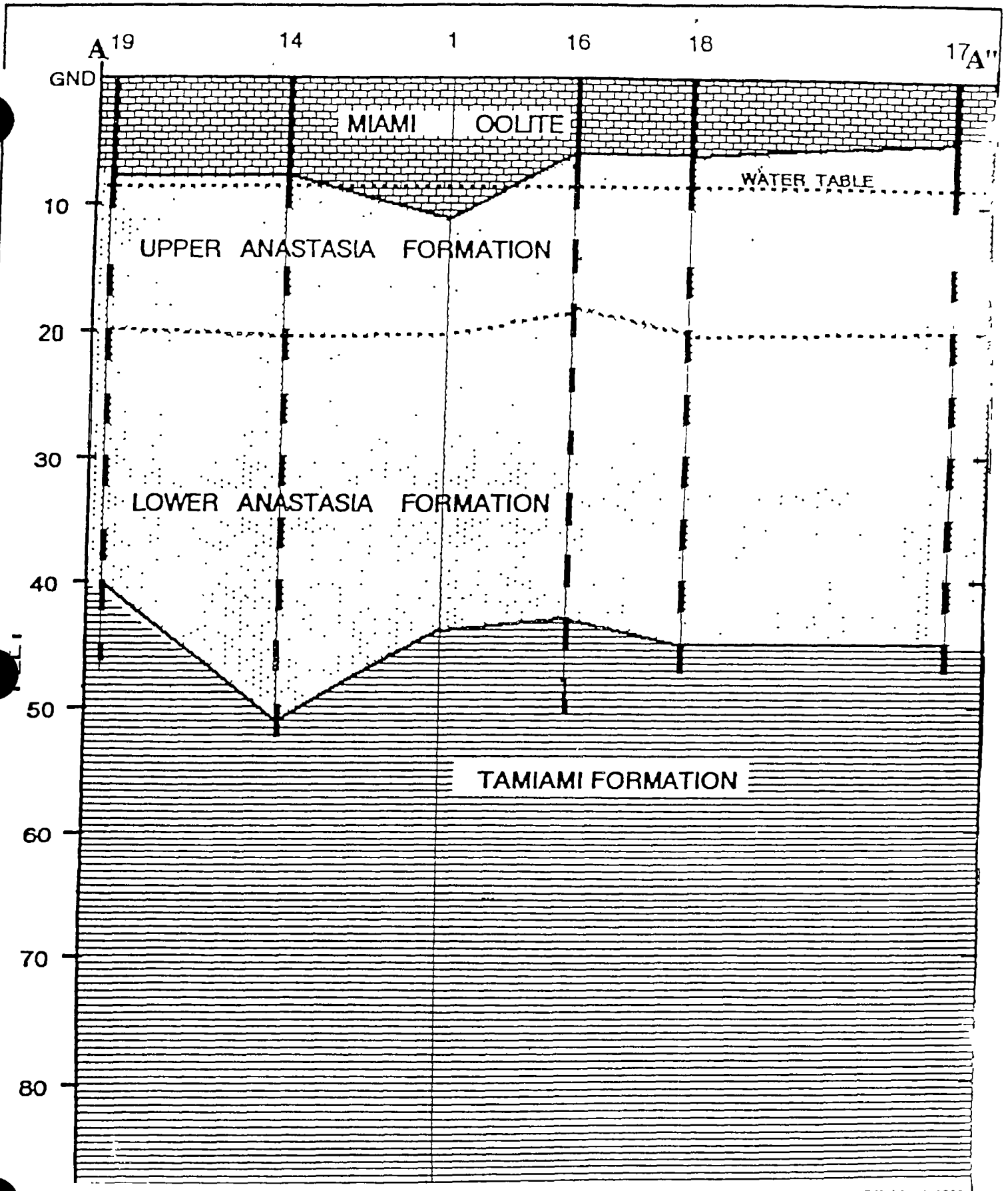
GOLD COAST OIL | PROJECT # 8902.02 | DATE 01/2094



MW	DEPTH (ft)
1	140
2	46
3	46
4	14
5	14
6	14
7	14
8	14
9	13 6
10	13 6
11	15
12	13 6
13	15
14	47 5
15	48 5
16	49 5
17	48 5
18	50
19	50 5
20	31
21	75

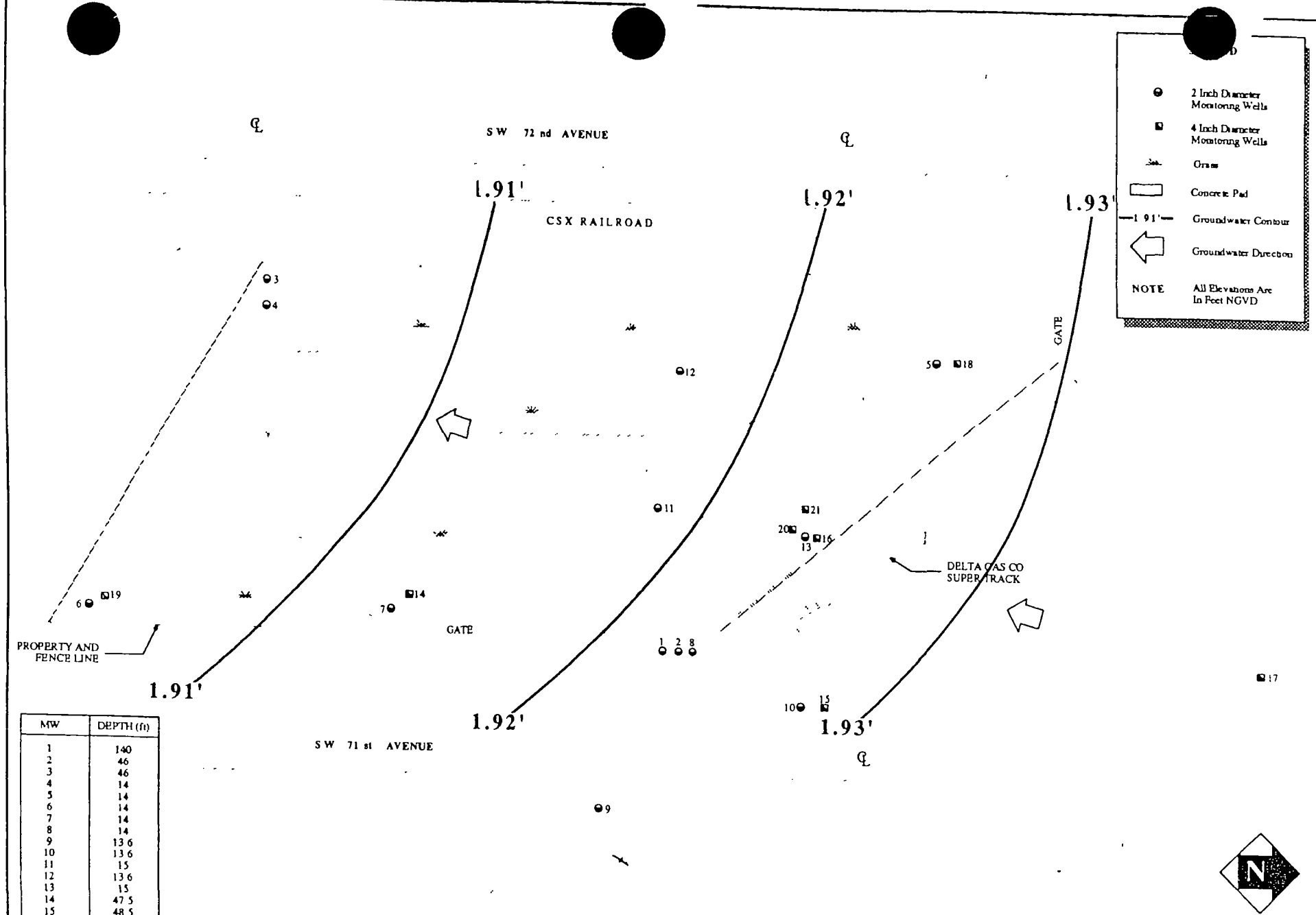
Source BALJET-CLARK March 1990

CLARK engineers-scientists	LOCATION OF GEOLOGIC SECTION A-A''	FIGURE # 3
		SCALE 1"=60'-0
	GOLD COAST OIL / PROJECT # 890202	DATE 01/20/94



Source BALJET-CLARK, March 1990

CLARK engineers-scientists	GEOLOGICAL SECTION A-A"	FIGURE # 3A
		SCALE
GOLD COAST OIL	PROJECT # 8902 02	DATE 01/2094



MW	DEPTH (ft)
1	140
2	46
3	46
4	14
5	14
6	14
7	14
8	14
9	13 6
10	13 6
11	15
12	13 6
13	15
14	47 5
15	48 5
16	49 5
17	48 5
18	50
19	50 5
20	31
21	75

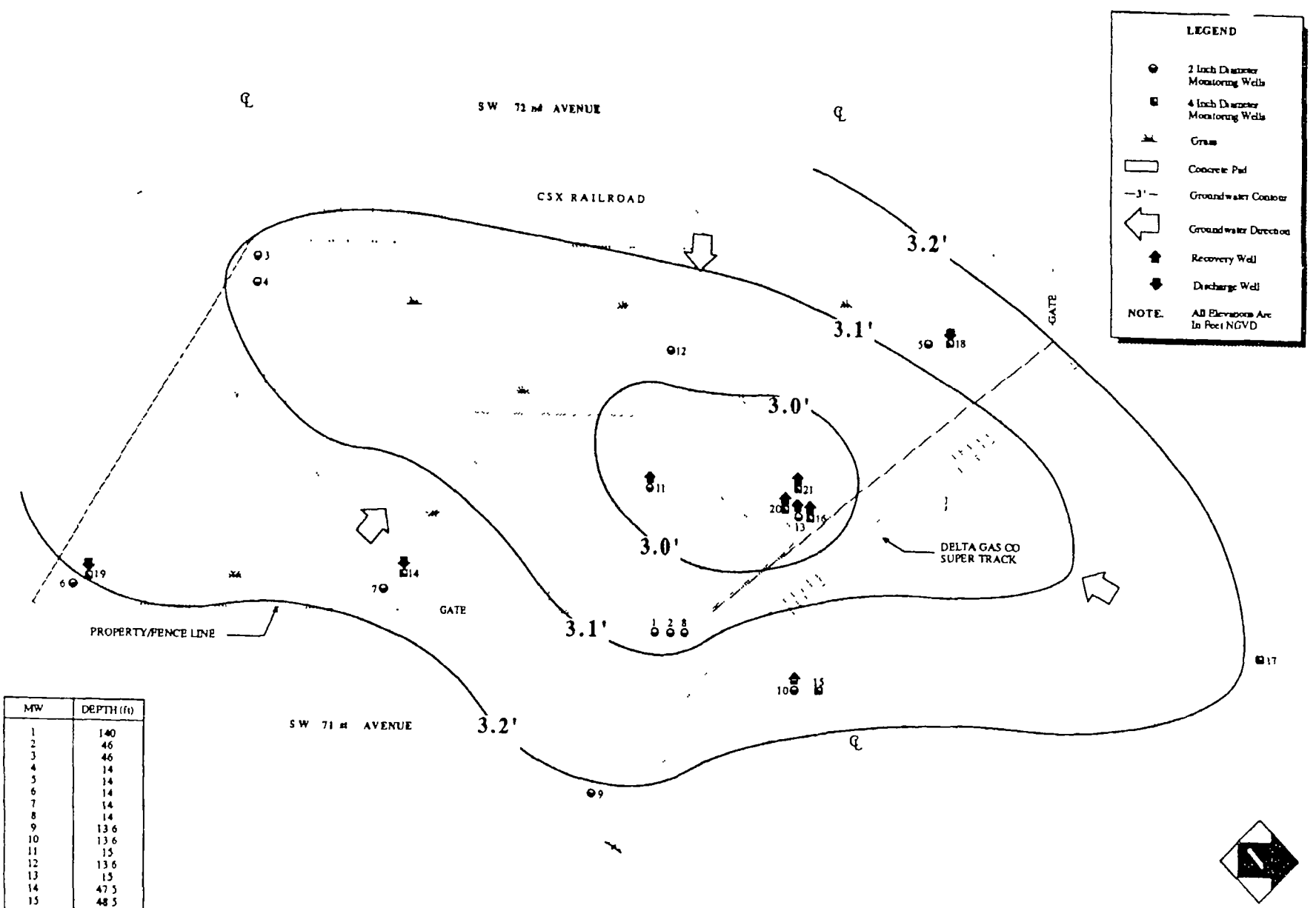
CLARK engineers-scientists

GROUNDWATER ELEVATION MAP PRIOR TO SYTEM START UP (02/28/90)

FIGURE # 4

SCALE 1"=60'-0"

GOLD COAST OIL | PROJECT # 8902 02 | DATE 01/20/94



MW	DEPTH (ft)
1	140
2	46
3	46
4	14
5	14
6	14
7	14
8	14
9	136
10	136
11	15
12	136
13	15
14	47 5
15	48 5
16	49 5
17	48 5
18	50
19	50 5
20	31
21	75

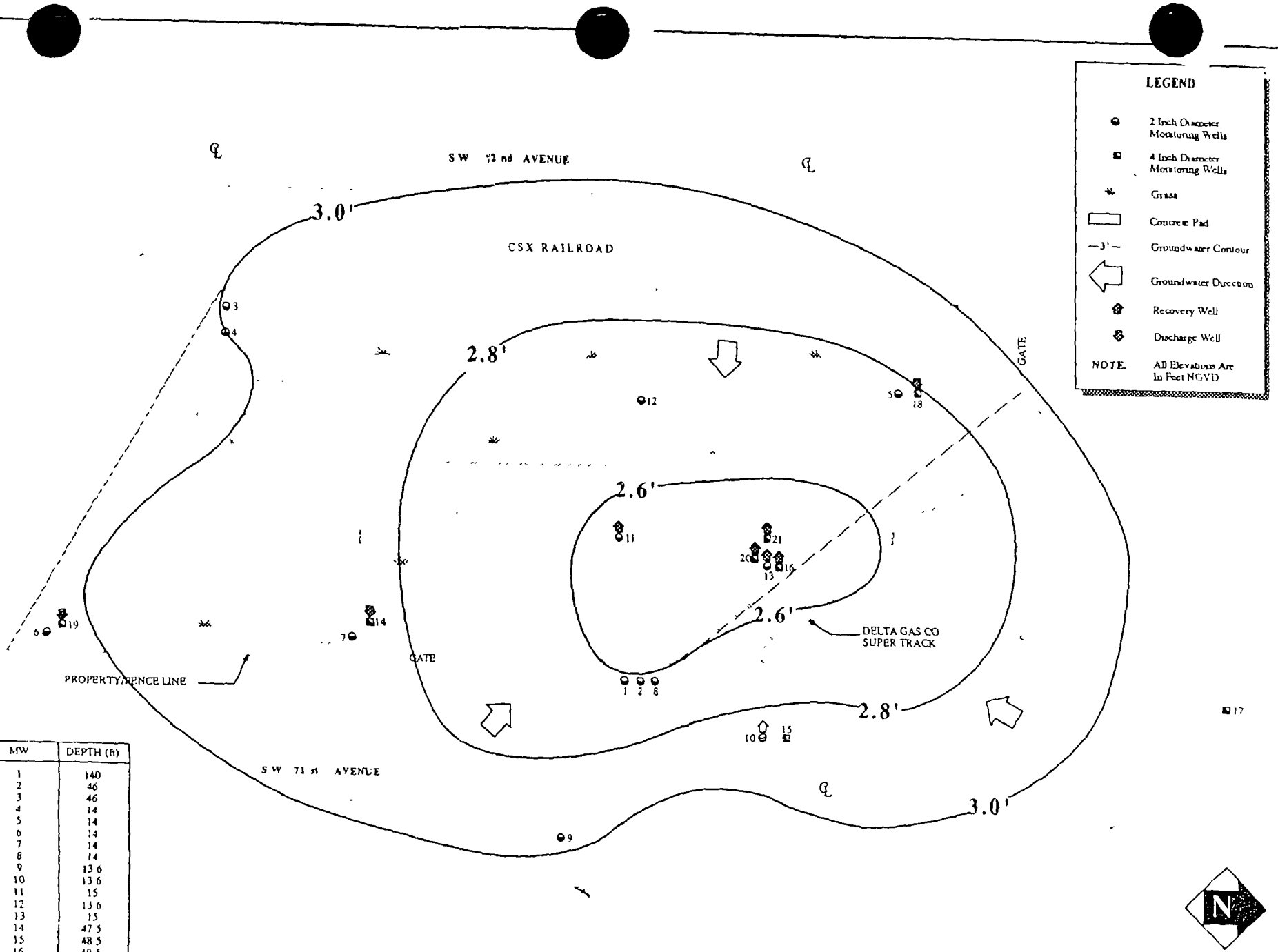
CLARK engineers-scientists

GROUNDWATER ELEVATION MAP (07/23/91)

FIGURE # 4A

SCALE 1 =60'-0"

GOLD COAST OIL | PROJECT # 8902 02 | DATE 01/20/94



MW	DEPTH (ft)
1	140
2	46
3	46
4	14
5	14
6	14
7	14
8	14
9	13 6
10	13 6
11	15
12	13 6
13	15
14	47 5
15	48 5
16	49 5
17	48 5
18	50
19	50 5
20	31
21	75

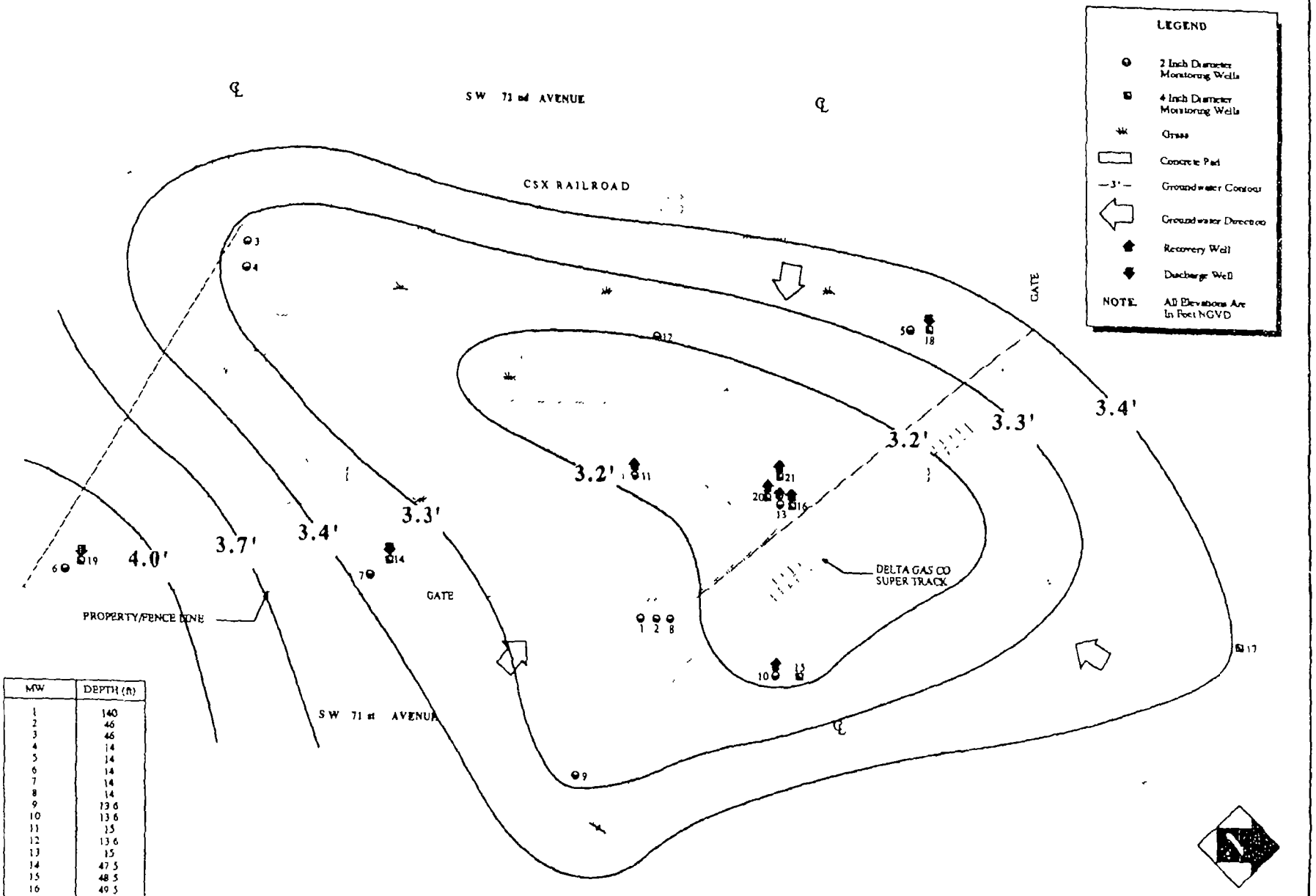
CLARK engineers-scientists

GROUNDWATER ELEVATION MAP (07/23/92)

FIGURE # 4B

SCALE 1"=40' 0"

GOLD COAST OIL | PROJECT # 8902 02 | DATE 01/20/94



MW	DEPTH (ft)
1	140
2	46
3	46
4	14
5	14
6	14
7	14
8	14
9	13 6
10	13 6
11	15
12	13 6
13	15
14	47 5
15	48 5
16	49 5
17	48 5
18	50
19	50 5
20	31
21	75

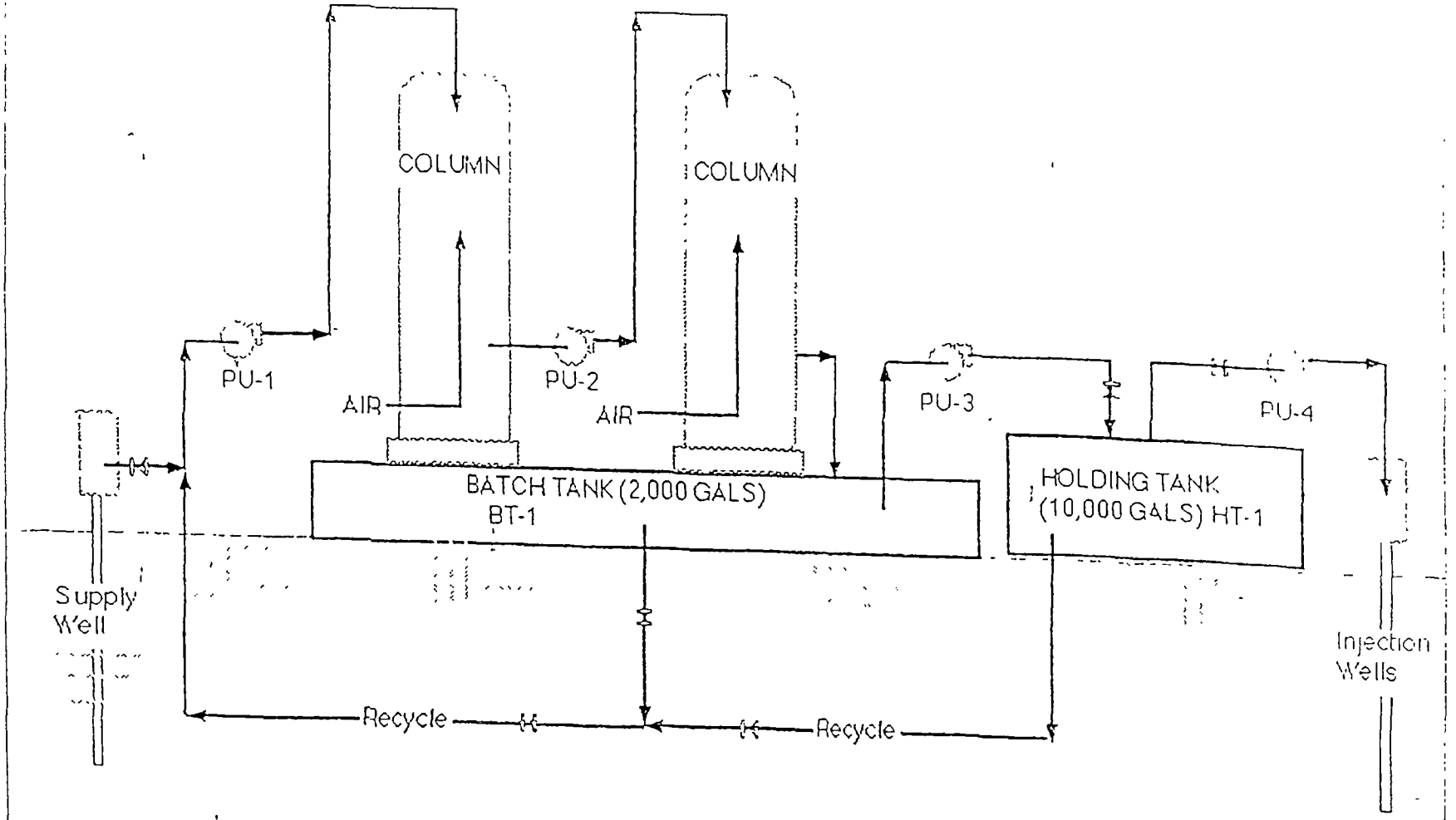
CLARK engineers-scientists

GROUNDWATER ELEVATION MAP (07/28/93)

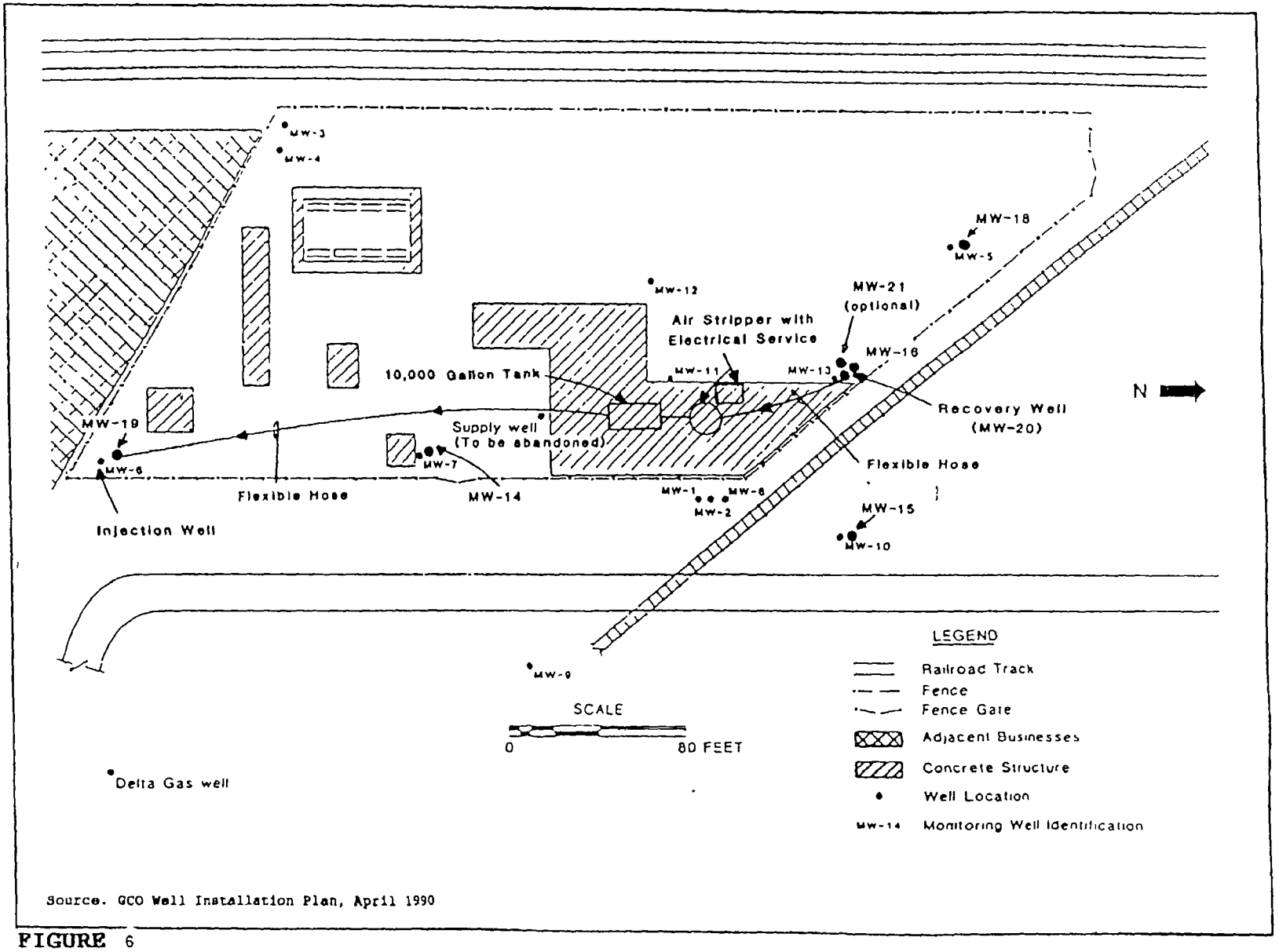
FIGURE # 4C

SCALE 1"=60' 0"

GOLD COAST OIL | PROJECT # 8902 02 | DATE 01/20/94

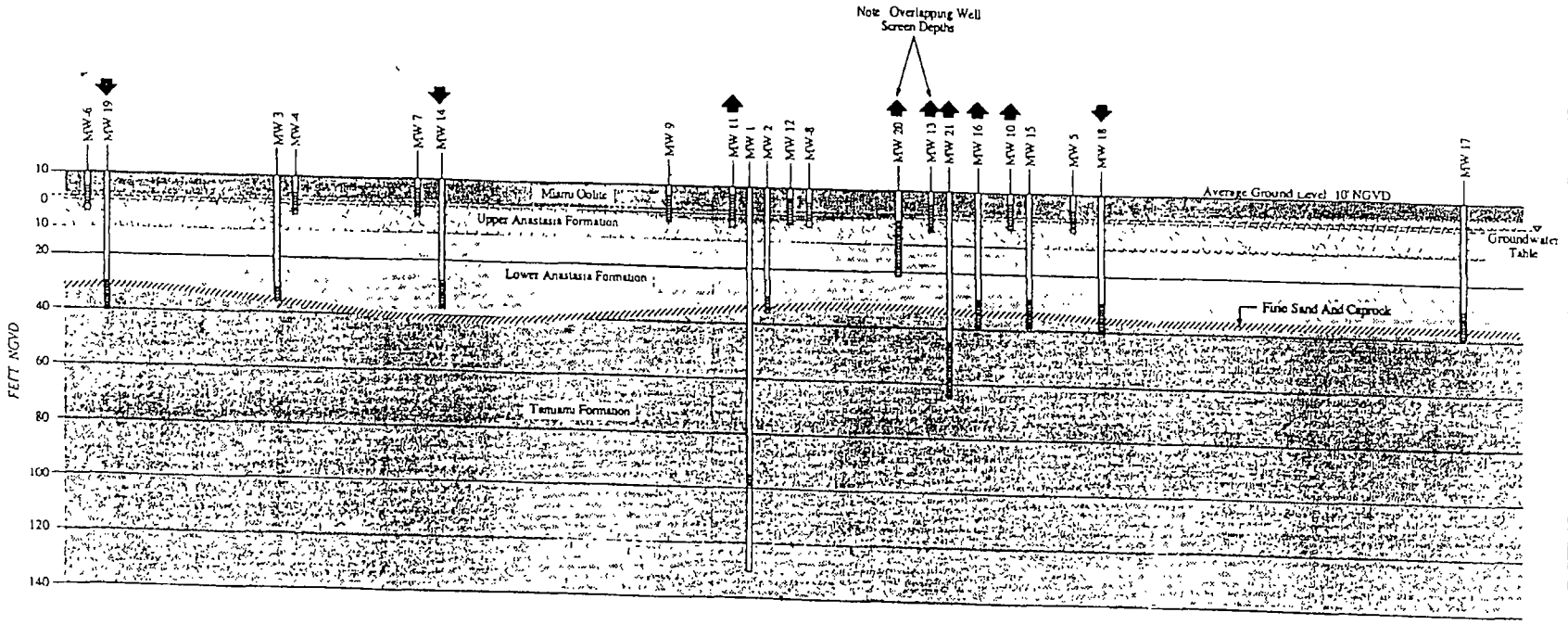


CLARK engineers-scientists	GRTD SCHEMATIC		FIGURE # 5
			SCALE see figure
	GOLD COAST OIL	PROJECT # 8902 02	DATE 01/20/94



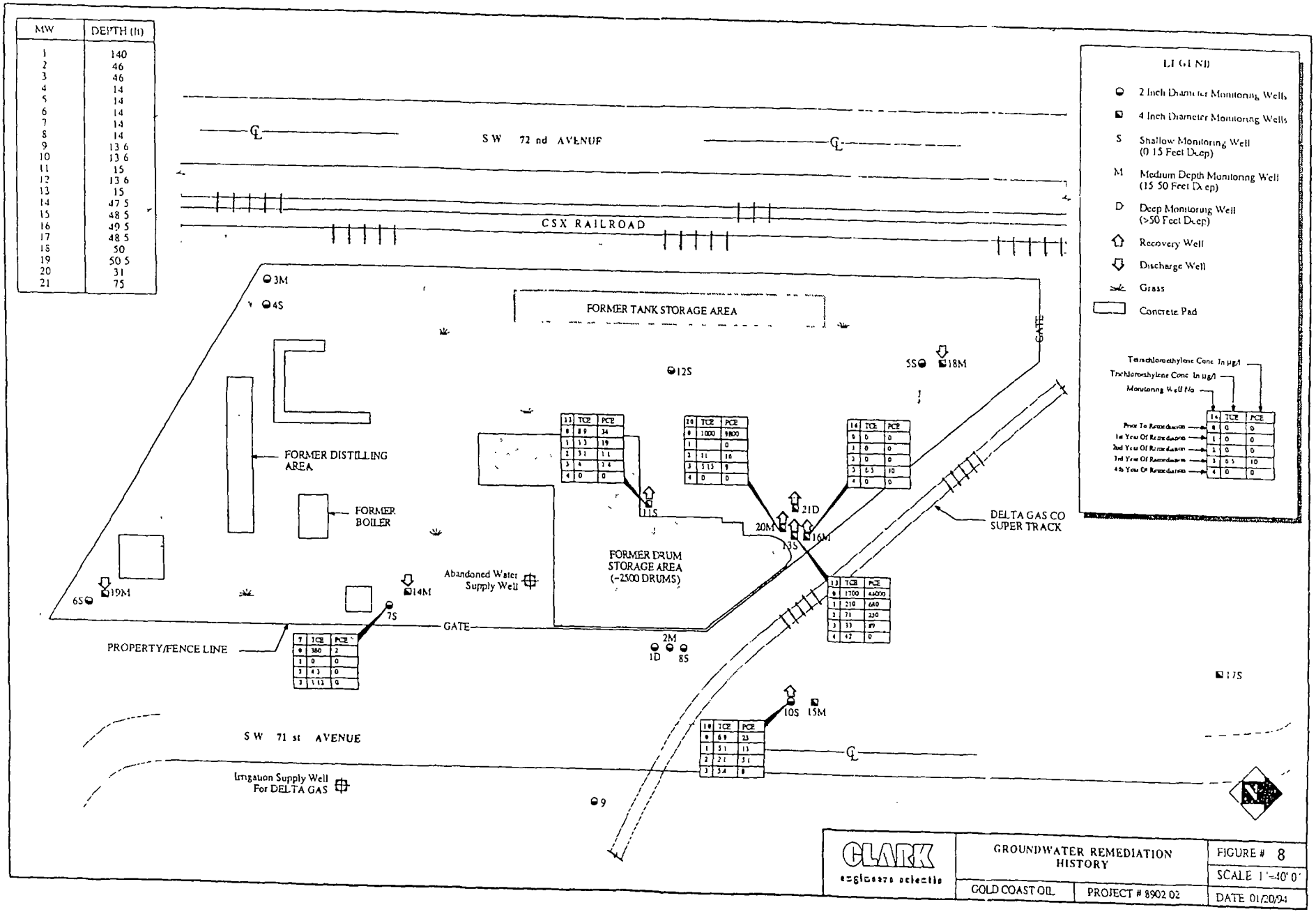
Source. GCO Well Installation Plan, April 1990

FIGURE 6
MONITORING WELL LOCATIONS
GOLD COAST OIL SITE
MIAMI, FLORIDA



CLARK engineering-science inc	GEOLOGIC SECTION SHOWING WELL DEPTHS	FIGURE # 7
		SCALE see figure
	GOLD COAST OIL / PROJECT # 8902	DATE 01/25/94

MW	DEPTH (ft)
1	140
2	46
3	46
4	14
5	14
6	14
7	14
8	14
9	13 6
10	13 6
11	15
12	13 6
13	15
14	47 5
15	48 5
16	49 5
17	48 5
18	50
19	50 5
20	31
21	75



CLARK engineers scientists

GROUNDWATER REMEDIATION HISTORY

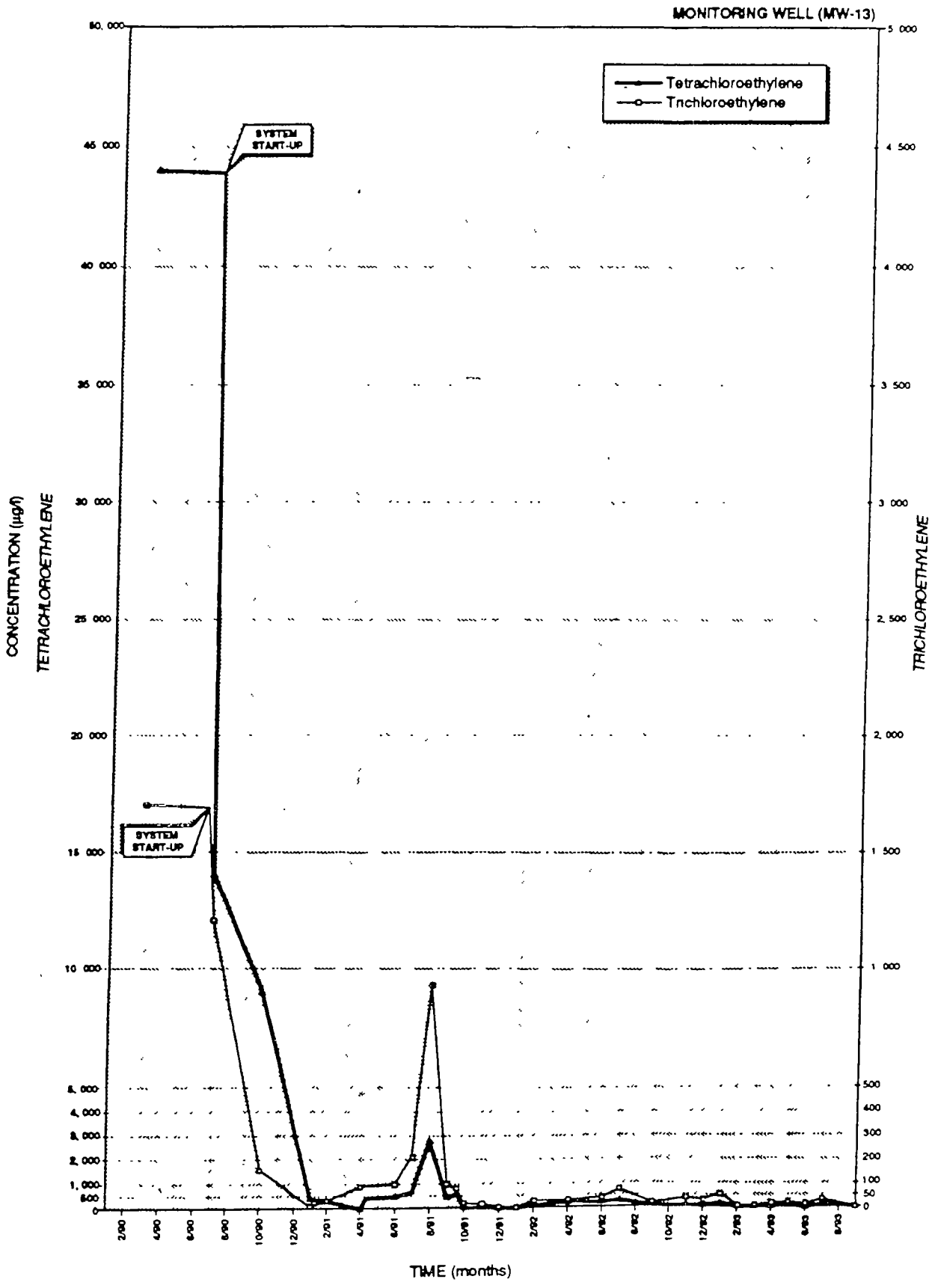
FIGURE # 8

SCALE 1"=40'0"

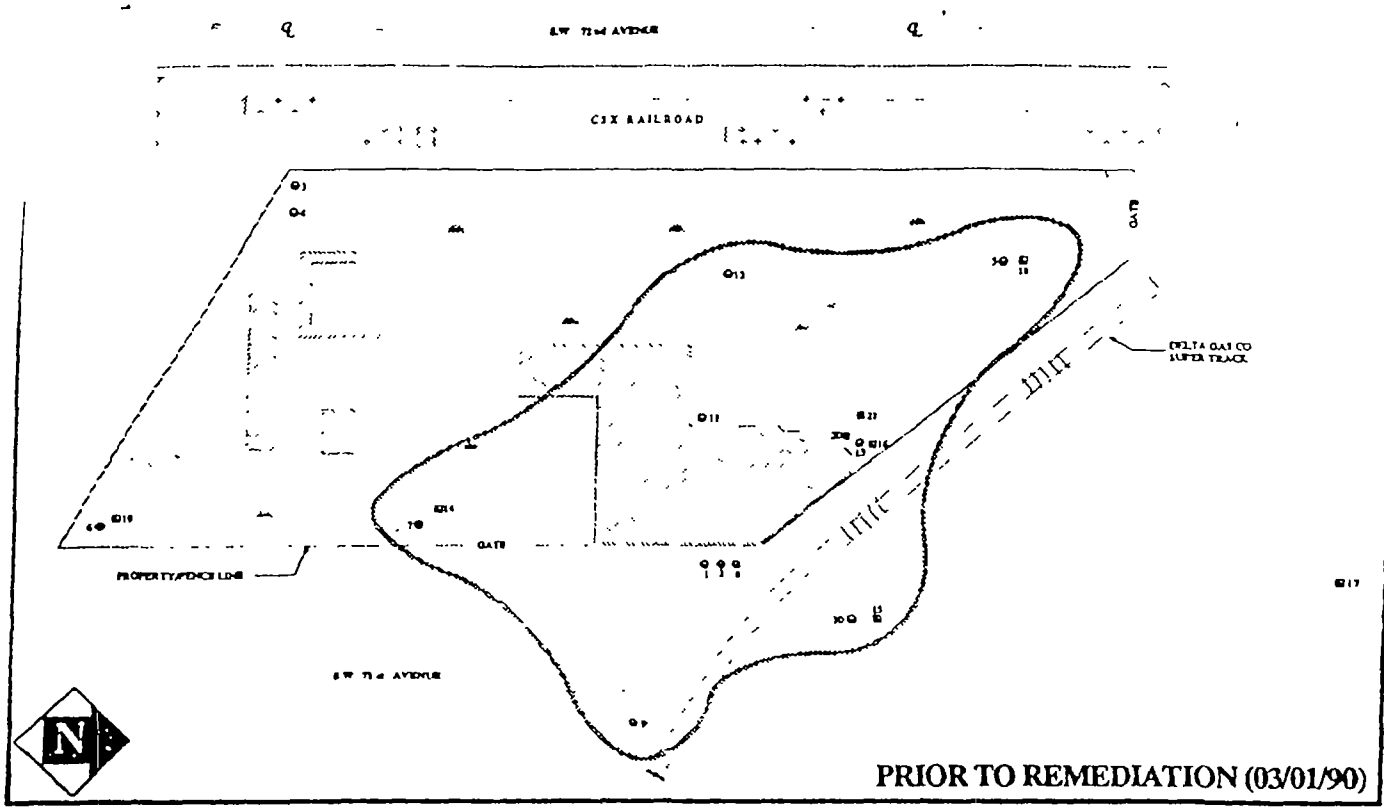
GOLD COAST OIL

PROJECT # 8902 02

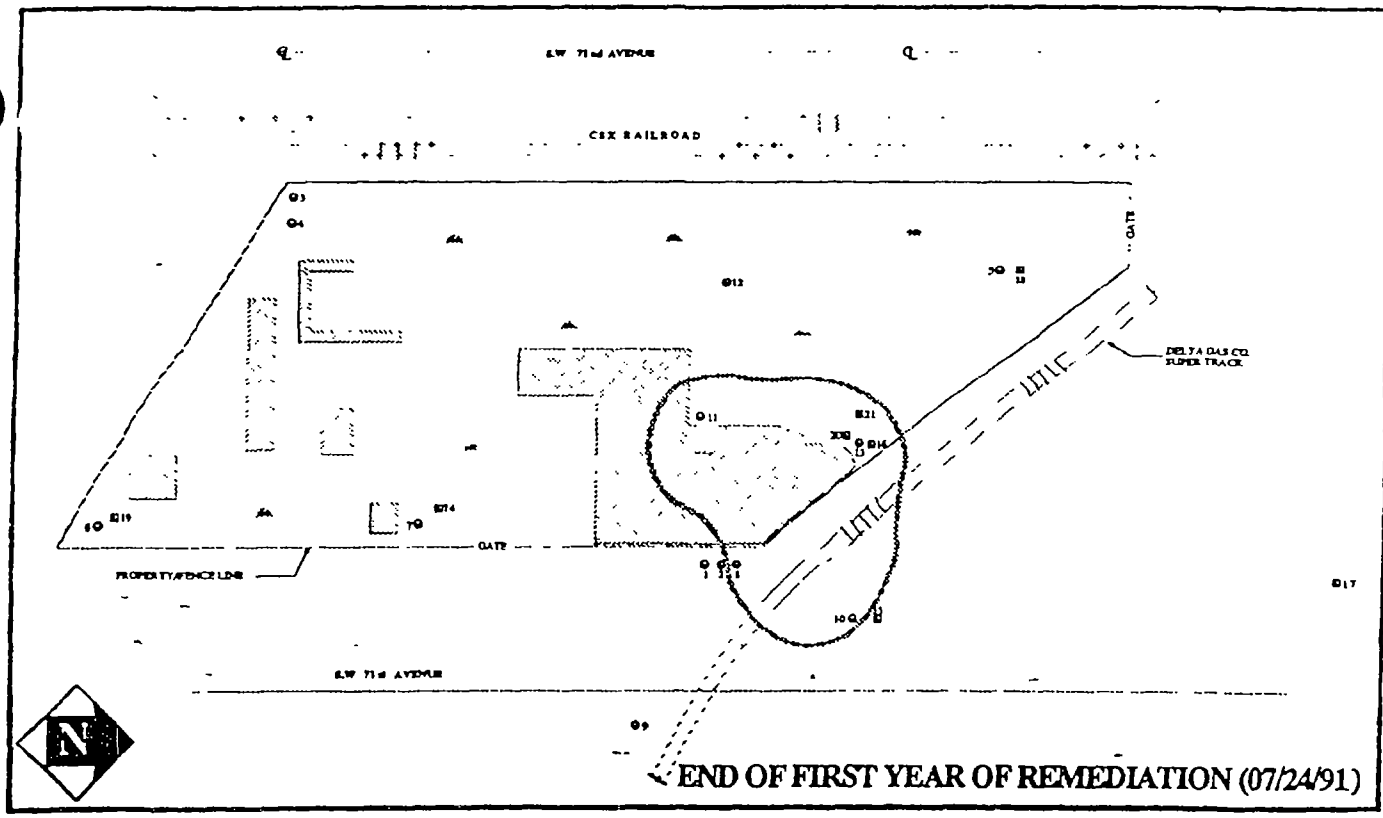
DATE 01/20/94



CLARK engineers-scientists	GROUNDWATER TREATMENT HISTORY (MW-13)	FIGURE # 9
		SCALE see figure
	GOLD COAST OIL / PROJECT # 8902.02	DATE 01/20/94



PRIOR TO REMEDIATION (03/01/90)

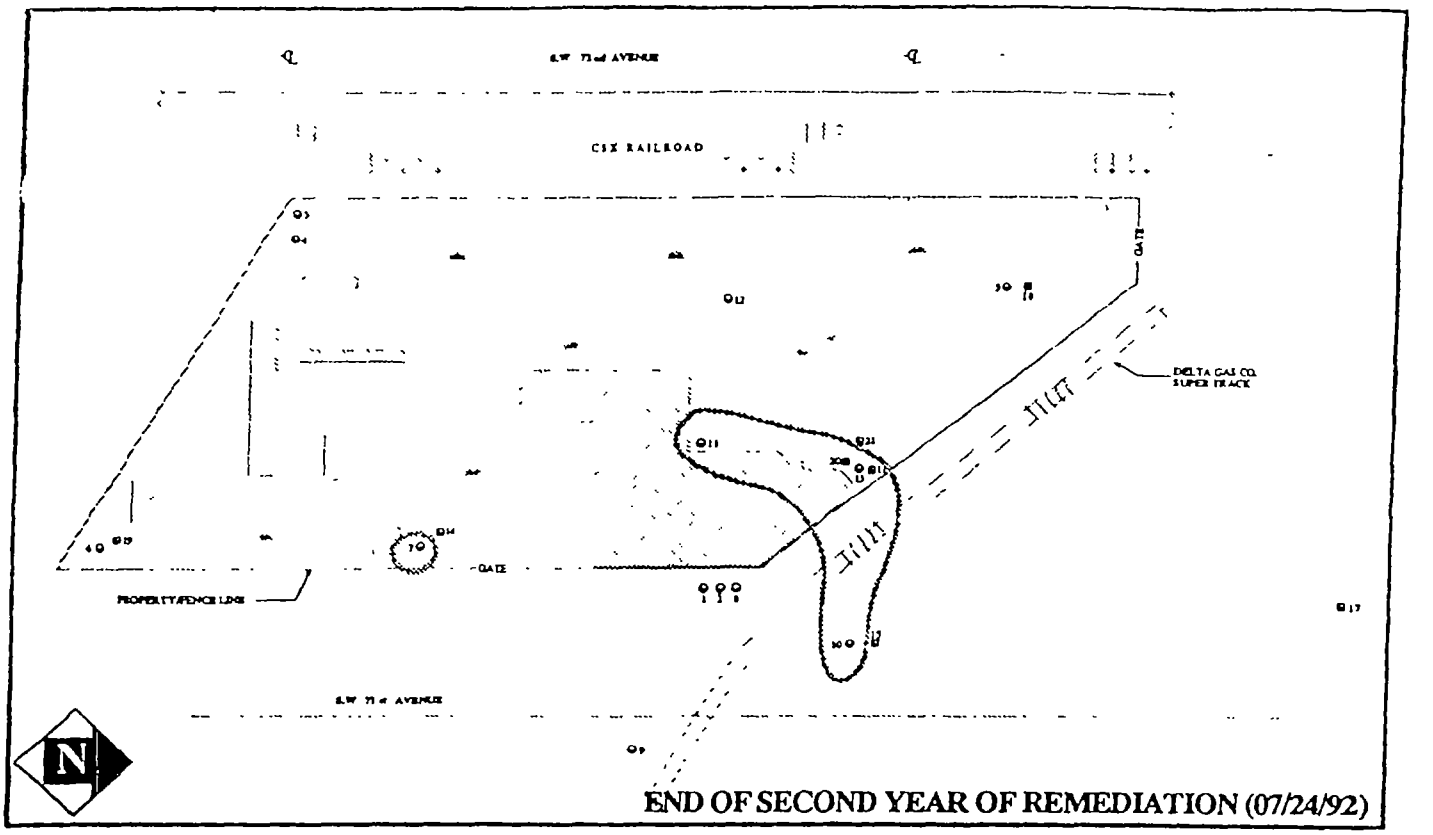


END OF FIRST YEAR OF REMEDIATION (07/24/91)

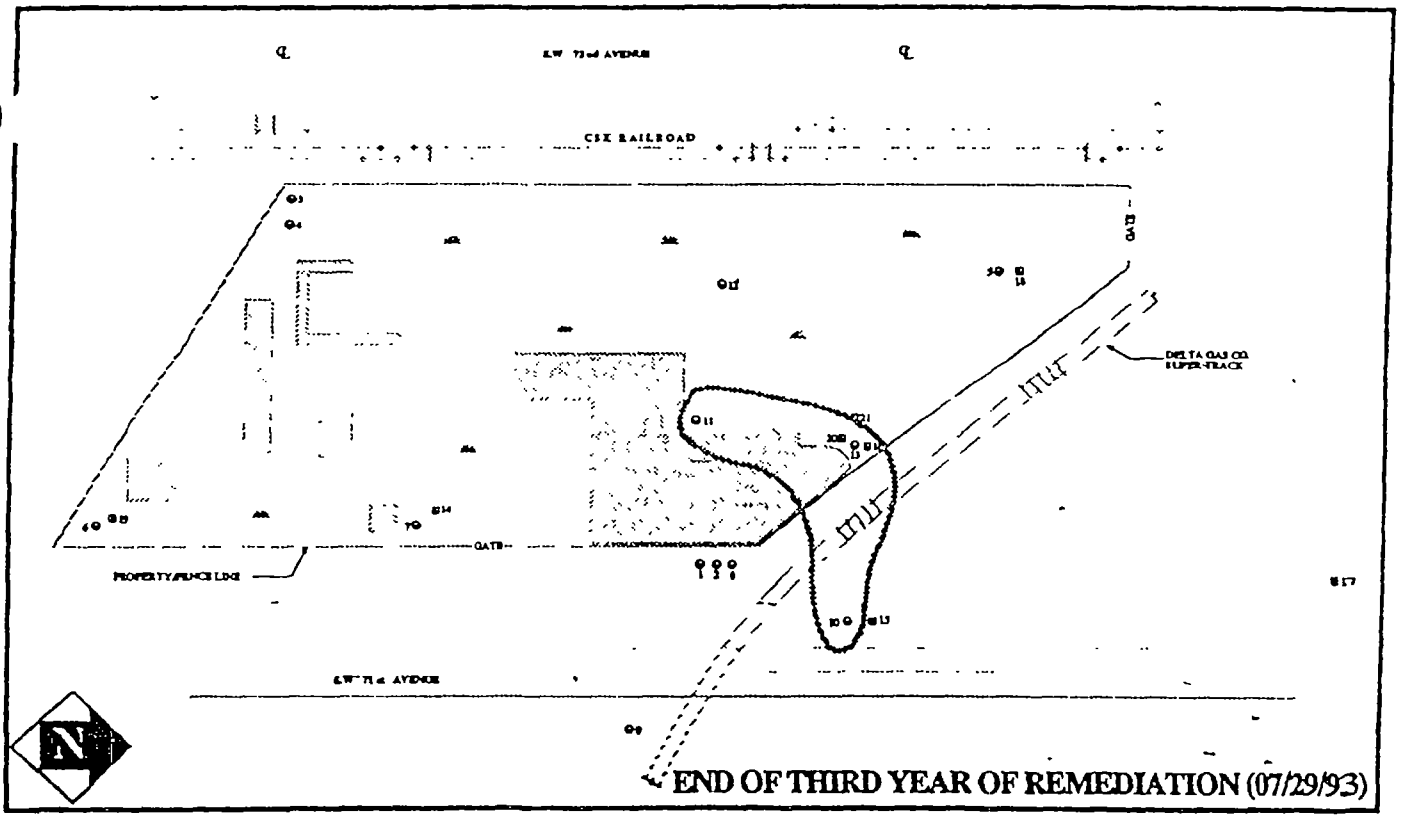
Aqueous Constituent Plume

CLARK engineers-scientists

SITE PLANS SHOWING DISSOLVED CONSTITUENT PLUMES FOR THE INDICATED DATES		FIGURE #: 10
		SCALE: 1"=80'-0"
GOLD COAST OIL	PROJECT #: 8902.02	DATE: 12/28/94



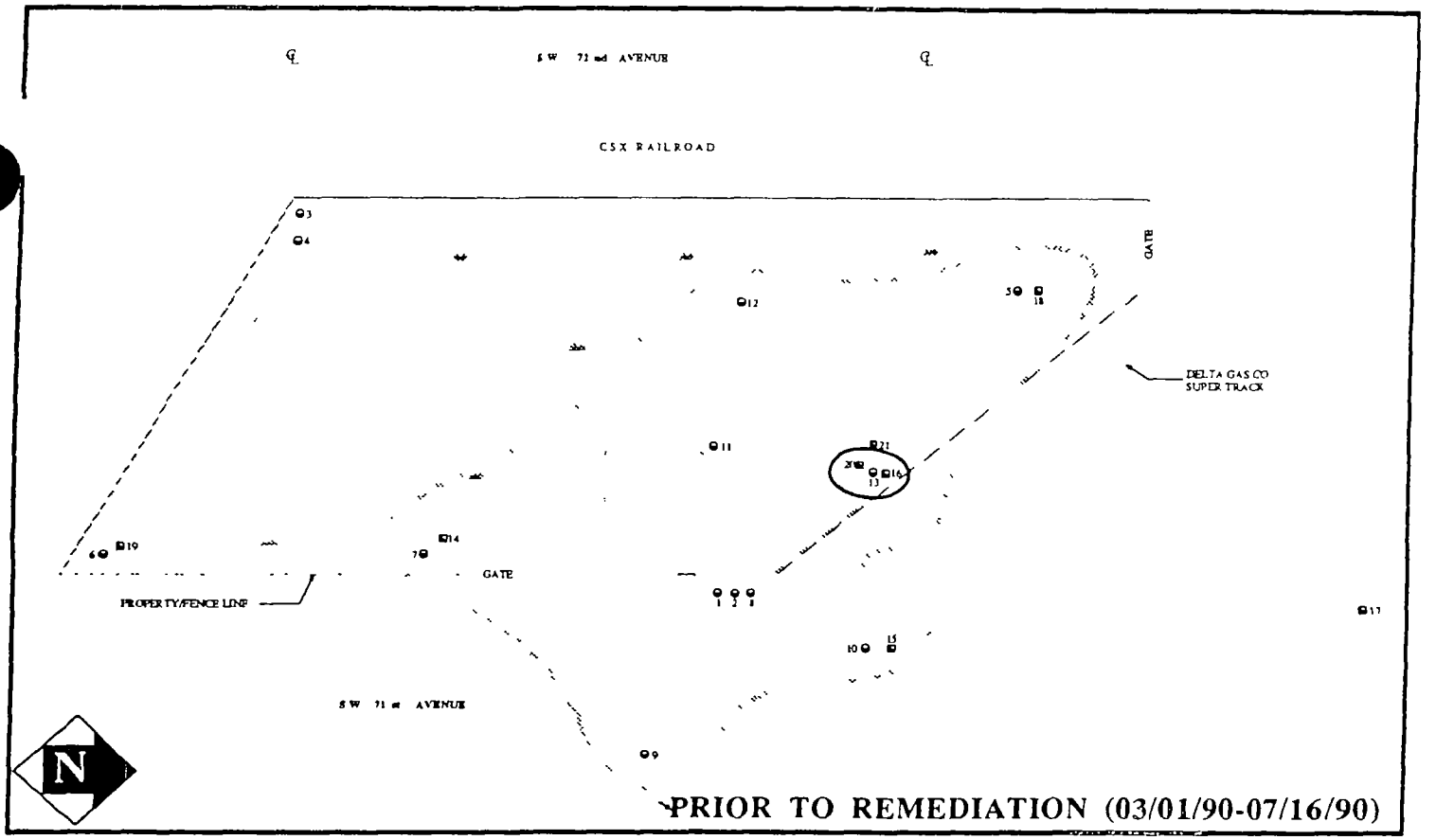
END OF SECOND YEAR OF REMEDIATION (07/24/92)



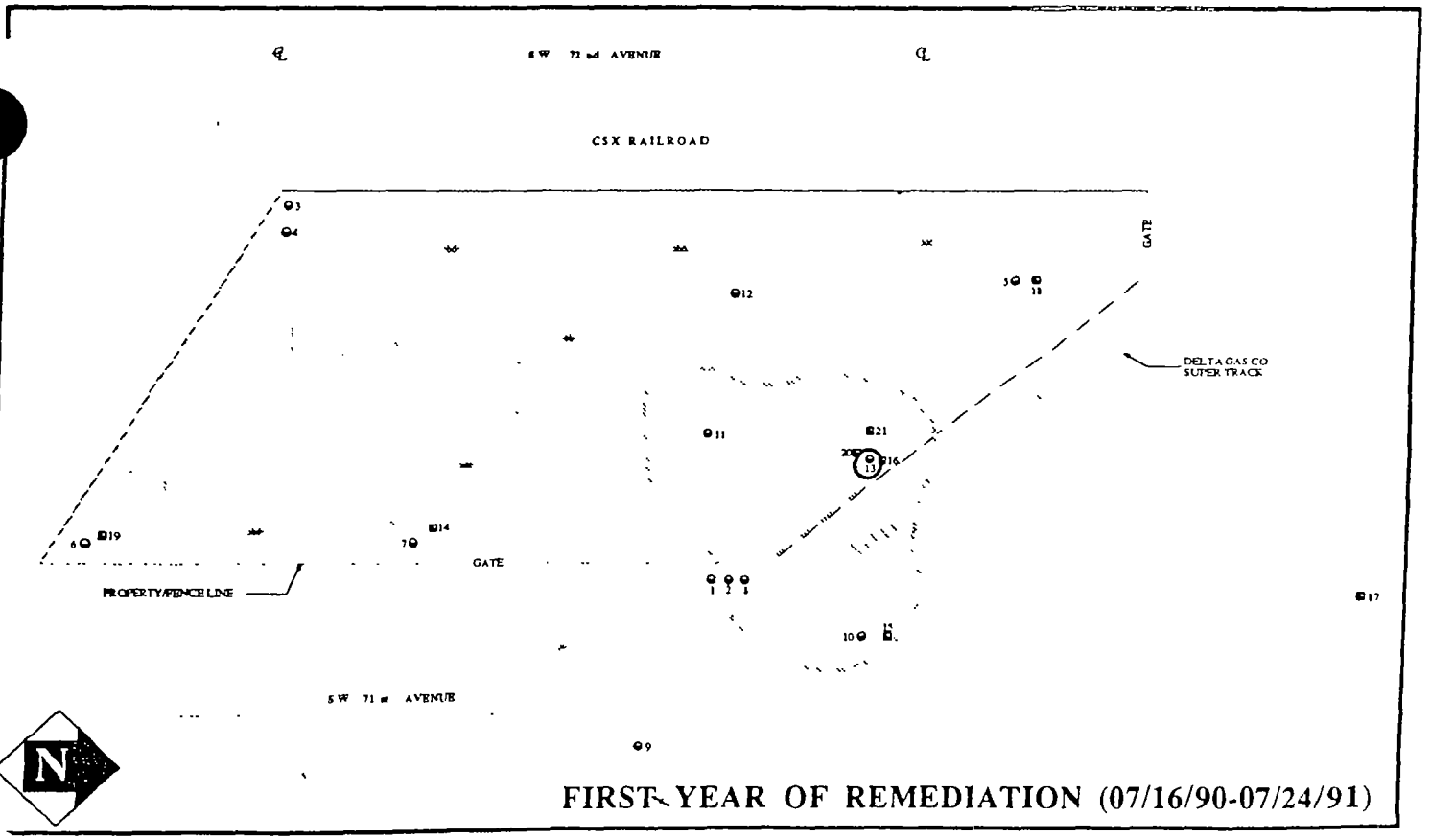
END OF THIRD YEAR OF REMEDIATION (07/29/93)

——— Aqueous Constituent Plume

CLARK engineers-scientists	SITE PLANS SHOWING DISSOLVED CONSTITUENT PLUMES FOR THE INDICATED DATES		FIGURE #: 10A
			SCALE: 1"=80'-0"
	GOLD COAST OIL	PROJECT #: 8902 02	DATE: 12/28/94



PRIOR TO REMEDIATION (03/01/90-07/16/90)



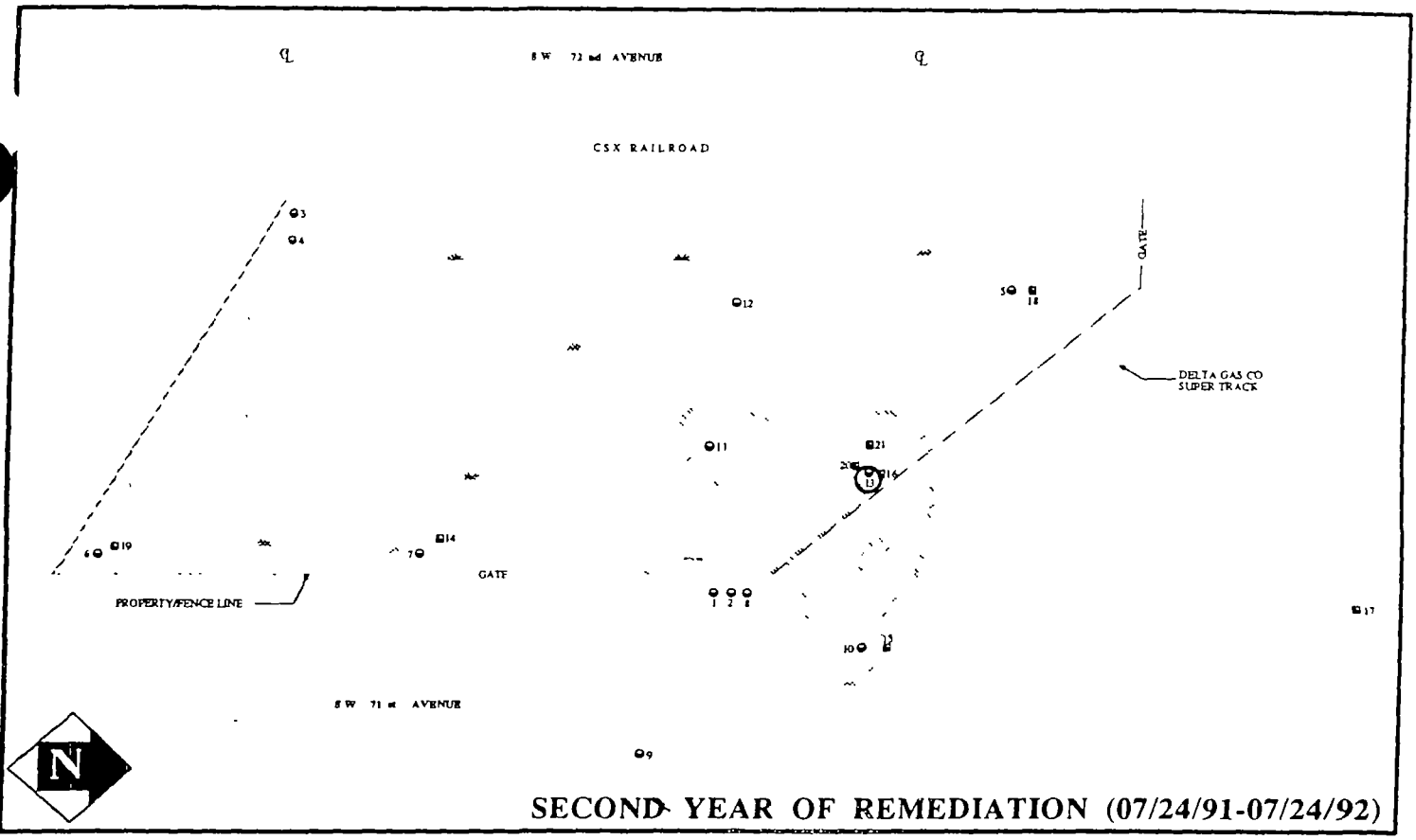
FIRST YEAR OF REMEDIATION (07/16/90-07/24/91)

Aqueous Constituent Plume

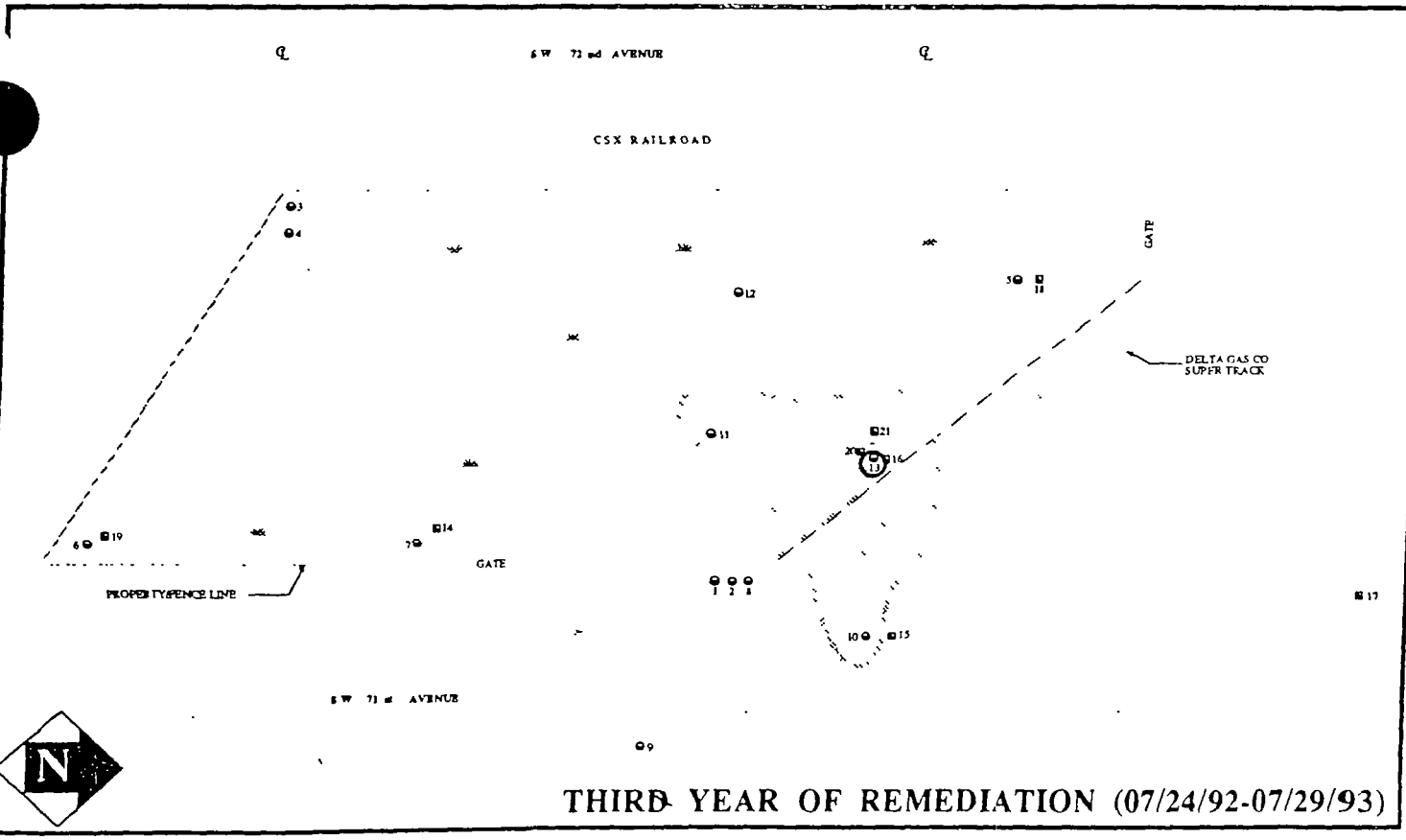
Dnapl Residual Zone
(Also DNAPL Entry Zone)

CLARK engineers-scientists

SITE PLANS SHOWING DISSOLVED CONSTITUENT PLUMES FOR INDICATED PERIODS		FIGURE # 10B
		SCALE 1"=80'-0"
GOLD COAST OIL	PROJECT # 8902 02	Date 02/22/94



SECOND YEAR OF REMEDIATION (07/24/91-07/24/92)



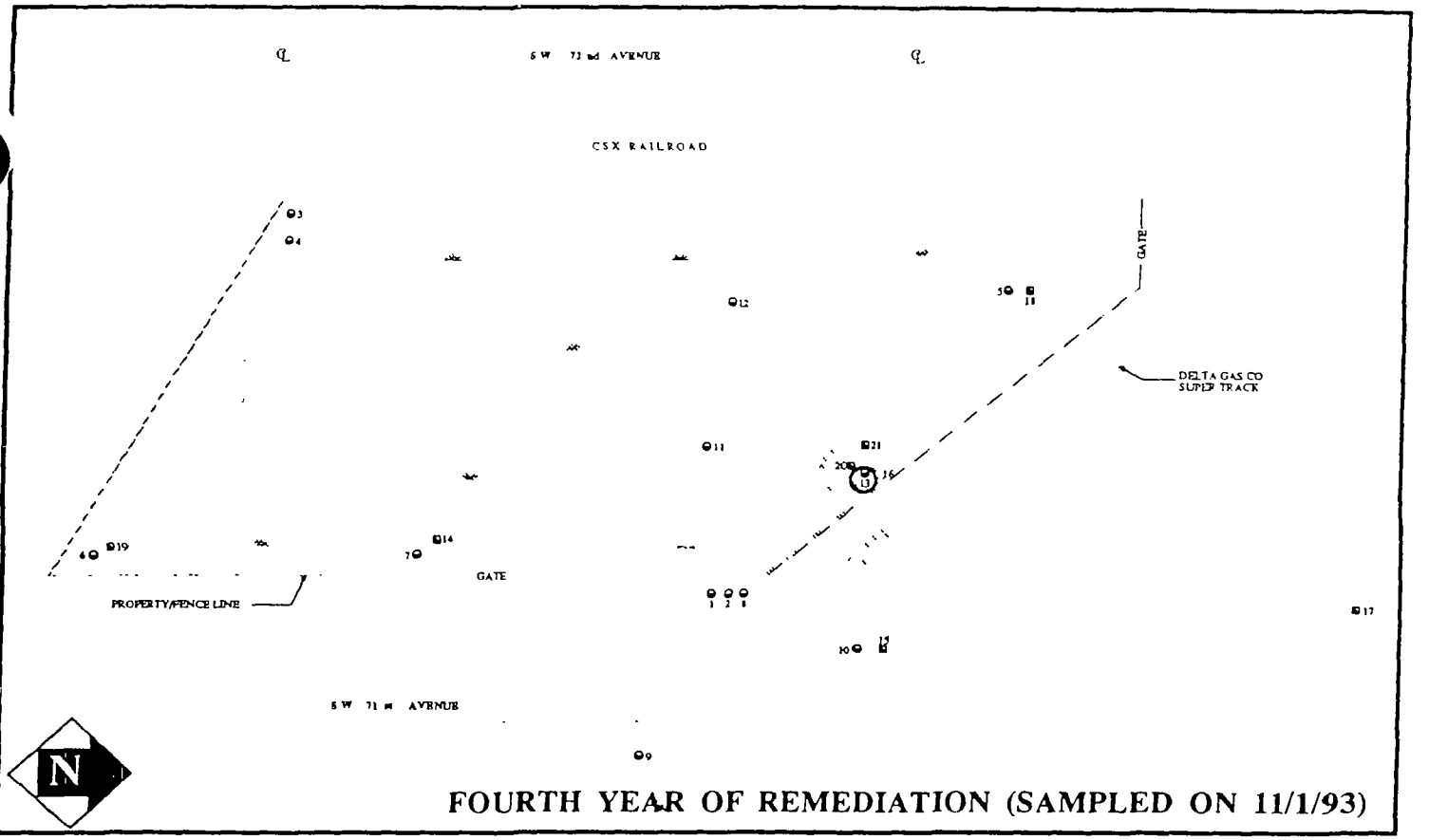
THIRD YEAR OF REMEDIATION (07/24/92-07/29/93)

Aqueous Constituent Plume

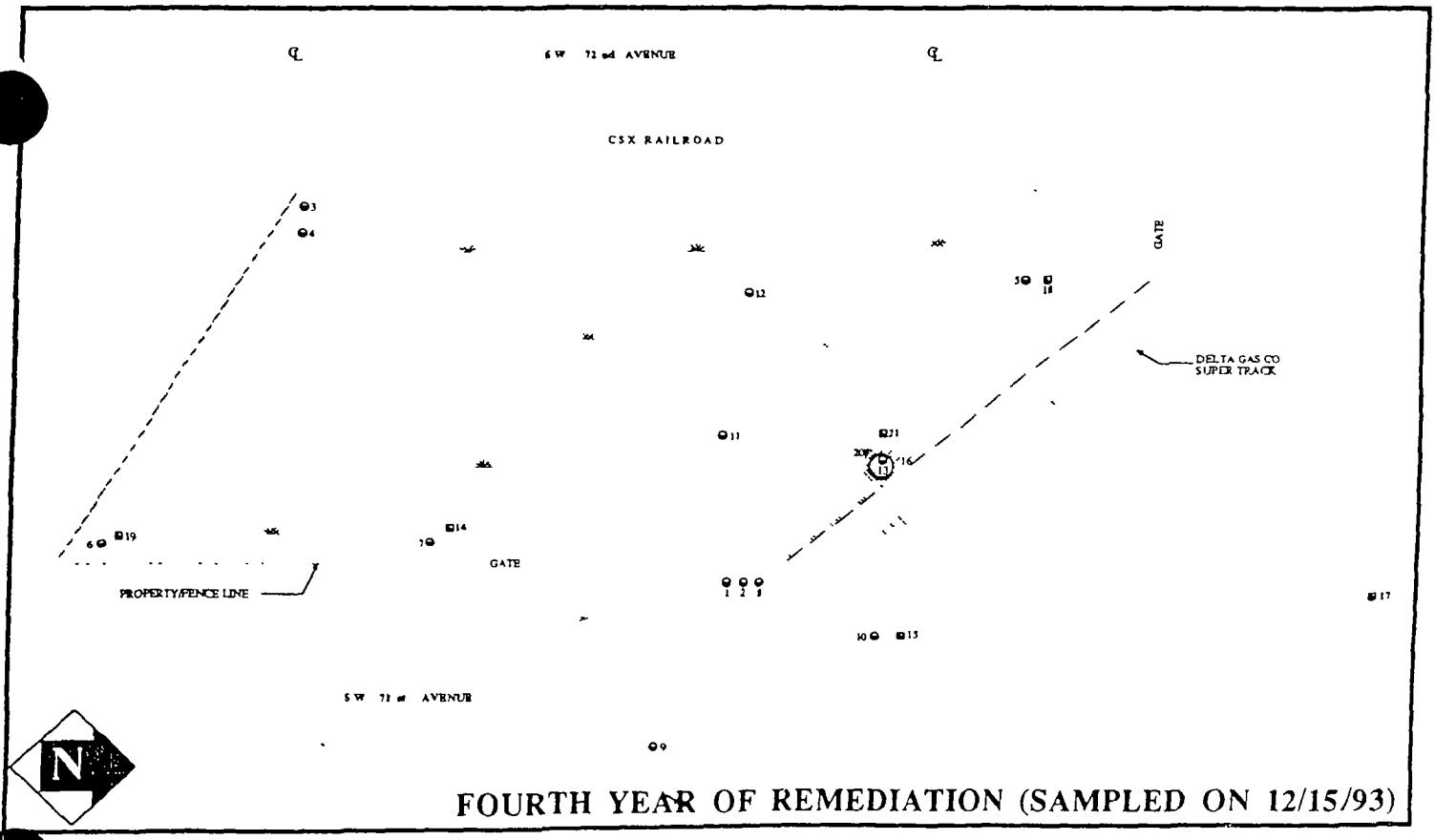
Dnapl Residual Zone
(Also DNAPL Entry Zone)

CLARK engineers-scientists

SITE PLANS SHOWING DISSOLVED CONSTITUENT PLUMES FOR INDICATED PERIODS		FIGURE # 10C
		SCALE 1"=80'-0"
GOLD COAST OIL	PROJECT # 8902 02	Date 02/22/94



FOURTH YEAR OF REMEDIATION (SAMPLED ON 11/1/93)



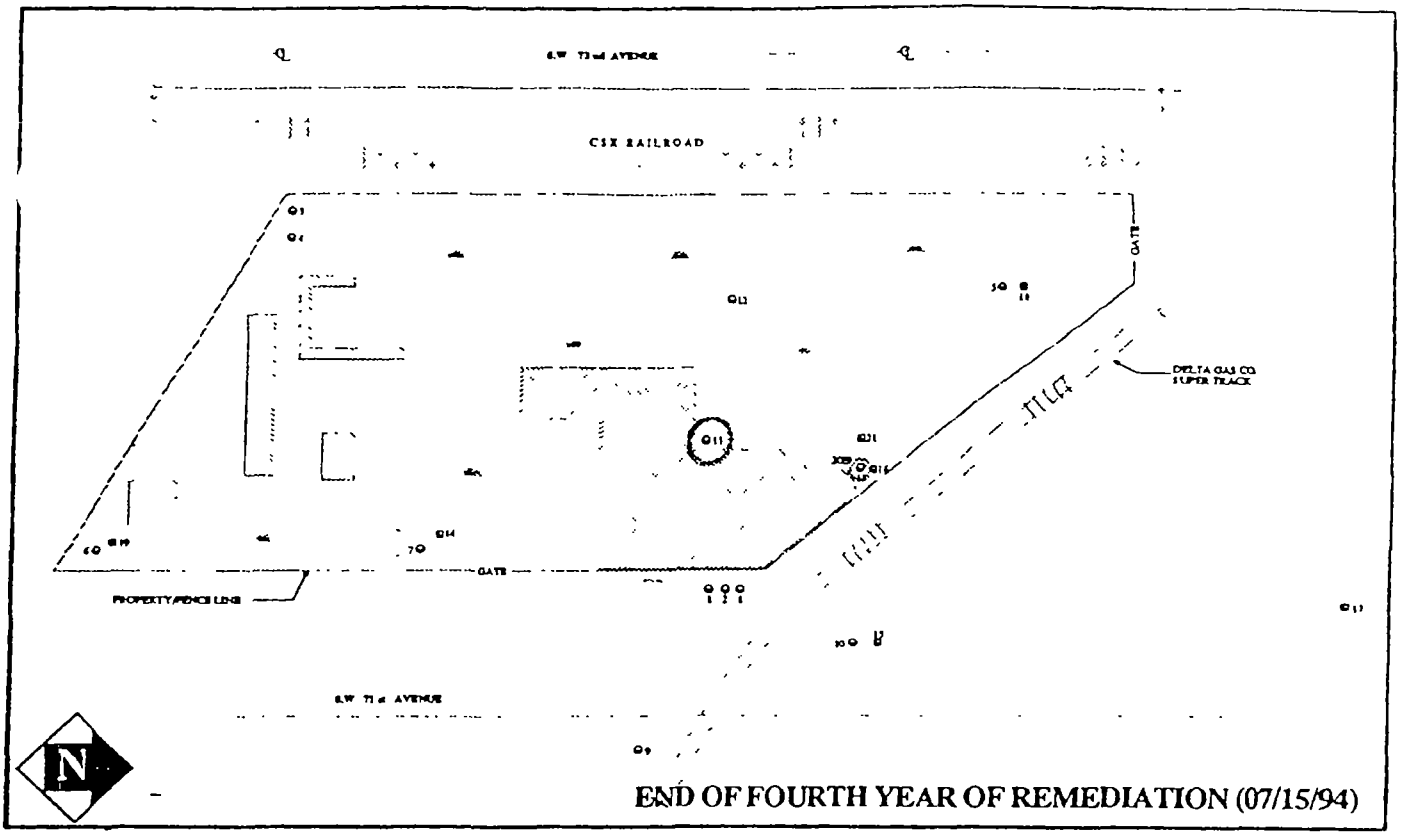
FOURTH YEAR OF REMEDIATION (SAMPLED ON 12/15/93)

Aqueous Constituent Plume

Dnapl Residual Zone
(Also DNAPL Entry Zone)

CLARK
engineers-scientists

SITE PLANS SHOWING DISSOLVED CONSTITUENT PLUMES FOR INDICATED PERIODS		FIGURE # 10D
		SCALE 1"=80'-0"
GOLD COAST OIL	PROJECT # 8902 02	Date 01/24/94



END OF FOURTH YEAR OF REMEDIATION (07/15/94)

Aqueous Constituent Plume

CLARK engineers-scientists

SITE PLANS SHOWING DISSOLVED CONSTITUENT PLUMES FOR THE INDICATED DATES		FIGURE #: 10E
		SCALE: 1"=80'-0"
GOLD COAST OIL	PROJECT #: 8902.02	DATE: 12/28/94

Documents Reviewed

Record of Decision, Remedial Alternative Selection, Gold Coast Oil Corporation, Miami Florida, prepared by U S Environmental Protection Agency (September 11, 1987)

Technical Impracticability Evaluation of Further Groundwater Restoration at the Gold Coast Oil NPL Site, Miami, Florida, "Edward E Clark Engineers-Scientists, Inc (February 24, 1994)

Interim Site Closeout Report for the Gold Coast Oil Superfund Site, Miami, Florida, "EPA Region IV (June 23, 1992)

Closeout Report Gold Coast Oil Site, Miami Florida Prepared by U S Environmental Protection Agency, Region IV Atlanta, Georgia February 1996

U S Environmental Protection - region IV, Superfund Fact Sheet, Explanation of Significant Differences, Gold Coast oil Site, Miami Florida (March 8, 1994

Notice of Deletion of Gold Coast Oil Corporation Site from the National Priority List (September 27, 1996)

Notice of Completion and Remedial Action Report, Gold Coast Oil Superfund Site, Miami, Florida The Baljet Corporation/Edward E Clark Engineers-Scientists, Inc , February 1992

Notice of Completion and Remedial Action Report, Gold Coast Oil Superfund Site, Miami Florida, prepared by the Baljet Corporation/Edward E Clark Engineers-Scientists, Inc (January 1990)

Hazardous Waste Site Investigation Gold Coast oil Corporation, prepared by U S Environmental Protection Agency, June 1, 1981

Remedial Design/Remedial Action Groundwater Recovery Treatment and Discharge, prepared by the Baljet Corporation, Edward E Clark Engineers-Scientists, Inc for U S Environmental Protection Agency, February 1990

Site Closeout report, Gold Coast oil Site, prepared by Edward E Clark Engineers-Scientists, Inc , for the U S Environmental Agency, January 18, 1995