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PRELIMINARY REPORT OF SUBSURFACE ENVIRONMENTAL INVESTIGATION AND CORRECTIVE ACTION INCLUDING INITIAL ABATEMENT, INITIAL SITE CHARACTERIZATION AND FREE PRODUCT REMOVAL AT THE CITY GAS AND TRANSMISSION TERMINAL WILMINGTON, NORTH CAROLINA

PREPARED FOR:

WYANDOTTE TRIBAL PETROLEUM, INC.

MAY 20, 1991

PREPARED BY:

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TABLE OF CONTENTS

		PAGE
1.0	BACKGROUND	1
2.0	AUTHORIZATION	2
3.0	PURPOSE	2
4.0	METHODS	2
5.0	FINDINGS	3
6.0	RECOMMENDATIONS	7
7.0	LIMITATIONS	8

LIST OF FIGURES

FIGURE 1	VICINITY MAP SHOWING PROJECT LOCATION
FIGURE 2	SITE MAP SHOWING WELL LOCATIONS
FIGURE 3	WATER TABLE CONTOURS AT LOW TIDE (4/19/91)
FIGURE 4	WATER TABLE CONTOURS AT HIGH TIDE (4/19/91)
FIGURE 5	ESTIMATED FREE PRODUCT PLUME GEOMETRY AS OF 4/19/91 AT LOW TIDE
FIGURE 6	LOCATION OF CROSS-SECTION SHOWN ON FIGURE 7
FIGURE 7	CROSS SECTION ILLUSTRATING DRAWDOWN DATA
FIGURE 8	SITE MAP SHOWING PROPOSED ADDITIONAL RECOVERY AND MONITORING WELLS

LIST OF APPENDICES

APPENDIX I	STANDARD METHODS FOR CONDUCTING SUB-SURFACE ENVIRONMENTAL INVESTIGATIONS
APPENDIX II	AS-BUILT WELL CONSTRUCTION DETAILS
APPENDIX III	BORING LOGS
APPENDIX IV	WELL CONSTRUCTION RECORDS
APPENDIX V	WELL CONSTRUCTION PERMITS
APPENDIX VI	LABORATORY ANALYSES

PRELIMINARY REPORT OF SUBSURFACE

ENVIRONMENTAL INVESTIGATION AND CORRECTIVE ACTION

INCLUDING INITIAL ABATEMENT,

INITIAL SITE CHARACTERIZATION AND FREE PRODUCT REMOVAL

AT THE

CITY GAS AND TRANSMISSION TERMINAL

WILMINGTON, NORTH CAROLINA

PREPARED FOR:

WYANDOTTE TRIBAL PETROLEUM, INC.

MAY 20, 1991

1.0 BACKGROUND:

The subject facility is located along the Wilmington, North Carolina, Cape Fear River waterfront at 801 Surry Street. Figure 1 shows the project location and Figure 2 is a map of the portion of the site included in this investigation.

Originally built in the 1960's by Titan Petroleum, the facility has been operated in petroleum storage and refining capacities. Specifically, the site was formerly utilized for blending gasoline and subsequently for refining heavier oils. Recently, the facility has been operated by Wyandotte Tribal Petroleum, Inc. in anticipation of completing purchase arrangements.

In March of 1991, the U.S. Coast Guard responded to a seepage of oil into a storm sewer/tidal ditch tributary to the Cape Fear River. The North Carolina Division of Environmental Management was notified and immediate emergency actions were taken, including the installation

and maintenance of sorbent materials in the ditch and the placement of a terminal boom at the mouth of the ditch. Specialized Marine, Inc. (SMI) was contracted by Wyandotte Tribal Petroleum, Inc. to undertake the emergency actions. SMI sub-contracted Clark Environmental Services, Inc. to provide professional geologic and hydrogeologic services.

2.0 AUTHORIZATION:

The environmental work at the City Gas and Transmission facility was authorized by Mr. Jim Pappas of Wyandotte Tribal Petroleum, Inc.

3.0 PURPOSE:

The purposes of this report are to document initial abatement, initial site characterization, free product removal, and to make recommendations for additional investigations and/or corrective action utilizing preliminary hydrogeologic findings.

4.0 METHODS:

Initial abatement measures included the installation and maintenance of sorbent materials in the ditch, and the placement of a terminal boom at the entrance to the Cape Fear River.

Initial site characterization was accomplished through the installation of 23 monitoring wells, laboratory identification of free product, preliminary evaluations of hydrogeologic data and other site reconnaissance.

Subsurface free product removal was initiated through the installation of an initial recovery well installed along the area where free product seepage was occurring. The recovery well has been pumped on a continuous basis, along with intermittent pumping of other site wells containing an accumulation of product.

Preliminary hydrogeologic data was utilized to develop a more comprehensive product removal strategy.

Standard methods are attached as Appendix I. As-built well construction details are attached as Appendix II, and Appendix III contains boring logs from hand auger borings. Appendix IV contains well construction records and Appendix V contains permits for the monitoring and recovery wells.

5.0 FINDINGS:

5.1 INITIAL ABATEMENT:

Initial abatement measures facilitated the prevention of free phase product from entering the Cape Fear River. Reconnaissance investigations attempted to locate a probable source for the plume. Existing information suggests that the product plume may have resulted from a past release, and that its present location is a result of downgradient migration.

In accordance with initial abatement requirements, free product removal was begun immediately upon discovery through impacted monitoring wells utilizing pneumatic pumps. No fire hazards were present due to the nature of safety considerations already implemented at the facility. No contaminated soils were excavated.

5.2 INITIAL SITE CHARACTERIZATION:

Initial site characterization activities included compiling information on the nature of the release, data from available sources regarding land use, potential receptors and subsurface conditions, results of free product investigations and recovery and preliminary hydrogeological characterizations.

5.2.1 Release Characterization:

Subsurface free product was sampled by the U.S. Coast Guard. To date, the results of this analysis are not available. An

independent analysis of two free product samples (monitoring wells 13 and 15, Figure 2) revealed a mixture of products. The results (Appendix VI) suggest a mixture of gasoline, #2 fuel oil, and heavy oil. There is no information available for estimating the quantities originally released.

5.2.2 Land Use and Potential Receptors:

This area along the Cape Fear River is industrial, with petroleum storage facilities predominating. The adjacent properties to the north and south are occupied by petroleum storage facilities. To the east of Surry Street, land use is primarily light commercial and residential.

Adjacent to the site to the west, the Cape Fear River flows southwardly. The impacted tidal ditch flows directly into this sensitive receptor.

A terminal storm sewer running westwardly empties directly into the head of the tidal ditch (Figure 2). The sewer is part of the City of Wilmington system, and its lowest reaches are flushed by tidal action. Near its terminus, the sewer apparently intersects the water table. The longitudinal extent of the water table intersect is unknown at present.

No drinking water supply wells were found in the immediate vicinity of the area of investigation.

5.2.3 Free Product Investigations and Recovery:

Free product accumulations were found in twelve of the 23 monitoring wells installed at the site. The plume has apparently migrated to the ditch in accordance with groundwater flow direction.

The prevention of free product discharge into the ditch was chosen as a minimum objective, and a six-inch diameter recovery well was installed in the area of highest impact. A submersible recovery pump was installed, and has been operated continuously in order to facilitate and maintain a drawdown. Additional impacted monitoring wells have been, and continue to be, periodically pumped as an additional measure.

The total fluids discharge from recovery operations is routed to a dosing sump, where it is pumped into tank #1 for separation and temporary storage.

An API separator at the facility has been cleaned and refitted for use (Figure 2). This separator is permitted for NPDES discharge into the Cape Fear River. When preparations are complete, recovered groundwater will be routed through the permitted treatment facility for discharge. Recovered product will eventually be disposed of properly, or recycled.

The discharge rate to tank #1 is approximately 3 to 4 GPM. According to tank gauging data, an estimated 1,500 to 2,500 gallons of product have been removed from the subsurface as of 5/15/91.

5.2.4 Hydrogeologic Data and Plume Characteristics:

5.2.4.1 Subsurface Conditions:

The site is underlain predominantly by fine sand. However, in areas adjacent to the ditch extending beneath the road, significant fill debris was encountered while hand augering.

The debris was apparently placed in conjunction with construction activities and may offer increased permeability relative to the fine sand sediments.

5.2.4.2 Ground Water Flow:

Figures 3 and 4 depict ground-water contours as of 4/19/91 at low and high tide, respectively. Flow direction is westward, then redirects southward in the vicinity of the ditch (discharge area). Note that tidal influences are apparent in the area adjacent to the ditch, and the relative effects imposed by continuous pumping from the recovery well (RW).

5.2.4.3 Plume Characteristics:

Figure 5 depicts the apparent free product plume as of 4/19/91. The plume geometry suggests one or two source directions; however, remains undefined to the north. Free product is expected to continue to migrate southward with ground-water flow direction toward the ditch. The dissolved plume was not addressed during this investigation and remains wholly undefined.

5.2.4.4 Hydrogeologic (Free Product) Plume Control:

Figure 6 illustrates the location of the cross-section shown on Figure 7. The cross-section demonstrates tidal influences and drawdown effects in the vicinity of the recovery well as of 4/15/91 and low tide static conditions on

4/2/91. The illustration suggests an influence extending outward from the pumping well, and a gravity inducement for the capture of free product in the vicinity. Since pumping began, no significant discharge of product into the ditch has been observed. However, the outermost portions of the free product plume approaching the ditch are probably not contained.

6.0 RECOMMENDATIONS:

Based on the findings of this investigation, the following recommendations are made:

- Install additional monitoring wells as shown on Figure 8 to facilitate completing free product plume delineation.
- Install/implement additional recovery wells at locations shown on Figure 8 to ensure free product capture and source removal.
- Conduct sampling and analyses of ground water or product in all wells. Install additional wells as necessary to facilitate dissolved plume delineation.
- Conduct additional surveys as necessary.
- Conduct additional aquifer and/or vapor removal tests.
- Prepare Comprehensive Site Assessment and Corrective Action Plan.
- Implement Corrective Action Plan.

7.0 LIMITATIONS:

Information obtained and presented as part of this investigation is based on available data in an effort to understand and/or correct an existing problem. The validity of any resulting conclusions is limited by methodological constraints and by the lack of a statistically significant number of data points.

Therefore, there is no warranty, expressed or implied, that additional or new information and/or additional measures will not be required to ultimately solve the problem. Additionally, Clark Environmental Services, Inc. (CES) assumes no responsibility for the validity of subjective or interpolated interpretations, whether or not implied or indicated, although an attempt is made to qualify such areas.

FIGURES

FIGURE 1: VICINITY MAP SHOWING PROJECT LOCATION.

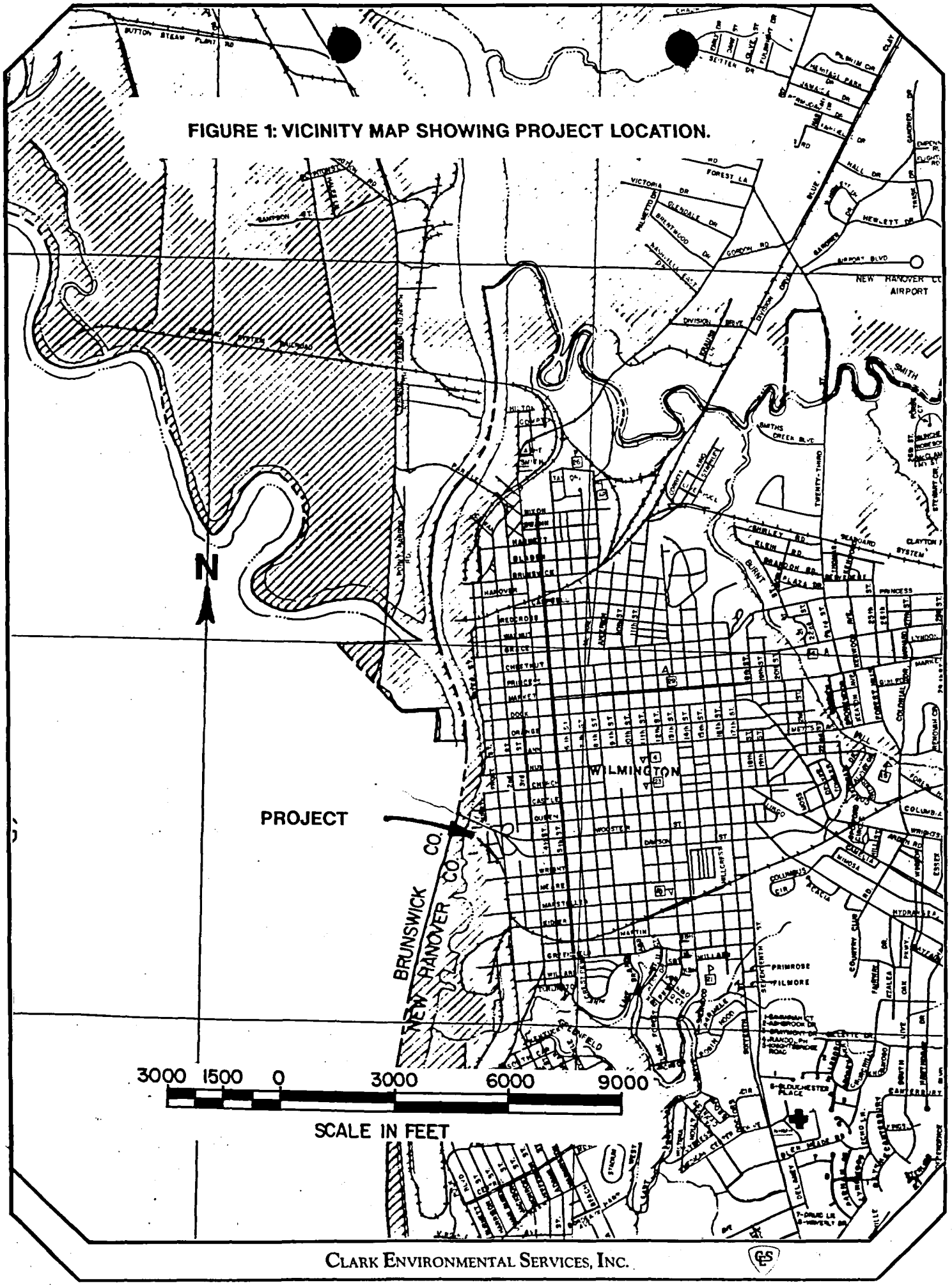

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FIGURE 2: SITE MAP SHOWING WELL LOCATIONS.

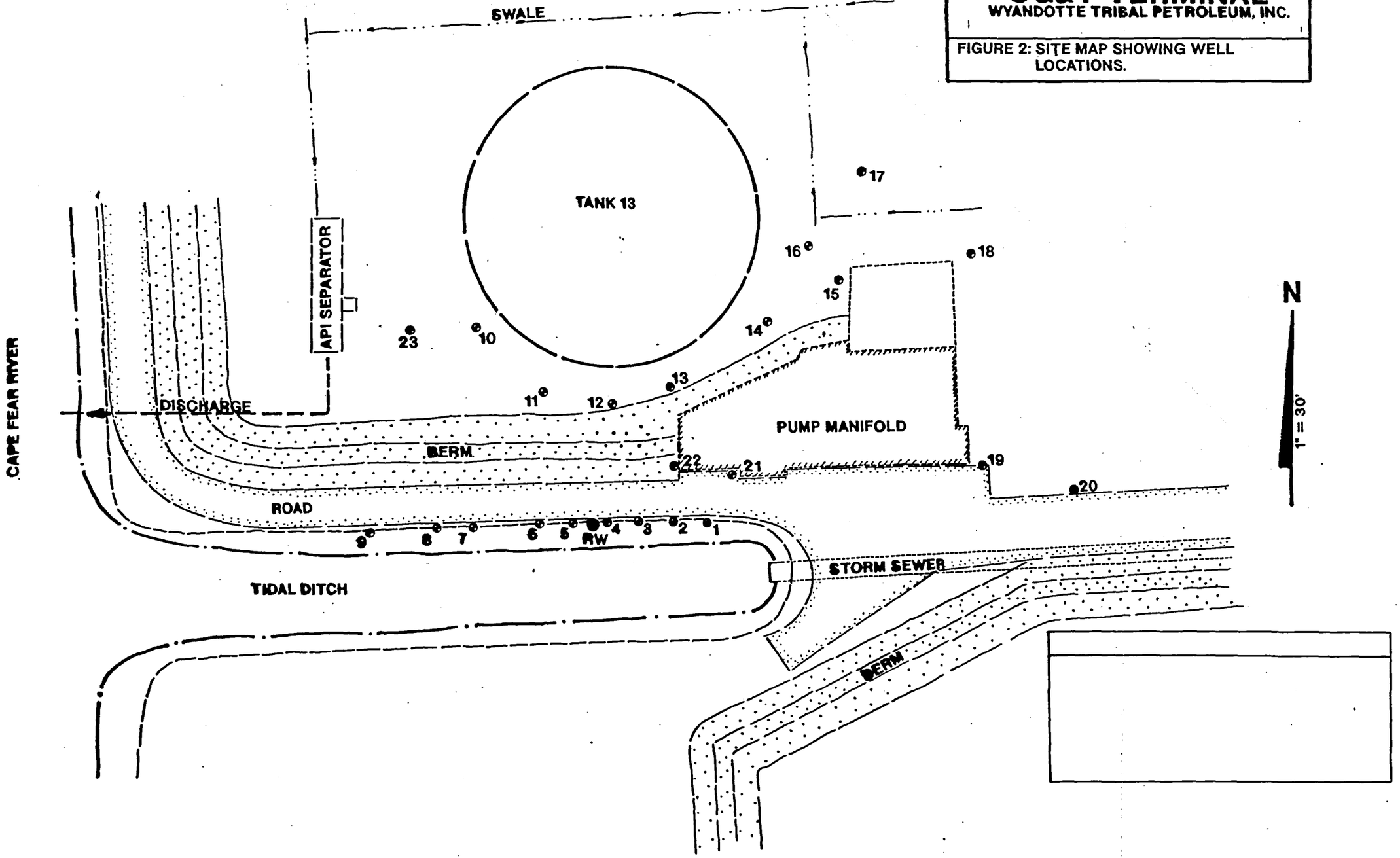

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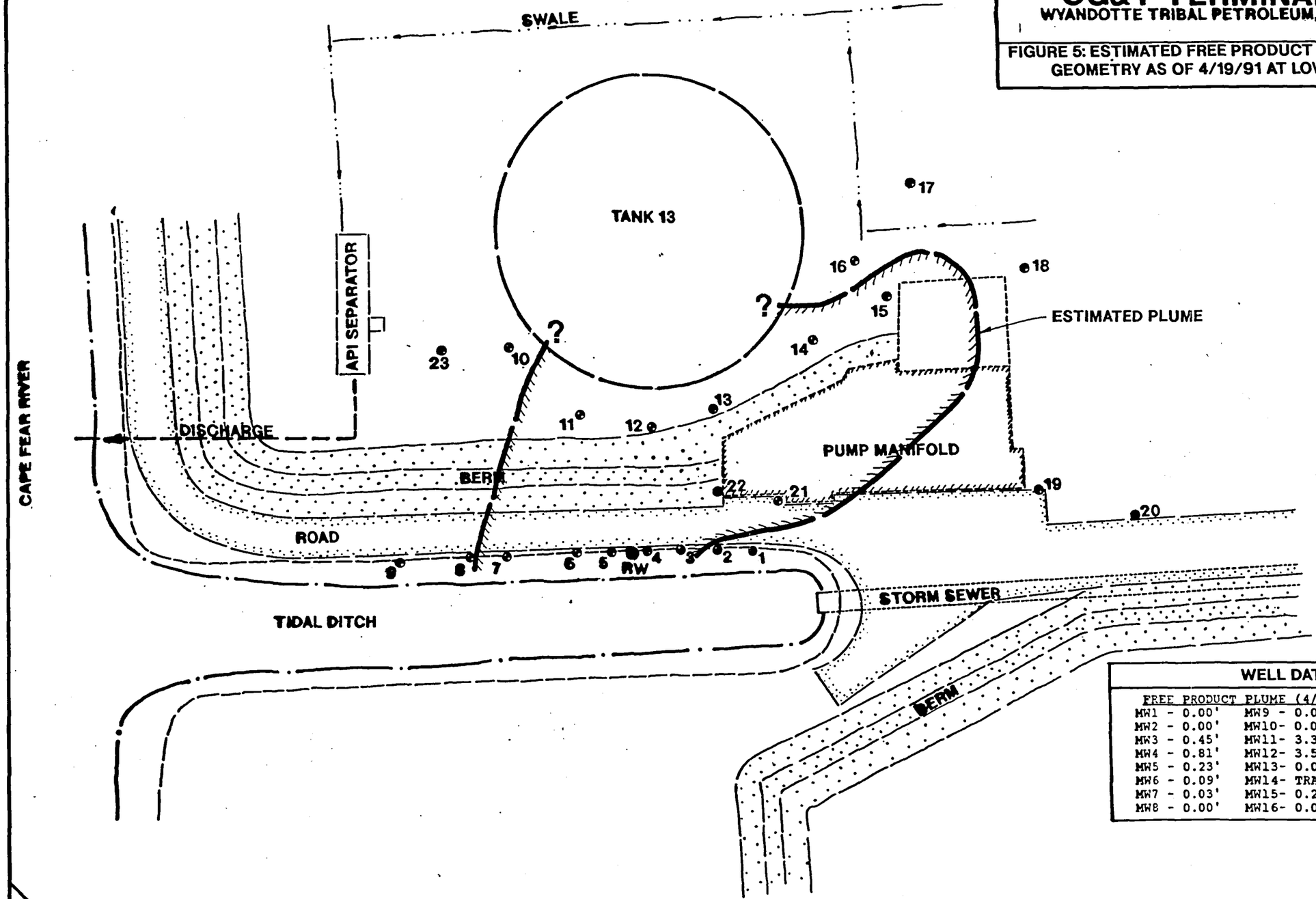
FIGURE 5: ESTIMATED FREE PRODUCT PLUME GEOMETRY AS OF 4/19/91 AT LOW TIDE.



WELL DATA

FREE PRODUCT PLUME (4/19/91) LOW TIDE

MW1 - 0.00'	MW9 - 0.00'	MW17- 0.00'
MW2 - 0.00'	MW10- 0.00'	MW18- 0.00'
MW3 - 0.45'	MW11- 3.36'	MW19- 0.00'
MW4 - 0.81'	MW12- 3.53'	MW20- 0.00'
MW5 - 0.23'	MW13- 0.02'	MW21- 0.00'
MW6 - 0.09'	MW14- TRACE	MW22- 0.09'
MW7 - 0.03'	MW15- 0.20'	MW23- 0.00'
MW8 - 0.00'	MW16- 0.00'	RW - 2.00'

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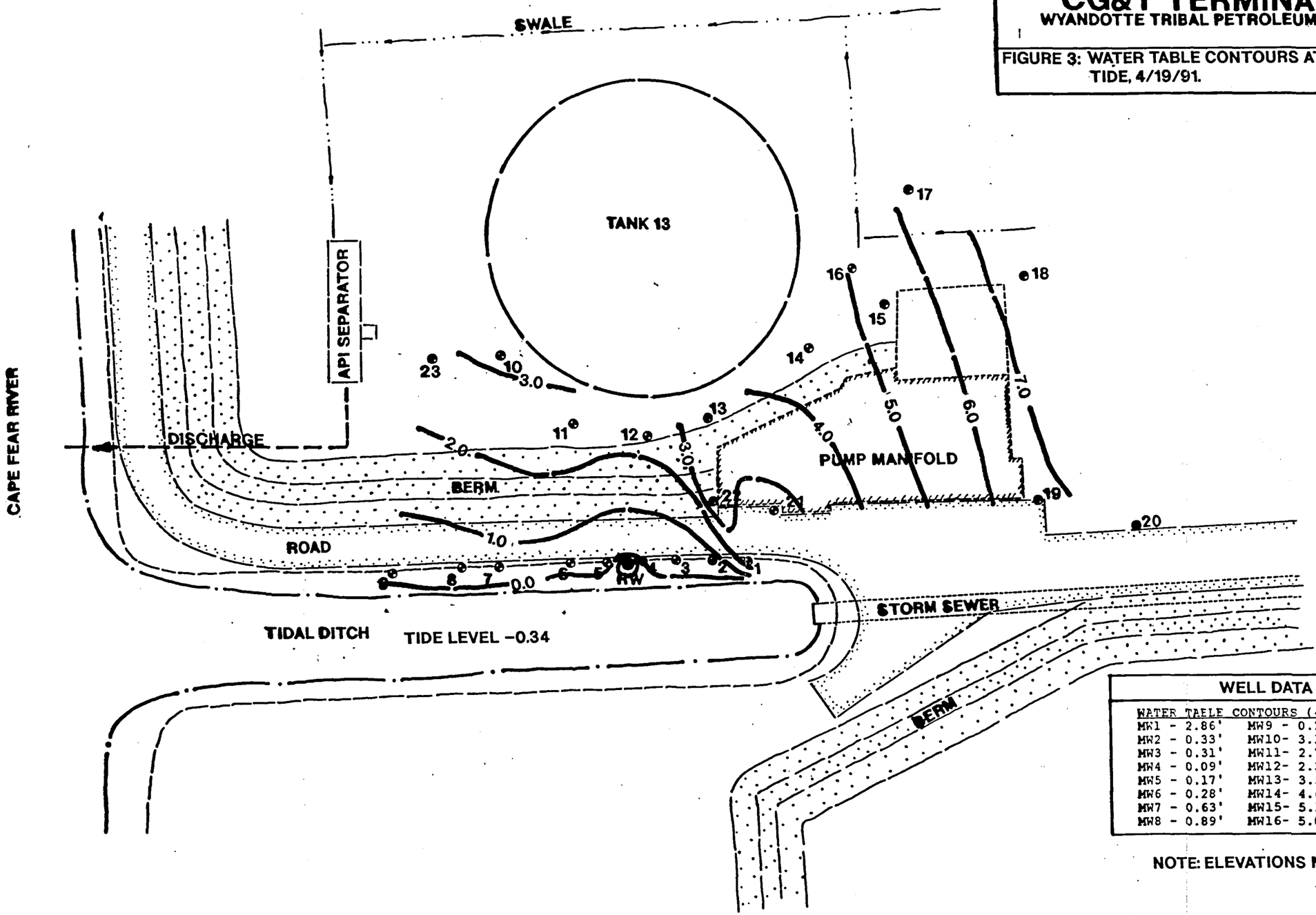
FIGURE 3: WATER TABLE CONTOURS AT LOW TIDE, 4/19/91.



WELL DATA

WATER TABLE CONTOURS (4/19/91) LOW TIDE

MW1 - 2.86'	MW9 - 0.28'	MW17- 6.32'
MW2 - 0.33'	MW10- 3.18'	MW18- 7.62'
MW3 - 0.31'	MW11- 2.70'	MW19- 6.75'
MW4 - 0.09'	MW12- 2.37'	MW20- 7.38'
MW5 - 0.17'	MW13- 3.54'	MW21- 2.69'
MW6 - 0.28'	MW14- 4.68'	MW22- 3.05'
MW7 - 0.63'	MW15- 5.17'	MW23- 2.78'
MW8 - 0.89'	MW16- 5.01'	RW --1.52'

NOTE: ELEVATIONS MLW DATUM

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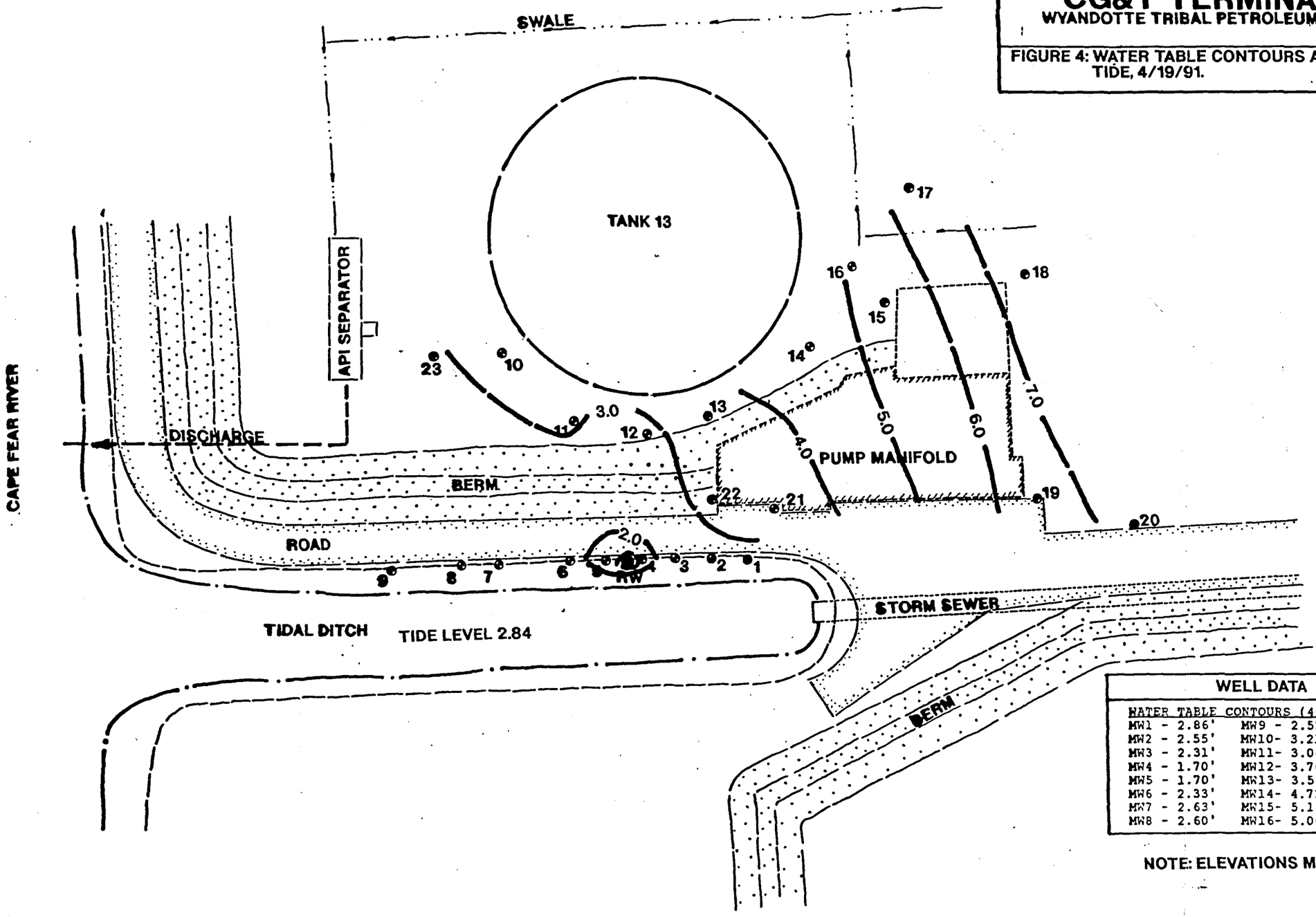
FIGURE 4: WATER TABLE CONTOURS AT HIGH TIDE, 4/19/91.



WELL DATA		
WATER TABLE CONTOURS (4/19/91) HIGH TIDE		
MW1 - 2.86'	MW9 - 2.52'	MW17- 6.34'
MW2 - 2.55'	MW10- 3.21'	MW18- 7.62'
MW3 - 2.31'	MW11- 3.04'	MW19- 6.53'
MW4 - 1.70'	MW12- 3.76'	MW20- 7.42'
MW5 - 1.70'	MW13- 3.59'	MW21- 3.20'
MW6 - 2.33'	MW14- 4.72'	MW22- 3.32'
MW7 - 2.63'	MW15- 5.19'	MW23- 2.92'
MW8 - 2.60'	MW16- 5.06'	RW - 0.22'

NOTE: ELEVATIONS MLW DATUM

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FIGURE 6: LOCATION OF CROSS-SECTION SHOWN ON FIGURE 7.

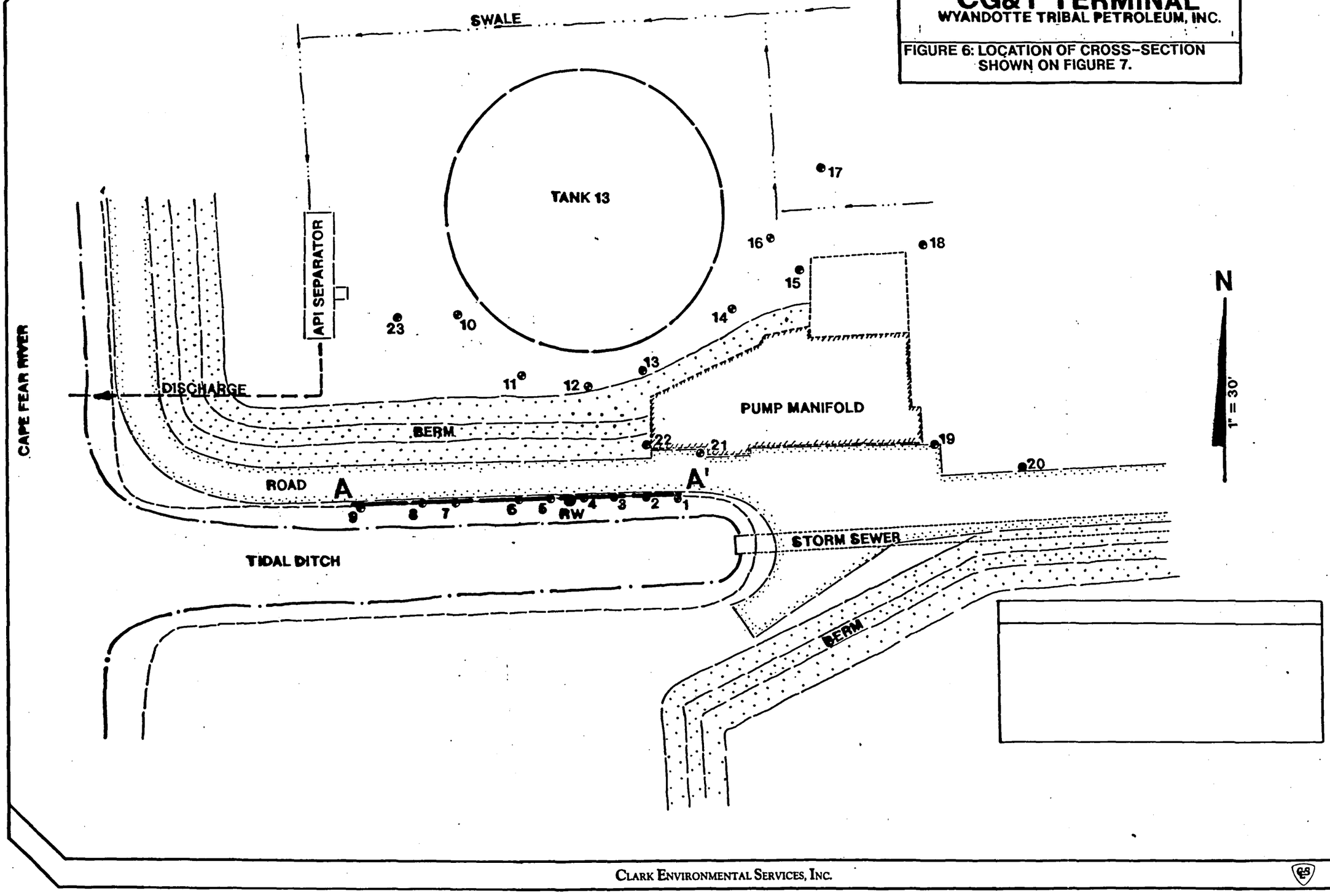
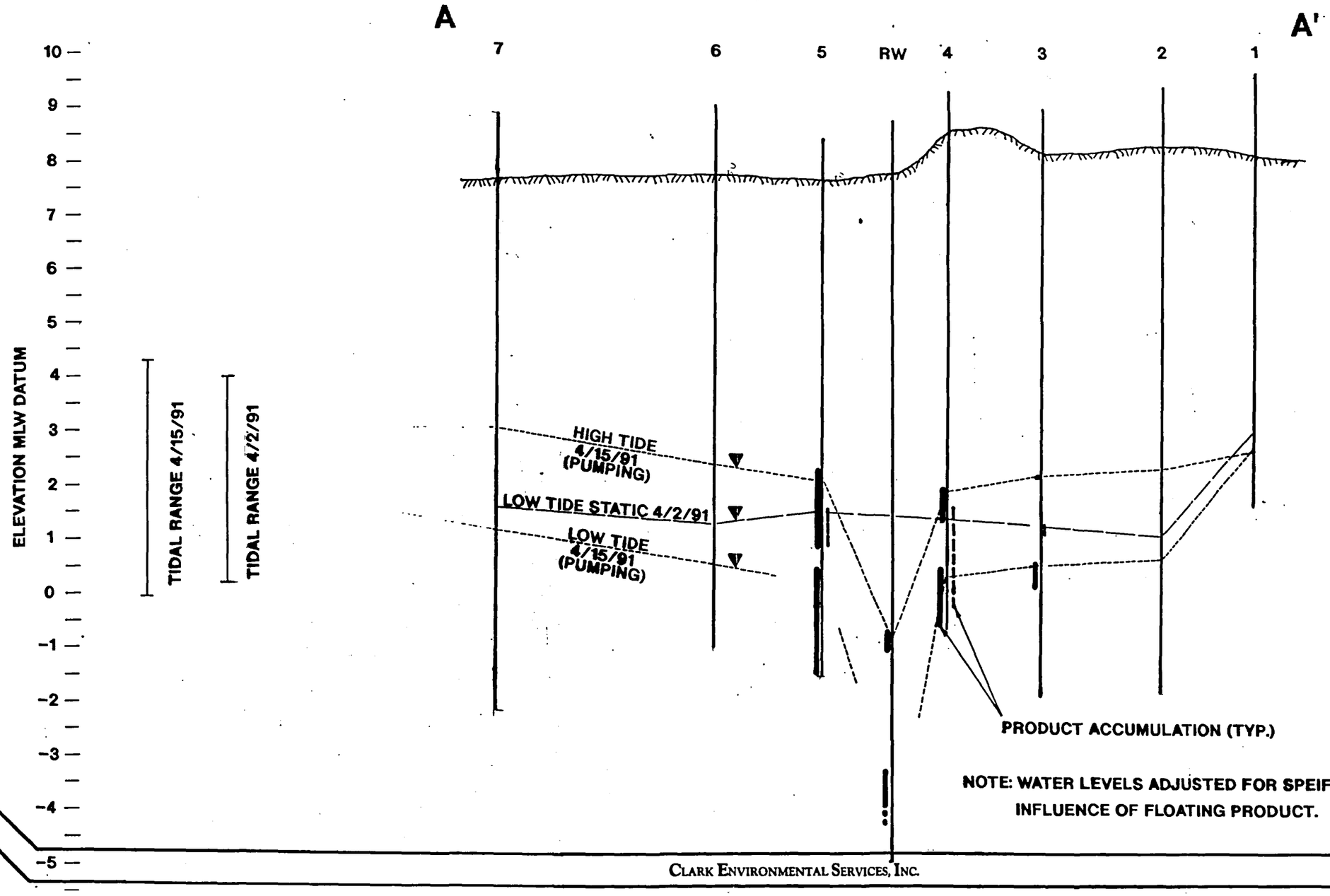


FIGURE 7:

CROSS SECTION ILLUSTRATING DRAWDOWN DATA



HORIZONTAL SCALE: 1"=10'

VERTICAL SCALE: 1"=2'

VE * 5

NOTE: WATER LEVELS ADJUSTED FOR SPEIFIC GRAVITY INFLUENCE OF FLOATING PRODUCT.

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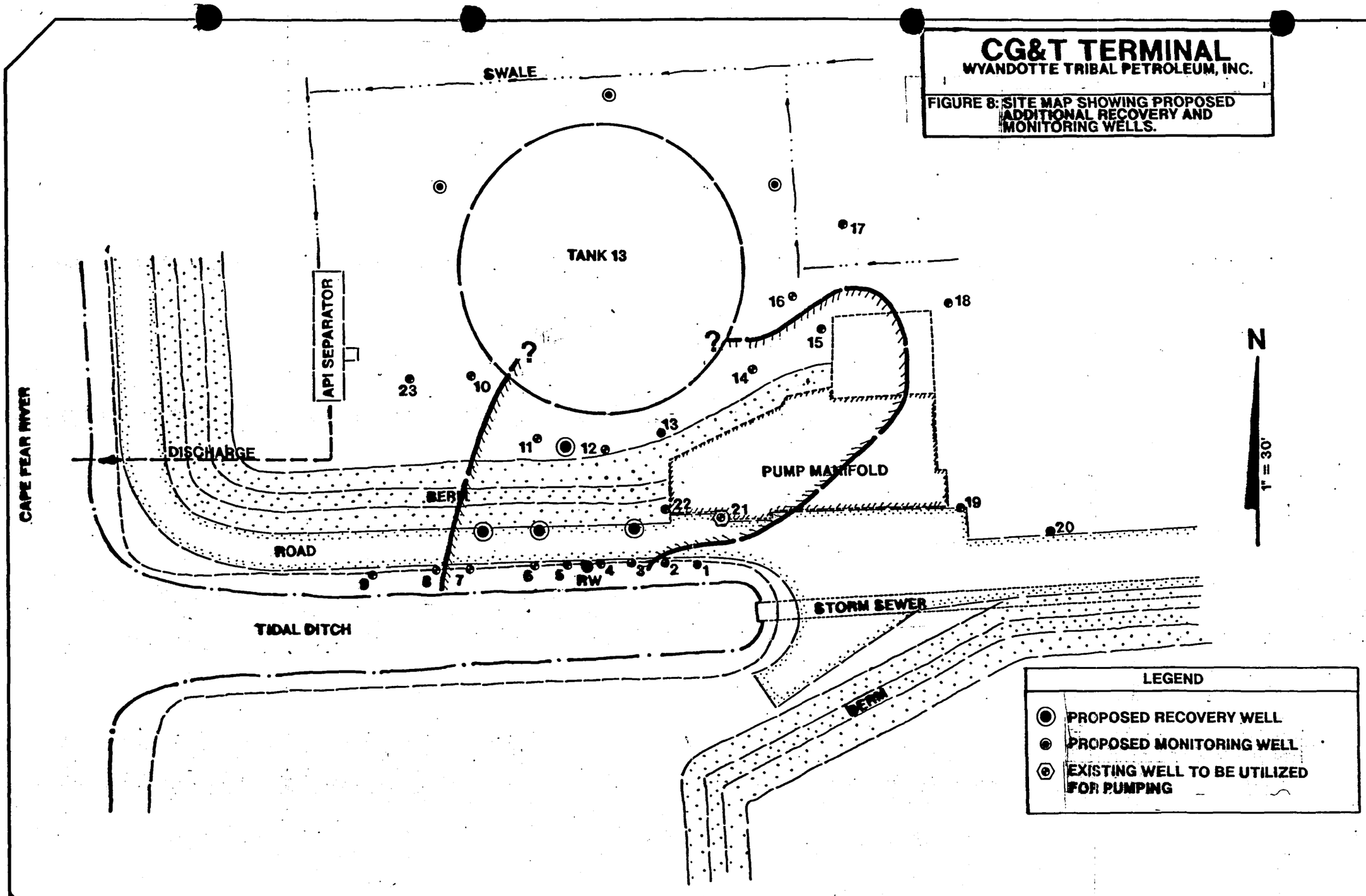
FIGURE 8: SITE MAP SHOWING PROPOSED ADDITIONAL RECOVERY AND MONITORING WELLS.



APPENDICES

APPENDIX I

STANDARD METHODS FOR CONDUCTING SUBSURFACE ENVIRONMENTAL INVESTIGATIONS

STANDARD METHODS FOR CONDUCTING

SUBSURFACE ENVIRONMENTAL INVESTIGATIONS

1.0 DATA COLLECTION:

1.1 PROJECT BACKGROUND:

Historical information relevant to comprehensive subsurface investigation is generated through a wide spectrum of potential sources. Those most often utilized as credible sources include, but are not limited to, the following:

1.1.1. Correspondence and/or conversations with clients, regulatory officials and attorneys;

1.1.2. Regulatory mandates;

1.1.3. Pre-existing reports and other technical data;

1.1.4. Public records;

1.1.5. Documented eyewitness accounts;

1.1.6. Site reconnaissance.

1.2. POTENTIAL RECEPTOR SURVEYS:

Potential plume receptor data is generated on a site-specific basis. The scope of information is based upon the intended level of investigation and the availability of data is to differing degrees dependent upon the existence and accuracy of public and private record keeping; and on property ingress and egress. Generally, an attempt is made to facilitate a reasonable determination of possible environmental impacts in the context of the investigation being conducted, and with the goal of adequate and appropriate site assessment and corrective action planning. Potential receptors are identified and surveyed/evaluated in the context of individual relevance and/or regulatory mandate or guidance.

1.3 SITE SURVEYS:

Physical surveys are site-specifically utilized in the development of a horizontal and vertical project database. The data is often used to construct maps, to assist in making hydrogeologic determinations, and to aid in corrective action planning.

1.3.1. Horizontal Control:

Horizontal survey data is compiled using a possible combination of methods. Usually standard field and computational methods are employed. However, existing survey maps and/or photogrammetric techniques may be utilized, or a combination of existing data and field generated information may be used.

1.3.2. Vertical Control:

Vertical survey data is utilized primarily for establishing hydrogeologic control, and for evaluating topographic characteristics when necessary. The datum plane is generally assumed, except as otherwise noted. Assumed benchmarks are generally chosen to correspond with the approximate ground level and vertical control is generally carried to an accuracy of +/- 0.01'.

1.4. DRILLING/HAND AUGERING AND MONITORING WELL/RECOVERY WELL/PIEZOMETER INSTALLATION:

Drilling, hand augering and subsurface installations are accomplished in accordance with site specific requirements, regulatory requirements and feasibility considerations. The method employed at a specific site is tailored to the situation. Prior to any drilling or well construction activities, all necessary permits are obtained in accordance with federal, state and local requirements. All applicable licensing and bonding requirements are also fulfilled prior to

beginning any work. Any boreholes purposely conducted at off-site locations are previously permitted through ingress/egress agreements with affected property owners or their agents.

1.4.1 Drilling Methods:

The following drilling methods are utilized:

1.4.1.1. Hand Augering:

Hand augering is commonly employed where economically, scientifically and/or situationally feasible. Hand augers typically produce 3" to 5" holes.

1.4.1.2. Auger Drilling:

Auger drilling is most often utilized in subsurface investigations. A truck or trailer mounted rig is usually employed and continuous five-foot auger flights of varying configurations are used to produce the borehole. Sampling is often accomplished through hollow-stem type augers. Auger selection is based on site-specific requirements.

1.4.1.3. Rotary Drilling:

Air or mud rotary drilling may be utilized for special applications where necessary or appropriate. Rotary drilling is usually preferred and often utilized for telescoping well installations.

1.4.1.4. Other Drilling Methods:

Other methods such as coring, cable tool, truck-mounted bucket augering, hammer drilling, and reverse rotary are not commonly utilized except under special circumstances.

1.4.2. Decontamination:

Drilling tools are thoroughly cleaned between boreholes to prevent cross-contamination. Depending upon site-specific circumstances, cleaning methods may include steam cleaning, detergent wash, nitric acid rinsing and deionized water or analyte-free water rinsing.

1.4.3. Soil Sample Collection/Borehole Monitoring:

Typically, soil samples are retrieved using a split-spoon device at five foot intervals. Cuttings and penetration rates are continuously monitored and additional samples are taken when appropriate.

1.4.4. Well Installation:

Wells/piezometers are typically constructed utilizing threaded PVC casing and screen. Glues and cements are not used. Stainless steel or Teflon materials may also be used if site specific conditions dictate. Filter packs are selected to be compatible with screen slot characteristics. Bentonite is utilized to seal the borehole above the filter pack and grout is used to fill the remaining annulus. Well diameter and protective covers are chosen specific to site conditions. Well construction records are prepared from field notes.

1.4.5. Well Development:

Under appropriate circumstances, wells are developed by overpumping, surging or bailing. Any contaminated development water is temporarily stored on-site for proper disposal. For large volumes of contaminated water, other site-specific arrangements may be made.

1.5. Hydrogeologic Data:

Many methods are utilized for obtaining hydrogeologic data. Those methods most commonly utilized are as generally described below:

1.5.1. Regional Framework:

Information relating to the regional geological scope are generally compiled from existing published literature; however, previous technical reports, unpublished reports and personal communications with qualified workers may also be utilized.

1.5.2. Site Characteristics:

Most site information is generated through investigations on-site, although previous work proximal to the area of investigation may also be utilized. Borehole descriptions are important for making interpretations with respect to contacts, lithostratigraphic gradations, facies changes, fractures, faults, cleavage and diagenetic porosity and permeability modifications. Geophysical methods may also be employed.

1.5.3. Groundwater Measurements:

Groundwater measurements include physical and chemical qualitative and quantitative parameters. There are many procedures for making groundwater determinations in the field, including but not limited to, those listed below:

1.5.3.1. Well Water Levels:

Water levels are primarily measured using pre-cleaned probes or tapes in conjunction with water and gas finding pastes. Measurements are usually made to an accuracy of +/- 0.01'. Floating products are measured and a specific gravity determination is made for each product type. A specific gravity adjustment is then used to calculate true hydraulic grade. Well measurements are combined with vertical survey data to calculate relative groundwater elevations. Transducers, bubbler lines, or other methods may also be used under special circumstances to make water level measurements.

1.5.3.2 Aquifer Tests:

Various aquifer tests may be utilized to characterize aquifer parameters. These tests may include, but are not limited to, pumping tests, slug tests, recovery tests, tracer tests, specific capacity tests, laboratory permeability tests, sieve and pipette analyses and drawdown tests. Vertical gradients are usually characterized through nested well configurations. Other methods including fracture tracing, geophysical logging and resistivity surveys may be utilized on a site-specific basis.

1.5.3.3. Chemical Data:

Chemical data may be field-measured using organic analyzers, pH meters or litmus paper, specific conductance meters, thermometers or other equipment.

1.6 Contamination Data:

1.6.1. Depending upon the nature of contamination, many methods are utilized to collect information. The following are the most commonly utilized methods; however, the list is not inclusive:

1.6.1.1 Direct thickness measurements of phase (gravity) separated components.

1.6.1.2 Laboratory analyses of free-phase products.

1.6.1.3 Specific gravity measurements of free phase products.

1.6.1.4 Field vapor or headspace analysis.

1.6.1.5 Laboratory analysis of vapor, soil and groundwater.

1.6.1.6 Visual observations.

1.6.1.7 Field analytical procedures: temperature, conductance, pH, etc.

1.6.1.8 Geophysical methods.

1.6.2. Field Sampling for Laboratory Analyses:

Field sampling methods are generally in accordance with the 1986 EPA SOP and QA Manual and State guidance documents. Rigor-

ous cleaning procedures are adhered to and quality control blanks are utilized. Chain of custody is documented throughout the sample handling process. Generally, procedures are as follows:

1.6.2.1 Products:

Pure product samples are refrigerated and shipped to the analytical laboratory.

1.6.2.2 Soil:

Soil samples are obtained utilizing pre-cleaned equipment, and quickly containerized. Samples are then immediately refrigerated and shipped to the analytical laboratory.

1.6.2.3 Surface Water:

Grab samples are obtained and, if in a flowing body with the sampler, facing the upstream direction. Samples are refrigerated and shipped to the analytical laboratory.

1.6.2.4 Vapor:

Vapor samples are obtained either utilizing carbon tubes in conjunction with a calibrated pump, Tedlar bags, or using a glass syringe. Samples are refrigerated and shipped to an analytical laboratory.

1.6.2.5 Water Supply Wells:

Water supply wells are difficult to properly purge and sample due to several factors including:

1) availability of accurate construction records, 2) inaccessability, 3) attached appurtenances such as tanks, treatment systems, etc., 4) agitation from pumping, and 5) analyte-incompatible construction materials. Generally, an attempt is made to obtain samples from as close to the wellhead as possible, and to completely purge the well and any attached equipment such as holding or pressure tanks. Also, prior to actual sample collection, flow is slowed to a trickle to minimize agitation. If possible, the sample is taken directly from the well using a bailer.

1.6.2.6 Monitoring Wells:

Monitoring wells are sampled according to a standard procedure, as follows:

A) A total storage volume is calculated for each well.

B) Three volumes are removed using a bailer or purging pump. If the well dries up during bailing, a minimum of one volume is removed.

C) Samples are labeled.

D) Samples are refrigerated and immediately preserved and/or containerized in accordance with protocol.

E) Sampling records are completed.

F) Chain of custody records are completed.

G) Samples are promptly shipped to the analytical laboratory.

2.0 DATA COMPILATION/EVALUATION:

Date is compiled and evaluated in accordance with generally accepted industry standards, summarized as follows:

2.1 Background Data:

Background information is utilized to develop an historical perspective relating to the identification of all potential sources or contributors.

2.2 Receptor Data:

Receptor information is evaluated with regard to the potential for past, current and future environmental impact.

2.3 Survey Data:

Horizontal survey data is reduced and utilized in the development of site maps for use as a framework to provide a spacial context. Vertical survey data is utilized to provide a vertical datum for hydrogeologic and topographic characterizations.

2.4 Drilling Data:

Drilling information is compiled and presented in boring logs. The information is utilized for hydrogeologic characterizations.

2.5 Well Construction:

Well construction information is utilized in the development of as-built well details and/or other well construction records and evaluated in terms of depths and screen settings as they relate to hydrogeologic and contaminant characteristics.

2.6 Contamination/Laboratory Analyses Data:

Laboratory and other analyses data is utilized in the development of maps, calculations, models and other constructions and is used in developing and monitoring corrective actions.

2.7 Geological/Hydrogeological Data:

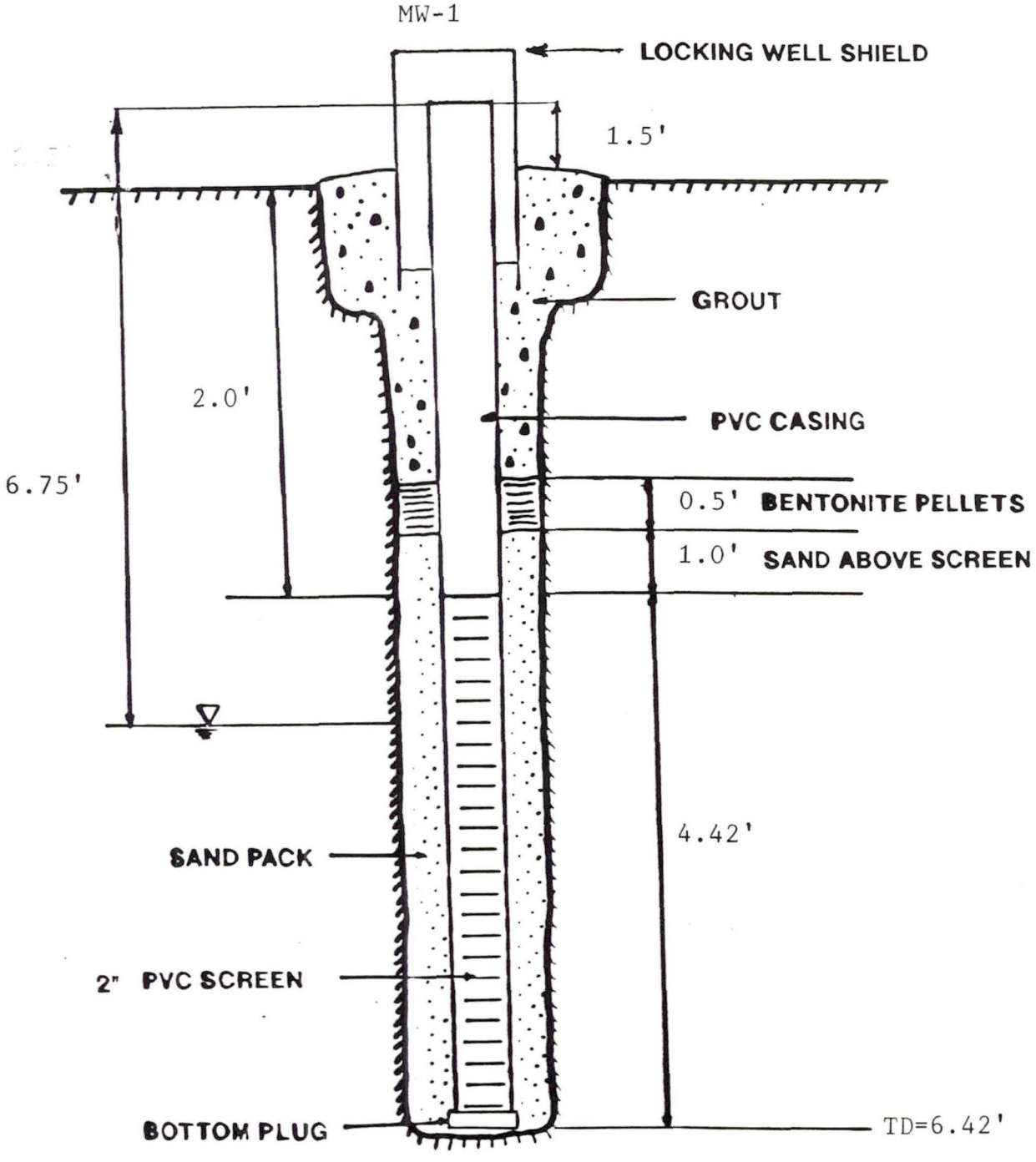
Geological and hydrogeological data are used for developing maps, calculations and other constructions as they relate to making characterizations and developing and monitoring corrective actions.

APPENDIX II

AS-BUILT WELL CONSTRUCTION DETAILS

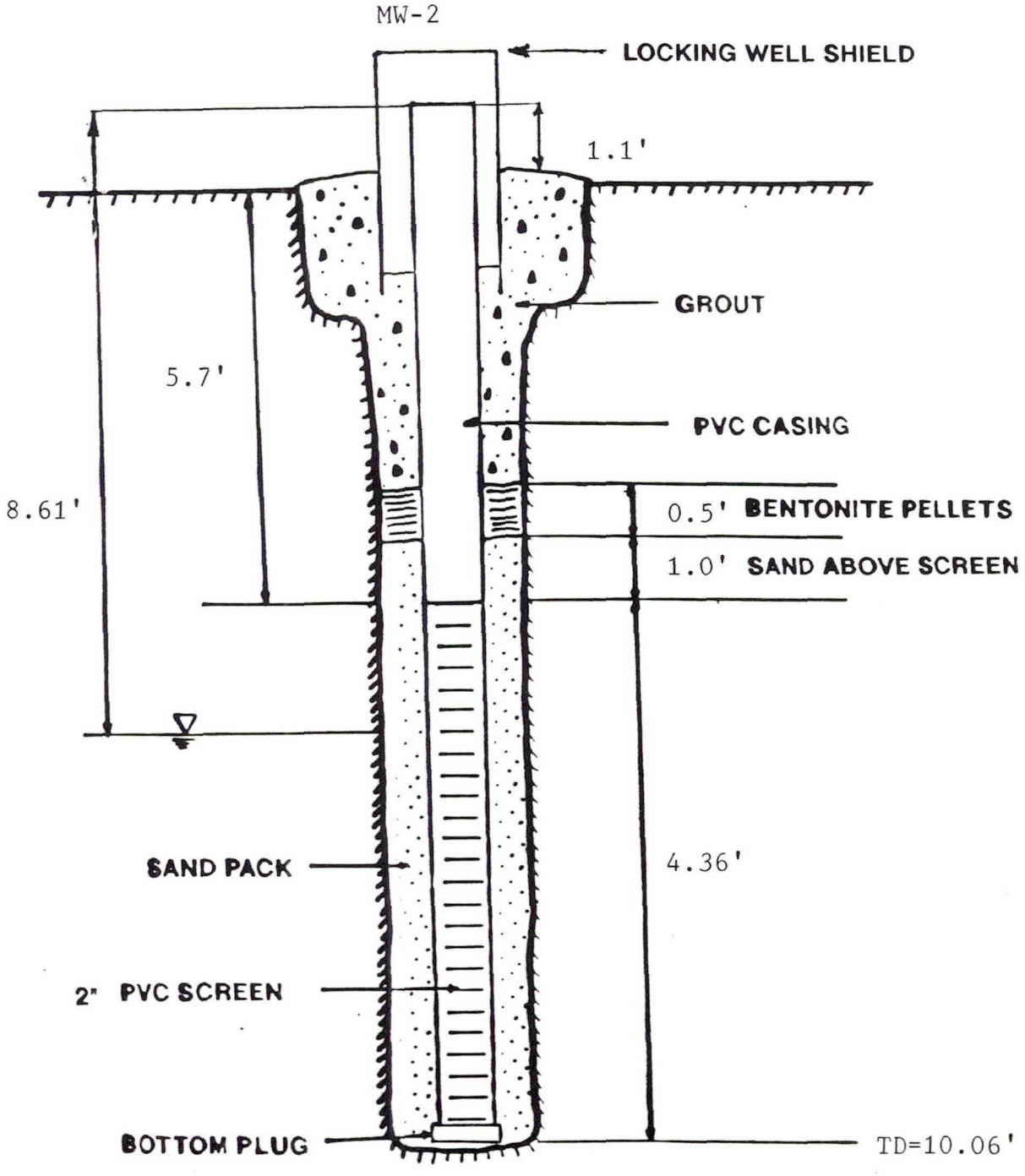
MONITORING WELL DETAIL

NOT TO SCALE



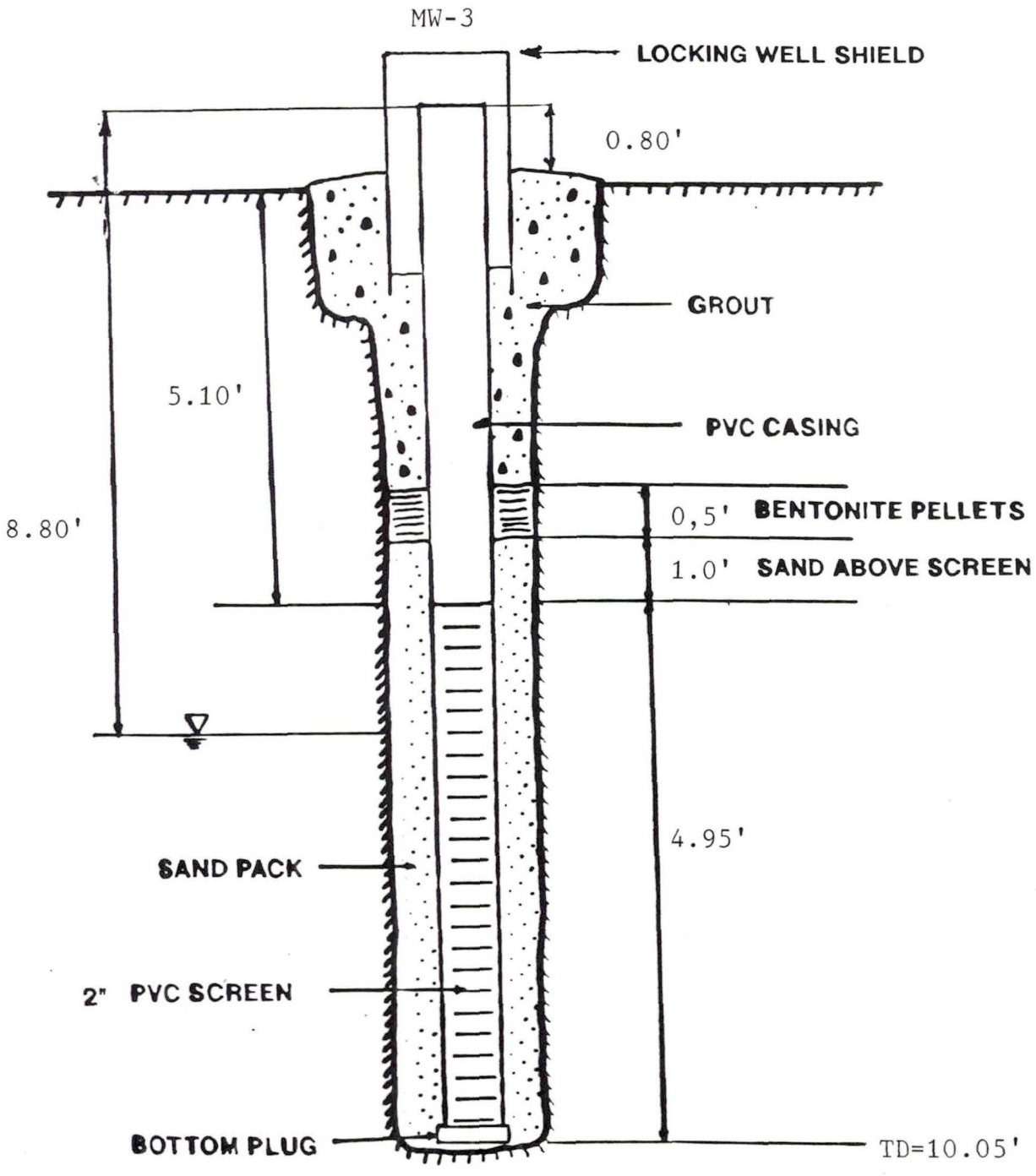
MONITORING WELL DETAIL

NOT TO SCALE



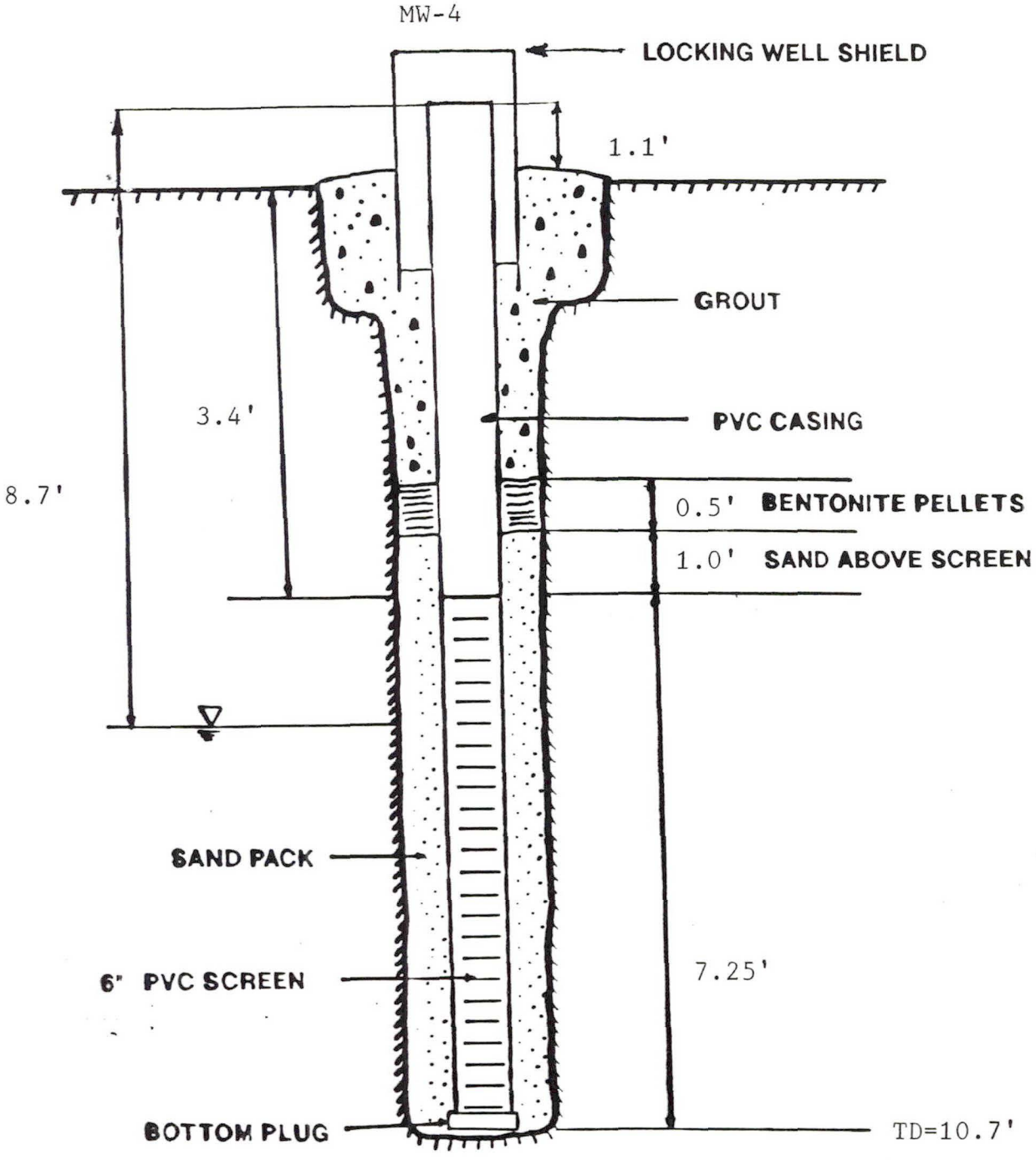
MONITORING WELL DETAIL

NOT TO SCALE



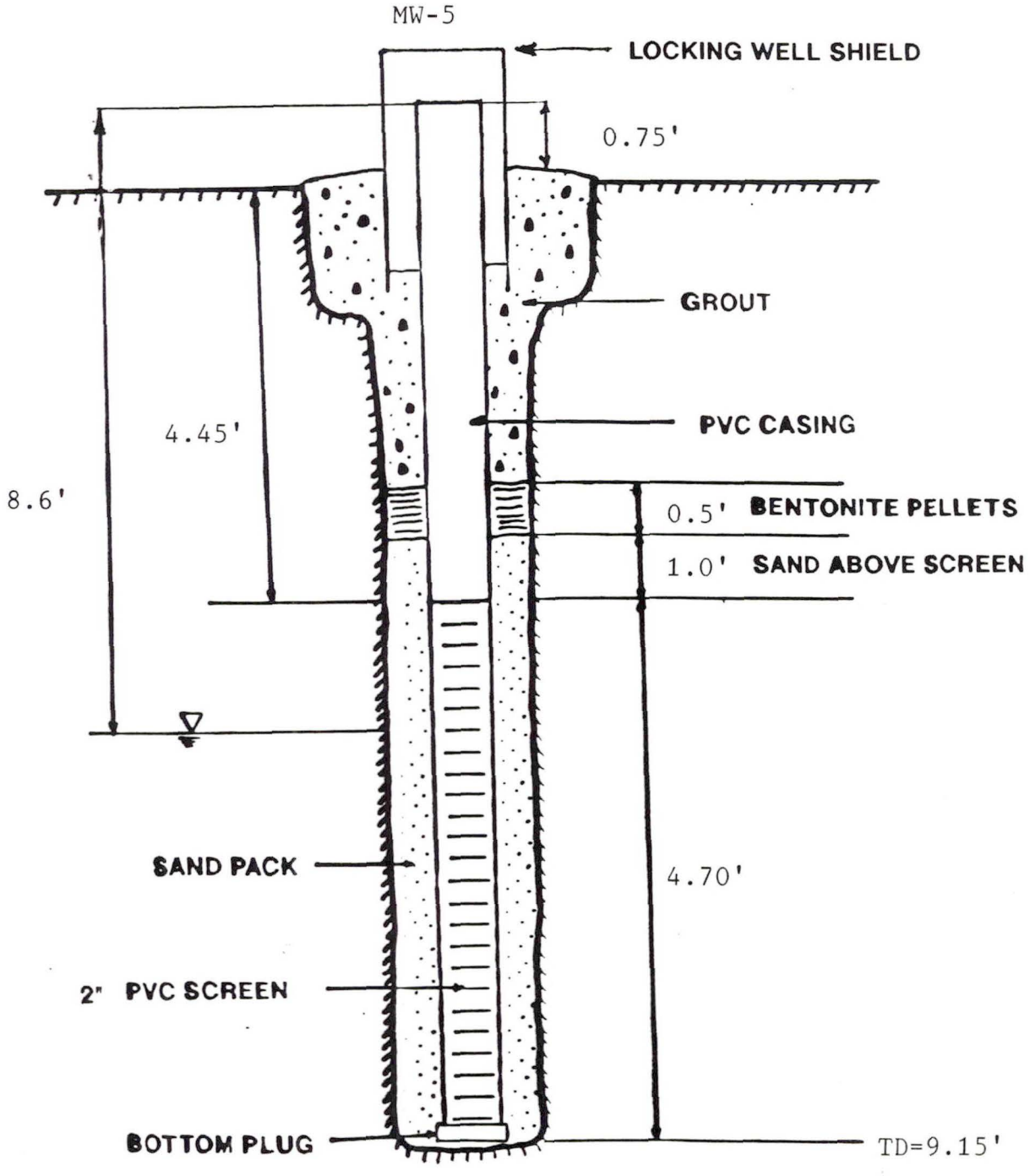
MONITORING WELL DETAIL

NOT TO SCALE



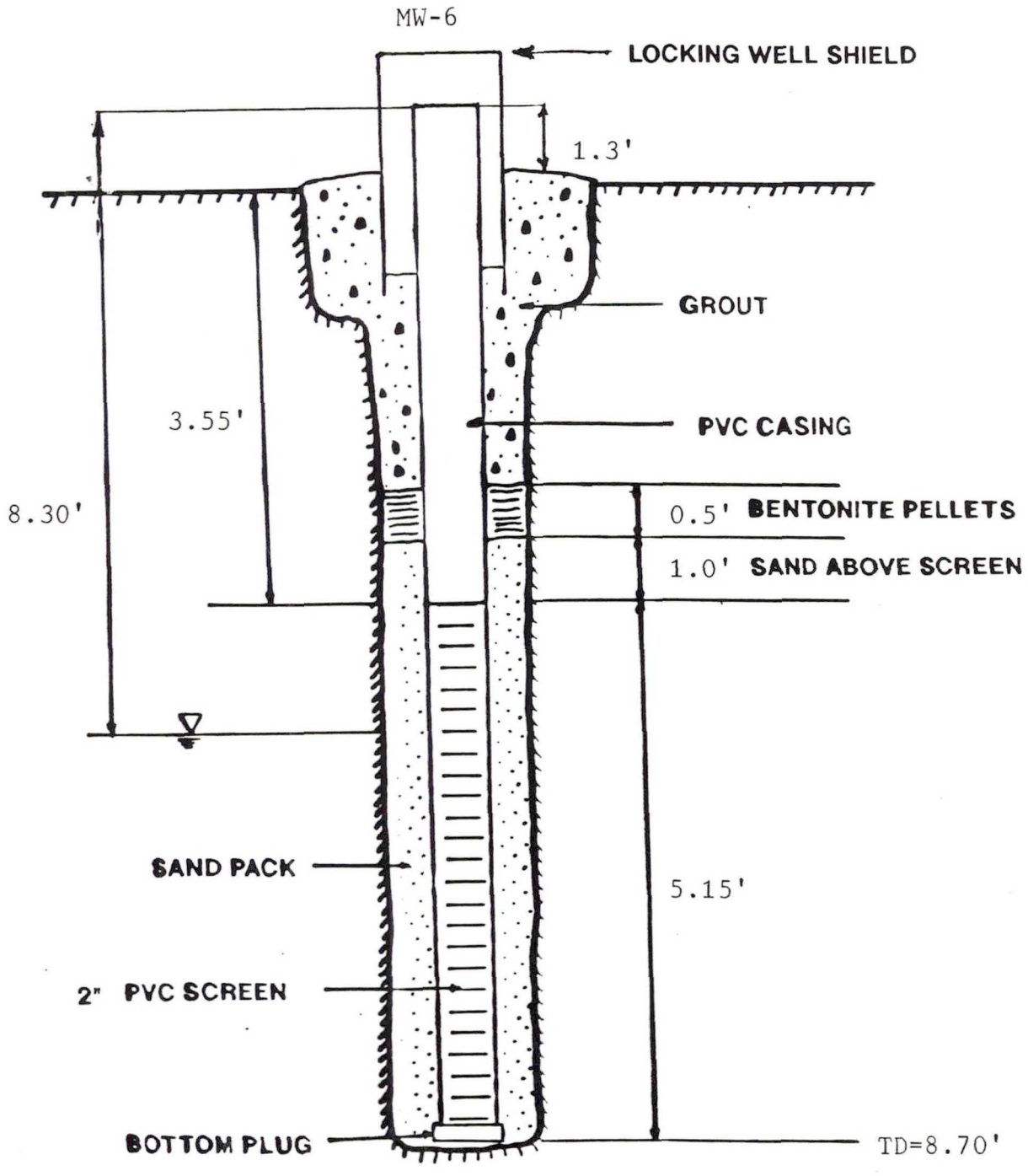
MONITORING WELL DETAIL

NOT TO SCALE



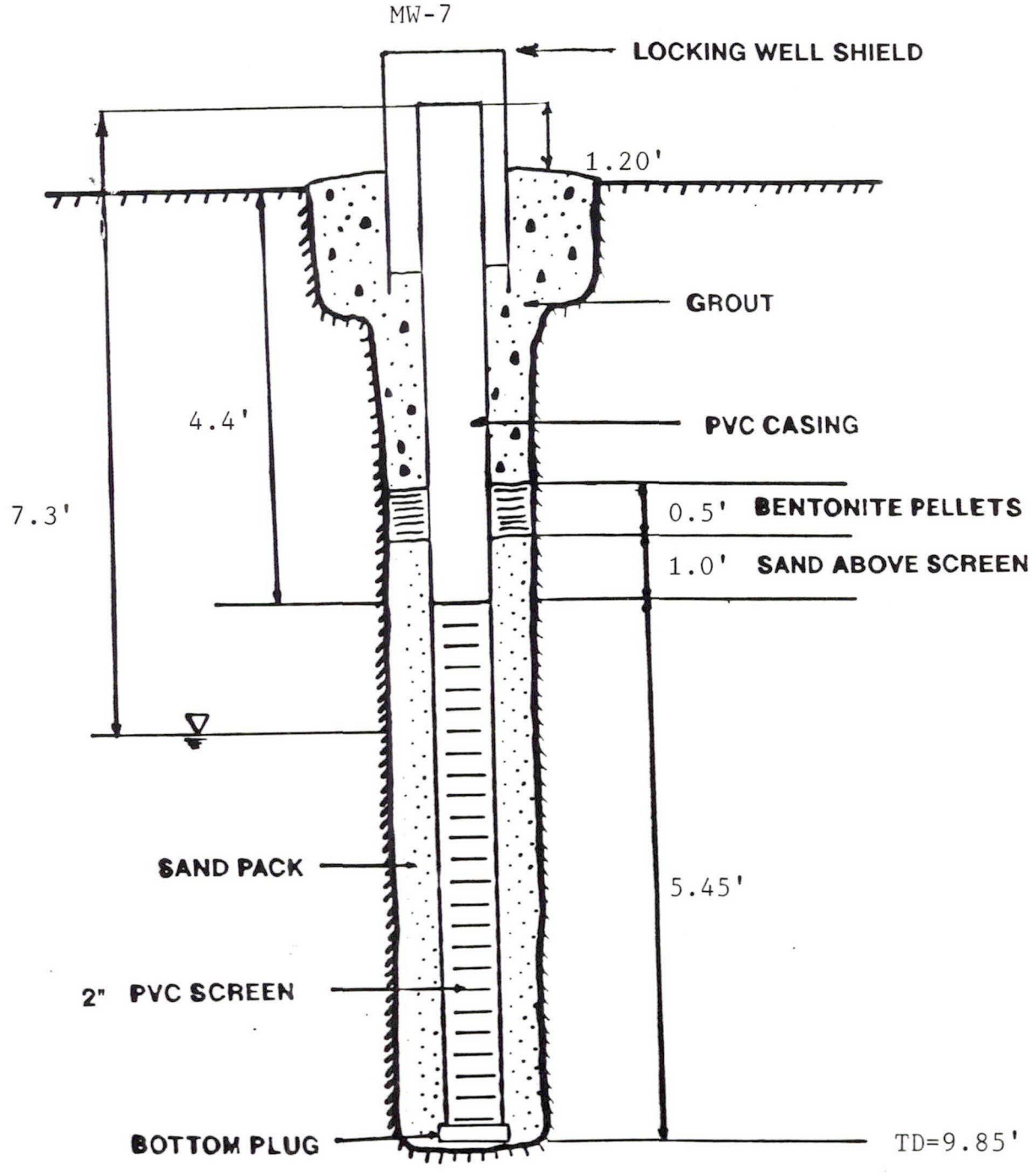
MONITORING WELL DETAIL

NOT TO SCALE



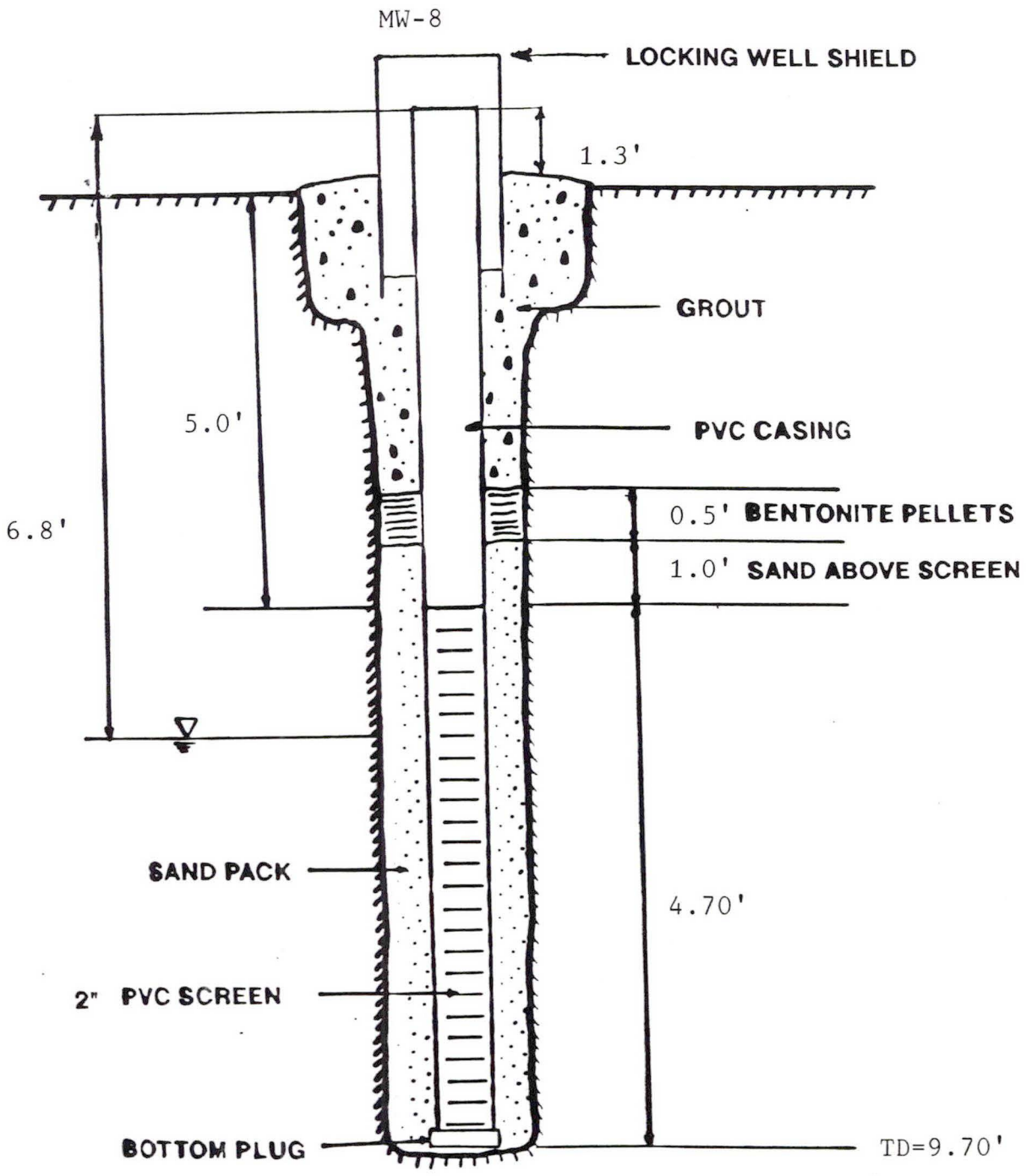
MONITORING WELL DETAIL

NOT TO SCALE



MONITORING WELL DETAIL

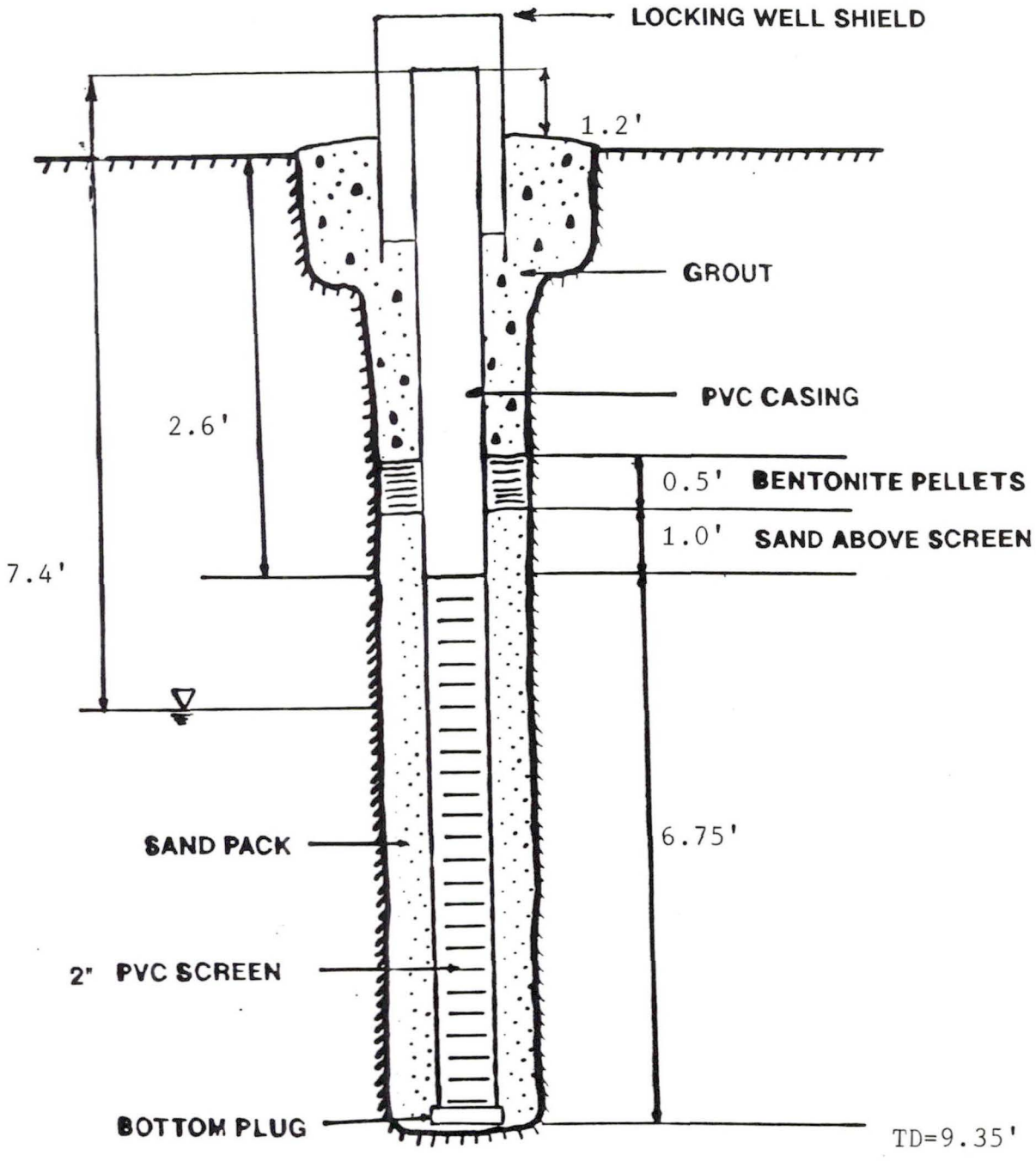
NOT TO SCALE



MONITORING WELL DETAIL

NOT TO SCALE

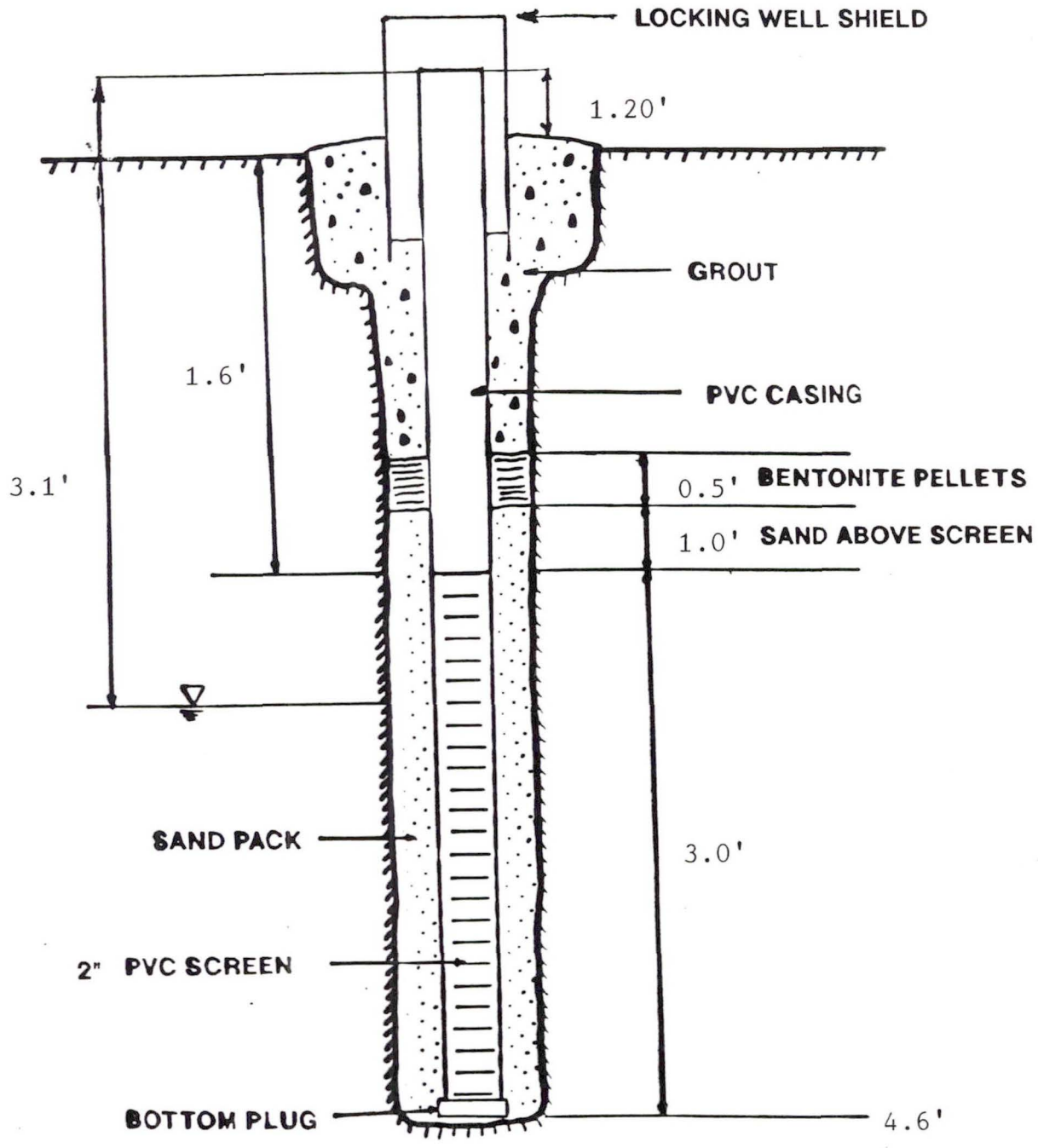
MW-9



MONITORING WELL DETAIL

NOT TO SCALE

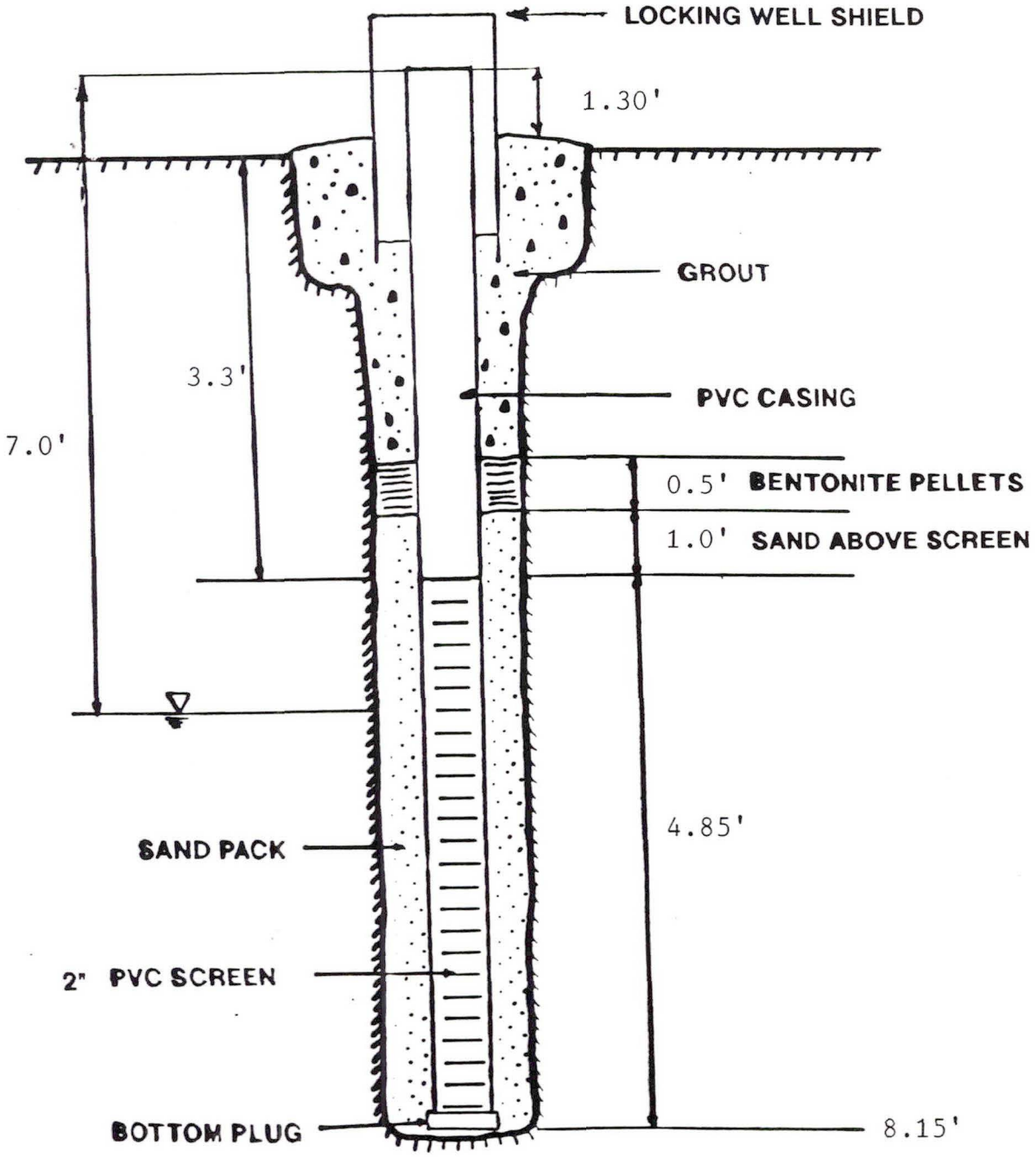
MW-10



MONITORING WELL DETAIL

NOT TO SCALE

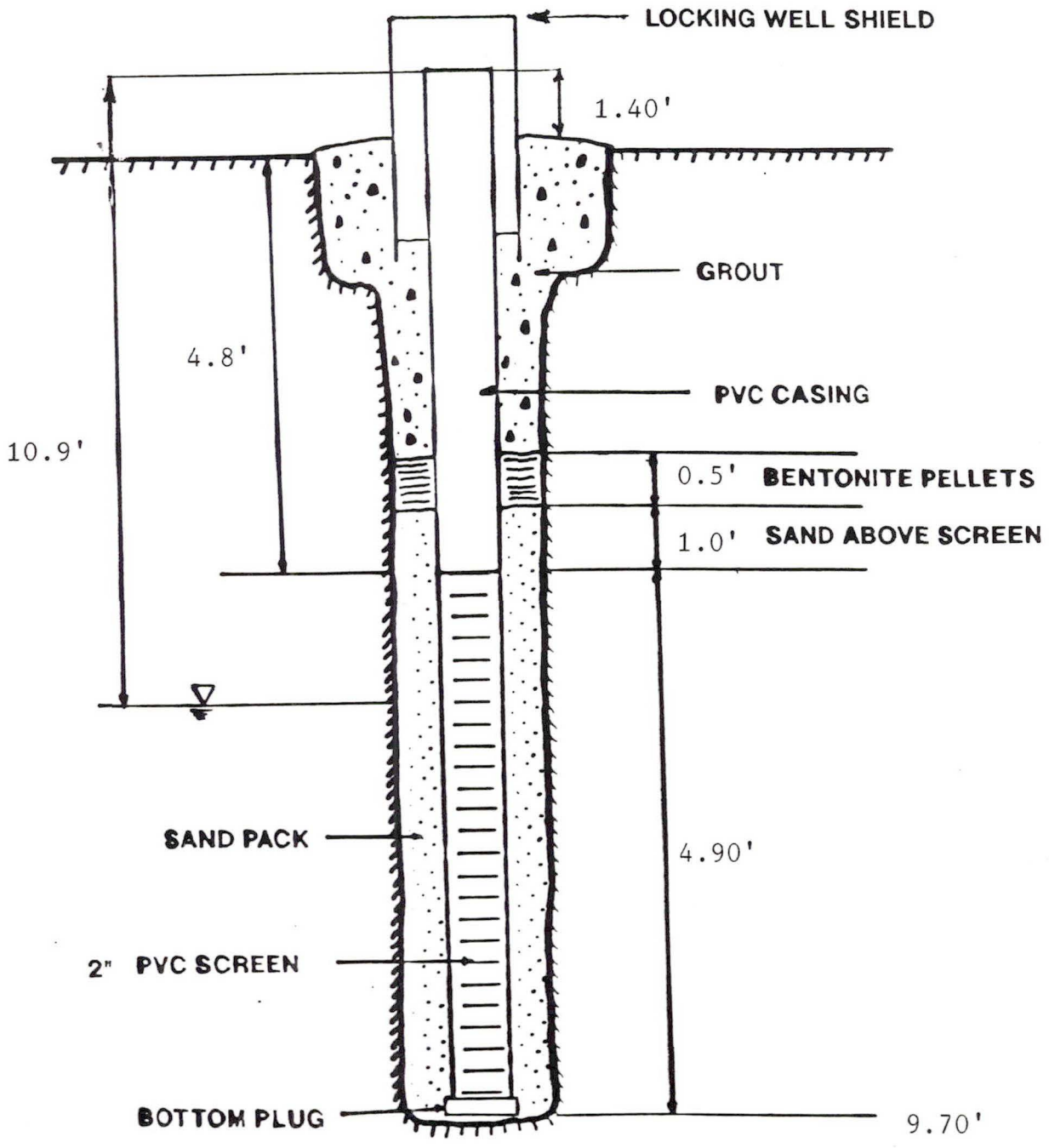
MW-11



MONITORING WELL DETAIL

NOT TO SCALE

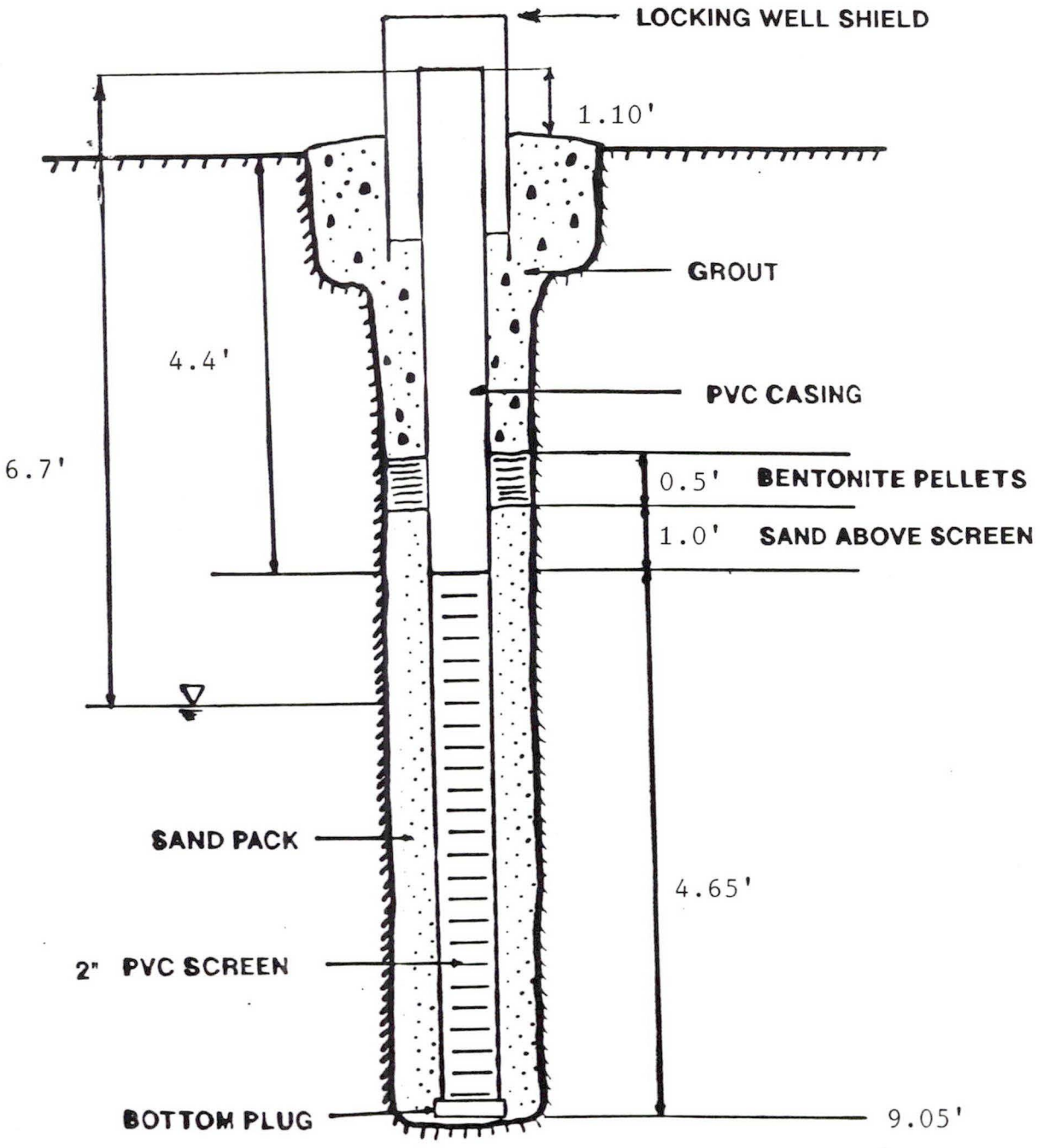
MW-12



MONITORING WELL DETAIL

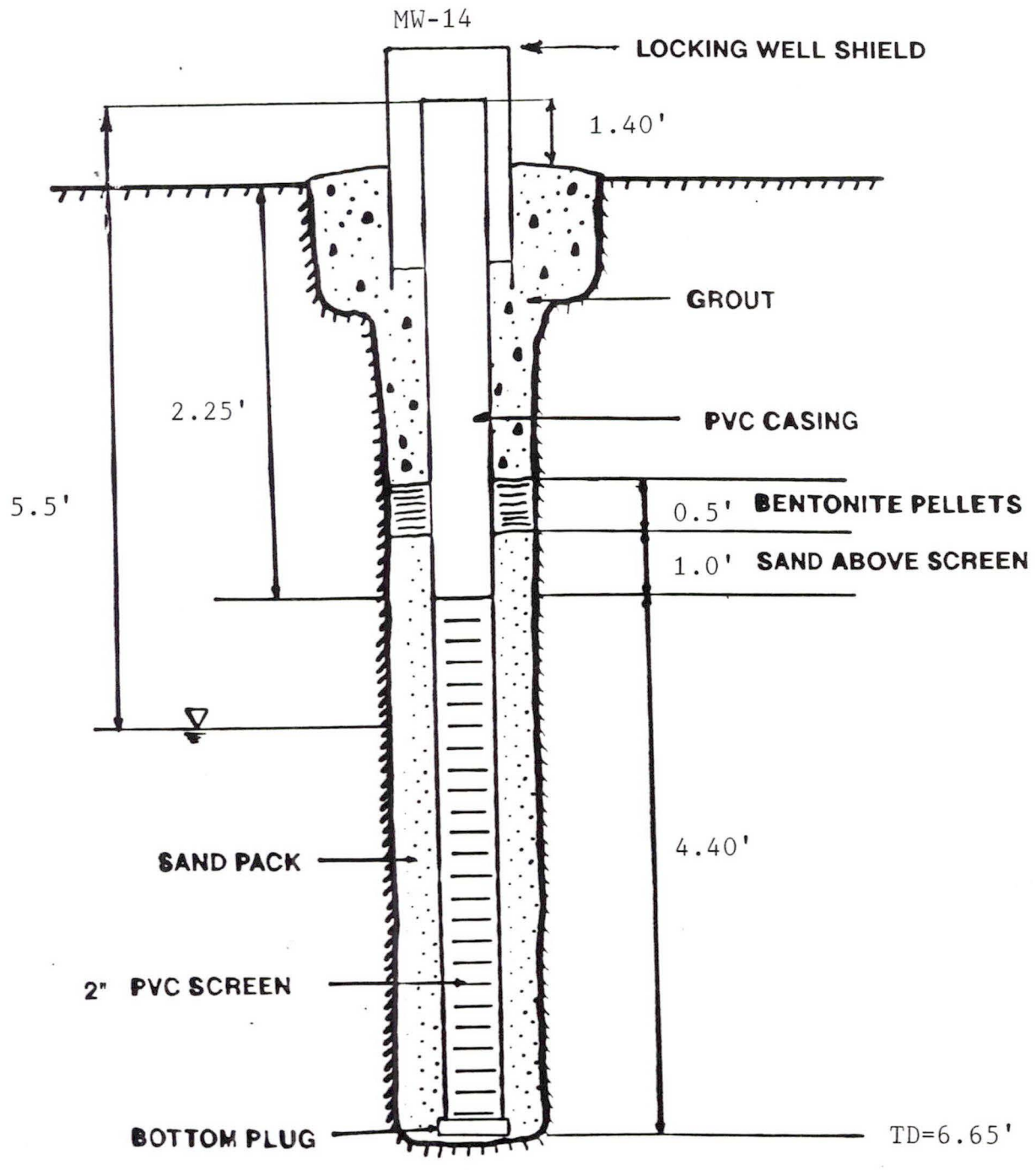
NOT TO SCALE

MW-13



MONITORING WELL DETAIL

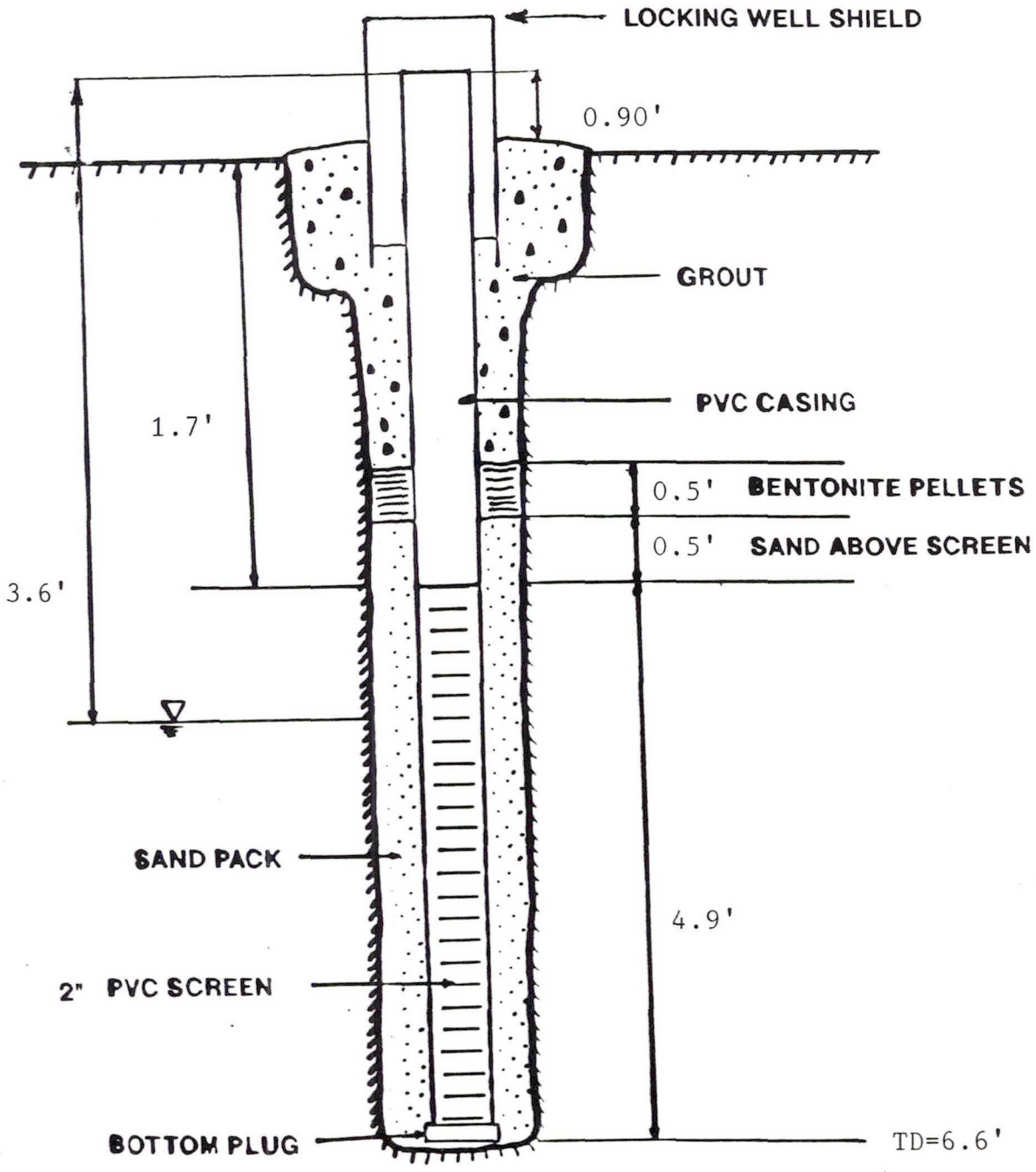
NOT TO SCALE



MONITORING WELL DETAIL

NOT TO SCALE

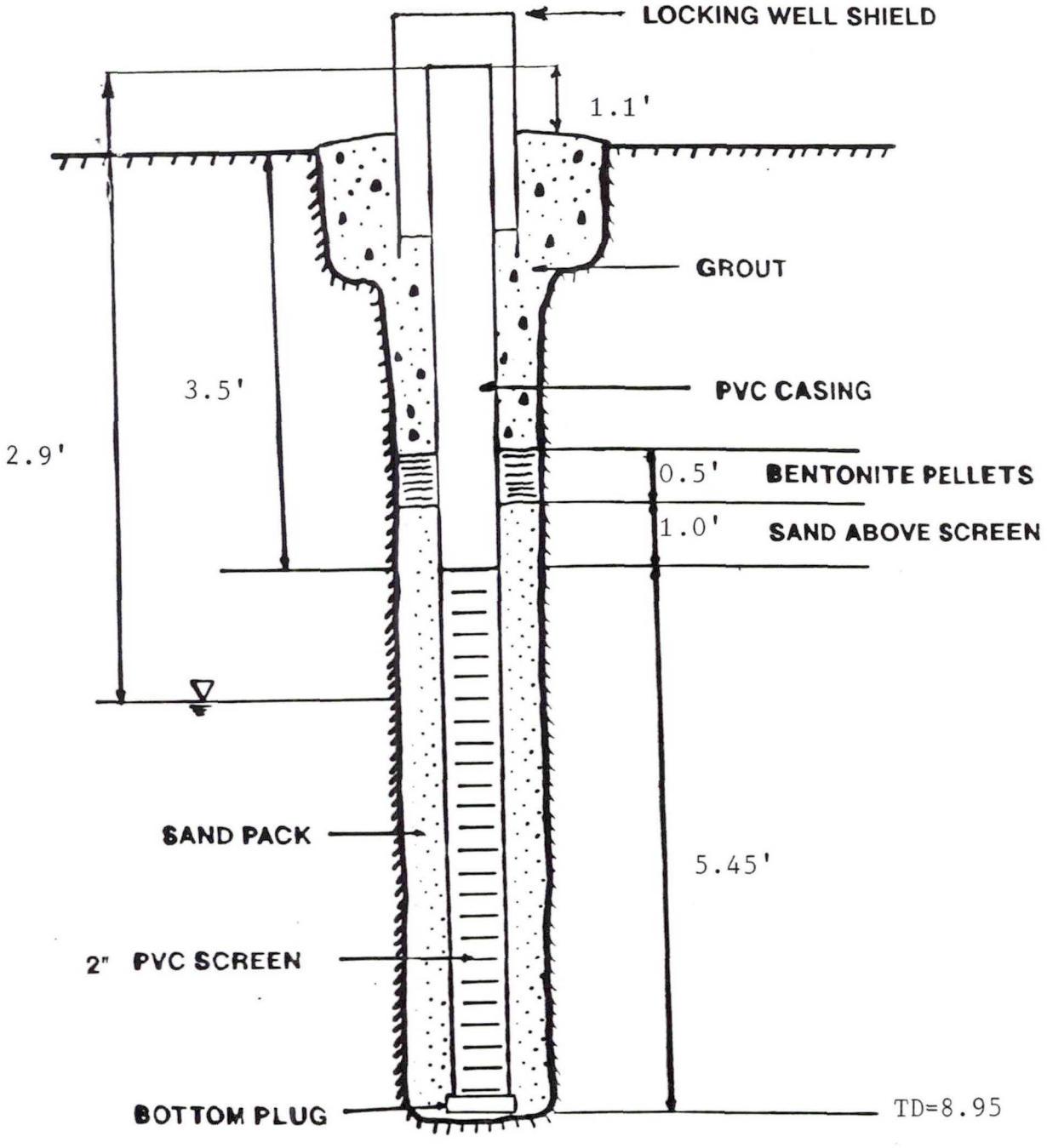
MW-15



MONITORING WELL DETAIL

NOT TO SCALE

MW-16

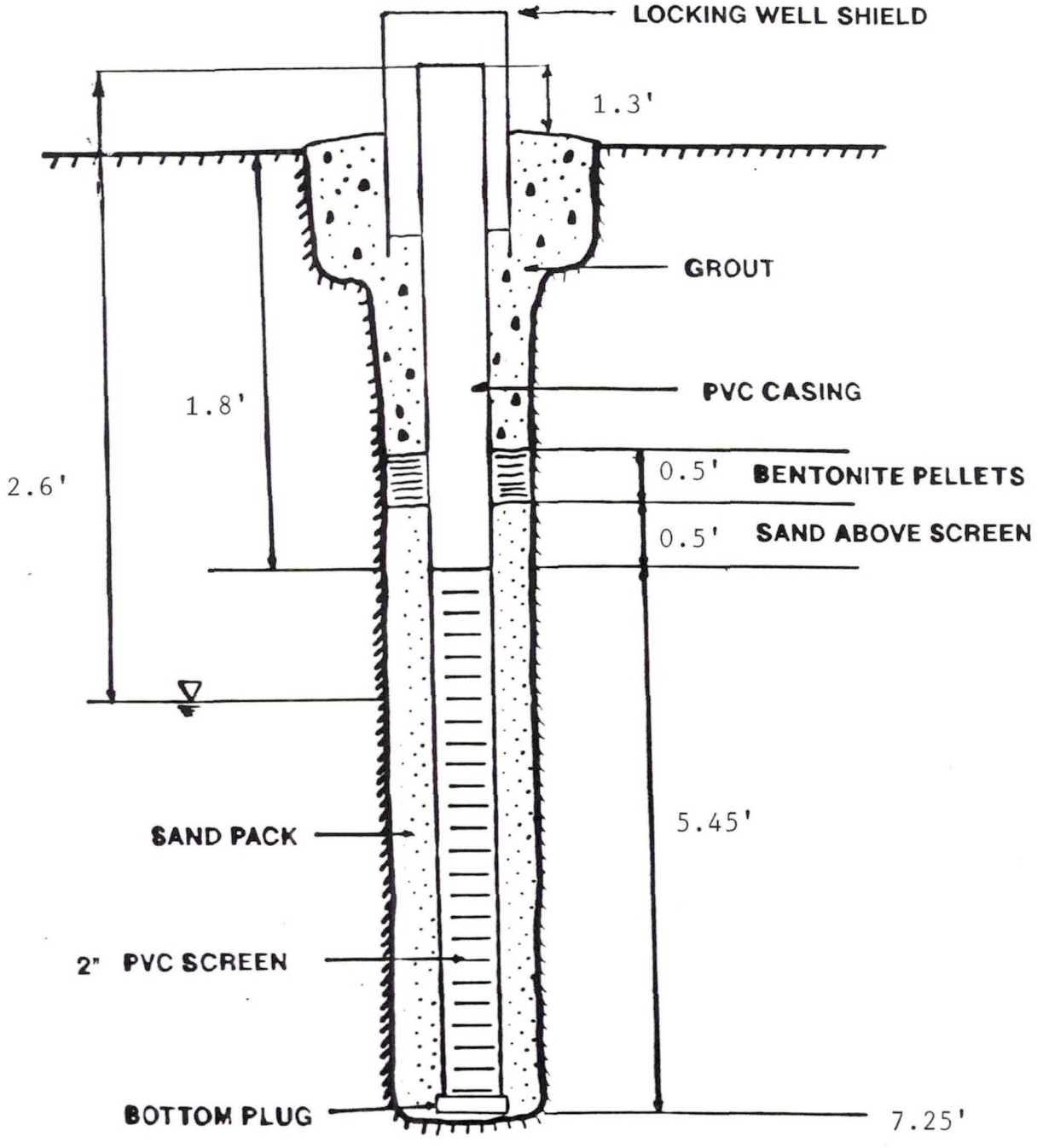


NOTE: Water table appeared to be below screen when well was installed. Due to the shallow water table, a temporary piezometer was installed beside well to check for free product.

MONITORING WELL DETAIL

NOT TO SCALE

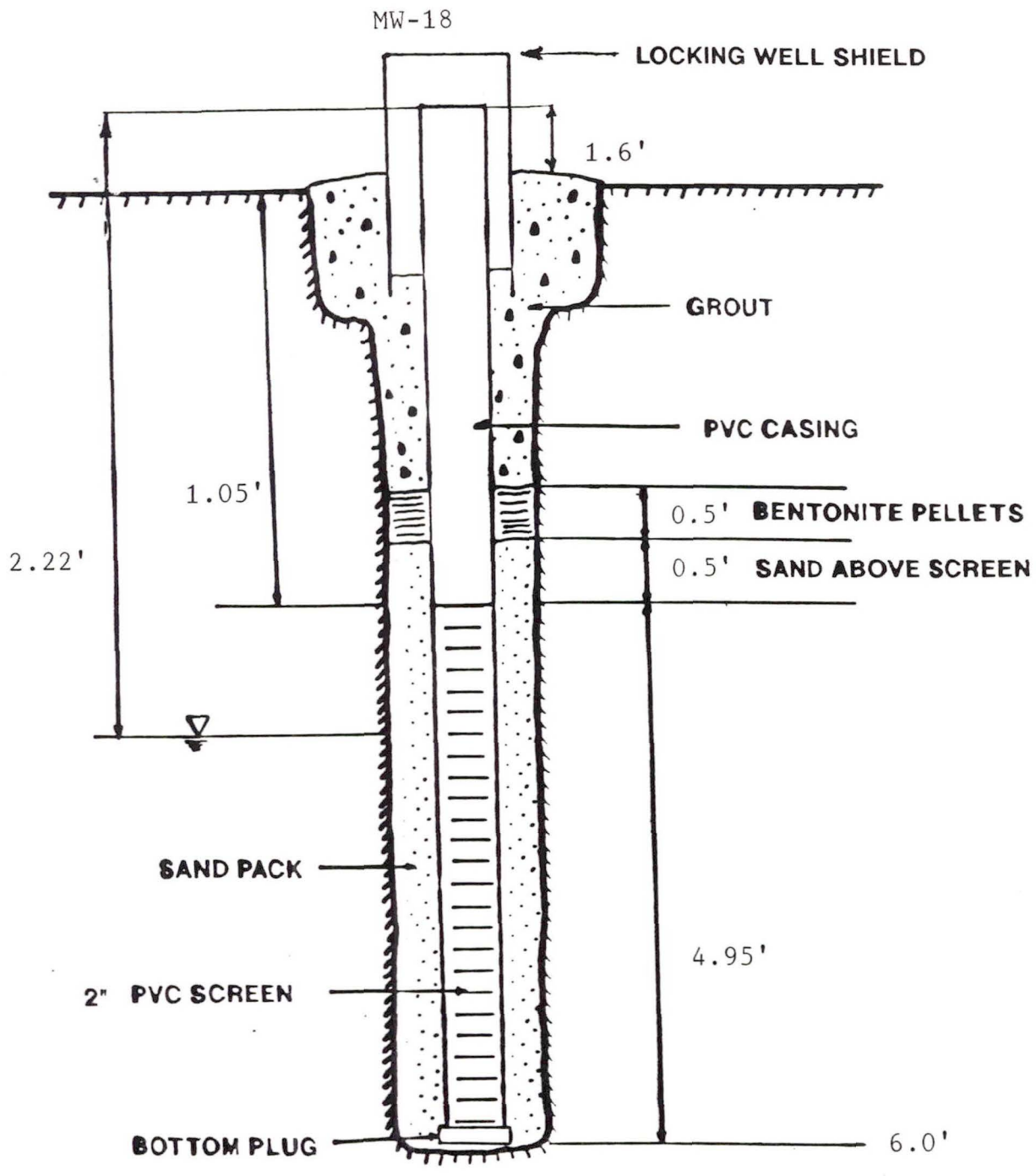
MW-17



NOTE: Water table appeared to be below screen when well was installed. Due to the shallow water table, a temporary piezometer was installed beside well to check for free product.

MONITORING WELL DETAIL

NOT TO SCALE

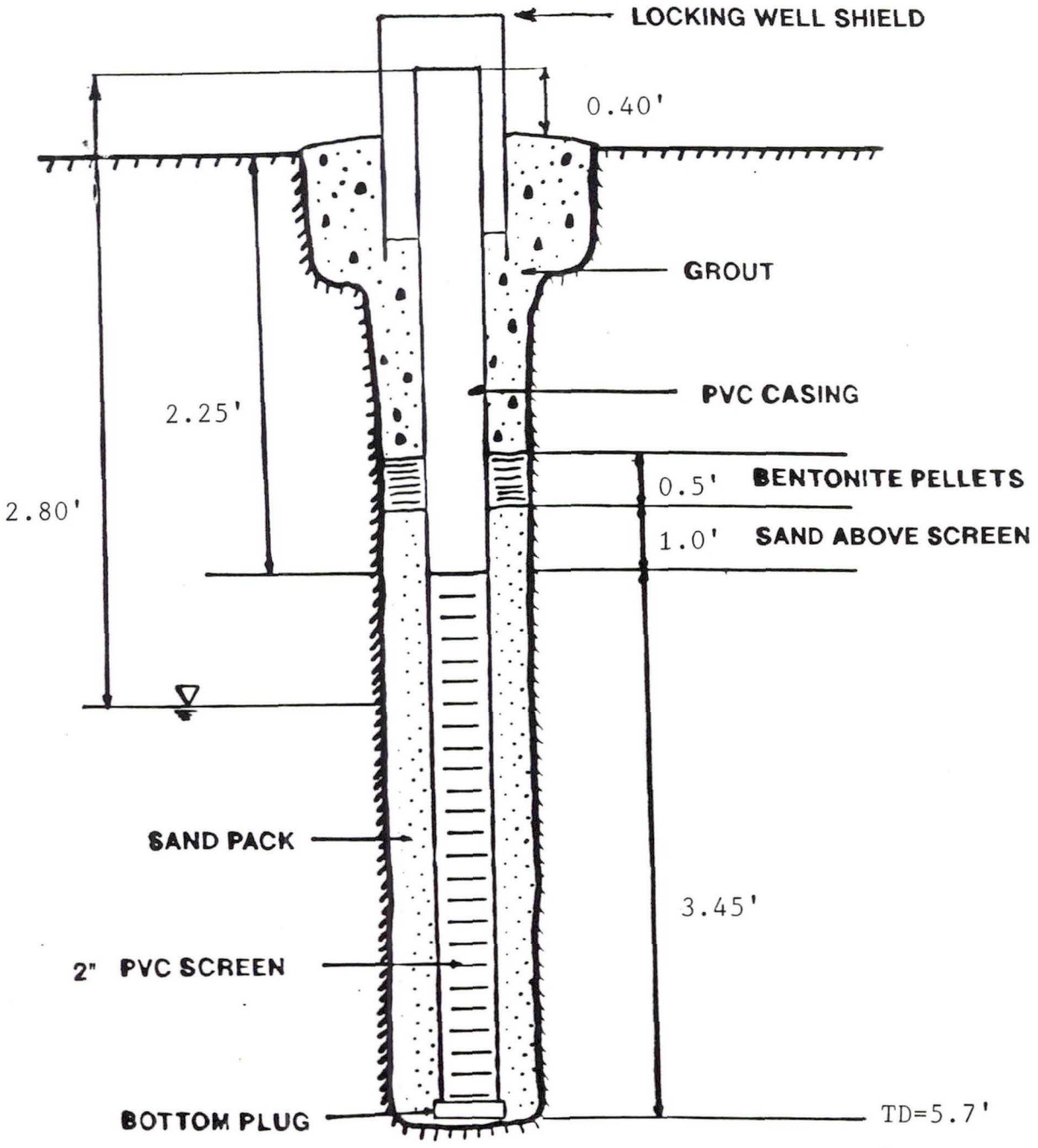


NOTE: Water table appeared to be below screen when well was installed. Due to the shallow water table, a temporary piezometer was installed beside well to check for free product.

MONITORING WELL DETAIL

NOT TO SCALE

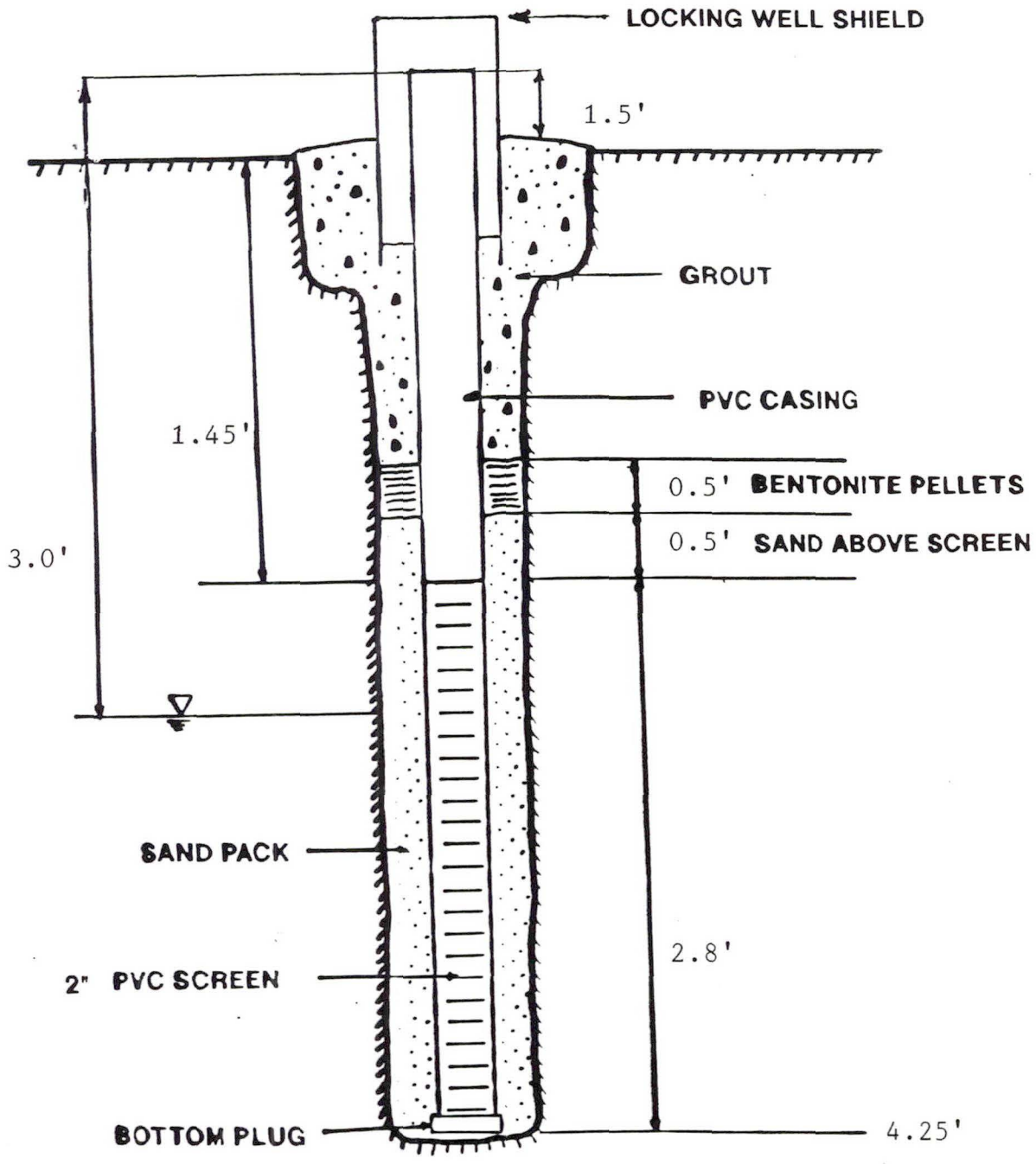
MW-19



MONITORING WELL DETAIL

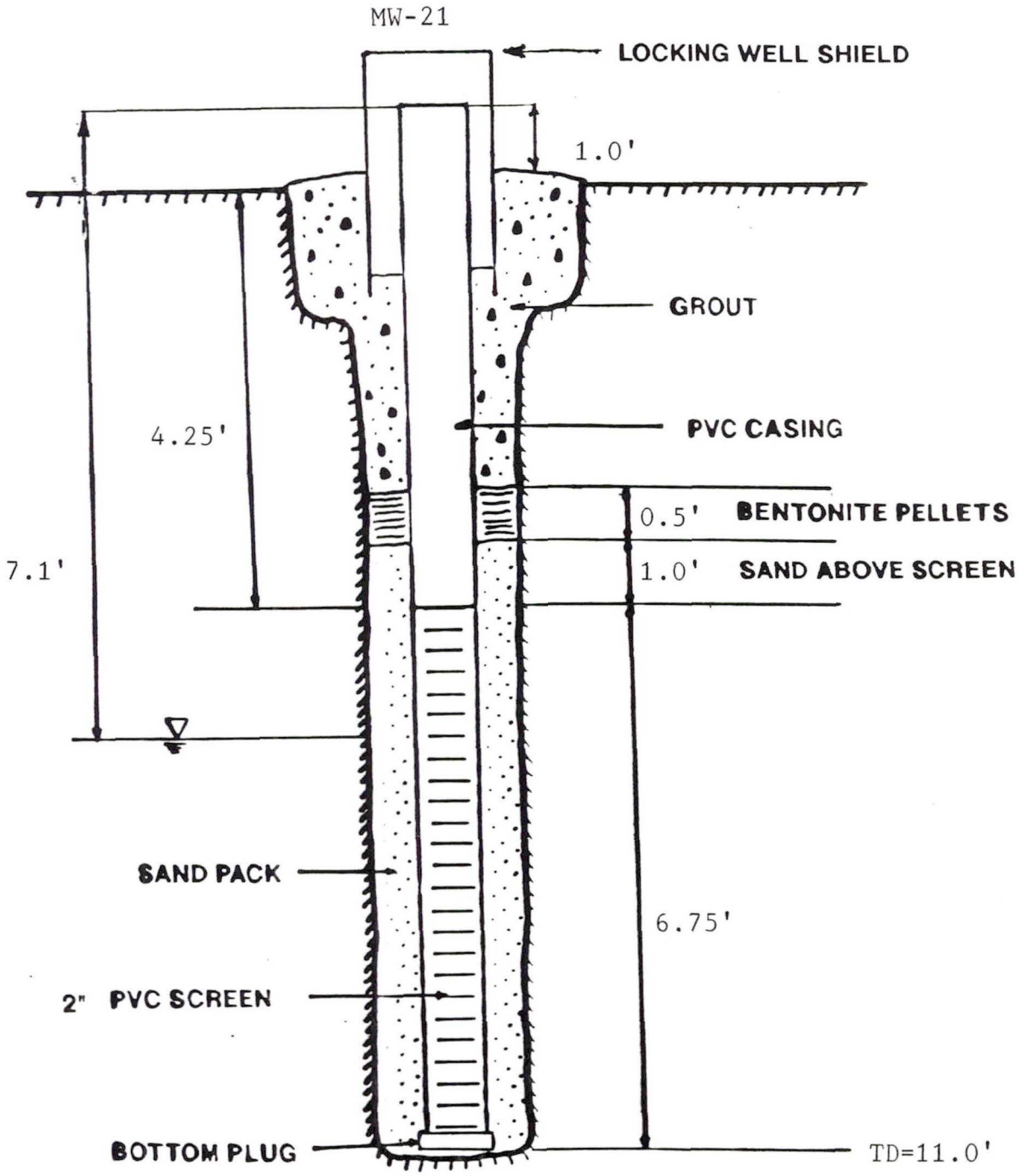
NOT TO SCALE

MW-20



MONITORING WELL DETAIL

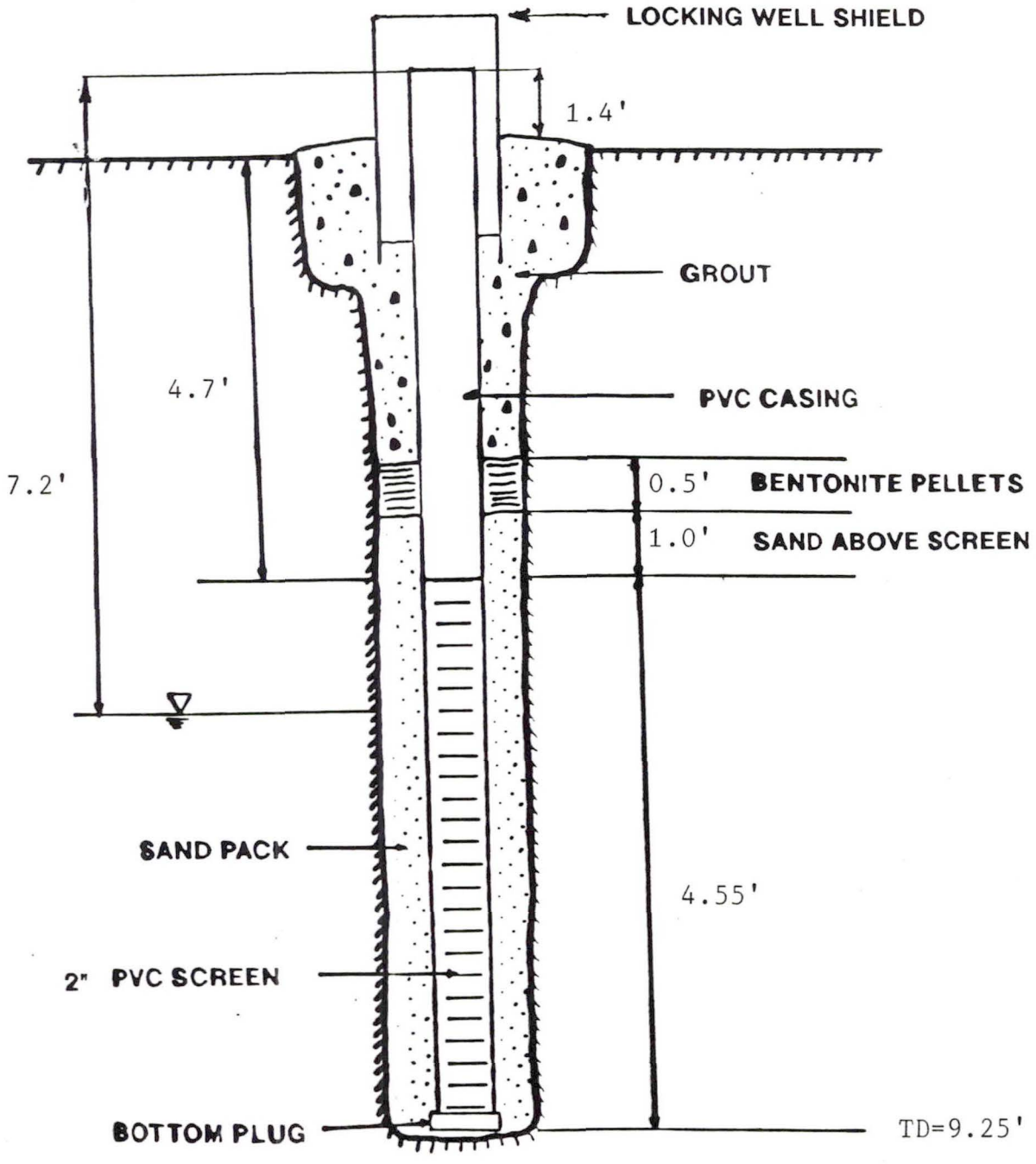
NOT TO SCALE



MONITORING WELL DETAIL

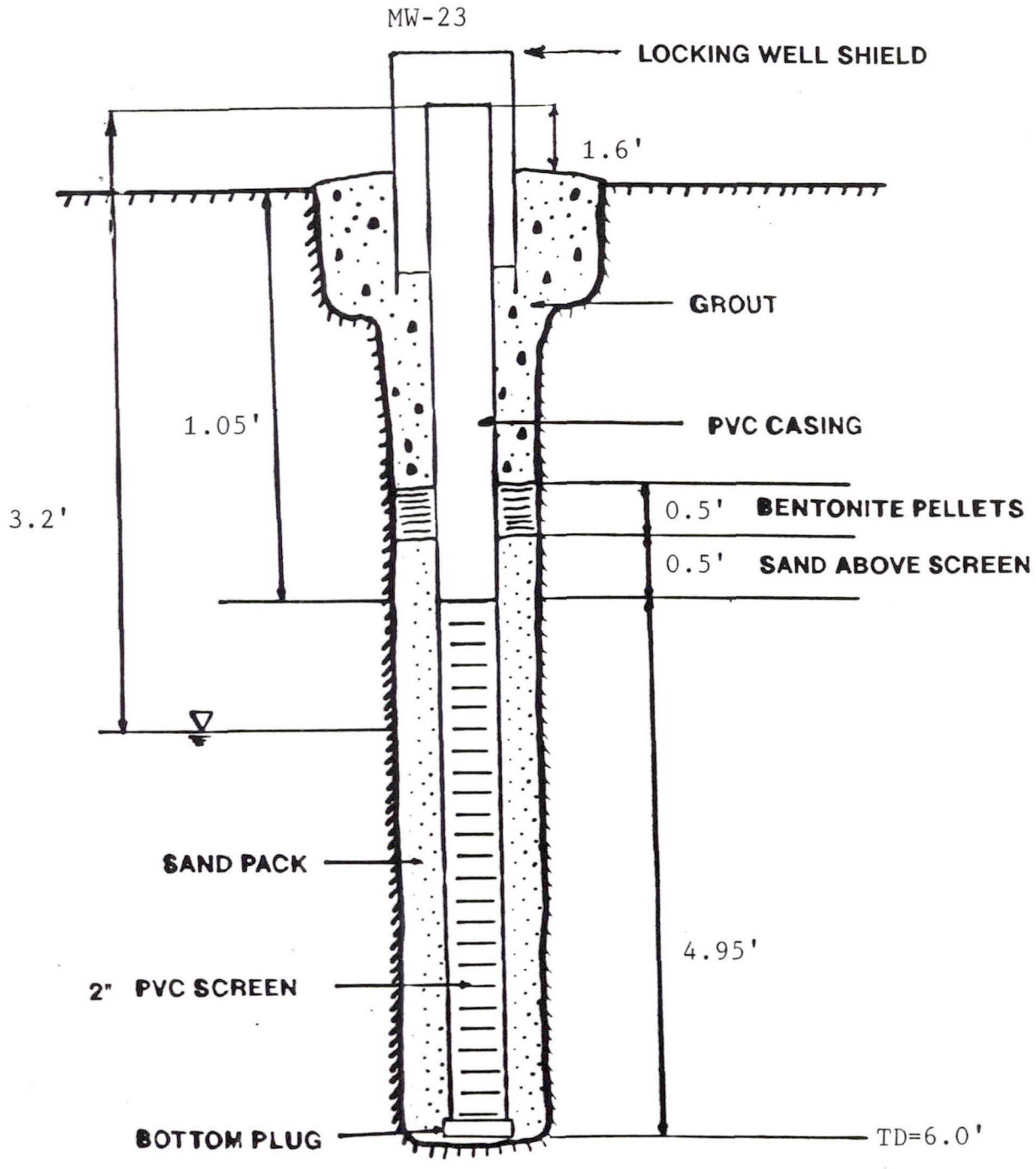
NOT TO SCALE

MW-22



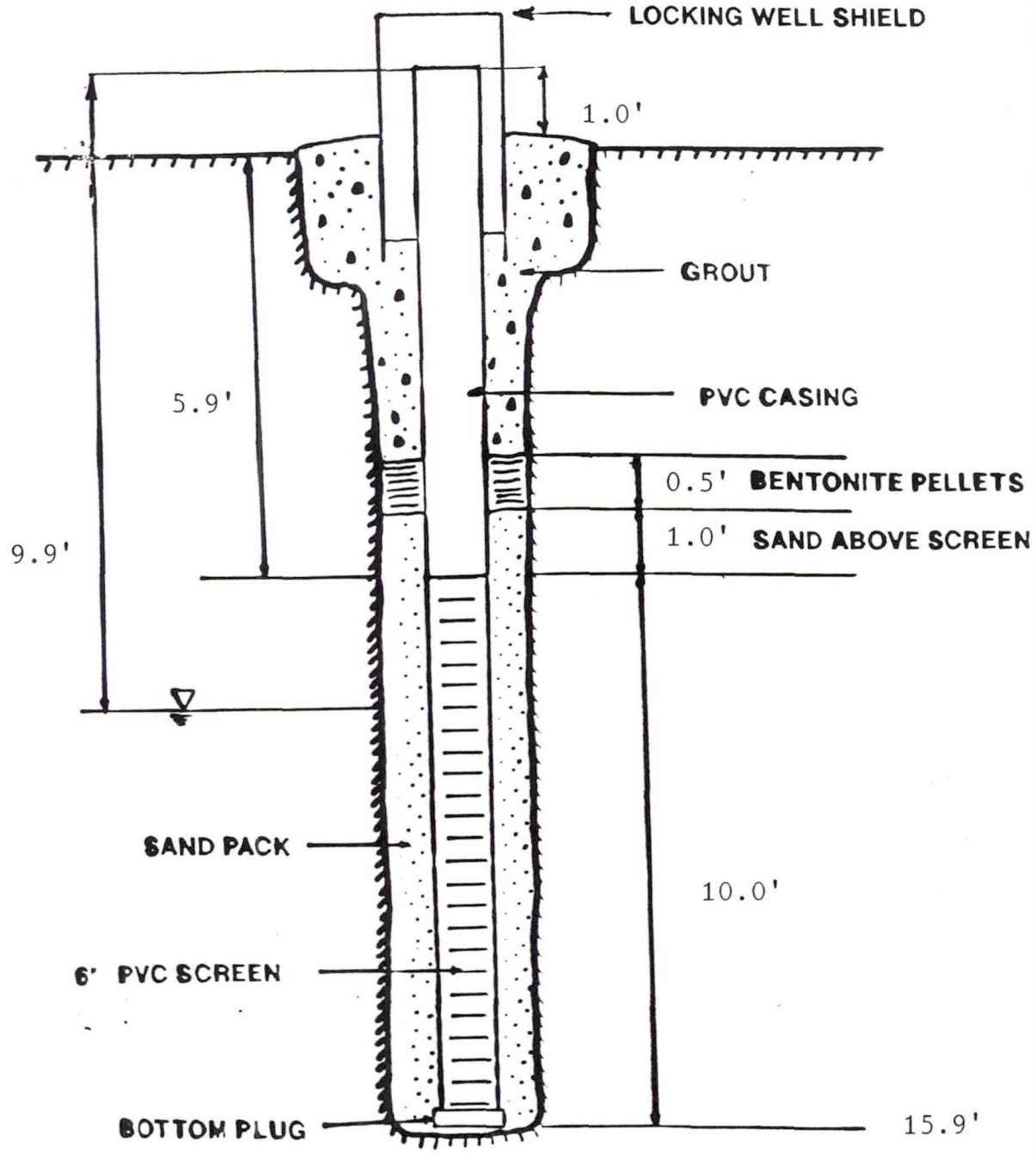
MONITORING WELL DETAIL

NOT TO SCALE



RECOVERY WELL DETAIL

NOT TO SCALE



APPENDIX III

BORING LOGS

BORING LOG

PROJECT: CG&T, WYANDOTTE PROJECT #: CES 91112

BORING # MW1 DATE 3/29/91 GROUND ELEV. N/A LOGGED BY P.Richter

DEPTH FROM	DEPTH TO	ELEV.	DESCRIPTION	BLOW COUNT	VAPOR SURVEY
0.0	3.0	N/A	Brown fine sand	N/A	N/A
3.0	6.5	N/A	Sandy rock/brick fill	N/A	N/A

REMARKS:

BORING LOG

PROJECT: CG&T, WYANDOTTE PROJECT #: CES 91112

BORING # MW 2 DATE 3/29/91 GROUND ELEV. N/A LOGGED BY P.Richter

DEPTH FROM	DEPTH TO	ELEV.	DESCRIPTION	BLOW COUNT	VAPOR SURVEY
0.0	3.0	N/A	Brown fine sand	N/A	N/A
3.0	7.0	N/A	Sandy rock/brick fill	N/A	N/A
7.0	10.0	N/A	Fine white sand	N/A	N/A

REMARKS:

BORING LOG

PROJECT: CG&T, WYANDOTTE PROJECT #: CES 91112

BORING # MW 3 DATE 3/29/91 GROUND ELEV. N/A LOGGED BY GREENLEAF

DEPTH FROM	DEPTH TO	ELEV.	DESCRIPTION	BLOW COUNT	VAPOR SURVEY
0.0	3.0	N/A	Brown sand	N/A	N/A
3.0	7.0	N/A	Brick debris	N/A	N/A
7.0	10.0	N/A	Fine sand	N/A	N/A

REMARKS:

BORING LOG

PROJECT: CG&T, WYANDOTTE PROJECT #: CES 91112

BORING # MW 4 DATE 3/29/91 GROUND ELEV. N/A LOGGED BY P.CLARK

DEPTH FROM	DEPTH TO	ELEV.	DESCRIPTION	BLOW COUNT	VAPOR SURVEY
0.0	3.5	N/A	Brown sandy soil	N/A	N/A
3.5	7.0	N/A	Sandy brick fill debris	N/A	N/A
7.0	9.5	N/A	Fine white sand	N/A	N/A

REMARKS:

BORING LOG

PROJECT: CG&T, WYANDOTTE PROJECT #: CES 91112

BORING # MW 5 DATE 3/29/91 GROUND ELEV. N/A LOGGED BY B.Lea

DEPTH FROM	DEPTH TO	ELEV.	DESCRIPTION	BLOW COUNT	VAPOR SURVEY
0.0	3.0	N/A	Brown sand	N/A	N/A
3.0	6.0	N/A	Sand/debris	N/A	N/A
6.0	9.0	N/A	Fine sand	N/A	N/A

REMARKS:

BORING LOG

PROJECT: CG&T, WYANDOTTE PROJECT #: CES 91112

BORING # MW6 DATE 3/29/91 GROUND ELEV. N/A LOGGED BY GREENLEAF

DEPTH FROM	DEPTH TO	ELEV.	DESCRIPTION	BLOW COUNT	VAPOR SURVEY
0.0	2.0	N/A	Brown sand	N/A	N/A
2.0	6.0	N/A	Fill debris	N/A	N/A
6.0	9.0	N/A	Fine sand	N/A	N/A

REMARKS:

BORING LOG

PROJECT: CG&T, WYANDOTTE PROJECT #: CES 91112

BORING # MW7 DATE 3/29/91 GROUND ELEV. N/A LOGGED BY T.CURRY

DEPTH FROM	DEPTH TO	ELEV.	DESCRIPTION	BLOW COUNT	VAPOR SURVEY
0.0	1.0	N/A	Sand	N/A	N/A
1.0	9.0	N/A	Fill debris	N/A	N/A
9.0	10.0	N/A	Fine sand	N/A	N/A

REMARKS:

BORING LOG

PROJECT: CG&T, WYANDOTTE PROJECT #: CES 91112

BORING # MW8 DATE 3/29/91 GROUND ELEV. N/A LOGGED BY GREENLEAF

DEPTH FROM	DEPTH TO	ELEV.	DESCRIPTION	BLOW COUNT	VAPOR SURVEY
0.0	9.0	N/A	Sandy fill debris	N/A	N/A
9.0	10.0	N/A	Fine sand	N/A	N/A

REMARKS:

BORING LOG

PROJECT: CG&T, WYANDOTTE PROJECT #: CES 91112

BORING # MW 9 DATE 3/29/91 GROUND ELEV. N/A LOGGED BY T.CURRY

DEPTH FROM	DEPTH TO	ELEV.	DESCRIPTION	BLOW COUNT	VAPOR SURVEY
0.0	9.0	N/A	Fill material	N/A	N/A
9.0	10.0	N/A	Fine sand	N/A	N/A

REMARKS:

BORING LOG

PROJECT: CG&T, WYANDOTTE PROJECT #: CES 91112

BORING # MW 10 DATE 3/29/91 GROUND ELEV. N/A LOGGED BY B.LEA

DEPTH FROM	DEPTH TO	ELEV.	DESCRIPTION	BLOW COUNT	VAPOR SURVEY
0.0	1.0	N/A	Rock	N/A	N/A
1.0	5.0	N/A	Fine sand	N/A	N/A

REMARKS:

BORING LOG

PROJECT: CG&T, WYANDOTTE PROJECT #: CES 91112

BORING # MW 11 DATE 3/29/91 GROUND ELEV. N/A LOGGED BY B.LEA

DEPTH FROM	DEPTH TO	ELEV.	DESCRIPTION	BLOW COUNT	VAPOR SURVEY
0.0	1.0	N/A	Rock	N/A	N/A
1.0	8.0	N/A	Fine sand	N/A	N/A

REMARKS:

BORING LOG

PROJECT: CG&T, WYANDOTTE PROJECT #: CES 91112

BORING #MW12 DATE 3/29/91 GROUND ELEV. N/A LOGGED BY T.CURRY

DEPTH FROM	DEPTH TO	ELEV.	DESCRIPTION	BLOW COUNT	VAPOR SURVEY
0.0	1.0	N/A	Rock	N/A	N/A
1.0	10.0	N/A	Fine sand	N/A	N/A

REMARKS:

BORING LOG

PROJECT: CG&T, WYANDOTTE PROJECT #: CES 91112

BORING # MW 13 DATE 3/29/91 GROUND ELEV. N/A LOGGED BY T.CURRY

DEPTH FROM	DEPTH TO	ELEV.	DESCRIPTION	BLOW COUNT	VAPOR SURVEY
0.0	1.0	N/A	Rock	N/A	N/A
1.0	9.0	N/A	Fine sand	N/A	N/A

REMARKS:

BORING LOG

PROJECT: CG&T, WYANDOTTE PROJECT #: CES 91112

BORING #MW14 DATE 3/29/91 GROUND ELEV. N/A LOGGED BY B.LEA

DEPTH FROM	DEPTH TO	ELEV.	DESCRIPTION	BLOW COUNT	VAPOR SURVEY
0.0	1.0	N/A	Rock	N/A	N/A
1.0	7.0	N/A	Fine sand	N/A	N/A

REMARKS:

BORING LOG

PROJECT: CG&T, WYANDOTTE PROJECT #: CES 91112

BORING #MW 15 DATE 3/29/91 GROUND ELEV. N/A LOGGED BY GREENLEAF

DEPTH FROM	DEPTH TO	ELEV.	DESCRIPTION	BLOW COUNT	VAPOR SURVEY
0.0	1.0	N/A	Rock	N/A	N/A
1.0	7.0	N/A	Fine sand	N/A	N/A

REMARKS:

BORING LOG

PROJECT: CG&T, WYANDOTTE PROJECT #: CES 91112

BORING # MW 16 DATE 3/29/91 GROUND ELEV. N/A LOGGED BY T.CURRY

DEPTH FROM	DEPTH TO	ELEV.	DESCRIPTION	BLOW COUNT	VAPOR SURVEY
0.0	1.0	N/A	Rock	N/A	N/A
1.0	9.0	N/A	Fine sand	N/A	N/A

REMARKS:

BORING LOG

PROJECT: CG&T, WYANDOTTE PROJECT #: CES 91112

BORING # MW17 DATE 3/29/91 GROUND ELEV. N/A LOGGED BY B.LEA

DEPTH FROM	DEPTH TO	ELEV.	DESCRIPTION	BLOW COUNT	VAPOR SURVEY
0.0	1.0	N/A	Rock	N/A	N/A
1.0	8.0	N/A	Fine sand	N/A	N/A

REMARKS:

BORING LOG

PROJECT: CG&T, WYANDOTTE PROJECT #: CES 91112

BORING # MW18 DATE 3/29/91 GROUND ELEV. N/A LOGGED BY P.RICHTER

DEPTH FROM	DEPTH TO	ELEV.	DESCRIPTION	BLOW COUNT	VAPOR SURVEY
0.0	1.0	N/A	Rock	N/A	N/A
1.0	6.0	N/A	Fine sand	N/A	N/A

REMARKS:

BORING LOG

PROJECT: CG&T, WYANDOTTE PROJECT #: CES 91112

BORING # MW19 DATE 3/29/91 GROUND ELEV. N/A LOGGED BY P.RICHTER

DEPTH FROM	DEPTH TO	ELEV.	DESCRIPTION	BLOW COUNT	VAPOR SURVEY
0.0	1.0	N/A	Asphalt and base	N/A	N/A
1.0	6.0	N/A	Fine sand	N/A	N/A

REMARKS:

BORING LOG

PROJECT: CG&T, WYANDOTTE PROJECT #: CES 91112

BORING # MW20 DATE 3/29/91 GROUND ELEV. N/A LOGGED BY P.RICHTER

DEPTH FROM	DEPTH TO	ELEV.	DESCRIPTION	BLOW COUNT	VAPOR SURVEY
0.0	1.0	N/A	Rock	N/A	N/A
1.0	5.0	N/A	Fine sand	N/A	N/A

REMARKS:

BORING LOG

PROJECT: CG&T, WYANDOTTE PROJECT #: CES 91112

BORING # MW21 DATE 4/1/91 GROUND ELEV. N/A LOGGED BY GREENLEAF

DEPTH FROM	DEPTH TO	ELEV.	DESCRIPTION	BLOW COUNT	VAPOR SURVEY
0.0	1.0	N/A	Asphalt and base	N/A	N/A
1.0	11.0	N/A	Fine sand	N/A	N/A

REMARKS:

BORING LOG

PROJECT: CG&T, WYANDOTTE PROJECT #: CES 91112

BORING # MW22 DATE 4/1/91 GROUND ELEV. N/A LOGGED BY T.CURRY

DEPTH FROM	DEPTH TO	ELEV.	DESCRIPTION	BLOW COUNT	VAPOR SURVEY
0.0	2.0	N/A	Rock	N/A	N/A
2.0	10.0	N/A	Fine sand	N/A	N/A

REMARKS:

BORING LOG

PROJECT: CG&T, WYANDOTTE PROJECT #: CES 91112

BORING # MW23 DATE 4/1/91 GROUND ELEV. N/A LOGGED BY GREENLEAF

DEPTH FROM	DEPTH TO	ELEV.	DESCRIPTION	BLOW COUNT	VAPOR SURVEY
0.0	1.0	N/A	Rock	N/A	N/A
1.0	6.0	N/A	Fine sand	N/A	N/A

REMARKS:

BORING LOG

PROJECT: CG&T, WYANDOTTE PROJECT #: CES 91112

BORING # RW DATE 4/2/91 GROUND ELEV. N/A LOGGED BY N/A

DEPTH FROM	DEPTH TO	ELEV.	DESCRIPTION	BLOW COUNT	VAPOR SURVEY
			NOT LOGGED - MUD ROTARY DRILLED		

REMARKS:

APPENDIX IV

WELL CONSTRUCTION RECORDS

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH, N.C. 27611, PHONE [redacted] 733-5083

FOR OFFICE USE ONLY
Quad. No. [redacted] Serial No.
Lat. Long. Pc
Minor Basin
Basin Code
Header Ent. GW-1 Ent.

WELL CONSTRUCTION RECORD

MW-1

DRILLING CONTRACTOR SPECIALIZED MARINE, INC.

DRILLER REGISTRATION NUMBER 1278

STATE WELL CONSTRUCTION PERMIT NUMBER: 64-0404-WM-0450

1. WELL LOCATION: (Show sketch of the location below)

Nearest Town: WILMINGTON, NORTH CAROLINA
801 SURRY STREET
(Road, Community, or Subdivision and Lot No.)

County: NEW HANOVER

2. OWNER CITY GAS & TRANSMISSION (WYANDOTTE TRIBAL PETROLEUM, AGENT)
ADDRESS 801 SURRY STREET (Street or Route No.)
WILMINGTON (City or Town) NC (State) 28401 (Zip Code)

3. DATE DRILLED 3/29/91 USE OF WELL MONITORING

4. TOTAL DEPTH 6.4' CUTTINGS COLLECTED ☐ Yes ☒ No

5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☒ No

6. STATIC WATER LEVEL 6.7' FT. ☐ above ☒ below TOP OF CASING,
TOP OF CASING IS 1.5' FT ABOVE LAND SURFACE.

7. YIELD (gpm): N/A METHOD OF TEST

8. WATER ZONES (depth) 1-10 FEET (SURFICIAL AQUIFER)

9. CHLORINATION Type N/A Amount

10. CASING

	Depth From	Depth To	Diameter	Wall Thickness or Weight/Ft.	Material
	1.5'	3.5' Ft	2"	SCH40	PVC
		Ft.			
		Ft.			

11. GROUT:

	Depth From	Depth To	Material	Method
	0.0	0.5 Ft.	CEMENT	IN-PLACE
		Ft.		

12. SCREEN.

	Depth From	Depth To	Diameter	Slot Size	Material
	2.0	6.4 Ft.	2" in.	.010 in.	PVC
		Ft.	in.	in.	
		Ft.	in.	in.	

13. GRAVEL PACK:

	Depth From	Depth To	Size	Material
	1.0	6.4 Ft	COARSE	SAND
		Ft.		

14. REMARKS:

Depth From	Depth To	DRILLING LOG Formation Description
		SEE ATTACHED

If additional space is needed use back of form.

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

SEE ATTACHED

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL-OWNER.

[signature] 5/21/91
SIGNATURE OF CONTRACTOR OR AGENT DATE

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH, N.C. 27611, PHONE [redacted] 733-5083

FOR OFFICE USE ONLY
Quad. No. [redacted] Serial No. _____
Lat. _____ Long. _____ Pc _____
Minor Basin _____
Basin Code _____
Header Ent. _____ GW-1 Ent. _____

WELL CONSTRUCTION RECORD

MW-2

DRILLING CONTRACTOR SPECIALIZED MARINE, INC.

DRILLER REGISTRATION NUMBER 1278

STATE WELL CONSTRUCTION PERMIT NUMBER: 64-0404-WM-0450

1. WELL LOCATION: (Show sketch of the location below)

Nearest Town: WILMINGTON, NORTH CAROLINA

County: NEW HANOVER

801 SURRY STREET
(Road, Community, or Subdivision and Lot No.)

2. OWNER CITY GAS & TRANSMISSION (WYANDOTTE TRIBAL PETROLEUM, AGENT)

ADDRESS 801 SURRY STREET (Street or Route No.)

WILMINGTON (City or Town) NC (State) 28401 (Zip Code)

3. DATE DRILLED 3/29/91 USE OF WELL MONITORING

4. TOTAL DEPTH 10' CUTTINGS COLLECTED ☐ Yes ☒ No

5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☒ No

6. STATIC WATER LEVEL 8.6 FT. ☐ above ☒ below TOP OF CASING,
TOP OF CASING IS 1.1 FT ABOVE LAND SURFACE.

7. YIELD (gpm): N/A METHOD OF TEST _____

8. WATER ZONES (depth) 1-10 FEET (SURFICIAL AQUIFER)

9. CHLORINATION Type N/A Amount _____

10. CASING

	Depth From	To	Diameter	Wall Thickness or Weight/Ft.	Material
	1.1	5.7 Ft	2"	SCH40	PVC
		Ft.			
		Ft.			

11. GROUT:

	Depth From	To	Material	Method
	0.0	4.2 Ft.	CEMENT	IN-PLACE
		Ft.		

12. SCREEN:

	Depth From	To	Diameter	Slot Size	Material
	5.7	10.0 Ft.	2" in.	.010 in.	PVC
		Ft.	in.	in.	
		Ft.	in.	in.	

13. GRAVEL PACK:

	Depth From	To	Size	Material
	4.7	10.0 Ft	COARSE	SAND
		Ft.		

14. REMARKS: _____

Depth From	To	DRILLING LOG Formation Description
		SEE ATTACHED

If additional space is needed use back of form.

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

SEE ATTACHED

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

[signature] 5/21/91

SIGNATURE OF CONTRACTOR OR AGENT DATE

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH, N.C. 27611, PHONE (919) 733-3083

FOR OFFICE USE ONLY
Quad. No. _____ Serial No. _____
Lat. _____ Long. _____ Pc _____
Minor Basin _____
Basin Code _____
Header Ent. _____ GW-1 Ent. _____

WELL CONSTRUCTION RECORD

MW-3

DRILLING CONTRACTOR SPECIALIZED MARINE, INC.

DRILLER REGISTRATION NUMBER 1278

STATE WELL CONSTRUCTION PERMIT NUMBER: 64-0404-WM-0450

1. WELL LOCATION: (Show sketch of the location below)

Nearest Town: WILMINGTON, NORTH CAROLINA
801 SURRY STREET
(Road, Community, or Subdivision and Lot No.)

County: NEW HANOVER

2. OWNER CITY GAS & TRANSMISSION (WYANDOTTE TRIBAL PETROLEUM, AGENT)
ADDRESS 801 SURRY STREET (Street or Route No.)
WILMINGTON (City or Town) NC (State) 28401 (Zip Code)

3. DATE DRILLED 3/29/91 USE OF WELL MONITORING

4. TOTAL DEPTH 10.0' CUTTINGS COLLECTED ☐ Yes ☒ No

5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☒ No

6. STATIC WATER LEVEL 8.8 FT. ☐ above ☒ below TOP OF CASING,
TOP OF CASING IS 0.8 FT ABOVE LAND SURFACE.

7. YIELD (gpm): N/A METHOD OF TEST _____

8. WATER ZONES (depth) 1-10 FEET (SURFICIAL AQUIFER)

9. CHLORINATION Type N/A Amount _____

10. CASING

	Depth From	Depth To	Diameter	Wall Thickness or Weight/Ft.	Material
	0.8	5.1 Ft	2"	SCH40	PVC
		Ft.			
		Ft.			

11. GROUT:

	Depth From	Depth To	Material	Method
	0.0	3.6 Ft.	CEMENT	IN-PLACE
		Ft.		

12. SCREEN.

	Depth From	Depth To	Diameter	Slot Size	Material
	5.1	10.0 Ft.	2" in.	.010 in.	PVC
		Ft.	in.	in.	
		Ft.	in.	in.	

13. GRAVEL PACK:

	Depth From	Depth To	Size	Material
	4.1	10.0 Ft	COARSE	SAND
		Ft.		

14. REMARKS: _____

DRILLING LOG

Depth From	Depth To	Formation Description
		SEE ATTACHED

If additional space is needed use back of form.

LOCATION SKETCH

(Show direction and distance from at least two State Roads, or other map reference points)

SEE ATTACHED

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CONTRACTOR OR AGENT

4/21/91
DATE

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH, N.C. 27611, PHONE (919) 733-5083

FOR OFFICE USE ONLY
Quad. No. _____ Serial No. _____
Lat. _____ Long. _____ Pc _____
Minor Basin _____
Basin Code _____
Header Ent. _____ GW-1 Ent. _____

WELL CONSTRUCTION RECORD MW-4

DRILLING CONTRACTOR SPECIALIZED MARINE, INC.
DRILLER REGISTRATION NUMBER 1278
STATE WELL CONSTRUCTION PERMIT NUMBER: 64-0404-WM-0450

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: WILMINGTON, NORTH CAROLINA
801 SURRY STREET
(Road, Community, or Subdivision and Lot No.)
County: NEW HANOVER

2. OWNER CITY GAS & TRANSMISSION (WYANDOTTE TRIBAL PETROLEUM, AGENT)
ADDRESS 801 SURRY STREET (Street or Route No.)
WILMINGTON (City or Town) NC (State) 28401 (Zip Code)

3. DATE DRILLED 3/29/91 USE OF WELL MONITORING
4. TOTAL DEPTH 10.7' CUTTINGS COLLECTED ☐ Yes ☒ No
5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☒ No
6. STATIC WATER LEVEL 8.7 FT. ☐ above ☒ below TOP OF CASING,
TOP OF CASING IS 1.1 FT ABOVE LAND SURFACE.
7. YIELD (gpm): N/A METHOD OF TEST _____
8. WATER ZONES (depth) 1-10 FEET (SURFICIAL AQUIFER)
9. CHLORINATION Type N/A Amount _____

Depth From	Depth To	DRILLING LOG Formation Description
		SEE ATTACHED

If additional space is needed use back of form.

10. CASING

	Depth		Diameter	Wall Thickness or Weight/Ft.	Material
From	1.1	To 3.4 Ft	2"	SCH40	PVC
From		To Ft.			
From		To Ft.			

11. GROUT:

	Depth		Material	Method
From	0.0	To 1.9 Ft.	CEMENT	IN-PLACE
From		To Ft.		

12. SCREEN.

	Depth		Diameter	Slot Size	Material
From	3.4	To 10.7 Ft.	2" in.	.010 in.	PVC
From		To Ft.	in.	in.	
From		To Ft.	in.	in.	

SEE ATTACHED

13. GRAVEL PACK:

	Depth		Size	Material
From	2.4	To 10.7 Ft.	COARSE	SAND
From		To Ft.		

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

14. REMARKS: _____

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

[signature] 5/21/91
SIGNATURE OF CONTRACTOR OR AGENT DATE

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH, N.C. 27611, PHONE (919) 733-3083

FOR OFFICE USE ONLY
Quad. No. _____ Serial No. _____
Lat. _____ Long. _____ Pc _____
Minor Basin _____
Basin Code _____
Header Ent. _____ GW-1 Ent. _____

WELL CONSTRUCTION RECORD MW-5

DRILLING CONTRACTOR SPECIALIZED MARINE, INC.
DRILLER REGISTRATION NUMBER 1278
STATE WELL CONSTRUCTION PERMIT NUMBER: 64-0404-WM-0450

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: WILMINGTON, NORTH CAROLINA
801 SURRY STREET
(Road, Community, or Subdivision and Lot No.)
County: NEW HANOVER

2. OWNER CITY GAS & TRANSMISSION (WYANDOTTE TRIBAL PETROLEUM, AGENT)
ADDRESS 801 SURRY STREET (Street or Route No.)
WILMINGTON (City or Town) NC (State) 28401 (Zip Code)

3. DATE DRILLED 3/29/91 USE OF WELL MONITORING
4. TOTAL DEPTH 9.2 CUTTINGS COLLECTED ☐ Yes ☒ No
5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☒ No
6. STATIC WATER LEVEL 8.6 FT. ☐ above ☒ below TOP OF CASING,
TOP OF CASING IS 0.75 FT ABOVE LAND SURFACE.
7. YIELD (gpm): N/A METHOD OF TEST _____
8. WATER ZONES (depth) 1-10 FEET (SURFICIAL AQUIFER)
9. CHLORINATION Type N/A Amount _____

10. CASING

	Depth		Diameter	Wall Thickness or Weight/Ft.	Material
From	0.75	To 4.5 Ft	2"	SCH40	PVC
From		To Ft.			
From		To Ft.			

11. GROUT:

	Depth		Material	Method
From	0	To 3.0 Ft.	CEMENT	IN-PLACE
From		To Ft.		

12. SCREEN:

	Depth		Diameter	Slot Size	Material
From	4.5	To 9.2 Ft.	2" in.	.010 in.	PVC
From		To Ft.	in.	in.	
From		To Ft.	in.	in.	

13. GRAVEL PACK:

	Depth		Size	Material
From	3.5	To 9.2 Ft	COARSE	SAND
From		To Ft.		

Depth From	Depth To	DRILLING LOG Formation Description
		SEE ATTACHED

If additional space is needed use back of form.

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

SEE ATTACHED

14. REMARKS: _____

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CONTRACTOR OR AGENT — DATE 5/24/91

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH, N.C. 27611, PHONE (919) 733-3083

FOR OFFICE USE ONLY
Quad. No. _____ Serial No. _____
Lat. _____ Long _____ Pc _____
Minor Basin _____
Basin Code _____
Header Ent. _____ GW-1 Ent. _____

WELL CONSTRUCTION RECORD MW-6

DRILLING CONTRACTOR SPECIALIZED MARINE, INC.
DRILLER REGISTRATION NUMBER 1278
STATE WELL CONSTRUCTION PERMIT NUMBER: 64-0404-WM-0450

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: WILMINGTON, NORTH CAROLINA
801 SURRY STREET
(Road, Community, or Subdivision and Lot No.)
County: NEW HANOVER

2. OWNER CITY GAS & TRANSMISSION (WYANDOTTE TRIBAL PETROLEUM, AGENT)
ADDRESS 801 SURRY STREET (Street or Route No.)
WILMINGTON (City or Town) NC (State) 28401 (Zip Code)

3. DATE DRILLED 3/29/91 USE OF WELL MONITORING
4. TOTAL DEPTH 8.7 CUTTINGS COLLECTED ☐ Yes ☒ No
5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☒ No
6. STATIC WATER LEVEL 8.3 FT. ☐ above ☒ below TOP OF CASING,
TOP OF CASING IS 1.3 FT ABOVE LAND SURFACE.
7. YIELD (gpm): N/A METHOD OF TEST _____
8. WATER ZONES (depth) 1-10 FEET (SURFICIAL AQUIFER)
9. CHLORINATION: Type N/A Amount _____
10. CASING:

	Depth From	Depth To	Diameter	Wall Thickness or Weight/Ft.	Material
	1.3	3.5 Ft.	2"	SCH40	PVC
From		To Ft.			
From		To Ft.			

11. GROUT:

	Depth From	Depth To	Material	Method
	0.0	2.0 Ft.	CEMENT	IN-PLACE
From		To Ft.		

12. SCREEN:

	Depth From	Depth To	Diameter	Slot Size	Material
	3.5	8.7 Ft.	2" in.	.010 in.	PVC
From		To Ft.	in.	in.	
From		To Ft.	in.	in.	

13. GRAVEL PACK:

	Depth From	Depth To	Size	Material
	2.5	8.7 Ft.	COARSE	SAND
From		To Ft.		

14. REMARKS: _____

Depth From	Depth To	DRILLING LOG Formation Description
		SEE ATTACHED

If additional space is needed use back of form.

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

SEE ATTACHED

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CONTRACTOR OR AGENT — DATE 5/21/91

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH, N.C. 27611, PHONE (919) 733-3083

FOR OFFICE USE ONLY
Quad. No. _____ Serial No. _____
Lat. _____ Long. _____ Pc _____
Minor Basin _____
Basin Code _____
Header Ent. _____ GW-1 Ent. _____

WELL CONSTRUCTION RECORD MW-7

DRILLING CONTRACTOR SPECIALIZED MARINE, INC.
DRILLER REGISTRATION NUMBER 1278
STATE WELL CONSTRUCTION PERMIT NUMBER: 64-0404-WM-0450

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: WILMINGTON, NORTH CAROLINA
801 SURRY STREET
(Road, Community, or Subdivision and Lot No.)
County: NEW HANOVER

2. OWNER CITY GAS & TRANSMISSION (WYANDOTTE TRIBAL PETROLEUM, AGENT)
ADDRESS 801 SURRY STREET (Street or Route No.)
WILMINGTON (City or Town) NC (State) 28401 (Zip Code)

3. DATE DRILLED 3/29/91 USE OF WELL MONITORING
4. TOTAL DEPTH 9.9 CUTTINGS COLLECTED ☐ Yes ☒ No
5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☒ No
6. STATIC WATER LEVEL 7.3 FT. ☐ above ☒ below TOP OF CASING,
TOP OF CASING IS 1.2 FT ABOVE LAND SURFACE.
7. YIELD (gpm): N/A METHOD OF TEST _____
8. WATER ZONES (depth) 1-10 FEET (SURFICIAL AQUIFER)
9. CHLORINATION Type N/A Amount _____

Depth From	Depth To	DRILLING LOG Formation Description

SEE ATTACHED

If additional space is needed use back of form.

10. CASING

	Depth From	Depth To	Diameter	Wall Thickness or Weight/Ft.	Material
	1.2	4.4 Ft	2"	SCH40	PVC
		Ft.			
		Ft.			

11. GROUT:

	Depth From	Depth To	Material	Method
	0.0	2.9 Ft.	CEMENT	IN-PLACE
		Ft.		

12. SCREEN.

	Depth From	Depth To	Diameter	Slot Size	Material
	4.4	9.9 Ft.	2" in.	.010 in.	PVC
		Ft.	in.	in.	
		Ft.	in.	in.	

SEE ATTACHED

13. GRAVEL PACK:

	Depth From	Depth To	Size	Material
	3.4	9.9 Ft	COARSE	SAND
		Ft		

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

14. REMARKS: _____

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Melissa Green 5/21/91
SIGNATURE OF CONTRACTOR OR AGENT DATE

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH, N.C. 27611, PHONE [redacted] 733-3083

FOR OFFICE USE ONLY
Quad. No. [redacted] Serial No.
Lat. Long. Pc
Minor Basin
Basin Code
Header Ent. GW-1 Ent.

WELL CONSTRUCTION RECORD MW-8

DRILLING CONTRACTOR SPECIALIZED MARINE, INC.
DRILLER REGISTRATION NUMBER 1278
STATE WELL CONSTRUCTION PERMIT NUMBER: 64-0404-WM-0450

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: WILMINGTON, NORTH CAROLINA
801 SURRY STREET
(Road, Community, or Subdivision and Lot No.)
County: NEW HANOVER

2. OWNER CITY GAS & TRANSMISSION (WYANDOTTE TRIBAL PETROLEUM, AGENT)
ADDRESS 801 SURRY STREET (Street or Route No.)
WILMINGTON (City or Town) NC (State) 28401 (Zip Code)

3. DATE DRILLED 3/29/91 USE OF WELL MONITORING
4. TOTAL DEPTH 9.7 CUTTINGS COLLECTED ☐ Yes ☒ No
5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☒ No
6. STATIC WATER LEVEL 6.8 FT. ☐ above ☒ below TOP OF CASING,
TOP OF CASING IS 1.3 FT ABOVE LAND SURFACE.
7. YIELD (gpm): N/A METHOD OF TEST
8. WATER ZONES (depth): 1-10 FEET (SURFICIAL AQUIFER)
9. CHLORINATION Type N/A Amount

Depth From	Depth To	DRILLING LOG Formation Description
		SEE ATTACHED

If additional space is needed use back of form.

10. CASING

	Depth		Diameter	Wall Thickness or Weight/Ft.	Material
From 1.3	To 5.0	Ft. 2"	SCH40	PVC
From	To	Ft.		
From	To	Ft.		

11. GROUT:

	Depth		Material	Method
From 0.0	To 3.5	Ft. CEMENT	IN-PLACE
From	To	Ft.	

12. SCREEN:

	Depth		Diameter	Slot Size	Material
From 5.0	To 9.7	Ft. 2"	In. .010	In. PVC
From	To	Ft.	In.	In.
From	To	Ft.	In.	In.

13. GRAVEL PACK:

	Depth		Size	Material
From 4.0	To 9.7	Ft. COARSE	SAND
From	To	Ft.	

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

SEE ATTACHED

14. REMARKS:

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

[signature] 5/21/91
SIGNATURE OF CONTRACTOR OR AGENT DATE

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH, N.C. 27611, PHONE (919) 733-5083

FOR OFFICE USE ONLY
Quad. No. _____ Serial No. _____
Lat. _____ Long _____ Pc _____
Minor Basin _____
Basin Code _____
Header Ent. _____ GW-1 Ent. _____

WELL CONSTRUCTION RECORD MW-9

DRILLING CONTRACTOR SPECIALIZED MARINE, INC.
DRILLER REGISTRATION NUMBER 1278
STATE WELL CONSTRUCTION PERMIT NUMBER: 64-0404-WM-0450

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: WILMINGTON, NORTH CAROLINA
801 SURRY STREET
(Road, Community, or Subdivision and Lot No.)
County: NEW HANOVER

2. OWNER CITY GAS & TRANSMISSION (WYANDOTTE TRIBAL PETROLEUM, AGENT)
ADDRESS 801 SURRY STREET (Street or Route No.)
WILMINGTON (City or Town) NC (State) 28401 (Zip Code)

3. DATE DRILLED 3/29/91 USE OF WELL MONITORING
4. TOTAL DEPTH 9.4 CUTTINGS COLLECTED ☐ Yes ☒ No
5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☒ No
6. STATIC WATER LEVEL 7.4 FT. ☐ above ☒ below TOP OF CASING,
TOP OF CASING IS 1.2 FT ABOVE LAND SURFACE.
7. YIELD (gpm): N/A METHOD OF TEST _____
8. WATER ZONES (depth) 1-10 FEET (SURFICIAL AQUIFER)
9. CHLORINATION Type N/A Amount _____

Depth From	Depth To	DRILLING LOG Formation Description
		SEE ATTACHED

If additional space is needed use back of form.

10. CASING

	Depth From	Depth To	Diameter	Wall Thickness or Weight/Ft.	Material
	1.2	2.6 Ft	2"	SCH40	PVC
From		To Ft.			
From		To Ft.			

11. GROUT:

	Depth From	Depth To	Material	Method
	0.0	1.1 Ft.	CEMENT	IN-PLACE
From		To Ft.		

12. SCREEN.

	Depth From	Depth To	Diameter	Slot Size	Material
	2.6	9.4 Ft.	2" in.	.010 in.	PVC
From		To Ft.	in.	in.	
From		To Ft.	in.	in.	

SEE ATTACHED

13. GRAVEL PACK:

	Depth From	Depth To	Size	Material
	1.6	9.4 Ft.	COARSE	SAND
From		To Ft.		

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

14. REMARKS: _____

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Christian A. Lea 5/21/91
SIGNATURE OF CONTRACTOR OR AGENT DATE

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH, N.C. 27611, PHONE (919) 733-3083

FOR OFFICE USE ONLY
Quad. No. _____ Serial No. _____
Lat. _____ Long. _____ Pc ____
Minor Basin _____
Basin Code _____
Header Ent. _____ GW-1 Ent. _____

WELL CONSTRUCTION RECORD MW-10

DRILLING CONTRACTOR SPECIALIZED MARINE, INC.
DRILLER REGISTRATION NUMBER 1278
STATE WELL CONSTRUCTION PERMIT NUMBER: 64-0404-WM-0450

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: WILMINGTON, NORTH CAROLINA
801 SURRY STREET
(Road, Community, or Subdivision and Lot No.)
County: NEW HANOVER

2. OWNER CITY GAS & TRANSMISSION (WYANDOTTE ~~TRIBAL PETROLEUM, AGENT~~)
ADDRESS 801 SURRY STREET (Street or Route No.)
WILMINGTON (City or Town) NC (State) 28401 (Zip Code)

3. DATE DRILLED 3/29/91 USE OF WELL MONITORING
4. TOTAL DEPTH 4.6 CUTTINGS COLLECTED ☐ Yes ☒ No
5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☒ No
6. STATIC WATER LEVEL 3.1 FT. ☐ above ☒ below TOP OF CASING,
TOP OF CASING IS 1.2 FT ABOVE LAND SURFACE.
7. YIELD (gpm): N/A METHOD OF TEST _____
8. WATER ZONES (depth): 1-10 FEET (SURFICIAL AQUIFER)
9. CHLORINATION Type N/A Amount _____
10. CASING

	Depth From	Depth To	Diameter	Wall Thickness or Weight/Ft.	Material
	1.2	1.6 Ft	2"	SCH40	PVC
		Ft.			
		Ft.			

11. GROUT:

	Depth From	Depth To	Material	Method
	0.0	0.6 Ft.	CEMENT	IN-PLACE
		Ft.		

12. SCREEN.

	Depth From	Depth To	Diameter	Slot Size	Material
	1.6	4.6 Ft.	2" in.	.010 in.	PVC
		Ft.	in.	in.	
		Ft.	in.	in.	

13. GRAVEL PACK:

	Depth From	Depth To	Size	Material
	1.1	4.6 Ft	COARSE	SAND
		Ft.		

14. REMARKS: _____

Depth From	Depth To	DRILLING LOG Formation Description
		SEE ATTACHED

If additional space is needed use back of form.

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

SEE ATTACHED

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Contract Fee 5/21/91
SIGNATURE OF CONTRACTOR OR AGENT DATE

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH,N.C. 27611, PHONE (919) 733-5083

FOR OFFICE USE ONLY
Quad. No. _____ Serial No. _____
Lat. _____ Long. _____ Pc _____
Minor Basin _____
Basin Code _____
Header Ent. _____ GW-1 Ent. _____

WELL CONSTRUCTION RECORD

MW-11

DRILLING CONTRACTOR SPECIALIZED MARINE, INC.

DRILLER REGISTRATION NUMBER 1278

STATE WELL CONSTRUCTION PERMIT NUMBER: 64-0404-WM-0450

1. WELL LOCATION: (Show sketch of the location below)

Nearest Town: WILMINGTON, NORTH CAROLINA
801 SURRY STREET
(Road, Community, or Subdivision and Lot No.)

County: NEW HANOVER

2. OWNER CITY GAS & TRANSMISSION (WYANDOTTE TRIBAL PETROLEUM, AGENT)
ADDRESS 801 SURRY STREET (Street or Route No.)
WILMINGTON (City or Town) NC (State) 28401 (Zip Code)

3. DATE DRILLED 3/29/91 USE OF WELL MONITORING

4. TOTAL DEPTH 8.2 CUTTINGS COLLECTED ☐ Yes ☒ No

5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☒ No

6. STATIC WATER LEVEL 7.0 FT. ☐ above ☒ below TOP OF CASING,
TOP OF CASING IS 1.3 FT ABOVE LAND SURFACE.

7. YIELD (gpm): N/A METHOD OF TEST _____

8. WATER ZONES (depth) 1-10 FEET (SURFICIAL AQUIFER)

9. CHLORINATION: Type N/A Amount _____

10. CASING

Depth From	Depth To	Diameter	Wall Thickness or Weight/Ft.	Material
1.3	3.3 Ft	2"	SCH40	PVC
_____	\ Ft.	_____	_____	_____
_____	_____ Ft.	_____	_____	_____

11. GROUT:

Depth From	Depth To	Material	Method
0	1.8 Ft.	CEMENT	IN-PLACE
_____	_____ Ft.	_____	_____

12. SCREEN.

Depth From	Depth To	Diameter	Slot Size	Material
3.3	8.2 Ft.	2" in.	.010 in.	PVC
_____	_____ Ft.	_____ in.	_____ in.	_____
_____	_____ Ft.	_____ in.	_____ in.	_____

13. GRAVEL PACK:

Depth From	Depth To	Size	Material
2.3	8.2 Ft	COARSE	SAND
_____	_____ Ft.	_____	_____

14. REMARKS: _____

Depth From	Depth To	DRILLING LOG Formation Description
		SEE ATTACHED

If additional space is needed use back of form.

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

SEE ATTACHED

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Cynthia A. Lea 5/21/91
SIGNATURE OF CONTRACTOR OR AGENT DATE

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH, N.C. 27611, PHONE (919) 733-3083

FOR OFFICE USE ONLY
Quad. No. _____ Serial No. _____
Lat. _____ Long. _____ Pc _____
Minor Basin _____
Basin Code _____
Header Ent. _____ GW-1 Ent. _____

WELL CONSTRUCTION RECORD MW-12

DRILLING CONTRACTOR SPECIALIZED MARINE, INC.
DRILLER REGISTRATION NUMBER 1278
STATE WELL CONSTRUCTION PERMIT NUMBER: 64-0404-WM-0450

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: WILMINGTON, NORTH CAROLINA
801 SURRY STREET
(Road, Community, or Subdivision and Lot No.)
County: NEW HANOVER

2. OWNER CITY GAS & TRANSMISSION (WYANDOTTE ~~TRIBAL PETROLEUM, AGENT~~)
ADDRESS 801 SURRY STREET (Street or Route No.)
WILMINGTON (City or Town) NC (State) 28401 (Zip Code)

3. DATE DRILLED 3.29/91 USE OF WELL MONITORING
4. TOTAL DEPTH 9.7' CUTTINGS COLLECTED ☐ Yes ☒ No
5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☒ No
6. STATIC WATER LEVEL 10.9 FT. ☐ above ☒ below TOP OF CASING,
TOP OF CASING IS 1.4 FT ABOVE LAND SURFACE.
7. YIELD (gpm): N/A METHOD OF TEST _____
8. WATER ZONES (depth) 1-10 FEET (SURFICIAL AQUIFER)
9. CHLORINATION Type N/A Amount _____

Depth From	Depth To	DRILLING LOG Formation Description
		SEE ATTACHED

If additional space is needed use back of form.

10. CASING

Depth From	Depth To	Diameter	Wall Thickness or Weight/Ft.	Material
1.4	4.8 Ft	2"	SCH40	PVC
	Ft.			
	Ft.			

11. GROUT:

Depth From	Depth To	Material	Method
0	3.3 Ft.	CEMENT	IN-PLACE
	Ft.		

12. SCREEN.

Depth From	Depth To	Diameter	Slot Size	Material
4.8	9.7 Ft.	2" in.	.010 in.	PVC
	Ft.	in.	in.	
	Ft.	in.	in.	

13. GRAVEL PACK:

Depth From	Depth To	Size	Material
3.8	9.7 Ft	COARSE	SAND
	Ft.		

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

SEE ATTACHED

14. REMARKS: _____

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Lisa A Fea 5/21/91
SIGNATURE OF CONTRACTOR OR AGENT DATE

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH, N.C. 27611, PHONE (919) 733-5083

FOR OFFICE USE ONLY
Quad. No. _____ Serial No. _____
Lat. _____ Long. _____ Pc _____
Minor Basin _____
Basin Code _____
Header Ent. _____ GW-1 Ent. _____

WELL CONSTRUCTION RECORD MW-13

DRILLING CONTRACTOR SPECIALIZED MARINE, INC.
DRILLER REGISTRATION NUMBER 1278
STATE WELL CONSTRUCTION PERMIT NUMBER: 64-0404-WM-0450

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: WILMINGTON, NORTH CAROLINA
801 SURRY STREET
(Road, Community, or Subdivision and Lot No.)
County: NEW HANOVER

2. OWNER CITY GAS & TRANSMISSION (WYANDOTTE TRIBAL PETROLEUM, AGENT)
ADDRESS 801 SURRY STREET (Street or Route No.)
WILMINGTON NC 28401
City or Town State Zip Code

3. DATE DRILLED 3/29/91 USE OF WELL MONITORING
4. TOTAL DEPTH 9.1 CUTTINGS COLLECTED ☐ Yes ☒ No
5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☒ No
6. STATIC WATER LEVEL 6.7 FT. ☐ above ☒ below TOP OF CASING.
TOP OF CASING IS 1.1 FT ABOVE LAND SURFACE.
7. YIELD (gpm): N/A METHOD OF TEST _____
8. WATER ZONES (depth) 1-10 FEET (SURFICIAL AQUIFER)
9. CHLORINATION Type N/A Amount _____

Depth From	Depth To	DRILLING LOG Formation Description
		SEE ATTACHED

If additional space is needed use back of form.

10. CASING

	Depth		Diameter	Wall Thickness or Weight/Ft.	Material
From	1.1	To 4.4 Ft	2"	SCH40	PVC
From		To Ft.			
From		To Ft.			

11. GROUT:

	Depth		Material	Method
From	0	To 2.9 Ft.	CEMENT	IN-PLACE
From		To Ft.		

12. SCREEN.

	Depth		Diameter	Slot Size	Material
From	4.4	To 9.1 Ft.	2" in.	.010 in.	PVC
From		To Ft.	in.	in.	
From		To Ft.	in.	in.	

13. GRAVEL PACK:

	Depth		Size	Material
From	3.4	To 9.1 Ft.	COARSE	SAND
From		To Ft.		

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

SEE ATTACHED

14. REMARKS: _____

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Cynthia A Lea 5/21/91
SIGNATURE OF CONTRACTOR OR AGENT DATE

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH, N.C. 27611, PHONE (919) 733-3083

FOR OFFICE USE ONLY
Quad. No. _____ Serial No. _____
Lat. _____ Long. _____ Pc _____
Minor Basin _____
Basin Code _____
Header Ent. _____ GW-1 Ent. _____

WELL CONSTRUCTION RECORD MW-14

DRILLING CONTRACTOR SPECIALIZED MARINE, INC.
DRILLER REGISTRATION NUMBER 1278
STATE WELL CONSTRUCTION PERMIT NUMBER: 64-0404-WM-0450

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: WILMINGTON, NORTH CAROLINA
801 SURRY STREET
(Road, Community, or Subdivision and Lot No.)
County: NEW HANOVER

2. OWNER CITY GAS & TRANSMISSION (WYANDOTTE TRIBAL PETROLEUM, AGENT)
ADDRESS 801 SURRY STREET (Street or Route No.)
WILMINGTON (City or Town) NC (State) 28401 (Zip Code)

3. DATE DRILLED 3/29/91 USE OF WELL MONITORING
4. TOTAL DEPTH 6.7 CUTTINGS COLLECTED ☐ Yes ☒ No
5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☒ No
6. STATIC WATER LEVEL 5.5 FT. ☐ above ☒ below TOP OF CASING,
TOP OF CASING IS 1.4 FT ABOVE LAND SURFACE.
7. YIELD (gpm): N/A METHOD OF TEST _____
WATER ZONES (depth) 1-10 FEET (SURFICIAL AQUIFER)
9. CHLORINATION. Type N/A Amount _____

10. CASING

	Depth		Diameter	Wall Thickness or Weight/Ft.	Material
From 1.4	To 2.3	Ft	2"	SCH40	PVC
From _____	To _____	Ft.	_____	_____	_____
From _____	To _____	Ft.	_____	_____	_____

11. GROUT:

	Depth		Material	Method
From 0	To 0.8	Ft.	CEMENT	IN-PLACE
From _____	To _____	Ft.	_____	_____

12. SCREEN.

	Depth		Diameter	Slot Size	Material
From 2.3	To 6.7	Ft.	2" in.	.010 in.	PVC
From _____	To _____	Ft.	_____ in.	_____ in.	_____
From _____	To _____	Ft.	_____ in.	_____ in.	_____

13. GRAVEL PACK:

	Depth		Size	Material
From 1.3	To 6.7	Ft	COARSE	SAND
From _____	To _____	Ft.	_____	_____

14. REMARKS: _____

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Cynthia A Lea 5/21/91
SIGNATURE OF CONTRACTOR OR AGENT DATE

Depth From	Depth To	DRILLING LOG Formation Description
		SEE ATTACHED

If additional space is needed use back of form.

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

SEE ATTACHED

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH,N.C. 27611, PHONE (919) 733-3083

FOR OFFICE USE ONLY
Quad. No. _____ Serial No. _____
Lat. _____ Long. _____ Pc _____
Minor Basin _____
Basin Code _____
Header Ent. _____ GW-1 Ent. _____

WELL CONSTRUCTION RECORD MW-15

DRILLING CONTRACTOR SPECIALIZED MARINE, INC.
DRILLER REGISTRATION NUMBER 1278
STATE WELL CONSTRUCTION PERMIT NUMBER: 64-0404-WM-0450

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: WILMINGTON, NORTH CAROLINA
801 SURRY STREET
(Road, Community, or Subdivision and Lot No.)
County: NEW HANOVER

2. OWNER CITY GAS & TRANSMISSION (WYANDOTTE TRIBAL PETROLEUM, AGENT)
ADDRESS 801 SURRY STREET (Street or Route No.)
WILMINGTON (City or Town) NC (State) 28401 (Zip Code)

3. DATE DRILLED 3/29/91 USE OF WELL MONITORING
4. TOTAL DEPTH 6.6 CUTTINGS COLLECTED ☐ Yes ☒ No
5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☒ No
6. STATIC WATER LEVEL 3.6 FT. ☐ above ☒ below TOP OF CASING,
TOP OF CASING IS 0.9 FT ABOVE LAND SURFACE.
7. YIELD (gpm): N/A METHOD OF TEST _____
8. WATER ZONES (depth) 1-10 FEET (SURFICIAL AQUIFER)
9. CHLORINATION Type N/A Amount _____
10. CASING

	Depth From	To	Diameter	Wall Thickness or Weight/Ft.	Material
	0.9	1.7 Ft	2"	SCH40	PVC
		Ft.			
		Ft.			

11. GROUT:

	Depth From	To	Material	Method
	0	0.7 Ft.	CEMENT	IN-PLACE
		Ft.		

12. SCREEN:

	Depth From	To	Diameter	Slot Size	Material
	1.7	6.6 Ft.	2" in.	.010 in.	PVC
		Ft.	in.	in.	
		Ft.	in.	in.	

13. GRAVEL PACK:

	Depth From	To	Size	Material
	1.2	6.6 Ft	COARSE	SAND
		Ft.		

14. REMARKS: _____

Depth From	To	DRILLING LOG Formation Description
		SEE ATTACHED

If additional space is needed use back of form.

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

SEE ATTACHED

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Cynthia d. Fea 5/21/91
SIGNATURE OF CONTRACTOR OR AGENT DATE

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH, N.C. 27611, PHONE (919) 733-3083

FOR OFFICE USE ONLY
Quad. No. _____ Serial No. _____
Lat. _____ Long. _____ Pc _____
Minor Basin _____
Basin Code _____
Header Ent. _____ GW-1 Ent. _____

WELL CONSTRUCTION RECORD MW-16

DRILLING CONTRACTOR SPECIALIZED MARINE, INC.
DRILLER REGISTRATION NUMBER 1278
STATE WELL CONSTRUCTION PERMIT NUMBER: 64-0404-WM-0450

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: WILMINGTON, NORTH CAROLINA
801 SURRY STREET
(Road, Community, or Subdivision and Lot No.)
County: NEW HANOVER

2. OWNER CITY GAS & TRANSMISSION (WYANDOTTE ~~TRIBAL PETROLEUM, AGENT~~)
ADDRESS 801 SURRY STREET (Street or Route No.)
WILMINGTON (City or Town) NC (State) 28401 (Zip Code)

3. DATE DRILLED 3/29/91 USE OF WELL MONITORING
4. TOTAL DEPTH 9.0 CUTTINGS COLLECTED ☐ Yes ☒ No
5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☒ No
6. STATIC WATER LEVEL 2.9 FT. ☐ above ☒ below TOP OF CASING.
TOP OF CASING IS 1.1 FT ABOVE LAND SURFACE.
7. YIELD (gpm): N/A METHOD OF TEST _____
8. WATER ZONES (depth) 1-10 FEET (SURFICIAL AQUIFER)
9. CHLORINATION Type N/A Amount _____
10. CASING

	Depth From	Depth To	Diameter	Wall Thickness or Weight/Ft.	Material
	3.5	9.0 Ft	2"	SCH40	PVC
		Ft.			
		Ft.			

11. GROUT:

	Depth From	Depth To	Material	Method
	0.0	2.0 Ft.	CEMENT	IN-PLACE
		Ft.		

12. SCREEN.

	Depth From	Depth To	Diameter	Slot Size	Material
	3.5	9.0 Ft.	2"	.010 in.	PVC
		Ft.	in.	in.	
		Ft.	in.	in.	

13. GRAVEL PACK:

	Depth From	Depth To	Size	Material
	2.5	9.0 Ft	COARSE	SAND
		Ft.		

14. REMARKS: _____

DRILLING LOG

Depth From	Depth To	Formation Description
		SEE ATTACHED

If additional space is needed use back of form.

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

SEE ATTACHED

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Clinton A. Lea 5/21/91
SIGNATURE OF CONTRACTOR OR AGENT DATE

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH, N.C. 27611, PHONE (919) 733-5083

FOR OFFICE USE ONLY
Quad. No. _____ Serial No. _____
Lat. _____ Long. _____ Pc _____
Minor Basin _____
Basin Code _____
Header Ent. _____ GW-1 Ent. _____

WELL CONSTRUCTION RECORD MW-17

DRILLING CONTRACTOR SPECIALIZED MARINE, INC.
DRILLER REGISTRATION NUMBER 1278
STATE WELL CONSTRUCTION PERMIT NUMBER: 64-0404-WM-0450

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: WILMINGTON, NORTH CAROLINA
801 SURRY STREET
(Road, Community, or Subdivision and Lot No.)
County: NEW HANOVER

2. OWNER CITY GAS & TRANSMISSION (WYANDOTTE TRIBAL PETROLEUM, AGENT)
ADDRESS 801 SURRY STREET (Street or Route No.)
WILMINGTON NC 28401
City or Town State Zip Code

3. DATE DRILLED 3/29/91 USE OF WELL MONITORING
4. TOTAL DEPTH 7.3 CUTTINGS COLLECTED ☐ Yes ☒ No
5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☒ No
6. STATIC WATER LEVEL 2.6 FT. ☐ above ☒ below TOP OF CASING,
TOP OF CASING IS 1.3 FT ABOVE LAND SURFACE.
7. YIELD (gpm): N/A METHOD OF TEST _____
WATER ZONES (depth) 1-10 FEET (SURFICIAL AQUIFER)
9. CHLORINATION Type N/A Amount _____

Depth From	Depth To	DRILLING LOG Formation Description
		SEE ATTACHED

If additional space is needed use back of form.

10. CASING

Depth From	Depth To	Diameter	Wall Thickness or Weight/Ft.	Material
1.3	1.8 Ft	2"	SCH40	PVC
	Ft.			
	Ft.			

11. GROUT:

Depth From	Depth To	Material	Method
0	0.8 Ft.	CEMENT	IN-PLACE
	Ft.		

12. SCREEN.

Depth From	Depth To	Diameter	Slot Size	Material
1.8	7.3 Ft.	2" in.	.010 in.	PVC
	Ft.	in.	in.	
	Ft.	in.	in.	

13. GRAVEL PACK:

Depth From	Depth To	Size	Material
1.3	7.3 Ft	COARSE	SAND
	Ft.		

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

SEE ATTACHED

14. REMARKS: _____

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Signature of Contractor or Agent — Date 5/24/91

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH, N.C. 27611, PHONE (919) 733-3083

FOR OFFICE USE ONLY
Quad. No. _____ Serial No. _____
Lat. _____ Long _____ Pc _____
Minor Basin _____
Basin Code _____
Header Ent. _____ GW-1 Ent. _____

WELL CONSTRUCTION RECORD

MW-18

DRILLING CONTRACTOR SPECIALIZED MARINE, INC.

DRILLER REGISTRATION NUMBER 1278

STATE WELL CONSTRUCTION PERMIT NUMBER: 64-0404-WM-0450

1. WELL LOCATION: (Show sketch of the location below)

Nearest Town: WILMINGTON, NORTH CAROLINA
801 SURRY STREET
(Road, Community, or Subdivision and Lot No.)

County: NEW HANOVER

2. OWNER CITY GAS & TRANSMISSION (WYANDOTTE TRIBAL PETROLEUM, AGENT)

ADDRESS 801 SURRY STREET (Street or Route No.)

WILMINGTON (City or Town) NC (State) 28401 (Zip Code)

3. DATE DRILLED 3/29/91 USE OF WELL MONITORING

4. TOTAL DEPTH 6.0 CUTTINGS COLLECTED ☐ Yes ☒ No

5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☒ No

6. STATIC WATER LEVEL 2.2 FT. ☐ above ☒ below TOP OF CASING,
TOP OF CASING IS 1.6 FT ABOVE LAND SURFACE.

7. YIELD (gpm): N/A METHOD OF TEST _____

8. WATER ZONES (depth) 1-10 FEET (SURFICIAL AQUIFER)

9. CHLORINATION Type N/A Amount _____

10. CASING

	Depth From	Depth To	Diameter	Wall Thickness or Weight/Ft.	Material
	1.6	1.1 Ft	2"	SCH40	PVC
		Ft.			
		Ft.			

11. GROUT:

	Depth From	Depth To	Material	Method
	0	0.1 Ft.	CEMENT	IN-PLACE
		Ft.		

12. SCREEN:

	Depth From	Depth To	Diameter	Slot Size	Material
	1.1	6.0 Ft.	2" in.	.010 in.	PVC
		Ft.	in.	in.	
		Ft.	in.	in.	

13. GRAVEL PACK:

	Depth From	Depth To	Size	Material
	0.6	6.0 Ft	COARSE	SAND
		Ft.		

14. REMARKS: _____

Depth From	Depth To	DRILLING LOG Formation Description
		SEE ATTACHED

If additional space is needed use back of form.

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

SEE ATTACHED

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Cynthia A. Lea 5/21/91
SIGNATURE OF CONTRACTOR OR AGENT DATE

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROU[redacted]WATER SECTION
P.O. BOX 27687 - RALEIGH, N.C. 27611, PHONE [redacted]) 733-5083

FOR OFFICE USE ONLY	
Quad. No. [redacted]	Serial No.
Lat.	Long. Pc
Minor Basin	
Basin Code	
Header Ent.	GW-1 Ent.

WELL CONSTRUCTION RECORD MW-19

DRILLING CONTRACTOR SPECIALIZED MARINE, INC.

DRILLER REGISTRATION NUMBER 1278

STATE WELL CONSTRUCTION PERMIT NUMBER: 64-0404-WM-0450

1. WELL LOCATION: (Show sketch of the location below)
   Nearest Town: WILMINGTON, NORTH CAROLINA
   County: NEW HANOVER
   801 SURRY STREET
   (Road, Community, or Subdivision and Lot No.)
2. OWNER CITY GAS & TRANSMISSION (WYANDOTTE ~~TRIBAL PETROLEUM, AGENT)~~
   ADDRESS 801 SURRY STREET (Street or Route No.)
   WILMINGTON (City or Town) NC (State) 28401 (Zip Code)
3. DATE DRILLED 3/29/91 USE OF WELL MONITORING
4. TOTAL DEPTH 5.7' CUTTINGS COLLECTED ☐ Yes ☒ No
5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☒ No
6. STATIC WATER LEVEL 2.8 FT. ☐ above ☒ below TOP OF CASING. TOP OF CASING IS 0.4 FT ABOVE LAND SURFACE.
7. YIELD (gpm): N/A METHOD OF TEST
8. WATER ZONES (depth) 1-10 FEET (SURFICIAL AQUIFER)
9. CHLORINATION Type N/A Amount
10. CASING:

	Depth	Diameter	Wall Thickness or Weight/Ft.	Material
From 0.4	To 2.2 Ft.	2"	SCH40	PVC
From	To Ft.			
From	To Ft.			

11. GROUT:

	Depth	Material	Method
From 0	To 0.7 Ft.	CEMENT	IN-PLACE
From	To Ft.		

12. SCREEN:

	Depth	Diameter	Slot Size	Material
From 2.2	To 5.7 Ft.	2" in.	.010 in.	PVC
From	To Ft.	in.	in.	
From	To Ft.	in.	in.	

13. GRAVEL PACK:

	Depth	Size	Material
From 1.2	To 5.7 Ft.	COARSE	SAND
From	To Ft.		

14. REMARKS:

Depth From	To	DRILLING LOG Formation Description
		SEE ATTACHED

If additional space is needed use back of form.

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

SEE ATTACHED

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

[signature] 5/21/91
SIGNATURE OF CONTRACTOR OR AGENT DATE

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH, N.C. 27611, PHONE [redacted] 733-5083

FOR OFFICE USE ONLY
Quad. No. _____ Serial No. _____
Lat. _____ Long _____ Pc _____
Minor Basin _____
Basin Code _____
Header Ent. _____ GW-1 Ent. _____

WELL CONSTRUCTION RECORD

MW-20

DRILLING CONTRACTOR SPECIALIZED MARINE, INC.

DRILLER REGISTRATION NUMBER 1278

STATE WELL CONSTRUCTION PERMIT NUMBER: 64-0404-WM-0450

1. WELL LOCATION: (Show sketch of the location below)

Nearest Town: WILMINGTON, NORTH CAROLINA
801 SURRY STREET
(Road, Community, or Subdivision and Lot No.)

County: NEW HANOVER

2. OWNER CITY GAS & TRANSMISSION (WYANDOTTE TRIBAL PETROLEUM, AGENT)
ADDRESS 801 SURRY STREET (Street or Route No.)
WILMINGTON (City or Town) NC (State) 28401 (Zip Code)

3. DATE DRILLED 3/29/91 USE OF WELL MONITORING

4. TOTAL DEPTH 4.3 CUTTINGS COLLECTED ☐ Yes ☒ No

5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☒ No

6. STATIC WATER LEVEL 3.0 FT. ☐ above ☒ below TOP OF CASING,
TOP OF CASING IS 1.5 FT ABOVE LAND SURFACE.

7. YIELD (gpm): N/A METHOD OF TEST _____

8. WATER ZONES (depth) 1-10 FEET (SURFICIAL AQUIFER)

9. CHLORINATION: Type N/A Amount _____

10. CASING:

From	To	Depth Ft	Diameter	Wall Thickness or Weight/Ft.	Material
1.5	1.5		2"	SCH40	PVC

11. GROUT:

From	To	Depth Ft	Material	Method
0	0.5		CEMENT	IN-PLACE

12. SCREEN:

From	To	Depth Ft	Diameter	Slot Size	Material
1.5	4.3		2" in.	.010 in.	PVC
			in.	in.	
			in.	in.	

13. GRAVEL PACK:

From	To	Depth Ft	Size	Material
1.0	4.3		COARSE	SAND

Depth From	Depth To	DRILLING LOG Formation Description
		SEE ATTACHED

If additional space is needed use back of form.

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

SEE ATTACHED

14. REMARKS: _____

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Cynthia d Lea 5/21/91
SIGNATURE OF CONTRACTOR OR AGENT DATE

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH, N.C. 27611, PHONE [redacted] 733-5083

FOR OFFICE USE ONLY
Quad. No. [redacted] Serial No.
Lat. Long. Pc
Minor Basin
Basin Code
Header Ent. GW-1 Ent.

WELL CONSTRUCTION RECORD

MW-21

DRILLING CONTRACTOR SPECIALIZED MARINE, INC.

DRILLER REGISTRATION NUMBER 1278

STATE WELL CONSTRUCTION PERMIT NUMBER: 64-0404-WM-0450

1. WELL LOCATION: (Show sketch of the location below)

Nearest Town: WILMINGTON, NORTH CAROLINA
801 SURRY STREET
(Road, Community, or Subdivision and Lot No.)

County: NEW HANOVER

2. OWNER CITY GAS & TRANSMISSION (WYANDOTTE TRIBAL PETROLEUM, AGENT)

ADDRESS 801 SURRY STREET
(Street or Route No.)

WILMINGTON NC 28401
City or Town State Zip Code

3. DATE DRILLED 4/1/90 USE OF WELL MONITORING

4. TOTAL DEPTH 11.0 CUTTINGS COLLECTED ☐ Yes ☒ No

5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☒ No

6. STATIC WATER LEVEL 7.1 FT. ☐ above ☒ below TOP OF CASING,
TOP OF CASING IS 1.0 FT ABOVE LAND SURFACE.

7. YIELD (gpm): N/A METHOD OF TEST

WATER ZONES (depth) 1-10 FEET (SURFICIAL AQUIFER)

9. CHLORINATION Type N/A Amount

10. CASING

	Depth		Diameter	Wall Thickness or Weight/Ft.	Material
From 1.0	To 4.3	Ft	2"	SCH40	PVC
From	To	Ft.			
From	To	Ft.			

11. GROUT:

	Depth		Material	Method
From 0	To 2.8	Ft.	CEMENT	IN-PLACE
From	To	Ft.		

12. SCREEN.

	Depth		Diameter		Slot Size		Material
From 4.3	To 11.0	Ft.	2"	in.	.010	in.	PVC
From	To	Ft.		in.		in.	
From	To	Ft.		in.		in.	

13. GRAVEL PACK:

	Depth		Size	Material
From 3.3	To 11.0	Ft	COARSE	SAND
From	To	Ft.		

14. REMARKS:

Depth From	Depth To	DRILLING LOG Formation Description
		SEE ATTACHED

If additional space is needed use back of form.

LOCATION SKETCH

(Show direction and distance from at least two State Roads, or other map reference points)

SEE ATTACHED

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

[signature] 5/21/91

SIGNATURE OF CONTRACTOR OR AGENT DATE

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH, N.C. 27611, PHONE [redacted] 733-5083

FOR OFFICE USE ONLY
Quad. No. _____ Serial No. _____
Lat. _____ Long _____ Pc _____
Minor Basin _____
Basin Code _____
Header Ent. _____ GW-1 Ent. _____

WELL CONSTRUCTION RECORD MW-22

DRILLING CONTRACTOR SPECIALIZED MARINE, INC.
DRILLER REGISTRATION NUMBER 1278
STATE WELL CONSTRUCTION PERMIT NUMBER: 64-0404-WM-0450

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: WILMINGTON, NORTH CAROLINA
801 SURRY STREET
(Road, Community, or Subdivision and Lot No.)
County: NEW HANOVER

2. OWNER CITY GAS & TRANSMISSION (WYANDOTTE TRIBAL PETROLEUM, AGENT)
ADDRESS 801 SURRY STREET (Street or Route No.)
WILMINGTON (City or Town) NC (State) 28401 (Zip Code)

3. DATE DRILLED 4/1/91 USE OF WELL MONITORING
4. TOTAL DEPTH 9.3' CUTTINGS COLLECTED ☐ Yes ☒ No
5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☒ No
6. STATIC WATER LEVEL 7.2 FT. ☐ above ☒ below TOP OF CASING,
TOP OF CASING IS 1.4 FT ABOVE LAND SURFACE.
7. YIELD (gpm): N/A METHOD OF TEST _____
WATER ZONES (depth) 1-10 FEET (SURFICIAL AQUIFER)
9. CHLORINATION Type N/A Amount _____

Depth From	Depth To	DRILLING LOG Formation Description
		SEE ATTACHED

If additional space is needed use back of form.

10. CASING

Depth From	Depth To	Diameter	Wall Thickness or Weight/Ft.	Material
1.4	4.7 Ft	2"	SCH40	PVC
	Ft.			
	Ft.			

11. GROUT:

Depth From	Depth To	Material	Method
0	3.2 Ft.	CEMENT	IN-PLACE
	Ft.		

12. SCREEN.

Depth From	Depth To	Diameter	Slot Size	Material
4.7	9.3 Ft.	2" in.	.010 in.	PVC
	Ft.	in.	in.	
	Ft.	in.	in.	

13. GRAVEL PACK:

Depth From	Depth To	Size	Material
3.7	9.3 Ft	COARSE	SAND
	Ft.		

SEE ATTACHED

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

14. REMARKS: _____

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Cynthia A. Lee 5/21/91
SIGNATURE OF CONTRACTOR OR AGENT DATE

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH, N.C. 27611, PHONE [redacted] 733-5083

FOR OFFICE USE ONLY
Quad. No. [redacted] Serial No.
Lat. Long. Pc
Minor Basin
Basin Code
Header Ent. GW-1 Ent.

WELL CONSTRUCTION RECORD

MW-23

DRILLING CONTRACTOR SPECIALIZED MARINE, INC.

DRILLER REGISTRATION NUMBER 1278

STATE WELL CONSTRUCTION PERMIT NUMBER: 64-0404-WM-0450

1. WELL LOCATION: (Show sketch of the location below)

Nearest Town: WILMINGTON, NORTH CAROLINA
801 SURRY STREET
(Road, Community, or Subdivision and Lot No.)

County: NEW HANOVER

2. OWNER CITY GAS & TRANSMISSION (WYANDOTTE TRIBAL PETROLEUM, AGENT)
ADDRESS 801 SURRY STREET (Street or Route No.)
WILMINGTON (City or Town) NC (State) 28401 (Zip Code)

3. DATE DRILLED 4/1/90 USE OF WELL MONITORING

4. TOTAL DEPTH 6.0' CUTTINGS COLLECTED ☐ Yes ☒ No

5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☒ No

6. STATIC WATER LEVEL 3.2 FT. ☐ above ☒ below TOP OF CASING,
TOP OF CASING IS 1.6 FT ABOVE LAND SURFACE.

7. YIELD (gpm): N/A METHOD OF TEST

8. WATER ZONES (depth): 1-10 FEET (SURFICIAL AQUIFER)

9. CHLORINATION: Type N/A Amount

10. CASING:

Depth From	Depth To	Diameter	Wall Thickness or Weight/Ft.	Material
1.6	1.1 Ft.	2"	SCH40	PVC
	Ft.			
	Ft.			

11. GROUT:

Depth From	Depth To	Material	Method
0	0.1 Ft.	CEMENT	IN-PLACE
	Ft.		

12. SCREEN:

Depth From	Depth To	Diameter	Slot Size	Material
1.1	6.0 Ft.	2" in.	.010 in.	PVC
	Ft.	in.	in.	
	Ft.	in.	in.	

13. GRAVEL PACK:

Depth From	Depth To	Size	Material
0.6	6.0 Ft.	COARSE	SAND
	Ft.		

Depth From	Depth To	DRILLING LOG Formation Description
		SEE ATTACHED

If additional space is needed use back of form.

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

SEE ATTACHED

14. REMARKS:

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Cynthia d Lea 5/21/91
SIGNATURE OF CONTRACTOR OR AGENT DATE

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH, N.C. 27611, PHONE (919) 733-3083

FOR OFFICE USE ONLY
Quad. No. _____ Serial No. _____
Lat. _____ Long. _____ Pc ____
Minor Basin _____
Basin Code _____
Header Ent. _____ GW-1 Ent. _____

WELL CONSTRUCTION RECORD RW

DRILLING CONTRACTOR SPECIALIZED MARINE, INC.
DRILLER REGISTRATION NUMBER 1278
STATE WELL CONSTRUCTION PERMIT NUMBER: 64-0404-WM-0450

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: WILMINGTON, NORTH CAROLINA
801 SURRY STREET
(Road, Community, or Subdivision and Lot No.)
County: NEW HANOVER

2. OWNER CITY GAS & TRANSMISSION (WYANDOTTE ~~TRIBAL PETROLEUM, AGENT~~)
ADDRESS 801 SURRY STREET (Street or Route No.)
WILMINGTON (City or Town) NC (State) 28401 (Zip Code)

3. DATE DRILLED 4/2/91 USE OF WELL MONITORING
4. TOTAL DEPTH 15.9' CUTTINGS COLLECTED ☐ Yes ☒ No
5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☒ No
6. STATIC WATER LEVEL 9.9 FT. ☐ above ☒ below TOP OF CASING,
TOP OF CASING IS 1.0 FT ABOVE LAND SURFACE.
7. YIELD (gpm): 4 GPM METHOD OF TEST PUMPING
WATER ZONES (depth) 1-10 FEET (SURFICIAL AQUIFER)
9. CHLORINATION Type N/A Amount _____

Depth From	Depth To	DRILLING LOG Formation Description
		SEE ATTACHED

If additional space is needed use back of form.

10. CASING

Depth From	Depth To	Diameter	Wall Thickness or Weight/Ft.	Material
1.0	5.9 Ft	6"	SCH40	PVC
	Ft.			
	Ft.			

11. GROUT:

Depth From	Depth To	Material	Method
0	4.4 Ft.	CEMENT	IN-PLACE
	Ft.		

12. SCREEN.

Depth From	Depth To	Diameter	Slot Size	Material
5.9	15.9 Ft.	6" in.	.020 in.	PVC
	Ft.	in.	in.	
	Ft.	in.	in.	

13. GRAVEL PACK:

Depth From	Depth To	Size	Material
4.9	15.9 Ft	COARSE	SAND
	Ft.		

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

SEE ATTACHED

14. REMARKS: _____

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Cynthia A. Lea 5/21/91
SIGNATURE OF CONTRACTOR OR AGENT DATE

APPENDIX V

WELL CONSTRUCTION PERMITS

RECEIVED APR 0 1 1991

State of North Carolina
Department of Environment, Health, and Natural Resources
Wilmington Regional Office

James G. Martin, Governor
William W. Cobey, Jr., Secretary

Bob Jamieson
Regional Manager

DIVISION OF ENVIRONMENTAL MANAGEMENT

March 29, 1991

Mr. David E. Hinson
City Gas and Transmission
801 Surry Street
Wilmington, North Carolina 28401

Subject: Well Construction Permit No. 64-0404-WR-0449
City Gas and Transmission
Wilmington
New Hanover

Dear Mr. Hinson:

In accordance with your application received March 26, 1991, we are forwarding herewith Well Construction Permit No. 64-0404-WR-0449 dated March 27, 1991, issued to City Gas and Transmission for the construction of five (5) recovery wells.

If any parts, requirements, or limitations contained in this Permit are unacceptable to you, you have the right to an adjudicatory hearing before a hearing officer upon written demand to the Director within 30 days following receipt of this Permit, identifying the specific issues to be contended. Unless such demand is made, this Permit shall be final and binding.

This Permit will be effective from the date of its issuance and shall be subject to the conditions and limitations as specified therein.

Sincerely,

Original Signed By:
RICK SHIVER

A. Preston Howard, Jr., P.E.
Regional Supervisor

APH/RSS/TD/sfc

Enclosure

cc: Specialized Marine, Inc.
Perry Nelson
CF, WiRO

RECEIVED 1991

State of North Carolina
Department of Environment, Health, and Natural Resources
Wilmington Regional Office

James G. Martin, Governor
William W. Cobey, Jr., Secretary

Bob Jamieson
Regional Manager

DIVISION OF ENVIRONMENTAL MANAGEMENT

March 29, 1991

Mr. David E. Hinson
City Gas and Transmission
801 Surry Street
Wilmington, North Carolina 28401

Subject: Well Construction Permit No. 64-0404-WM-0450
City Gas and Transmission
Wilmington
New Hanover

Dear Mr. Hinson:

In accordance with your application received March 26, 1991, we are forwarding herewith Well Construction Permit No. 64-0404-WM-0450 dated March 27, 1991, issued to City Gas and Transmission for the construction of thirty (30) monitoring wells.

If any parts, requirements, or limitations contained in this Permit are unacceptable to you, you have the right to an adjudicatory hearing before a hearing officer upon written demand to the Director within 30 days following receipt of this Permit, identifying the specific issues to be contended. Unless such demand is made, this Permit shall be final and binding.

This Permit will be effective from the date of its issuance and shall be subject to the conditions and limitations as specified therein.

Sincerely,

Original Signed By:
RICK SHIVER

A. Preston Howard, Jr., P.E.
Regional Supervisor

APH/RSS/TD/jp

Enclosure

cc: Specialized Marine, Inc.
Perry Nelson
CF, WiRO

NORTH CAROLINA

ENVIRONMENTAL MANAGEMENT COMMISSION

DEPARTMENT OF ENVIRONMENT, HEALTH AND NATURAL RESOURCES

RALEIGH, NORTH CAROLINA

PERMIT FOR THE CONSTRUCTION OF A WELL OR WELL SYSTEM

In accordance with the provisions of Article 7, Chapter 87, North Carolina General Statutes, and other applicable Laws, Rules and Regulations.

PERMISSION IS HEREBY GRANTED TO

City Gas and Transmission

FOR THE CONSTRUCTION OF five (5) recovery wells, which will be exposed to the Surficial Aquifer, and which will be located at 801 Surry Street, Wilmington, New Hanover County, in accordance with the application dated March 26, 1991, and in conformity with specifications and supporting data, all of which are filed with the Department of Environment, Health and Natural Resources and are considered a part of this Permit.

This Permit is for well construction only, and does not waive any provisions or requirements of the Water Use Act of 1967, or any other applicable laws or regulations.

Construction of a well under this Permit shall be in compliance with the North Carolina Well Construction Regulations and Standards, and any other laws and regulations pertaining to well construction.

This Permit will be effective from the date of its issuance until September 28, 1991, and shall be subject to other specified conditions, limitations, or exceptions as follows:

1. The well(s) shall be located and constructed as shown on the attachments submitted as part of the permit application.

Permit issued this the 27th day of March 1991.

NORTH CAROLINA ENVIRONMENTAL MANAGEMENT COMMISSION

Original Signed By:
RICK SHIVER

A. Preston Howard, Jr., P.E., REGIONAL SUPERVISOR
Division of Environmental Management
By Authority of the Environmental Management Commission

PERMIT NO. 64-0404-WR-0449

NORTH CAROLINA

ENVIRONMENTAL MANAGEMENT COMMISSION

DEPARTMENT OF ENVIRONMENT, HEALTH AND NATURAL RESOURCES

RALEIGH, NORTH CAROLINA

PERMIT FOR THE CONSTRUCTION OF A WELL OR WELL SYSTEM

In accordance with the provisions of Article 7, Chapter 87, North Carolina General Statutes, and other applicable Laws, Rules and Regulations.

PERMISSION IS HEREBY GRANTED TO

City Gas and Transmission

FOR THE CONSTRUCTION OF thirty (30) monitoring wells, which will be exposed to the Surficial Aquifer, and which will be located at 801 Surry Street, Wilmington, New Hanover County, in accordance with the application dated March 26, 1991, and in conformity with specifications and supporting data, all of which are filed with the Department of Environment, Health and Natural Resources and are considered a part of this Permit.

This Permit is for well construction only, and does not waive any provisions or requirements of the Water Use Act of 1967, or any other applicable laws or regulations.

Construction of a well under this Permit shall be in compliance with the North Carolina Well Construction Regulations and Standards, and any other laws and regulations pertaining to well construction.

This Permit will be effective from the date of its issuance until September 28, 1991, and shall be subject to other specified conditions, limitations, or exceptions as follows:

1. The well(s) shall be located and constructed as shown on the attachments submitted as part of the permit application.

Permit issued this the 27th day of March 1991.

NORTH CAROLINA ENVIRONMENTAL MANAGEMENT COMMISSION

Original Signed By:
RICK SHIVER

A. Preston Howard, Jr., P.E., REGIONAL SUPERVISOR
Division of Environmental Management
By Authority of the Environmental Management Commission

PERMIT NO. 64-0404-WM-0450

NORTH CAROLINA
ENVIRONMENTAL MANAGEMENT COMMISSION
DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT

APPLICATION FOR PERMIT TO CONSTRUCT MONITOR/RECOVERY WELL(S)

To: NORTH CAROLINA ENVIRONMENTAL MANAGEMENT COMMISSION MARCH 25, 1991

Gentlemen:

In accordance with the provisions of Article 7, Chapter 87, General Statutes of North Carolina, and regulations pursuant thereto, application is hereby made by CITY GAS AND TRANSMISSION (name of well owner) for a permit to construct a monitor/recovery well(s) as described below and in the accompanying data submitted as a part of this application.

(a) Name of property owner: CITY GAS AND TRANSMISSION

(b) Location of property: 801 SURRY STREET, WILMINGTON NEW HANOVER
(Road, Industry, Community, etc.) Town County

(c) Type of facility or site being monitored: TERMINAL / REFINERY

(d) Types of contamination being monitored or recovered: HYDROCARBONS

(e) Existing monitor well numbers: N/A

(f) Existing monitor wells showing contamination (well no.): N/A

(g) Estimated water-table depth: 7. feet

(h) Estimated date of construction: Begin MARCH 26, 1991 Complete DECEMBER 26, 1991

(i) Drilling constractor: SPECIALIZED MARINE, INC.

(j) Location of well: Provide a detailed map showing the location of the proposed well(s), and of any wells in an existing monitoring system (if applicable), in relation to the pollution source(s) being monitored and to at least two (2) nearby permanent reference points such as roads, intersections, and streams. Identify roads with State Highway road identification numbers. (Show all existing water supply wells within a radius of 1,000 feet of the proposed well.)

(k) Well construction diagram: Provide a diagram showing proposed construction specifications, including diameter, estimated depth, screens, sand pack, grout, type of materials, etc.

The Applicant hereby agrees the proposed well will be constructed in accordance with approved specifications and conditions of the Well Construction Permit. As regulated under the Well Construction Standards (Title 15 - North Carolina Administrative Code, Subchapter 2C)

R. Paul Clark FOR CINDY LEA
Signature of Well Owner or Agent

PRESIDENT (SMI)
Title (if applicable)

801 SURRY STREET
WILMINGTON, NC 28401
(Mailing Address of Well Owner-Required)

SPECIALIZED MARINE, INC
P.O. BOX 813, WRIGHTSVILLE BEACH, NC 284
(Mailing Address of Agent-if other than above)

FOR OFFICE USE ONLY

PERMIT NO. _____ issued _____ 19__

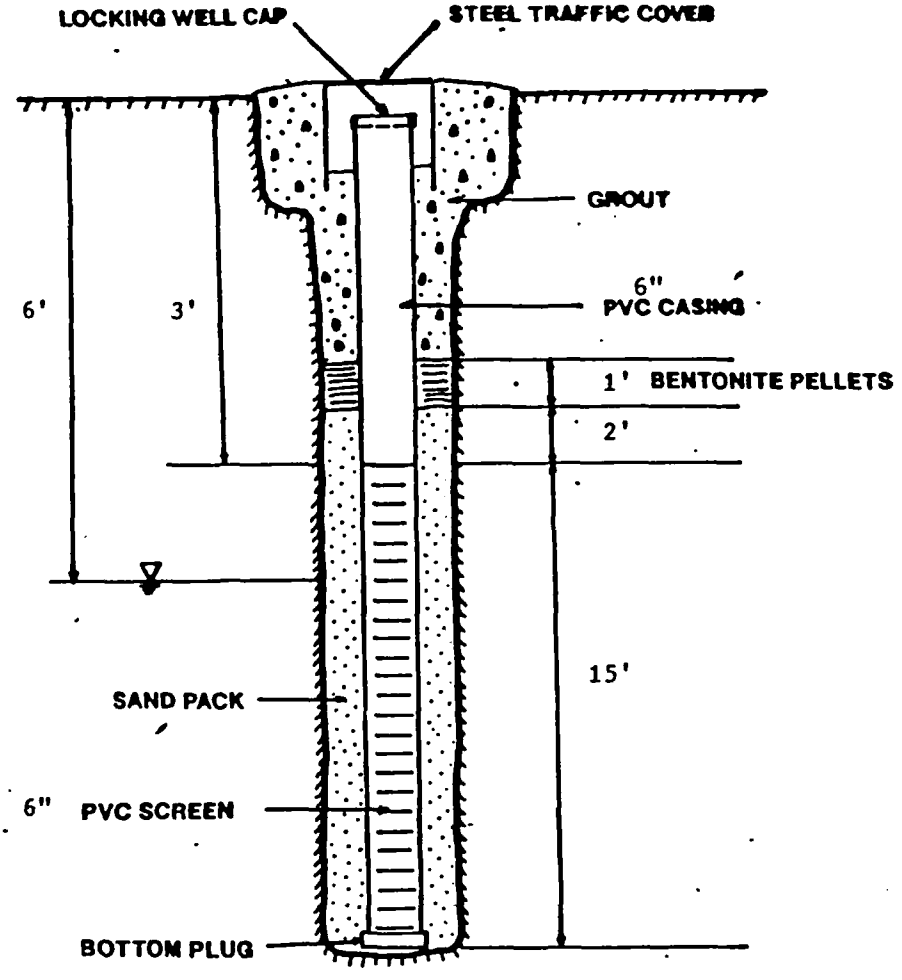
GW-22B

SPECIALIZED MARINE, Inc.

P.O. Box 813 Wrightsville Beach, NC 28480 (919) 256-5780

PROPOSED WELL DETAIL

RECOVERY WELLS RW-1 thru RW-5
NOT TO SCALE



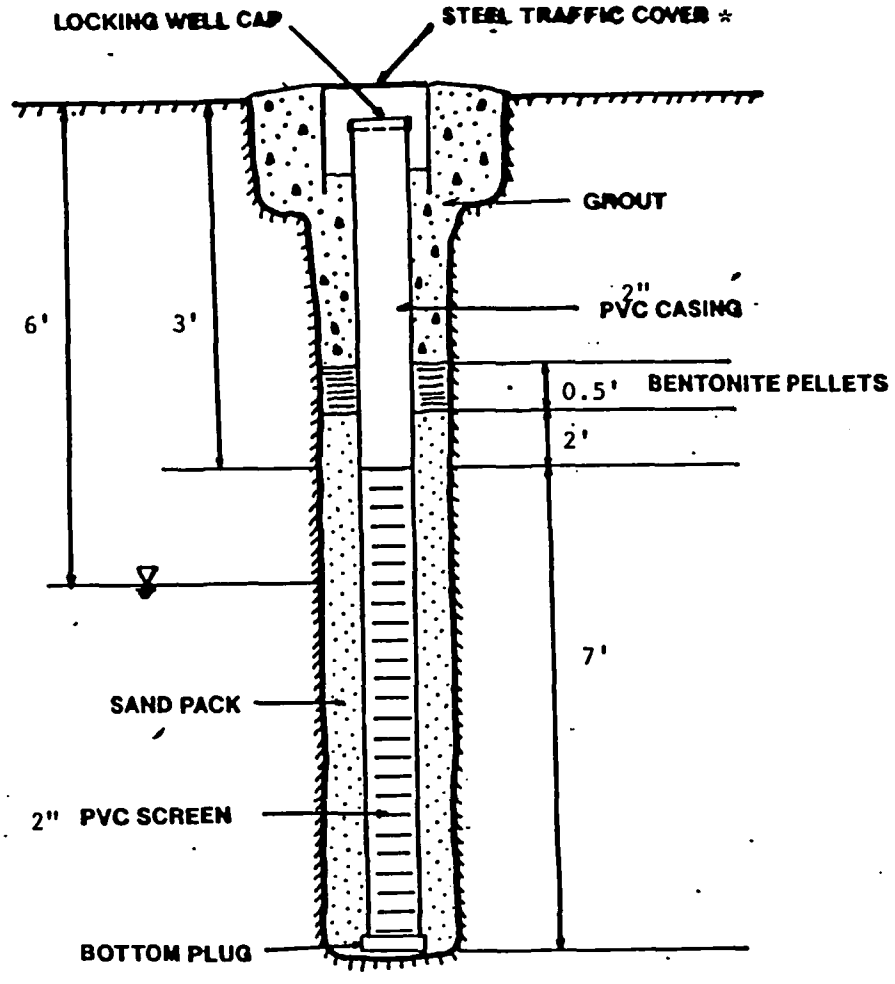
SPECIALIZED MARINE, Inc.

P.O. Box 813 Wrightsville Beach, NC 28480 (919) 256-5780

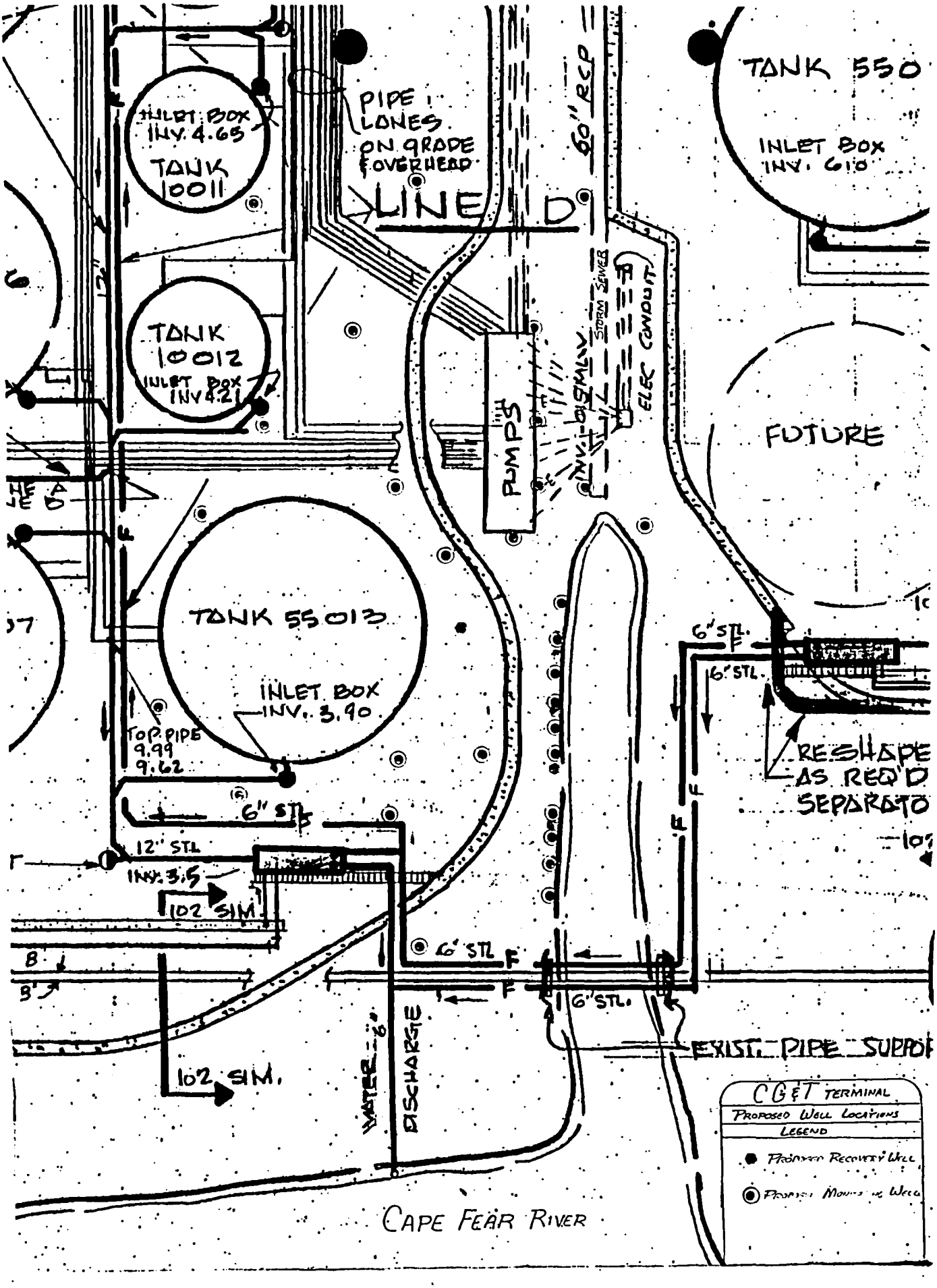
PROPOSED WELL DETAIL

MW-1 thru MW-30

NOT TO SCALE



* NOTE: IN NON-TRAFFIC AREAS, A LOCKING STEEL COVER EXTENDING 18" ABOVE GROUND WILL BE USED IN LIEU OF THE TRAFFIC COVER. THE CASING WILL ALSO EXTEND ABOVE GROUND INTO THE SHEILD.


TANK 550
INLET BOX INV. 6.10
INLET BOX INV. 4.65
TANK 10011
PIPE LINES ON GRADE OVERHEAD
LINE D
60" RCP
TANK 10012
INLET BOX INV 4.21
PUMPS
INV. 4.5 STORM SEWER
ELEC CONDUIT
FUTURE
TANK 55013
INLET BOX INV. 3.90
TOP PIPE 9.99
9.62
6" STL
12" STL
INV. 3.5
102 SIM
6" STL
6" STL
6" STL
RESHAPE AS REQ'D SEPARATO
EXIST. PIPE SUPPO
102 SIM.
WATER DISCHARGE
CAPE FEAR RIVER
CG&T TERMINAL
PROPOSED WELL LOCATIONS
LEGEND

APPENDIX VI

LABORATORY ANALYSES

LAW & COMPANY

Consulting and Analytical Chemists

ESTABLISHED 1903

RECEIVED APR 2 6 1991

Main Office
1711 Castle Street
P.O. Box 629
Wilmington, N.C. 28402

919-762-7082 919-762-8956
FAX 919-762-8785

REPORT DATE: 4-25-91

SPECIALIZED MARINE
P.O. BOX 813
WRIGHTSVILLE BEACH, N.C. 28480
ATTN: MARK GREENLEAF

DATE RECEIVED: 4-15-91
DATE COLLECTED: 4-15-91
COLLECTED BY: CUSTOMER
LAB I.D. # EW 5833

SAMPLE DESCRIPTION: CG & T (SMI)

TESTS/SAMPLES	MW13	MW15
PRODUCT I.D.	10% GASOLINE	3% GASOLINE
	26% #2 FUEL OIL	16% #2 FUEL OIL
	64% HEAVY OIL	81% HEAVY OIL

Dolly Bidwell
LABORATORY DIRECTOR

LAW & COMPANY
Consulting and Analytical Chemists
ESTABLISHED 1903

1711 Castle Street • P.O. Box 629 • Wilmington, North Carolina 28402
Telephones (919) 762-7082 or (919) 762-8956
FAX (919) 762-8785

CHAIN OF CUSTODY RECORD

Specialized Marine

CUSTOMER: CCST (SM11)

PROJECT ID:

SAMPLERS (Signature)

SAMPLE NUMBER	SAMPLE LOCATION	DATE	TIME	SAMPLE TYPE WATER COMP	SAMPLE TYPE WATER GRAB	SAMPLE TYPE SOIL	NO. OF CONT.	ANALYSIS REQUIRED
MW13		4/15	11:15		✓		1	Pieco ID
MW15	"	4/15	11:15		✓		1	Pieco ID

Relinquished by: (Signature)	Received by: (Signature)	Date/Time
Relinquished by: (Signature)	Received by: (Signature)	Date/Time
Relinquished by: (Signature)	Received by: (Signature)	Date/Time
Methods of Shipment: hand carried	Received for Laboratory by: Debby Bidwell	Date/Time: 4/15/91 2:30
Conditions upon receipt: no refrigeration	Remarks:	

TO TOM

DATE ASSIGNED 05-29-91

DATE DUE _____ DATE DONE _____

INSTRUCTIONS WHAT NOW? I CAN'T I.D. A PRP?

Sec. April

PETROLEUM, INC.

JIM PAPPAS
Regional Manager East
General Manager Wilmington Facility

(919) 763-9800
801 Surry Street
Wilmington, NC 28401

(800) 348-7891 • Fax (919) 762-3307

Chief Bearskin
(918) 678-2297
1-800-256-2539

Wyandotte Tribal Petroleum

Refining Company 3-21-91

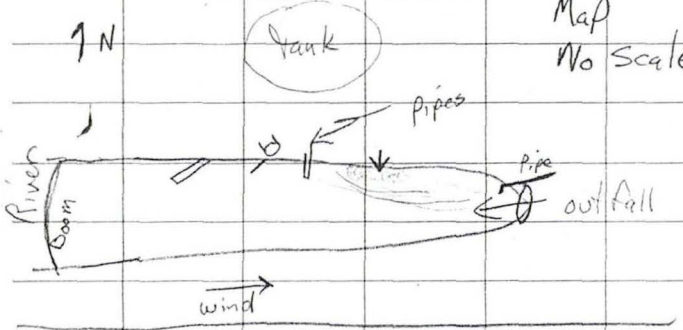
Kirk McDonald, Tom Dickey

USCG - Lt. Mike Price 343-4567

Dave Hinson - Wyandotte Petroleum

- check oil sheen at sewer out fall at Cape Fear River

Map
No Scale



Key oil sheen moving away from bank

9:30 AM when I stirred up the mud at the water level a small "pool" of dark free product flowed out

(low tide this morning was 8:20 AM)

This preliminary investigation suggests to me that the oil sheen noted on the water is caused by product seeping out of the ground and is not coming from the sewer drain

CITY GAS & TRANSMISSION AKA

FILE CODE: WYANDOTTE TRIBAL PET. CO.

NEW HANOVER COUNTY

03-20-91: 1000 - 1203

JIM PAPPAS

DICK SHIVER

MIKE WILLIAMS

A WALKOVER OF THE SITE SHOWED AREAS (Δ) WHERE THE SOIL WAS CONTAMINATED. WYANDOTTE AGREED TO CLEANUP THESE SITES, BUT THE OIL CONTAMINATED SOIL IN A ROLL-ON, AND LET HUCHIN (?) DISPOSE OF IT.

AT THE STORM DISCHARGE DITCH, JIM WILL CALL US WHEN HE SEES OIL SEEPING FROM THE BANKS. WE AGREED TO AUGER AROUND THE PUMP BASIN TO SEE IF THERE HAD BEEN A RELEASE OF OIL FROM IT.

OTHER THAN THE DUMPING OF THE SLUDGE FROM TWO POLS, WYANDOTTE IS NOT RESPONSIBLE FOR RELEASES THAT OCCURRED OR WERE CAUSED BY PREDECESSOR COMPANIES. UNLESS NEW INFO SUGGESTS OTHERWISE, WE HAVE NO CAUSE TO REQUIRE AN ASSESSMENT.

OGDEN, STURGILL & WELCH

ATTORNEYS AT LAW
155 E. MAIN STREET
LEXINGTON, KENTUCKY 40507-1393
Telephone: (606) 255-8581
Telefax: (606) 231-0851

1200 ONE RIVERFRONT PLAZA
LOUISVILLE, KY 40202-2973
(502) 582-1601
TELEFAX: (502) 581-9564

1422 WINCHESTER AVENUE
ASHLAND, KY 41105-1653
(606) 325-8446
TELEFAX: (606) 325-8155

GARDNER L. TURNER
DON S. STURGILL
RICHARD P. NEWELL
JAMES S. WELCH
JOHN T. BALLANTINE
DAVID O. WELCH
JOSEPH C. OLDHAM
JAMES L. COOSSEN*
STEPHEN F. SCHUSTER
JERRY D. TRUITT
SCOTT T. WENDELSDORF
DONALD P. MOLONEY, II
WALTER LAPP SALES
STEPHEN L. BARKER

ERNEST W. WILLIAMS
OSBALD R. TONER
DAVID A. HARRIS
ANN D. STURGILL
GREGORY J. BUBALO**
PHILLIP M. MOLONEY
D. BRIAN RATTLIFF
TRACEY N. BOSOMWORTH
W. GREGORY KING
DOUGLAS L. MCSWAIN
ROBERT E. THERMAN
JAMES N.G. CAUTHEN***
JAMES B. MARTIN, JR.
GARNER CLIFF STIDHAM

STEPHEN P. CARSON
GREGORY C. SHIELDS
KATHRYN WARNECKE
LISA ANN VOOT
JOHN WADE HENDRICKS
JEANNE REES CLEMENS
TURNEY P. BERRY
JAMES G. CAMPBELL
SALLIE EVANS CORYELL
PATRICIA BRENNAN VAN CLEAVE
TERESA C. BUCHHEIT
SUSAN C. BYBEE
DOUGLAS C. BALLANTINE
JEAN R. CHENAULT

GENE LYNN HUMPHREYS
JOHN T. BALLANTINE, JR.
TRACY S. PREWITT**
THOMAS E. RUTLEDGE
PALMER G. VANCE, II

SQUIRE R. OGDEN
(1898-1984)

*ALSO ADMITTED FLORIDA
**ALSO ADMITTED INDIANA
***ALSO ADMITTED VIRGINIA

March 7, 1991

RE: City Gas & Transmission Corporation
Oil Refinery Facility Located in
Wilmington, North Carolina

TO WHOM IT MAY CONCERN:

Please be advised that this firm represents City Gas & Transmission Corp. ("CG&T") in its pending Chapter 11 proceeding. CG&T has completed negotiations with the Wyandotte Tribal Petroleum, Inc. to turn over the operational and monetary management of the oil refinery facility owned by CG&T and located in Wilmington, North Carolina, to Wyandotte, which Management and Operating Agreement is subject to the approval of the United States Bankruptcy Court for the Eastern District of Kentucky.

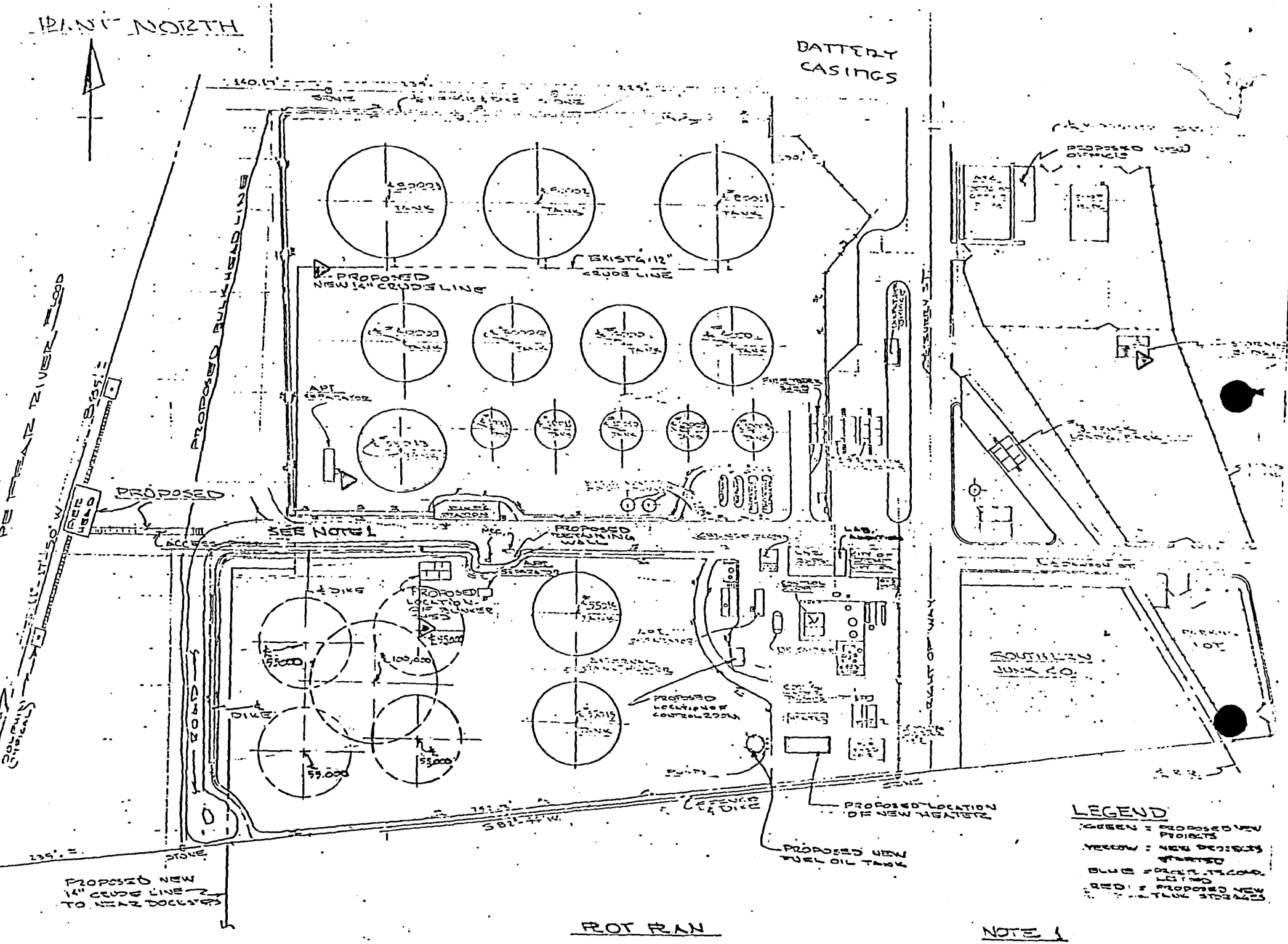
Very truly yours,

OGDEN, STURGILL & WELCH

BY: Tracey N. Bosomworth
TRACEY N. BOSOMWORTH

TNB/tcm

<n>misc.3/7



PLOT PLAN

DWN J.R.M.

DATE: 2-22-80

NOTE 1

ADDED TO STORM DRAIN TO BULKHEAD LINE AND BACK FILL DITCH.

FILE CODE: W[redacted]dotte Tribal Petroleum

BR CA CO DU (NH) ON PE

State of North Carolina
Department of Environment, Health, and Natural Resources
Wilmington Regional Office

James G. Martin, Governor
William W. Cobey, Jr., Secretary

Bob Jamieson
Regional Manager

March 20, 1991

DIVISION OF ENVIRONMENTAL MANAGEMENT

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Jim Pappas, Regional Manager East
Wyandotte Tribal Petroleum, Inc.
801 Surry Street
Wilmington, North Carolina 28401

Subject: **NOTICE OF VIOLATION**
Oil Sludge Disposal and Use of
Oil/Water Separators
Wyandotte Tribal Petroleum, Inc.
New Hanover County

Dear Mr. Pappas:

This is to notify you that Wyandotte Tribal Petroleum, Inc., located at 801 Surry Street, Wilmington, North Carolina, 28401, is in violation of North Carolina General Statute 143-215.83(a) by discharging petroleum sludge onto the lands within the State at the above location on or before March 14, 1991.

Enforcement actions may be pursued by this Division for the above violation. These actions may result in the assessment of civil penalties in accordance with NCGS 143-215.6.

The Wyandotte Tribal Petroleum Company was instructed to excavate the petroleum sludge and residue from oil storage tank bottoms and place the material into a covered metal roll off container. The material must remain on site or at the site of High Rise Service Company until the material is sampled, and disposed of in an authorized location. You should contact Mr. Flint Worrell, Hazardous Waste Section at (919) 486-1191, to determine proper disposal methods. The excavation of the material (an estimated 5-7 cubic yards) began on March 14, 1991.

7225 Wrightsville Avenue, Wilmington, N.C. 28403-3696 • Telephone 919-256-4161 • Fax 919-256-8572

During a March 14, 1991 investigation conducted by Mr. Mike Williams of the Wilmington Regional Office; an elongated above ground tank (approximately +6 feet wide by +25 feet long) was also discovered. The contents of the tank appeared to contain predominately water, however, 1-2 inches of oil was observed to be on the surface. It was apparent that the tank has overflowed in the past resulting in the discharge of oil onto the ground. The Company was instructed to remove the oil from the tank, place it into a secure oil storage tank, or dispose of the oil along with the material originating from the tank bottoms, in an approved manner.

It was also discovered during the March 14, 1991 investigation, that the oil/water separators serving the facility have been in operation. An NPDES permit was issued by this Division to CG & T for the discharge of treated wastewater from the units. The permit is valid until 1993, providing CG & T owns the facility. Any change in ownership will require modification of the permit. You indicated that CG & T does, in fact still own the facility at this time. The permit requires effluent monitoring and reporting on a monthly basis. A monitoring report has not been received since May, 1990. Monthly reports must be submitted for as long as the permit is valid. Failure to submit reports will constitute violations of the permit. If no discharge occurs during the month, a monthly report must also be submitted indicating on the form that no discharge has occurred.

It is requested that you provide a written response to this Notice, on or before March 27, 1991; indicating what actions are and have been taken to resolve this matter.

If you have any questions concerning this matter, please contact Mr. Mike Williams, Mr. Dave Adkins, or me, at (919) 395-3900.

Sincerely,

Original Signed By
A. PRESTON HOWARD, JR.

A. Preston Howard, Jr., P.E.
Regional Supervisor

MW:WYANDOT.MA2
cc: Steve Tedder
Mike Williams
Pete Richardson, USCG
Flint Worrell
Rick Shiver
Bob Jamieson
Ed Gavin
Wilmington Regional Office Files
Central Files

N.C. Department of Environment, Health, and Natural Resources

Telephone Log

Date: 3/14/91

Sheet 1 of ___

Time: 9:50 (9:41) ☑ am ☐ pm

Call: Placed ☐ Received ☑ Returned ☐

1. Project: C G & T Facility County: New Hanover

2. Conversation with: Pete Richardson Telephone: (919) 343-4892

3. Affiliation: Marine Safety Office 343-4895: can get cellular phone no.

4. Content of conversation: Pete called Bill Cochran about this incident on 3-12-91.

Background: MSO got an anonymous complaint of sludge dumping at the C G & T Facility - MSO didn't see anything initially, went back w/ owner representative - owner didn't know of anything - took MSO to selected areas on-site -

3-13-91 Another anonymous complaint to MSO - dumping oil/sludge MSO went back - told owner's rep. they were going to go where they wanted this time. They found an estimated 15 barrels of sludge near inlet piled on the ground, the material was leaching into the inlet, thus causing the sheen on the water. The owner's rep. booned-off the inlet and has not hired anyone to address the incident. There is a drainline from a berm that goes to the Cape Fear River.

Owners rep. wants to put sludge in barrels and put into a hired building.

Owner sarcastic and uncooperative.

cc: General Pollution File
WQS-WiRO

Filed by: Reed

FILE CODE: BIXS R ROAD
PROJECT
BR CA CO DU X NH ON PE

LAW OFFICES
OF
BRUCE H. ROBINSON, JR.
P. O. BOX 625
WALLACE, NORTH CAROLINA 28466
TELEPHONE: (919) 285-7534

May 11, 1990

TO DIANE
DATE ASSIGNED 06-02-90
DATE DUE 6-7 DATE DONE 6-7
INSTRUCTIONS SEND COPY OF GW-61 TO ROBINSON FOR INCIDENT(S) AT: EXXON, MOBIL, AMOCO, PAC, CPL, KOCH, HESS, ATC, UNION, & CG&T. SEND BY COVER LETTER (MY SIGNATURE).

Mr. Rick Shriver
Department of Natural Resources and
Commercial Development
7225 Wrightsville Avenue
Wilmington, NC 28402

Dear Mr. Shriver:

I understand that you are working on a project in Wilmington in which you have removed some kerosene from the ground and possibly other toxic wastes. I do not know if this is in response to my letter to Senator Cobey dated August 22, 1989 and his response to me dated January 17, 1990 (copies enclosed), but, in any event, I belive that the brochure that your department has received from me will pinpoint the areas of concern and I believe that your report is a public record and I would like to know if you will voluntarily mail a copy of it to me or if I must take legal action to receive a copy of the report.

Please mail a copy of all reports done on the sites described in the brochure previously provided to the Department of Environment, Health & Natural Resources.

If I have mis-stated the situation, I apologize but I am going on information provided to me.

If your office is not connected with the Office of the Department of Environment, Health and Natural Resources, please let me know. Thank you.

Sincerely,

Bruce H. Robinson, Jr.

BRUCE ROBINSON, JR.

BHRjr/fw

RECEIVED
MAY 14 1990
Wilmington Regional Office

mailed 10/26/89 per BHR.

LAW OFFICES
OF
BRUCE H. ROBINSON, JR.
P. O. BOX 625
WALLACE, NORTH CAROLINA 28466
TELEPHONE (919) 285-7534

Dictated
August 22, 1989

The Honorable William W. Cobey, Jr.
Dept. of Environment, Health & Natural Resources
512 North Salisbury Street
Raleigh, NC 27611

RE: Toxic Waste

Dear Secretary Cobey:

As attorney for Donald Arthur, I am enclosing a brochure and requesting an investigation by your department into the issues raised and request that a copy of this report be sent to me.

Mr. Arthur and others are very concerned about the toxic waste as detailed in this brochure and are further concerned about the apparent lack of investigation and action done to correct this problem in the past.

As the new Secretary of the Department of Environment, Health and Natural Resources, I explained to my client that, before anything else could be done, we needed to give the State agency that is charged with overseeing these problems an opportunity to conduct an investigation.. Thank you.

With personal regards,

BRUCE H. ROBINSON, JR.

BHRjr/fw

Enclosure

State of North Carolina
Department of Environment, Health, and Natural Resources
512 North Salisbury Street • Raleigh, North Carolina 27611

James G. Martin, Governor

William W. Cobey, Jr., Secretary

January 17, 1990

Mr. Bruce H. Robinson, Jr.
Attorney at Law
Post Office Box 625
Wallace, North Carolina 28466

Dear Mr. Robinson:

This is in response to your request for information regarding possible events subsequent to Mr. Arthur's December 1985 request for assistance.

Reconstruction of four years old reactions to citizen requests is time-consuming, however we are in the process of searching for records on Mr. Arthur's case and will forward what we find as soon as possible.

Sincerely,

William W. Cobey, Jr.

WWCjr:su

P.O. Box 27687, Raleigh, North Carolina 27611-7687 Telephone 919-733-4984

North Carolina Department of Human Resources
Division of Health Services
P.O. Box 2091 • Raleigh, North Carolina 27602-2091

James G. Martin, Governor
David T. Flaherty, Secretary

Ronald H. Levine, M.D., M.P.H.
State Health Director

December 27, 1988

MEMORANDUM

TO: Lee Crosby, Head
Superfund/Inactive Sites Branch

FROM: Doug Holyfield, Supervisor
Hazardous Waste Compliance Program

RE: Referral of Information: Potter's Pits, Wilmington Oil Terminals

I have attached recent correspondence from the following sites for your review:

Potter's Pits-Results from monitoring wells at the site.
DEM-Wilmington is coordinating the sampling program.

Wilmington area oil terminals-As noted in the letter from Bill Pate, Mr. Donald Arthur has requested assistance on numerous occasions to evaluate the disposal of leaded tank bottoms on-site at several tank farm areas. We are continuing to evaluate known RCRA activites at these locations, however, we cannot evaluate old, disposal activities.

In conclusion, please contact me or Flint Worrell regarding these sites if you should have any questions or comments.

Attachments:

cc: Flint Worrell
Rosemarie Sidorowicz ✓

C G & T Corp
W Hanover ✓

INCIDENT MANAGEMENT SITE STATUS REPORT
INFORMATION REQUIREMENTS

1.	Incident Number	3493
2.	Site Priority Ranking Score	125
3.	Phase	CO

	DISCOVERY (DI)	DATE
4.	Complaint or 24-hour leak report received by regional office	7-30-87
	ASSESSMENT (AS)	
5.	Preliminary investigation and/or confirmation of leak report conducted by regional office and pollution incident/UST leak reporting form submitted to central office.	8-28-87
	RESPONSE (RE)	
6.	Field investigation started to identify source(s) and responsible party(s)	7-31-87
	FOLLOW-UP (FU)	
7.	NOV issued to responsible party(s) by regional office	7-30-87
8.	Cleanup started (excavation, product removal, etc.) by responsible party	7-30-87
9.	Twenty (20) day corrective action report received by regional office (UST sites)	____
10.	Forty five (45) day initial site characterization report received by regional office (UST sites)	____
11.	Forty five (45) day free product report received by regional office (UST sites)	____
12.	Site "under control"	8-12-87
13.	Tank data submitted	____
14.	Enforcement report submitted by regional office	____
15.	Special order issued by EMC	____
	REMEDIAL ACTION (RA)	
16.	Corrective action plan approved by regional office	____
17.	Public notice published	____
18.	Public meeting held	____
19.	SOC signed by Director/EMC	____
	CLOSE OUT (CO)	
20.	Cleanup completed - no further action necessary	12-14-88
21.	Close out report submitted to central office	____

**For further clarification of phase terminology, see attached document entitled "Explanation of Phase Nomenclature".

DIVISION OF ENVIRONMENTAL MANAGEMENT

GROUNDWATER SECTION

December 14, 1988

MEMORANDUM

TO: Rick Shiver

FROM: Bill Jeter

SUBJECT: City Gas and Transmission Corp.; Incident # 3493, New Hanover County

A review of the information contained in the incident file and obtained from my conversation with you on this date indicates that the responsible party has removed the soils containing the fuel oil spilled at the companys refinery. The review also indicates that the oil does not represent a threat of degradation of groundwater quality or to adjacent properties. Therefore, the incident is considered to be closed.

Should there be any questions concerning this matter, please contact me.

cc: Incident File

DIVISION OF ENVIRONMENTAL MANAGEMENT

Groundwater Section

December 13, 1988

MEMORANDUM

TO: Bill Jeter

FROM: Rick Shiver RSS

SUBJECT: Request for Closeout of Incident
Incident No. 3493
City Gas and Transmission Corp.
Wilmington
New Hanover County

Soil that was contaminated with No. 6 fuel oil at the subject facility as a result of leaking lines and valves has been excavated and properly disposed, as requested by the Department.

Because the subject facility has taken the necessary remedial actions, we request closeout of this incident.

RSS:pj

cc: WiRO - GWS V

North Carolina Department of Human Resources
Division of Health Services
P.O. Box 2091 • Raleigh, North Carolina 27602-2091

James G. Martin, Governor
David T. Flaherty, Secretary

Ronald H. Levine, M.D., M.P.H.
State Health Director

September 6, 1988

Ms. Joan Beaseley
c/o Donald A. Arthur, Sr.
125 Ruthledge Drive
Wilmington, North Carolina 28403

Dear Ms. Beaseley:

I am responding to your August 10, 1988 request for assistance to the North Carolina Department of Human Resources. You requested information about the response to a letter that your father, Donald Arthur, Sr., sent to the North Carolina Department of Natural Resources and Community Development on October 25, 1985, in which your father expressed concern about environmental contamination and human exposures resulting from activities at oil companies in the Wilmington area. A copy of this letter was sent to the Secretary of the North Carolina Department of Human Resources. The initial response to you from these two departments was that your concerns would be investigated. It is my understanding, that you are not sure what investigations were conducted and which agencies addressed your concerns. Because of the complexity of state government, i.e., different agencies responsible for specific parts of the environmental and human health problems that you are concerned about, I can understand your not knowing if and how your concerns were addressed.

I contacted the following agencies and requested information about investigation results or reports related to your request:

1. Department of Human Resources, Solid and Hazardous Waste Management Section.

2. Department of Natural Resources and Community Development, Groundwater Section, Wilmington Regional Office.

3. Department of Labor, Occupational Safety and Health Division.

4. New Hanover County Health Department, Environmental Health Division.

All of these agencies participated in investigations related to your concerns. I have enclosed copies of reports. Briefly, the results of these investigations are as follows:

1. The Solid and Hazardous Waste Section determined that the facility was in compliance with existing regulations and will continue to monitor the facility to enforce existing and new regulations.

2. The Groundwater Section has inspected the area where the oil companies are located and has located sites suitable for monitoring groundwater.

3. The OSHA Division of the Department of Labor visited the facility and was unable to inspect the facility since the company was out of business and there was no employee exposure.

4. The New Hanover County Health Department (Environmental Health Division) inspected the area, and identified private wells near the site that may be subject to contamination by spills or runoff from the oil company facilities. The health department informed owners of these private wells not to drink the water unless they had it analyzed.

Mr. Arthur's letters and notes from physicians mentioned the possibility of lead exposure. I did not receive results of blood tests for lead content. There was a mention of analysis of hair samples for lead content. A reliable method for biological monitoring of lead exposure is analysis of blood for lead content, however, this sampling must be conducted within days after exposure to be a valid representation of exposure.

The situation you describe in which men work inside storage tanks to remove petroleum-based materials and to remove scale could expose employees to petroleum-based hydrocarbons and petroleum additives, i.e., tetraethyl lead. In addition, the tanks may be classified as confined spaces and thus may contain inadequate oxygen supply for workers not wearing supplied air respirators. Therefore, your concerns about potential health hazards are well founded. Contamination of soil, groundwater, surface water, and air by improper handling of materials is also a possibility. In order to minimize worker exposure and environmental contamination, employers must develop and enforce safe operating procedures for employees and must have procedures and facilities for control and collection of spills, runoff, and air emissions. Enforcement agencies, OSHA and the Division of Environmental Management, respond to concerns from employees and citizens and are able to address human exposure and environmental contamination. However, it is difficult for these agencies to enforce or evaluate compliance with regulations and safe operating procedures when a concern is raised some time after the exposure or contamination occurred.

Thank you for notifying the environmental and public health agencies about your concerns and for requesting information about the investigations. I hope that the information I have provided for you addresses your concerns. Please call me at (919) 733-3410 if you need additional assistance, or if you know of other current human exposures or environmental contaminations.

Sincerely,

William J. Pate

William J. Pate, PE, CIH
Environmental Epidemiology Branch

WJP:km

Enclosure(s)

c: Doug Holyfield
Rick Shiver
Tom Stich
Susan Crocker

Incident Name City Gas and Transmission Corp.
Region/County WiRO / New Hanover
Groundwater Incident File # 3493
Ranking Performed by Carol N. Miller Date 3/23/88

NORTH CAROLINA

GROUNDWATER CONTAMINATION INCIDENT MANAGEMENT
SITE PRIORITY RANKING SYSTEM

	Points Awarded
I. IMMINENT HAZARD ASSESSMENT	
A. Explosion - free product in confined areas or vapor phase product detected at or above 20% of the lower explosive limit; award 50 points total	0
B. Fire - free product subject to ignition in exposed areas such as surface water impoundments, streams, excavations, etc.; award 50 points total	50
II. EXPOSURE ASSESSMENT	
A. Contaminated Drinking Water Supplies	
1. Private, domestic water supply well containing substances in concentrations exceeding Class GA underground water quality standards; award 10 points per well	0
2. Public or institutional water supply well containing substances in concentrations exceeding Class GA underground water quality standards; award 30 points per well	0
3. Exceedences of Class WS-1 surface water quality standards as a result of groundwater discharge; award 20 points per surface water body impacted	0
4. If a water supply well identified in items II.A.1 and II.A.2 cannot be replaced by an existing public water supply source requiring hook-up only; award additional 10 points per irreplaceable well	0

B. Threat To Uncontaminated Drinking Water Supplies

1. Private, domestic water supply well located within 1500 feet downgradient of contaminant source; award 10 points per well — 0

2. Public or institutional water supply well located within 1/2 mile downgradient of contaminant source; award 15 points per well — 0

3. Raw surface water intake for public water supply located within 1/2 mile downgradient of contaminant source; award 5 points per water supply system — 0

4. If any well identified in items II.B.1 and II.B.2 is located within 250 feet of contaminant source; award additional 20 points total — 0

C. Vapor Phase Exposure

1. Product vapors detected in inhabitable building(s); award 30 points total — 0

2. Product vapors detected in other confined areas (uninhabitable buildings, sewer lines, utility vaults, etc.); award 5 points total — 0

III. CONTAMINANT HAZARD ASSESSMENT (chemical groups are categorized based on toxicity, mobility and persistence in the environment). Evaluate the most hazardous substances detected and select only one of the following:

A. Award 30 points total if contaminants detected are identified with any of the following groups: — 30

1. Aromatic (Benzene) Acids
2. Aromatic Hydrocarbons (Benzene Derivatives)
3. Sulfonated Hydrocarbons
4. Halogenated Hydrocarbons
5. Alkaloids
6. Anilines
7. Phenols
8. Aldehydes
9. Ketones
10. Organic Sulfur Compounds (Sulfides, Mercaptans)
11. Organometallic Compounds

12. Cyanides
13. Esters
14. Metal Salts, Including Heavy Metals

B. Award 20 points total if contaminants detected are identified with any of the following groups: 0

1. Aliphatic (Fatty) Acids
2. Alcohols
3. Aliphatic Hydrocarbons (Petroleum Derivative)
4. Pyridines
5. Thiocyanides
6. Mineral and Metal Acids
7. Mineral and Metal Bases
8. Oxides
9. Sulfides

C. Award 10 points total if contaminants detected are identified with any of the following groups: 0

1. Aliphatic Amines and Their Salts
2. Sugars and Cellulose
3. Carbon and Graphite

IV. SOURCE ASSESSMENT

A. Free product thickness of $\geq$ 1/4 inch detected on water table in observation or monitoring well; award 20 points total 0

B. Contaminated Soil (select only one answer)

1. Soil saturated with product (saturation determined by release of free liquid upon compaction of a soil sample by hand pressure); award 10 points total 10

2. Soil exhibiting organic vapor content above 100 ppm as measured by organic vapor or volatile organic detection equipment; award 5 points total 0

C. Uncontrolled or Unabated Primary Source (including dumpsites, stockpiles, lagoons, land applications, septic tanks, landfills, underground and above ground storage tanks, etc.)

1. Suspected or confirmed source remains in active use and continues to receive raw product, wastewater or solid waste; award 20 points per source — 0

2. Active use of suspected or confirmed source has been discontinued or source was caused by a one-time release of product or waste, however, source continues to release product or contaminants into the environment; award 10 points per source — 0

V. ENVIRONMENTAL VULNERABILITY ASSESSMENT

A. Vertical Contaminant Migration - Literature or well logs indicate that no confining layer is present above bedrock or above twenty feet below land surface; award 10 points total — 10

B. Horizontal Contaminant Migration - Data or observations indicate that no discharge points or aquifer discontinuities exist between the source and the nearest downgradient drinking water supply; award 10 points total — 0

C. Hydraulic Gradient Is Determined By (select only one answer):

1. Calculations based on groundwater level measurements; award 10 points total — 0

2. Observation of significant recharge/discharge features in the vicinity of contaminant source and local topographic features; award 5 points total — 5

3. Observation of local topographic features only; award 0 points — 0

D. Existing Groundwater Quality

1. Analytical test(s) performed on groundwater sample(s) obtained from site confirm presence of substances in concentrations exceeding Class GA underground water quality standards; award 10 points total — 10

2. Source(s) identified in Section IV constitute the only known source(s) of contamination resulting in exposure or potential exposure identified in Section II; award 10 points total — 10

TOTAL POINTS AWARDED — 125

CITY GAS & TRANSMISSION

(09-11-87 : 1100-1115)

ROBERT PREVATTE

RICK SHIVER

I INSPECTED THE THREE AREAS WHERE SPILLS HAD OCCURRED. THERE WAS NO FLOATING OIL IN THE EXCAVATIONS (THERE WAS WATER).

CITY GAS AND TRANSMISSION WILL HAVE THE CONTAMINATED SOIL MADE INTO ASPHALT.

POLLUTION INCIDENT REPORTING FORM

1. Incident # 3493
2. Tabulate only 3493

Division of Environmental Management
GROUNDWATER SECTION

TYPE OF ACTION

A

1. Emergency response
2. Compliance investigation
3. Complaint investigation
4. Routine inventory
5. Re-evaluation : # _____
6. Other : Investigation of Reported Spill

POTENTIAL HAZARDS : 1. Toxic chemicals 2. Radioactivity 3. Air emissons 4. Explosives 5. Fire

INCIDENT

B

Incident Name: City Gas & Transmission Corp (CGT)

Address: 801 Surry Street | City/Town: Wilmington

County: New Hanover | Region: WIRO | DEM Regional Contact: Carol Miller

PERSON REPORTING INCIDENT

C

Name: William L. Tracy | Date: 7-30-87 | Time: 11:00AM

Company/Agency: City Gas & Transmission Corp. | Telephone: (919) 251-9512

Briefly Describe Incident:

There are two sources of leaks at the site. One leak involves a hole in a "rundown" line, the other involves leaks in two values at an external tank heater. The leaks involve small quantities of no. 6 fuel oil.

REPORTED BY: (1.) Responsible party 2. Government agency 3. Private party

RECOMMENDED ACTION

D

1. Investigation complete
2. Continue investigation
3. Initiate/complete cleanup
4. Long-term remedial action
5. Technical support
6. Drill crew
7. Enforcement action
8. Monitoring plan

Comments

LAB SAMPLES: 1. Yes (2.) No

Signature: Carol N. Miller | Date: 8-28-87

OC TO FAY SWEAT ON 08-27-87

Incident # 3493
County: New Hanover

POLLUTION INCIDENT REPORTING FORM

POLLUTANTS INVOLVED

E

MATERIALS INVOLVED	AMOUNT STORED	AMOUNT LOST	AMOUNT RECOVERED
#6 Fuel Oil	2167 Barrels	unknown	unknown

IMPACT ON SURFACE WATERS

F

WATERS EFFECTED 1. Yes (2) No No 3. Potentially	Distance to Stream (ft)	Amount in Water (gal)
	500'	unknown
FISH KILL: 1. Yes (2.) No	Name of Stream: Cape Fear River	Stream Class: SC

RISK ASSESSMENT

G

Use these Codes: High = 3 Moderate = 2 Low = 1 None = 0

Amount Infiltrating Land: unknown

Resource Threat	GROUNDWATER	SURFACE WATER	AIR
Vertical Migration of Contaminant	3		
Horizontal Migration of Contaminant	3		
Areal Extent of Contamination	1		
Probability of Violations	3	2	0
Remedial Action Priority	2	2	0
Potential Hazard of Substance	2	2	0
Threat to Drinking Water	2	2	0
Seriousness of Threat	2	2	0
Overall Regional Concern	2	1	0

Please Circle the Appropriate Response(s):

1. This incident poses additional threat to human health by: (1) inhalation (2) absorption (3) ingestion
2. This incident poses additional threat to the environment by potential adverse effects on :
   (1) sensitive areas (2) wildlife (3) fish

POTENTIAL SOURCE OF POLLUTION

H

SOURCE OF POTENTIAL POLLUTION
1. Intentional dump
2. Pit, pond, lagoon
3. Leak--underground
4. Spray irrigation
5. Land application
6. Animal feedlot
7. Source unknown
8. Septic tank
9. Sewer line
10. Stockpile
11. Landfill
(12) Spill--surface
13. Well
14. Dredge Spoil
15. Nonpoint source

MULTIPLE SOURCES AT SITE:
(1.) Yes 2. No

TYPE OF POLLUTANT
1. Pesticide/herbicide
2. Radioactive waste
3. Gasoline/diesel
(4) Other petroleum prod.
5. Sewage/septage
6. Fertilizers
7. Sludge
8. Solid waste leachate
9. Metals
10. Other inorganics
11. Other organics

LOCATION
1. Facility
2. Railroad
(3.) Waterway
4. Pipeline
5. Dumpsite
6. Highway
7. Residence
8. Other

SETTING
1. Residential
(2.) Industrial
3. Urban
4. Rural

POLLUTION CONFIRMED
1. Yes (2.) No

Incident # _____
County: New Hanover

POLLUTION INCIDENT REPORTING FORM

RESPONSIBLE PARTY

I

Responsible Party/Names				Telephone
William L. Tracy				(919) 251-9512
Company			**Street Address**	
City Gas & Transmission Corp.			301 East Main St.	
City		**County**	**State**	**Zip Code**
Lexington		Unknown	Kentucky	40507

REASON FOR INCIDENT
1. Transportation Accident
(2.) Mechanical failure
3. Facility design
4. Inventory only
5. Human error
6. Vandalism
7. Unknown

SOURCE IN USE
0. N/A
1. Yes
(2.) No

SOURCE PERMITTED
1. Yes
(2.) No

PERMIT NUMBER
DNA

SOURCE ON ERRIS LIST
1. Yes
(2.) No

ERRIS NUMBER
DNA

PERMIT TYPE
(0.) N/A
1. Nondischarge
2. Oil terminal
3. Landfill
4. Mining
5. NPDES
6. RCRA
7. Air

OWNERSHIP
0. N/A
1. Municipal
2. Military
3. Unknown
(4.) Private
5. Federal
6. County
7. State

OPERATION TYPE
0. N/A
1. Public Service
2. Agricultural
3. Other Source
4. Educational
(5.) Industrial
6. Commercial
7. Mining

ACTIONS TAKEN

J

Containment, Cleanup, etc.

CG&T Corp. has contracted High Rise Services Corp. Inc. (NE Royster Rd. Leland, N.C. (919) 371-2325) to remove the oil contaminated soil. The contaminated soil will be transfered to an asphalt plant. The oil contaminated water will be treated in an on-site oil water seperator. (permit # 21A-002)

Nearest Populated Buildings--Type and Distance

Precipition/Weather Data: Hot Humid

Incident # 3493
County New Hanover

POLLUTION INCIDENT REPORTING FORM

LOCATION OF INCIDENT

Street Address, Road	City/Town	County
801 Surry Street	Wilmington	New Hanover

Date Incident Occurred	Time Incident Occurred	7 1/2 Quad Name	Lat. : Deg: Min: Sec: / Long. : Deg: Min: Sec:
unknown	unknown	Wilmington DD-31, h	77 57 02 / 34 13 24

Draw Sketch of Area

ATTACH PHOTOCOPY OF MAP SHOWING: 1. Pollutant Source 2. Threatened Water Supplies 3. Direction of Overland Flow

Incident # 3495
County: New Hanover

POLLUTION INCIDENT REPORTING FORM

SOIL TYPES

COASTAL PLAIN REGION

1. Middle Coastal Plain
2. Upper Coastal Plain/Piedmont
3. Sandhills
4. Lower Coastal/Wicomico, Talbot
5. Lower Coastal Plain/Pamlico
6. Organic Soil
7. Brackish and Freshwater Marsh
8. Outer Banks
(9.) Large River Valleys/Flood Plain

PIEDMONT SOIL REGION

10. Felsic Crystalline
11. Carolina Slate Belt
12. Triassic Basin
13. Mixed Felsic and Mafic

MOUNTAIN SOIL REGION

14. Low and Intermediate Mountain
15. Basins/Terraces/Flood Plain
16. High Mountain

LANDFORM

(1.) River/coastal terrace
2. Coastal (flat) plain
3. Mountain range
4. Sandhills
5. Swamp
6. Linear (valley) slope
7. Head slope (concave)
8. Nose slope (convex)
9. Foot slope
10. Barrier island
11. Barrier system
12. Beach ridge
13. Tidal marsh
14. Floodplain
15. Upland: 0-5% slope (interstream divide)

OBSERVED AVERAGE GRADIENTS

To nearest water supply: <1 %
Water table gradient: <1 %
To nearest stream: <1 %
Stream gradient: <1 %

ESTIMATED DEPTHS

To uppermost confining bed: unknown
To water table: 0-2' ft.
To bedrock: unknown

ESTIMATE HYDRAULIC CONDUCTIVITIES

Soil	Unsaturated zone	Water Table	Upper confined aquifer
1. high	1. high	1. high	1. high
(2.) medium	(2.) medium	(2.) medium	(2.) medium
3. low	3. low	3. low	3. low
4. unknown	4. unknown	4. unknown	4. unknown

AQUIFER USE
WATER TABLE
(1.) Little or no use
2. Moderate uses
3. Heavily used

DISTANCE TO NEAREST WATER SUPPLY: EST. >100' ft.

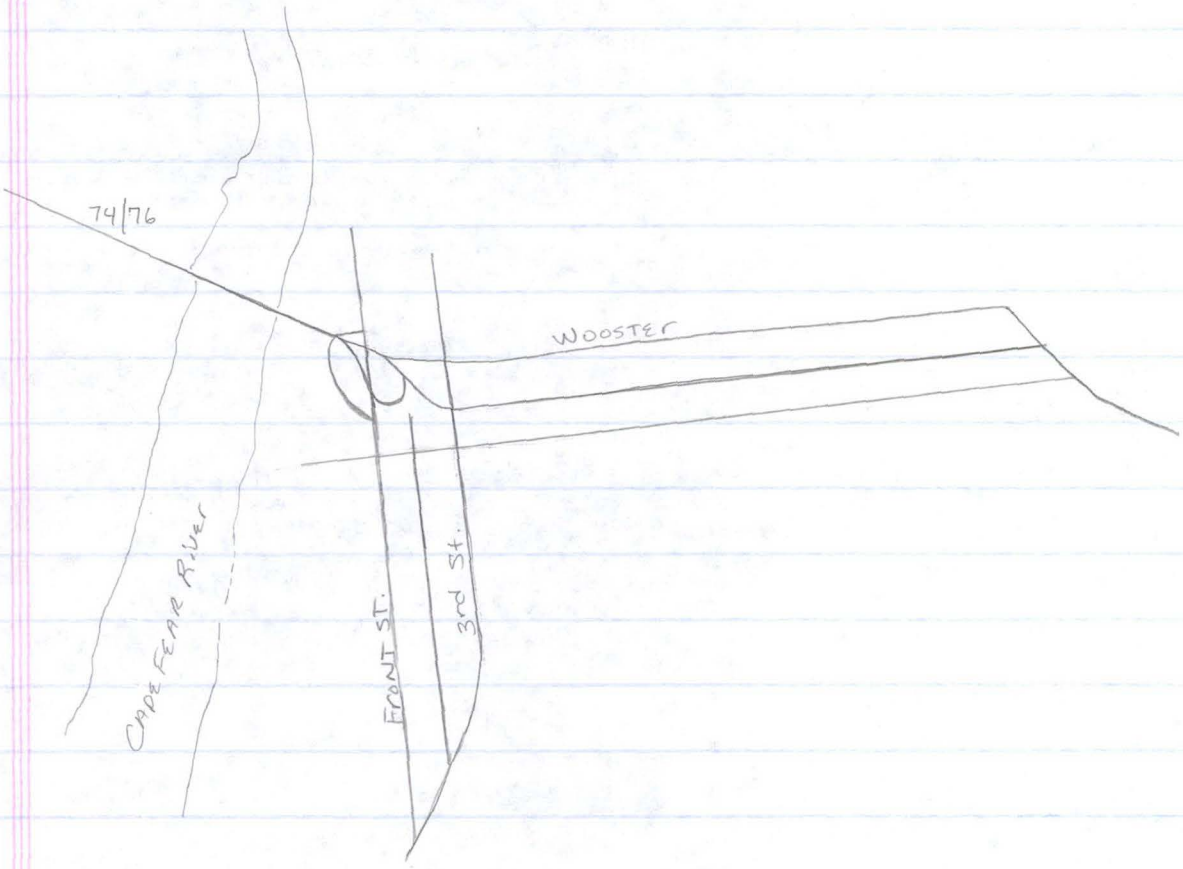
DISTANCE TO NEAREST BUILDING: ≈200 ft.

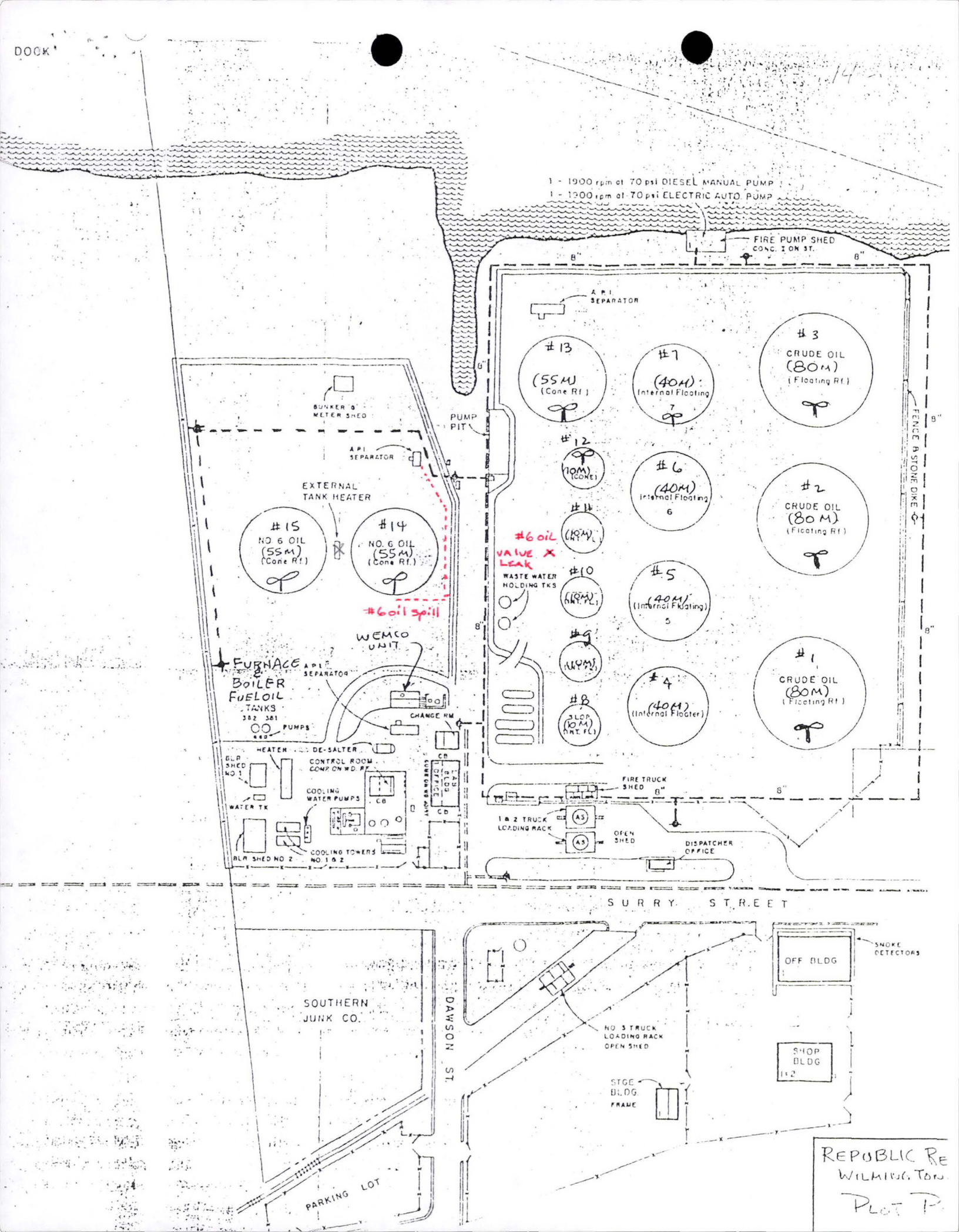
Describe general lithology of soil and unsaturated zone

Sandy

Provide map showing: 1. Pollutant source 2. Threatened water supplies 3. Direction of overland flow

Vicinity Map of
City Gas and Transmission
Wilmington
New Hanover County




DOCK
1 - 1900 rpm at 70 psi DIESEL MANUAL PUMP
1 - 1900 rpm at 70 psi ELECTRIC AUTO PUMP
FIRE PUMP SHED
CONC. I ON ST.
8"
A.P.I. SEPARATOR
#13
(55M)
(Cone Rf.)
#7
(40M)
Internal Floating
#3
CRUDE OIL
(80M)
(Floating Rf.)
FENCE & STONE DIKE
BUNKER 'B' METER SHED
PUMP PIT
A.P.I. SEPARATOR
#12
(10M)
(CONE)
#6
(40M)
Internal Floating
6
#2
CRUDE OIL
(80M)
(Floating Rf.)
EXTERNAL TANK HEATER
#15
NO. 6 OIL
(55M)
(Cone Rf.)
#14
NO. 6 OIL
(55M)
(Cone Rf.)
#11
(10M)
INT. FL.
#6 OIL VALVE X LEAK
WASTE WATER HOLDING TKS
#10
(10M)
INT. FL.
#5
(40M)
Internal Floating
5
#6 oil spill
WEMCO UNIT
#9
(10M)
INT. FL.
FURNACE & BOILER FUEL OIL TANKS
382 381
PUMPS
A.P.I. SEPARATOR
#8
SLOP
(10M)
INT. FL.
#4
(40M)
Internal Floater
#1
CRUDE OIL
(80M)
(Floating Rf.)
CHANGE RM
HEATER
DE-SALTER
BLR SHED NO 1
CONTROL ROOM
COMP ON WD. FL.
CB
LAB & BLDG OFFICE
COOLING WATER PUMPS
WATER TK
FIRE TRUCK SHED
1 & 2 TRUCK LOADING RACK
AS
OPEN SHED
DISPATCHER OFFICE
BLR SHED NO 2
COOLING TOWERS NO. 1 & 2
SURRY STREET
SOUTHERN JUNK CO.
DAWSON ST.
OFF BLDG
SMOKE DETECTORS
NO. 3 TRUCK LOADING RACK OPEN SHED
SHOP BLDG
1+2
STOR BLDG FRAME
PARKING LOT
REPUBLIC RE
WILMING. TON
PLOT P

CG&T CORPORATION • 301 EAST MAIN STREET • SUITE 950 • LEXINGTON, KENTUCKY 40507 • (606) 255-8621

August 12, 1987

N. C. Division of Environmental Management
7225 Wrightsville Avenue
Wilmington, North Carolina 28403

ATT: Carol Miller

Dear Ms. Miller:

The project is underway at the CG&T oil refinery, 801 Surry Street to excavate all contaminated soil as you requested, due to a leaking #6 oil rundown line to tanks 14 and 15.

The #6 oil line was purged out and removed. Laborers are removing the contaminated soil on to plastic. This soil will be shipped out at a later date to an asphalt company.

Sincerely,

CG&T Corporation

Walter S. Tracy
Temporary Startup Supervisor

WST/dtm

CITY GAS & TRANSMISSION
(08-05-87: 1500-1600)

MIKE RATLIFF
WALTER TRACY
RICK SHIVER

THERE ARE TWO SOURCES OF LEAKS ON-SITE. ONE LEAK INVOLVES A HOLE IN A "RUNDOWN" LINE, THE OTHER INVOLVES LEAKS IN TWO VALVES AT AN EXTERNAL TANK HEATER. THE LEAKS INVOLVE SMALL QUANTITIES OF NO.6 FUEL OIL.

HIGH RISE SERVICES CO. WILL REMOVE THE OIL CONTAMINATED SOIL. THIS CONTAMINATED SOIL WILL BE SENT TO AN ASPHALT PLANT. THE OIL CONTAMINATED WATER WILL BE TREATED IN AN ON-SITE OIL-WATER SEPARATOR.

IN THE SPILL AREAS, THE W.T. IS AT OR NEAR LAND SURFACE.

THIS FACILITY WAS CONSTRUCTED IN 1973.

NOV 02044

North Carolina
Division of Environmental Management

NOTICE OF VIOLATION OF

RECEIVED
JUL 30 1987
GROUNDWATER SECTION
WILMINGTON REGIONAL OFFICE

____G.S. 143-215.1 ____G.S. 143-215.108
__X__G.S. 143-215.75, et seq. ____G.S. 87-83, et seq.
____G.S. _____

TO: City Gas and Transmisson Corp 801 Surry St.
(Address)

William L. Tracy President Wilmington, New Hanover
(Name of Violator) (City/County)

YOU ARE HEREBY NOTIFIED that the undersigned representative of the North Carolina Division of Environmental Management observed a violation of North Carolina Environmental Pollution Control Laws at: 801 Surry St

Wilmington, N.C.
(Location of Violation)

on or before July 30, 19 87.

The following facts establish a violation:
On July 30, 1987, Carol Miller, with DEM observed #6 fuel oil leaking from a valve from a rundown line servicing tanks #14 and 15. Another smaller leak was located from a valve near tanks #11 & 12

You are required to cease the unlawful activity immediately. The following corrective actions must be taken:
Cease all discharges of petroleum products onto the lands of the State. Excavate all contaminated materials and or soils as instructed by state officals.

A written response must be filed with the Regional Office at the address below on or before August 13, 19 87.

NOTICE is given that this and any further violations may result in enforcement actions, including civil penalties.

7-30-87 Carol M. Miller
(Date) (Representative's Signature)

I, Carol M. Miller, hereby certify that I have personally served a copy of this Notice on:

William (Bill) L. Tracy, at 801 Surry St.
(Name) (Location)

on 7-22, 19 87. William L. Tracy
(Signature)

Regional Office Address:
7225 Wrightsville Av.
Wilmington N.C.
28403
Ph (919) 762-5548

NOV 012044

North Carolina
Division of Environmental Management

NOTICE OF VIOLATION OF

RECEIVED
JUL 30 1987
GROUNDWATER SECTION
WILMINGTON REGIONAL OFFICE

____G.S. 143-215.1 ____G.S. 143-215.108
__X__G.S. 143-215.75, et seq. ____G.S. 87-83, et seq.
____G.S._____

TO: City Gas and Transmisson Corp 801 Surry St.
(Address)

William L. Tracy President Wilmington, New Hanover
(Name of Violator) (City/County)

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Wilmington, N.C.
(Location of Violation)

on or before July 30, 19 87.

The following facts establish a violation:
On ~~February~~ July, 30, 1987, Carol Miller, with DEM observed #6 fuel oil leaking from a valve from a rundown line servicing tanks # 14 and 15. Another smaller leak was located from a valve near tanks# 11 & 12

You are required to cease the unlawful activity immediately. The following corrective actions must be taken:
Cease all discharges of petroleum products onto the lands of the State. Excavate all contaminated materials and or soils as instructed by state officals.

A written response must be filed with the Regional Office at the address below on or before ~~August 15~~ August 13, 19 87.

NOTICE is given that this and any further violations may result in enforcement actions, including civil penalties.

7-30-87 Carol M. Miller
(Date) (Representative's Signature)

I, Carol M. Miller, hereby certify that I have personally served a copy of this Notice on:

William (Bill) L Tracy, at 801 Surry St.
(Name) (Location)

on 7-22, 19 87. William L Tracy
(Signature)

Regional Office Address:
7225 Wrightsville Av.
Wilmington N.C.
28403
Ph (919) 762-5548

State of North Carolina
Department of Natural Resources and Community Development
Division of Environmental Management
512 North Salisbury Street • Raleigh, North Carolina 27611

James G. Martin, Governor
S. Thomas Rhodes, Secretary

R. Paul Wilms
Director

October 31, 1986

Mr. William L. Tracy, President
City Gas and Transmission Corporation
301 East Main Street, Suite 950
Lexington, Kentucky 40507

Subject: Oil Refining Facility Permit
New Hanover County

Dear Mr. Tracy:

In accordance with your application for Oil Refining Facility Permit submitted on June 19, 1986, we are forwarding herewith the subject Permit. This Permit is issued pursuant to the requirements of North Carolina General Statutes 143-215.100 and 15 North Carolina Administrative Code 1F .0001 et seq.

If any parts, requirements, or limitations contained in this Permit are unacceptable to you, you have the right to an adjudicatory hearing before a hearing officer upon written demand to the Assistant Secretary within 30 days following receipt of this Permit, identifying the specific issues to be contended. Unless such demand is made, this Permit shall be final and binding.

Sincerely,

ORIGINAL SIGNED BY
R. PAUL WILMS

R. Paul Wilms
Director

RPW:CW:kc

Encl.

cc: Mr. Charles Wakild
Mr. Robert Jamieson
Mr. George Everett
Mr. Ogden Gerald
Mr. Perry Nelson
WiRO, CF
Wilmington

NORTH CAROLINA

DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT

Raleigh

P E R M I T

For the Continued Operation of an Oil Refining Facility

In accordance with the provisions of Article 21A of Chapter 143, General Statutes of North Carolina as amended, and other applicable Laws, Rules and Regulations.

PERMISSION IS HEREBY GRANTED TO

City Gas and Transmission Corporation

301 East Main Street

Lexington, Kentucky 40507

FOR THE

continued operation of an oil refining facility consisting of a 15,000 barrel per day (unit design rate), low pressure, low temperature, crude oil distillation unit and related appurtenances including pipelines, which excludes any conversion processes such as crackers, reformers, etc., at the facility located at 801 Surry Street, Wilmington, North Carolina, New Hanover County.

in accordance with the application received June 19, 1986 and in conformity with the plans, specifications, and other supporting data, all of which are filed with the Department of Natural Resources and Community Development and are incorporated as part of this Permit.

This Permit shall be effective from the date of its issuance until rescinded, is nontransferable to future owners and operators, and shall be subject to the following specified conditions and limitations:

1. The company shall maintain continuous compliance with any permit issued by the Department including those issued under General Statute 143-215.1 entitled "Control of sources of water pollution; permits required," and General Statute 143.215.108 entitled "Control of sources of air pollution; permits required,".

2. The Company shall submit to the Department a representative analysis of all crude oil or other potential feedstock at least five (5) working days before that crude oil or other feedstock is unloaded at the company's facility. The Company shall review the analysis and certify to the Department that the storing, transferring, or processing of that crude oil or other feedstock will not likely cause violations of any effluent, emission or ambient standard adopted by the Commission.

3. This Permit does not replace, set aside, or otherwise relieve the Company of any obligation relative to acquisition of any other Federal, State, or Local permits or approvals.

4. This Permit may be amended to impose such terms and conditions therein as shall be deemed necessary and appropriate to effectuate the purposes of Article 21A of Chapter 143 of the General Statutes.

5. Beginning February 1, 1988 and each February 1st thereafter, the Company shall submit to the Department a description of the following aspects of its operation as of that date:

   a) kind of refining process;
   b) refining capacity;
   c) kind, character and volume of raw materials, and the source(s) of their supply;
   d) kind, character and volume of products
   e) kind, character and volume of by-products;
   f) kind, character and volume of effluent discharges to waters or lands of the State;
   g) kind, character and volume of emissions to the air;
   h) number of persons in the facility's permanent work force; and
   i) transfer of oil to and from the facility, including a statement of the amount and kind of vessel traffic which the facility's operation does or will generate.

6. This Permit does not relieve the Company of its obligation relative to the development, implementation, and maintenance of a Federal Spill Prevention, Control and Counter-measure Plan.

7. The Company shall maintain and have accessible at several locations at its facility the State emergency response telephone numbers to contact in the event of an oil or other hazardous substance spill, and shall instruct its employees of the locations of these numbers and the State spill reporting requirements under Article 21A of Chapter 143 of the General Statutes.

8. The Company shall have ready access to on a continuous basis, oil spill containment and removal equipment, sufficient in design and quantity and maintained in working order at all times, to effectively contain and remove any spill which is likely to originate on the refinery site, along the transfer pipeline corridors, or at the loading dock facilities.

9. The Company shall at all times operate the oil refinery facilities including pipelines in such manner as to effect compliance with Article 21A of Chapter 143 of the General Statutes entitled "Oil Pollution and Hazardous Substances Control".

Permit issued this 31st day of October, 1986

DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT

ORIGINAL SIGNED BY
R. PAUL WILMS

R. Paul Wilms, Director
Division of Environmental Management
By Authority of the Secretary of the Department
of Natural Resources and Community Development

Permit Number: 21A-002

DIVISION OF ENVIRONMENTAL MANAGEMENT

GROUNDWATER SECTION

May 5, 1986

MEMORANDUM

TO: Rick Shiver

FROM: Bill Jeter

SUBJECT: Subsurface Investigation, Cape Fear River Terminals, New Hanover County

In view of past practices for disposal of tank bottoms, the preliminary findings at the Mobil Oil Corporation terminal and the allegations by private citizens concerning two other terminal facilities, the central office staff agrees with your recommendation for a subsurface investigation of the area. The study will be a multi-phased, discovery investigation tailored to your proposal. The first phase will center around those terminal sites which are the subjects of citizens' allegations. The study plan will contain detailed criteria, which would trigger the expansion of the investigations latter phases.

A plan for the investigation including but not limited to well locations and specs, quality monitoring parameters and frequency, and drill site acquisitions should be prepared by your staff and submitted to the central office as soon as your schedule will permit. Approval of the submitted plan will allow for allocation of resources for scheduling and completion of the investigation.

Should you have any questions concerning this matter, please contact me at your earliest convenience.

WCJ/ls

cc: Perry Nelson
Bob Jamison
Chuck Wakild
Oscar Howard
Files

State of North Carolina
Department of Natural Resources and Community Development
512 North Salisbury Street • Raleigh, North Carolina 27611

James G. Martin, Governor

S. Thomas Rhodes, Secretary

December 6, 1985

Mr. Benjamin Horne
Route 5 Box 360
Myrtle Grove Loop Road
Wilmington, NC 28403

Dear Mr. Horne:

Thank you for your recent letter concerning the potential environmental impacts of petroleum storage practices at terminals in the Wilmington area.

The Department has initiated an investigation of sludge disposal at one terminal and is developing a plan for investigating the impact of petroleum sludge disposal practices on groundwater throughout the area.

Please feel free to communicate with the Division of Environmental Management staff at our Wilmington Regional office. They will be happy to keep you informed of the findings of our investigation.

Sincerely,

ORIGINAL SIGNED BY
S. THOMAS RHODES

S. Thomas Rhodes

cc: Paul Wilms
Bob Jameison
Charles Walkild

October 25, 1985

Mr. Tommy Rhodes
Secretary
Natural Resources & Community Development
Raleigh, North Carolina 27611

Dear Mr. Rhodes:

I would like to bring to your attention a potential serious environmental problem. This problem deals with the method of disposal of sludge from oil terminals along the Cape Fear River.

I was employed at Shell Oil Company in Wilmington for eight years from late 1940 until early 1950. I then worked for Atlantic Refinery for about eight years. During this time of employment my job responsibilities were those of a "terminal man." This job consisted of numerous duties. One of these duties was the cleaning of large storage tanks containing sludge and residue from gasoline. A hole was dug near the tank and the sludge was put there and allowed to dry. After drying the material was covered with soil. Every time the tank was cleaned, a new hole was dug. During the time of employment I was not informed of any potential environmental or health risks. I feel that there could be significant ground water contamination from the disposal of the sludge material in these unlined pits and possible contamination of sediments in the Cape Fear River.

Please let me know what steps you are taking to investigate and deal with this problem, as it could have far reaching consequences to all of us.

Respectfully yours,

Benjamin Horne

Benjamin Horne
Route 5 Box 360
Myrtle Grove Loop Road
Wilmington, NC 28403

cc: Bob Smythe, Conservation Chairperson of NC Sierra Club
Harry Payne, District Representative to North Carolina
Bob Jameison, Regional NRCD
Philip Kirk, Jr., Department of Human Resources

Received 11/19/85 [illegible]

Copy to: [illegible] Rick Shiver
From [illegible] (11-20-85 SP)

RECEIVED
NOV 19 1985
WILMINGTON REGIONAL OFFICE

October 25, 1985

Mr. Tommy Rhodes
Secretary
Natural Resources & Community Development
Raleigh, North Carolina 27611

Dear Mr. Rhodes:

I would like to bring to your attention a potential serious environmental problem. This problem deals with the method of disposal of sludge from oil terminals along the Cape Fear River.

I was employed at Shell Oil Company in Wilmington for eight years from late 1940 until early 1950. I then worked for Atlantic Refinery for about eight years. During this time of employment my job responsibilities were those of a "terminal man." This job consisted of numerous duties. One of these duties was the cleaning of large storage tanks containing sludge and residue from gasoline. A hole was dug near the tank and the sludge was put there and allowed to dry. After drying the material was covered with soil. Every time the tank was cleaned, a new hole was dug. During the time of employment I was not informed of any potential environmental or health risks. I feel that there could be significant ground water contamination from the disposal of the sludge material in these unlined pits and possible contamination of sediments in the Cape Fear River.

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Respectfully yours,

Benjamin J. Horne

Benjamin Horne
Route 5 Box 360
Myrtle Grove Loop Road
Wilmington, NC 28403

cc: Bob Smythe, Conservation Chairperson of NC Sierra Club
Harry Payne, District Representative to North Carolina
Bob Jameison, Regional NRCD
Philip Kirk, Jr., Department of Human Resources

State of North Carolina
Department of Natural Resources and Community Development
512 North Salisbury Street • Raleigh, North Carolina 27611

James G. Martin, Governor

S. Thomas Rhodes, Secretary

December 6, 1985

Mr. Donald Arthur
125 Rutledge Drive
Wilmington, NC 28403

Dear Mr. Arthur:

Thank you for your recent letter regarding the possible environmental impact of past petroleum sludge disposal practices in the Wilmington area.

Division of Environmental Management staff are currently formulating plans for investigating the effects of past practices on the groundwaters and the Cape Fear River in the Wilmington area. You may be assured that monitoring sufficient to ensure compliance with groundwater and surface water quality standards will be conducted and that appropriate action will be taken in the event pollution is detected.

Sincerely,

ORIGINAL SIGNED BY
S. THOMAS RHODES
S. Thomas Rhodes

cc: Paul Wilms
Bob Jameison
Charles Wakild

October 25, 1985

Mr. Tommy Rhodes
Secretary
Natural Resources & Community Development
Raleigh, North Carolina 27611

Dear Mr. Rhodes:

In recent years I have become painfully aware of the serious health problems that can be related to environmental issues, and I would like to know that measures are being taken to both educate others and to correct the situation.

I was employed for a number of years through 1983 with oil companies (Titan, Pace, and ATC) having terminals along the Cape Fear River. I participated in cleaning tanks and emptying the sludge in unprotected areas on the ground. I also remember replacing a blown gasket on a 4" blending line which contained tetraethyl lead, in the 1970's. Unknown amounts of tetraethyl lead must have escaped onto the ground, causing ground contamination.

For the safety of everyone concerned, these systems need to be carefully monitored, and persons working in such areas should be made aware of the serious hazards and trained in handling the materials and in the proper use of safety equipment. Such training was not available to me. Consequently, I now suffer from chronic lung disease and there is a high level of lead in my system. I know that there are regulations for monitoring and controlling such actions. My concern is that the regulations need to be strictly followed and enforced. Otherwise, everyone suffers.

I am sure that you share my concern, and hope that you will let me hear from you regarding this matter.

Sincerely,

Donald Arthur
125 Rutledge Drive
Wilmington, NC 28403

cc: Bob Smythe, Conservation Chairperson of NC Sierra Club
Harry Payne, District Representative to North Carolina
Bob Jameison, Regional NRCD
Philip Kirk, Jr., Department of Human Resources

Received 11/19/85 CW Copy to: Lee Laymon
Rick Shiver
11-20-85 SA
From: Wakild

October 25, 1985

Mr. Tommy Rhodes
Secretary
Natural Resources & Community Development
Raleigh, North Carolina 27611

Dear Mr. Rhodes:

In recent years I have become painfully aware of the serious health problems that can be related to environmental issues, and I would like to know that measures are being taken to both educate others and to correct the situation.

I was employed for a number of years through 1983 with oil companies (Titan, Pace, and ATC) having terminals along the Cape Fear River. I participated in cleaning tanks and emptying the sludge in unprotected areas on the ground. I also remember replacing a blown gasket on a 4" blending line which contained tetraethyl lead, in the 1970's. Unknown amounts of tetraethyl lead must have escaped onto the ground, causing ground contamination.

For the safety of everyone concerned, these systems need to be carefully monitored, and persons working in such areas should be made aware of the serious hazards and trained in handling the materials and in the proper use of safety equipment. Such training was not available to me. Consequently, I now suffer from chronic lung disease and there is a high level of lead in my system. I know that there are regulations for monitoring and controlling such actions. My concern is that the regulations need to be strictly followed and enforced. Otherwise, everyone suffers.

I am sure that you share my concern, and hope that you will let me hear from you regarding this matter.

Sincerely,

Donald Arthur

Donald Arthur
125 Rutledge Drive
Wilmington, NC 28403

cc: Bob Smythe, Conservation Chairperson of NC Sierra Club
Harry Payne, District Representative to North Carolina
Bob Jameison, Regional NRCD
Philip Kirk, Jr., Department of Human Resources

WILMINGTON REGIONAL OFFICE
07 JULY 1985
0947 - 1053

DONALD ARTHUR (COMPLAINANT)
125 RUTLEDGE DR.
WILMINGTON 28403
791-6261

ATC (NOW REPUBLIC REFINING) IS DEFENDANT. MR. ARTHUR WORKED IN TANK NUMBER 4 (LEADED GASOLINE TANK FROM 1972-1976). MR. ARTHUR SWEPT DUST FROM BOTTOM OF TANK, THEN STORED IN DRUMS; MATERIAL WAS DISPOSED ON LAND SURFACE ON PART OF ATC TERMINAL. MR. ARTHUR DOES NOT RECALL HOW MANY TIMES HE HELPED CLEAN OUT TANKS.

ATC FORMERLY WAS TITAN PETROLEUM (PACE OIL COMPANY), THEN TRANSOCEAN, THEN ATC, NOW REPUBLIC REFINING).

MR. ARTHUR WAS EMPLOYED THERE FROM APRIL 1972 TO AUGUST 1983.

MR. ARTHUR ALLEGES THAT HE HAD LEAD POISONING AT ONE TIME, AND HE BELIEVES HE CONTRACTED IT DURING HIS WORK WITH ATC.

ALSO, MR. ARTHUR HAS A CHRONIC LUNG DISEASE, EXPERIENCES AN ADVERSE REACTION TO CORTISONE (INJURED SHOULDER), EXPERIENCES EPISODES OF ANXIETY. MR. ARTHUR DOES SMOKE. LEAD POISONING?

HAIR SAMPLE (PUBIC REGION) SHOWS ABOVE BACKGROUND CONCENTRATIONS OF LEAD.

WORKMAN'S COMPENSATION HEARING? YES, BUT NOT FOR LEAD POISONING.

MR. ARTHUR WANTS ATC TO PAY DOCTOR BILLS.

ATC (A. JOHNSON AND CO., INC.).

MR. ARTHUR WAS NOT SPECIFICALLY REFERRED TO ME. I REFERRED HIM TO DOYER, DOYER REFERRED HIM TO TAYLOR.

DEM CANNOT ASSIST THIS MAN.

DIVISION OF ENVIRONMENTAL MANAGEMENT

May 21, 1985

MEMORANDUM

To: Perry Nelson

From: Chuck Wakild ORIGINAL SIGNED BY: CHARLES WAKILD

Subject: Request for Drilling Assistance
Cape Fear River Terminals
New Hanover County

Our work at the Mobil Oil terminal has raised questions regarding the quality of groundwaters along the Cape Fear River where oil and chemical storage and transfer facilities are located. We are told that prior to RCRA, industry practice was to dispose of tank sludges and perhaps other wastes by on-site burial.

In order to get a preliminary idea of the quality of these groundwaters, it is recommended that we put in and sample wells adjacent to the river at from six (6) to ten (10) locations. At each location, it is suggested that wells be constructed in both the surficial and the limestone aquifers (i.e. a total of 12 to 20 wells) since discharge to the river occurs from both.

It is suggested that the data obtained from these wells be used as a basis for requiring more monitoring by the sources themselves with an eye toward remedial action or RS designation, or as a basis for not doing any more work in that area at all.

Enclosed is a listing of the terminals with evaluations of potential well sites, description of products stored and a map showing locations of each facility and potential and existing well sites.

If you concur with the recommendation to use the drill crew let me know and we will identify specific sites and specific parameters to sample for.

Call me or Rick if you have any questions or wish to discuss further.

CW/sf

cc: Bob Jamieson
Wilmington Regional Office
Central Files

Site Evaluations for Monitor Well Placement
Oil and Chemical Storage Facilities
River Road - New Hanover County

The following site evaluations were conducted by Mike Marsh in March 1985. Each facility was evaluated for physical accessibility by drilling equipment for the placement of three monitor wells. One well to be placed upgradient of bulk storage tanks; one to be centrally located within a spill containment dike in close proximity to bulk storage tanks; and one to be downgradient outside any spill containment dikes and as close as possible to the Cape Fear River.

1. A.T.C.
Ron Hart - Manager
762-2431
P.O. Box 5485, Station 1, Wilmington, NC 28403-4155

Upgradient Site - Fair to good access - inside "bone yard" or in vicinity of office; small, buried gasoline tanks for fueling equipment located inside "bone yard."

Central Site - Good access inside diked areas.

Downgradient Site - Good access but may be some old fill material (bricks, stone, concrete, wood, etc.) close to river.

Products Stored - Gasoline, diesel, #6, mineral spirits, solvents, hexane, methanol, naptha.

2. Union Oil Chemical Storage
Mack Overton - Manager (Also manages Cape Fear Terminal)

No good monitor well sites.

3. Union Oil - Cape Fear Terminal
Mack Overton - Manager
762-6615
P.O. Box 2072, Wilmington, NC 28402

Good upgradient and downgradient site. No access inside diked areas but good access between diked areas in approximate north center of site.

Stores - gasoline, mineral spirits, diesel, #6 oil, solvent, hexane, methanol, naptha.

4. Amoco
Grant Mays - Manager
799-0483
P.O. Box 1696, Wilmington, NC 28402

Good access all over site - upgradient from Mobil.

Stores - Kerosene, diesel, #6, naptha, asphalt, acid, tall oil, duominc, vinsol resin.

5. Koch
Jim Strickland - Manager
799-0180
P.O. Box 3958, Wilmington, NC 28406

Several good upgradient sites. Good access inside diked areas.

Downgradient - it is suggested that one of several existing monitor wells (paraxylene spill) be used for downgradient wells. Otherwise site is accessible for construction of another downgradient well.

Stores - petroleum fuels and paraxylene.

6. Paktank
Alfred Smeilus - Assistant Manager
P.O. Box 896, Wilmington, NC 28402
763-0104

Good access for upgradient site. Inside dikes accessible for central site. Downgradient site would have to be inside lowest part of diked area adjacent to the marsh.

Site is leased to Paktank by State Ports.

Stores - ethylene glycol, liquid caustic soda (50%), methly alcohol, paraxylene.

7. Chevron
James Robeson - Manager
763-8423
Don Becks - Environmental Specialist
201-738-2353

Good site access upgradient, downgradient, central (inside dikes).

Facility stores - paving grade asphalt (primarily) naptha (1 tank - 1000 bbls) RC 30 (1000 bbls).

North boundary of site is Greenfield Creek.

Mr. Becks would like to coordinate monitoring - expressed desire to install their own monitor wells. Had scheduled monitoring for this facility in 1986 but would move up priority if needed.

8. Exxon
Jim Thompson - Manager
Jesse Bryant - Assistant Manager
799-0144
P.O. Box 1350, Wilmington, NC 28401

Headquarters
Attn. Ray Stanbaugh
P.O. Box 367, Memphis, Tennessee 38101

Good access upgradient and central. Two potential downgradient sites are space limited and on roadsides - access probably possible but not the best for downgradient well.

Stores - kerosene, diesel, #6 oil, gasoline, mineral spirits, paraxylene, aviation fuel, hexane, taluene, naptha, laktane, xylene, aromatic 100;150.

9. R.F. Cameron -

Too small to bother with.

10. Hess Corporation
Richard Skipper - Manager
763-5122
Fred Sandstrum - District Manager
404-458-3267
Suite 119, 3781 Northeast Expressway
Atlanta, Georgia 30340

Would not let me on site without written request and authorization.

From off site observation and topo sheet looks like good site access.

Product storage unknown.

11. Petroleum Fuel and Terminal (Apex)
Ken Kirby - Assistant Manager
P.O. Box 3127, Wilmington, NC 28406
799-0030

Access inside dike area. No good downgradient site. Upgradient site probably not possible. Leases nine tanks from CP&L on adjacent property.

Stores - gasoline, diesel, #6 oil.

12. CP&L Company
Contact - same as Petroleum Fuel and Terminal (Apex)

Good access upgradient and downgradient inside diked areas asphalt paved but very accessible.

Known spill of diesel 260,000 gallons at site - 195,000 gallons recovered.

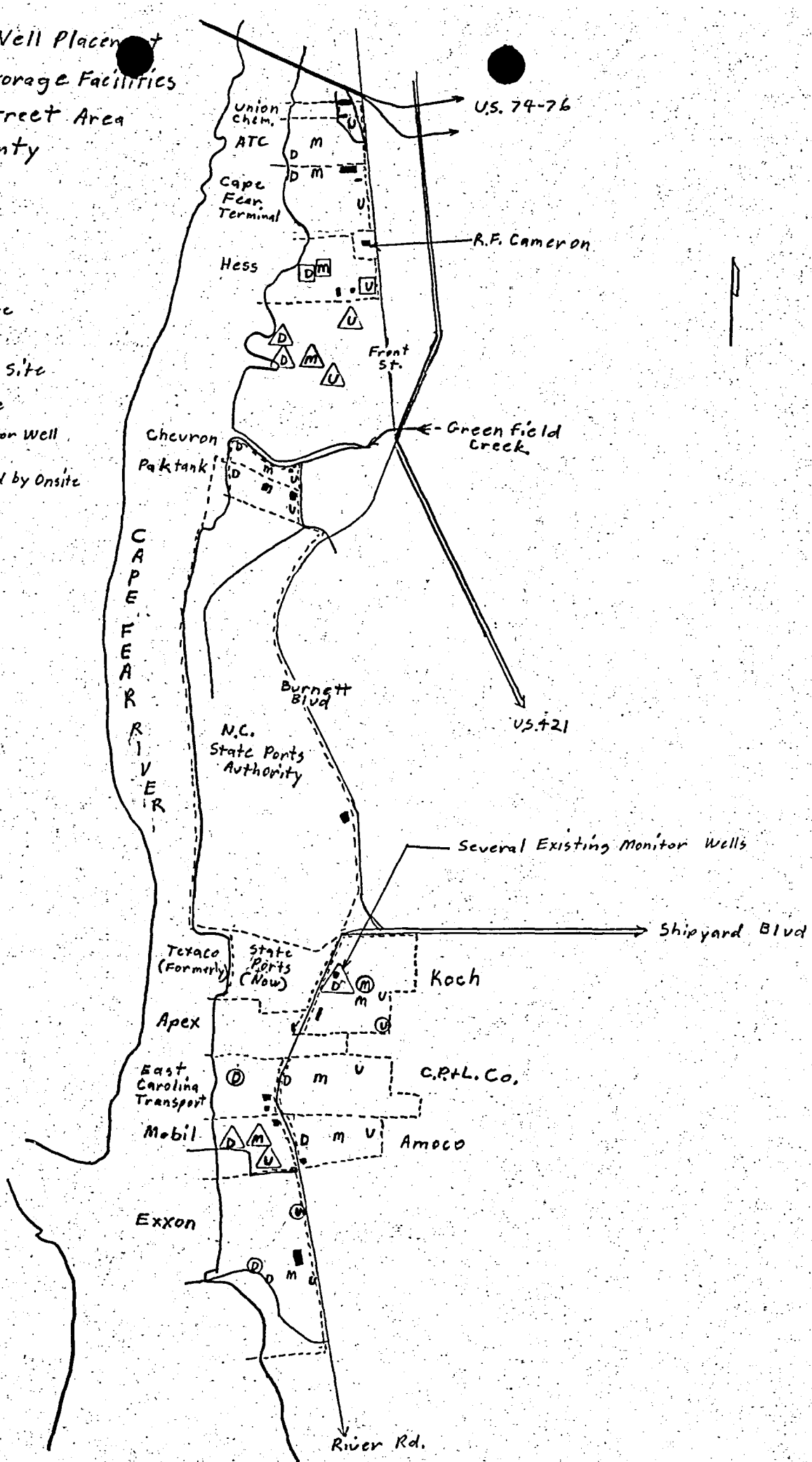
It is suggested that a second downgradient well be constructed at East Carolina Transport adjacent to the river.

13. East Carolina Transport
Not contacted

Only stores fuel for fueling tanker trucks. Good downgradient site in conjunction with CP&L - Apex facility.

Possible Monitor Well Placement
Oil and Chemical Storage Facilities
River Road / Front Street Area
New Hanover County

U - Upgradient Site
M - Midpoint Site
D Downgradient Site
(D) Alternate Site
(M) Existing Monitor Well
[U] Site Not Confirmed by Onsite Observation



CSX

On January 11, 1982, one of two bulk storage tanks owned by CSX ruptured and spilled diesel fuel into the containment area. An estimated 500,000 gallons of diesel seeped onto the Surficial Aquifer. This oil also seeped into downgradient storm sewers, ditches, and the sanitary sewer. Recovery is still ongoing.

CITY GAS AND TRANSMISSION

During 1987, several small spills of No. 6 fuel oil were discovered present on the facility.

CAPE FEAR TERMINAL

A varsol spill occurred from a ruptured tank at this site on October 9, 1976: 355,000 gallons of varsol were spilled and all but 80,000 gallons were recovered.

ATC PETROLEUM, INC., TERMINAL

Since 1987, approximately 1000 gallons of light oil has been recovered from an interceptor trench at this facility. The spilled oil is believed to have originated from leaks, slops, and spills that have occurred at this bulk storage facility.

SOUTHERN WOOD PIEDMONT

This is a CERCLA site. There are four (4) sources here that are being monitored for the following wood preservative contaminants: creosote; pentachlorophenol; and copper-chrome-arsenic (CCA).

KOCH FUELS, INC. (formerly, SUNMARK)

In January 1981, approximately 291,000 gallons of paraxylene was discovered to have leaked from a pipeline. The spilled product also was discovered present on State Port property. To date, about 240,000 gallons of paraxylene have been recovered.

On March 29, 1986, Koch Fuels also reported to DEM that gasoline and fuel oil had been discovered floating on the Surficial Aquifer under the facility. These spills originated from holes in the tank bottom and pipeline leaks. The total quantity of spilled products are unknown. Recovery is still ongoing.

In September 1981, SunMark discovered that 10,000 gallons of gas had leaked from

xc: Tom Hutzler

Tank No. 5. All but a small quantity of the spilled gas was recovered.

APEX

On September 13, 1979, DEM investigated a subsurface spill of No. 2 fuel oil at the CP&L Wilmington Terminal: 260,000 gallons of oil leaked from a hole in the bottom of Tank No. 6. The company recovered 195,000 gallons of the spilled oil.

ASPHALT AND PETROLEUM CO., INC.

On August 21, 1986, DEM personnel discovered that untreated wastewater from the washdown area of the asphalt tankers was being illegally disposed into a drainage ditch on the Company's property.

During this same investigation, two other spill areas were discovered at the site. One was near the pump area, where numerous overfills and spills of diesel fuel had occurred. The other spill occurred as a result of the illegal land disposal of residual asphalt on the property.

Dissolved constituents were discovered present in the Surficial Aquifer as a result of the site assessment conducted at this facility. Not incidentally, the results of the investigation suggest that off-site sources may have contributed to the pollution problem at this site.

AMOCO ASPHALT TERMINAL

DEM recently received information to suggest that a significant area of the Surficial Aquifer underneath this terminal has been contaminated with spilled fuel.

KOCH SOUTH TERMINAL (formerly MOBIL)

Between 1945 and 1979, it is believed that Mobil disposed of an unknown quantity of tank bottom stills into onsite excavations. This sludge originated from the cleaning out of tanks that contained leaded gas, unleaded gas and middle distillates. The analyses results from water samples collected from four monitor wells also show the pressure of dissolved gasoline in the unconfined and semi-confined aquifers.

EXXON TERMINAL

On August 2, 1985, DEM investigated an incident at the Exxon Terminal on River Road that involved leaks and spills from several sources, to include: an underground storage tank (slop tank), a vertical tank, and leaky packing glands at the pumps. The contaminant plume is a mixture of petroleum hydrocarbon fuels and solvents. The plumes are both floating product and dissolved constituents.

The total amount spilled is unknown. Recovery is still taking place.

In October 1977, 500 gallons of No. 6 fuel oil was spilled at the Exxon Terminal.

Our records also indicate a 40,000 gallon hexane spill occurred on October 21, 1976 at Tank No. 14. Recovery was not attempted.