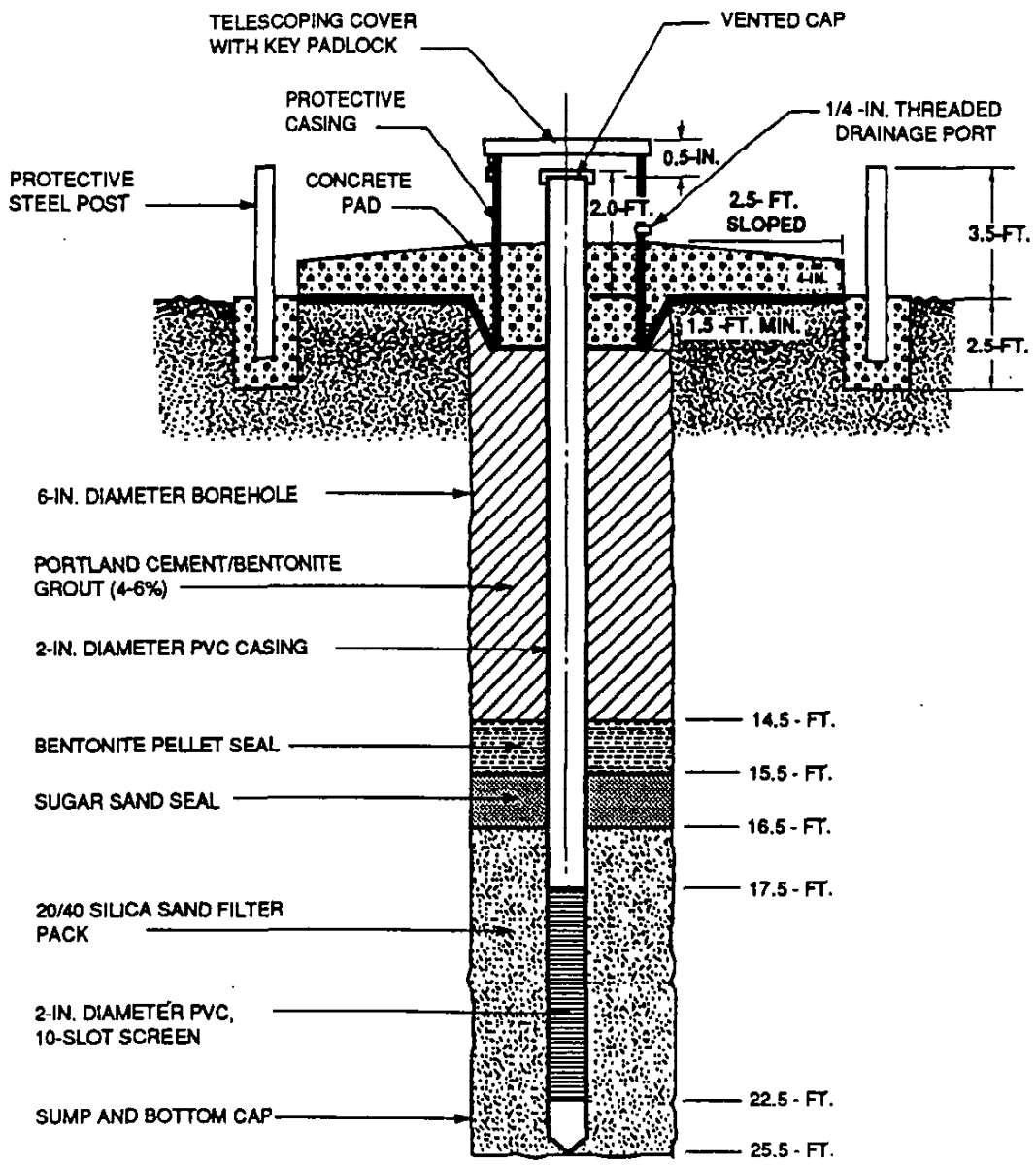
GERAGHTY & MILLER, INC.
Environmental Services

TYPICAL MONITOR-WELL CONSTRUCTION DIAGRAM

MONITOR-WELL NO. MW-45

PROJECT CHEVRON CHEMICAL CO. Belle Chase, Louisiana



NOT TO SCALE

NOTE: All Depth Measurements in Feet Below Ground Surface

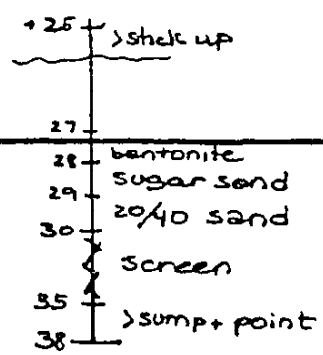
LA171.02-MW-45

BORING LOG

PROJECT NAME Chevron PROJECT NUMBER L495 BC2 PAGE 1 OF 1
LOGGED BY L. Cohen APPROX. ELEV. _____ BORING NO. MW-46
COORDINATES _____ DRILLING METHOD Mud Rotary DATE STARTED 9-26-85
GWL: DEPTH _____ ACTUAL TIME _____ DATE COMPLETED 9-26-85

CASING INFORMATION		GROUNDWATER LEVEL DATA			
SIZE	DEPTH	ACTUAL TIME	DEPTH	ACTUAL TIME	DEPTH
2" ϕ PVC	+2.5-30				
2" ϕ PVC screen	30-35				
2" ϕ PVC sump + point	35-38				

DEPTH	% SAMPLER RECOVERY	SAMPLE NO. AND TYPE	STRATA LOG	U.S.C.S. SYMBOL	MEASURED CONSISTENCY (TSF) average (tons/ft²)	DESCRIPTION
3		Auger				FILL, brown, clayey, shells, wood Hydrocarbon odor
6	75				0.67	CLAY, sandy/silty in parts, micaceous, dk grey, bl. organics, large pieces of wood, ODOR, moist.
9	90	S-1			0.88	CLAY, silty, wood pieces, black organics and oil, dk grey, some odor, moist.
12	65	S-2			0.18	CLAY, wood + shells, dk grey black organics, moist 11.5-12 SAND, micaceous, med grain, med. grey, wet
15	85	S-3			<0.10	SAND, clayey micaceous, med-fine grain, med-dk grey, roots + wood some black organics, moist to wet.
20	95	Shelby Tube			<0.10	15-19 SAND and silty CLAY interlayered, med grey, trace black organics and wood, soft, wet 19-20 CLAY, silty, med. grey, black organics, moist
25	95				<0.10	20-23 CLAY, w many shell fragments, med grey, soft, wet 23-25 CLAY w sandy/silty layers, micaceous, med grey, wet
30	98				<0.10	SAND w silty clay layers, micaceous, med to dk grey, woody, black organics, soft, wet
35	98				<0.10	SAND AS ABOVE
38	98				<0.10	SAND AS ABOVE 37-38 SAME AS ABOVE w some thin silty clay layers

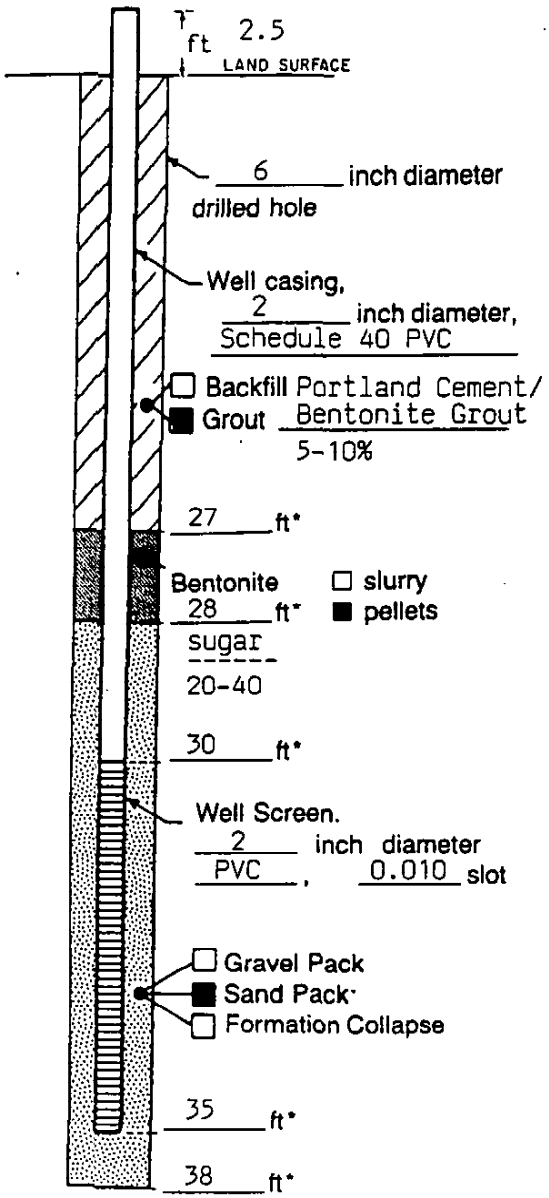


NOTE

TRACE	0 - 5 %
LITTLE	5 - 12 %
SOME	12 - 30 %
—Y	30 - 45 %
AND	45 - 55 %

GERAGHTY & MILLER, INC.
Environmental Services

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted.

*Depth Below Land Surface

Project Chevron - L0495BC2 Well MW-46
Town/City Belle Chasse
County Plaquemine State LA
Permit No. NA
Land-Surface Elevation and Datum NA feet ☐ Surveyed ☐ Estimated
Installation Date(s) September 26, 1985
Drilling Method Mud Rotary
Drilling Contractor Eustis Engineering
Drilling Fluid Mud/Water

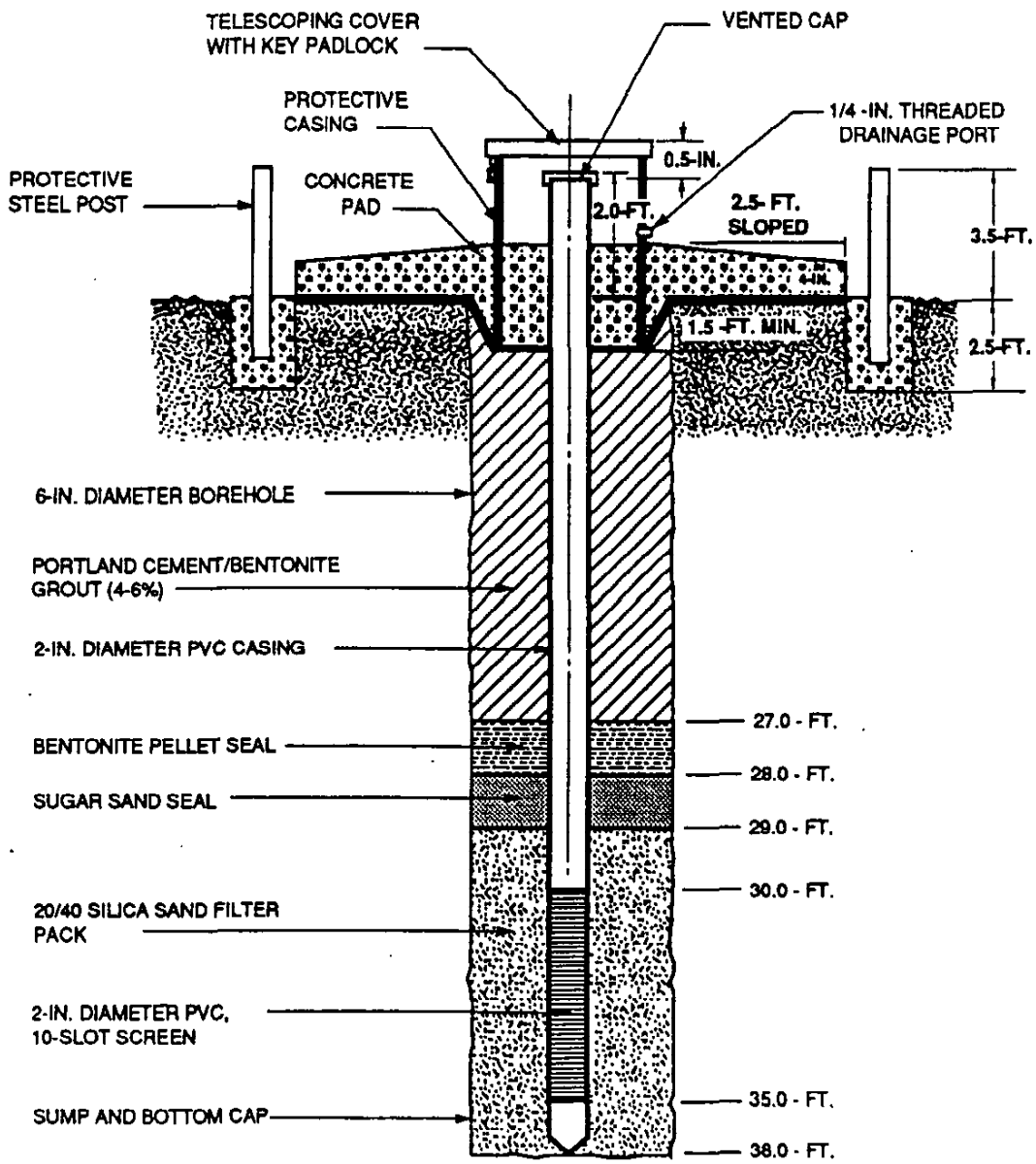
Development Technique(s) and Date(s)
airlift & Surge - September, 1985

Fluid Loss During Drilling Unknown gallc
Water Removed During Development Unknown gallc
Static Depth to Water Unknown feet below M
Pumping Depth to Water Unknown feet below M
Pumping Duration Unknown hours
Yield Unknown gpm Date NA
Specific Capacity NA gpm/ft
Well Purpose Louisiana hazardous Waste Regulations Compliance Monitoring Wells

Remarks
Formed fiflled out with information from G&M 12-30-85.

Prepared by Kipper W. Montgomery

GERAGHTY & MILLER, INC. Environmental Services	TYPICAL MONITOR-WELL CONSTRUCTION DIAGRAM	MONITOR-WELL NO. MW-46
		PROJECT CHEVRON CHEMICAL CO. Belle Chase, Louisiana



NOT TO SCALE

NOTE: All Depth Measurements in Feet Below Ground Surface

LA171.02-MW-46

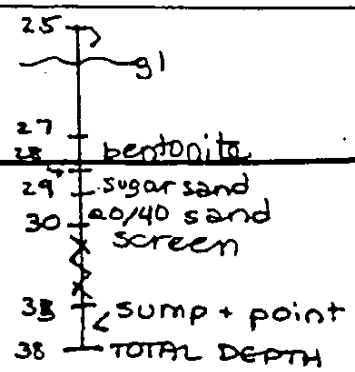
BORING LOG

PROJECT NAME Chevron PROJECT NUMBER L495BC2 PAGE 1 OF 1
LOGGED BY L. Cohen APPROX. ELEV. _____ BORING NO. MW-47
COORDINATES _____ DRILLING METHOD Mud Rotary DATE STARTED 10-2-85
GWL : DEPTH _____ ACTUAL TIME _____ DATE COMPLETED 10-2-85

CASING INFORMATION		GROUNDWATER LEVEL DATA			
SIZE	DEPTH	ACTUAL TIME	DEPTH	ACTUAL TIME	DEPTH
2" ϕ PVC	+2.5-20'				
2" ϕ PVC screen	20-25				
2" ϕ PVC sump + point	35-38				

DEPTH	% SAMPLER RECOVERY	SAMPLE NO AND TYPE	STRATA LOG	U.S.C.S. SYMBOL	MEASURED CONSISTENCY (TSF) average (tons/ft²)	DESCRIPTION
3		AUGER				Fill, loose brown soil CLAY, dk-med grey, moist
6	90	S-1			.75	CLAY, silty, Fe-rich, med-dk grey, mottled, little bl. organics trace sandy material, moist
9	90	S-2			.12	CLAY, tr. Fe + wood, dk grey, black organics, moist to wet
12	90	S-3			.27	CLAY, micaceous, silty, dk grey, black organics, roots, moist to wet 12.5-12.10 SAND, med grain, med grey
15	80				<0.10	SAND, micaceous, med. grey, wet Little silty clay layers, roots, black organics
20	95				.25	CLAY, silty w alternating sand layers, med to dk grey, some shells, moist
25	95	S-4			.13	CLAY, silty w some lenses of sand, med. to dk grey, micaceous, tr. shells, moist
30	85	S-5			<0.10	25-27 Clay, silty w some sand lenses as above 27-30 SAND, micaceous, med. grain, med grey w a little clay – tan clasts
35	90				<0.10	SAND, micaceous, med grain, med grey, small chips of wood in layers, some clayey sand layers, wet
38	90				<0.10	AS ABOVE

Shelby Tube

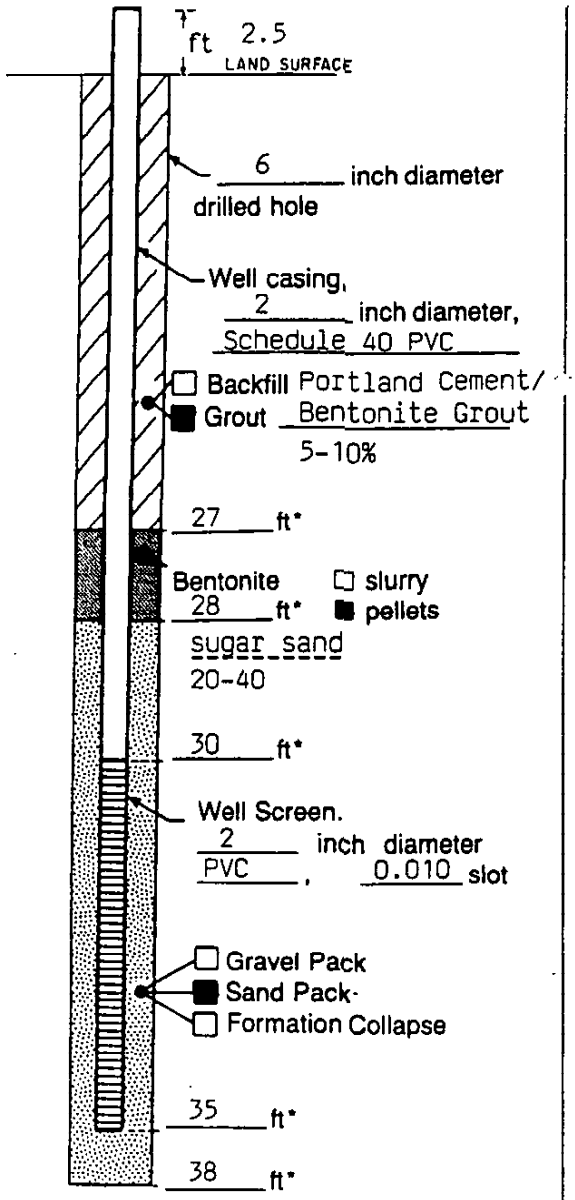


NOTE

TRACE	0 - 5 %
LITTLE	5 - 12 %
SOME	12 - 30 %
—Y	30 - 45 %
AND	45 - 55 %

GERAGHTY & MILLER, INC.
Environmental Services

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

*Depth Below Land Surface

Project Chevron - L0495BC2 Well MW-47
Town/City Belle Chasse
County Plaquemines State LA
Permit No. NA
Land-Surface Elevation
and Datum NA feet ☐ Surveyed
☐ Estimated
Installation Date(s) October 2, 1985
Drilling Method Mud Rotary
Drilling Contractor Eustis Engineering
Drilling Fluid NA

Development Technique(s) and Date(s)
Airlift & Purge - October, 1985

Fluid Loss During Drilling Unknown gall
Water Removed During Development Unknown gall
Static Depth to Water Unknown feet below M
Pumping Depth to Water Unknown feet below M
Pumping Duration Unknown hours
Yield NA gpm Date NA
Specific Capacity NA gpm/ft
Well Purpose Louisiana Hazardous Waste Regulations
Compliance Monitoring Wells

Remarks
Formed filled out with information ffrom G&M
12-30-85.

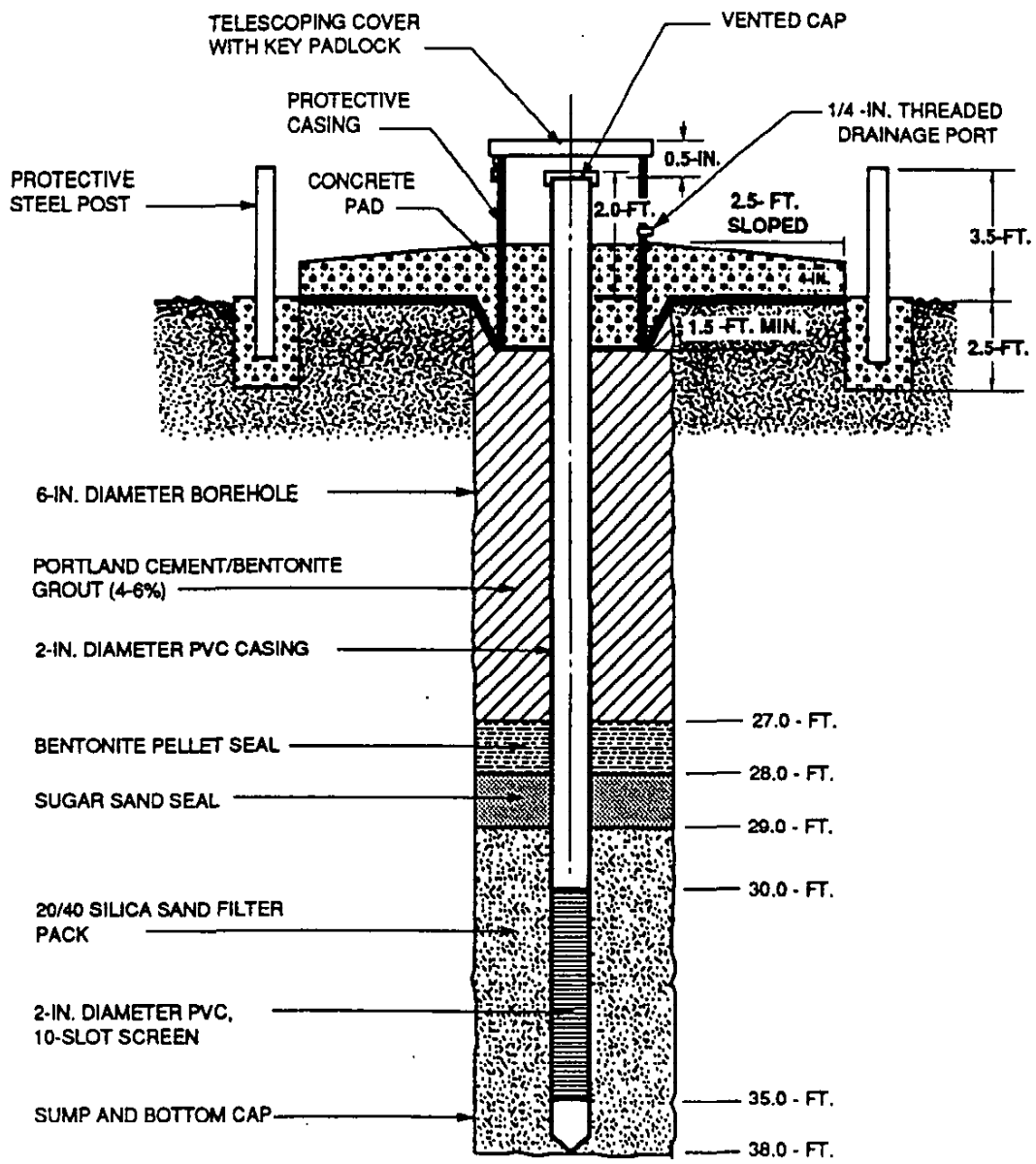
Prepared by

GERAGHTY & MILLER, INC.
Environmental Services

TYPICAL MONITOR-WELL CONSTRUCTION DIAGRAM

MONITOR-WELL NO. MW-47

PROJECT CHEVRON CHEMICAL CO. Belle Chase, Louisiana



NOT TO SCALE

NOTE: All Depth Measurements in Feet Below Ground Surface

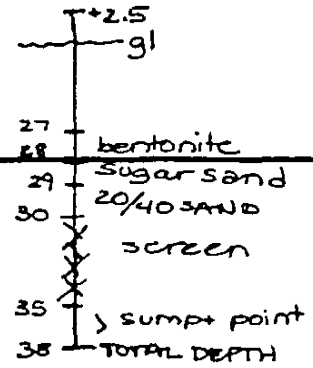
LA171.02-MW-47

BORING LOG

PROJECT NAME Chevron PROJECT NUMBER L495BC2 PAGE 1 OF 1
LOGGED BY L. Cohen APPROX. ELEV. _____ BORING NO. MW-48
COORDINATES _____ DRILLING METHOD MUD ROTARY DATE STARTED 9-24-85
GWL: DEPTH _____ ACTUAL TIME _____ DATE COMPLETED 9-24-85

CASING INFORMATION		GROUNDWATER LEVEL DATA			
SIZE	DEPTH	ACTUAL TIME	DEPTH	ACTUAL TIME	DEPTH
2"ØPVC	+2.5-30'				
2"ØPVC Screen	30-35				
2"ØPVC Sump	35-38				
+ point					

DEPTH	% SAMPLER RECOVERY	SAMPLE NO AND TYPE	STRATA LOG	U.S.C.S. SYMBOL	MEASURED CONSISTENCY (TSF) / Penetrometer tons/sq.ft (avg 85)	DESCRIPTION
		AUGER				SHELL, FILL, Brown
3						
	40				1.80	FILL WITH CLAY, silty layers, dark grey, black organics, hydrocarbon odor
6						
	40	S-1			1.20	CLAY, with fill and pebbles, some silt, grey, black organics, odor.
9						
	75	S-2			1.13	CLAY, many silty parts, medium grey/brown, with some Fe stains, black + brown oily material, odor, moist
12						
	75	S-3			0.47	CLAY, with silt, grey/brown, black oily zones, wood pieces soft, moist.
15						
	50	SHELBY			>0.15	CLAY, silty in parts, med.-dk grey, lots of wood chunks (processed wood or tree limbs) black organics, little oily zones, slight odor wet
18						
	75					18-20 as above 20-21 Sand, micaceous, medium grey, medium-fine grained, soft slight odor, wet
21						
	95					SAND (as above) with clay layers CLAY w sand layers, micaceous, med grey, soft, very wet.
24						
	95					CLAY and Sand alternating layers - description as above. last 6" sandy CLAY w shells, med grey, smooth soft, wet
27						
	90					27-29 CLAY, sandy w shells, med grey smooth, soft, wet 29-30 SAND, med grained, med grey, wet
30						
	90					30-32 Sand with Clay layers, med. grained, med grey, wet 32-34 Sand, micaceous, med grey, med grain, wet
34						
	90					SAND, micaceous, med. grey, med. grain, wet
37						
	90					SAND AS ABOVE
38						



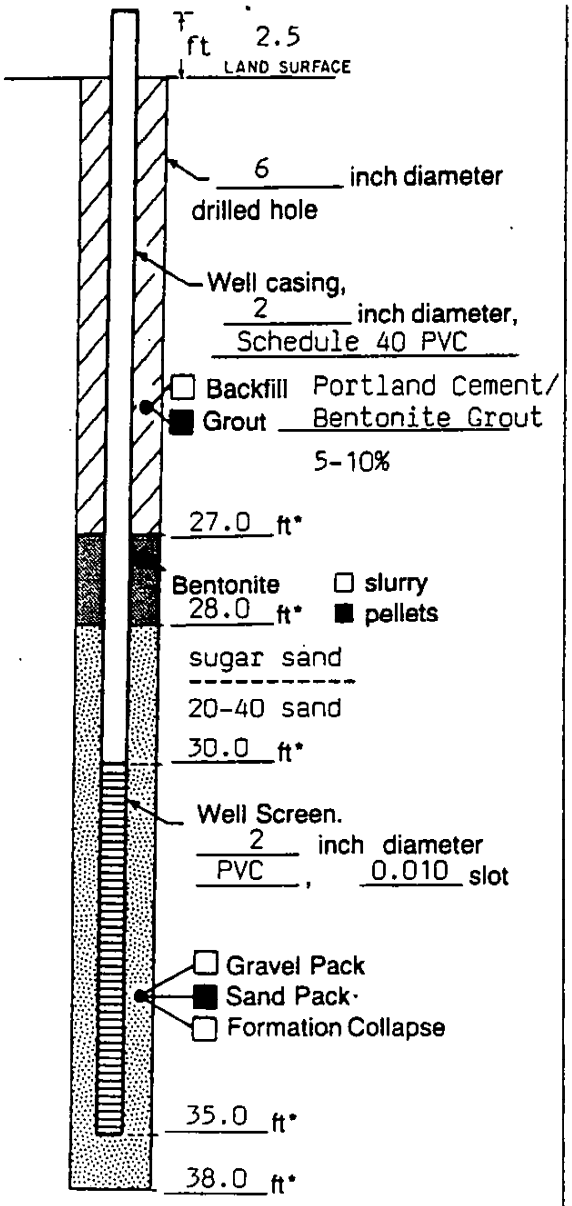
NOTE

TRACE	0 - 5 %
LITTLE	5 - 12 %
SOME	12 - 30 %
—Y	30 - 45 %
AND	45 - 55 %

Geraghty & Miller, Inc

GERAGHTY & MILLER, INC.
Environmental Services

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted.

*Depth Below Land Surface

Project: Chevron - L0495BC2 Well: MW-48
Town/City: Belle Chasse
County: Plaquemine State: LA
Permit No.: NA
Land-Surface Elevation and Datum: NA feet ☐ Surveyed ☐ Estimated
Installation Date(s): September 24, 1985
Drilling Method: Hand rotary
Drilling Contractor: Eustis Engineering
Drilling Fluid: Mud/Water

Development Technique(s) and Date(s)
Airlift & surge - September, 1985

Fluid Loss During Drilling: Unknown gallc
Water Removed During Development: Unknown gallc
Static Depth to Water: Unknown feet below M
Pumping Depth to Water: Unknown feet below M
Pumping Duration: Unknown hours
Yield: NA gpm Date: NA
Specific Capacity: NA gpm/ft
Well Purpose: Louisiana hazardous Waste Regulations Compliance Monitoring Wells

Remarks:
Formed filled out with information from G&M 12-30-85.

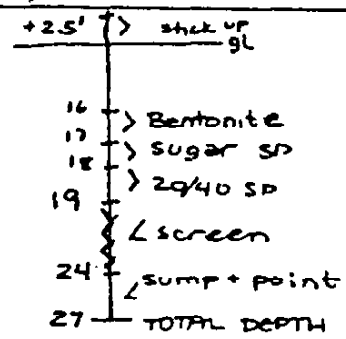
Prepared by: Kipper W. Montgomery

BORING LOG

PROJECT NAME CHEVRON PROJECT NUMBER L0495BC2 PAGE 1 OF 1
LOGGED BY L. COHEN APPROX. ELEV. _____ BORING NO. MW-49
COORDINATES _____ DRILLING METHOD Mud Rotary DATE STARTED 9-23-85
GWL : DEPTH _____ ACTUAL TIME _____ DATE COMPLETED 9-23-85

CASING INFORMATION		GROUNDWATER LEVEL DATA			
SIZE	DEPTH	ACTUAL TIME	DEPTH	ACTUAL TIME	DEPTH
2"ϕ PVC	+2.5-19				
2"ϕ PVC screen	19-24				
2"ϕ sump + pt	24-27				

DEPTH	% SAMPLER RECOVERY	SAMPLE NO. AND TYPE	STRATA LOG	U.S.C.S. SYMBOL	MEASURED CONSISTENCY (TSF) Average (tons/ft²)	DESCRIPTION
1						SHELL, FILL
3	80	S-1			1.00	CLAY, trace sand, fill, pebbles, wood, shells, grey/brown, stiff, moist, BLACK OILY SUBSTANCE, ODOR (Hydrocarbon)
6	60	S-2			0.50	CLAY, AS ABOVE w SHELL and wood and black organics
9	98	S-3			0.25	CLAY, silty, some small sandy layers and black oily layers, tr Fe, dark grey, odor moist
12	80				0.25	CLAY, silty, oil streaks, wood pieces, roots, dk+ medium grey, smooth, wet, hyd. odor, Fe.
15	95	S-4			0.70	CLAY, some silt, oily streaks, woody organics, med. grey, smooth, wet.
20	95	Shelby Tube			0.10	CLAY, silty w black organics having a hydrocarbon odor (oil?), wood, roots, med. grey, wet. 18-20 Sand, w clayey layers, grey, med-fine grain, wet.
25	40				<.10	SAND w clay layers, micaceous, med grey, med→fine grain, v. soft, wet, clay content increased at bottom
28	70				<.10	SAND w clay layers, silty, micaceous, many shells, dark grey, soft, wet.



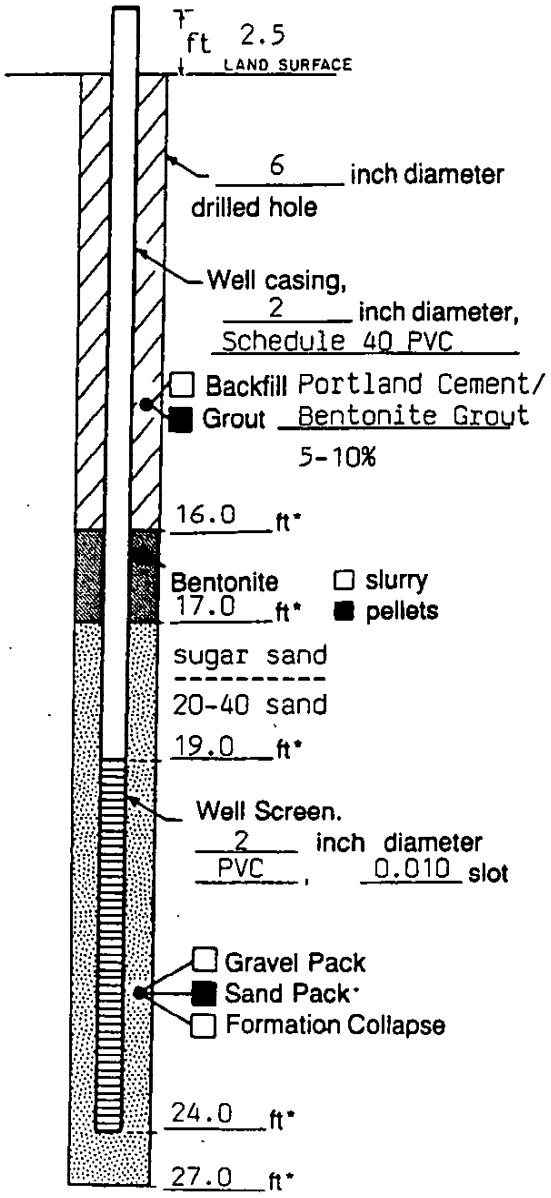
PLUGGED BACK TOTAL DEPTH=27'

NOTE

TRACE	0 - 5 %
LITTLE	5 - 12 %
SOME	12 - 30 %
—Y	30-45 %
AND	45-55 %

GERAGHTY & MILLER, INC.
Environmental Services

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted.

*Depth Below Land Surface

Project: Chevron - L0495BC2 Well: MW-49
Town/City: Belle Chasse
County: Plaquemine State: LA
Permit No.: NA
Land-Surface Elevation and Datum: NA feet ☐ Surveyed ☐ Estimated
Installation Date(s): September 23, 1985
Drilling Method: Mud Rotary
Drilling Contractor: Eustis Engineering
Drilling Fluid: Mud/Water

Development Technique(s) and Date(s)
Airlift & surge - September 23, 1985

Fluid Loss During Drilling: Unknown gall
Water Removed During Development: Unknown gall
Static Depth to Water: Unknown feet below M
Pumping Depth to Water: Unknown feet below M
Pumping Duration: Unknown hours
Yield: NA gpm Date: NA
Specific Capacity: NA gpm/ft
Well Purpose: Louisiana Hazardous Waste Regulations compliance Monitoring Wells

Remarks:
Formed filled out with information from G&M 12-30-85.

Prepared by: Kipper W. Montgomery

LOG OF BORING

PROJECT: Solid Waste Lan .ll
LOCATION: 25-Acre Property, Belle Chasse, Louisiana

CLIENT: Chevron Chemical Company
Belle Chasse, Louisiana

BORING: B-6 (MW-52)
FILE: 90B465C-4
DATE: 2/12/90
TECHNICIAN: KL
APPROVED: KL
PAGE: 1 of 2

Dry Augered: 0' to 6' Wash Bored: 6' to 50'

Free water encountered at a depth of 1' during dry augering.

Coordinates: N 415,427 E 2,418,328 Ground Surface Elevation: 6.0

DEPTH (FEET)	SYMBOL	SAMPLE	SPT (b/ft)	Comp. Strength (tsf)	Moist. Content (%)	Dry Density (pcf)	L.L. (%)	P.I. (%)	Description of Stratum
0					31				Soft to medium brown, light gray and gray Silty CLAYS with clay pockets, shell fragments, roots and organics (CL)
					34		51	26	Soft to medium brown, light gray and gray CLAYS (CH)
				0.45	42	78			---with silt pockets and streaks to 4' ---gray and brownish-gray, 4' to 8'
5									---slickensided and jointed, 4' to 10'
			(1)		58		94	67	---with small roots to 6'
				0.49	56	68	68	42	---gray and light gray with roots, wood and a trace of silt below 8'
10			(2)		51				
				0.27	49	74			Laminated layers and lenses of soft gray CLAYS, Silty CLAYS, and Clayey SILTS with wood and small roots (CH/CL/ML)
15					44		42	17	
					28				
			6 b/f						Loose gray Silty SANDS with a trace of clay (SM)
20			4 b/f (3)						Loose gray Sandy SILTS with clay and some wood (ML)
			2 b/f		83				Soft to medium gray CLAYS with a trace of fine sand and shell fragments (CH)
25			1 b/f		64		83	54	
				0.47	53	68			---with sandy silt pockets below 26'
					54		55	32	
30			NR						Loose gray Sandy SILTS with clay streaks (ML)
			12 b/f (4)						
35			8 b/f						
			2 b/f						Soft gray CLAYS with silt and sand pockets and streaks and shell fragments (CH)
40					34		39	14	Alternating and laminated layers of soft gray CLAYS, Sandy SILTS, and Silty SANDS with organic matter (CH/ML/SM)

Continued Next Page

(1) Kv = 1.68 x 10EE(-7) cm/sec.
(2) Kv = 2.78 x 10 EE(-7) cm/sec.
(3) 76.0% passing the No. 200 sieve. (4) 76.5% passing the No. 200 sieve.
NR = No Recovery

Unified Soil Classifications based on limited laboratory test data and visual observations.

Woodward-Clyde Consultants

LOG OF BORING

PROJECT: Solid Waste Lan. .ll
LOCATION: 25-Acre Property, Belle Chasse, Louisiana

CLIENT: Chevron Chemical Company
Belle Chasse, Louisiana

BORING: B-6
FILE: 90B465C-4
DATE: 2/12/90
TECHNICIAN: KL
APPROVED: KL
PAGE: 2 of 2

DEPTH (FEET)	SYMBOL	SAMPLE	SPT (b/ft)	Comp. Strength (tsf)	Moist. Content (%)	Dry Density (pcf)	L.L. (%)	P.I. (%)	Description of Stratum
40					71				Alternating and laminated layers of soft gray CLAYS, Sandy SILTS, and Silty SANDS with organic matter (CH/ML/SM)
45				0.58	35	88			Medium gray Silty CLAYS with silt and sand pockets, lenses and streaks (CL)
50									Bottom of boring at 50'. Borehole grouted full depth.

Unified Soil Classifications based on limited laboratory test data and visual observations.

Woodward-Clyde Consultants

LOG OF BORING

PROJECT: Solid Waste Land...
LOCATION: 25-Acre Property, Belle Chasse, Louisiana

CLIENT: Chevron Chemical Company
Belle Chasse, Louisiana

BORING: B-9 (MW-53)
FILE: 90B465C-4
DATE: 2/23/90
TECHNICIAN: RES
APPROVED:
PAGE: 1 of 2

Dry Augered: 0' to 2' Wash Bored: 2' to 50'

Free water encountered on surface before drilling activities.

Coordinates: N 414,588 E 2,417,962 Ground Surface Elevation: 6.2

Depth (Feet)	Symbol	Sample	SPT (b/ft)	Comp. Strength (tsf)	Moist. Content (%)	Dry Density (pcf)	L.L. (%)	P.I. (%)	Description of Stratum
0					29		76	53	Medium light gray and tan CLAYS with organic matter (CH)
					33				
				0.49	48	70			---with silt pockets and streaks to 4'
5									---light gray and brown, jointed, 4' to 8'
				0.49	54	68			---soft to medium below 4'
									---with wood fragments, 6' to 10'
					54				
10					42				---with calcareous nodules below 10'
			(1)		38				Very soft gray Clayey SILTS with wood fragments and a trace of fine sand (ML)
					43				
15									Laminated layers and lenses of soft gray CLAYS and Silty SANDS with wood fragments (CH/SM)
			(2)	0.20	42	79			
									Firm gray Silty SANDS with a trace of clay (SM)
			21 b/f (3)						
20			19 b/f						
			18 b/f (4)						
25			4 b/f						
				0.72	65	61			Medium gray CLAYS with silty sand pockets and layers (CH)
					39				
30					39		50	31	---with shell fragments to 30'
									---with laminated sandy silt layers and lenses below 30'
			NR						
				0.35	56	71			---with a trace of organic matter below 34'
35					59				
					46		59	36	Laminated layers of soft gray CLAYS, Clayey SILTS and Sandy SILTS with a trace of organic matter (CH/ML)
40									

Continued Next Page

(1) 94.4% passing the No. 200 sieve. (2) Unconsolidated, undrained traixial compression test run at 6.2 psi confining pressure. (3) 30.4% passing the No. 200 sieve. (4) 12.9% passing the No. 200 sieve.

NR = No Recovery.

Unified Soil Classifications based on limited laboratory test data and visual observations.

Woodward-Clyde Consultants

LOG OF BORING

PROJECT: Solid Waste Land.
LOCATION: 25-Acre Property, Belle Chasse, Louisiana

CLIENT: Chevron Chemical Company
Belle Chasse, Louisiana

BORING: B-9
FILE: 90B465C-4
DATE: 2/23/90
TECHNICIAN: RES
APPROVED: KZ
PAGE: 2 of 2

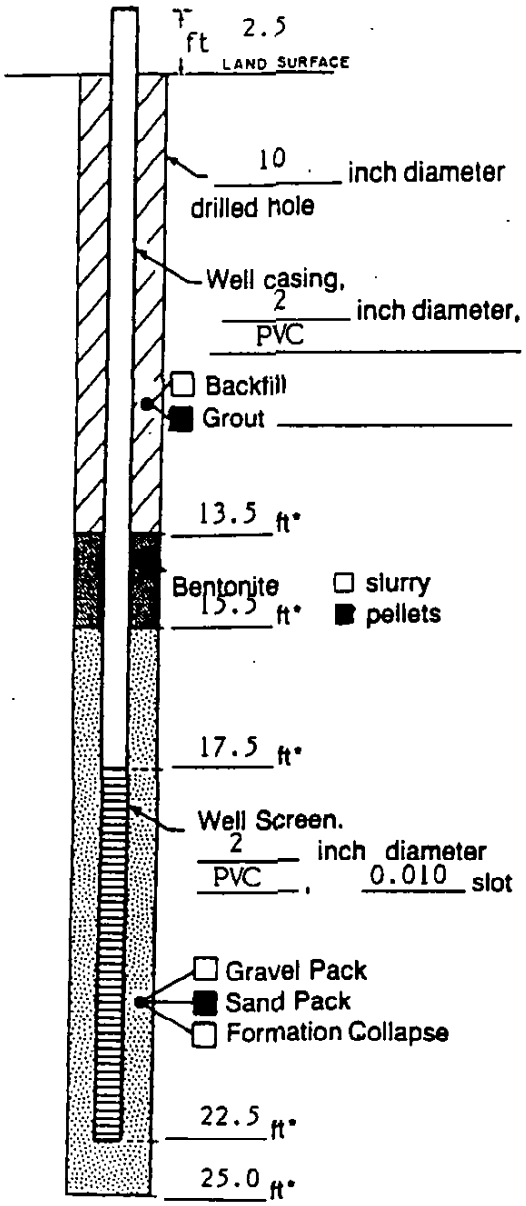
DEPTH (FEET)	SYMBOL	SAMPLE	SPT (b/ft)	Comp. Strength (tsf)	Moist. Content (%)	Dry Density (pcf)	L.L. (%)	P.I. (%)	Description of Stratum
40			4 b/f						Laminated layers of soft gray CLAYS, Clayey SILTS and Sandy SILTS with a trace of organic matter (CH/ML)
				0.44	54	71			Soft gray CLAYS with a peat layer and silty sand pockets and layers (CH)
45									
					60				Alternating layers of soft gray CLAYS and Clayey SILTS with a trace of fine sand (CH/ML)
50									Bottom of boring at 50' Borehole grouted full depth

Unified Soil Classifications based on limited laboratory test data and visual observations.

Woodward-Clyde Consultants

GERAGHTY & MILLER, INC.
Environmental Services

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted.

*Depth Below Land Surface

Project: Chevron Chemical - LA385.01 Well: 54
Town/City: Belle Chasse
County: Plaquemines State: Louisiana
Permit No.: N/A
Land-Surface Elevation and Datum: 6 feet ☐ Surveyed ☐ Estimated
Installation Date(s): 3/7/91
Drilling Method: Hollow Stem
Drilling Contractor: Eustis Engineering
Drilling Fluid: N/A

Development Technique(s) and Date(s): N/A

Fluid Loss During Drilling: N/A gall
Water Removed During Development: N/A gall
Static Depth to Water: N/A feet below M
Pumping Depth to Water: N/A feet below M
Pumping Duration: N/A hours
Yield: N/A gpm Date: N/A
Specific Capacity: N/A gpm/ft
Well Purpose: Monitor well for landfill area

Remarks:

Prepared by: Mike Manuel

G&M Form 05 12-88

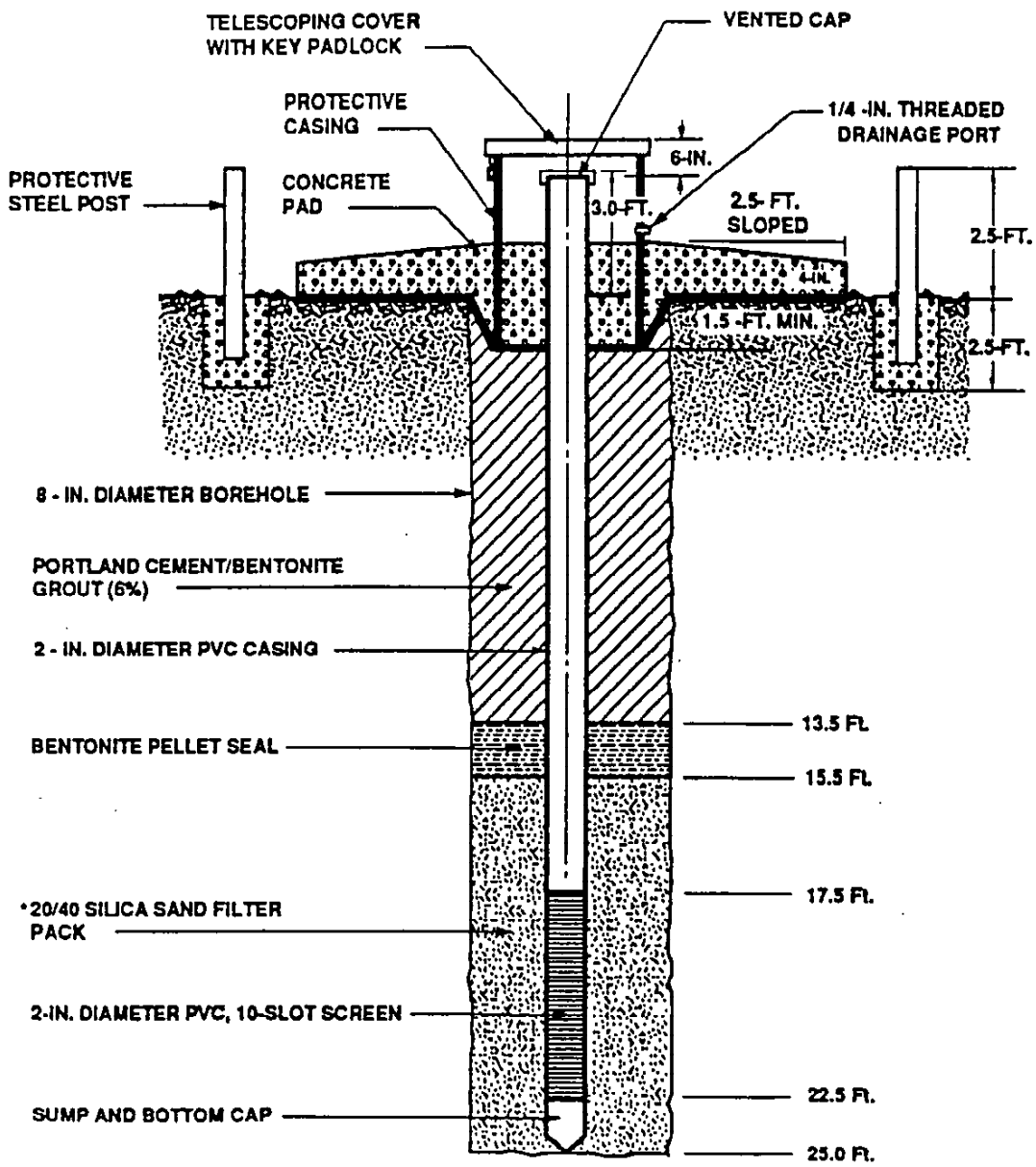
Southport 89-0978

GERAGHTY & MILLER, INC.
Ground-Water Consultants

MONITOR-WELL CONSTRUCTION DIAGRAM

BORING NO. MW - 54

PROJECT CHEVRON CHEMICAL CO.
Belle Chasse, Louisiana



NOT TO SCALE

NOTE: * Depth May Vary Due To Site Conditions

NOTE: All Depth Measurements in Feet Below Ground Surface

MW-S4 Between B-15 + B-16

LOG OF BORING

PROJECT: Solid Waste Landi...
LOCATION: 25-Acre Property, Belle Chasse, Louisiana

CLIENT: Chevron Chemical Company
Belle Chasse, Louisiana

BORING: B-15
FILE: 90B465C-4
DATE: 2/16/90
TECHNICIAN: RES
APPROVED: RX
PAGE: 1 of 2

Dry Augered: 0' to 4' Wash Bored: 4' to 51.5'

Free water encountered at a depth of 4' during dry augering. Water level rose to a depth of 2' after an observation period of 1 minute.

Coordinates: N 414,325 E 2,418,553 Ground Surface Elevation: 8.5

DEPTH (FEET)	SYMBOL	SAMPLE	SPT (b/ft)	Comp. Strength (tsf)	Moist. Content (%)	Dry Density (pcf)	L.L. (%)	P.I. (%)	Description of Stratum
0					31				Medium tan and light gray Silty CLAYS with ferrous nodules and roots (CL)
				0.31	32	82			Soft tan, light gray and gray CLAYS with silt streaks and pockets and a trace of fine sand (CH)
					36		39	13	Medium tan and light gray Silty CLAYS with clay pockets and a trace of fine sand (CL)
5					36				
				0.50	36	85			Medium gray and tan CLAYS with sandy silt streaks and pockets and ferrous nodules (CH)
10					39				Very soft to soft gray Clayey SILTS (ML)
				0.36	38	79	38	10	---with fine sand below 12'
15					38				---with laminated layers and lenses of clay, silt and sand, 14' to 16
				0.50	41	80			Alternating and laminated layers and lenses of soft to medium gray CLAYS and Clayey SILTS with a fine sand pockets (CH/ML)
20					38		46	20	
				0.47	45	81			
25					60				
				0.25	44	78			
					52		60	24	Soft gray CLAYS (CH)
30					64				---with laminated silt lenses and fine sand to 30' ---with sandy silt pockets and streaks, 30' to 34'
				0.45	66	60			---with brown clay pockets, 32' to 34'
35					59				---with laminated layers and lenses of clayey silts and fine sands below 34'
				0.68	57	66			
					59				
40									

Continued Next Page

Unified Soil Classifications based on limited laboratory test data and visual observations.

Woodward-Clyde Consultants

LOG OF BORING

PROJECT: Solid Waste Landfill
LOCATION: 25-Acre Property, Belle Chasse, Louisiana

CLIENT: Chevron Chemical Company
Belle Chasse, Louisiana

BORING: B-15
FILE: 90B465C-4
DATE: 2/16/90
TECHNICIAN: RES
APPROVED: ZZ
PAGE: 2 of 2

DEPTH (FEET)	SYMBOL	SAMPLE	SPT (b/ft)	Comp. Strength (tsf)	Moist. Content (%)	Dry Density (pcf)	L.L. (%)	P.I. (%)	Description of Stratum
40					62		88	57	Soft gray CLAYS with laminated layers and lenses of clayey silts and fine sands (CH)
45			(1)	0.65	23	93			Alternating and laminated layers and lenses of medium gray CLAYS and Clayey SILTS with fine sand pockets (CH/ML)
50			28 b/f (2)						Firm gray SANDS, slightly silty (SP-SM)
									Bottom of boring at 51.5' Borehole grouted full depth

(1) Unconsolidated, undrained triaxial compression test run at 17.9 psi confining pressure.
(2) 26.7% passing the No. 200 sieve.

Unified Soil Classifications based on limited laboratory test data and visual observations.

Woodward-Clyde Consultants

LOG OF BORING

PROJECT: Solid Waste Landfill
LOCATION: 25-Acre Property, Belle Chasse, Louisiana
CLIENT: Chevron Chemical Company
Belle Chasse, Louisiana

BORING: B-16
FILE: 90B465C-4
DATE: 2/15/90
TECHNICIAN: RES
APPROVED: KK
PAGE: 1 of 2

Dry Augered: 0' to 2' Wash Bored: 2' to 50'

Free water encountered at a depth of 2' during dry augering. Water level rose to a depth of 1' after an observation period of 1 minute.

Coordinates: N 414,585 E 2,418,693 Ground Surface Elevation: 8.4

DEPTH (FEET)	SYMBOL	SAMPLE	SPT (b/ft)	Comp. Strength (tsf)	Moist. Content (%)	Dry Density (pcf)	L.L. (%)	P.I. (%)	Description of Stratum
0									Medium gray, light gray and tan CLAYS with silt pockets and streaks, ferrous nodules, and organic matter (CH)
				0.47	35	82			Soft tan and light gray Silty CLAYS with ferrous nodules (CL)
					38				---very soft, 4' to 6'
5									---with a trace of fine sand below 4'
				0.62	35	86			---medium, with clay pockets below 6'
					41				
10			(1)		30				Medium light gray Clayey SILTS with clay pockets and streaks and a trace of fine sand (ML)
			(2)	0.26	32	86			---soft below 12'
15					42				Alternating and laminated layers and lenses of soft gray CLAYS and Clayey SILTS with traces of fine sand (CH/ML)
			NR						
			(3)	0.31	36	82			
20					55		76	49	---with soft light gray clay layer from 20' to 21'
					58				
				0.65	65	61			Soft to medium light gray and reddish brown CLAYS with silty sand pockets and streaks (CH)
25					64				
				0.48	65	61			
30					58				
				0.31	54	67			---jointed, 32' to 34'
					58				
35					59				---with sandy silt lenses below 36'
				0.44	56	64			---jointed, 38' to 40'
40									

Continued Next Page

(1) 94.1% passing the No. 200 sieve.
(2) Unconsolidated, undrained triaxial compression test run at 4.8 psi confining pressure.
(3) Unconsolidated, undrained triaxial compression test run at 7.0 psi confining pressure.
NR = No Recovery.

Unified Soil Classifications based on limited laboratory test data and visual observations.

Woodward-Clyde Consultants

LOG OF BORING

PROJECT: Solid Waste Landfill
LOCATION: 25-Acre Property, Belle Chasse, Louisiana

CLIENT: Chevron Chemical Company
Belle Chasse, Louisiana

BORING: B-16
FILE: 90B465C-4
DATE: 2/15/90
TECHNICIAN: RES
APPROVED: TX
PAGE: 2 of 2

DEPTH (FEET)	SYMBOL	SAMPLE	SPT (b/ft)	Comp. Strength (tsf)	Moist. Content (%)	Dry Density (pcf)	L.L. (%)	P.I. (%)	Description of Stratum
40									Soft to medium light gray and reddish brown CLAYS with silty sand pockets, lenses and streaks (CH)
					57				Alternating and laminated layers and lenses of medium gray CLAYS and Sandy SILTS (CH/ML)
45									
				0.66	50	68			
50									Bottom of boring at 50' Borehole grouted full depth

Unified Soil Classifications based on limited laboratory test data and visual observations.

Woodward-Clyde Consultants

LOG OF BORING

PROJECT: Solid Waste Landf..
LOCATION: 25-Acre Property, Belle Chasse, Louisiana

CLIENT: Chevron Chemical Company
Belle Chasse, Louisiana

BORING: B-17 (MW-SS)
FILE: 90B465C-4
DATE: 2/15/90
TECHNICIAN: RES
APPROVED: [illegible]
PAGE: 1 of 2

Dry Augered: 0' to 4' Wash Bored: 4' to 50'

Free water encountered at a depth of 4' during dry augering. Water level rose to a depth of 3' after an observation period of 1 minute.

Coordinates: N 414,830 E 2,418,788 Ground Surface Elevation: 8.3

DEPTH (FEET)	SYMBOL	SAMPLE	SPT (b/ft)	Comp. Strength (tsf)	Moist. Content (%)	Dry Density (pcf)	L.L. (%)	P.I. (%)	Description of Stratum
0					30				Soft to medium brown tan and light gray Silty CLAYS with ferrous nodules (CL)
					33		44	21	
5				0.28	34	80			Very soft brown, tan and light gray Clayey SILTS with ferrous nodules (ML)
					34	88			---with clay pockets and organic matter to 6'
					43		38	13	
10			2 b/f						Alternating and laminated layers and lenses of very soft and loose gray and light gray CLAYS, Clayey SILTS, and Sandy SILTS (CH/ML)
			(1)		43	80	41	19	
15				0.38	36	82			
			4 b/f						
					37				
20				0.34	44	78			
					28				
25				0.51	46	70			
					29				
					37				
30					63				Soft gray CLAYS with sandy silt lenses, streaks and pockets (CH)
				0.45	60	65			
35					63				----gray and reddish-brown, 34' to 36'
					52				Alternating layers and lenses of soft gray CLAYS and loose Sandy SILTS (CH/ML)
40					66				Medium gray CLAYS with sandy silt lenses and layers (CH)

Continued Next Page

(1) Kv = 1.67 x 10EE(-7) cm/sec.

Unified Soil Classifications based on limited laboratory test data and visual observations.

LOG OF BORING

PROJECT: Solid Waste Landfill
LOCATION: 25-Acre Property, Belle Chasse, Louisiana
CLIENT: Chevron Chemical Company
Belle Chasse, Louisiana

BORING: B-17
FILE: 90B465C-4
DATE: 2/15/90
TECHNICIAN: RES
APPROVED: [illegible]
PAGE: 2 of 2

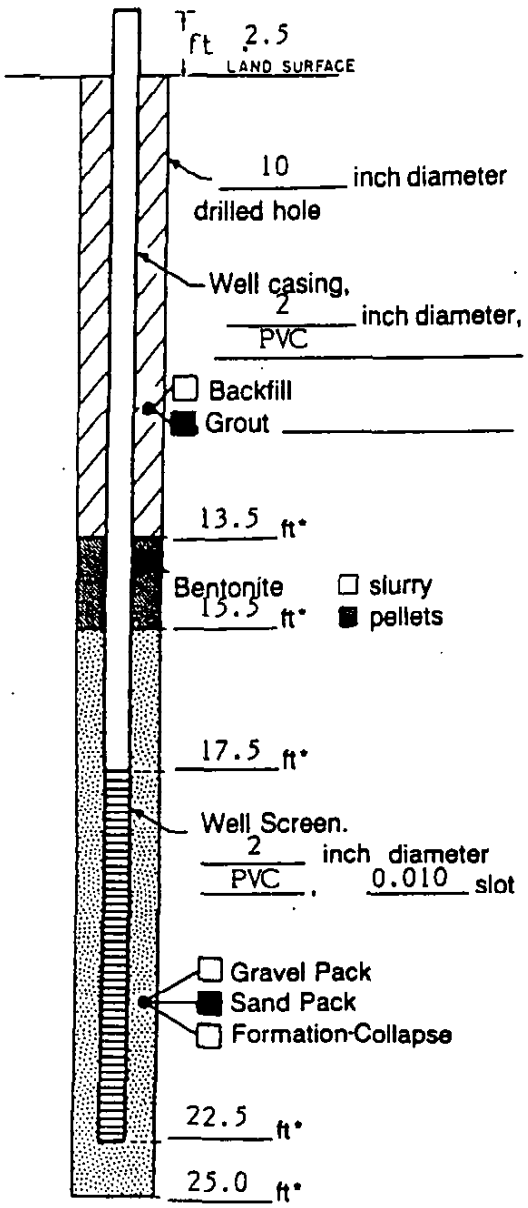
DEPTH (FEET)	SYMBOL	SAMPLE	SPT (b/ft)	Comp. Strength (tsf)	Moist. Content (%)	Dry Density (pcf)	L.L. (%)	P.I. (%)	Description of Stratum
40									Medium gray CLAYS with sandy silt lenses and layers (CH)
				0.68	60	66			
45									
					64				
50									Bottom of boring at 50'
									Borehole grouted full depth

Unified Soil Classifications based on limited laboratory test data and visual observations.

Woodward-Clyde Consultants

GERAGHTY & MILLER, INC.
Environmental Services

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

*Depth Below Land Surface

Project: Chevron Chemical - LA385.01 Well: 55
Town/City: Belle Chasse
County: Plaquemines State: Louisiana
Permit No.: N/A
Land-Surface Elevation
and Datum: 6 feet ☐ Surveyed ☐ Estimated
Installation Date(s): 3/8/91
Drilling Method: Hollow Stem
Drilling Contractor: Eustis engineering
Drilling Fluid: N/A

Development Technique(s) and Date(s)
N/A

Fluid Loss During Drilling: N/A gal
Water Removed During Development: N/A gal
Static Depth to Water: N/A feet below l
Pumping Depth to Water: N/A feet below l
Pumping Duration: N/A hours
Yield: N/A gpm Date: N/A
Specific Capacity: N/A gpm/ft
Well Purpose: Monitor well for landfill

Remarks:

Prepared by: Mike Manuel

G&M Form 05 12 88

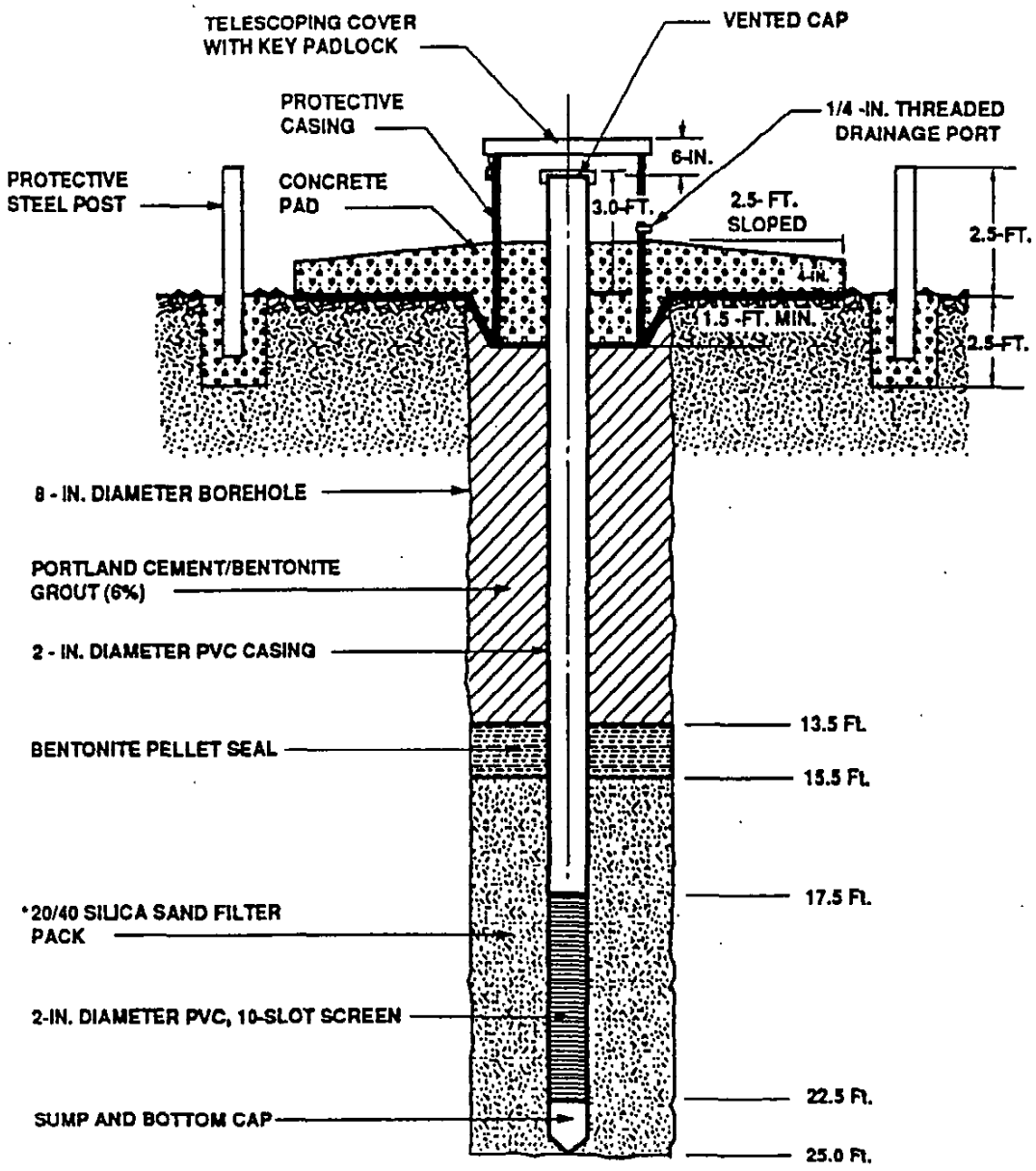
Southpoint 89-0978

GERAGHTY & MILLER, INC.
Ground-Water Consultants

MONITOR-WELL CONSTRUCTION DIAGRAM

BORING NO. MW - 55

PROJECT CHEVRON CHEMICAL CO.
Belle Chasse, Louisiana



NOT TO SCALE

NOTE: * Depth May Vary Due To Site Conditions

NOTE: All Depth Measurements in Feet Below Ground Surface

MW-37

Date Drilled: 3/15/83
Location: Near Chevron property line, outside fence, near Gate 2 and MW-12
Stratigraphy:
0 to 3 ft brown sand fill
3 to 5 ft gray mottled brown dense clay
5 to 9 ft gray clay, moderately dense, with twigs and roots
Well Construction:
Installed 5 ft of 1.25-inch PVC screen and 5 ft of 1.25-inch PVC casing. Put 6 inches coarse sand in bottom of boring, then screen and casing, then sand to 6 inches above the screen, then 2-inch bentonite seal, and cement grout to surface. Installed 4-inch steel casing protector around PVC casing. Stick-up is 1.5 ft. Top of PVC casing elevation is 5.10 ft above msl.

MW-38

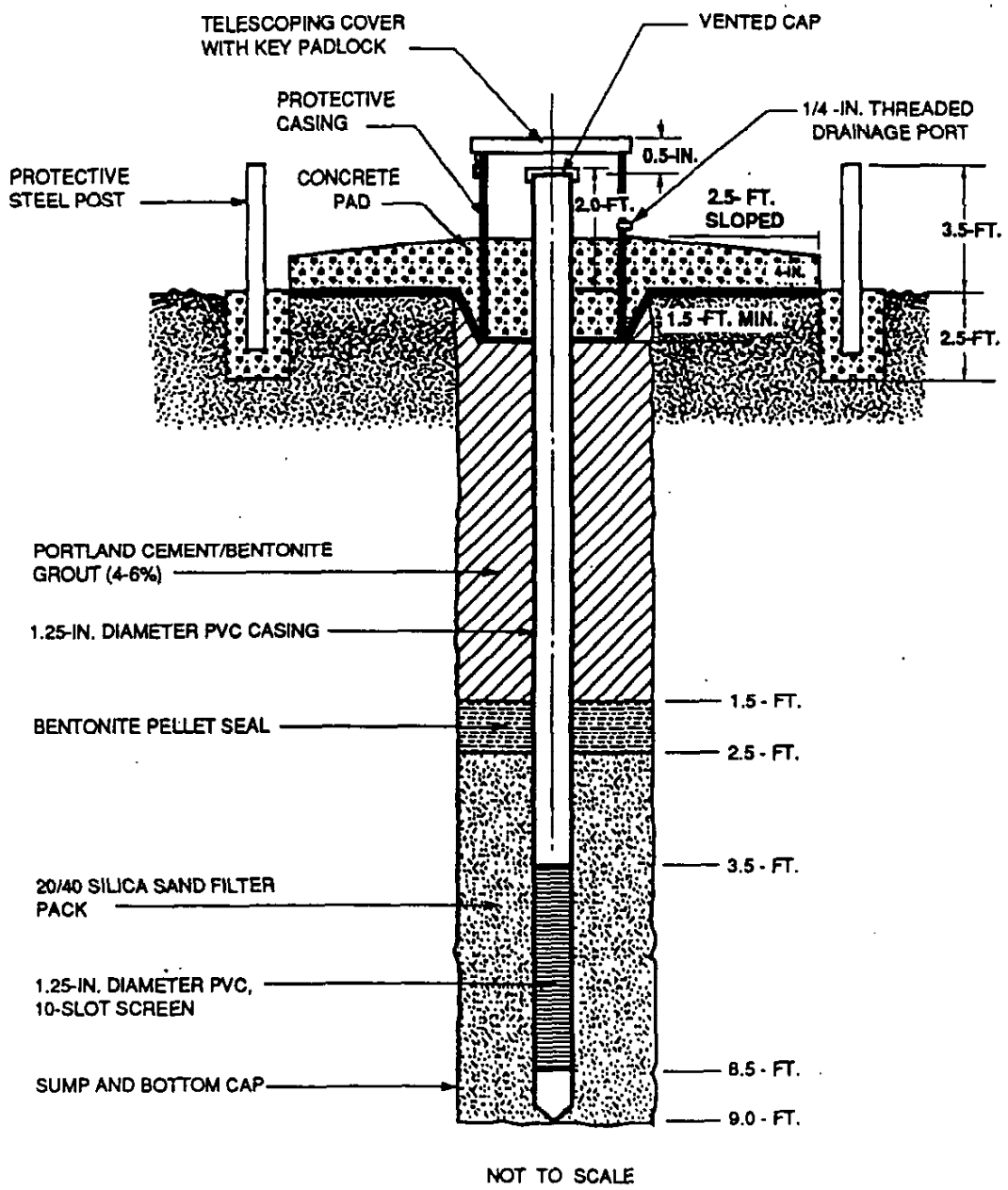
Date Drilled: 3/15/83
Location: Near Chevron property line, outside fence, near Gate 1 and MW-11
Stratigraphy:
0 to 1 ft brown sand fill
1 to 3 ft gray mottled brown dense clay
3 to 9 ft gray moderately dense clay with roots and twigs
Well Construction:
Installed 5 ft of 1.25-inch PVC screen and 5 ft of 1.25-inch PVC casing. Put 6 inches coarse sand in bottom of boring, then screen and casing, then sand to 6 inches above the screen, then 2-inch bentonite seal, and cement grout to surface. Installed 4-inch steel casing protector around PVC casing. Stick-up is 2 ft. Top of PVC casing elevation is 7.14 ft above msl.

GERAGHTY & MILLER, INC.
Environmental Services

TYPICAL MONITOR-WELL CONSTRUCTION DIAGRAM

MONITOR-WELL NO. MW-37

PROJECT
CHEVRON CHEMICAL CO.
Belle Chase, Louisiana



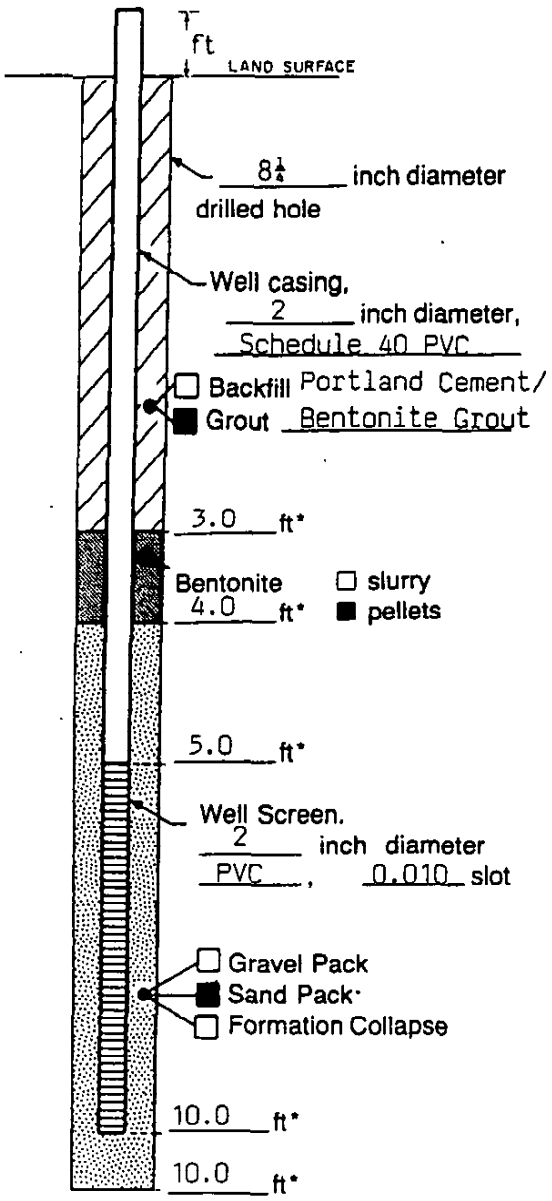
NOT TO SCALE

NOTE: All Depth Measurements in Feet Below Ground Surface

LA171.02-MW-37

GERAGHTY & MILLER, INC.
Environmental Services

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted.

*Depth Below Land Surface

Project: Chevron Chemical LA17102 Well: MW-38R
Town/City: Belle Chasse
County: Plaquemine State: LA
Permit No.: NA
Land-Surface Elevation and Datum: NA feet ☐ Surveyed ☐ Estimated
Installation Date(s): October 29, 1992
Drilling Method: Hollow Stem
Drilling Contractor: Eustis Engineering
Drilling Fluid: NA

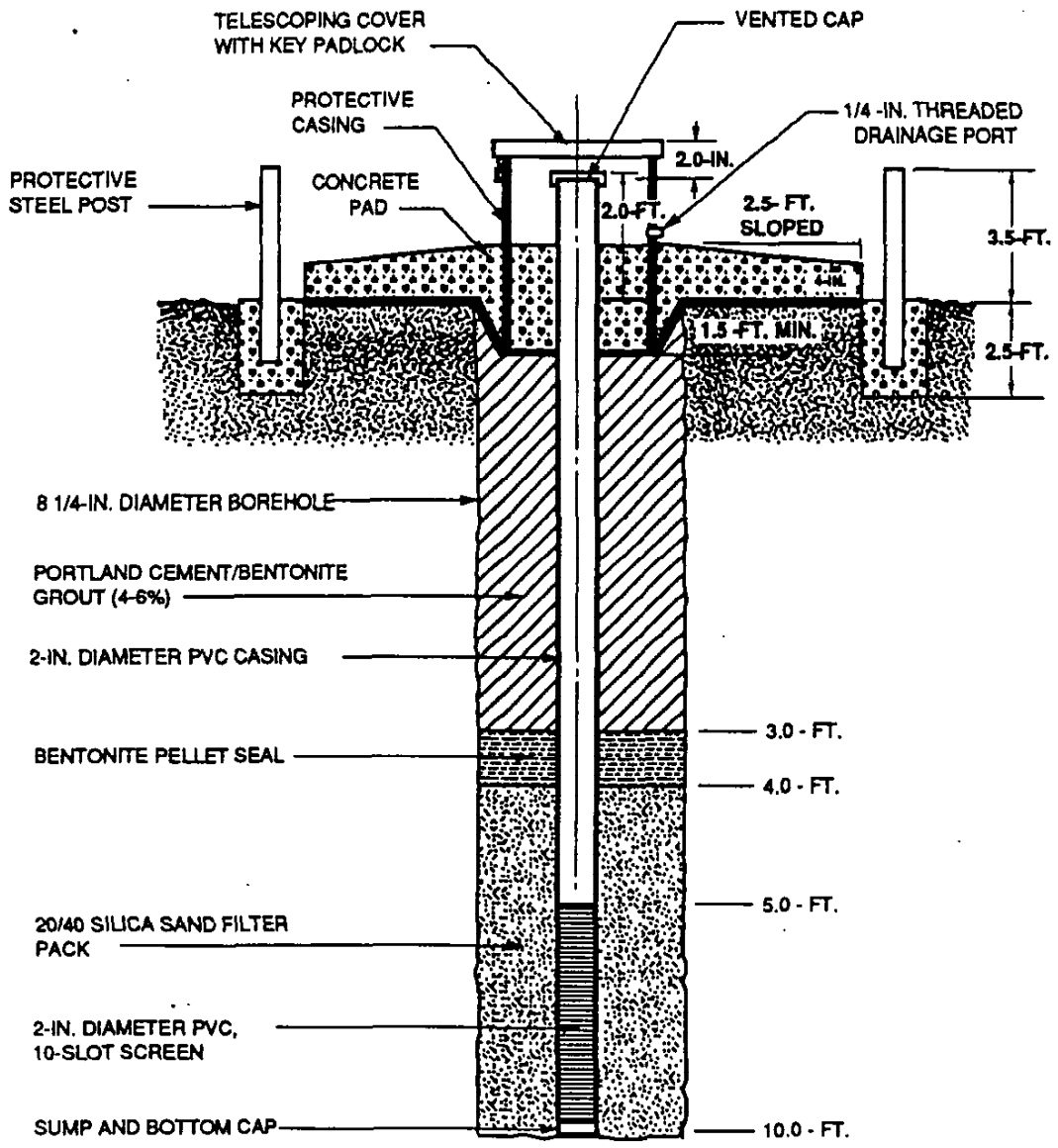
Development Technique(s) and Date(s)
Hand bailed

Fluid Loss During Drilling: NA gallc
Water Removed During Development: NA gallc
Static Depth to Water: NA feet below M
Pumping Depth to Water: NA feet below M
Pumping Duration: NA hours
Yield: NA gpm Date: NA
Specific Capacity: NA gpm/ft
Well Purpose: Monitoring well in upper c lay zone

Remarks:

Prepared by: Kipper W. Montgomery

GERAGHTY & MILLER, INC. Environmental Services	TYPICAL MONITOR-WELL CONSTRUCTION DIAGRAM	MONITOR-WELL NO. MW-38R PROJECT CHEVRON CHEMICAL CO. Belle Chase, Louisiana



NOT TO SCALE

NOTE: All Depth Measurements in Feet Below Ground Surface

LA171.02-MW-38R

MW-39

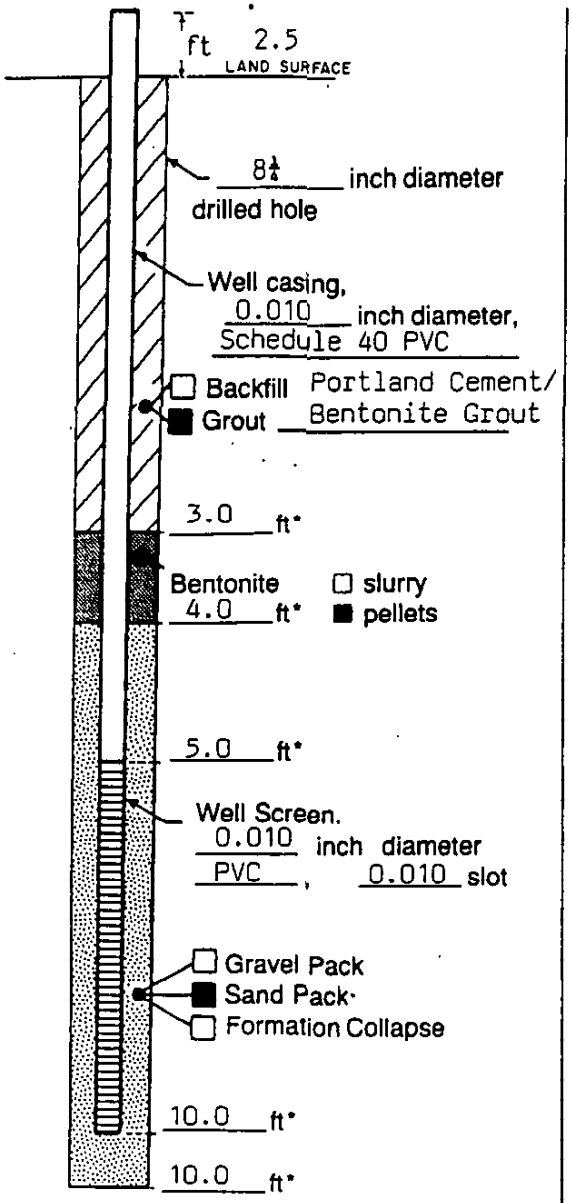
Date Drilled: 3/15/83
Location: At 1st Avenue and E Street, north side of main plant
Stratigraphy:
0 to 3 ft brown clay-shell fill
3 to 4 ft gray mottled brown dense clay
4 to 9 ft gray clay grading to gray clayey silt, both with twigs and roots. Last 1.5 ft of boring caved in.
Well Construction:
Installed 5 ft of 1.25-inch PVC screen and 5 ft of 1.25-inch PVC casing. Put 6 inches coarse sand in bottom of boring, then screen and casing, then sand to 6 inches above the screen, then 2-inch bentonite seal, and cement grout to surface. Installed 4-inch steel casing protector around PVC casing. Stick-up is 3 ft. Top of PVC casing elevation is 7.44 ft above msl.

MW-40

Date Drilled: 3/15/83
Location: At 1st Avenue and levee, northeast corner of main plant
Stratigraphy:
0 to 3 ft brown clay fill
3 to 5 ft gray mottled brown dense clay
6 to 9 ft gray clay with twigs and roots
Well Construction:
Installed 5 ft of 1.25-inch PVC screen and 5 ft of 1.25-inch PVC casing. Put 6 inches coarse sand bottom of boring, then screen and casing, then sand to 6 inches above the screen, then 2-inch bentonite seal, and cement grout to surface. Installed 4-inch steel casing protector around PVC casing. Stick-up is 2.5 ft. Top of PVC casing elevation is 8.46 ft above msl.

GERAGHTY & MILLER, INC.
Environmental Services

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted.

*Depth Below Land Surface

Project Chevron - LA171.02 Well MW-39R
Town/City Belle Chasse
County Plaquemine State LA
Permit No. NA
Land-Surface Elevation and Datum NA feet ☐ Surveyed ☐ Estimated
Installation Date(s) October 29, 1992
Drilling Method Hollow Stem
Drilling Contractor Eustis Engineering
Drilling Fluid NA

Development Technique(s) and Date(s)
Hand bailed

Fluid Loss During Drilling NA gall
Water Removed During Development NA gall
Static Depth to Water NA feet below M
Pumping Depth to Water NA feet below M
Pumping Duration NA hours
Yield NA gpm Date NA
Specific Capacity NA gpm/ft
Well Purpose Monitoring well in upper clay zone

Remarks

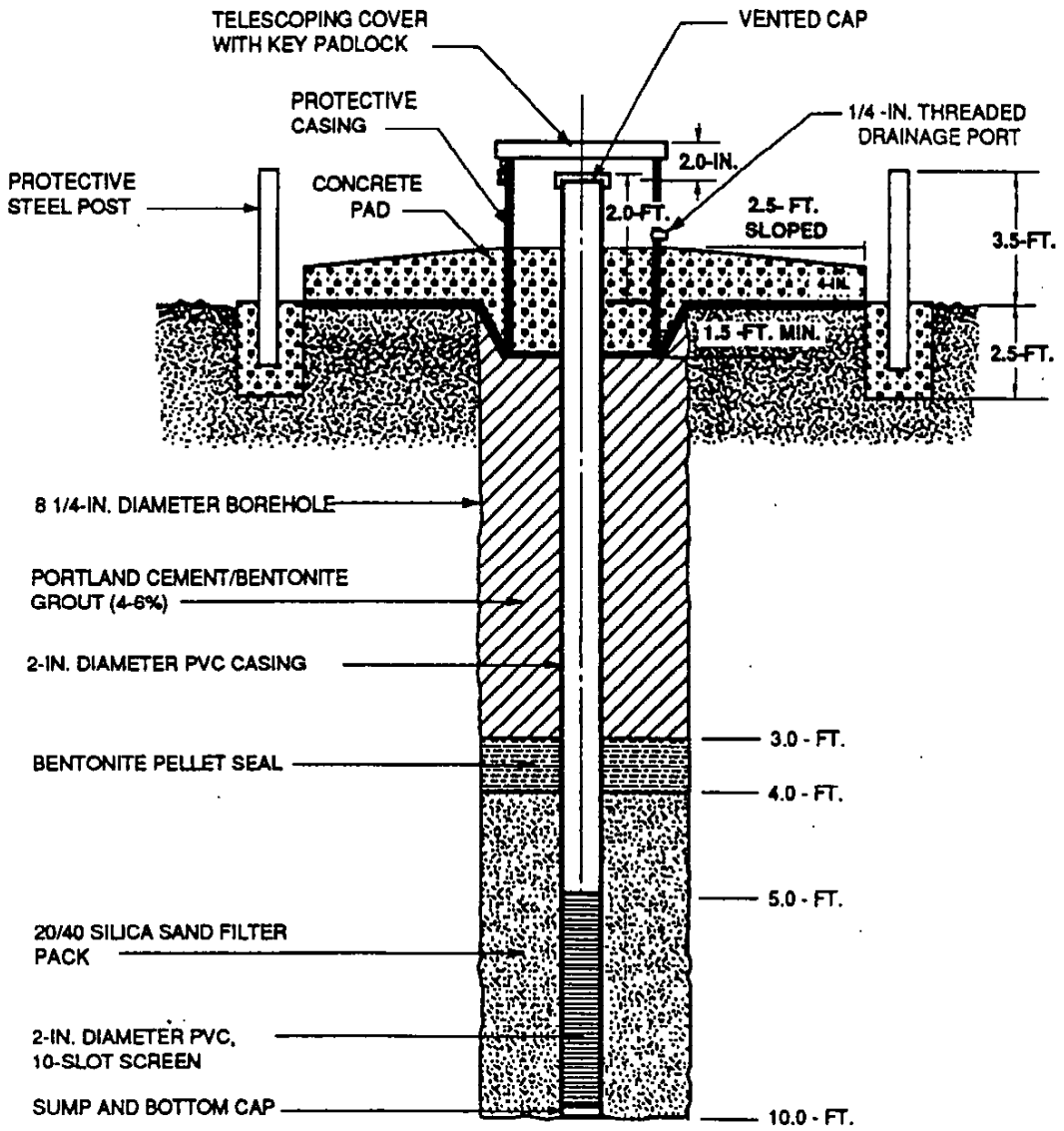
Prepared by Kipper W. Montgomery

GERAGHTY & MILLER, INC.
Environmental Services

TYPICAL MONITOR-WELL CONSTRUCTION DIAGRAM

MONITOR-WELL NO. MW-39R

PROJECT CHEVRON CHEMICAL CO. Belle Chase, Louisiana



NOT TO SCALE

NOTE: All Depth Measurements in Feet Below Ground Surface

LA171.02-MW-39R

MW-39

Date Drilled: 3/15/83
Location: At 1st Avenue and E Street, north side of main plant
Stratigraphy:
0 to 3 ft brown clay-shell fill
3 to 4 ft gray mottled brown dense clay
4 to 9 ft gray clay grading to gray clayey silt, both with twigs and roots. Last 1.5 ft of boring caved in.
Well Construction:
Installed 5 ft of 1.25-inch PVC screen and 5 ft of 1.25-inch PVC casing. Put 6 inches coarse sand in bottom of boring, then screen and casing, then sand to 6 inches above the screen, then 2-inch bentonite seal, and cement grout to surface. Installed 4-inch steel casing protector around PVC casing. Stick-up is 3 ft. Top of PVC casing elevation is 7.44 ft above msl.

MW-40

Date Drilled: 3/15/83
Location: At 1st Avenue and levee, northeast corner of main plant
Stratigraphy:
0 to 3 ft brown clay fill
3 to 5 ft gray mottled brown dense clay
6 to 9 ft gray clay with twigs and roots
Well Construction:
Installed 5 ft of 1.25-inch PVC screen and 5 ft of 1.25-inch PVC casing. Put 6 inches coarse sand bottom of boring, then screen and casing, then sand to 6 inches above the screen, then 2-inch bentonite seal, and cement grout to surface. Installed 4-inch steel casing protector around PVC casing. Stick-up is 2.5 ft. Top of PVC casing elevation is 8.46 ft above msl.

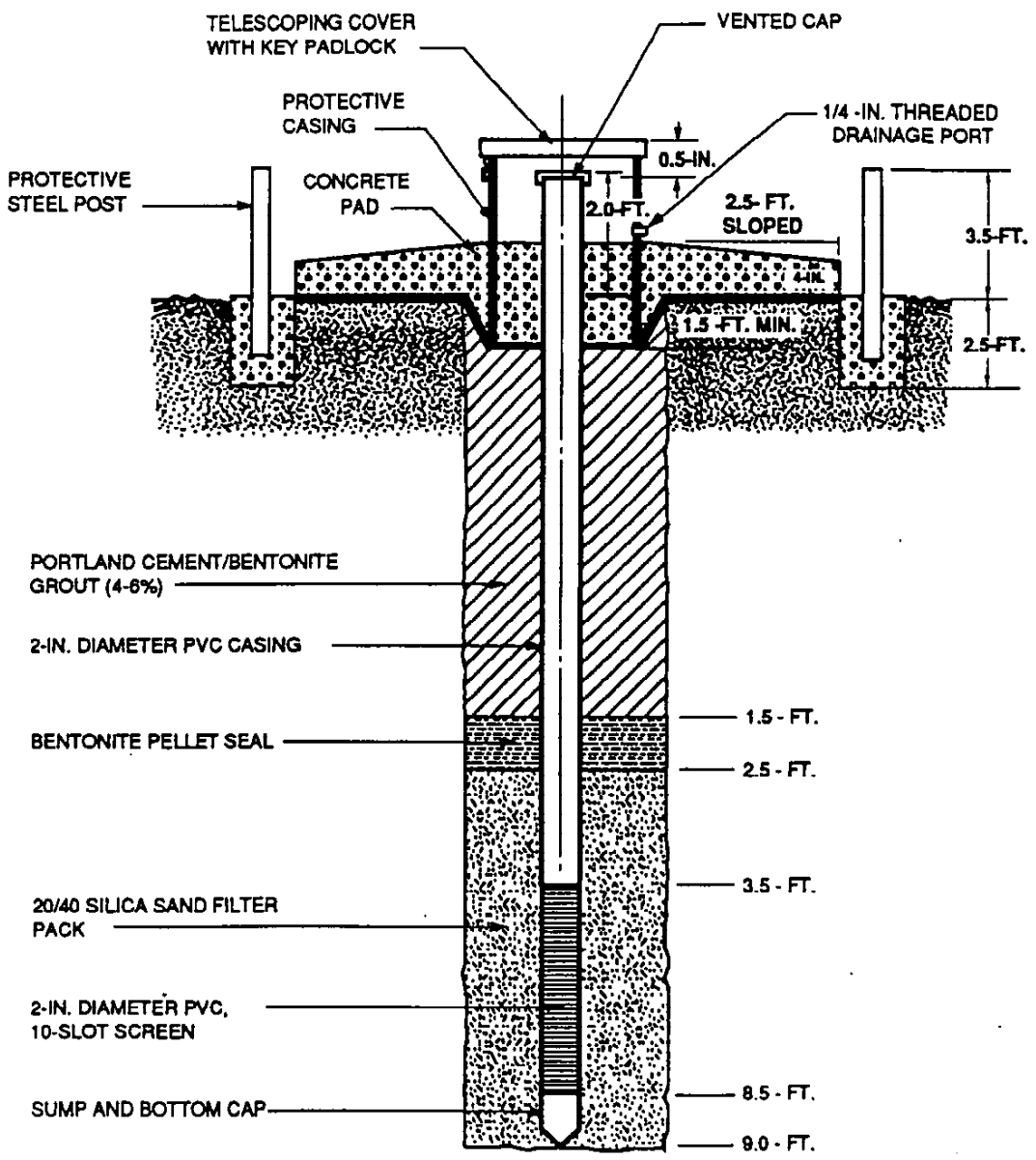
OK

GERAGHTY & MILLER, INC.
Environmental Services

TYPICAL MONITOR-WELL CONSTRUCTION DIAGRAM

MONITOR-WELL NO. MW-40

PROJECT
CHEVRON CHEMICAL CO.
Belle Chase, Louisiana



NOT TO SCALE

NOTE: All Depth Measurements in Feet Below Ground Surface

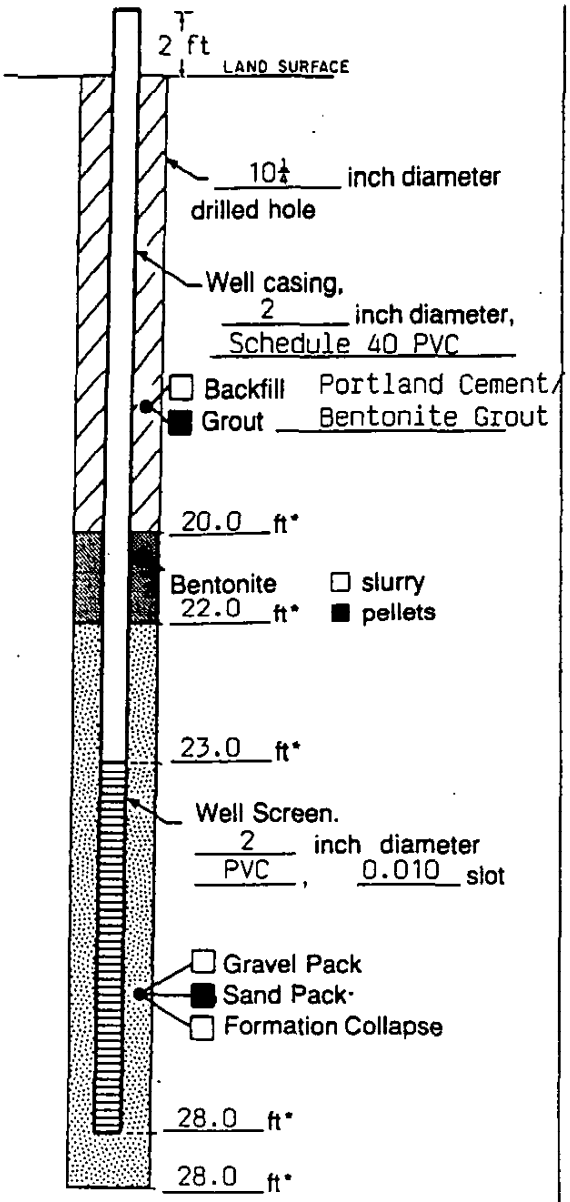
LA171.02-MW-40

MW-41

Date Drilled: 3/16/83
Location: Adjacent to MW-39
Stratigraphy:
0 to 9 ft same as MW-39
9 to 14 ft gray clayey silt to silty clay
14 to 24 ft gray silt grading to gray silty fine sand
24 to 27 ft gray clay
27 to 28 ft gray clayey silt
Well Construction:
Installed 5 ft of 1.25-inch PVC screen and 27 ft of 1.25-inch PVC casing. Pushed casing and screen into caved sand at bottom of hole, then added sand to 36 inches above the screen, then 6-inch bentonite seal, and cement grout to surface with tremie tube. Installed 4-inch steel casing protector around PVC casing. Stick-up is 2 ft. Top of PVC casing elevation is 6.39 ft above msl.

GERAGHTY & MILLER, INC.
Environmental Services

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted.

*Depth Below Land Surface

Project Chevron - LA171.02 Well MW-41R
Town/City Belle Chasse
County Plaquemine State LA
Permit No. NA
Land-Surface Elevation and Datum NA feet ☐ Surveyed ☐ Estimated
Installation Date(s) November 3, 1992
Drilling Method Hollow Stem
Drilling Contractor Eustis Engineering
Drilling Fluid NA

Development Technique(s) and Date(s)
Hand bailed

Fluid Loss During Drilling NA gallo
Water Removed During Development NA gallo
Static Depth to Water NA feet below M.
Pumping Depth to Water NA feet below M.
Pumping Duration NA hours
Yield NA gpm Date NA
Specific Capacity NA gpm/ft
Well Purpose Monitoring well in 30 ft zone

Remarks

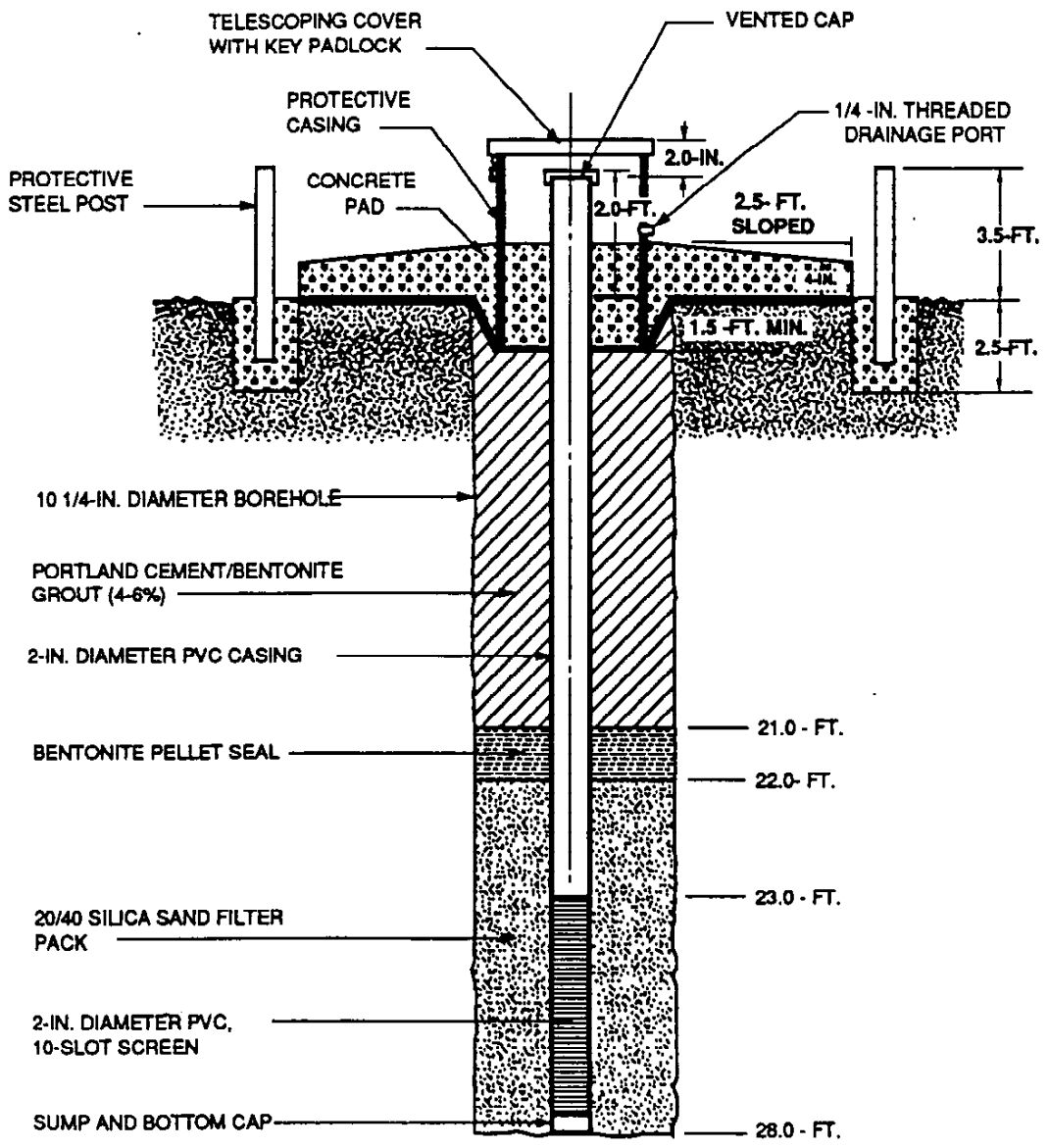
Prepared by Kipper W. Montgomery

GERAGHTY & MILLER, INC.
Environmental Services

TYPICAL MONITOR-WELL CONSTRUCTION DIAGRAM

MONITOR-WELL NO. MW-41R

PROJECT CHEVRON CHEMICAL CO.
Belle Chase, Louisiana



NOT TO SCALE

NOTE: All Depth Measurements in Feet Below Ground Surface

LA171.02-MW-37

JSTIS ENGINEERING COMPANY
SOIL AND FOUNDATION CONSULTANTS
METAIRIE, LA.

LOG OF BORING

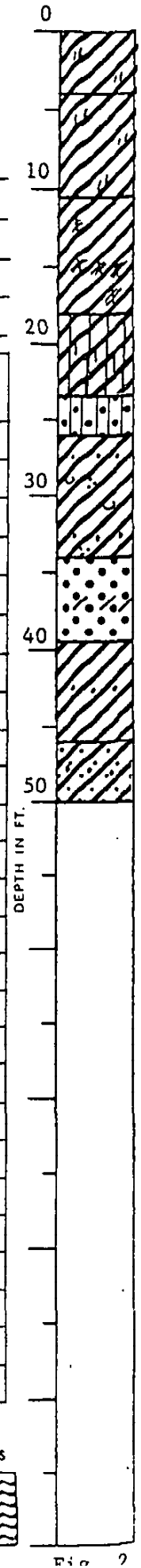
Name of Project: Chevron Chemical Company - Cell Pit Areas
Oak Point Plant, Belle Chasse, Louisiana

For: Chevron Chemical Company, Belle Chasse, Louisiana

Boring No. 1 Soil Technician Jack Pratt Date 31 October 1979

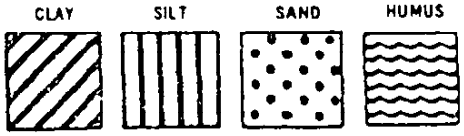
Ground Elev. _____ Datum _____ Gr. Water Depth See Text

Sample No.	SAMPLE Depth — Feet From	SAMPLE Depth — Feet To	DEPTH STRATUM Feet From	DEPTH STRATUM Feet To	VISUAL CLASSIFICATION	*STANDARD PENETRATION TEST	
1	1.5	2.0	0.0	4.0	Stiff gray & tan clay w/silt pockets		
2	4.0	4.5	4.0		Medium stiff gray & tan clay w/silt		
					pockets		
3	6.5	7.0			Ditto		
4	9.0	9.5		10.5	Ditto		
5	11.5	12.0	10.5		Soft gray clay w/silty clay pockets		
6	14.0	14.5		18.0	Soft gray clay w/silty clay pockets &		
					layers		
7	19.0	19.5	18.0	23.5	Soft gray silty clay w/silt layers		
8	24.0	24.5	23.5	26.0	Medium dense gray silty sand		
9	29.0	29.5	26.0	34.0	Soft gray clay w/sand lenses &		
					pockets & shell fragments		
10	34.0	34.5	34.0		Medium dense gray fine sand w/clay		
					layers		
11	39.0	39.5		39.5	Ditto		
12	44.0	44.5	39.5	46.0	Soft gray clay w/sand layers		
13	49.0	49.5	46.0	50.0	Soft gray sandy clay w/sand lenses		



*Number in first column indicates number of blows of 140-lb. hammer dropped 30 in. required to seat 2-in. O. D. splitspoon sampler 6 in. Number in second column indicates number of blows of 140-lb. hammer dropped 30 in. required to drive 2-in. O. D. splitspoon sampler 1 ft. after seating 6 in.

WHILE THIS LOG OF BORING IS CONSIDERED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT ITS RESPECTIVE LOCATION ON THE DATE SHOWN, IT IS NOT WARRANTED THAT IT IS REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.



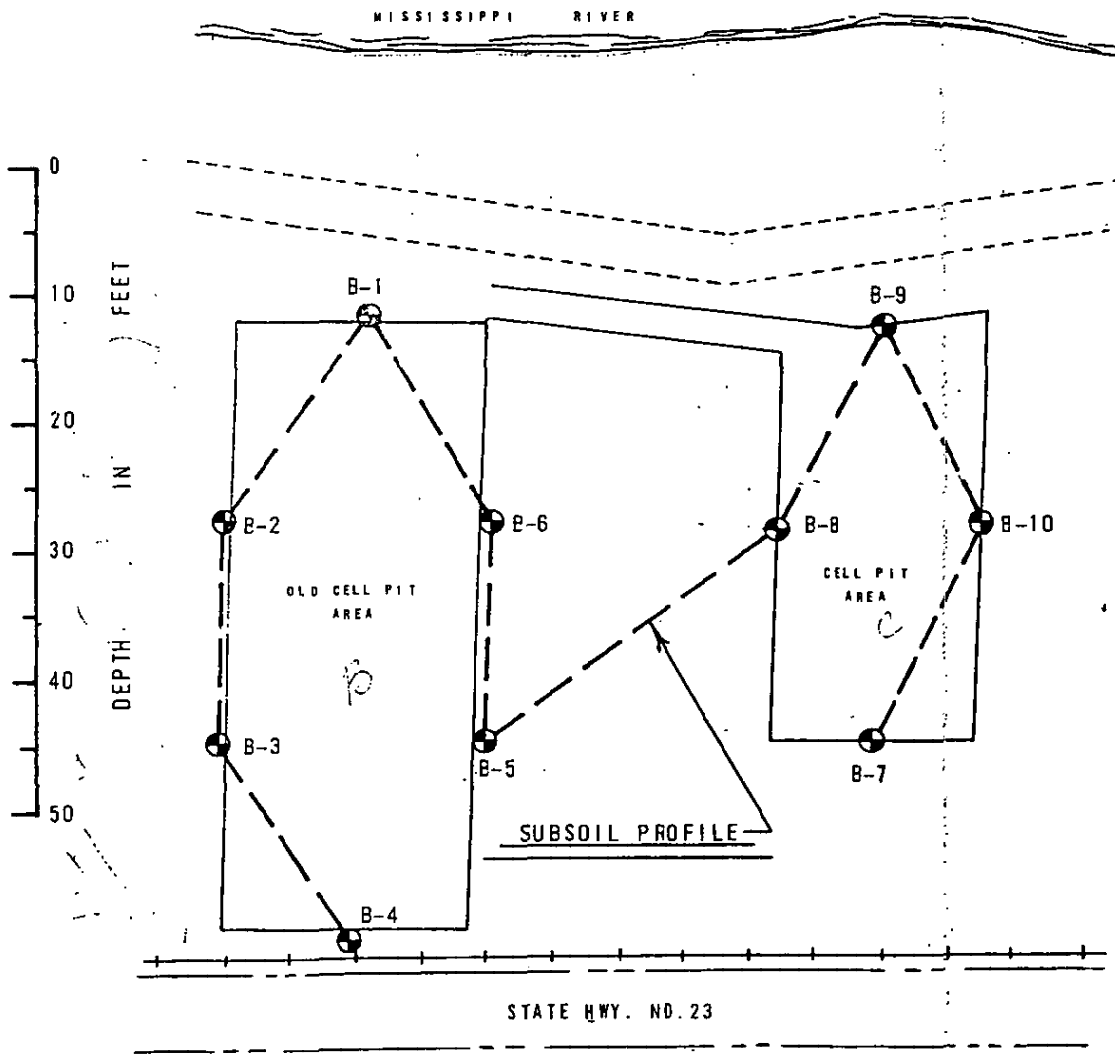
Remarks: _____

Fig. 2

OBSERVATION WELLS

5. An observation well was set in each of the borings upon completion of boring operations. Each of the ten (10) observation wells consisted of a 2-ft length of 2-in. diameter slotted PVC pipe with a riser of 2-in. diameter solid PVC pipe of sufficient length to extend above existing ground surface. The wells were installed by first flushing the completed soil boring with clear water, suspending the assembled PVC pipe in the boring so that the bottom of the 2-ft length of slotted pipe was about 1-ft above the bottom of the hole, placing a clean sand in the hole so that the slotted portion of the pipe was completely surrounded by sand and so that the sand would extend approximately 1-ft below and 1-ft above the slotted pipe. A bentonite seal was placed on top of the sand and the remainder of the hole was grouted with a cement-bentonite slurry to the ground surface. Each riser was provided with a cap and was vented to the atmosphere.

6. Observations were made of the depth to ground water in each of the observation wells on either 1 or 2 November. The results of these observations are shown in the following tabulation.



LOCATION OF BORINGS

SCALE: 1" = 200'

BORINGS DRILLED 30 OCTOBER THRU 2 NOVEMBER 1979

SOIL BORINGS, OBSERVATION WELLS & LABORATORY TESTS
CHEVRON CHEMICAL COMPANY
CELL PIT AREAS
OAK POINT PLANT
BELLE CHASSE, LOUISIANA

LOCATION OF BORINGS & SUBSOIL PROFILE

FOR
CHEVRON CHEMICAL COMPANY
BELLE CHASSE, LOUISIANA

EUSTIS ENGINEERING COMPANY
SOIL AND FOUNDATION CONSULTANTS
NOVEMBER, 1979 METAIRIE, LA.

LDEQ-EDMS Document 36119775, Page 190 of 596

EUSTIS ENGINEERING COMPANY
SOIL AND FOUNDATION CONSULTANTS
METAIRIE, LA.

LOG OF BORING

Name of Project: Chevron Chemical Company - Cell Pit Areas
Oak Point Plant, Belle Chasse, Louisiana

For: Chevron Chemical Company, Belle Chasse, Louisiana

Boring No. 2 Soil Technician Jack Pratt Date 31 October 1979

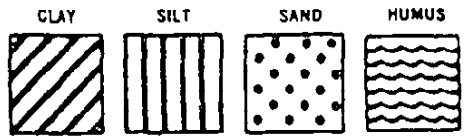
Ground Elev. _____ Datum _____ Gr. Water Depth See Text

Sample No.	SAMPLE Depth — Feet From	SAMPLE Depth — Feet To	DEPTH STRATUM Feet From	DEPTH STRATUM Feet To	VISUAL CLASSIFICATION	*STANDARD PENETRATION TEST	
1	1.5	2.0	0.0	4.0	Stiff gray & tan clay w/silt pockets & roots		
2	4.0	4.5	4.0		Medium stiff gray & tan clay w/silt pockets & few roots		
3	6.5	7.0		8.0	Medium stiff gray & tan clay w/silt pockets		
4	9.0	9.5	8.0		Soft gray clay w/silt pockets & few roots		
5	11.5	12.0		13.5	Ditto		
	14.0	14.5	13.5	15.0	Medium dense gray clayey sand w/sandy clay layers		

*Number in first column indicates number of blows of 140-lb. hammer dropped 30 in. required to seat 2-in. O. D. splitspoon sampler 6 in. Number in second column indicates number of blows of 140-lb. hammer dropped 30 in. required to drive 2-in. O. D. splitspoon sampler 1 ft. after seating 6 in.

WHILE THIS LOG OF BORING IS CONSIDERED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT ITS RESPECTIVE LOCATION ON THE DATE SHOWN, IT IS NOT WARRANTED THAT IT IS REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

Remarks: _____



Predominant type shown heavy. Modifying type shown light.

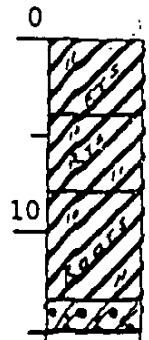
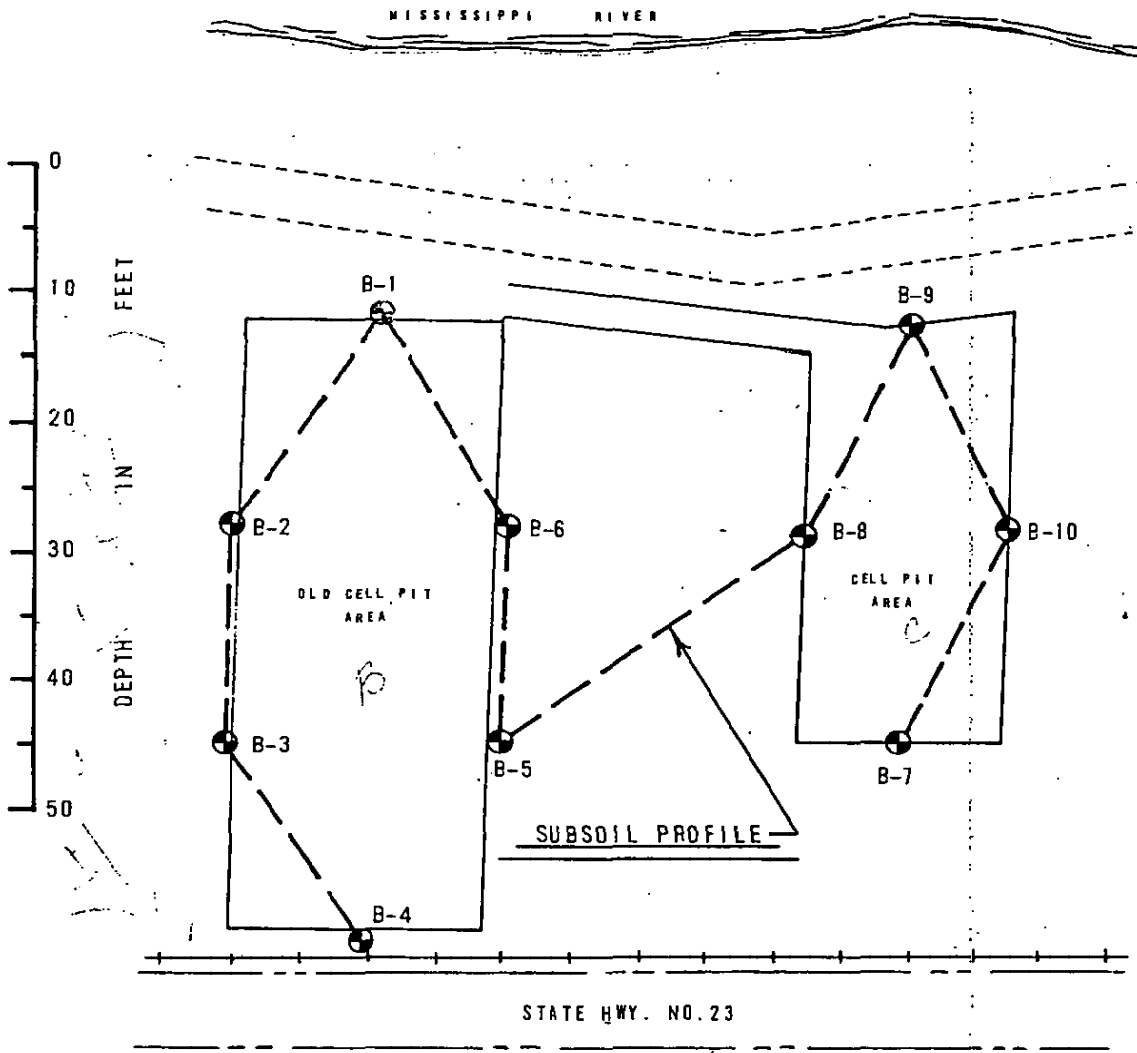


Fig. 3

OBSERVATION WELLS

5. An observation well was set in each of the borings upon completion of boring operations. Each of the ten (10) observation wells consisted of a 2-ft length of 2-in. diameter slotted PVC pipe with a riser of 2-in. diameter solid PVC pipe of sufficient length to extend above existing ground surface. The wells were installed by first flushing the completed soil boring with clear water, suspending the assembled PVC pipe in the boring so that the bottom of the 2-ft length of slotted pipe was about 1-ft above the bottom of the hole, placing a clean sand in the hole so that the slotted portion of the pipe was completely surrounded by sand and so that the sand would extend approximately 1-ft below and 1-ft above the slotted pipe. A bentonite seal was placed on top of the sand and the remainder of the hole was grouted with a cement-bentonite slurry to the ground surface. Each riser was provided with a cap and was vented to the atmosphere.

6. Observations were made of the depth to ground water in each of the observation wells on either 1 or 2 November. The results of these observations are shown in the following tabulation.



LOCATION OF BORINGS

SCALE: 1" = 200'

BORINGS DRILLED 30 OCTOBER THRU 2 NOVEMBER 1979

SOIL BORINGS, OBSERVATION WELLS & LABORATORY TESTS
CHEVRON CHEMICAL COMPANY
CELL PIT AREAS
OAK POINT PLANT
BELLE CHASSE, LOUISIANA

LOCATION OF BORINGS & SUBSOIL PROFILE

FOR
CHEVRON CHEMICAL COMPANY
BELLE CHASSE, LOUISIANA

EUSTIS ENGINEERING COMPANY
SOIL AND FOUNDATION CONSULTANTS
NOVEMBER, 1979 METAIRIE, LA.

LDEQ-EDMS Document 36119775, Page 193 of 596

'STIS ENGINEERING COMPANY
SOIL AND FOUNDATION CONSULTANTS
METAIRIE, LA.

LOG OF BORING

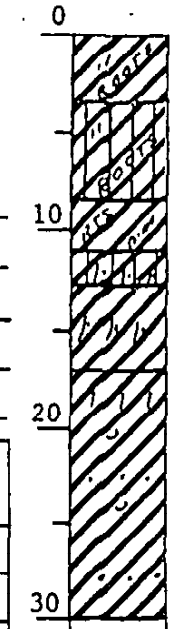
Name of Project: Chevron Chemical Company - Cell Pit Areas
Oak Point Plant, Belle Chasse, Louisiana

For: Chevron Chemical Company, Belle Chasse, Louisiana

Boring No. 3 Soil Technician Jack Pratt Date 31 October 1979

Ground Elev. _____ Datum _____ Gr. Water Depth See Text

Sample No.	SAMPLE Depth — Feet From	SAMPLE Depth — Feet To	DEPTH STRATUM Feet From	DEPTH STRATUM Feet To	VISUAL CLASSIFICATION	*STANDARD PENETRATION TEST	
1	1.5	2.0	0.0	3.5	Stiff gray & tan clay w/silt pockets & roots		
2	4.0	4.5	3.5		Soft gray & tan silty clay w/silt pockets & roots		
3	6.5	7.0		8.5	Ditto		
4	9.0	9.5	8.5	11.0	Soft gray clay w/roots & organic matter		
5	11.5	12.0	11.0	13.0	Very soft gray silty clay w/silty sand layers		
6	14.0	14.5	13.0	17.0	Soft gray clay w/many silty sand lenses		
	19.0	19.5	17.0		Soft gray clay w/silt lenses & shell fragments		
8	24.0	24.5			Soft gray clay w/sand lenses & shell fragments		
9	29.0	29.5		30.0	Soft gray clay w/sand lenses		



*Number in first column indicates number of blows of 140-lb. hammer dropped 30 in. required to seat 2-in. O. D. splitspoon sampler 6 in. Number in second column indicates number of blows of 140-lb. hammer dropped 30 in. required to drive 2-in. O. D. splitspoon sampler 1 ft. after seating 6 in.

WHILE THIS LOG OF BORING IS CONSIDERED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT ITS RESPECTIVE LOCATION ON THE DATE SHOWN, IT IS NOT WARRANTED THAT IT IS REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

CLAY SILT SAND HUMUS

Remarks: _____

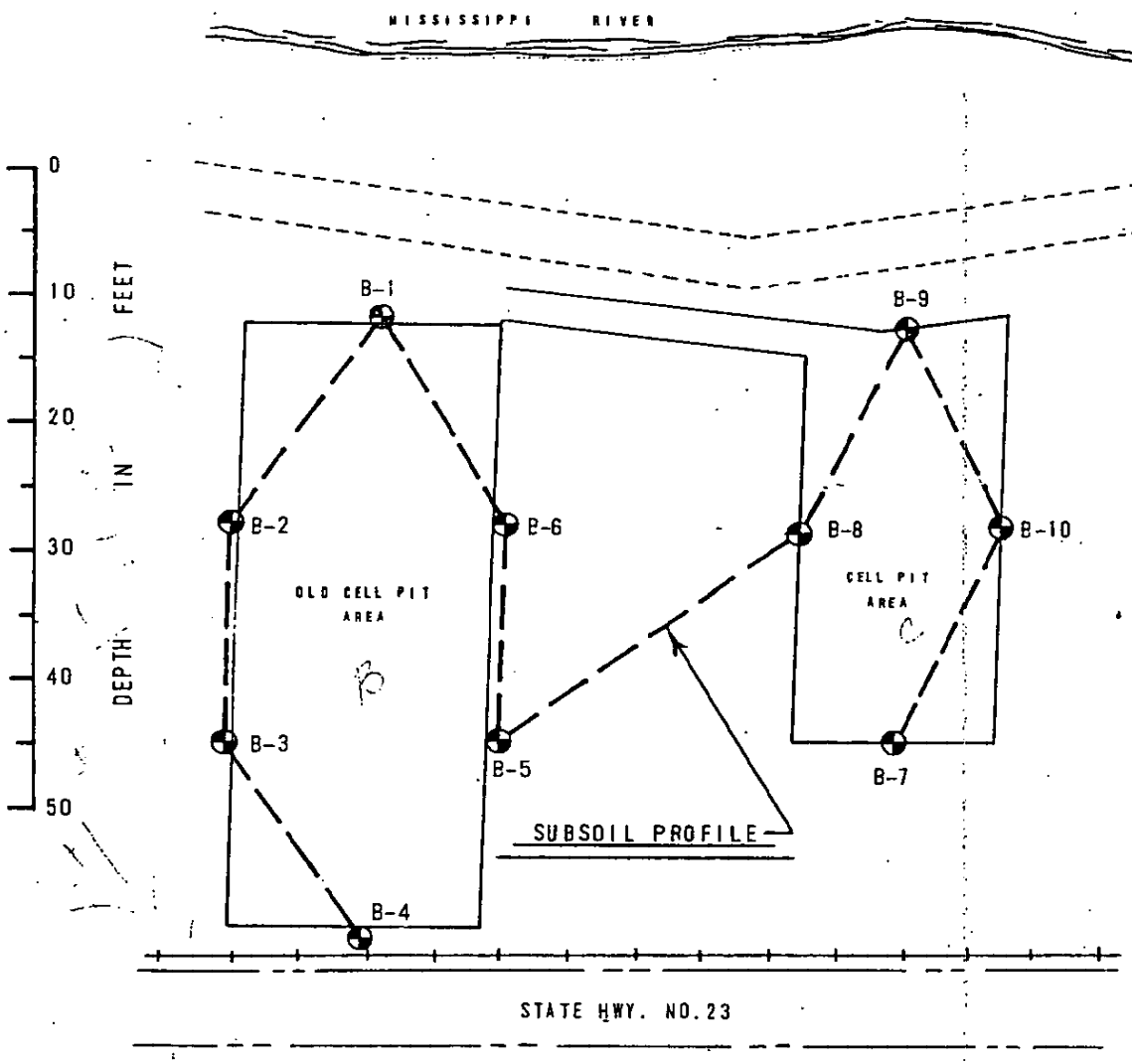
Predominant type shown heavy. Modifying type shown light.

Fig. 4

OBSERVATION WELLS

5. An observation well was set in each of the borings upon completion of boring operations. Each of the ten (10) observation wells consisted of a 2-ft length of 2-in. diameter slotted PVC pipe with a riser of 2-in. diameter solid PVC pipe of sufficient length to extend above existing ground surface. The wells were installed by first flushing the completed soil boring with clear water, suspending the assembled PVC pipe in the boring so that the bottom of the 2-ft length of slotted pipe was about 1-ft above the bottom of the hole, placing a clean sand in the hole so that the slotted portion of the pipe was completely surrounded by sand and so that the sand would extend approximately 1-ft below and 1-ft above the slotted pipe. A bentonite seal was placed on top of the sand and the remainder of the hole was grouted with a cement-bentonite slurry to the ground surface. Each riser was provided with a cap and was vented to the atmosphere.

6. Observations were made of the depth to ground water in each of the observation wells on either 1 or 2 November. The results of these observations are shown in the following tabulation.



LOCATION OF BORINGS

SCALE: 1" = 200'

BORINGS DRILLED 30 OCTOBER THRU 2 NOVEMBER 1979

SOIL BORINGS, OBSERVATION WELLS & LABORATORY TESTS
CHEVRON CHEMICAL COMPANY
CELL PIT AREAS
OAK POINT PLANT
BELLE CHASSE, LOUISIANA

LOCATION OF BORINGS & SUBSOIL PROFILE

FOR
CHEVRON CHEMICAL COMPANY
BELLE CHASSE, LOUISIANA

EUSTIS ENGINEERING COMPANY
SOIL AND FOUNDATION CONSULTA
NOVEMBER, 1979 META LA.

LDEQ-EDMS Document 36119775, Page 196 of 596

FUSTIS ENGINEERING COMPANY
SOIL AND FOUNDATION CONSULTANTS
METAIRIE, LA.

LOG OF BORING

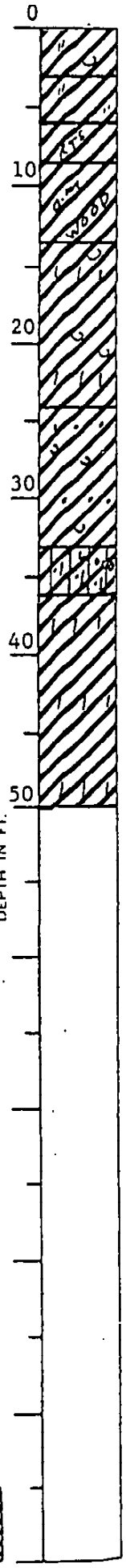
Name of Project: Chevron Chemical Company - Cell Pit Areas
Oak Point Plant, Belle Chasse, Louisiana

For: Chevron Chemical Company, Belle Chasse, Louisiana

Boring No. 4 Soil Technician Jack Pratt Date 30 October 1979

Ground Elev. _____ Datum _____ Gr. Water Depth See Text

Sample No.	SAMPLE Depth — Feet From	SAMPLE Depth — Feet To	DEPTH STRATUM Feet From	DEPTH STRATUM Feet To	VISUAL CLASSIFICATION	*STANDARD PENETRATION TEST	
1	1.5	2.0	0.0	3.0	Stiff gray & tan clay w/silt pockets & shells		
2	4.0	4.5	3.0	6.0	Soft gray & tan clay w/silt pockets		
3	6.5	7.0	6.0	8.5	Soft gray clay w/roots		
4	9.0	9.5	8.5		Soft gray clay w/organic matter & wood		
5	11.5	12.0		13.5	Ditto		
6	14.0	14.5	13.5		Very soft gray clay w/silt lenses & shell fragments		
7	19.0	19.5		24.0	Ditto		
[illegible]	24.0	24.5	24.0		Soft gray clay w/sand lenses & shell fragments		
9	29.0	29.5		33.0	Ditto		
10	34.0	34.5	33.0	36.0	Soft gray silty clay w/sandy silt layers & decayed wood		
11	39.0	39.5	36.0		Soft gray clay w/silt lenses		
12	44.0	44.5			Ditto		
13	49.0	49.5		50.0	Ditto		



[illegible]ber in first column indicates number of blows of 140-lb. hammer dropped 30 in. required to seat 2-in. O. D. splitspoon sampler 6 in. Number in [illegible]nd column indicates number of blows of 140-lb. hammer dropped 30 in. required to drive 2-in. O. D. splitspoon sampler 1 ft. after seating 6 in.

WHILE THIS LOG OF BORING IS CONSIDERED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT ITS RESPECTIVE LOCATION ON THE DATE SHOWN, IT IS NOT WARRANTED THAT IT IS REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

Remarks: _____

CLAY SILT SAND HUMUS

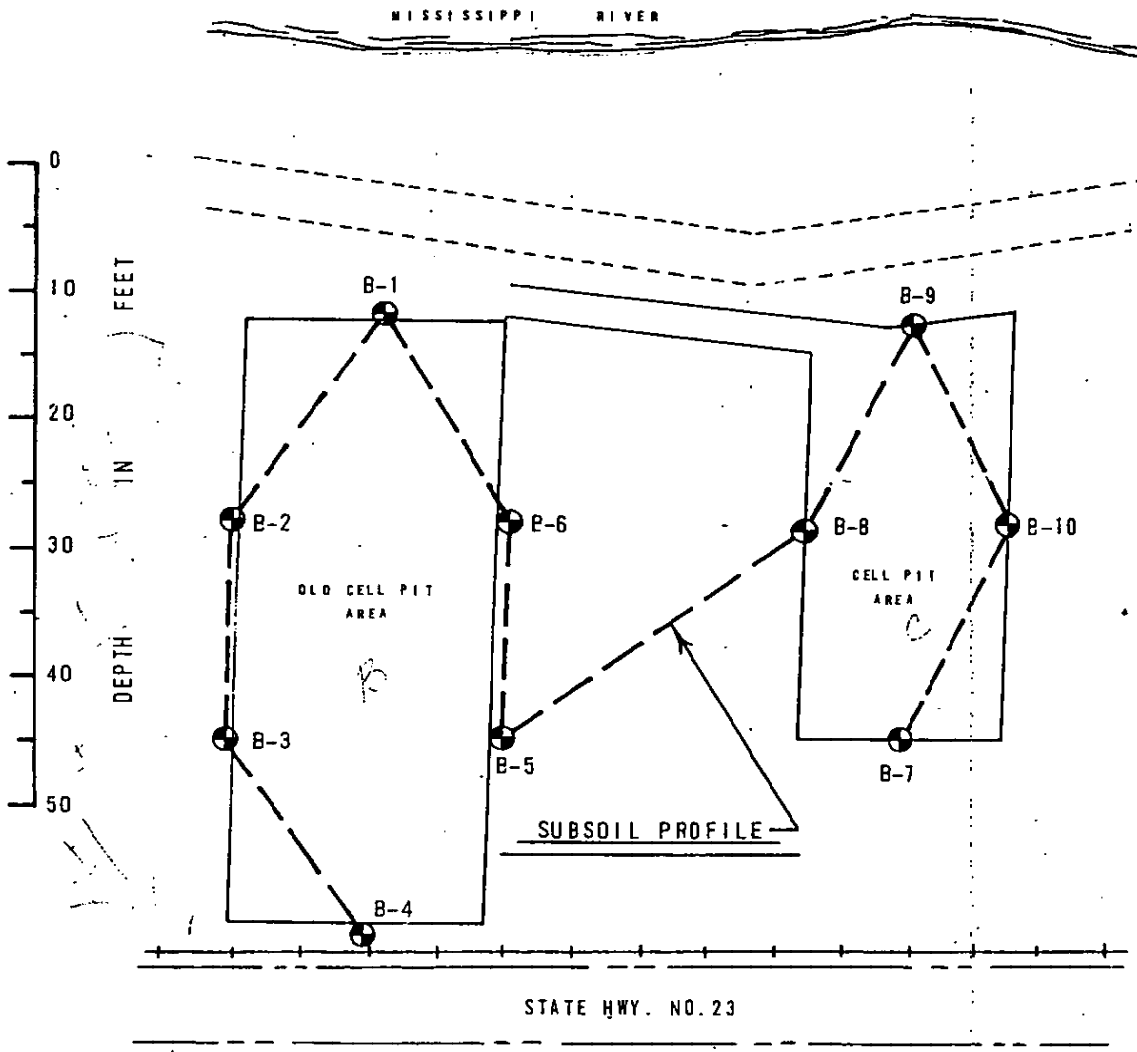
Predominant type shown heavy. Modifying type shown light.

Fig. 5

OBSERVATION WELLS

5. An observation well was set in each of the borings upon completion of boring operations. Each of the ten (10) observation wells consisted of a 2-ft length of 2-in. diameter slotted PVC pipe with a riser of 2-in. diameter solid PVC pipe of sufficient length to extend above existing ground surface. The wells were installed by first flushing the completed soil boring with clear water, suspending the assembled PVC pipe in the boring so that the bottom of the 2-ft length of slotted pipe was about 1-ft above the bottom of the hole, placing a clean sand in the hole so that the slotted portion of the pipe was completely surrounded by sand and so that the sand would extend approximately 1-ft below and 1-ft above the slotted pipe. A bentonite seal was placed on top of the sand and the remainder of the hole was grouted with a cement-bentonite slurry to the ground surface. Each riser was provided with a cap and was vented to the atmosphere.

6. Observations were made of the depth to ground water in each of the observation wells on either 1 or 2 November. The results of these observations are shown in the following tabulation.



LOCATION OF BORINGS

SCALE: 1" = 200'

BORINGS DRILLED 30 OCTOBER THRU 2 NOVEMBER 1979

SOIL BORINGS, OBSERVATION WELLS & LABORATORY TESTS
CHEVRON CHEMICAL COMPANY
CELL PIT AREAS
OAK POINT PLANT
BELLE CHASSE, LOUISIANA

LOCATION OF BORINGS & SUBSOIL PROFILE

FOR
CHEVRON CHEMICAL COMPANY
BELLE CHASSE, LOUISIANA

EUSTIS ENGINEERING COMPANY
SOIL AND FOUNDATION CONSULTANTS
NOVEMBER, 1979 METAIRIE, LA.

LDEQ-EDMS Document 36119775, Page 199 of 596

F''STIS ENGINEERING COMPANY
.IL AND FOUNDATION CONSULTANTS
METAIRIE, LA.

LOG OF BORING

Name of Project: Chevron Chemical Company - Cell Pit Areas
Oak Point Plant, Belle Chasse, Louisiana

For: Chevron Chemical Company, Belle Chasse, Louisiana

Boring No. 5 Soil Technician Jack Pratt Date 30 October 1979

Ground Elev. _____ Datum _____ Gr. Water Depth See Text

Sample No.	SAMPLE Depth — Feet From	SAMPLE Depth — Feet To	DEPTH STRATUM Feet From	DEPTH STRATUM Feet To	VISUAL CLASSIFICATION	*STANDARD PENETRATION TEST	
1	1.5	2.0	0.0	3.5	Medium stiff gray clay w/silt pockets & shells		
2	4.0	4.5	3.5	6.0	Soft gray clay w/humus layers & organic matter		
3	6.5	7.0	6.0		Soft gray & tan clay w/silt pockets, roots & trace of oil		
4	9.0	9.5			Soft gray & tan clay w/silt pockets		
5	11.5	12.0		13.0	Soft gray & tan clay w/silt pockets & few small roots		
	14.0	14.5	13.0	15.0	Very soft gray silty clay w/sandy silt lenses		

*Number in first column indicates number of blows of 140-lb. hammer dropped 30 in. required to seat 2-in. O. D. splitspoon sampler 6 in. Number in second column indicates number of blows of 140-lb. hammer dropped 30 in. required to drive 2-in. O. D. splitspoon sampler 1 ft. after seating 6 in.

WHILE THIS LOG OF BORING IS CONSIDERED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT ITS RESPECTIVE LOCATION ON THE DATE SHOWN, IT IS NOT WARRANTED THAT IT IS REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

Remarks: _____

CLAY SILT SAND HUMUS

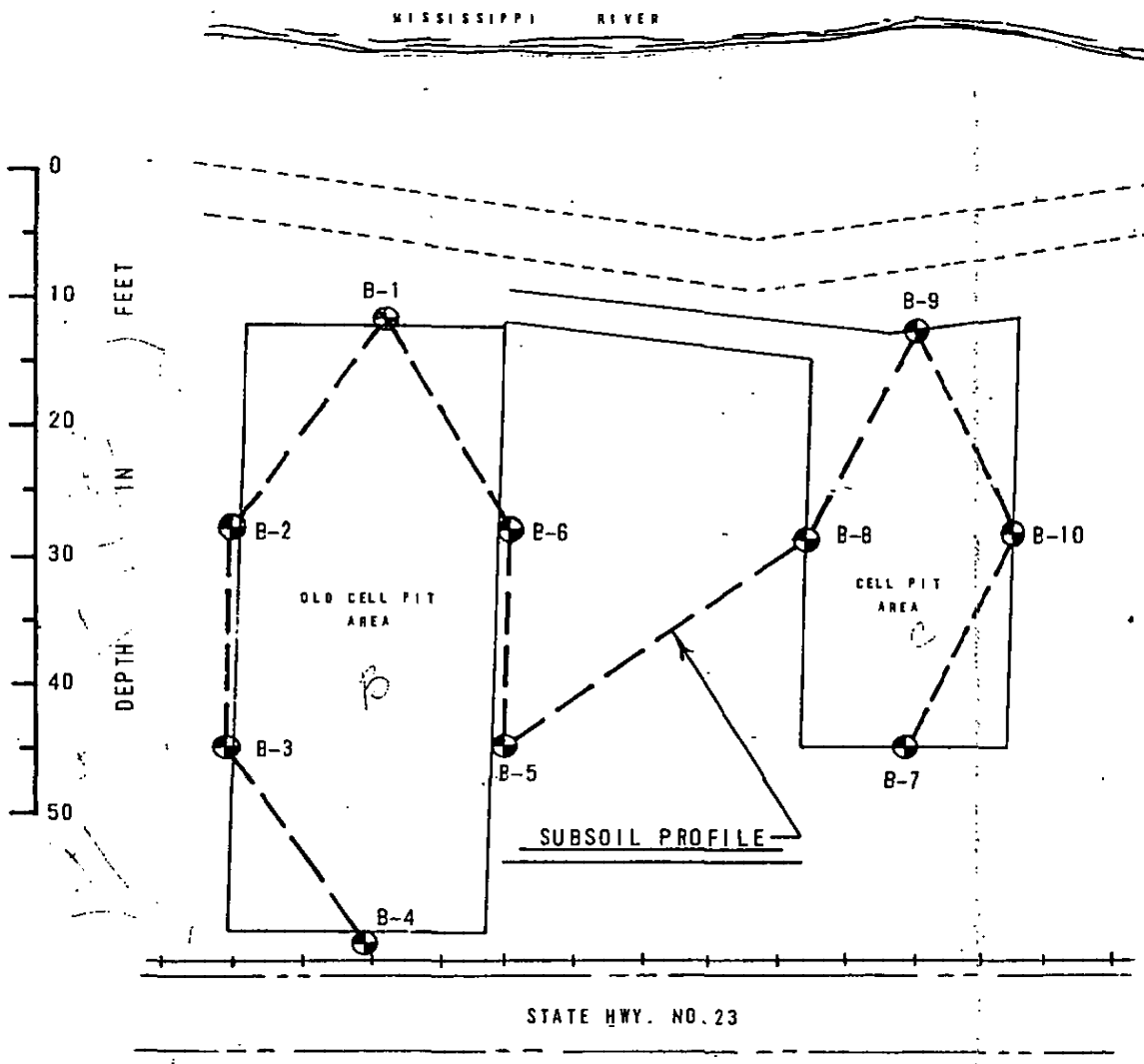
Predominant type shown heavy. Modifying type shown light.

Fig. 6

OBSERVATION WELLS

5. An observation well was set in each of the borings upon completion of boring operations. Each of the ten (10) observation wells consisted of a 2-ft length of 2-in. diameter slotted PVC pipe with a riser of 2-in. diameter solid PVC pipe of sufficient length to extend above existing ground surface. The wells were installed by first flushing the completed soil boring with clear water, suspending the assembled PVC pipe in the boring so that the bottom of the 2-ft length of slotted pipe was about 1-ft above the bottom of the hole, placing a clean sand in the hole so that the slotted portion of the pipe was completely surrounded by sand and so that the sand would extend approximately 1-ft below and 1-ft above the slotted pipe. A bentonite seal was placed on top of the sand and the remainder of the hole was grouted with a cement-bentonite slurry to the ground surface. Each riser was provided with a cap and was vented to the atmosphere.

6. Observations were made of the depth to ground water in each of the observation wells on either 1 or 2 November. The results of these observations are shown in the following tabulation.



LOCATION OF BORINGS

SCALE: 1" = 200'

BORINGS DRILLED 30 OCTOBER THRU 2 NOVEMBER 1979

SOIL BORINGS, OBSERVATION WELLS & LABORATORY TESTS
CHEVRON CHEMICAL COMPANY
CELL PIT AREAS
OAK POINT PLANT
BELLE CHASSE, LOUISIANA

LOCATION OF BORINGS & SUBSOIL PROFILE

FOR
CHEVRON CHEMICAL COMPANY
BELLE CHASSE, LOUISIANA

EUSTIS ENGINEERING COMPANY
SOIL AND FOUNDATION CONSULTANTS
NOVEMBER, 1979 METAIRIE, LA.

LDEQ-EDMS Document 36119775, Page 202 of 596

EUSTIS ENGINEERING COMPANY
OIL AND FOUNDATION CONSULTANTS
METAIRIE, LA.

LOG OF BORING

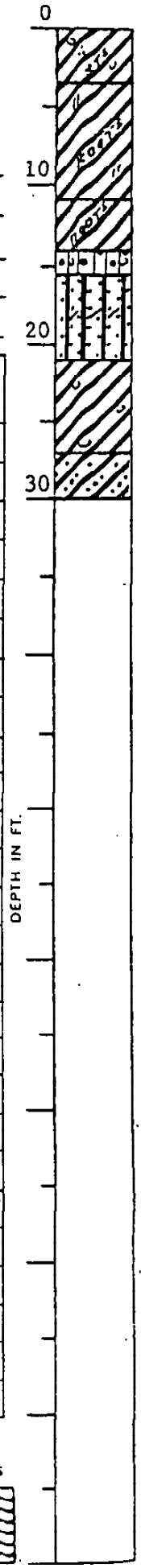
Name of Project: Chevron Chemical Company - Cell Pit Areas
Oak Point Plant, Belle Chasse, Louisiana

For: Chevron Chemical Company, Belle Chasse, Louisiana

Boring No. 6 Soil Technician Jack Pratt Date 2 November 1979

Ground Elev. _____ Datum _____ Gr. Water Depth See Text

Sample No.	SAMPLE Depth — Feet From	SAMPLE Depth — Feet To	DEPTH STRATUM Feet From	DEPTH STRATUM Feet To	VISUAL CLASSIFICATION	*STANDARD PENETRATION TEST	
1	1.5	2.0	0.0	3.5	Medium stiff gray & brown clay w/sand		
					pockets, roots & shells		
2	4.0	4.5	3.5		Soft to medium stiff gray & tan clay		
					w/silt pockets & roots		
3	6.5	7.0	·		Ditto		
4	9.0	9.5		11.0	Ditto		
5	11.5	12.0	11.0	14.0	Soft gray clay w/roots		
6	14.0	14.5	14.0	15.5	Very loose gray silty sand w/shell		
					fragments		
[illegible]	19.0	19.5	15.5	21.0	Loose gray sandy silt w/clay lenses		
8	24.0	24.5	21.0	27.0	Soft gray clay w/shell fragments		
9	29.0	29.5	27.0	30.0	Soft gray sandy clay w/sand layers		



[illegible]r in first column indicates number of blows of 140-lb. hammer dropped 30 in. required to seat 2-in. O. D. splitspoon sampler 6 in. Number in [illegible] column indicates number of blows of 140-lb. hammer dropped 30 in. required to drive 2-in. O. D. splitspoon sampler 1 ft. after seating 6 in.

WHILE THIS LOG OF BORING IS CONSIDERED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT ITS RESPECTIVE LOCATION ON THE DATE SHOWN, IT IS NOT WARRANTED THAT IT IS REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

CLAY SILT SAND HUMUS

Remarks: _____

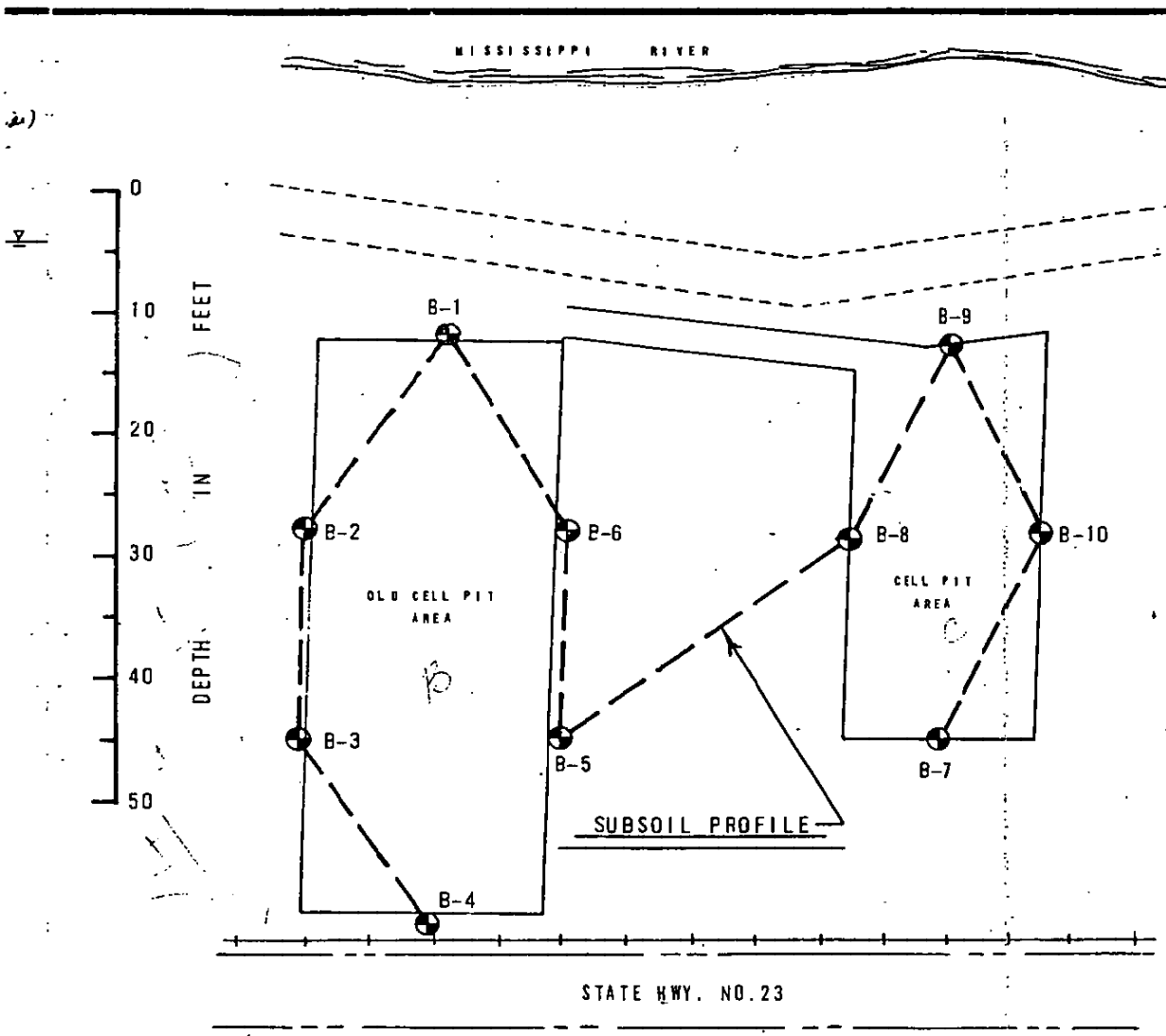
Predominant type shown heavy. Modifying type shown light.

Fig. 7

OBSERVATION WELLS

5. An observation well was set in each of the borings upon completion of boring operations. Each of the ten (10) observation wells consisted of a 2-ft length of 2-in. diameter slotted PVC pipe with a riser of 2-in. diameter solid PVC pipe of sufficient length to extend above existing ground surface. The wells were installed by first flushing the completed soil boring with clear water, suspending the assembled PVC pipe in the boring so that the bottom of the 2-ft length of slotted pipe was about 1-ft above the bottom of the hole, placing a clean sand in the hole so that the slotted portion of the pipe was completely surrounded by sand and so that the sand would extend approximately 1-ft below and 1-ft above the slotted pipe. A bentonite seal was placed on top of the sand and the remainder of the hole was grouted with a cement-bentonite slurry to the ground surface. Each riser was provided with a cap and was vented to the atmosphere.

6. Observations were made of the depth to ground water in each of the observation wells on either 1 or 2 November. The results of these observations are shown in the following tabulation.



LOCATION OF BORINGS

SCALE: 1" = 200'

BORINGS DRILLED 30 OCTOBER THRU 2 NOVEMBER 1979

SOIL BORINGS, OBSERVATION WELLS & LABORATORY TESTS
CHEVRON CHEMICAL COMPANY
CELL PIT AREAS
OAK POINT PLANT
BELLE CHASSE, LOUISIANA

LOCATION OF BORINGS & SUBSOIL PROFILE

FOR
CHEVRON CHEMICAL COMPANY
BELLE CHASSE, LOUISIANA

EUSTIS ENGINEERING COMPANY
SOIL AND FOUNDATION CONSULTA[illegible]
NOVEMBER, 1979 . META[illegible], LA.

LDEQ-EDMS Document 36119775, Page 205 of 596

SOIL AND FOUNDATION CONSULTANTS
METAIRIE, LA.

LOG OF BORING

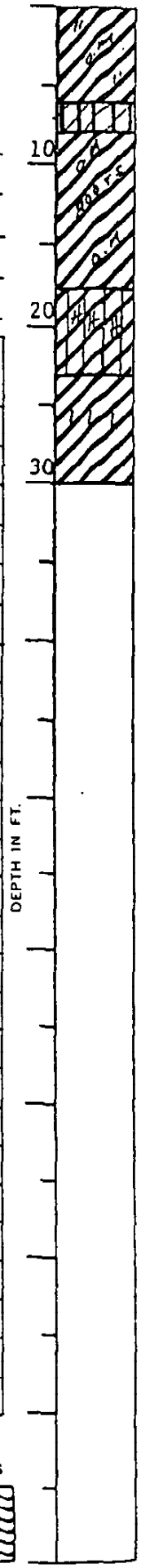
of Project: Chevron Chemical Company - Cell Pit Areas
Oak Point Plant, Belle Chasse, Louisiana

For: Chevron Chemical Company, Belle Chasse, Louisiana

Boring No. 7 Soil Technician Jack Pratt Date 1 November 1979

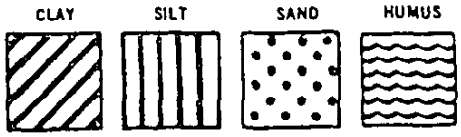
Ground Elev. _____ Datum _____ Gr. Water Depth See Text

Sample No.	SAMPLE Depth — Feet From	SAMPLE Depth — Feet To	DEPTH STRATUM Feet From	DEPTH STRATUM Feet To	VISUAL CLASSIFICATION	*STANDARD PENETRATION TEST	
1	1.5	2.0	0.0		Stiff gray & tan clay w/silt pockets & organic matter		
2	4.0	4.5		6.0	Ditto		
3	6.5	7.0	6.0	8.0	Medium compact gray clayey silt with trace of oil		
4	9.0	9.5	8.0		Medium stiff gray clay w/organic matter & roots		
5	11.5	12.0			Ditto		
6	14.0	14.5		17.5	Ditto		
7	19.0	19.5	17.5	23.0	Medium stiff gray silty clay w/clayey silt layers		
8	24.0	24.5	23.0		Soft gray clay w/silt lenses		
9	29.0	29.5		30.0	Ditto		



*Number in first column indicates number of blows of 140-lb. hammer dropped 30 in. required to seat 2-in. O. D. splitspoon sampler 6 in. Number in second column indicates number of blows of 140-lb. hammer dropped 30 in. required to drive 2-in. O. D. splitspoon sampler 1 ft. after seating 6 in.

THIS LOG OF BORING IS CONSIDERED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT ITS RESPECTIVE LOCATION ON THE DATE SHOWN. IT IS NOT WARRANTED THAT IT IS REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.



Remarks: _____

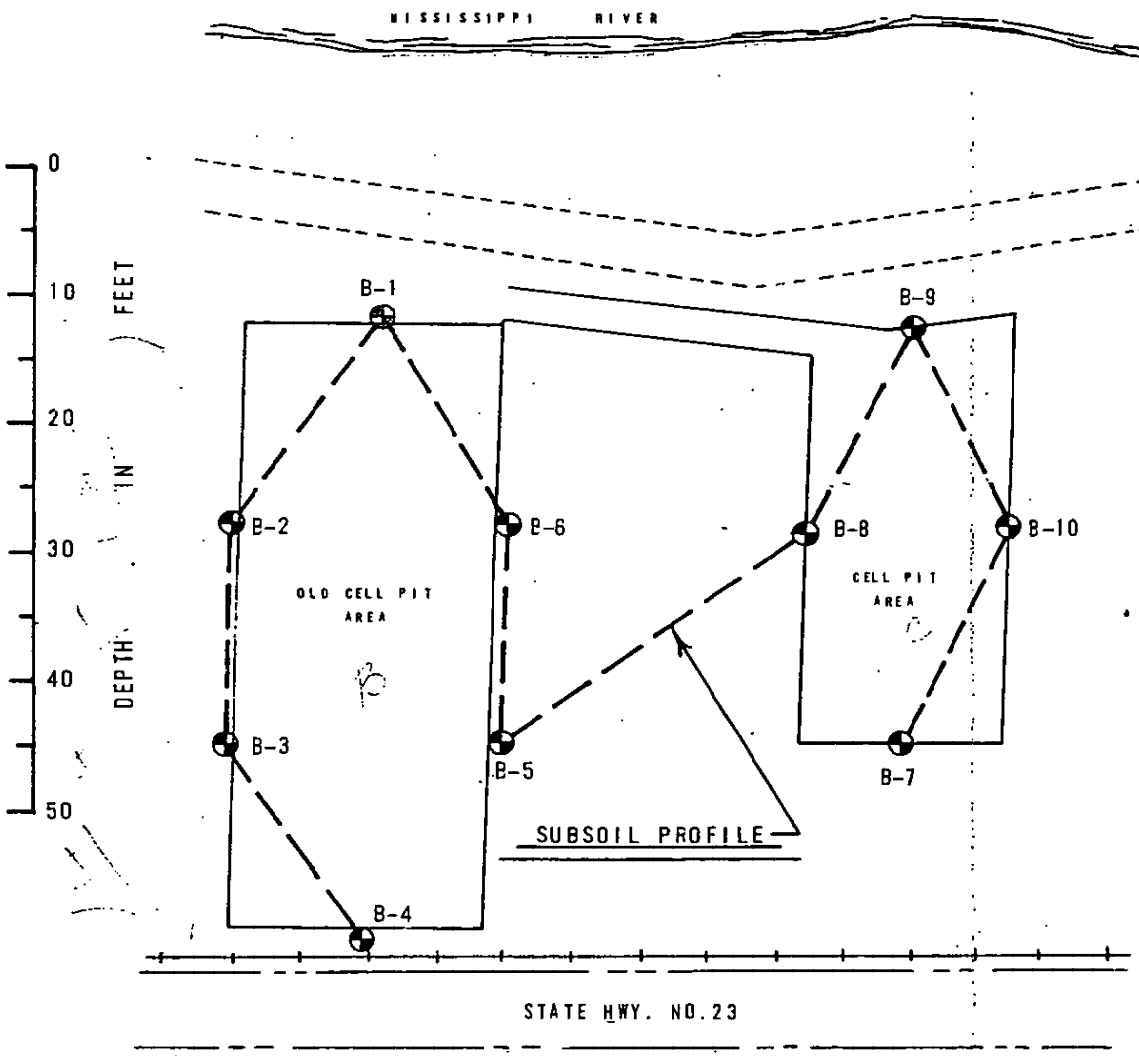
Predominant type shown heavy. Modifying type shown light.

Fig. 8

OBSERVATION WELLS

5. An observation well was set in each of the borings upon completion of boring operations. Each of the ten (10) observation wells consisted of a 2-ft length of 2-in. diameter slotted PVC pipe with a riser of 2-in. diameter solid PVC pipe of sufficient length to extend above existing ground surface. The wells were installed by first flushing the completed soil boring with clear water, suspending the assembled PVC pipe in the boring so that the bottom of the 2-ft length of slotted pipe was about 1-ft above the bottom of the hole, placing a clean sand in the hole so that the slotted portion of the pipe was completely surrounded by sand and so that the sand would extend approximately 1-ft below and 1-ft above the slotted pipe. A bentonite seal was placed on top of the sand and the remainder of the hole was grouted with a cement-bentonite slurry to the ground surface. Each riser was provided with a cap and was vented to the atmosphere.

6. Observations were made of the depth to ground water in each of the observation wells on either 1 or 2 November. The results of these observations are shown in the following tabulation.



LOCATION OF BORINGS

SCALE: 1" = 200'

BORINGS DRILLED 30 OCTOBER THRU 2 NOVEMBER 1979

SOIL BORINGS, OBSERVATION WELLS & LABORATORY TESTS
CHEVRON CHEMICAL COMPANY
CELL PIT AREAS
OAK POINT PLANT
BELLE CHASSE, LOUISIANA

LOCATION OF BORINGS & SUBSOIL PROFILE

FOR
CHEVRON CHEMICAL COMPANY
BELLE CHASSE, LOUISIANA

EUSTIS ENGINEERING COMPANY
SOIL AND FOUNDATION CONSULTANTS
NOVEMBER, 1979 METAIRIE, LA.

LDEQ-EDMS Document 36119775, Page 208 of 596

JSTIS ENGINEERING COMPANY
SOIL AND FOUNDATION CONSULTANTS
METAIRIE, LA.

LOG OF BORING

Name of Project: Chevron Chemical Company - Cell Pit Areas
Oak Point Plant, Belle Chasse, Louisiana

For: Chevron Chemical Company, Belle Chasse, Louisiana

Boring No. 8 Soil Technician Jack Pratt Date 1 November 1979

Ground Elev. _____ Datum _____ Gr. Water Depth See Text

Sample No.	SAMPLE Depth — Feet From	SAMPLE Depth — Feet To	DEPTH STRATUM Feet From	DEPTH STRATUM Feet To	VISUAL CLASSIFICATION	*STANDARD PENETRATION TEST	
1	1.5	2.0	0.0	4.0	Stiff gray & tan clay w/silt pockets & shells		
2	4.0	4.5	4.0	6.0	Stiff gray silty clay		
3	6.5	7.0	6.0	8.5	Soft gray & tan silty clay w/clay layers		
4	9.0	9.5	8.5	10.5	Medium stiff gray & tan clay w/silt pockets		
5	11.5	12.0	10.5	13.0	Medium stiff gray clay w/silt pockets & roots		
6	14.0	14.5	13.0	15.0	Soft gray clay w/roots		

DEPTH IN FT.

0
10
20

*Number in first column indicates number of blows of 140-lb. hammer dropped 30 in. required to seat 2-in. O. D. splitspoon sampler 6 in. Number in second column indicates number of blows of 140-lb. hammer dropped 30 in. required to drive 2-in. O. D. splitspoon sampler 1 ft. after seating 6 in.

WHILE THIS LOG OF BORING IS CONSIDERED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT ITS RESPECTIVE LOCATION ON THE DATE SHOWN, IT IS NOT WARRANTED THAT IT IS REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

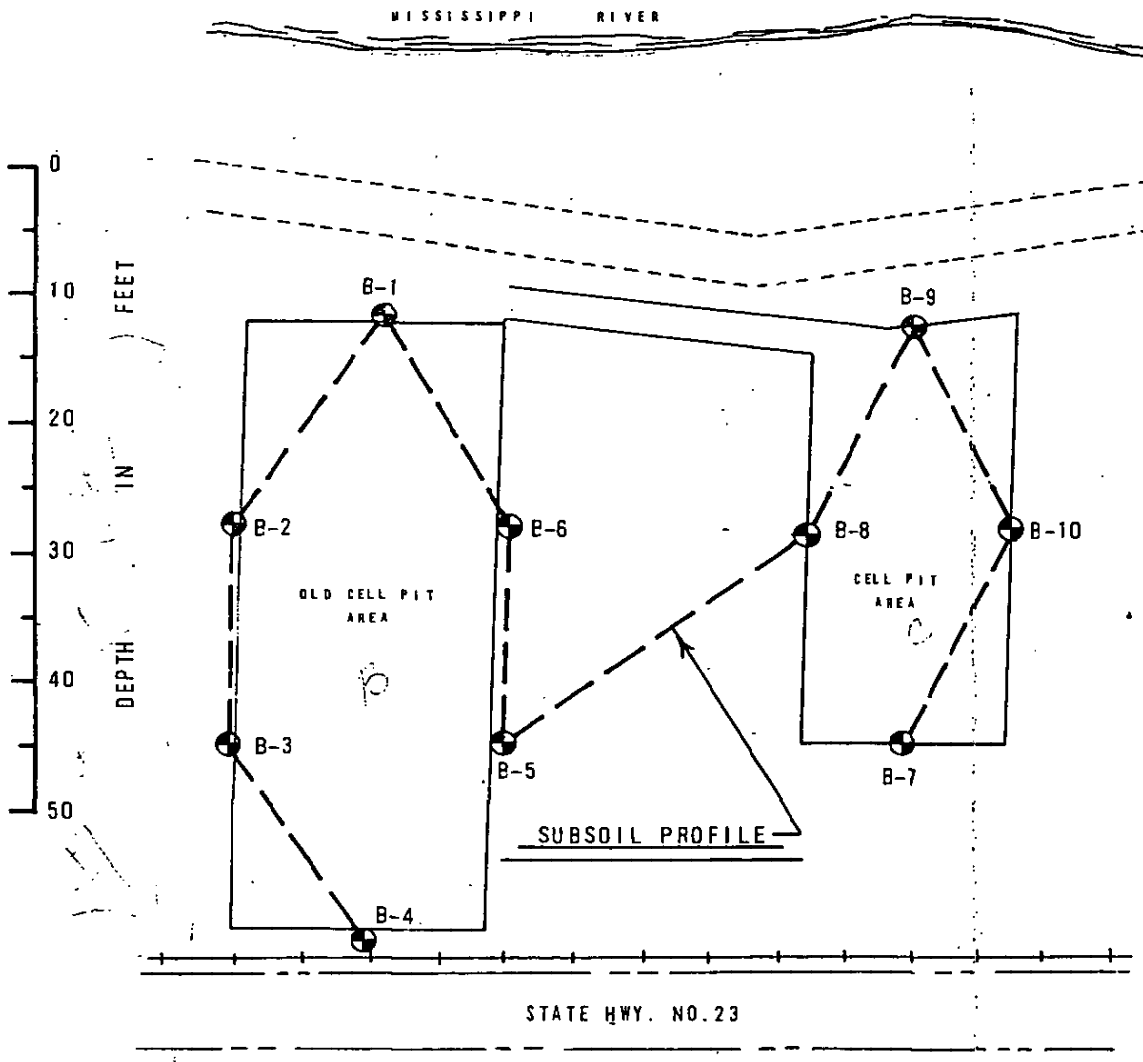
CLAY SILT SAND HUMUS

Remarks: _____

OBSERVATION WELLS

5. An observation well was set in each of the borings upon completion of boring operations. Each of the ten (10) observation wells consisted of a 2-ft length of 2-in. diameter slotted PVC pipe with a riser of 2-in. diameter solid PVC pipe of sufficient length to extend above existing ground surface. The wells were installed by first flushing the completed soil boring with clear water, suspending the assembled PVC pipe in the boring so that the bottom of the 2-ft length of slotted pipe was about 1-ft above the bottom of the hole, placing a clean sand in the hole so that the slotted portion of the pipe was completely surrounded by sand and so that the sand would extend approximately 1-ft below and 1-ft above the slotted pipe. A bentonite seal was placed on top of the sand and the remainder of the hole was grouted with a cement-bentonite slurry to the ground surface. Each riser was provided with a cap and was vented to the atmosphere.

6. Observations were made of the depth to ground water in each of the observation wells on either 1 or 2 November. The results of these observations are shown in the following tabulation.



LOCATION OF BORINGS

SCALE: 1" = 200'

BORINGS DRILLED 30 OCTOBER THRU 2 NOVEMBER 1979

SOIL BORINGS, OBSERVATION WELLS & LABORATORY TESTS
CHEVRON CHEMICAL COMPANY
CELL PIT AREAS
OAK POINT PLANT
BELLE CHASSE, LOUISIANA

LOCATION OF BORINGS & SUBSOIL PROFILE

FOR
CHEVRON CHEMICAL COMPANY
BELLE CHASSE, LOUISIANA

EUSTIS ENGINEERING COMPANY
SOIL AND FOUNDATION CONSULTANTS
NOVEMBER, 1979 METAIRIE, LA.

LDEQ-EDMS Document 36119775, Page 211 of 596

USTIS ENGINEERING COMPANY
SOIL AND FOUNDATION CONSULTANTS
METAIRIE, LA.

LOG OF BORING

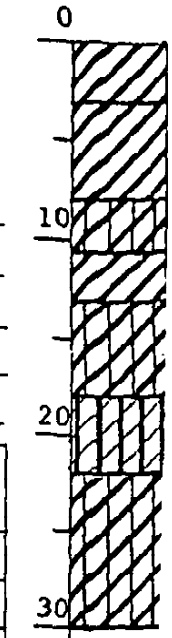
Name of Project: Chevron Chemical Company - Cell Pit Areas
Oak Point Plant, Belle Chasse, Louisiana

For: Chevron Chemical Company, Belle Chasse, Louisiana

Boring No. 9 Soil Technician Jack Pratt Date 1 November 1979

Ground Elev. _____ Datum _____ Gr. Water Depth See Text

Sample No.	SAMPLE Depth — Feet From	SAMPLE Depth — Feet To	DEPTH STRATUM Feet From	DEPTH STRATUM Feet To	VISUAL CLASSIFICATION	*STANDARD PENETRATION TEST	
1	1.5	2.0	0.0	3.0	Stiff gray & tan clay w/silt pockets, shells & wood		
2	4.0	4.5	3.0		Stiff gray & tan clay w/silt pockets		
3	6.5	7.0		8.0	Ditto		
4	9.0	9.5	8.0	10.5	Soft gray & tan silty clay w/sandy silt layers		
5	11.5	12.0	10.5	13.0	Soft gray clay w/silt lenses & pockets		
6	14.0	14.5	13.0	18.0	Very soft gray silty clay w/silt lenses		
7	19.0	19.5	18.0	22.0	Very loose gray clayey silt		
8	24.0	24.5	22.0		Soft gray silty clay w/silt & clay layers		
9	29.0	29.5		30.0	Soft gray silty clay		



*Number in first column indicates number of blows of 140-lb. hammer dropped 30 in. required to seat 2-in. O. D. splitspoon sampler 6 in. Number in second column indicates number of blows of 140-lb. hammer dropped 30 in. required to drive 2-in. O. D. splitspoon sampler 1 ft. after seating 6 in.

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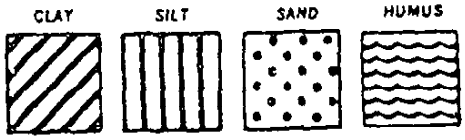


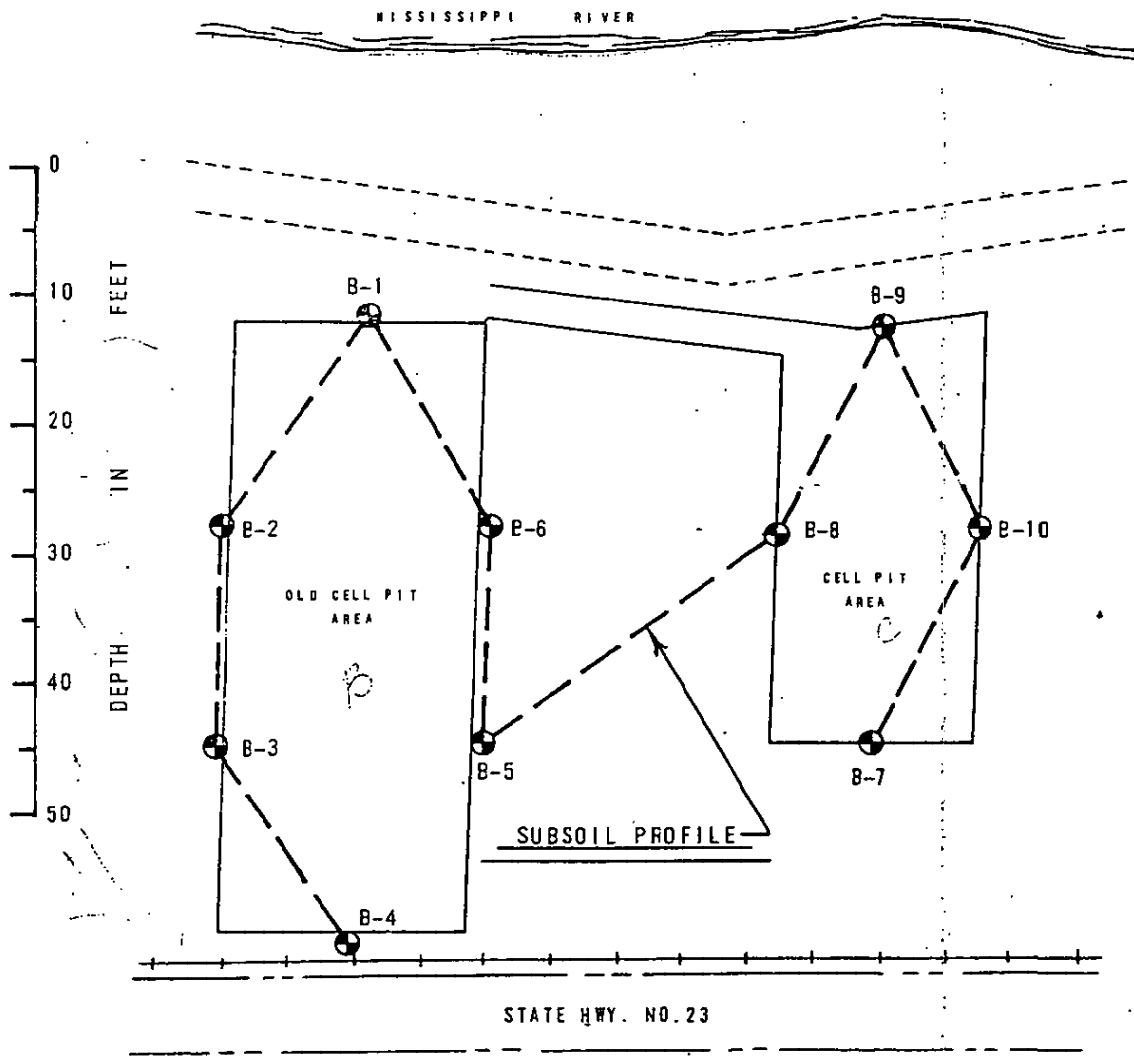
Remarks: _____

Fig.

OBSERVATION WELLS

5. An observation well was set in each of the borings upon completion of boring operations. Each of the ten (10) observation wells consisted of a 2-ft length of 2-in. diameter slotted PVC pipe with a riser of 2-in. diameter solid PVC pipe of sufficient length to extend above existing ground surface. The wells were installed by first flushing the completed soil boring with clear water, suspending the assembled PVC pipe in the boring so that the bottom of the 2-ft length of slotted pipe was about 1-ft above the bottom of the hole, placing a clean sand in the hole so that the slotted portion of the pipe was completely surrounded by sand and so that the sand would extend approximately 1-ft below and 1-ft above the slotted pipe. A bentonite seal was placed on top of the sand and the remainder of the hole was grouted with a cement-bentonite slurry to the ground surface. Each riser was provided with a cap and was vented to the atmosphere.

6. Observations were made of the depth to ground water in each of the observation wells on either 1 or 2 November. The results of these observations are shown in the following tabulation.



LOCATION OF BORINGS

SCALE: 1" = 200'

BORINGS DRILLED 30 OCTOBER THRU 2 NOVEMBER 1979

SOIL BORINGS, OBSERVATION WELLS & LABORATORY TESTS
CHEVRON CHEMICAL COMPANY
CELL PIT AREAS
OAK POINT PLANT
BELLE CHASSE, LOUISIANA

LOCATION OF BORINGS & SUBSOIL PROFILE

FOR
CHEVRON CHEMICAL COMPANY
BELLE CHASSE, LOUISIANA

EUSTIS ENGINEERING COMPANY
SOIL AND FOUNDATION CONSULTANTS
NOVEMBER, 1979 METAIRIE, LA.

LDEQ-EDMS Document 36119775, Page 214 of 596

ISTIS ENGINEERING COMPANY
SOIL AND FOUNDATION CONSULTANTS
METAIRIE, LA.

LOG OF BORING

Name of Project: Chevron Chemical Company - Cell Pit Areas
Oak Point Plant, Belle Chasse, Louisiana

For: Chevron Chemical Company, Belle Chasse, Louisiana

Boring No. 10 Soil Technician Jack Pratt Date 1 November 1979

Ground Elev. _____ Datum _____ Gr. Water Depth See Text

Sample No.	SAMPLE Depth — Feet From	SAMPLE Depth — Feet To	DEPTH STRATUM Feet From	DEPTH STRATUM Feet To	VISUAL CLASSIFICATION	*STANDARD PENETRATION TEST	
1	1.5	2.0	0.0	3.5	Stiff gray & tan clay w/silt pockets & decayed roots		
2	4.0	4.5	3.5	5.5	Medium stiff gray silty clay w/silt pockets, roots & trace of oil		
3	6.5	7.0	5.5		Soft gray & tan clay w/silt pockets & trace of organic matter		
4	9.0	9.5			Ditto		
5	11.5	12.0			Ditto		
6	14.0	14.5			Ditto		
7	19.0	19.5		22.0	Ditto		
8	24.0	24.5	22.0	28.0	Loose gray silty sand w/trace of clay		
9	29.0	29.5	28.0	33.0	Soft gray clay w/sand pockets & shells		
10	34.0	34.5	33.0		Loose gray silty sand w/clay layers		
11	39.0	39.5		40.0	Ditto		
12	44.0	44.5	40.0		Medium stiff gray silty clay w/sandy silt layers		
13	49.0	49.5		50.0	Ditto		

*Number in first column indicates number of blows of 140-lb. hammer dropped 30 in. required to seat 2-in. O. D. splitspoon sampler 6 in. Number in second column indicates number of blows of 140-lb. hammer dropped 30 in. required to drive 2-in. O. D. splitspoon sampler 1 ft. after seating 6 in.

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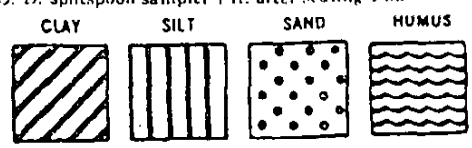
Remarks: _____



Predominant type shown heavy. Modifying type shown light.

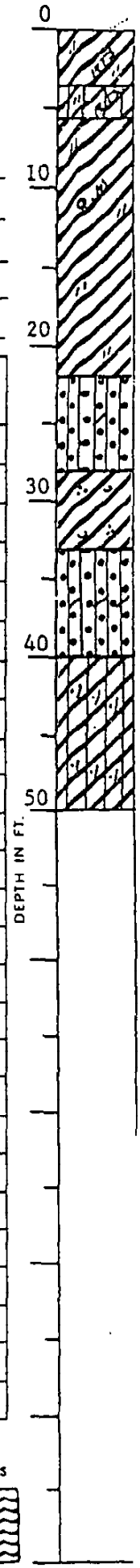


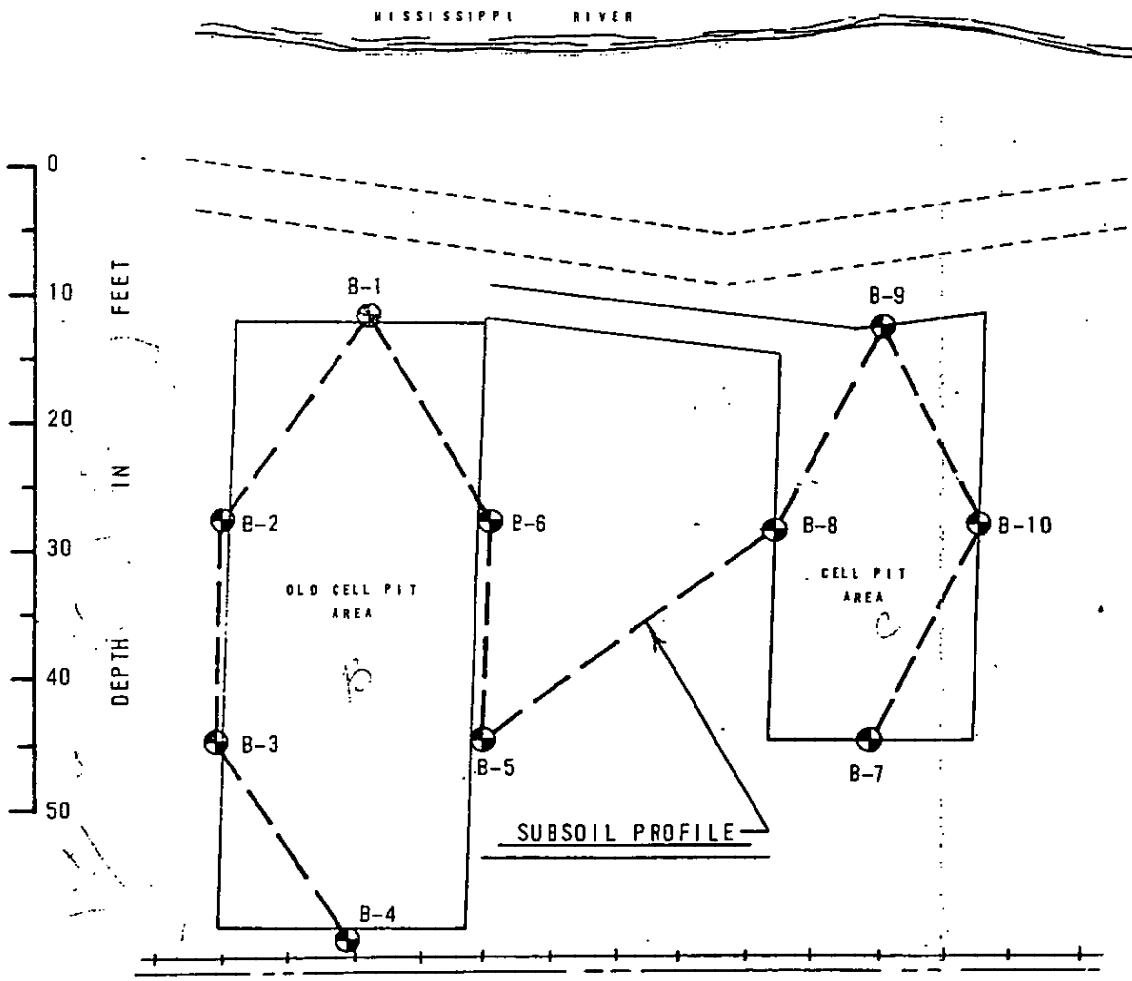
Fig. 1

OBSERVATION WELLS

5. An observation well was set in each of the borings upon completion of boring operations. Each of the ten (10) observation wells consisted of a 2-ft length of 2-in. diameter slotted PVC pipe with a riser of 2-in. diameter solid PVC pipe of sufficient length to extend above existing ground surface. The wells were installed by first flushing the completed soil boring with clear water, suspending the assembled PVC pipe in the boring so that the bottom of the 2-ft length of slotted pipe was about 1-ft above the bottom of the hole, placing a clean sand in the hole so that the slotted portion of the pipe was completely surrounded by sand and so that the sand would extend approximately 1-ft below and 1-ft above the slotted pipe. A bentonite seal was placed on top of the sand and the remainder of the hole was grouted with a cement-bentonite slurry to the ground surface. Each riser was provided with a cap and was vented to the atmosphere.

6. Observations were made of the depth to ground water in each of the observation wells on either 1 or 2 November. The results of these observations are shown in the following tabulation.

LDEQ-EDMS Document 36119775, Page 217 of 596



LOCATION OF BORINGS

SCALE: 1" = 200'

BORINGS DRILLED 30 OCTOBER THRU 2 NOVEMBER 1979

SOIL BORINGS, OBSERVATION WELLS & LABORATORY TESTS
CHEVRON CHEMICAL COMPANY
CELL PIT AREAS
OAK POINT PLANT
BELLE CHASSE, LOUISIANA

LOCATION OF BORINGS & SUBSOIL PROFILE

FOR
CHEVRON CHEMICAL COMPANY
BELLE CHASSE, LOUISIANA

EUSTIS ENGINEERING COMPANY
SOIL AND FOUNDATION CONSULTANTS
NOVEMBER, 1979 METAIRIE, LA.

Appendix M

Monitor Well Plug and Abandonment
and Water Well Registration Forms

ARCADIS GERAGHTY&MILLER

ARCADIS Geraghty & Miller, Inc.
2900 West Fork Drive
Suite 540
Baton Rouge
Louisiana 70827
Tel 225 292 1004
Fax 225 292 5210

Mr. Troy Gaubert
Chevron Chemical Company
Post Office Box 70
Belle Chasse, Louisiana 70037

ENVIRONMENTAL

Subject:
Plug and Abandonment of Damaged Monitor Well 34-A and Installation of Replacement Well 34-R Summary Report, Chevron Chemical Company, Oak Point Facility

Baton Rouge,
27 October 1998

Contact:
Kipper Montgomery

Extension:
(225) 292-1004

Dear Mr. Gaubert:

ARCADIS Geraghty & Miller, Inc., (ARCADIS Geraghty & Miller) is pleased to provide Chevron Chemical Company (Chevron) the following summary report documenting the above referenced field activities at the Oak Point facility (Figure 1). The proposed scope of work and cost estimate (ARCADIS Geraghty & Miller, May 1998) was based upon a written proposal received from Chevron. Chevron informed ARCADIS Geraghty & Miller that a Monitor Well (MW-34A) had been damaged by a motor vehicle. The monitoring well is located west of Landfill "C" next to Louisiana Highway 23. The scope work included the plugging and abandonment of the damaged well and the installation of a replacement well. Registration of the new well and registration of the plugging and abandonment of the damaged well with the LDOTD.

Field Activities

ARCADIS Geraghty & Miller mobilized to the Chevron's Oak Point facility during the week of July 20, 1998, with the assistance of Fugro Geosciences, a subcontracted Louisiana licensed driller to plug and abandon Monitor Well 34-A and install the replacement well MW-34R. Field activities began by installing the replacement well MW-34R approximately 25 feet north of the damaged well MW-34A. A hollow stem auger rig was utilized to drill a new borehole to facilitate the installation of the monitor well. Continuous soil samples were collected and described by the on-site hydrogeologist. The description of lithology was recorded on a sample/core log (Attachment A). The boring was drilled to 33 feet below land surface. Once total depth was achieved, a 2-inch diameter, schedule 40 polyvinyl chloride (PVC) well casing was installed into the borehole such that the 5 foot PVC screen (0.010-inch slotted) section intersected the second water-bearing zone (30-Foot Zone). A 20-40 washed sand filter pack was placed around the well screen to approximately 2 feet above the top of the screen. Following the placement of the sand pack, sugar sand was placed 1 foot above the top of the filter sand. Two feet

of dehydrated bentonite pellets were then placed above the top of the sugar sand and allowed to hydrate to form a seal. Once hydrated, one foot of sugar sand was placed on top of the hydrated pellets. The remaining annular space was filled with a bentonite clay/Portland cement grout mixture. The grout slurry was prepared in accordance with the Louisiana Department of Transportation and Development (LDOTD) and the Louisiana Department of Environmental Quality's Construction of *Geotechnical Boreholes and Groundwater Monitoring Systems: Handbook.* The grout slurry was pumped from the top of the secondary sugar sand to land surface via the tremie method. Prior to pumping the grout the slurry was weighed with a calibrated mud scale to ensure the proper weight. Grouting was discontinued after it was determined the return grout mix exiting the borehole was equal in density to that being pumped into the borehole by frequent measuring. Once the grout was allowed to harden, the monitor well was completed with a locked protective casing and cap for security. To complete the monitor well installation process, a new 5 foot by 5 foot concrete pad and guard posts were installed at MW-34R. A well construction log and a well diagram for MW-34R has been provided as Attachment B.

To facilitate the plugging and abandonment of MW-34A, the four guard posts and concrete pad were removed from around the damaged well's protective casing. The hollow stem drill rig was then utilized to extract the protective casing, PVC well casing and screen of the damaged well MW-34A. The drill rig successfully extracted all PVC well material during the process. Upon extracting the casing from the ground, the borehole was drilled out (overdrilled) to the total depth of the well. Soil cuttings accumulated during the overdrilling were containerized and disposed of in an environmentally safe manner by Chevron. A grout mixture was then prepared and pumped in the same manner as described in the previous paragraph.

Once the replacement well's protective concrete pad had been given sufficient time to set, an ARCADIS Geraghty & Miller hydrogeologist mobilized to the site to develop the well. A 2-inch Rediflo® submersible pump was used to develop the replacement well. Development activities were discontinued when the discharge water was visibly clear or silt-free. After installation, Chevron subcontracted a Louisiana licensed surveyor to survey MW-34R. A copy of the survey has been provided as Attachment C. As required by the LDOTD, the Certification form DOTD-GW-2 was submitted to the DOTD upon completion of the plugging and abandonment of 34-A and form DOTD-GW-1S was also submitted upon completion of the installation of 34-R by Fugro. A signed copy of the plug and abandonment form and the well registration form have been included as Attachment D and Attachment E, respectively.

ARCADIS Geraghty & Miller appreciates the opportunity to provide this letter report documenting the plugging and abandonment of Monitor Well MW-34A and the installation of the Replacement Monitor Well MW-34R. We look forward to

ARCADIS GERAGHTY & MILLER

assisting Chevron with future projects. Should you have any questions or require additional information, please contact Rudy Guichard or Kipper Montgomery at (225) 292-1004.

Sincerely,

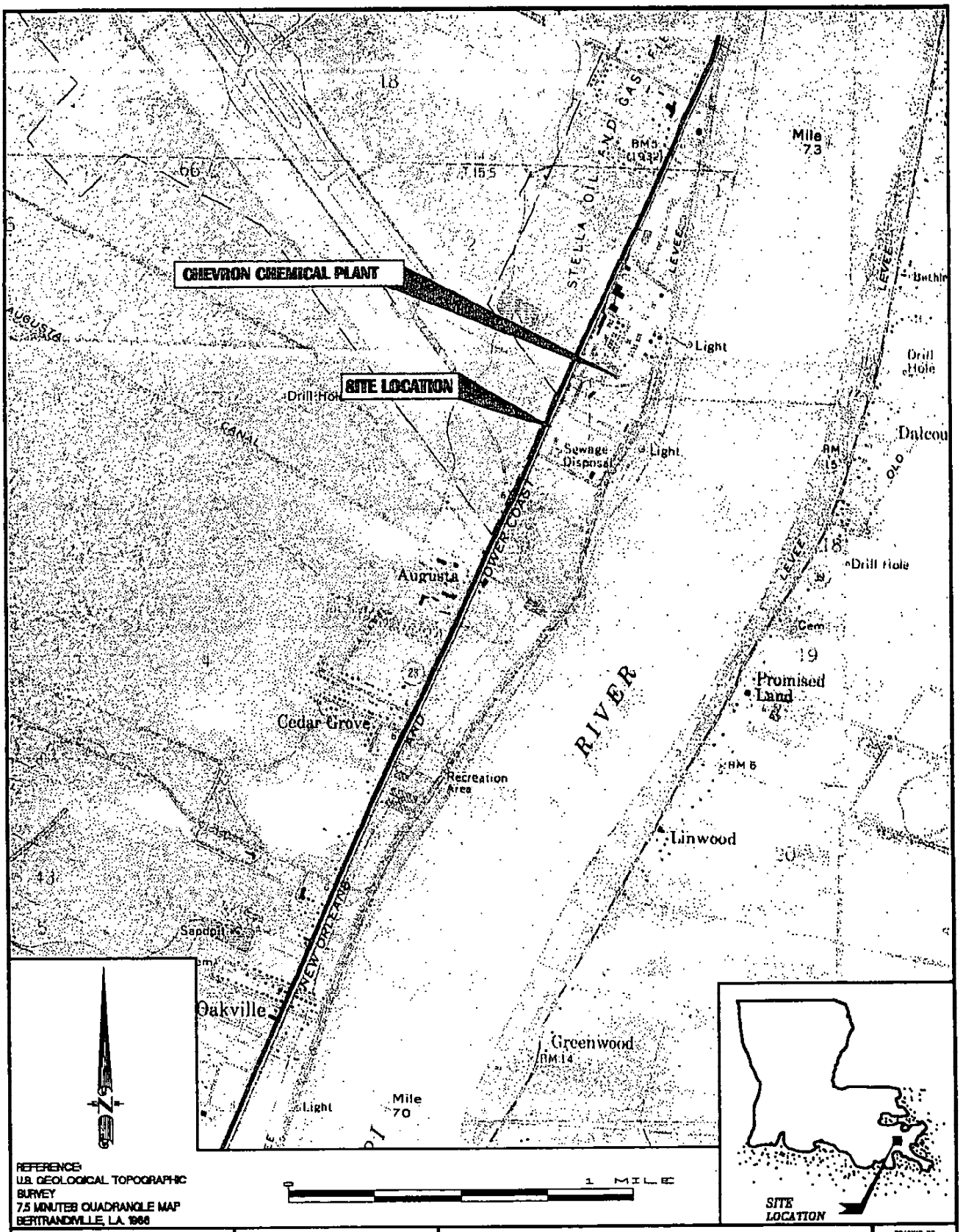
ARCADIS Geraghty & Miller, Inc.

Rudy J. Guichard
Associate/Regional Manager

RJG:crg
Attachment

ARCADIS GERAGHTY&MILLER

FIGURE



REFERENCE:
U.S. GEOLOGICAL TOPOGRAPHIC SURVEY
7.5 MINUTES QUADRANGLE MAP
BERTRANDVILLE, LA. 1966

ARCADIS GERAGHTY & MILLER
2900 WEST FORK DRIVE
SUITE 540 LOUISIANA, LA 70827
Tel (504) 292-1004 Fax (504) 292-5210

PROJECT NUMBER	LA001613.001
DWG DATE: 7-31-98	
DRAWING NO. LOC-F-1A	DRAWN BY: CRM
CHECKED BY:	APPROVED BY:
REVISION BY:	

SITE LOCATION MAP
CHEVRON CHEMICAL COMPANY
OAK POINT PLANT
Belle Chasse, Louisiana

DRAWING NO. 1

ARCADIS GERAGHTY&MILLER

ATTACHMENT A

Sample/Core Log

ARCADIS Geraghty & Miller, Inc.

SAMPLE/CORE LOG

Boring/Well MW-34R Project/No. CHEVRON CHEMICAL COMPANY (LA001703.0001) Page 1 of 2

Site Location Belle Chasse, Louisiana Drilling Started 07/22/98 Drilling Completed 07/22/98

Land-Surface Elev. 4 feet ☐ Surveyed ☐ Estimated Datum NA

Drilling Fluid Used NA Drilling Method Hollow Stem

Drilling Contractor Fugro Geosciences Driller Frank Helper Jerry

Prepared By K. Montgomery Hammer Weight NA Hammer Drop NA Inches

Fill | Silty Clay | Silt | Sandy Silt | Silty Sand | Shelby Tube | ▽ Water First Encountered

Clay | Sandy Clay | Clayey Silt | Sand | Clayey Sand | Split Spoon | ▼ Water Level After 10 Min.

SAMPLE DEPTH (Feet)	SAMPLE TYPE	RECOVERY (Feet)	SYMBOL	VISUAL DESCRIPTION	USCS (LL/PL/PI)	PP	OVM (ppm)	REMARKS
0								
1		2.0		Fill material				
2								
3		2.0		Silty clay, gray, dry				
4								
5		2.0						
6								
7		2.0						
8								
9		2.0						
10								
11		2.0						
12								
13		2.0						
14								
15		2.0						
16								
17		2.0						
18								
19		2.0						
20								
21		2.0		Clay, gray, dry				
22								
23		2.0		Sandy silt, gray, wet				▽
24								
25		2.0						

ARCADIS Geraghty & Miller, Inc.

SAMPLE/CORE LOG

Boring/Well MW-34R Project/No. CHEVRON CHEMICAL COMPANY (LA001703.0001) Page 2 of 2

Site Location Belle Chasse, Louisiana Drilling Started 07/22/98 Drilling Completed 07/22/98

Land-Surface Elev. 4 feet ☐ Surveyed ☐ Estimated Datum NA

Drilling Fluid Used NA Drilling Method Hollow Stem

Drilling Contractor Fugro Geosciences Driller Frank Helper Jerry

Prepared By K. Montgomery Hammer Weight NA Hammer Drop NA Inches

Fill, Silty Clay, Silt, Sandy Silt, Silty Sand, Shelby Tube, Water First Encountered

Clay, Sandy Clay, Clayey Silt, Sand, Clayey Sand, Split Spoon, Water Level After 10 Min.

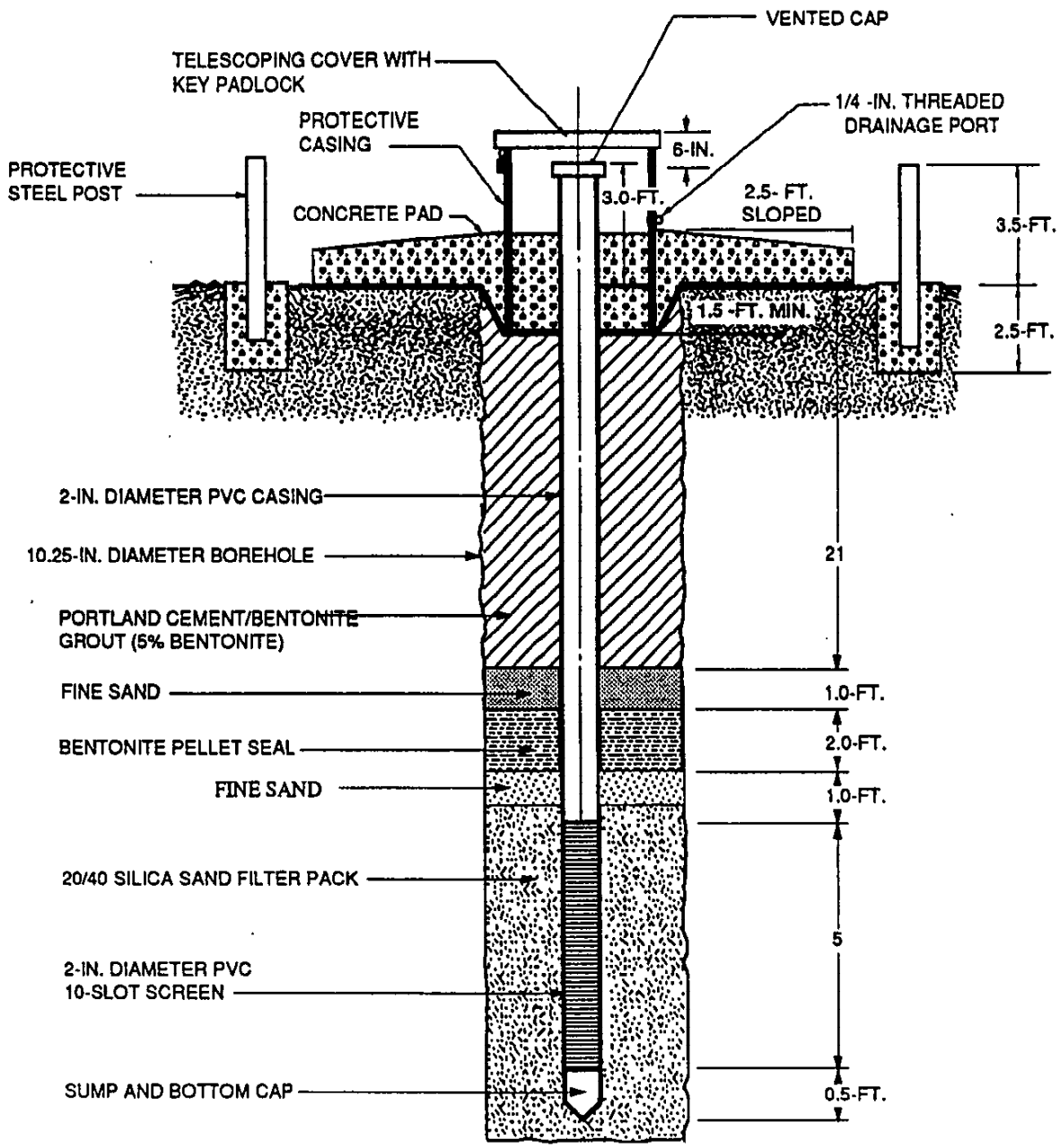
SAMPLE DEPTH (Feet)	SAMPLE TYPE	RECOVERY (Feet)	SYMBOL	VISUAL DESCRIPTION	USCS (LL/PL/PI)	PP	OVM (ppm)	REMARKS
25								
26								
27		2.0						
28								
29		2.0						
30								
31		2.0						
32								
33		0.5						
				Total Depth - 33.5 ft bls				

ARCADIS GERAGHTY&MILLER

ATTACHMENT B

Well Construction Log and a Well Diagram for MW-34R

MW-34R
Monitor Well Diagram



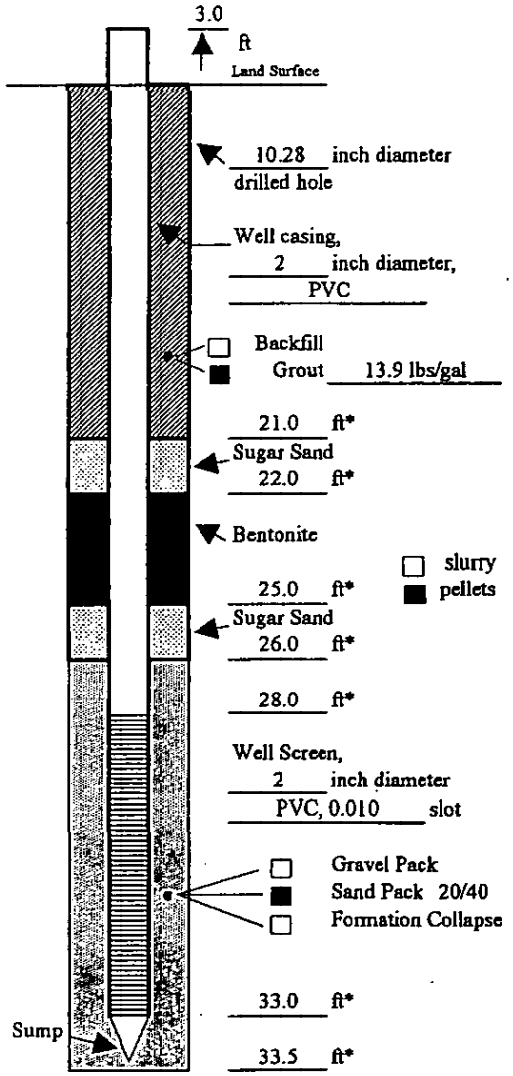
NOT TO SCALE

Chevron Chemical Company
Oak Point Plant
Belle Chasse, Louisiana
LA001703.0001

LDEQ-EDMS Document 36119775, Page 229 of 596

GERAGHTY & MILLER, INC.
Environmental Services
a heidemij company

WELL CONSTRUCTION LOG



Project	Chevron Chemical (LA001703.0001)	Well	MW-34R
Town/City	Belle Chasse		
County	Plaquemines	State	LA
Permit Number	NA		
Land-Surface Elevation and Datum	4 feet	☐ Surveyed ■ Estimated	
Installation Date(s)	7/21/98; 7/22/98		
Drilling Method	Hollow Stem Auger		
Drilling Contractor	Fugro Geoscience, Inc.		
Drilling Fluid	None		

Development Technique(s) and Date(s)
2" Rediflo pump

Fluid Loss During Drilling	None	gallons
Water Removed During Development	150	gallons
Static Depth to Water	3.77	feet below M.P.
Pumping Depth to Water	32	feet below M.P.
Pumping Duration	NA hours	
Yield	NA gpm	Date 7/29/98
Specific Capacity	NA	gpm/ft
Well Purpose	Replacement well for MW-34 that was damaged.	

Remarks

Prepared by George Cook

Measuring Point is Top of Well Casing Unless Otherwise Noted.

* Depth Below Land Surface

CHEVRON\SAMPLING\We-mw34r.xlsx

ARCADIS GERAGHTY & MILLER

ATTACHMENT C

Copy of the Survey

W/E PROFESSIONAL SURVEYS

A DIVISION OF WINK INCORPORATED

4949 BULLARD AVE. • NEW ORLEANS, LA 70128-3147 • TELEPHONE: (504) 248-7924
FAX: (504) 246-8759

Chevron Chemical
Monitor Well 34R Locations
August 24, 1998

STATE PLANE (1983 NAD)	GEODETIC (1983 NAD)	ELEVATION (NGVD)
X=3,699,288.82	LON 090°00'49.922"	4.44 PVC
Y= 477,413.18	LAT 29°48'22.203"	2.0 GROUND
PLANT COORDINATES		(PLANT)
S= 1532.89	W= 447.95	6.35 PVC
		3.9 GROUND

State Plane and Geodetic positions are based upon the U.S. Corps of Engineers Levee Baseline.
NGVD elevations are based upon NGS Bench Mark D-366 having an elevation of 1.61 feet (1995 adjustment).

STATE OF LOUISIANA
HUGH McCURDY III
Reg. No. 4847
REGISTERED
PROFESSIONAL
LAND SURVEYOR

8/24/98

GERAGHTY&MILLER

ATTACHMENT D

Plug and Abandonment Form

LDEQ-EDMS Document 36119775, Page 233 of 596

PLEASE PRINT IN INK OR TYPE WHEN COMPLETING THIS FORM

LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
WATER RESOURCES SECTION
WATER WELL PLUGGING AND ABANDONMENT FORM (DOTD-GW-2)

MAIL ORIGINAL TO
Department of Transportation and Development
Attn: Chief - Water Resources Section
P.O. BOX 94245
Baton Rouge, LA 70804-9245
(504) 379-1434

1. WELL OWNER: (If different from owner when drilled, note in Item 6) Chevron Chemical Company
ADDRESS: P.O. Box 70, Hwy 23, Belle Chasse, La. 70037
OWNERS WELL NUMBER (if any) MW-34A

2. LOCATION OF WELL: Parish: Plaquemines, Well is Near, Belle Chasse
Approximately 1.25 miles from Intersection of Russell Rd.
(Crossroads, Town, City, Landmark, Any Landmark, etc.)
and Hwy. 23 (South)
(Please draw sketch on back of Original)

3. WELL INFO: Casing material PVC, Diameter of casing 2 in.,
Depth of well 33.5 ft., Date drilled 9/29/85 by (give name of water well contractor who installed well or hole): Eustis Engineering

4. Describe in detail how well or hole was plugged: (materials used, amount of casing and/or screen removed, or left in hole, etc.)
Above ground pad and post was removed. Hollow stem augers were used to overdrill well casing.
All casing and screen was removed. Well was bentonite cement grout to surface with 6 bags. 5-screen & 28-feet riser was removed.

5. REMARKS: (0302-0931) Well was damaged

I certify that this work was done and completed in accordance with Rules and Regulations of the State on 7/22, 19 98 by (name and no. of contractor) Fugro Geosciences, Inc. WWC 291
Authorized Signature: Stephanie Gunzel Date: 9/16/98

OFFICE USE ONLY

State	Parish	Local Well No.	Identification Number		Section	Township	Range	Quad. No.
22	075	-52593	294822 0	900046 01	003	15S	24E	201C

elev. 4'

(REV. 6/92)

DOTD'S COPY

ARCADIS GERAGHTY & MILLER

ATTACHMENT E

Well Registration Form

LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
WATER RESOURCES SECTION
WATER WELL REGISTRATION SHORT FORM (DOTD-GW-1S)

PLEASE PRINT IN INK OR TYPE WHEN COMPLETING THIS FORM

1. USE OF WELL (Check Appropriate Box)
   ☐ DOMESTIC ☐ RIG SUPPLY ☒ MONITORING ☐ PIEZOMETER ☐ RECOVERY
   ☐ HEAT PUMP HOLE ☐ HEAT PUMP SUPPLY ☐ ABANDONED PILOT HOLE ☐ OTHER _____ (Please Specify)
2. WELL OWNER Chevron Chemical Company PHONE (504) 391-6331
3. WELL OWNER'S ADDRESS P.O. Box 70, Hwy 28, Belle Chasse, La. 70037
4. OWNER'S WELL NUMBER OR NAME (if any) MW-34R
5. DATE COMPLETED 7/22/98 DEPTH OF HOLE 33 FT. DEPTH OF WELL 33 FT.
6. STATIC WATER LEVEL 3.82 FT. BELOW GROUND SURFACE MEASURED ON 7/23/98 (Date)
7. CASING 2 IN. ☐ METAL ☒ PLASTIC ☐ OTHER LENGTH 33 FT.
8. SCREEN 2 IN. ☐ METAL ☒ PLASTIC ☐ OTHER SLOT SIZE 0.010 LENGTH 5 FT.
9. CEMENTED FROM 21 FT. TO GROUND SURFACE, USING ☒ PUMP DOWN METHOD OR ☐ GRAVITY METHOD
10. LOCATION OF WELL: PARISH Plaquemines WELL IS NEAR, Belle Chasse (Town or City)
    APPROXIMATELY 1.25 MILES FROM Intersection of Russell Rd. and Hwy 23 (South) (Crossroads, Railroad, Any Landmark, etc.)
    (Please draw sketch on back of Original)
11. REMARKS: 3-foot Stick-up (0202-0431)
12. DRILLER'S LOG (Description and color of cuttings, such as shale, sand, etc. in feet)

FROM	TO	DESCRIPTION	FROM	TO	DESCRIPTION
0	2	Fill Material			
2	20	Silty Clay			
20	22	Clay			
22	33	Sandy Silt			

13. FOR HEAT PUMP ONLY: AVG. DEPTH N/A FT. NUMBER OF HOLES N/A
14. ABANDONMENT INFORMATION: DOES THE NEW WELL REPLACE AN EXISTING WELL? YES ☒ NO ☐
15. NAME OF PERSON WHO DRILLED THE WELL: Frank Ward

Fugro Geosciences, Inc.
Name of Water Well Contractor
LICENSE NUMBER WWC-291
Authorized Signature [signature] Date 9/16/98

MAIL ORIGINAL TO:
LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
ATTN.: CHIEF - WATER RESOURCES SECTION
P.O. BOX 94245
BATON ROUGE, LA 70804-9245
(504) 379-1434

FOR OFFICE USE ONLY
PARISH 075 WELL NO. -5928
IDENTIFICATION NUMBER 0
REVISED COORDINATES
Geologic Unit
Use of Well M
SECTION TOWNSHIP RANGE
ELEV. QUAD. NO.
INPUT BY: [illegible] DATE: 9/[illegible]/98
INSPECTED BY: DATE:
REMARKS:

FOR MONITOR/PIEZO/RECOVERY WELLS ONLY
LATITUDE 29453.2 LONGITUDE 90004.9 01
SECTION 003 TOWNSHIP 15S RANGE 34E
ELEV. 4 QUAD. NO. 2010

SITE ADDRESS: P.O. Box 70, Hwy 28
Belle Chasse, La. 70037

FILE

ARCADIS

Infrastructure, buildings, environment, communications

ARCADIS G&M, Inc.
2900 West Fork Drive
Suite 540
Baton Rouge
Louisiana 70827
Tel 225 292 1004
Fax 225 292 5210
www.arcadis-us.com

ENVIRONMENTAL

Mr. Troy Sampey
Environmental Specialist
Chevron Oronite Company, LLC
P.O. Box 70
Belle Chasse, Louisiana 70037-0070

Subject:
Plugging and Abandonment of 24 Monitor Wells and
Installation of 2 Piezometers
Chevron Oronite Company, LLC
Oak Point Facility
Belle Chasse, Louisiana

Date:
10 June 2004

Contact:
John Ellis, P.G.

Extension:
208

Email:
jellis@arcadis-us.com

Our ref:
LA002413.0001.00001
Chevron/2413/C/2/rdr

Dear Mr. Sampey:

ARCADIS is pleased to provide Chevron with this summary report for the plugging and abandonment of 24 monitor wells and installation of 2 piezometers at the Chevron Oronite Company, LLC (Chevron) facility, located in Belle Chasse, Louisiana. A description of the activities completed by ARCADIS is provided below.

Scope of Work

Based on our understanding of the project scope and the Louisiana Department of Environmental Quality (LDEQ) and Louisiana Department of Transportation and Development (LDOTD) regulations, ARCADIS performed the following scope of work. The scope of work was provided to LDEQ in a letter dated March 2, 2004.

Plugging and Abandonment of Monitor Wells

ARCADIS subcontracted Professional Technical Support Services, Inc. (Pro Tech), a licensed water well driller, to provide all necessary labor and equipment needed to plug and abandon the 24 monitor wells at the site. The work was initiated on March 15, 2004. The following monitor wells were plugged and abandoned:

EDA/DETA-1	LMS-9	MW-20	MW-39R	MW-53	OLOA-2
LMS-5R	LMS-11	MW-21	MW-40	MW-54	OLOA-3
LMS-6	LMS-12	MW-26	MW-41R	MW-55	OLOA-4
LMS-8	MW-11	MW-38R	MW-52	MW-56	TOLOA-5

A location map of all abandoned wells is provided as Figure 1.

All well abandonment activities were performed under the supervision of an ARCADIS geologist experienced in monitor well plugging and abandonments. Each well was plugged and abandoned in accordance with the procedures and specifications for abandoning groundwater monitor wells as presented in the December 2000 LDEQ and LDOTD handbook entitled *Construction of Geotechnical Boreholes and Groundwater Monitoring Systems*.

A backhoe and hydraulic hammer were utilized to fragment the concrete pad and remove the protective outer casing, protective posts, and polyvinyl chloride (PVC) well casing at each well location. Where possible, 100 percent of the PVC casing was removed. At four well locations, MW-11, MW-26, MW-55, and MW-56, Pro Tech personnel were unable to remove the PVC casing. In these locations, the PVC casing was severed approximately 2 feet below ground surface and only the top portion was removed. Following PVC casing removal, each borehole was backfilled from the bottom to land surface with a Portland cement and bentonite grout mixture. Five monitor wells, EDA/DETA-1, OLOA-2, OLOA-3, OLOA-4, and TOLOA-5, were flush-mounted casings located inside process units. No attempt was made to remove these well casings, and they were plugged and abandoned in place. The grout mixture consisted of approximately 5 pounds of bentonite clay to every 94-pound bag of Portland cement and 8.5 gallons of potable water to achieve a 13.8 pound/gallon Portland cement/bentonite grout mixture. Prior to pumping, the grout mixture was weighed with a calibrated mud scale. Grouting was discontinued after it was determined the return grout mix exiting the borehole was equal in density to that being pumped into the borehole. The grout was allowed to cure overnight and was subsequently covered with topsoil or concrete, depending on location.

Pro Tech personnel loaded all waste material onto a flatbed trailer and transported to an on-site solid waste dumpster.

Construction of Piezometers

Piezometer PZ-2 was installed directly west of Landfill B. Its purpose is to provide water level data for construction of potentiometric maps. A Geoprobe® was utilized to advance a new borehole to facilitate the installation of the piezometer. Continuous soil samples were collected and described by the on-site Hydrogeologist, and the lithology was recorded on a Sample/Core Log (Attachment A). A borehole was advanced to the water bearing zone, and a 2-inch PVC casing and screen were installed. A plug of bentonite pellets was placed above the screen, and the borehole was grouted to land surface. The Well Construction Log for PZ-2 is included as Attachment B.

During installation of PZ-1, an existing piezometer was discovered under loose gravel west of Landfill A. This piezometer was previously believed to be destroyed. A tall protective casing, protective posts, and a larger concrete pad were added to increase visibility of the piezometer. This piezometer was redesignated as PZ-1.

The locations of the two piezometers are provided on Figure 1.

Documentation

Well Plugging and Abandonment Forms (DOTD-GW-2) were prepared for each well that was abandoned and a Water Well Registration Short Form (DOTD-GW-1S) was prepared for the newly constructed piezometer (PZ-2). While completing the LDOTD forms, it was discovered that Monitor Well TOLOA-5 was not registered. Consistent with LDOTD protocols, a Water Well Registration (short form) and a Well Plugging and Abandonment Form have been prepared for TOLOA-5. These forms have been forwarded to LDOTD. Copies of these forms are enclosed with this report as Attachments C and D.

Closing

ARCADIS appreciates the opportunity to continue to provide environmental consulting services to Chevron. Please contact any of the undersigned if you have any questions or need additional information.

Sincerely,

ARCADIS G&M, Inc.

Jacob Wilson (RJG)
Jacob Wilson
Scientist/Geologist

John Ellis
John Ellis, P.G.
Project Scientist/Geologist

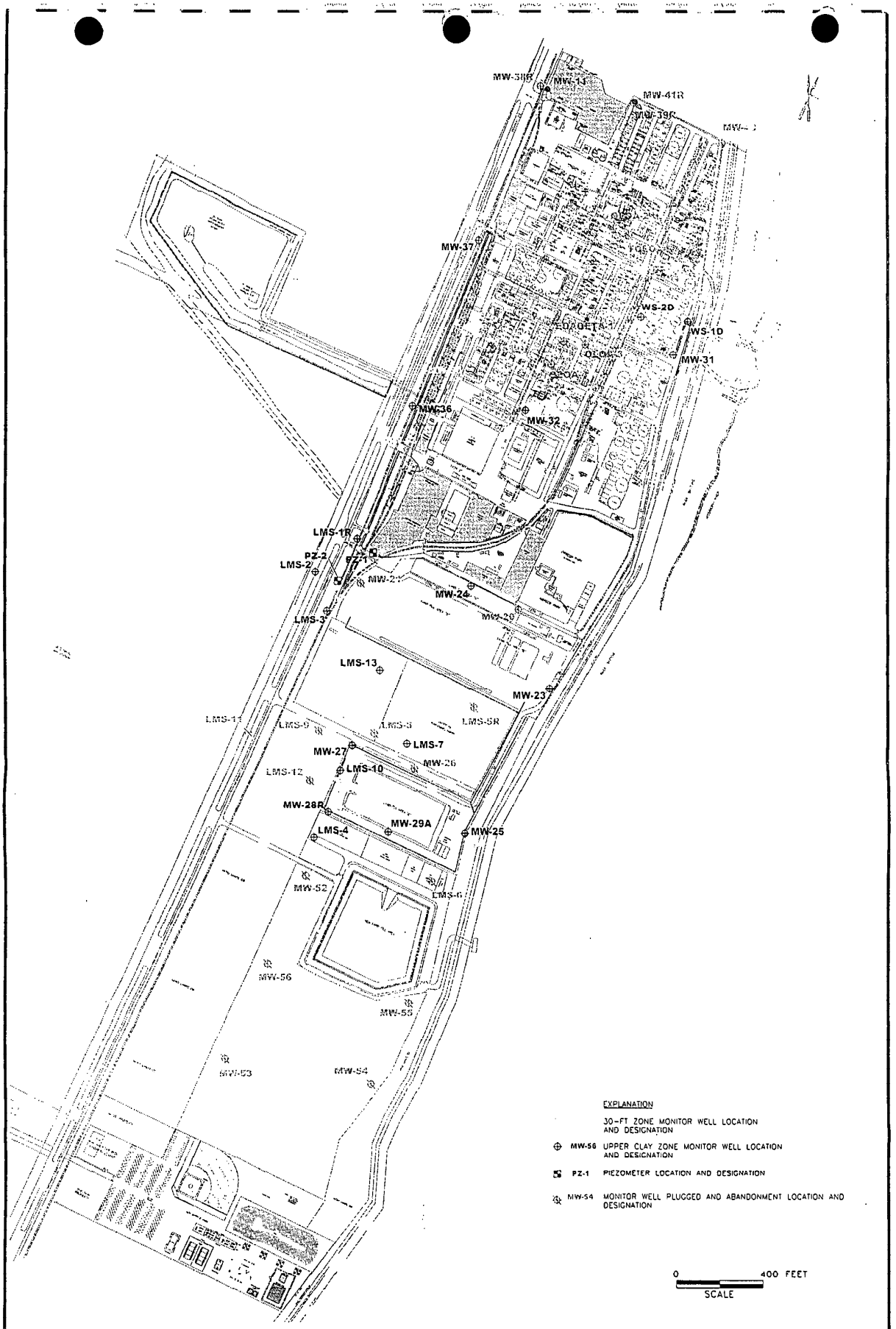
George H Cramer
for Rudy J. Guichard
Vice President/Area Manager

JW:JE:RJG:rdr

Attachments

ARCADIS

FIGURE



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ARCADIS
2900 WEST FORK DRIVE
SUITE 540, BATON ROUGE, LA 70827
Tel: 225-292-1004 Fax: 225-292-5210

MONITOR WELL LOCATION MAP

CHEVRON ORONITE COMPANY, LLC
OAK POINT PLANT
Belle Chasse, Louisiana

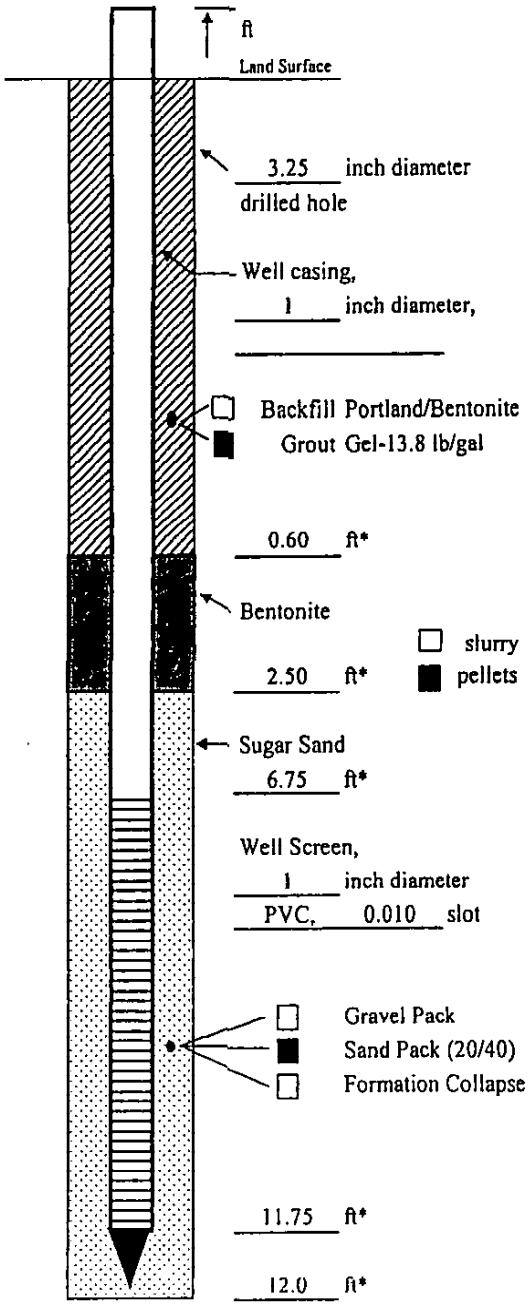
PROJECT MANAGER: RJC	CHECKED BY: JC
DRAWING NAME: 2413-01-01 MW	CAD-FILE: 2413-01-01_MW
DRAWN BY: CLIENT/GRM	DATE: 6-12-2004
PROJECT NUMBER: LA002413.0001	DRAWING NUMBER: 1

ARCADIS

ATTACHMENT A

ARCADIS

WELL CONSTRUCTION LOG



Measuring Point is Top of Well Casing Unless Otherwise Noted.
* Depth Below Land Surface

Project	Chevron/LA002413.0001.00001	Well	PZ-2
Town/City	Belle Chasse		
County/Parish	Plaquemines	State	Louisiana
Permit Number	NA		
Land-Surface Elevation and Datum	NA feet	☐ Surveyed ☐ Estimated	
Installation Date(s)	3-17-04		
Drilling Method	Direct Push-Geoprobe		
Drilling Contractor	Pro Tech		
Drilling Fluid	None		

Development Technique(s) and Date(s)
Disposable Bailer 3-18-04

Fluid Loss During Drilling	NA		gallons
Water Removed During Development	10		gallons
Static Depth to Water	NA		feet below M.P.
Pumping Depth to Water	NA		feet below M.P.
Pumping Duration	NA		hours
Yield	NA gpm	Date	NA
Specific Capacity	NA		gpm/ft
Well Purpose	Piezometer for groundwater level measurements		

Remarks

Prepared by Jacob Wilson

ARCADIS

ATTACHMENT B

ARCADIS G & M, Inc.
2900 West Fork Dr., Suite 540
Baton Rouge, LA 70827

SAMPLE / CORE LOG

Boring/Well: PZ-2 Project No.: Chevron Oak Point/LA002413.0001.00001

Site Location: Belle Chasse, LA; East Side of Hwy 23 Drilling Started: 3/17/04 1405 Drilling Completed: 3/17/04 1435

Land-Surface Elev.: NA Surveyed: NA Estimated: NA Datum: NA

Drilling Fluid: None Drilling Method Used: Direct Push/Geoprobe®

Drilling Contractor: Pro Tech Driller: David Jenny Helper: P. Waguespack

Prepared By: J. Wilson Hammer Weight: NA Hammer Drop (inches): NA

Fill, Silty Clay, Silt, Sandy Silt, Silty Sand, Acetate Sleeve, Water First Encountered
Clay, Sandy Clay, Clayey Silt, Sand, Clayey Sand, Split Spoon, Water Level After 10 Minutes

SAMPLE DEPTH (ft)	SAMPLE TYPE	RECOVERY (ft)	SYMBOL	VISUAL DESCRIPTION	USCS (LL/PL/PI)	PP H	PP V	OVA (wo/F) (ppm)	OVA (w/F) (ppm)	REMARKS
0–1				FILL: gravel and shells						
1–2		3.5		CLAY: gray, black natural organics, ferrous staining, plant material, stiff, damp		0.75	0.75			
3–4				SILTY CLAY: gray, black natural organics, abundant ferrous stain, plant rootlet material, soft, very damp		0.50	0.50			
5–6		3.5		- stiff, damp		0.25	0.50			▽
7–8				- soft, very damp - reddish-brown, more plant root material - gray, stiffer		0.50	0.50			
9–10		3.5		- very soft, very damp		0.50	0.50			
11–12				- soft, more plant root material *SANDY SILT: light gray, soft, damp* TOTAL DEPTH - 12 ft bls @ 1435		0.25	0.25			

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

ARCADIS

ATTACHMENT C

Cut [illegible]otted line before submitting this form to the LA Dept of Trai[illegible]tation and Development.

PLEASE PRINT IN INK OR TYPE WHEN COMPLETING THIS FORM

LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
WATER RESOURCES SECTION
WATER WELL PLUGGING AND ABANDONMENT FORM (DOTD-GW-2)

MAIL ORIGINAL TO
Department of
Transportation and Development
Attn: Chief - Water Resources Section
P.O. BOX 94245
Baton Rouge, LA 70804-9245
(225) 379-1434

1. WELL OWNER: (if different from owner when drilled, note in item 5)
Chevron Chemical Oak Point Plant
ADDRESS: P.O. Box 70 Belle Chasse, La 70737
OWNERS WELL NUMBER (if any) LMS-5R

2. LOCATION OF WELL: Parish: Plaquemines, Well is near, Belle Chasse
Approximately .25 miles from Hwy 23
(Crossroads, Town, City, Railroad, Any Landmark, etc.)
Please see original location of well on the registration form.

(Please draw sketch on back of Original)

3. WELL INFO: Casing material PVC, Diameter of casing 2 in., Depth of well 14 ft., Date drilled 5/96 by (give name of water well contractor who installed well or hole): Fugro (GS)

4. Describe in detail how well or hole was plugged: (materials used, amount of casing and/or screen removed, or left in hole, etc.) Entire well and pad were pulled / removed. Remaining hole was grouted with ~ 9 gallons of 13.8 lbs/gal bentonite / Portland cement slurry using tremie grout method to ground surface.

5. REMARKS: DOTD # 5187Z

I certify that this work was done and completed in accordance with Rules and Regulations of the State on 3/15-18, 200 4 by (name and no. of contractor) Professional Techpical Support Services, Inc. WWC 394
Authorized Signature [illegible] Date [illegible]

State	Parish	Local Well No.	Identification Number	OFFICE USE ONLY	Section	Township	Range	Quad. No.
		–	0					

(REV. 6/92)

Owner

Form provided by Power Graphics, Inc. - Dallas, Texas

LDEQ-EDMS Document 36119775, Page 246 of 596

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PLEASE PRINT IN INK OR TYPE WHEN COMPLETING THIS FORM

LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
WATER RESOURCES SECTION
WATER WELL PLUGGING AND ABANDONMENT FORM (DOTD-GW-2)

MAIL ORIGINAL TO
Department of Transportation and Development
Attn: Chief - Water Resources Section
P.O. BOX 94245
Baton Rouge, LA 70804-9245
(225) 379-1434

1. WELL OWNER: (if different from owner when drilled, note in item 5) Chevron Chemical Oak Point Plant
ADDRESS: P.O. Box 70 Belle Chasse, La 70737
OWNERS WELL NUMBER (if any) LMS-8

2. LOCATION OF WELL: Parish: Plaquemines, Well is near, Belle Chasse
Approximately .25 miles from Hwy 23
(Crossroads, Town, City, Railroad, Any Landmark, etc.)
Please see original location of well on the registration form.
(Please draw sketch on back of Original)

3. WELL INFO: Casing material PVC, Diameter of casing 2 in., Depth of well 13 ft., Date drilled 5/92 by (give name of water well contractor who installed well or hole): Eustis

4. Describe in detail how well or hole was plugged: (materials used, amount of casing and/or screen removed, or left in hole, etc.) Entire well and pad were pulled / removed. Remaining hole was grouted with ~ 8 gallons of 13.8 lbs/gal bentonite / Portland cement slurry using tremie grout method to ground surface.

5. REMARKS: DOTD # 5278Z

I certify that this work was done and completed in accordance with Rules and Regulations of the State on 3/16-18, 2004 by (name and no. of contractor) Professional Technical Support Services Inc. WWC-394
Authorized Signature [illegible] Date: [illegible]

State	Parish	Local Well No.	Identification Number	OFFICE USE ONLY	Section	Township	Range	Quad. No.
		–	0					

(REV. 6/92)

Owner

LDEQ-EDMS Document 36119775, Page 247 of 596

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PLEASE PRINT IN INK OR TYPE WHEN COMPLETING THIS FORM

LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
WATER RESOURCES SECTION
WATER WELL PLUGGING AND ABANDONMENT FORM (DOTD-GW-2)

MAIL ORIGINAL TO
Department of
Transportation and Development
Attn: Chief - Water Resources Section
P.O. BOX 94245
Baton Rouge, LA 70804-9245
(225) 379-1434

1. WELL OWNER: (if different from owner when drilled, note in item 5) Chevron Chemical Oak Point Plant
ADDRESS: P.O. Box 70 Belle Chasse, La 70737
OWNERS WELL NUMBER (if any) LMS-9

2. LOCATION OF WELL: Parish: Plaquemines, Well is near, Belle Chasse
Approximately .25 miles from Hwy 23
(Crossroads, Town, City, Railroad, Any Landmark, etc.)
Please see original location of well on the registration form.
(Please draw sketch on back of Original)

3. WELL INFO: Casing material PVC, Diameter of casing 2 in., Depth of well 17 ft., Date drilled 5/92 by (give name of water well contractor who installed well or hole): Eustis

4. Describe in detail how well or hole was plugged: (materials used, amount of casing and/or screen removed, or left in hole, etc.) Entire well and pad were pulled / removed. Remaining hole was grouted with ~ 10 gallons of 13.8 lbs/gal bentonite / Portland cement slurry using tremie grout method to ground surface.

5. REMARKS: DOTD # 5279Z

I certify that this work was done and completed in accordance with Rules and Regulations of the State on 3/15-18 200 4 by (name and no. of contractor) Professional Technical Support Services, Inc. WWC- 394
Authorized Signature [signature] Date [illegible]

State	Parish	Local Well No.	Identification Number	OFFICE USE ONLY	Section	Township	Range	Quad. No.
		-	0					

(REV. 6/92)

Owner

LDEQ-EDMS Document 36119775, Page 248 of 596

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PLEASE PRINT IN INK OR TYPE WHEN COMPLETING THIS FORM

LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

WATER RESOURCES SECTION

WATER WELL PLUGGING AND ABANDONMENT FORM (DOTD-GW-2)

MAIL ORIGINAL TO
Department of Transportation and Development
Attn: Chief - Water Resources Section
P.O. BOX 94245
Baton Rouge, LA 70804-9245
(225) 379-1434

1. WELL OWNER: (if different from owner when drilled, note in item 5) Chevron Chemical Oak Point Plant
ADDRESS: P.O. Box 70 Belle Chasse, La 70737
OWNERS WELL NUMBER (if any) LMS-11

2. LOCATION OF WELL: Parish: Plaquemines, Well is near, Belle Chasse
Approximately .25 miles from Hwy 23
(Crossroads, Town, City, Railroad, Any Landmark, etc.)
Please see original location of well on the registration form.
(Please draw sketch on back of Original)

3. WELL INFO: Casing material PVC, Diameter of casing 2 in., Depth of well 13 ft., Date drilled 5/92 by (give name of water well contractor who installed well or hole): Eustis

4. Describe in detail how well or hole was plugged: (materials used, amount of casing and/or screen removed, or left in hole, etc.) Entire well and pad were pulled / removed. Remaining hole was grouted with ~ 8 gallons of 13.8 lbs/gal bentonite / Portland cement slurry using tremie grout method to ground surface.

5. REMARKS: DOTD # 5281Z

I certify that this work was done and completed in accordance with Rules and Regulations of the State on 3/15-18, 200 4 by (name and no. of contractor) Professional Technical Support Services, Inc. WWC- 394
Authorized Signature [signature] Date: 4/10/04

State	Parish	Local Well No.	Identification Number	OFFICE USE ONLY	Section	Township	Range	Quad. No.
		-	0					

(REV. 6/92)

Owner

LDEQ-EDMS Document 36119775, Page 249 of 596

Cut [redacted]otted line before submitting this form to the LA Dept of Trar[redacted]tation and Development.

PLEASE PRINT IN INK OR TYPE WHEN COMPLETING THIS FORM

LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
WATER RESOURCES SECTION
WATER WELL PLUGGING AND ABANDONMENT FORM (DOTD-GW-2)

MAIL ORIGINAL TO
Department of
Transportation and Development
Attn: Chief - Water Resources Section
P.O. BOX 94245
Baton Rouge, LA 70804-9245
(225) 379-1434

1. WELL OWNER: (if different from owner when drilled, note in item 5)
Chevron Chemical Oak Point Plant
ADDRESS: P.O. Box 70 Belle Chasse, La 70737
OWNERS WELL NUMBER (if any) LMS-12

2. LOCATION OF WELL: Parish: Plaquemines, Well is near, Belle Chasse
Approximately .25 miles from Hwy 23
(Crossroads, Town, City, Railroad, Any Landmark, etc.)
Please see original location of well on the registration form.
(Please draw sketch on back of Original)

3. WELL INFO: Casing material PVC, Diameter of casing 2 in., Depth of well 13 ft., Date drilled 5/92 by (give name of water well contractor who installed well or hole): Eustis

4. Describe in detail how well or hole was plugged: (materials used, amount of casing and/or screen removed, or left in hole, etc.) Entire well and pad were pulled / removed. Remaining hole was grouted with ~ 8 gallons of 13.8 lbs/gal bentonite / Portland cement slurry using tremie grout method to ground surface.

5. REMARKS: DOTD # 5282Z

I certify that this work was done and completed in accordance with Rules and Regulations of the State on 3/15-18, 200 4 by (name and no. of contractor) Professional Technical Support Services, Inc. WWC- 394
Authorized Signature [signature] Date 3/16/04

State	Parish	Local Well No.	Identification Number	OFFICE USE ONLY	Section	Township	Range	Quad. No.
		-	0					

(REV. 6/92)

Owner

LDEQ-EDMS Document 36119775, Page 250 of 596

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PLEASE PRINT IN INK OR TYPE WHEN COMPLETING THIS FORM

LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
WATER RESOURCES SECTION
WATER WELL PLUGGING AND ABANDONMENT FORM (DOTD-GW-2)

MAIL ORIGINAL TO
Department of
Transportation and Development
Attn: Chief - Water Resources Section
P.O. BOX 94245
Baton Rouge, LA 70804-9245
(215) 379-1434

1. WELL OWNER: (if different from owner when drilled, note in item 5) Chevron Chemical Corporation Oak Point Plant
ADDRESS: P.O. Box 70 Belle Chasse, La 70737
OWNERS WELL NUMBER (if any) OLOA-2

2. LOCATION OF WELL: Parish: Plaquemines, Well is near, Belle Chasse
Approximately .25 miles from Hwy 23
(Crossroads, Town, City, Railroad, Any Landmark, etc.)
Please see original location of well on the registration form.
(Please draw sketch on back of Original)

3. WELL INFO: Casing material PVC, Diameter of casing 4 in., Depth of well 16 ft., Date drilled 5/92 by (give name of water well contractor who installed well or hole): Eustis

4. Describe in detail how well or hole was plugged: (materials used, amount of casing and/or screen removed, or left in hole, etc.) Pad was pulled / removed. Remaining well material / riser was tremie grouted in place with ~ 8 gallons of 13.8 lbs/gal bentonite / Portland cement slurry to ground surface. Concrete cap was then used to finish surface completion.

5. REMARKS: DOTD # 6284Z

I certify that this work was done and completed in accordance with Rules and Regulations of the State on 3/16-18, 200 4 by (name and no. of contractor) Professional Technical Support Services, Inc. WWC-394
Authorized Signature [illegible] Date: [illegible]

State	Parish	Local Well No.	Identification Number	OFFICE USE ONLY	Section	Township	Range	Quad. No.
		–	0					

(REV. 6/92)

Owner

LDEQ-EDMS Document 36119775, Page 251 of 596

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LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
WATER RESOURCES SECTION
WATER WELL PLUGGING AND ABANDONMENT FORM (DOTD-GW-2)

MAIL ORIGINAL TO
Department of Transportation and Development
Attn: Chief - Water Resources Section
P.O. BOX 94245
Baton Rouge, LA 70804-9245
(225) 379-1434

1. WELL OWNER: (if different from owner when drilled, note in item 5) Chevron Chemical Corporation Oak Point Plant
ADDRESS: P.O. Box 70 Belle Chasse, La 70737
OWNERS WELL NUMBER (if any) OLOA-3

2. LOCATION OF WELL: Parish: Plaquemines, Well is near, Belle Chasse
Approximately .25 miles from Hwy 23
(Crossroads, Town, City, Railroad, Any Landmark, etc.)
Please see original location of well on the registration form.
(Please draw sketch on back of Original)

3. WELL INFO: Casing material PVC, Diameter of casing 2 in., Depth of well 18 ft., Date drilled 1/91 by (give name of water well contractor who installed well or hole): Eustis

4. Describe in detail how well or hole was plugged: (materials used, amount of casing and/or screen removed, or left in hole, etc.) Pad was pulled / removed. Remaining well material / riser was tremie grouted in place with ~ 8 gallons of 13.8 lbs/gal bentonite / Portland cement slurry to ground surface. Concrete cap was then used to finish surface completion.

5. REMARKS: DOTD # 5285Z

I certify that this work was done and completed in accordance with Rules and Regulations of the State on 3/15-18, 200 4 by (name and no. of contractor) Professional Technical Support Services, Inc. WWC- 394
Authorized Signature [signature] Date 3/16/04

State	Parish	Local Well No.	Identification Number	OFFICE USE ONLY	Section	Township	Range	Quad. No.
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(REV. 6/92)

Owner

LDEQ-EDMS Document 36119775, Page 252 of 596

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LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
WATER RESOURCES SECTION
WATER WELL PLUGGING AND ABANDONMENT FORM (DOTD-GW-2)

MAIL ORIGINAL TO
Department of Transportation and Development
Attn: Chief - Water Resources Section
P.O. BOX 94245
Baton Rouge, LA 70804-9245
(225) 379-1434

1. WELL OWNER: (if different from owner when drilled, note in item 5)
Chevron Chemical Corporation Oak Point Plant
ADDRESS: P.O. Box 70 Belle Chasse, La 70737
OWNERS WELL NUMBER (if any) OLOA-4

2. LOCATION OF WELL: Parish: Plaquemines, Well is near, Belle Chasse
Approximately .25 miles from Hwy 23
(Crossroads, Town, City, Railroad, Any Landmark, etc.)
Please see original location of well on the registration form.
(Please draw sketch on back of Original)

3. WELL INFO: Casing material PVC, Diameter of casing 2 in., Depth of well 15 ft., Date drilled 5/92 by (give name of water well contractor who installed well or hole): Eustis

4. Describe in detail how well or hole was plugged: (materials used, amount of casing and/or screen removed, or left in hole, etc.) Pad was pulled / removed. Remaining well material / riser was tremie grouted in place with ~ 8 gallons of 13.8 lbs/gal bentonite / Portland cement slurry to ground surface. Concrete cap was then used to finish surface completion.

5. REMARKS: DOTD # 5286Z

I certify that this work was done and completed in accordance with Rules and Regulations of the State on 3/15-18, 200 4 by (name and no. of contractor) Professional Technical Support Services, Inc. WWC- 384
Authorized Signature [illegible] Date: [illegible]

OFFICE USE ONLY

State	Parish	Local Well No.	Identification Number	Section	Township	Range	Quad. No.
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(REV. 6/92)

Owner

LDEQ-EDMS Document 36119775, Page 253 of 596

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LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
WATER RESOURCES SECTION
WATER WELL PLUGGING AND ABANDONMENT FORM (DOTD-GW-2)

MAIL ORIGINAL TO
Department of Transportation and Development
Attn: Chief - Water Resources Section
P.O. BOX 94245
Baton Rouge, LA 70804-9245
(225) 379-1434

1. WELL OWNER: (if different from owner when drilled, note in item 5)
Chevron Chemical Corporation Oak Point Plant
ADDRESS: P.O. Box 70 Belle Chasse, La 70737
OWNERS WELL NUMBER (if any) MW-11

2. LOCATION OF WELL: Parish: Plaquemines, Well is near, Belle Chasse
Approximately .25 miles from Hwy 23
(Crossroads, Town, City, Railroad, Any Landmark, etc.)
Please see original location of well on the registration form.
(Please draw sketch on back of Original)

3. WELL INFO: Casing material PVC, Diameter of casing 2 in., Depth of well 30 ft., Date drilled 11/81 by (give name of water well contractor who installed well or hole): Geraghty

4. Describe in detail how well or hole was plugged: (materials used, amount of casing and/or screen removed, or left in hole, etc.) Pad was pulled / removed. Remaining well material / riser was grouted in place with ~ 20 gallons of 13.8 lbs/gal bentonite / Portland cement slurry using tremie grout method to ground surface. Well riser was then cut approximately two feet below ground surface. Remaining hole was then back filled with soil.

5. REMARKS: DOTD # 6236Z

I certify that this work was done and completed in accordance with Rules and Regulations of the State on 3/15-18, 200 4 by (name and no. of contractor) Professional Technical Support Services, Inc. WWC- 394
Authorized Signature [signature] Date: [illegible]

State	Parish	Local Well No.	Identification Number	OFFICE USE ONLY	Section	Township	Range	Quad. No.
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(REV. 6/92)

Owner

LDEQ-EDMS Document 36119775, Page 254 of 596

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LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
WATER RESOURCES SECTION
WATER WELL PLUGGING AND ABANDONMENT FORM (DOTD-GW-2)

MAIL ORIGINAL TO
Department of Transportation and Development
Attn: Chief - Water Resources Section
P.O. BOX 94245
Baton Rouge, LA 70804-9245
(225) 379-1434

1. WELL OWNER: (if different from owner when drilled, note in item 5) Chevron Chemical Oak Point Plant
ADDRESS: P.O. Box 70 Belle Chasse, La 70737
OWNERS WELL NUMBER (if any) MW-20

2. LOCATION OF WELL: Parish: Plaquemines, Well is near, Belle Chasse
Approximately .25 miles from Hwy 23
(Crossroads, Town, City, Railroad, Any Landmark, etc.)
Please see original location of well on the registration form.
(Please draw sketch on back of Original)

3. WELL INFO: Casing material PVC, Diameter of casing 1.25 in., Depth of well 9 ft., Date drilled 3/83 by (give name of water well contractor who installed well or hole): Ecology

4. Describe in detail how well or hole was plugged: (materials used, amount of casing and/or screen removed, or left in hole, etc.) Entire well and pad were pulled / removed. Remaining hole was grouted with ~ 5 gallons of 13.8 lbs/gal bentonite / Portland cement slurry using tremie grout method to ground surface.

5. REMARKS: DOTD # 5243Z

I certify that this work was done and completed in accordance with Rules and Regulations of the State on 3/16-18, 2004 by (name and no. of contractor) Professional Technical Support Services, Inc. WWC-394
Authorized Signature [illegible] Date: [illegible]

State	Parish	Local Well No.	Identification Number	OFFICE USE ONLY	Section	Township	Range	Quad. No.
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(REV. 6/92)

Owner

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LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
WATER RESOURCES SECTION
WATER WELL PLUGGING AND ABANDONMENT FORM (DOTD-GW-2)

MAIL ORIGINAL TO
Department of Transportation and Development
Attn: Chief - Water Resources Section
P.O. BOX 94245
Baton Rouge, LA 70804-9245
(225) 379-1434

1. WELL OWNER: (if different from owner when drilled, note in item 5)
Chevron Chemical Oak Point Plant
ADDRESS: P.O. Box 70 Belle Chasse, La 70737
OWNERS WELL NUMBER (if any) MW-21

2. LOCATION OF WELL: Parish: Plaquemines, Well is near, Belle Chasse
Approximately .25 miles from Hwy 23
(Crossroads, Town, City, Railroad, Any Landmark, etc.)
Please see original location of well on the registration form.
(Please draw sketch on back of Original)

3. WELL INFO: Casing material PVC, Diameter of casing 1.25 in., Depth of well 8 ft., Date drilled 3/83 by (give name of water well contractor who installed well or hole): Ecology

4. Describe in detail how well or hole was plugged: (materials used, amount of casing and/or screen removed, or left in hole, etc.) Entire well and pad were pulled / removed. Remaining hole was grouted with ~ 5 gallons of 13.8 lbs/gal bentonite / Portland cement slurry using tremie grout method to ground surface.

5. REMARKS: DOTD # 5244Z

I certify that this work was done and completed in accordance with Rules and Regulations of the State on 3/15-18, 2004 by (name and no. of contractor) Professional Technical Support Services, Inc. WWC 394
Authorized Signature [signature] Date 7/10/04

State	Parish	Local Well No.	Identification Number	OFFICE USE ONLY	Section	Township	Range	Quad. No.
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(REV. 6/92)

Owner

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LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
WATER RESOURCES SECTION
WATER WELL PLUGGING AND ABANDONMENT FORM (DOTD-GW-2)

MAIL ORIGINAL TO
Department of
Transportation and Development
Attn: Chief - Water Resources Section
P.O. BOX 94245
Baton Rouge, LA 70804-9245
(225) 379-1434

1. *WELL OWNER: (if different from owner when drilled, note in item 5)* _____
Chevron Chemical Corporation Oak Point Plant
ADDRESS: P.O. Box 70 Belle Chasse, La 70737
OWNERS WELL NUMBER (if any) MW-26

2. LOCATION OF WELL: Parish: Plaquemines, Well is near, Belle Chasse
Approximately .25 miles from Hwy 23
(Crossroads, Town, City, Railroad, Any Landmark, etc.)
Please see original location of well on the registration form.
(Please draw sketch on back of Original)

3. WELL INFO: Casing material PVC, Diameter of casing 1.25 in., Depth of well 9 ft., Date drilled 3/83 by (give name of water well contractor who installed well or hole): Ecology

4. *Describe in detail how well or hole was plugged: (materials used, amount of casing and/or screen removed, or left in hole, etc.)* Pad was pulled / removed. Remaining well material / riser was grouted in place with ~ 5 gallons of 13.8 lbs/gal bentonite / Portland cement slurry using tremie grout method to ground surface. Well riser was then cut approximately two feet below ground surface. Remaining hole was then back filled with soil.

5. REMARKS: DOTD # 5248Z

I certify that this work was done and completed in accordance with Rules and Regulations of the State on 3/15-18, 200 4 by (name and no. of contractor) Professional Technical Support Services, Inc. WWC- 394
Authorized Signature [signature] Date: 5/6/04

State	Parish	Local Well No.	Identification Number	OFFICE USE ONLY	Section	Township	Range	Quad. No.
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(REV. 6/92)

Owner

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LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
WATER RESOURCES SECTION
WATER WELL PLUGGING AND ABANDONMENT FORM (DOTD-GW-2)

MAIL ORIGINAL TO
Department of Transportation and Development
Attn: Chief - Water Resources Section
P.O. BOX 94245
Baton Rouge, LA 70804-9245
(225) 379-1434

1. WELL OWNER: (if different from owner when drilled, note in item 5) _____
Chevron Chemical Oak Point Plant
ADDRESS: P.O. Box 70 Belle Chasse, La 70737
OWNERS WELL NUMBER (if any) MW-38R

2. LOCATION OF WELL: Parish: Plaquemines, Well is near, Belle Chasse
Approximately .25 miles from Hwy 23
(Crossroads, Town, City, Railroad, Any Landmark, etc.)
Please see original location of well on the registration form.
(Please draw sketch on back of Original)

3. WELL INFO: Casing material PVC, Diameter of casing 2 in., Depth of well 10 ft., Date drilled 10/92 by (give name of water well contractor who installed well or hole): Eustis

4. Describe in detail how well or hole was plugged: (materials used, amount of casing and/or screen removed, or left in hole, etc.) Entire well and pad were pulled / removed. Remaining hole was grouted with ~ 6 gallons of 13.8 lbs/gal bentonite / Portland cement slurry using tremie grout method to ground surface.

5. REMARKS: DOTD # 5258Z

I certify that this work was done and completed in accordance with Rules and Regulations of the State on 3/15-18, 200 4 by (name and no. of contractor) Professional Technical Support Services, Inc. WWC- 394
Authorized Signature [signature] Date: 6/4/04

OFFICE USE ONLY

State	Parish	Local Well No.	Identification Number	Section	Township	Range	Quad. No.
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(REV. 6/92)

Owner

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LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
WATER RESOURCES SECTION
WATER WELL PLUGGING AND ABANDONMENT FORM (DOTD-GW-2)

MAIL ORIGINAL TO
Department of Transportation and Development
Attn: Chief - Water Resources Section
P.O. BOX 94245
Baton Rouge, LA 70804-9245
(225) 379-1434

1. WELL OWNER: (if different from owner when drilled, note in item 5) Chevron Chemical Oak Point Plant
ADDRESS: P.O. Box 70 Belle Chasse, La 70737
OWNERS WELL NUMBER (if any) MW-39R

2. LOCATION OF WELL: Parish: Plaquemines, Well is near, Belle Chasse
Approximately .25 miles from Hwy 23
(Crossroads, Town, City, Railroad, Any Landmark, etc.)
Please see original location of well on the registration form.
(Please draw sketch on back of Original)

3. WELL INFO: Casing material PVC, Diameter of casing 2 in., Depth of well 10 ft., Date drilled 10/92 by (give name of water well contractor who installed well or hole): Eustis

4. Describe in detail how well or hole was plugged: (materials used, amount of casing and/or screen removed, or left in hole, etc.) Entire well and pad were pulled / removed. Remaining hole was grouted with ~ 6 gallons of 13.8 lbs/gal bentonite / Portland cement slurry using tremie grout method to ground surface.

5. REMARKS: DOTD # 5259Z

I certify that this work was done and completed in accordance with Rules and Regulations of the State on 3/15-18 200.4 by (name and no. of contractor) Professional Technical Support Services, Inc. WWC 394
Authorized Signature [signature] Date 3/16/18

State	Parish	Local Well No.	Identification Number	OFFICE USE ONLY	Section	Township	Range	Quad. No.
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(REV. 6/92)

Owner

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LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
WATER RESOURCES SECTION
WATER WELL PLUGGING AND ABANDONMENT FORM (DOTD-GW-2)

MAIL ORIGINAL TO
Department of Transportation and Development
Attn: Chief - Water Resources Section
P.O. BOX 94245
Baton Rouge, LA 70804-9245
(225) 379-1434

1. WELL OWNER: (if different from owner when drilled, note in item 5)
Chevron Chemical Oak Point Plant
ADDRESS: P.O. Box 70 Belle Chasse, La 70737
OWNERS WELL NUMBER (if any) MW-40

2. LOCATION OF WELL: Parish: Plaquemines, Well is near, Belle Chasse
Approximately .25 miles from Hwy 23
(Crossroads, Town, City, Railroad, Any Landmark, etc.)
Please see original location of well on the registration form.
(Please draw sketch on back of Original)

3. WELL INFO: Casing material PVC, Diameter of casing 2 in., Depth of well 9 ft., Date drilled 3/83 by (give name of water well contractor who installed well or hole): Ecology

4. Describe in detail how well or hole was plugged: (materials used, amount of casing and/or screen removed, or left in hole, etc.) Entire well and pad were pulled / removed. Remaining hole was grouted with ~ 5 gallons of 13.8 lbs/gal bentonite / Portland cement slurry using tremie grout method to ground surface.

5. REMARKS: DOTD # 5260Z

I certify that this work was done and completed in accordance with Rules and Regulations of the State on 3/15-18 200 4 by (name and no. of contractor) Professional Technical Support Services, Inc. WWC: 394
Authorized Signature [signature] Date 4/6/04

State	Parish	Local Well No.	Identification Number	OFFICE USE ONLY	Section	Township	Range	Quad. No.
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Owner

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LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
WATER RESOURCES SECTION
WATER WELL PLUGGING AND ABANDONMENT FORM (DOTD-GW-2)

MAIL ORIGINAL TO
Department of Transportation and Development
Attn: Chief - Water Resources Section
P.O. BOX 94245
Baton Rouge, LA 70804-9245
(225) 379-1434

1. WELL OWNER: (if different from owner when drilled, note in item 5) Chevron Chemical Oak Point Plant
ADDRESS: P.O. Box 70 Belle Chasse, La 70737
OWNERS WELL NUMBER (if any) MW-41R

2. LOCATION OF WELL: Parish: Plaquemines, Well is near, Belle Chasse
Approximately .25 miles from Hwy 23
(Crossroads, Town, City, Railroad, Any Landmark, etc.)
Please see original location of well on the registration form.
(Please draw sketch on back of Original)

3. WELL INFO: Casing material PVC, Diameter of casing 2 in., Depth of well 28 ft., Date drilled 11/92 by (give name of water well contractor who installed well or hole): Eustis

4. Describe in detail how well or hole was plugged: (materials used, amount of casing and/or screen removed, or left in hole, etc.) Entire well and pad were pulled / removed. Remaining hole was grouted with ~ 18 gallons of 13.8 lbs/gal bentonite / Portland cement slurry using tremie grout method to ground surface.

5. REMARKS: DOTD # 5281Z

I certify that this work was done and completed in accordance with Rules and Regulations of the State on 3/15-18, 2004 by (name and no. of contractor) Professional/Technical Support Services, Inc. WWC- 394
Authorized Signature [signature] Date: 6/10/04

State	Parish	Local Well No.	Identification Number	OFFICE USE ONLY	Section	Township	Range	Quad. No.
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(REV. 6/92)

Owner

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LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
WATER RESOURCES SECTION
WATER WELL PLUGGING AND ABANDONMENT FORM (DOTD-GW-2)

MAIL ORIGINAL TO
Department of Transportation and Development
Attn: Chief - Water Resources Section
P.O. BOX 94245
Baton Rouge, LA 70804-9245
(225) 379-1434

1. WELL OWNER: (if different from owner when drilled, note in item 5)
Chevron Chemical Oak Point Plant
ADDRESS: P.O. Box 70 Belle Chasse, La 70737
OWNERS WELL NUMBER (if any) MW-52

2. LOCATION OF WELL: Parish: Plaquemines, Well is near, Belle Chasse
Approximately .25 miles from Hwy 23
(Crossroads, Town, City, Railroad, Any Landmark, etc.)
Please see original location of well on the registration form.
(Please draw sketch on back of Original)

3. WELL INFO: Casing material PVC, Diameter of casing 4 in., Depth of well 25 ft., Date drilled 2/90 by (give name of water well contractor who installed well or hole): URS Corporation

4. Describe in detail how well or hole was plugged: (materials used, amount of casing and/or screen removed, or left in hole, etc.) Entire well and pad were pulled / removed. Remaining hole was grouted with ~ 30 gallons of 13.8 lbs/gal bentonite / Portland cement slurry using tremie grout method to ground surface.

6. REMARKS: DOTD # 5079Z

I certify that this work was done and completed in accordance with Rules and Regulations of the State on 3/16-18, 200 4 by (name and no. of contractor) Professional Technical Support Services, Inc. WWC- 394
Authorized Signature [signature] Date: [illegible]

State	Parish	Local Well No.	Identification Number	OFFICE USE ONLY	Section	Township	Range	Quad. No.
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(REV. 6/92)

Owner

LDEQ-EDMS Document 36119775, Page 262 of 596

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LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
WATER RESOURCES SECTION
WATER WELL PLUGGING AND ABANDONMENT FORM (DOTD-GW-2)

MAIL ORIGINAL TO
Department of Transportation and Development
Attn: Chief - Water Resources Section
P.O. BOX 94245
Baton Rouge, LA 70804-9245
(225) 379-1434

1. WELL OWNER: (if different from owner when drilled, note in item 5) Chevron Chemical Oak Point Plant
ADDRESS: P.O. Box 70 Belle Chasse, La 70737
OWNERS WELL NUMBER (if any) MW-53

2. LOCATION OF WELL: Parish: Plaquemines, Well is near, Belle Chasse
Approximately .25 miles from Hwy 23
(Crossroads, Town, City, Railroad, Any Landmark, etc.)
Please see original location of well on the registration form.
(Please draw sketch on back of Original)

3. WELL INFO: Casing material PVC, Diameter of casing 4 in., Depth of well 24 ft., Date drilled 2/90 by (give name of water well contractor who installed well or hole): URS Corporation

4. Describe in detail how well or hole was plugged: (materials used, amount of casing and/or screen removed, or left in hole, etc.) Entire well and pad were pulled / removed. Remaining hole was grouted with ~ 30 gallons of 13.8 lbs/gal bentonite / Portland cement slurry using tremie grout method to ground surface.

5. REMARKS: DOTD # 5080Z

I certify that this work was done and completed in accordance with Rules and Regulations of the State on 3/15-18, 200 4 by (name and no. of contractor) Professional Technical Support Services, Inc. WWC-394
Authorized Signature [signature] Date 7/10/04

State	Parish	Local Well No.	Identification Number	OFFICE USE ONLY Section	Township	Range	Quad. No.
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(REV. 6/92)

Owner

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LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
WATER RESOURCES SECTION
WATER WELL PLUGGING AND ABANDONMENT FORM (DOTD-GW-2)

MAIL ORIGINAL TO
Department of
Transportation and Development
Attn: Chief - Water Resources Section
P.O. BOX 94245
Baton Rouge, LA 70804-9245
(225) 379-1434

1. WELL OWNER: (if different from owner when drilled, note in item 5) Chevron Chemical Oak Point Plant
ADDRESS: P.O. Box 70 Belle Chasse, La 70737
OWNERS WELL NUMBER (if any) MW-54

2. LOCATION OF WELL: Parish: Plaquemines, Well is near, Belle Chasse
Approximately .25 miles from Hwy 23
(Crossroads, Town, City, Railroad, Any Landmark, etc.)
Please see original location of well on the registration form.
(Please draw sketch on back of Original)

3. WELL INFO: Casing material PVC, Diameter of casing 2 in., Depth of well 25 ft., Date drilled 3/91 by (give name of water well contractor who installed well or hole): Eustis

4. Describe in detail how well or hole was plugged: (materials used, amount of casing and/or screen removed, or left in hole, etc.) Entire well and pad were pulled / removed. Remaining hole was grouted with ~ 15 gallons of 13.8 lbs/gal bentonite / Portland cement slurry using tremie grout method to ground surface.

5. REMARKS: DOTD # 5268Z

I certify that this work was done and completed in accordance with Rules and Regulations of the State on 3/15-18 ~~200-4~~ by (name and no. of contractor) Professional Technical Support Services, Inc. WWC- 384
Authorized Signature [signature] Date: 9/10/04

State	Parish	Local Well No.	Identification Number	OFFICE USE ONLY	Section	Township	Range	Quad. No.
		-	0					

(REV. 6/92)

Owner

Form provided by Prime Ink Printing, Inc. Eunice, Louisiana (318) 341-1579

LDEQ-EDMS Document 36119775, Page 264 of 596

Cut [illegible]otted line before submitting this form to the LA Dept of Tran[illegible]tation and Development.

COPY FOR

LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
WATER RESOURCES SECTION
WATER WELL PLUGGING AND ABANDONMENT FORM (DOTD-GW-2)

MAIL ORIGINAL TO
Department of
Transportation and Development
Attn: Chief - Water Resources Section
P.O. BOX 94245
Baton Rouge, LA 70804-9245
(225) 379-1434

1. WELL OWNER: (if different from owner when drilled, note in item 5)
Chevron Chemical Corporation Oak Point Plant
ADDRESS: P.O. Box 70 Belle Chasse, La 70737
OWNERS WELL NUMBER (if any) MW-55

2. LOCATION OF WELL: Parish: Plaquemines, Well is near, Belle Chasse
Approximately .25 miles from Hwy 23
(Crossroads, Town, City, Railroad, Any Landmark, etc.)
Please see original location of well on the registration form.
(Please draw sketch on back of Original)

3. WELL INFO: Casing material PVC, Diameter of casing 2 in., Depth of well 25 ft., Date drilled 3/91 by (give name of water well contractor who installed well or hole): Eustis

4. Describe in detail how well or hole was plugged: (materials used, amount of casing and/or screen removed, or left in hole, etc.) Pad was pulled / removed. remaining well material / riser was tremie grouted in place with ~ 18 gallons of 13.8 lbs/gal bentonite / Portland cement slurry to ground surface.

5. REMARKS: DOTD # 5269Z

I certify that this work was done and completed in accordance with Rules and Regulations of the State on 3/15-18, 200 4 by (name and no. of contractor) Professional Technical Support Services, Inc. WWC- 394
Authorized Signature [illegible] Date: [illegible]

State	Parish	Local Well No.	Identification Number	OFFICE USE ONLY	Section	Township	Range	Quad. No.
		–	0					

(REV. 6/92)

Owner

LDEQ-EDMS Document 36119775, Page 265 of 596

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COPY FOR

LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
WATER RESOURCES SECTION
WATER WELL PLUGGING AND ABANDONMENT FORM (DOTD-GW-2)

MAIL ORIGINAL TO
Department of
Transportation and Development
Attn: Chief - Water Resources Section
P.O. BOX 94245
Baton Rouge, LA 70804-9245
(225) 379-1434

1. WELL OWNER: (if different from owner when drilled, note in item 5)
Chevron Chemical Corporation Oak Point Plant
ADDRESS: P.O. Box 70 Belle Chasse, La 70737
OWNERS WELL NUMBER (if any) MW-56

2. LOCATION OF WELL: Parish: Plaquemines, Well is near, Belle Chasse
Approximately .25 miles from Hwy 23
(Crossroads, Town, City, Railroad, Any Landmark, etc.)
Please see original location of well on the registration form.
(Please draw sketch on back of Original)

3. WELL INFO: Casing material PVC, Diameter of casing 2 in.,
Depth of well 28 ft., Date drilled 3/91 by (give name of water well contractor who installed well or hole): Eustis

4. Describe in detail how well or hole was plugged: (materials used, amount of casing and/or screen removed, or left in hole, etc.) Pad was pulled / removed. Remaining well material / riser was tremie grouted in place with ~ 18 gallons of 13.8 lbs/gal bentonite / Portland cement slurry to ground surface.

5. REMARKS: DOTD # 6270Z

I certify that this work was done and completed in accordance with Rules and Regulations of the State on 3/15-18, 2004 by (name and no. of contractor) Professional Technical Support Services, Inc. WWC- 394
Authorized Signature [illegible] Date [illegible]

State	Parish	Local Well No.	Identification Number	OFFICE USE ONLY	Section	Township	Range	Quad. No.
		-	0					

(REV. 6/92)

Owner

LDEQ-EDMS Document 36119775, Page 266 of 596

Cut [illegible]otted line before submitting this form to the LA Dept of Tran[illegible]tation and Development.

PLEASE PRINT IN INK OR TYPE WHEN COMPLETING THIS FORM

LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
WATER RESOURCES SECTION
WATER WELL PLUGGING AND ABANDONMENT FORM (DOTD-GW-2)

MAIL ORIGINAL TO
Department of Transportation and Development
Attn: Chief - Water Resources Section
P.O. BOX 94245
Baton Rouge, LA 70804-9245
(225) 379-1434

1. WELL OWNER: *(if different from owner when drilled, note in item 5)*
Chevron Chemical Corporation Oak Point Plant
ADDRESS: P.O. Box 70 Belle Chasse, La 70737
OWNERS WELL NUMBER (if any) TOLOA-5

2. LOCATION OF WELL: Parish: Plaquemines, Well is near, Belle Chasse
Approximately .25 miles from Hwy 23
(Crossroads, Town, City, Railroad, Any Landmark, etc.)
Please see original location of well on the registration form.
(Please draw sketch on back of Original)

3. WELL INFO: Casing material PVC, Diameter of casing _____ in., Depth of well 15 ft., Date drilled 6/08/95 by (give name of water well contractor who installed well or hole): Ecology

4. *Describe in detail how well or hole was plugged: (materials used, amount of casing and/or screen removed, or left in hole, etc.)* Pad was pulled / removed. Remaining well material / riser was tremie grouted in place with ~ 8 gallons of 13.8 lbs/gal bentonite / Portland cement slurry to ground surface. Concrete cap was then used to finish surface completion.

5. REMARKS: Previously un-registered.

I certify that this work was done and completed in accordance with Rules and Regulations of the State on 3/15-18, 200 4 by (name and no. of contractor) Professional Technical Support Services, Inc. WWC- 394
Authorized Signature [signature] Date: 6/10/04

State	Parish	Local Well No.	Identification Number	OFFICE USE ONLY	Section	Township	Range	Quad. No.
		-	0					

(REV. 6/92)

Owner

LDEQ-EDMS Document 36119775, Page 267 of 596

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ATTACHMENT D

LDEQ-EDMS Document 36119775, Page 269 of 596

LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
WATER RESOURCES SECTION
WATER WELL REGISTRATION SHORT FORM (DOTD-GW-1S)

PLEASE PRINT IN INK OR TYPE WHEN COMPLETING THIS FORM

1. USE OF WELL (Check Appropriate Box)
   ☐ DOMESTIC ☐ RIG SUPPLY ☒ MONITORING ☐ PIEZOMETER ☐ RECOVERY
   ☐ HEAT PUMP HOLE ☐ HEAT PUMP SUPPLY ☐ ABANDONED PILOT HOLE ☐ OTHER _____ (Please Specify)
2. WELL OWNER Chevron Chemical Corporation Oak Point Plant PHONE (504) 391-6314
3. WELL OWNER'S ADDRESS P.O. Box 70, Belle Chasse, La 70737
4. OWNER'S WELL NUMBER OR NAME (if any) PZ-2
5. DATE COMPLETED 3/17/04 DEPTH OF HOLE 12 FT. DEPTH OF WELL 12 FT.
6. STATIC WATER LEVEL 6.45 FT. BELOW GROUND SURFACE MEASURED ON 5/1/04 (Date)
7. CASING 1 IN ☐ METAL ☒ PLASTIC ☐ OTHER LENGTH 7 FT
8. SCREEN 1 IN ☐ METAL ☒ PLASTIC ☐ OTHER SLOT SIZE .01 LENGTH 5 FT.
9. CEMENTED FROM .60 FT. TO GROUND SURFACE, USING ☐ PUMP DOWN METHOD OR ☒ GRAVITY METHOD
10. LOCATION OF WELL: PARISH Plaquemines WELL IS NEAR, Belle Chasse (Town or City)
    APPROXIMATELY .25 MILES FROM Hwy 23 (Crossroads, Railroad, Any Landmark, etc.)
    (Please draw sketch on back of Original)
11. REMARKS: ~2.5 ft of stick up
12. DRILLER'S LOG (Description and color of cuttings, such as shale, sand, etc. in feet)

FROM	TO	DESCRIPTION	FROM	TO	DESCRIPTION
0	.5	Fill: gravel and shells			
.5	2.5	Clay: gray, black Natural organics, ferrous stains, plant material, stiff, dmp			
5	11.5	Clay: gray, black Natural organics, ferrous stains, plant material, stiff, very dmp			
11.5	12	Sandy Silt: light gray, soft, damp			

13. FOR HEAT PUMP ONLY: AVG. DEPTH Not Applicable FT. NUMBER OF HOLES Not Applicable
14. ABANDONMENT INFORMATION: DOES THE NEW WELL REPLACE AN EXISTING WELL? YES ☐ NO ☒
15. NAME OF PERSON WHO DRILLED THE WELL: Ronnie Ducote

Professional Technical Support Services, Inc.
Name of Water Well Contractor
LICENSE NUMBER WWC-0394
Authorized Signature 6/10/04 Date

MAIL ORIGINAL TO:
LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
ATTN: CHIEF – WATER RESOURCES SECTION
P.O. BOX 94245
BATON ROUGE, LA 70804-9245
(225) 379-1434

FOR OFFICE USE ONLY
PARISH WELL NO.
IDENTIFICATION NUMBER 0
REVISED COORDINATES
Geologic Unit Use of Well
SECTION TOWNSHIP RANGE
ELEV. QUAD. NO.
INPUT BY: DATE:
INSPECTED BY: DATE:
REMARKS:

FOR MONITOR/PIEZO/RECOVERY WELLS ONLY
LATITUDE 294822 LONGITUDE 900048
SECTION 003 TOWNSHIP 15S RANGE 24E
ELEV. 0002 QUAD. NO. 201D
SITE ADDRESS: 10285 Highway 23, Belle Chasse, LA 70037

(REV. 7/93)

Owner

LDEQ-EDMS Document 36119775, Page 270 of 596

LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
WATER RESOURCES SECTION
WATER WELL REGISTRATION SHORT FORM (DOTD-GW-1S)

PLEASE PRINT IN INK OR TYPE WHEN COMPLETING THIS FORM

1. USE OF WELL (Check Appropriate Box)
   ☐ DOMESTIC ☐ RIG SUPPLY ☒ MONITORING ☐ PIEZOMETER ☐ RECOVERY
   ☐ HEAT PUMP HOLE ☐ HEAT PUMP SUPPLY ☐ ABANDONED PILOT HOLE ☐ OTHER _____ (Please Specify)
2. WELL OWNER Chevron Chemical Corporation Oak Point Plant PHONE (504) 391-6314
3. WELL OWNER'S ADDRESS P.O. Box 70, Belle Chasse, La 70737
4. OWNER'S WELL NUMBER OR NAME (if any) TOLOA-5
5. DATE COMPLETED 6/08/95 DEPTH OF HOLE 15 FT. DEPTH OF WELL 15 FT.
6. STATIC WATER LEVEL Not Available FT. BELOW GROUND SURFACE MEASURED ON Not Available (Date)
7. CASING 2 IN ☐ METAL ☒ PLASTIC ☐ OTHER LENGTH 10 FT
8. SCREEN 2 IN ☐ METAL ☒ PLASTIC ☐ OTHER SLOT SIZE .01 LENGTH 5 FT.
9. CEMENTED FROM .60 FT. TO GROUND SURFACE, USING ☐ PUMP DOWN METHOD OR ☒ GRAVITY METHOD
10. LOCATION OF WELL: PARISH Plaquemines WELL IS NEAR, Belle Chasse (Town or City)
    APPROXIMATELY .25 MILES FROM Hwy 23 (Crossroads, Railroad, Any Landmark, etc.)
    (Please draw sketch on back of Original)
11. REMARKS: ~2.5 ft of stick up
12. DRILLER'S LOG (Description and color of cuttings, such as shale, sand, etc. in feet)

FROM	TO	DESCRIPTION	FROM	TO	DESCRIPTION
0	11	Clay, gray, moist, black stains			
11	12	Clayey silt, very moist to wet, becomes siltier at the bottom			
12	15	Silty clay, very wet			

13. FOR HEAT PUMP ONLY: AVG. DEPTH Not Applicable FT. NUMBER OF HOLES Not Applicable
14. ABANDONMENT INFORMATION: DOES THE NEW WELL REPLACE AN EXISTING WELL? YES ☐ NO ☒
15. NAME OF PERSON WHO DRILLED THE WELL: B.Kloster (Ecological Services, Inc.)

Professional Technical Support Services, Inc.
Name of Water Well Contractor
LICENSE NUMBER WWC-0394
Authorized Signature _____ Date 6/16/04

MAIL ORIGINAL TO:
LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
ATTN: CHIEF – WATER RESOURCES SECTION
P.O. BOX 94245
BATON ROUGE, LA 70804-9245
(225) 379-1434

FOR OFFICE USE ONLY
PARISH ___ WELL NO. ___
IDENTIFICATION NUMBER ___ 0 ___
REVISED COORDINATES ___
Geologic Unit ___ Use of Well ___
SECTION ___ TOWNSHIP ___ RANGE ___
ELEV. ___ QUAD. NO. ___
INPUT BY: ___ DATE: ___
INSPECTED BY: ___ DATE: ___
REMARKS: ___

FOR MONITOR/PIEZO/RECOVERY WELLS ONLY
LATITUDE 284937 LONGITUDE 900034
SECTION 003 TOWNSHIP 15S RANGE 24E
ELEV. 0003 QUAD. NO. 201D
SITE ADDRESS: 10285 Highway 23, Belle Chasse, LA 70037

(REV. 7/93)

Owner

Appendix N

Hydraulic Conductivities

TABLE 1

MEASURED HYDRAULIC CONDUCTIVITY VALUES

WELL	DEPTH (feet)	MATERIAL TESTED	K cm/sec	TYPE OF TEST	CONTRACTOR*
TEST WELL top screen 5' below water table	10	Silty Clay	1.60×10^{-4}	Slug/Bail Horizontal	3
MW-1	4.0	Clay w/silt	5.80×10^{-8}	Laboratory Vertical	1
	9.0	Clay w/silt	2.50×10^{-7}	Laboratory Vertical	1
	19.0	Clay w/silty sand	7.50×10^{-6}	Laboratory Vertical	1
	29.0	Clay w/sand & shell	4.50×10^{-8}	Laboratory Vertical	1
MW-2	1.5	Clay w/silt	1.20×10^{-8}	Laboratory Vertical	1
	9.0	Clay w/silt	2.50×10^{-7}	Laboratory Vertical	1
MW-3	30	Silty, clayey sand	8.60×10^{-4}	Slug/Bail Horizontal	3
	4.0	Silty,clay	1.40×10^{-6}	Laboratory Vertical	1
	11.5	Silty clay w/sand	3.0×10^{-6}	Laboratory Vertical	1
	19.0	Clay w/shell	3.9×10^{-8}	Laboratory Vertical	1
MW-4	4.0	Clay w/silt	6.1×10^{-7}	Laboratory Vertical	1
	9.0	Clay w/organics	2.5×10^{-7}	Laboratory Vertical	1
	19.0	Clay w/shell	5.9×10^{-8}	Laboratory Vertical	1
	34.0	Clay w/sandy silt	3.0×10^{-5}	Laboratory Vertical	1
	44.0	Clay	3.0×10^{-8}	Laboratory Vertical	1

TABLE 1

MEASURED HYDRAULIC CONDUCTIVITY VALUES

WELL	DEPTH (feet)	MATERIAL TESTED	K cm/sec	TYPE OF TEST	CONTRACTOR*
MW-5	6.5	Clay w/silt (tr.oil)	1.60×10^{-8}	Laboratory Vertical	1
	14.0	Silty clay w/sandy silt	1.30×10^{-6}	Laboratory Vertical	1
MW-6	1.5	Clay w/shells	1.0×10^{-6}	Laboratory Vertical	1
	9.0	Clay w/silt	6.4×10^{-8}	Laboratory Vertical	1
	24.0	Clay w/shells	5.0×10^{-8}	Laboratory Vertical	1
MW-7	6.5	Clayey silt	2.4×10^{-5}	Laboratory Vertical	1
	11.5	Clay w/organics	3.3×10^{-7}	Laboratory Vertical	1
	19.0	Silty clay w/clayey silt	1.4×10^{-5}	Laboratory Vertical	1
MW-8	9.0	Clay w/silt	2.7×10^{-7}	Laboratory Vertical	1
MW-9	1.5	Clay w/silt	5.2×10^{-9}	Laboratory Vertical	1
	9.0	Silty clay w/sandy silt	1.5×10^{-5}	Laboratory Vertical	1
	19.0	Clayey silt	7.5×10^{-6}	Laboratory Vertical	1
MW-10	4.0	Silty clay	4.6×10^{-8}	Laboratory Vertical	1
	14.0	Clay w/trace organics	4.8×10^{-8}	Laboratory Vertical	1
	24.0	Silty sand trace clay	5.5×10^{-5}	Laboratory Vertical	1
	44.0	Silty clay w/sandy silt	2.2×10^{-7}	Laboratory Vertical	1

TABLE 1

MEASURED HYDRAULIC CONDUCTIVITY VALUES

WELL	DEPTH (feet)	MATERIAL TESTED	K cm/sec	TYPE OF TEST	CONTRACTOR*
MW-11	30	Silty, clayey sand	2.47×10^{-4}	Slug/Bail Horizontal	3
MW-12	30	Silty, clayey sand	2.01×10^{-3}	Slug/Bail Horizontal	3
MW-13	30	Silty, clayey sand	1.31×10^{-3}	Slug/Bail Horizontal	3
MW-14	30	Silty sand	2.06×10^{-3}	Slug/Bail Horizontal	3
MW-15	7-9	Silty clay	1.18×10^{-5}	Laboratory Vertical	2
	12-14	Sandy silt	2.17×10^{-4}	Laboratory Vertical	2
	30-32	Sandy clay	2.16×10^{-6}	Laboratory Vertical	2
MW-19	10.5-12.5	Sandy clay	2.36×10^{-5}	Laboratory Vertical	2
	30	Silty sand	9.60×10^{-4}	Slug/Bail Horizontal	3

* CONTRACTORS

1 Eustis Engineering Company
2 Geraghty and Miller, Inc.
3 Ecology and Environment, Inc.

Appendix O

Certification of Solid Waste Permit

Permit Application Preparer Certification

"I certify under penalty of law that I have personally examined and I am familiar with the information submitted in this permit application and that the facility as described in this permit application meets the requirements of the solid waste rules and regulations. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment."

Craig A. Derouen, P.E.
Louisiana Registration No. 30756

STATE OF LOUISIANA
CRAIG A. DEROUEN
License No. 30756
PROFESSIONAL ENGINEER
IN
ENVIRONMENTAL ENGINEERING
4-3-07

Appendix P

Groundwater Sampling Plan