

MONITORING WELL
INSTALLATION AND SAMPLING

LONGVIEW FIBRE COMPANY
OAKLAND, CALIFORNIA
FACILITY

FOR
LONGVIEW FIBRE COMPANY
P.O. BOX 639
LONGVIEW, WASHINGTON 98632

Prepared by:
CH2M HILL OF CALIFORNIA, INC.

JULY 1988



Engineers
Planners
Economists
Scientists

July 29, 1988

SFO24103.B1

Mr. David N. Mendenhall
Water Quality Engineer
Longview Fibre Company
P.O. Box 639
Longview, Washington 98632

Dear David:

Enclosed is a copy of our report entitled, "Monitoring Well Installation and Sampling, Longview Fibre Company, Oakland, California, Facility." A copy of this report has been sent directly to Worth Cornelius in Oakland and to the Regional Water Quality Control Board.

Should you have any questions regarding this report, please contact either Jack Payne at (503) 224-9190 or me at (415) 652-2426.

Sincerely,

A handwritten signature in cursive script that reads "Deanne Fischer".

Deanne Fischer, P.E.
Project Manager

Enclosure

cc: Worth Cornelius, Longview Fibre Co., Oakland Facility
Jack Payne, CH2M HILL/PDX
Greg Zentner, California Regional Water Quality Control
Board, San Francisco Bay Region

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INTRODUCTION

Following the removal of four underground fuel storage tanks from the Longview Fibre Company's Oakland facility, CH2M HILL recommended that a groundwater monitoring well be installed and soil and water samples be collected in accordance with guidelines issued by the California Regional Water Quality Control Board (RWQCB). A description of the field activities and a discussion of the results of the groundwater investigation are presented in this report. CH2M HILL's February 1988 report entitled "Report on the Removal of Underground Storage Tanks and Sump Closure, Longview Fibre Company, Oakland, California Facility" contains details of the underground storage tank removal and associated soil sampling.

BACKGROUND

The Longview Fibre Company has operated a cardboard box manufacturing facility at 8511 Blaine Avenue in Oakland, California since the early 1950s. (See Figure 1, Site Location). Four underground fuel storage tanks were installed at the facility to provide reserve diesel fuel for the plant's boilers and to supply gasoline fuel to the emergency fire protection water pump. The three diesel tanks were located beneath the courtyard at the north side of the plant and the gasoline tank was located on the Western Pacific Property on the south side of the facility. Figure 2, Site Plan, shows the general plant layout and the locations of the four underground tanks.

Longview Fibre initiated a national underground tank program in the spring of 1987 with the goal of eliminating potential future environmental problems by removing and disposing of their single-walled underground storage tanks. CH2M HILL was retained to provide engineering services for the removal and disposal of the four underground tanks at the Longview Fibre Oakland facility. All four tanks were removed in accordance with state and local regulatory requirements. CH2M HILL obtained the necessary permits from the Oakland Fire Department and submitted a closure plan to the Alameda County Department of Environmental Health.

GASOLINE TANK

The gasoline tank had been installed in a sandy backfill within a bottomless concrete vault. After removal of the tank, two soil samples were collected from the backfill/native soil interface at the bottom of the vault and were analyzed for total petroleum hydrocarbons-gasoline (TPH-gasoline). Both samples contained concentrations of less

than 5 parts per million (ppm) of TPH-gasoline. No groundwater was encountered during the removal of the gasoline tank. The vault was backfilled using the excavated material and clean sand (CH2M HILL, 1988).

DIESEL TANKS

The three diesel storage tanks had been placed in a sandy backfill. At the time of excavation, the three tanks were sitting in groundwater, which was encountered at approximately 9 feet below the ground surface. After removing the tanks, samples were collected from the water in the excavation, and soil samples were taken from the walls of the pit immediately above the groundwater level. Groundwater present in the excavation during the tank removal had an oily sheen.

Analytical results of the initial soil sampling indicated that total petroleum fuel hydrocarbons-diesel (TPH-diesel) concentrations exceeded 1000 ppm in the southeastern and southwestern margins of the excavation. In accordance with RWQCB regulations, these areas were further excavated until soil samples with TPH-diesel concentrations less than 1,000 ppm had been obtained. Analytical results of the grab samples of groundwater from the excavation contained TPH-diesel concentrations ranging from 170 ppm to 160,000 ppm (CH2M HILL, 1988).

CH2M HILL developed a remedial action plan and submitted it to the Alameda County Department of Environmental Health. The plan called for the installation of a down-gradient monitoring well and the collection of groundwater samples for volatile organic aromatics (EPA Method 602) and soil samples for TPH-diesel (CH2M HILL, 1988).

FIELD METHODS

The site investigation included the following field activities:

- o Installation of one shallow monitoring well
- o Collection of one soil sample from the borehole drilled during monitoring well construction and one sample of the drill cuttings
- o Measurement of fuel product thickness in the well and the collection of one groundwater sample after purging the well

The methods followed are described in the following paragraphs.

EQUIPMENT DECONTAMINATION AND WASTE STORAGE

Prior to sampling, the brass sleeves and plastic end caps (for soil sampling), and teflon bailer and associated teflon spigot (for water sampling) were washed with a detergent and water solution, rinsed in tap water, rinsed with distilled water, spray-rinsed with isopropanol, and spray-rinsed with distilled, deionized water (laboratory-grade water). The split-spoon sampler and trowel (for soil sampling), the clear bailer and steel tape (for groundwater measurements), and the bailer and suction hose (for well development) were washed with the detergent and water solution and rinsed in tap water.

Drill cuttings were placed in a barrel next to the well, which was secured with a lid and bolt ring when drilling was concluded. On May 9, a grab sample of the drill cuttings was collected by removing the upper 6 inches of material in the barrel with a trowel and pushing a 6-inch brass sleeve into the cuttings. This sample was labelled, documented, preserved, and analyzed following procedures identical to those used for the soil sampling that are discussed below.

The total of 120 gallons of water produced during well development was stored next to the well in barrels with secured bolt rings and lids. All groundwater that was discarded during sampling was also poured into these barrels.

SAMPLE PRESERVATION AND CHAIN-OF-CUSTODY PROCEDURES

Once filled, sample containers for both soil and water were labelled, sealed in a zip lock plastic bags, secured with custody seals, and placed in an ice-filled cooler. Chain-of-custody forms were generated for each shipment of samples, enclosed in zip lock plastic bags, and packed inside the cooler with the samples. Copies of the chain-of-custody forms are included in the appendix. Custody seals were affixed to the front and rear of the cooler's lid before shipment to the laboratory via an air courier service.

MONITORING WELL INSTALLATION AND DEVELOPMENT

The shallow monitoring well is located approximately 5 feet south of an aboveground starch tank (Figure 2, Site Plan). In accordance with guidelines issued by the San Francisco Bay Region of the California Regional Water Quality Control Board (RWQCB, 1985), the location was selected in order to place the monitoring well boring: 1) within the limits of the original tank excavation, 2) within 10 feet of Tank T-3, which was found to have numerous holes, 3) in an area where contaminated soils had been removed, and 4) in the inferred downgradient direction from the site of the excavated tanks. Shallow groundwater beneath the site probably flows in a

westerly direction toward a drainage channel located approximately 500 feet west of the Longview Fibre property (Figure 1).

CH2M HILL developed well construction specifications following RWQCB guidelines and retained Bayland Drilling of Foster City, California to drill and install the monitoring well. CH2M HILL then obtained a Groundwater Protection Ordinance Permit (number 88153) from the Alameda County Flood Control and Water Conservation District (copy included in the appendix).

Prior to drilling, a 14-inch diameter hole was cored through the existing reinforced concrete parking lot pavement at a point about 1½ feet from the southern corner of the starch tank foundation. The monitoring well borehole was drilled on May 2, 1988, by Bayland Drilling using a CME 55 drilling rig with 3-3/4-inch I.D. x 8-inch O.D. hollow-stem augers. Geologic logging of the borehole was done by a CH2M HILL hydrogeologist. A copy of the DWR Water Well Driller's Report is included in the appendix. Subsurface materials consist of sand backfill from the recent excavation work from about 1 to 4 feet bgs and gray to yellow-brown silty clay from 4 to 27 feet bgs. Small (1-millimeter diameter) worm borings were evident in a soil sample collected at 8-1/2 to 10 feet bgs. Relatively soft materials were encountered at about 21 feet bgs. Groundwater was first encountered at a depth of approximately 8 feet below the ground surface (bgs).

Monitoring well installation was also completed on May 2. See Figure 3, Monitoring Well Construction Details, and the DWR Water Well Driller's Report in the appendix for details. 5 feet of 2-inch diameter blank schedule 40 PVC casing and 20 feet of 2-inch diameter schedule 40 PVC screen with 0.010-inch slots plus a bottom cap were placed inside the hollow auger stem. The blank casing extended from 3 inches below the ground surface (bgs) to 5.25 feet bgs, and the screen extended from 5.25 to 25.25 feet bgs. Clean sand (12 x 20 sieve size) was slowly poured down the annulus between the well casing and auger stem as the augers were removed from the hole. The elevation of the sand pack was continually sounded as the sand was being added. Bentonite pellets were then added above the sand pack from 2.5 to 3.75 feet bgs. An upper grout seal of neat cement and bentonite was placed from 8 inches to 2.5 feet bgs. The surface completion of the well is a concrete traffic box set in cement with a steel lid. The top of the traffic box protrudes approximately 1½ inches above the existing concrete pavement ("ground surface") to promote drainage. A locking, watertight well cap and lock were placed on the top of the PVC casing upon completion of the well.

The monitoring well was developed using both a bailer and a hand pump. On May 2, an initial 20 gallons of water were bailed from the well about 4 hours after its installation. On May 4, an additional 100 gallons were pumped from the well with a hand-operated suction pump. The well was pumped dry five times. The total of 120 gallons of development water was stored next to the well in barrels with secured bolt rings and lids. The suction hose was stored on site in a plastic bag for use in purging the well before sampling.

SOIL SAMPLING

While drilling the monitoring well borehole on May 2, one soil sample was collected from a depth of 8½ to 10 feet bgs, which was near the bottom of the former fuel tank and slightly above the anticipated water table. The sample was collected using a 2.5-inch diameter, 18-inch long Modified California Split-Spoon sampler and three 6-inch long brass liner sleeves. The upper two of the three sleeves were saved and composited for analysis for total petroleum fuel hydrocarbons-diesel (TPH-diesel). The lowermost sleeve was used to develop a description of the subsurface lithology.

Upon removal of the brass sleeves from the split-spoon sampler, each end of the two sleeves to be retained for analysis were covered with teflon tape followed by a polyethylene plastic cap. The caps were secured by wrapping them with electrical tape. The sleeves were then labelled, sealed in a zip lock plastic bag, secured with custody seals, and placed in an ice-filled cooler which was also secured with custody seals.

The soil sample was analyzed for TPH-diesel in accordance with guidelines issued by the RWQCB. Analytical services were provided by the CH2M HILL laboratory in Redding, California, which is a State of California certified laboratory facility.

GROUNDWATER SAMPLING

Before collecting a groundwater sample on May 9, measurements were made of the water elevation and free floating petroleum product thickness in the monitoring well. The water elevation was measured with a steel tape graduated to 0.01 inches, and the product thickness was gauged with a clear acrylic bailer. After purging the well, a water sample was collected with a teflon bailer for analysis for volatile organic aromatics (EPA Method 602).

Standing water was purged from the well by using a hand-powered suction pump along with the plastic hose saved from the well development. Approximately 17 gallons were removed from the well before it went dry. (One well casing volume

for a 2-inch diameter well with 17 feet of standing water is about 2.8 gallons). Once the well recovered, two bailers full of water were removed from the well with the teflon bailer and were discarded through the bailer's sampling spigot. Three 40 milliliter VOA sample bottles were filled from the third bailer full of water. The sample bottles were filled only after discarding the initial few milliliters of water that first flowed when the spigot was opened, and the bottles were carefully filled to prevent any air bubbles from remaining in the container after sealing. All discarded groundwater was poured into the barrels containing well development water.

The water sample was analyzed for volatile organic aromatics in accordance with EPA Method 602 and guidelines issued by the RWQCB (RWQCB, 1985). Analytical services for the water samples were also provided by the CH2M HILL laboratory in Redding, California.

RESULTS OF INVESTIGATION

Subsurface materials at the monitoring well site consist of new sand backfill from about 1 to 4 feet bgs and gray to yellow-brown silty clay from 4 to 27 feet bgs. Small (1-millimeter diameter) worm borings were observed in the soil sample from 8½ to 10 feet bgs.

The water level in the monitoring well on May 9 at 8:50 a.m. was 7.97 feet below the top of the casing, or 8.22 feet below ground surface (the concrete pavement). No free fuel product was observed on the surface of water standing in the well, judging from a sample collected with the clear bailer. Analysis of the soil sample from a depth 8½ to 9½ feet in the monitoring well boring contained no detectable amounts of diesel fuel (detection limit 1 milligram/kilogram), but the drill cuttings sample contained 7 milligrams per kilogram (mg/kg) of diesel fuel. The groundwater sample collected on May 9 contained no detectable amounts of benzene, toluene, xylene, ethyl benzene, chlorobenzene, or dichlorobenzene isomers (detection limit 1 microgram/liter). The laboratory reports are included in the appendix.

CONCLUSIONS AND RECOMMENDATIONS

Results of the soil sampling and groundwater sampling indicate that there are no detectable concentrations of volatile organic aromatics in the groundwater in the immediate vicinity of the former diesel storage tanks and less than 10 ppm of diesel fuel hydrocarbons in the soils obtained from the monitoring well boring. Additional groundwater sampling to confirm the above results is recommended.

SFR155/005

REFERENCES

California Regional Water Quality Control Board (RWQCB), San Francisco Bay Region, 1985. Guidelines for Addressing Fuel Leaks, September.

CH2M HILL, 1988. Report on the Removal of Underground Storage Tanks and Sump Closure, Longview Fibre Company, Oakland, California Facility. Unpublished report prepared for Longview Fibre, February.

FIGURES

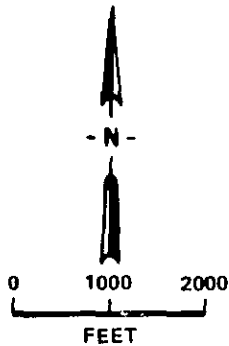
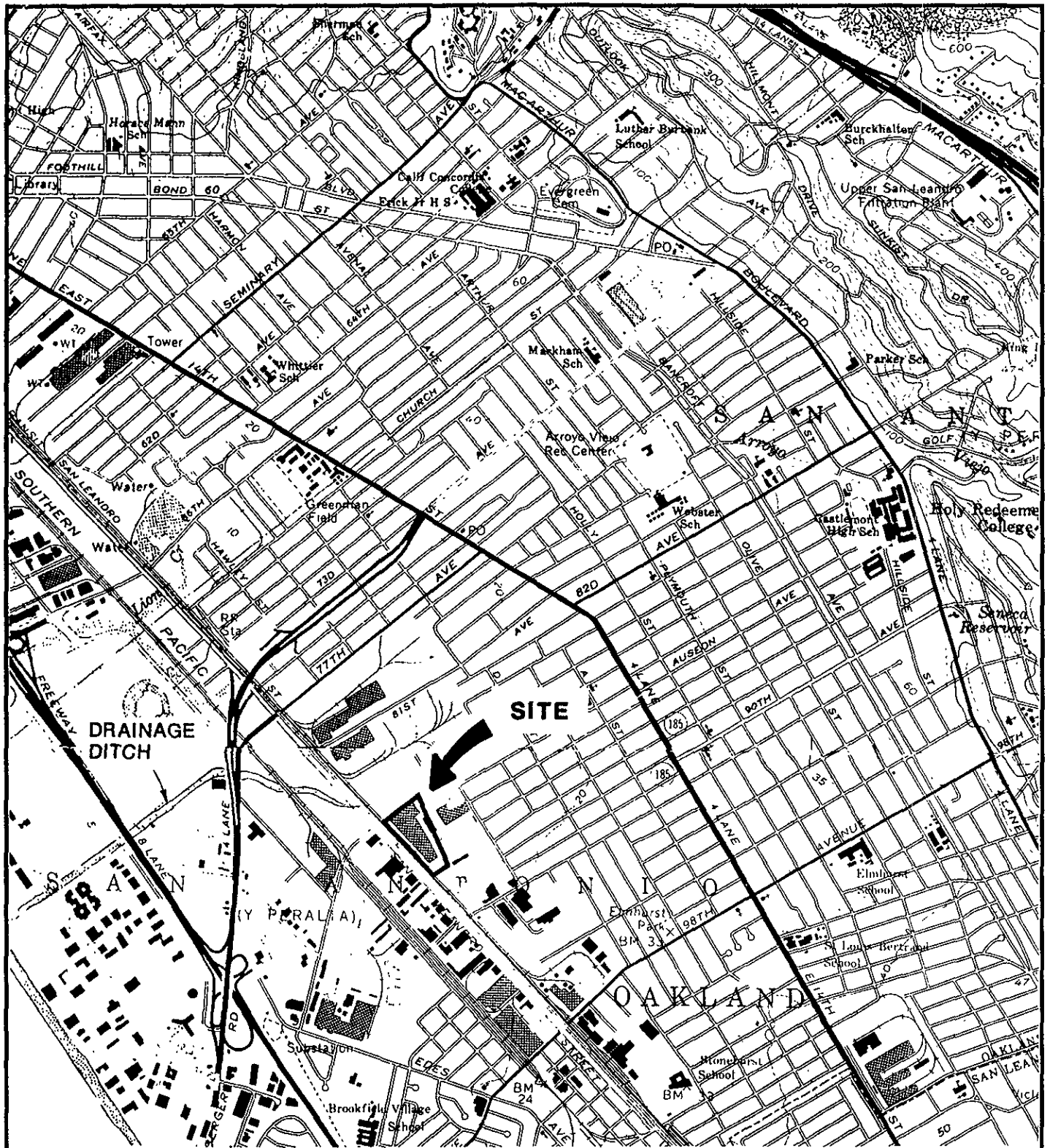
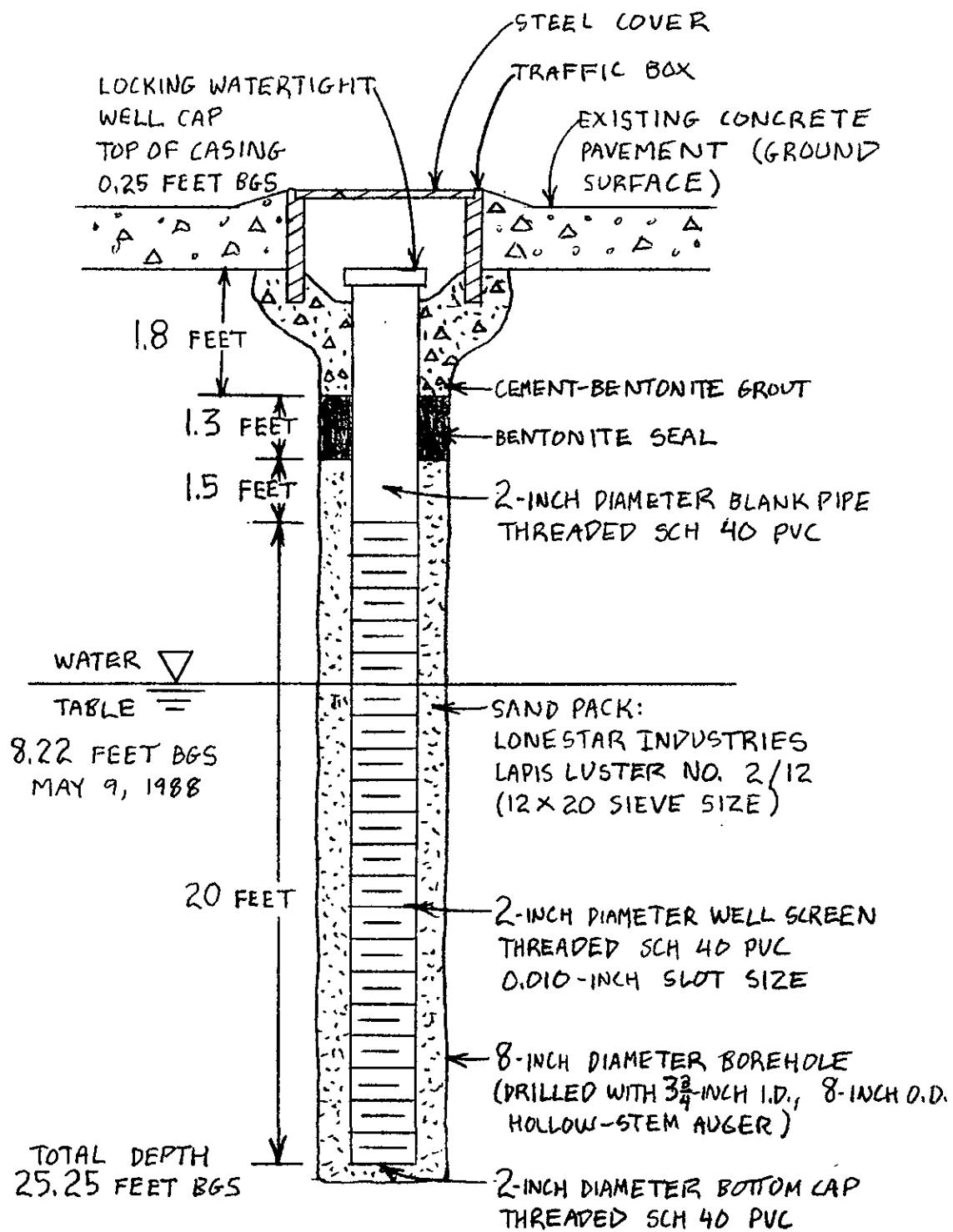


FIGURE 1
LONGVIEW FIBRE COMPANY
SITE LOCATION



NOT TO SCALE

FIGURE 3 (MW-1)
LONGVIEW FIBRE COMPANY
MONITORING WELL CONSTRUCTION
DETAILS

APPENDIX



ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

5997 PARKSIDE DRIVE PLEASANTON, CALIFORNIA 94566 (415) 484-2600

GROUNDWATER PROTECTION ORDINANCE PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

FOR OFFICE USE

1) LOCATION OF PROJECT Longview Fibre Co. 8511 Blaine Avenue (cross street 85th) Oakland, CA 94621 (415) 569-2616

PERMIT NUMBER 88153 LOCATION NUMBER

2) CLIENT Name Longview Fibre Co. Address P.O. Box 639 Phone (206) 425-1550 City Longview, WA Zip 98632

Approved Wyman Hong Date 25 Apr 88

3) APPLICANT Name CH2M HILL contact: Jeff Hegre Ste. 500 Address 6425 Christie Ave Phone (415) 652-2426 City Emeryville, CA Zip 94608

PERMIT CONDITIONS

Circled Permit Requirements Apply

4) DESCRIPTION OF PROJECT Water Well Construction [X] Geotechnical [] Cathodic Protection [] Well Destruction []

A. GENERAL

- 1. A permit application should be submitted so as to arrive at the Zone 7 office five days prior to proposed starting date. 2. Notify this office (484-2600) at least one day prior to starting work on permitted work and before placing well seals. 3. Submit to Zone 7 within 60 days after completion of permitted work the original Department of Water Resources Water Well Drillers Report or equivalent for well projects, or bore hole logs and location sketch for geotechnical projects. Permitted work is completed when the last surface seal is placed or the last boring is completed. 4. Permit is void if project not begun within 90 days of approval date.

5) PROPOSED WATER WELL USE Domestic [] Industrial [] Irrigation [] Municipal [] Monitoring [X] Other []

B. WATER WELLS, INCLUDING PIEZOMETERS

- 1. Minimum surface seal thickness is two inches of cement grout placed by tremie, or equivalent. 2. Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic, irrigation, and monitoring wells unless a lesser depth is specially approved.

6) PROPOSED CONSTRUCTION Drilling Method: Mud Rotary [] Air Rotary [] Auger [X] Cable [] Other []

WELL PROJECTS Drill Hole Diameter 8 in. Depth 25-30 ft. Casing Diameter 2 in. Number MW-1 Surface Seal Depth 3-8 ft. Total 1 Driller's License No. 374152 Bayland Drilling

GEOTECHNICAL PROJECTS Number [] Diameter [] in. Maximum Depth [] ft.

7) ESTIMATED STARTING DATE 05/02/88 ESTIMATED COMPLETION DATE 05/02/88

- C. GEOTECHNICAL. Backfill bore hole with compacted cuttings or heavy bentonite and upper two feet with compacted material. D. CATHODIC. Fill hole above anode zone with concrete placed by tremie, or equivalent. E. WELL DESTRUCTION. See attached.

hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 73-68.

APPLICANT'S SIGNATURE J.P. Hegre Date 04/20/88

CONFIDENTIAL

STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

CH2M HILL CHAIN OF CUSTODY RECORD

PROJECT NUMBER SFO.24103.B1		PROJECT NAME Longview Fibre-Groundwater				ANALYSES REQUESTED						FOR LAB USE ONLY		
CLIENT NAME Longview Fibre -		REPORT TO: Jeff Heglie/SFO				COPY TO:		NUMBER OF CONTAINERS 2X TAP-DIESEL						LAB # _____
REQUESTED COMPLETION DATE		LABORATORY Redding				ACK _____ VERIFIED _____								PROJ # _____
STA NO	DATE	TIME	COMP	GRAB	SAMPLE DESCRIPTION						DATE INVOICED _____	NO. OF SAMPLES _____ pg _____ of _____		
1	5/2/88	11:50			LVF-6W-SS-01 Soil sample						DISPOSITION: D R _____ DATE _____	REMARKS Composite for analysis		
SAMPLED BY AND TITLE (SIGNATURE)		DATE/TIME	RELINQUISHED BY (SIGNATURE)			DATE/TIME	RECEIVED BY: (SIGNATURE)			DATE/TIME				
1 Jeff Heglie / CH2MHILL		5/2/88/11:50					3							
RELINQUISHED BY: (SIGNATURE)		DATE/TIME	RECEIVED BY: (SIGNATURE)		DATE/TIME	RELINQUISHED BY: (SIGNATURE)		DATE/TIME	RECEIVED BY LAB: (SIGNATURE)		DATE/TIME			
4			5			6			7					
REMARKS			SAMPLING PROGRAM				SAMPLE SHIPPED VIA		AIR BUS BILL NUMBER					
			SDWA <input type="checkbox"/> NPDES <input type="checkbox"/> RCRA <input type="checkbox"/> OTHER _____ (SPECIFY)				<input type="checkbox"/> UPS <input type="checkbox"/> BUS <input checked="" type="checkbox"/> FED-EX <input type="checkbox"/> HAND OTHER _____		6479041133					



CH2M HILL ENVIRONMENTAL LABORATORY
 2218 RAILROAD AVENUE
 REDDING, CA 96001 916-243-5831

REPORT TO: LONGVIEW - FIBER
 CH2M HILL/SFO
 F24103.B1
 ATTENTION: JEFF HEGLIE
 SAMPLE DESCRIPTION: SOIL-LVF-GW-SS-01-
 COMPOSITE
 DATE OF SAMPLE: 5-2-88

REFERENCE NUMBER: 19942
 PAGE 1 OF 1
 DATE: 5-20-88
 PHONE:
 SAMPLED BY: J. HEGLIE
 DATE RECEIVED: 5-3-88

	TOTAL FUEL HYDROCARBONS (DIESEL) mg/kg
TEST UNITS	
RESULT	<1

COMMENTS: mg/kg = milligrams per kilogram

The information shown on this sheet is test data only and
 no analysis or interpretation is intended or implied.

APPROVED BY: J. Hawley



CH2M HILL ENVIRONMENTAL LABORATORY
 2218 RAILROAD AVENUE
 REDDING, CA 96001 916-243-5831

REPORT TO: LONGVIEW FIBER - OAKLAND
 CH2M HILL/SFO
 SFO24103.B1

ATTENTION: JEFF HEGLIE
 SAMPLE DESCRIPTION: LVF-GW
 DATE OF SAMPLE: 5-9-88

REFERENCE NUMBER: 20005
 PAGE 1 OF 1
 DATE: 6-10-88
 PHONE:
 SAMPLED BY: J. HEGLIE
 DATE RECEIVED: 5-10-88

TEST METHODS: EPA-602-8020

CONSTITUENT	BW-01 WATER	SS-02C SOIL
Benzene	<1.0	-
Toluene	<1.0	-
Ethyl benzene	<1.0	-
Xylene	<1.0	-
Chlorobenzene	<1.0	-
1,4-Dichlorobenzene	<1.0	-
1,3-Dichlorobenzene	<1.0	-
1,2-Dichlorobenzene	<1.0	-
Total Fuel Hydrocarbons (Diesel)	-	7

COMMENTS: Results are in micrograms per liter.

The information shown on this sheet is test data only and no interpretation is intended or implied.

ANALYST: Brian Green

APPROVED: J. Hawley