

**RESULTS OF GROUND-WATER SAMPLING
AND ANALYSES WEYERHAEUSER SOUTH END
RESIDUAL WOOD STORAGE SITE, EVERETT,
WASHINGTON**

**Prepared for
Weyerhaeuser Company
Everett, Washington**

Dalton, Olmsted & Fuglevand, Inc.
Environmental Consultants

September 17, 1996

RESULTS OF GROUND-WATER SAMPLING AND ANALYSES WEYERHAEUSER SOUTH END RESIDUAL WOOD STORAGE SITE, EVERETT, WASHINGTON

BACKGROUND

Dalton, Olmsted and Fuglevand, Inc. completed an environmental assessment of the South End Residual Wood Storage Site and Ferry Baker Islands in April and May, 1996. The results of this assessment are documented in a report titled "*Environmental Assessment of South End Residual Wood Storage Operable Unit Site and Ferry Baker Island Site - Survey Parcels 4 and 5, Weyerhaeuser East Site, Everett, Washington*" dated May 17, 1996.

During previous work on the South End Residual Wood Storage Site, several temporary well points (designated as WP-01 through WP-05, Figure 1) were installed by EMCON in 1995, and quickly sampled to screen for potential impacts to the Lower Sand Aquifer. Heavy oil range hydrocarbons and several metals were detected above cleanup levels specified in the Model Toxics Control Act (MTCA). However, the samples were very silty and likely were not representative of the actual conditions in ground water. Ecology requested that additional ground-water samples be obtained from the Lower Sand Aquifer to further assess water quality conditions in this zone.

As a result of Ecology's request, three new wells (MW-SE-101 through -103) were installed in the locations shown on Figure 1. These locations were selected based on previous data and input from Ecology. The work accomplished for the following report was done in general accordance with the Ecology approved work plan "*Soil and Ground-Water Sampling Plan, South End Residual Wood Storage Site and Ferry Baker Islands, Everett,*" dated July 15, 1996.

WELL LOCATIONS, SCREENING INTERVAL AND DRILLING METHODS

Three wells were installed within the upper portion of the Lower Sand Zone at the locations shown on Figure 1. Wells MW-SE-101 and SE-102 are located adjacent to the Snohomish River, in the general downgradient direction of the previously sampled well point locations WP-01 and WP-02, and TP-16, respectively. Well MW-SE-103 is located on the western edge of the property, adjacent to the existing railroad trackage as shown on Figure 1. This well is in the upgradient direction of wells A and B. The screens were set immediately below the bottom of the Upper Aquitard (upper silt unit), based on geologic sampling completed during the drilling of the wells.

The wells were installed using a hollow-stem auger in general accordance with Chapter 173-160 WAC. Ten feet of well screen were installed in each well as described below.

SOIL SAMPLING AND LOGGING

Soil samples were obtained on approximately 2.5 to 5-foot depth intervals as each well was drilled. The samples were obtained by driving a 3-inch O.D. split-spoon sampler 1.5- or 2.0-foot long. The sampler was driven with an approximately 300 pound cable-actuated slide

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hammer a distance equal to the length of the sampler. The penetration resistance in blows per six-inch interval was recorded for each sample.

Samples were classified in the field as to material type using ASTM D 2488 as a general guide. Visual observations of any observed staining or other indications of contamination were noted. A field boring and well completion log for each well was prepared (Attachment A).

WELL INSTALLATION METHOD AND MATERIALS

After the final drilling depth was reached, the well was installed by telescoping a ten-foot long, 2-inch, PVC, 0.010-inch slot size screen, attached to a 2-inch PVC riser pipe through the auger center. As the auger was extracted, a sand pack was placed around and approximately 0.5 to 2.5-feet above the top of the screen and the remaining annulus was sealed with hydrated bentonite chips. A steel above-ground monument, set in concrete, was installed to finish the well.

After the wells were installed, they were surveyed by W&H Pacific, licensed land surveyors, to determine the well head elevation (top of the PVC riser pipe). Well head elevations and locations were determined to 0.01-feet. The surveyed locations are summarized in Table 1.

WELL DEVELOPMENT, WATER LEVEL MEASUREMENTS, AND SAMPLING

Each well was developed by bailing and pumping to remove suspended particles, and to develop a natural graded filter around the sand pack and screen. Development involved removing five or more casing volumes and continuing until water from the well showed a substantial reduction in turbidity. Sampling was conducted three days after well development was completed.

Prior to sampling, depth to water measurements were made using an electric well probe. It was observed during sampling that water levels fluctuate rapidly during tidal fluctuations. For this reason, a "snapshot" of water levels at high tide and low tide were made. These measurements were used, along with the elevation survey data, to estimate ground-water level elevations and flow directions.

Sampling was completed using "low flow/low turbidity" sampling techniques to minimize the turbidity of the samples. A submersible pump with tygon-lined tubing was used to purge and sample at a flow rate of approximately 0.5 liters/minute. Samples were collected after at least three casing volumes were extracted and field parameters stabilized to within 10%. Temperature, specific conductivity, pH, and dissolved oxygen were measured in-situ using a QED "purge saver" down-hole probe at the time of purging and sampling. Turbidity was measured in the field using a LaMotte turbidity meter. The field parameters during purging and sampling are summarized in Table 2.

SAMPLE HANDLING AND ANALYSIS

Samples were placed in containers provided by Weyerhaeuser Analytical Testing Services. The filled sample containers were placed in chilled coolers and transported to the laboratory with 24-hours of sampling. Each container was labeled and standard chain-of custody procedures were used to document sample handling.

The ground-water samples were analyzed for:

- Petroleum hydrocarbons using Washington State Method WTPH-D(extended); and
- Total metals (arsenic, cadmium, chromium, copper, lead, mercury and zinc).

Results of the laboratory analyses are summarized in Table 3. The detailed laboratory data sheets are provided in Attachment B.

GROUND WATER FLOW DIRECTIONS

Ground water contours and flow directions were estimated as shown on Figures 2 and 3, based on water levels measured on September 11, 1996 at a predicted high tide of +10.8 feet (MLLW) and a predicted low tide of +1.2 feet (MLLW). As shown on the figures, during the low tide, ground water flows toward the river at a gradient of approximately 0.0041 feet per foot. During high tide, the ground water flow reverses and flows away from the river at a gradient of approximately 0.0036 feet per foot. Overall, the net flow of the deeper aquifer is estimated to be toward the river.

RESULTS OF GROUND WATER ANALYSES

- Results of the analyses (see Table 3 and Attachment B) show that concentration levels of petroleum hydrocarbons (TPH as oil and diesel) and total metals (arsenic, cadmium, chromium, copper, mercury, lead, and zinc), are all below MTCA Method A or B drinking water cleanup levels.
- It is our opinion that previous elevated metals and heavy oil concentrations measured in samples obtained from well points installed at the time of drilling were the results of particulates and possible "carry down" effects incorporated in the sampled water. As noted in their report, EMCON, 1995, the samples obtained at that time were very turbid and several of the samples were taken within sand that had "heaved" into the auger. The current sampling confirms this conclusion.

Closing

The services described in this report were performed consistent with generally accepted professional consulting principals and practices. No other warranty, expressed or implied, is made. These services were performed consistent with our agreement with Weyerhaeuser.

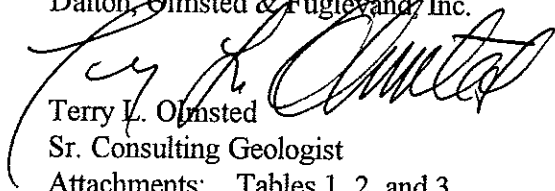
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Weyerhaeuser Company - South End Residual Wood Storage Site
9/17/96

This report is solely for the use and information of Weyerhaeuser unless otherwise noted. Any reliance on this report by a third party is at such party's sole risk.

Opinions and recommendations contained in this report apply to conditions existing when our services were performed and are intended only for the purposes, locations, time frames, and project parameters indicated. We are not responsible for the impacts of any changes in environmental standards, practices or regulations subsequent to performance of our services. We do not warrant the accuracy of information supplied by others, nor use of segregated portions of this reports.

Dalton, Olmsted & Fuglevand, Inc.



Terry L. Olmsted
Sr. Consulting Geologist

Attachments: Tables 1, 2, and 3
Figures 1, 2, and 3
Attachment A - Field Boring and Well Completion Logs
Attachment B - Laboratory Data Sheets

**Table 1 . Ground Water Monitor Well
Location/Elevation Survey and Water Level Data (All distances in Feet)**

Weyerhaeuser Co.
South End Residual Wood Storage Site

	MW-SE-101	MW-SE-102	MW-SE-103
Northing (Feet)	368,771	368,367	368,528
Easting (Feet)	1,310,413	1,310,340	1,310,077
Elevation Ground Surface (NGVD 29)	7.0	9.0	6.6
Elevation Ground Surface (MLLW)	13.0	18.9	24.8
Elevation Top PVC pipe (NGVD 29)	9.25	10.92	9.26
Elevation Top PVC Pipe (MLLW)	15.18	16.85	15.19
Date Time	9/11/96 1110	9/11/96 1117	9/11/96 1127
Depth to Ground Water (Feet)	12.65	14.46	11.63
Elevation of Ground Water (MLLW)	2.53	2.39	3.56
Predicted Tide Elevation (MLLW) Low 10:48	+1.2	+1.2	+1.2
Date Time	9/11/96 1735	9/11/96 1742	9/11/96 1755
Depth to Ground Water (Feet)	4.69	6.02	5.48
Elevation of Ground Water (MLLW)	10.49	10.83	9.71
Predicted Tide Elevation (MLLW) High 17:30	+10.8	+10.8	+10.8

Locations surveyed by W&H Pacific, Professional Land Surveyors August 22, 1996
Horizontal Datum: NAD 83/91 (US Survey Feet)
Vertical Datum: NGVD 29 (US Survey Feet)
To convert from NGVD 29 to Mean Lower Low Water (Tidal) Datum add 5.93 Ft.
Method: Real Time Kinematic GPS. Trimble 4000SSE Receivers

Table 2. Field Parameters During Sampling - August 19, 1996
Lower Sand Unit Monitoring Wells

Weyerhaeuser
 South End Residual Wood Storage Site

Well No.	Approx. Pumped Volume(gals)	Temperature (degrees C)	pH	Conductivity (umhos)	Dissolved Oxygen (mg/l)	Turbidity (NTUs)
MW-SE-101	0.5	15.5	6.6	1074	0.8	2.4
	4	14.4	6.6	992	0.5	2.3
	8	14.2	6.6	974	0.4	2.2
	11	14.2	6.6	970	0.4	1.8
MW-SE-102	0.5	15.0	6.5	2470	1.0	19
	3	14.7	6.5	2510	0.9	9.4
	5	14.6	6.6	2760	1.4	4
	8	14.6	6.6	3040	1.4	11
	10	14.6	6.6	3210	1.4	3
	12	14.6	6.6	3250	1.4	2.8
MW-SE-103	0.5	13.5	6.5	1500	4.9	3.2
	5	12.1	6.5	1510	3.1	3.2
	10	12.0	6.5	1530	3.2	1.9
	15	12.0	6.5	1530	3.2	1.6

Table 3. Water Quality Summary - Lower Sand Unit - Monitoring Wells

Weyerhaeuser
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		Well No.	MW-SE-101	MW-SE-102	MW-SE-103	MTCA
Well Point Screen Depth Interval (Ft.)			16.5 - 26.5	17.5-27.5	17.5-27.5	Method A/B
Bottom of Upper Aquitard (Upper Silt Unit)			17	17.5	15.5	Cleanup Levels
Sampling Date			8/19/96	8/19/96	8/19/96	
Analyte	Method					
TPH						
TPH as Diesel (mg/L)	WTPH-D Extended	<0.075	0.22	<0.075		1.0 (A)
TPH as Oil (mg/L)	WTPH-D Extended	<0.19	0.26	<0.19		1.0 (A)
Total Metals (ug/L)						
Arsenic	CEM RD42/200.9	<1	<1	<1		5.0 (A)
Cadmium	CEM RD42/200.9	<0.5	<0.5	<0.5		5.0 (A)
Chromium	CEM RD42/6010	<10	<10	<10		50 (A)
Copper	CEM RD42/6010	<10	<10	<10		592 (B)
Mercury	AMI-245.1	<0.2	<0.2	<0.2		2.0 (A)
Lead	CEM RD42/200.9	<1	<1	<1		5.0 (A)
Zinc	CEM RD42/6010	<10	<10	<10		4800 (B)
Field Parameters at Time of Sampling						
Temperature (degrees C)	NA	14.2	14.6	12.0		NA
pH	NA	6.6	6.6	6.6		NA
Conductivity (umhos)	NA	970	3250	1530		NA
Dissolved Oxygen (mg/l)	NA	0.4	1.4	3.2		NA
Turbidity (NTUs)	NA	1.8	2.8	1.6		NA

(<) = Below noted method reporting limits

NA = not applicable

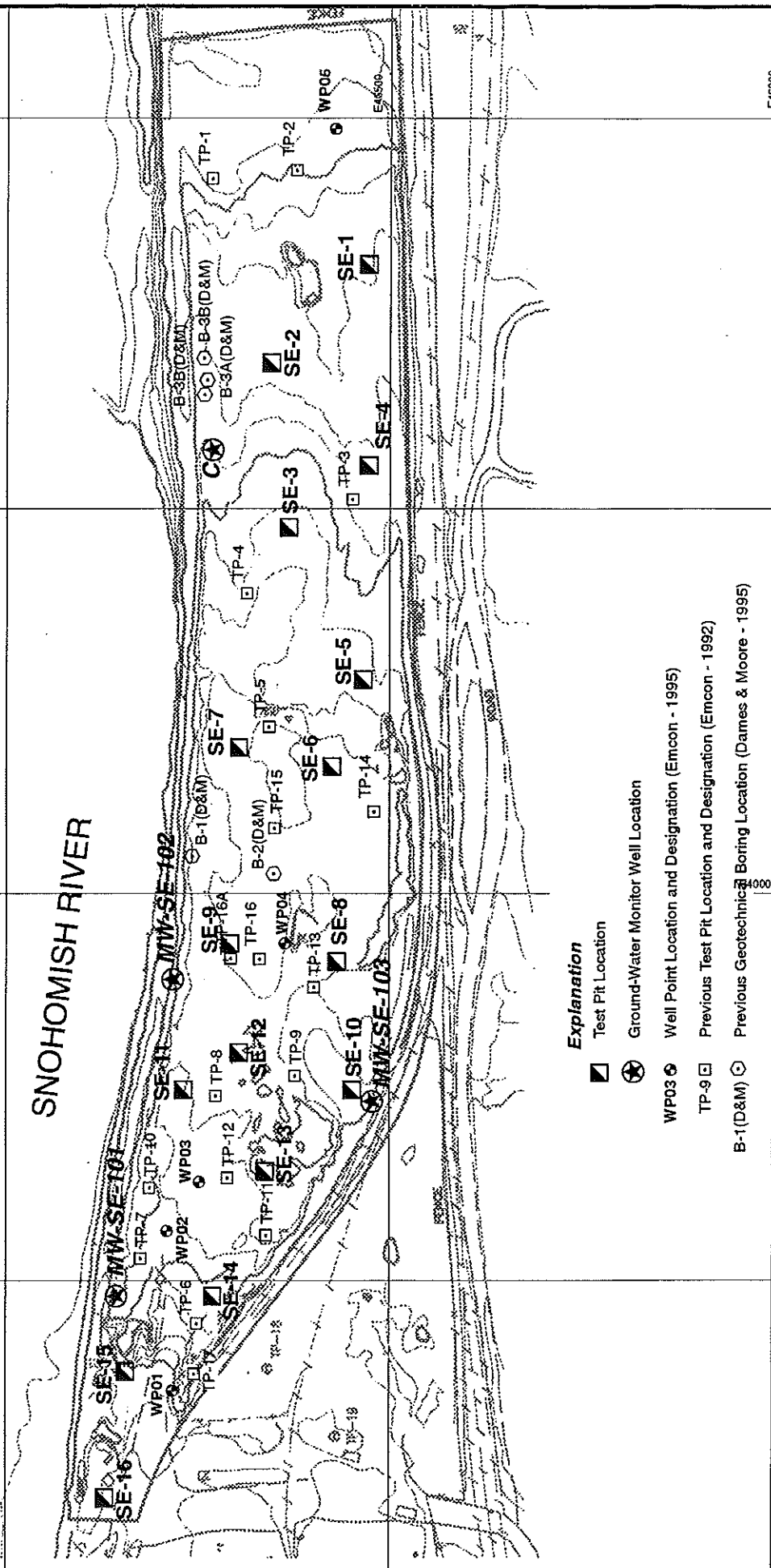
Data from Weyerhaeuser Analytical and Testing Services

See Attachment B to this report for detailed laboratory results

(A) = MTCA Method A Cleanup Level (Chapter 173-340-720 WAC)

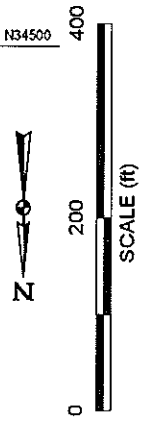
(B) = MTCA Method B Cleanup Level (Chapter 173-340-720 WAC)

SNOHOMISH RIVER



Explanation

- ▣ Test Pit Location
- ⊗ Ground-Water Monitor Well Location
- ⊕ WP03 Well Point Location and Designation (Emcon - 1995)
- TP-9 Previous Test Pit Location and Designation (Emcon - 1992)
- ⊙ B-1(D&M) Previous Geotechnical Boring Location (Dames & Moore - 1995)



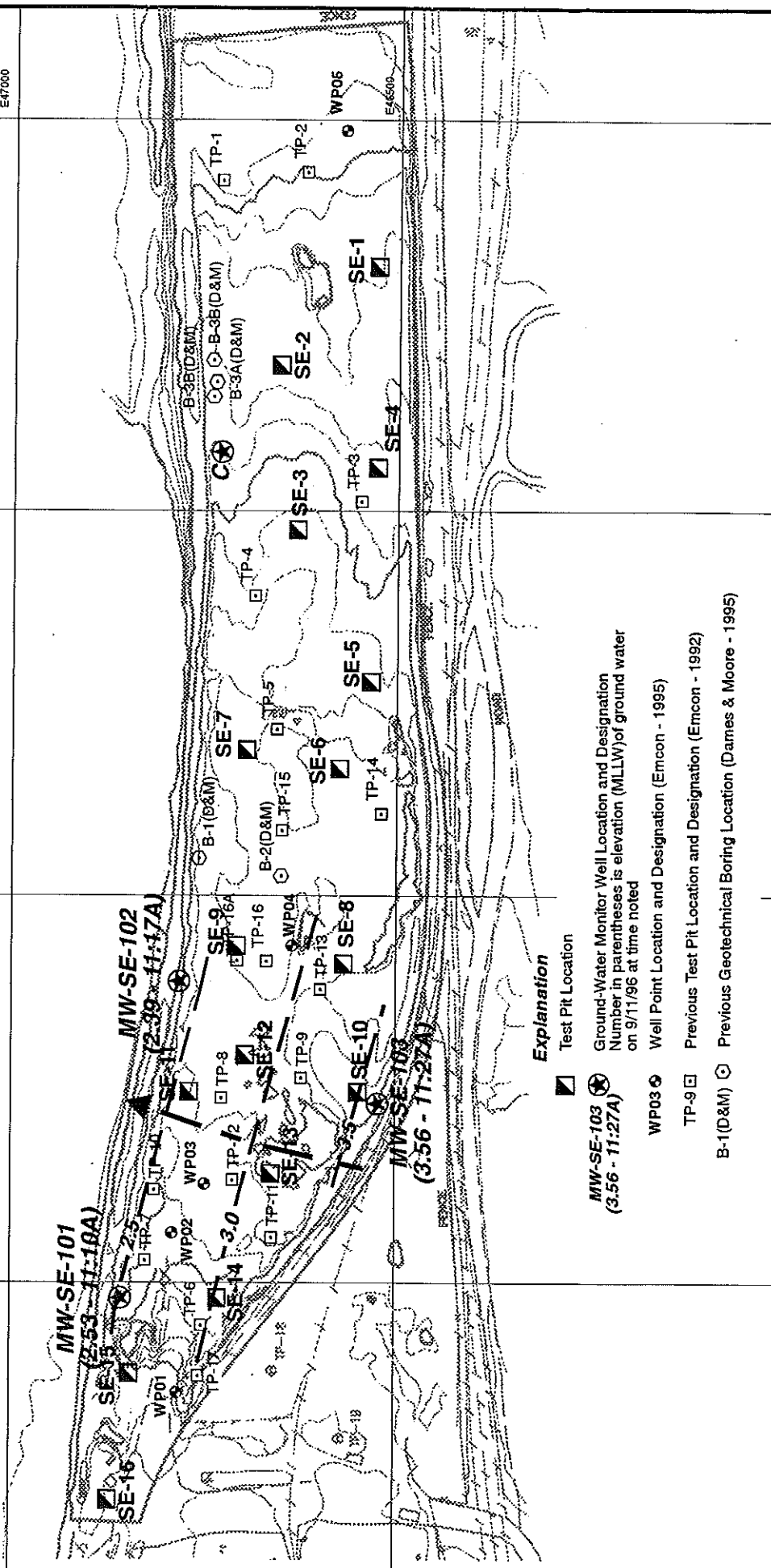
Weyerhaeuser Co.
South End Residual Wood Storage Site
SITE PLAN

Figure 1

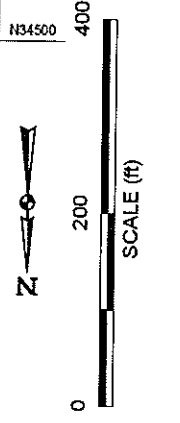
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WEY-011-04 9/7/96
ref. site.cdr

Snohomish River
 [Low Tide - +1.2 ft. (MLLW)
 9/11/96 - 10:48 AM]



- Explanation**
- ▣ Test Pit Location
 - ★ Ground-Water Monitor Well Location and Designation
 Number in parentheses is elevation (MLLW) of ground water
 on 9/11/96 at time noted
 - Well Point Location and Designation (Emcon - 1995)
 - ▣ Previous Test Pit Location and Designation (Emcon - 1992)
 - Previous Geotechnical Boring Location (Dames & Moore - 1995)



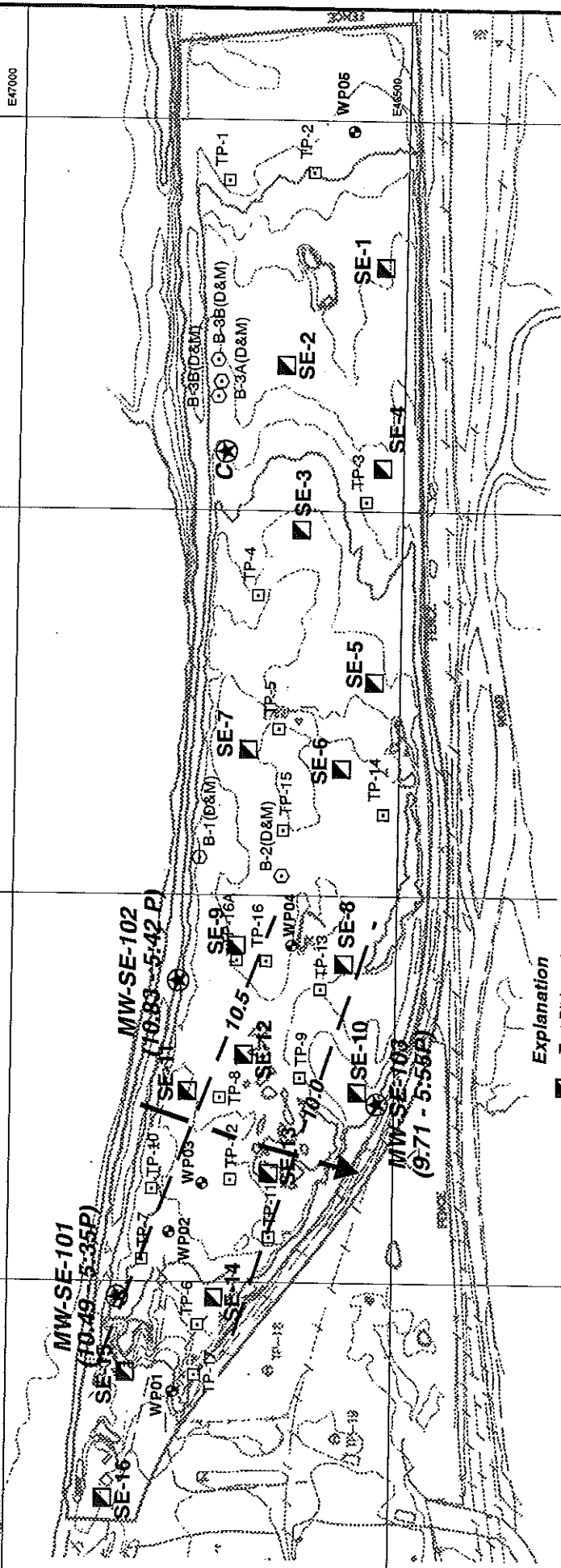
Ground Water Contour based on water levels in
 wells MW-SE-101 through -103 on 9/11/96
 Estimated Ground Water Flow Direction at Low Tide

Weyerhaeuser Co.
 South End Residual Wood Storage Site
Lower Sand Zone Ground Water Contours
 Low Tide - 9/11/96
 Figure 2

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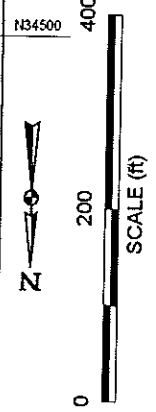
WEY-011-06 9/17/96
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Snohomish River
 [High Tide +10.8 ft. (MLLW)
 9/11/96 - 5:30PM]



Explanation

- ▣ Test Pit Location
- ★ Ground-Water Monitor Well Location and Designation Number in parentheses is elevation (MLLW) of ground water on 9/11/96 at time noted
- Well Point Location and Designation (Emcon - 1995)
- ▣ Previous Test Pit Location and Designation (Emcon - 1992)
- Previous Geotechnical Boring Location (Dames & Moore - 1995)



Ground Water Contour based on water levels in wells MW-SE-101 through -103 on 9/11/96
 Estimated Ground Water Flow Direction at Low Tide

Weyerhaeuser Co.
 South End Residual Wood Storage Site
Lower Sand Zone Ground Water Contours
High Tide - 9/11/96
 Figure 3

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WEY-011-06 9/17/96
 ref: gwcontb.cdr

ATTACHMENT A
FIELD BORING AND WELL COMPLETION LOGS

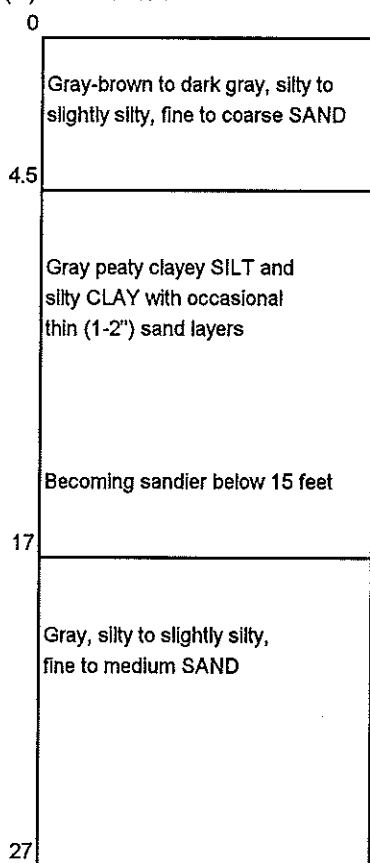
MONITORING WELL NO. MW-SE-101 - DESCRIPTION OF SAMPLES, TESTS, AND INSTALLATION

Field Rep: T. Olmsted	Location: N368,771 E1,310,413
Drilling Co.: Holt Testing	Elevation (Ft., MLLW): Surf: 13 Top PVC Pipe 15.18
Driller: Mike Sharp	Date Completed: 8/14/96
Drill Type: Lars L10T	Weather: clear & warm
Size/Type Casing: 4" I.D. Hollow-Stem Auger	

Spl.No.	Type	Drill Action	Spl Depth (Ft) From - To	Blows/ 6 inches	Spl length inches	Time	Sample Description
1	Drive	smooth	2.5 - 4	2-3-4	8	0924	Gray-brown, slightly silty, fine SAND Bot 2" Dark gray, fine to coarse SAND
2	Drive	smooth	5-6.5	1-2-1	18	0928	Gray, peaty clayey SILT
3	Drive	smooth	7.5-9	1-1-1	18	0940	Gray, peaty silty CLAY
4	Drive	smooth	10-11.5	1-1-1	18	0945	Gray, peaty clayey SILT with 1" fine sand layers - wet
5	Drive	smooth	12.5-14	1-2-2	18	0956	Gray, peaty clayey SILT with 1" fine sand layers - wet
6	Drive	smooth	15-16.5	2-1-1	18	1003	Gray, clayey SILT with less peat and 1" fine sand layers - wet
7	Drive	smooth	17.5-19	10-14-22	18	1012	Gray, silty to slightly silty fine SAND - wet
8	Drive	smooth	20-21.5	14-17-30	18	1025	Gray, slightly silty, fine to medium SAND -wet
9	Drive	smooth	22.5-24	14-24-35	18	1040	Gray, slightly silty, fine to medium SAND - wet
10	Drive	smooth	25.5-27	14-20-25	18	1105	Gray, slightly silty, fine to medium SAND - wet

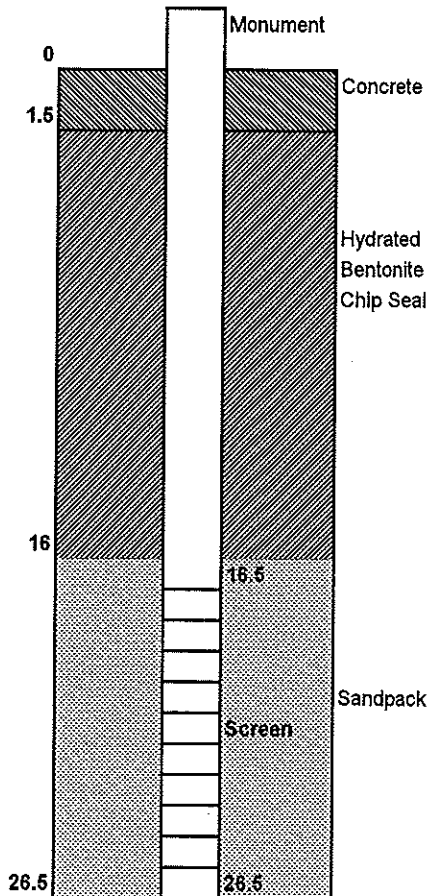
MONITORING WELL DIAGRAM

Depth(ft.) SUMMARY LOG



(Bottom of Well)

NOTE: The summary log is an interpretation based on samples, drill action, and interpolation. Variations between what is shown and actual conditions should be anticipated.



MONITORING WELL INFORMATION (FT.)

Riser Length: 16.5	Seal: Bentonite/Concrete (top/bot) 0/16
Sandpack: 10-20 Sand (top/bot) 16/26.5	Monument: Steel - Above ground
Screen: PVC/0.010" length 10 (top/bot) 16.5/26.5	

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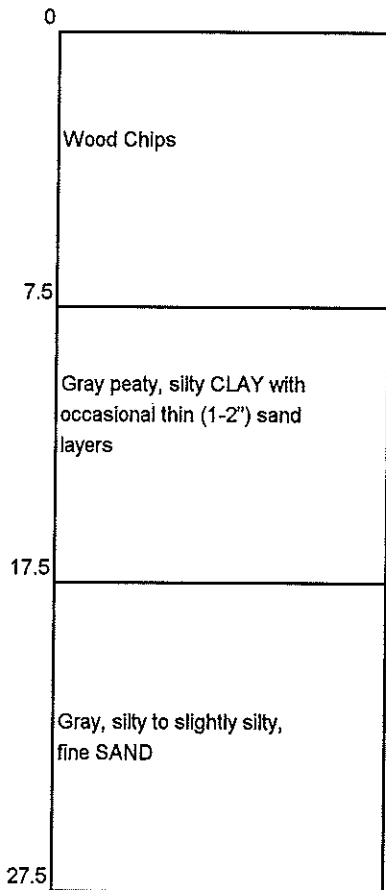
MONITORING WELL NO. MW-SE-102 - DESCRIPTION OF SAMPLES, TESTS, AND INSTALLATION

Field Rep: T. Olmsted	Location: N368,367 E1,310,340
Drilling Co.: Holt Testing	Elevation (Ft., MLLW): Surf: 15 Top PVC Pipe: 16.85
Driller: Mike Sharp	Date Completed: 8/14/96
Drill Type: Lars L10T	Weather: clear & warm
Size/Type Casing: 4" I.D. Hollow-Stem Auger	

Spl.No.	Type	Drill Action	Spl Depth (Ft.) From - To	Blows/ 6 inches	Spl length inches	Time	Sample Description
1	Drive	smooth	2.5 - 4	1-1-1	6	1325	Wood Chips
2	Drive	smooth	5-6.5	1-2-2	6	1335	Wood Chips-wet
3	Drive	smooth	10-11.5	1-0-1	6	1340	Gray, peaty silty CLAY - wet
4	Drive	smooth	15-16.5	1-1-1	18	1350	Gray, peaty silty CLAY with 1" fine sand layers-wet
5	Drive	smooth	20-21.5	7-12-13	18	1400	Gray, slightly silty, fine SAND - wet
6	Drive	smooth	25-26.5	6-11-15	18	1415	Gray, slightly silty, fine SAND - wet

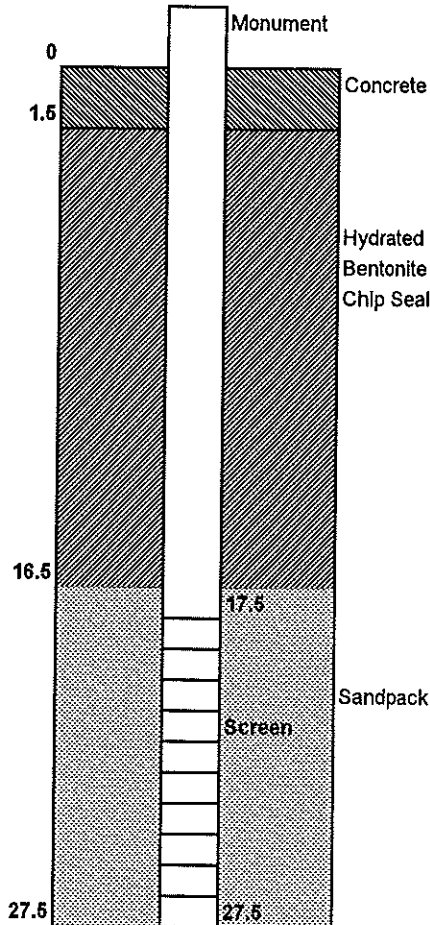
MONITORING WELL DIAGRAM

Depth(ft.) SUMMARY LOG



(Bottom of Well)

NOTE: The summary log is an interpretation based on samples, drill action, and interpolation. Variations between what is shown and actual conditions should be anticipated.



MONITORING WELL INFORMATION (FT.)

Riser Length: 17.5	Seal: Bentonite/Concrete (top/bot) 0/16.5
Sandpack: 10-20 Sand (top/bot) 16.5/26.	Monument: Steel - Above ground
Screen: PVC/0.010" length 10 (top/bot) 17.5/27.5	

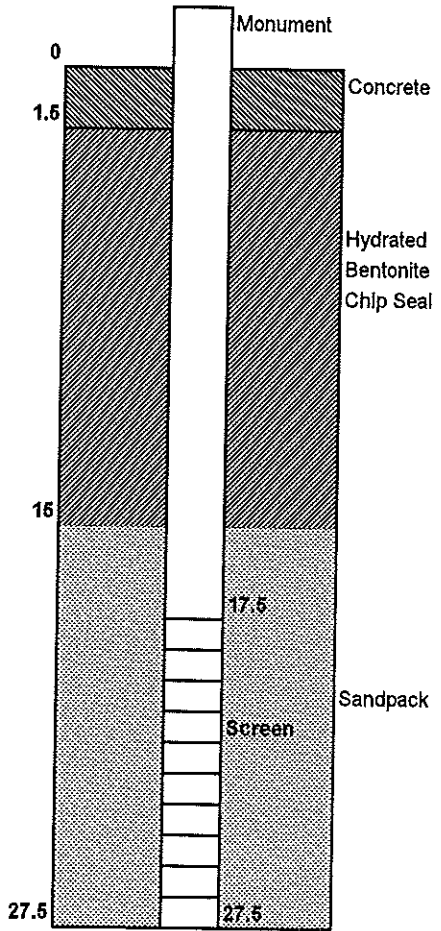
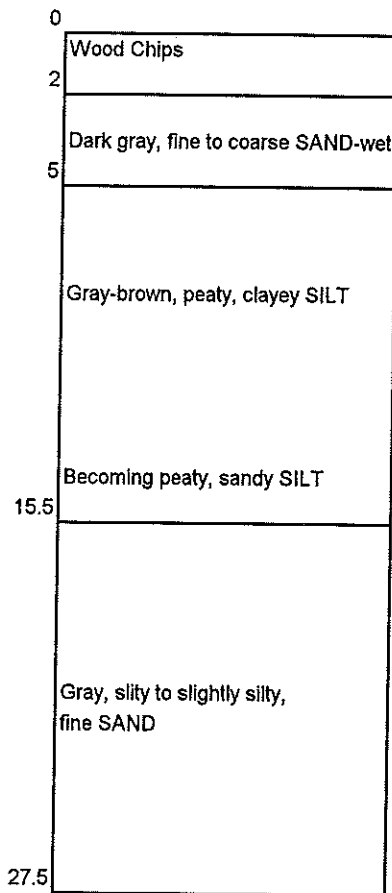
MONITORING WELL NO. MW-SE-103 - DESCRIPTION OF SAMPLES, TESTS, AND INSTALLATION

Field Rep: T. Olmsted	Location: N368,528 E1,310,077
Drilling Co.: Holt Testing	Elevation (Ft., MLLW): Surf: 13 Top PVC Pipe: 15.19
Driller: Mike Sharp	Date Completed: 8/15/96
Drill Type: Lars L10T	Weather: clear & warm
Size/Type Casing: 4" I.D. Hollow-Stem Auger	

Spl.No.	Type	Drill Action	Spl Depth (Ft.) From - To	Blows/ 6 inches	Spl length inches	Time	Sample Description
1	Drive	smooth	5-6.5	1-2-1	18	0855	Top 2" Gray, fine to medium SAND - wet Bot.16" Brown, peaty, clayey SILT
2	Drive	smooth	10-11.5	1-0-1	18	0905	Gray-brown, peaty, clayey SILT
3	Drive	smooth	15-16.5	10-12-14	18	0910	Top 6" Gray-brown, fine sandy peaty SILT Bot 12" Gray, silty, fine SAND with peaty silt layers
4	Drive	smooth	20-21.5	19-21-23	18	0935	Gray, slightly silty, fine to medium SAND - wet
5	Drive	smooth	25-26.5	14-20-21	18	0945	Gray, slightly silty, fine to medium SAND - wet

MONITORING WELL DIAGRAM

Depth(ft.) SUMMARY LOG



(Bottom of Well)

NOTE: The summary log is an interpretation based on samples, drill action, and interpolation. Variations between what is shown and actual conditions should be anticipated.

MONITORING WELL INFORMATION (FT.)

Riser Length: 17.5	Seal: Bentonite/Concrete (top/bot) 0/15
Sandpack: 10-20 Sand (top/bot) 15/27.5	Monument: Steel - Above ground
Screen: PVC/0.010" length 10 (top/bot) 17.5/27.5	

ATTACHMENT B
LABORATORY DATA SHEETS



32901 Weyerhaeuser Way South
Federal Way, Washington 98003
Analytical Chemistry Laboratories
Tacoma, Washington 98477
Tel (206) 924 6872
Fax (206) 924 6654

SDG NARRATIVE

WEYERHAEUSER (WEYER) ANALYTICAL AND TESTING SERVICES

Case Number 1733

SDG Number 69736

PROJECT: EVERETT WATERS/REMEDATION SCREENING DALTON, OLMSTED & FUGLEVAND INC.

The samples from this SDG were received on 8/20/96. The SDG was composed of three water samples for analysis of petroleum hydrocarbons by WTPH-D and metals. The following analyses were performed:

<u>SAMPLE ID</u>	<u>LAB ID</u>	<u>MATRIX</u>	<u>ANALYSIS</u>
MW-SE-101	69736	WATER	WTPH-D; Metals
MW-SE-102	69737	WATER	WTPH-D; Metals
MW-SE-103	69738	WATER	WTPH-D; Metals
MW-SE-103dup	69738dup	WATER	Metals
LCS 8/23/96	LCS 8/23/96	Fortified Blank	WTPH-D

Laboratory comments for this sample delivery group if applicable are listed below. The comments are broken up into categories for ease of explanation.

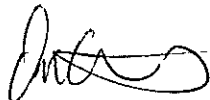
1. WTPH-D

- a) No comments.

2. Metals

a) No comments.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his designee, as verified by the following signature.



Dennis Catalano
Project Manager

9/6/96

Date

Please feel free to contact me with any questions concerning this data report. I can be reached at (206) 924-6242.

Sincerely,



Dennis Catalano
Weyerhaeuser Analytical & Testing Services

Sample Analysis Request/Chain of Custody Form

Facility: Weyco Everett		Project Manager (print): Steve Priolo	
Sampler's Project No. 120-2974270		Sampler Name (print): T. Olmsted	
Weyerhaeuser Account No. 120-2974270		Recorded By (signed): [Signature]	
Copulant: [Signature] Address: 1111 Andrews Pkwy Ste 101 Badhoe WA 98011 Phone No: 425-7905 FAX: 425-7651		Matrix: [] Oil [] Soil/Sed [] Water []	
Sample Description (ID, Date, Time are Required)		Preservative	
Field Sample ID (15 characters max.)	Date (m/d/y)	Time (hh:mm)	Depth (ft/m)
MW-SE-101	8/9/96	1045	-
MW-SE-102	8/9/96	1200	-
MW-SE-103	8/9/96	1330	-
Method		Filtered	
		Na ₂ S ₂ O ₃	
		HNO ₃ (Mer)	
		H ₂ SO ₄	
		HCl	

Method: G, grab; D, depth composite; T, time composite. Depth required for soil or sediment samples.

Reporting and QA/QC Requirements

RESULTS TO: M. DeLeon

CC: Douglas Olmsted, Eugene

Samples on Ice or Blue Ice
 CLP Package
 NPDES Permit
 Other:
 Electronic Report

Sample Chain of Custody and Shipping Method Record

Relinquished By (signature): [Signature]	Date: 8/19/96	Time: 3:00	Received By (signature):
Relinquished By (signature): [Signature]	Date:	Time:	Received By (signature):
Relinquished By (signature):	Date: 8/20/96	Time: 0730	Received For Laboratory By (signature):
			Samples Received Intact: 1/20
			Cooler Temp: 4 °C

Shipping Method: _____ Airbill No. _____

Number of Containers: 2

Analyses Requested (circle or write in parameters):

TKN P-tot Total TOC COD	
BOD P-ortho	
CN	
Dioxin: Total / 2,3,7,8-TCDD / 2,3,7,8-TCDF	
TCLP: Metals VOA SVOA Pest Herb PCBs	
AOX	
NH ₃ HCO ₃ CO ₃ Cl F NO ₃ SO ₄	
Metals (list below)	
Ca Mg Na K Fe Mn	
TPH: 418.1 TPH-G	X
TPH-D&K&L	X
Volatile Organics / BTEX	
Semi-volatile Organics	
Volatiles Organics / BTEX	
pH Cond TDS TSS Color Tannins	

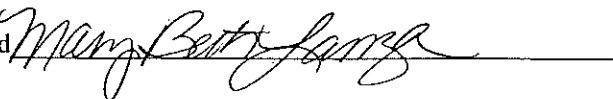
Remarks/Detection Limit Requirements

**WEYERHAEUSER COMPANY
ANALYTICAL LABORATORIES
ATOMIC SPECTROSCOPY
Tacoma, WA**

**Everett Waters / Remediation Screening
SR 01733
Total Metals Analysis**

Element	69736	69737	69738	69738D	Quantitation Limit	Method Number
	MW-SE-101	MW-SE-102	MW-SE-103	Duplicate		
	08/19/96	08/19/96	08/19/96			
	1045	1200	1330			
	(µg/L)					
As	< 1	1	1	< 1	1	CEM RD42/200.9
Cd	< 0.5	< 0.5	< 0.5	< 0.5	0.5	CEM RD42/200.9
Cr	< 10	< 10	< 10	< 10	10	CEM RD42/6010
Cu	< 10	< 10	< 10	< 10	10	CEM RD42/6010
Hg	< 0.2	< 0.2	< 0.2	< 0.2	0.2	AM1-245.1
Pb	< 1	< 1	< 1	< 1	1	CEM RD42/200.9
Zn	< 10	< 10	< 10	< 10	10	CEM RD42/6010

Approved



Report Date 9/6/96 ld

WTPH-D Extended

Service Request: 01733
 Analyst: C. Thomson

Sample ID	Blank	LCS	69736	69737	69738
Client ID	08/23/96	08/23/96	MW-SE-101	MW-SE-102	MW-SE-103
Analytes	mg/L	% Rec.	mg/L	mg/L	mg/L
Diesel Fuel Range	U	83%	U	0.22	U
Motor Oil Range	U		U	0.26	U
Surrogate Recovery	94%	95%	94%	99%	100%

Date Sampled			08/19/96	08/19/96	08/19/96
Date Extracted	08/23/96	08/23/96	08/23/96	08/23/96	08/23/96
Date Analyzed	08/28/96	08/28/96	08/28/96	08/28/96	08/29/96
Holding Time Days			4	4	4

Reporting Limit

Diesel Range	0.080		0.075	0.075	0.075
Motor Oil Range	0.20		0.19	0.19	0.19

Approved by Clay Thomson Date 9/3/96

WTPH-D Extended

Service Request: 01733
 Analyst: C. Thomson

Sample ID	Blank	LCS	69736	69737	69738
Client ID	08/23/96	08/23/96	MW-SE-101	MW-SE-102	MW-SE-103
Analytes	mg/L	% Rec.	mg/L	mg/L	mg/L
Diesel Fuel Range	U	83%	U	0.22	U
Motor Oil Range	U		U	0.26	U
Surrogate Recovery	94%	95%	94%	99%	100%

Date Sampled			08/19/96	08/19/96	08/19/96
Date Extracted	08/23/96	08/23/96	08/23/96	08/23/96	08/23/96
Date Analyzed	08/28/96	08/28/96	08/28/96	08/28/96	08/29/96
Holding Time Days			4	4	4

<u>Reporting Limit</u>					
Diesel Range	0.080		0.075	0.075	0.075
Motor Oil Range	0.20		0.19	0.19	0.19

Dilution	1	1	1	1	1
Volume Ext. (mL)	500	500	530	530	530

<u>Area</u>	<u>Blank</u>	<u>LCS</u>	<u>69736</u>	<u>69737</u>	<u>69738</u>
Diesel Range	469949	20182539	470821	5768135	1667166
Motor Oil Range	2542252		2116592	6865126	3507276
o-Terphenyl	5254845	5324961	5271548	5585427	5629455