Lust # 2498

Dalton, Olmsted & Fuglevand, Inc. *Environmental Consultants*

19017 120th Avenue N.E., Suite 107 • Bothell, Washington 98011
Telephone (206) 486-7905 (FAX 486-7651)

March 6, 1996

NWE-001-02

Margaret LaCrosse
Bellevue Fire Department
766 Bellevue Way S.E.
Bellevue, WA 98004

Re: Ground-Water Monitoring
Associated with Previous Underground Storage Tanks
Fire Station No. 9
12412 S.E. 69th Way
Renton, Washington

Dear Ms. LaCrosse,

This is our report on the results of the ground-water monitoring at Fire Station 9 completed in February 1996. Since our last report in February, 1994, the ownership of this fire station transferred from the King County Fire District 25 to the City of Bellevue. The previous water quality sampling rounds were performed under a contract with King County Fire District 25.

WATER QUALITY SAMPLING AND ANALYSIS

Water quality samples were obtained in wells MW-1, 2, 3 and 4 on February 2, 1996. There was a small (less than 1 cfs) of flow in the creek located on the west side of the property (Figure 1) at the time of our sampling.

Ground-water samples were analyzed by North Creek Analytical of Bothell, Washington for total purgeable fuel hydrocarbons with benzene, toluene, ethylbenzene and xylenes distinction (Ecology method WTPH-G and EPA Method 8020). The protocols and field methods that were used were the same as described in our July 17, 1991 report.

ANALYTICAL RESULTS AND EVALUATION

- Water quality analyses of samples from monitoring well MW-1 (located nearest the original tank excavation) taken in February 1996, show a decrease in purgeable hydrocarbons, benzene, and toluene, in comparison with

previous sampling rounds. Ethylbenzene, and xylene concentrations found during this round of sampling are at similar levels as those found in previous rounds of sampling. (see Table 1).

- Water quality analyses of samples from MW-3, located downgradient of the original tank excavation, taken in February 1996, also show decreases in purgeable hydrocarbons, benzene, and toluene in comparison with previous sampling rounds. As in well MW-1, ethylbenzene and xylene concentrations found during this round of sampling are at similar levels as those found in previous sampling rounds.

- Water quality analyses of samples from MW-2, located upgradient of the previous tank, and from MW-4, located "across-gradient" (north of) MW-1 and -3, indicate that the concentrations of these compounds continue to be below method detection limits.

- Water quality analyses at the creek over a period of about five years indicate that concentrations of purgeable hydrocarbons and BTEX have remained below method detection limits.

- It is our opinion that long-term monitoring of ground water and surface water at the site continues to be appropriate for the following reasons:

  * There are no apparent impacts to surface water quality at the creek;

  * The water-bearing zones containing elevated levels of hydrocarbons are within glacial till that is of relatively low hydraulic conductivity, and;

  * Elevated levels of hydrocarbons are still detected in water from the on-site ground-water monitoring wells

- For the reasons stated above, we recommend that the water quality monitoring program be continued. Because there is no flow in the creek during the summer, we recommend that the monitoring be continued on an annual basis, the next sampling period being January/February of 1997.

This report has been prepared using generally accepted professional practices, related to the nature of the work accomplished, in the same or similar localities, at the time the

services were performed. This report was prepared for the exclusive use of the Bellevue Fire Department for specific application to the project purpose. This report should not be construed to represent a legal opinion. No other conditions, expressed or implied, should be understood.

We appreciate the opportunity of providing you with our services. If you have any questions, please call.

Sincerely,
DALTON, OLMSTED & FUGLEVAND, INC.

Terry L. Olmsted
Sr. Consulting Engineering Geologist

Attachments: Table 1. Summary of Chemical Analyses
Figure 1. Site Plan
Attachment A: Analytical Laboratory Results

Dalton, Olmsted & Fuglevand, Inc.

Bellevue Fire Department

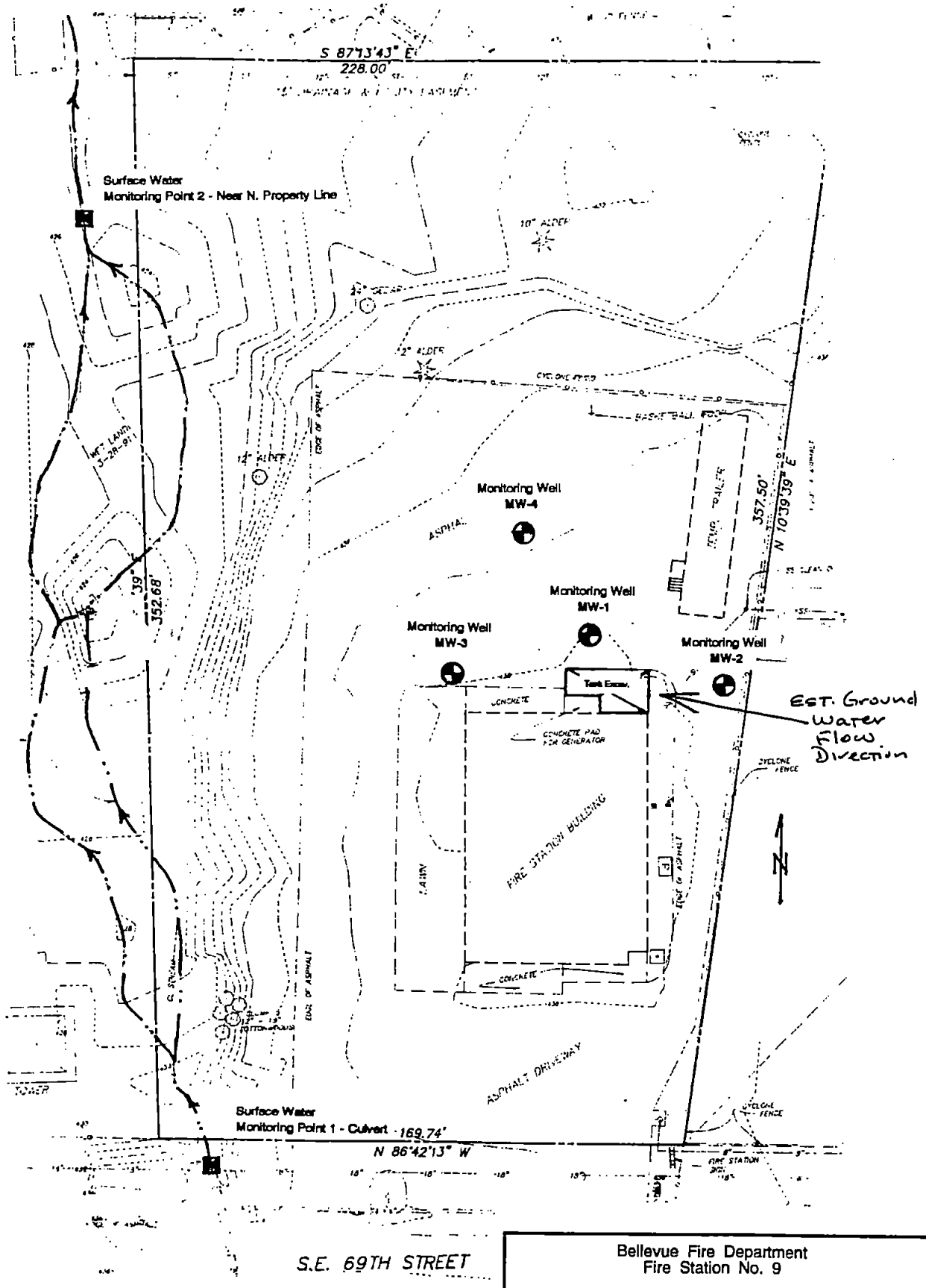
Station 9 02/20/96

NWE-001-02

Table 1. Summary of Chemical Analyses (mg/L)

SAMPLE LOCATION	SAMPLE DATE	Purgeable Hydrocarbons (WTPH-G)	Benzene	Toluene	Ethyl Benzene	Xylenes
MW-1	17-May-90	60	17	8.0	0.85	3.8
	30-Jan-91	46	8.9	7.3	2.0	8.4
	18-Apr-91	29	5.4	4.4	1.3	5.3
	31-Jul-91	56	16	8.4	1.1	3.7
	16-Jan-92	89	24	15	1.9	6.9
	17-Jun-92	75	17	12	2.5	8.3
	22-Jan-93	82	19	15	2.5	9.0
	19-Jan-94	48	22	7.5	2.1	5.7
	2-Feb-96	18	3.2	<0.080	1.2	3.0
MW-2	30-Jan-91	<0.030	0.00073	<0.00030	<0.00030	<0.00030
	18-Apr-91	<0.050	<0.00050	<0.00050	<0.00050	<0.00050
	31-Jul-91	<0.050	0.0010	<0.00050	<0.00050	<0.00050
	16-Jan-92	<0.050	<0.00050	<0.00050	<0.00050	<0.00050
	17-Jun-92	<0.050	<0.00050	<0.00050	<0.00050	<0.00050
	22-Jan-93	<0.050	<0.00050	<0.00050	<0.00050	<0.0010
	19-Jan-94	<0.050	<0.00050	<0.00050	<0.00050	<0.0010
	2-Feb-96	<0.050	<0.00050	<0.00050	<0.00050	<0.0010
MW-3	30-Jan-91	79	18	21	1.9	9.4
	18-Apr-91	110	22	25	2.1	12
	31-Jul-91	100	20	21	1.7	9.6
	16-Jan-92	110	22	24	2.2	12
	17-Jun-92	100	17	22	2.1	11
	22-Jan-93	120	15	22	2.4	13
	19-Jan-94	110	14	21	2.3	12
	2-Feb-96	76	4.4	6.6	2.8	15
MW-4	30-Jan-91	<0.030	<0.00030	<0.00030	<0.00030	<0.00030
	22-Jan-93	<0.050	<0.00050	<0.00050	<0.00050	<0.0010
	19-Jan-94	<0.050	<0.00050	<0.00050	<0.00050	<0.0010
	2-Feb-96	<0.050	<0.00050	<0.00050	<0.00050	<0.0010
CREEK @ Culvert	18-Apr-91	<0.050	<0.00050	<0.00050	<0.00050	<0.00050
	31-Jul-91	N.T.(Dry)	N.T.(Dry)	N.T.(Dry)	N.T.(Dry)	N.T.(Dry)
	16-Jan-92	<0.050	<0.00050	<0.00050	<0.00050	<0.00050
	17-Jun-92	N.T.(Dry)	N.T.(Dry)	N.T.(Dry)	N.T.(Dry)	N.T.(Dry)
	22-Jan-93	<0.050	<0.00050	<0.00050	<0.00050	<0.0010
	19-Jan-94	<0.050	<0.00050	<0.00050	<0.00050	<0.0010
	2-Feb-96	<0.050	<0.00050	<0.00050	<0.00050	<0.0010
CREEK Near P/L	18-Apr-91	<0.050	<0.00050	<0.00050	<0.00050	<0.00050
	31-Jul-91	N.T.(Dry)	N.T.(Dry)	N.T.(Dry)	N.T.(Dry)	N.T.(Dry)
	16-Jan-92	<0.050	<0.00050	<0.00050	<0.00050	<0.00050
	17-Jun-92	N.T.(Dry)	N.T.(Dry)	N.T.(Dry)	N.T.(Dry)	N.T.(Dry)
	22-Jan-93	<0.050	<0.00050	<0.00050	<0.00050	<0.0010
(ponded)	19-Jan-94	<0.050	<0.00050	<0.00050	<0.00050	<0.0010
	2-Feb-96	<0.050	<0.00050	<0.00050	<0.00050	<0.0010
MTCA Cleanup Level		1.0	0.0050	0.040	0.030	0.020
EPA Method No.		8015/8020	8015/8020	8015/8020	8015/8020	8015/8020

NOTES: Purgeable (low to medium boiling point) hydrocarbons are quantitated against a gasoline standard.
See North Creek Analytical Reports, Appendix A.
MTCA CLEANUP LEVELS refer to Model Toxics Control Act (MTCA) "Method A Cleanup Levels."
Method A provides conservative cleanup levles, and may not be appropriate for defining actual cleanup level
Exceedance of Method A levels does not necessarily trigger requirements for cleanup action under MTCA.



Site Plan based on Topographic Map by Etouma Engineers 4/11/91

Bellevue Fire Department
Fire Station No. 9

SITE PLAN

NWE-001-02 **FIGURE 1** Feb. 1996

Dalton, Olmsted & Fuglevand, Inc.

ATTACHMENT A

ANALYTICAL LABORATORY RESULTS

NORTH CREEK ANALYTICAL

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Dalton, Olmsted & Fuglevand, Inc.
11711 N. Creek Parkway, #D-101
Bothell, WA 98011
Attention: Terry Olmsted

Project Name: Fire Station #2 9 to
Client Project : #NWE-001-01
NCA Project #: B602051

Received: Feb 2, 1996
Reported: Feb 9, 1996

PROJECT SUMMARY PAGE

Laboratory Sample Number	Sample Description	Sample Matrix	Date Sampled
B602051-01	MW-1	Water	2/2/96
B602051-02	MW-2	Water	2/2/96
B602051-03	MW-3	Water	2/2/96
B602051-04	MW-4	Water	2/2/96
B602051-05	DUPL	Water	2/2/96
B602051-06	CREEK @ CULVERT	Water	2/2/96
B602051-07	CREEK @ P/L	Water	2/2/96
B602051-08	TRIP BLANK	Water	2/2/96

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

NORTH CREEK ANALYTICAL Inc.

Laura Dutton

Laura Dutton
Project Manager

NORTH CREEK ANALYTICAL

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Dalton, Olmsted & Fuglevand, Inc.	Client Project ID:	Fire Station #~~2~~ 9	Sampled:	Feb 2, 1996
11711 N. Creek Parkway, #D-101	Sample Matrix:	Water	Received:	Feb 2, 1996
Bothell, WA 98011	Analysis Method:	WTPH-G	Analyzed:	Feb 8, 1996
Attention: Terry Olmsted	First Sample #:	B602051-01	Reported:	Feb 9, 1996

TOTAL PETROLEUM HYDROCARBONS-GASOLINE RANGE

Sample Number	Sample Description	Sample Result µg/L (ppb)	Surrogate Recovery %
B602051-01	MW-1	18,000	93
B602051-02	MW-2	N.D.	80
B602051-03	MW-3	76,000	117
B602051-04	MW-4	N.D.	79
B602051-05	DUPL	75,000	113
B602051-06	CREEK @ CULVERT	N.D.	84
B602051-07	CREEK @ P/L	N.D.	80
BLK020896	Method Blank	N.D.	88

Reporting Limit:	**50**

4-Bromofluorobenzene surrogate recovery control limits are 50 - 150 %.
Volatile Total Petroleum Hydrocarbons are quantitated as Gasoline Range Organics (toluene - dodecane).
Analytes reported as N.D. were not detected above the stated Reporting Limit.

NORTH CREEK ANALYTICAL Inc.

Laura Dutton

Laura Dutton
Project Manager

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Dalton, Olmsted & Fuglevand, Inc.
11711 N. Creek Parkway, #D-101
Bothell, WA 98011
Attention: Terry Olmsted

Client Project ID: Fire Station #2 9 710
Sample Matrix: Water
Analysis Method: WTPH-G
Units: µg/L (ppb)

Analyzed: Feb 8, 1996
Reported: Feb 9, 1996

HYDROCARBON QUALITY CONTROL DATA REPORT

ACCURACY ASSESSMENT
Laboratory Control Sample

Gasoline

Spike Conc. Added:	100
Spike Result:	86
% Recovery:	86
Upper Control Limit %:	132
Lower Control Limit %:	56

PRECISION ASSESSMENT
Sample Duplicate

Gasoline Range Organics

Sample Number:	B602051-06
Original Result:	N.D.
Duplicate Result:	N.D.
Relative % Difference:	Relative Percent Difference values are not reported at sample concentration levels less than 10 times the Detection Limit.
Maximum RPD:	50

NORTH CREEK ANALYTICAL Inc.

Laura Dutton

Laura Dutton
Project Manager

% Recovery: $\frac{\text{Spike Result}}{\text{Spike Concentration Added}} \times 100$

Relative % Difference: $\frac{\text{Original Result - Duplicate Result}}{(\text{Original Result + Duplicate Result}) / 2} \times 100$

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Dalton, Olmsted & Fuglevand, Inc.	Client Project ID:	Fire Station #2	Sampled:	Feb 2, 1996
11711 N. Creek Parkway, #D-101	Sample Matrix:	Water	Received:	Feb 2, 1996
Bothell, WA 98011	Analysis Method:	EPA 8020	Analyzed:	Feb 8, 1996
Attention: Terry Olmsted	First Sample #:	B602051-01	Reported:	Feb 9, 1996

BTEX DISTINCTION

Sample Number	Sample Description	Benzene µg/L (ppb)	Toluene µg/L (ppb)	Ethyl Benzene µg/L (ppb)	Xylenes µg/L (ppb)	Surrogate Recovery %
B602051-01	MW-1	3,200	N.D. (R.L. = 80)	1,200	3,000	102
B602051-02	MW-2	N.D.	N.D.	N.D.	N.D.	91
B602051-03	MW-3	4,400	6,600	2,800	15,000	118
B602051-04	MW-4	N.D.	N.D.	N.D.	N.D.	91
B602051-05	DUPL	4,600	7,000	2,800	15,000	116
B602051-06	CREEK @ CULVERT	N.D.	N.D.	N.D.	N.D.	92
B602051-07	CREEK @ P/L	N.D.	N.D.	N.D.	N.D.	92
BLK020896	Method Blank	N.D.	N.D.	N.D.	N.D.	87
Reporting Limits:		**0.50**	**0.50**	**0.50**	**1.0**	

4-Bromofluorobenzene surrogate recovery control limits are 59 - 144 %.
Analytes reported as N.D. were not detected above the stated Reporting Limit.

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Project Manager

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Dalton, Olmsted & Fuglevand, Inc.
11711 N. Creek Parkway, #D-101
Bothell, WA 98011
Attention: Terry Olmsted

Client Project ID: Fire Station #2 220
Sample Matrix: Water
Analysis Method: EPA 8020
Units: µg/L (ppb)
QC Sample #: B602051-02

Analyzed: Feb 8, 1996
Reported: Feb 9, 1996

MATRIX SPIKE QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl Benzene	Xylenes
Sample Result:	N.D.	N.D.	N.D.	N.D.
Spike Conc. Added:	10.0	10.0	10.0	30.0
Spike Result:	9.0	8.2	8.7	25.2
Spike % Recovery:	90%	82%	87%	84%
Spike Dup. Result:	9.1	8.9	10.2	30.2
Spike Duplicate % Recovery:	91%	89%	102%	101%
Upper Control Limit %:	115	116	122	122
Lower Control Limit %:	82	81	85	85
Relative % Difference:	1.1%	8.2%	16%	18%, Q-7
Maximum RPD:	16	16	16	17

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Project Manager

Please Note:
Q-7 = The RPD value for this QC sample is outside of the advisory limit established by NCA. Additional sources for assessment of method precision, such as field dups, should be referenced.

Dalton, Olmsted & Fuglevand, Inc. *Environmental Consultants*

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LABORATORY NCA BOTHELL

CHAIN OF CUSTODY REPORT

CLIENT: DOF
ADDRESS: BOTHELL
PHONE: 206 486-7905 FAX:

REPORT TO: TERRY OLMSTED
BILLING TO: DOF
P.O. NUMBER:
NCA QUOTE #:

PROJECT NAME: FIESTA #2 TCO
PROJECT NUMBER: NWE-001-01
SAMPLED BY: DG COOPER

SAME DAY (2-8 HR.) RUSH	(+150%)
NEXT DAY RUSH	(+100%)
2 DAY RUSH	(+80%)
3 DAY RUSH	(+60%)
5 DAY RUSH	(+40%)
10 DAY STANDARD	(LIST PRICE) X

	SAMPLE IDENTIFICATION: NUMBER OR DESCRIPTION	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	ANALYSIS REQUESTED: WTPH-G/BTEX	COMMENTS & PRESERVATIVES USED	LABORATORY NUMBER
1	MW-1	2/2 1330	W	2	X		B602051-01
2	MW-2	1250			X		-02
3	MW-3	1345			X		-03
4	MW-4	1310			X		-04
5	DUPL	1346			X		-05
6	CREEK @ CULVERT	1400			X		-06
7	CREEK @ P/L	1410			X		-07
8	TRIP BLANK	—				HOLD	-08
9							
10							

RELINQUISHED BY: D COOPER DATE: 2/2/96
FIRM: DOF TIME: 1600

RECEIVED BY: Rochelle M Rae DATE: 2/2/96
FIRM: NCA TIME: 1605

RELINQUISHED BY: DATE:
FIRM: TIME:

RECEIVED BY: DATE:
FIRM: TIME:

SAMPLE RECEIPT INFORMATION: CONTAINER CONDITION?: GOOD VIOLATED COOL (4° C)? YES NO

CUSTODY SEALS? GOOD VIOLATED NOT USED HAZARDOUS SAMPLES?: NO YES; DESCRIBE ON BACK

PAGE 1 OF 1