AMTEST

METRO Water Resources
Louise Kitzer

Date Received: 10/25/91
Date Reported: 11/08/91
Project: Biofilt. Study II

QUALITY CONTROL - SPIKE RECOVERY DATA

ANALYTE	SAMPLE NUMBERS	SPIKED ADDED (mg/l)	RECOVERY (%)
Nitrate + Nitrite			
	91-A011321	1.25	98.
Nitrite			
	91-A011182	0.025	116.
Ortho Phosphate			
	91-A011159	0.10	94.
Total Phosphate			
	91-A010843	0.15	100.
Aluminum			
	91-A010708	10.	118.
Copper			
	91-A010708	1.0	109.
Iron			
	91-A010708	10.	110.
Lead			
	91-A010784	0.025	115.
Zinc			
	91-A010708	1.0	120.

NOTE: Most of the Quality Control was performed on non-Metro samples.

REPORTED BY _____
Kathy Fugiel

KF/pb

cc: City of Bellevue - Dave Renstrom
P.O. Box 90012
Bellevue, WA 98009-9012

Validated 1-13
Separate Table

AMTEST

Am Test Inc

Professional
Analytical
Services

14603 N.E. 87th St.
Redmond, WA
98052

Fax: 206 883 3496

Tel: 206 885 1664

11/20/91

Metro Water Resources
821 2nd Avenue
MS81
Seattle, WA 98104
Attention: Louise Kultzer

Dear Louise Kultzer,

Enclosed please find the analytical data for your Bio/Metro/MLT 91 project.

The following is a cross correlation of client and laboratory identification for your convenience.

CLIENT ID	AM TEST ID	TEST
200	91-A011666	BACT, CONV, MET,
000	91-A011667	BACT, CONV, MET,
000-A	91-A011668	BACT,

Your 3 water samples were received at AM TEST on 11/ 1/91.

At the time of receipt, the samples were logged in and properly maintained prior to subsequent analyses.

The analytical procedures used in the laboratory are well documented and are typically derived from the protocols of the EPA, USDA, FDA or the Army Corps of Engineers.

If you should have any questions pertaining to the data package, please feel free to contact me.

Sincerely,

Kathy Fugiel

Kathy Fugiel
AM TEST Inc.

BACT = Bacteriological
CONV = Conventionals
MET = Metals
ORG = Organics

ANALYSIS REPORT AMTEST

AmTest Inc.
Professional Analytical Services
14603 N.E. 87th St
Redmond, WA 98052
Fax 206 883 3495
Tel. 206 885 1664

Metro Water Resources
821 2nd Avenue
MS81
Seattle, WA 98104
Attention: Louise Kultzer

Date Received: 11/ 1/91
Date Reported: 11/20/91

Project Name: Bio/Metro/MLT 91

WATER SAMPLES

AM TEST Identification Number	91-A011666
Client Identification	200
Sampling Date	10/31/91

PARAMETER	RESULT	Q	D.L.
Bacteriological			
Fecal Coliforms (CFU/100 ml)	3100		1
Conventionals			
Biochemical Oxygen Demand (mg/l)	< 10		10
Chemical Oxygen Demand (mg/l)	26.		10
Hardness (mg/l)	17.		1.0
Nitrate + Nitrite Nitrogen (mg/l)	0.21		0.01
Nitrite Nitrogen (mg/l)	0.054		0.001
Total Oil and Grease (mg/l)	230		1.0
Total Petroleum Hydrocarbon (mg/l)	180		1.0
Bioavailable Phosphorus	< 0.01		0.005
Ortho-Phosphate (mg/l)	0.016		0.005
Total Phosphorus (mg/l)	0.052		0.005
Total Suspended Solids (mg/l)	4.0		1.0
Turbidity (NTU)	7.5		0.01
Total Metals			
Aluminum (mg/l)	0.10		0.01
Copper (mg/l)	< 0.002		0.002
Iron (mg/l)	0.13		0.01
Lead (mg/l)	0.003		0.001
Zinc (mg/l)	0.006		0.002

Note: Field Log indicates sheen, but values for O/G seem excessive.
LRK

ANALYSIS REPORT AMTEST

AmTest Inc
Professional Analytical Services
14603 N E 87th St
Redmond, WA 98052
Fax 206 883 3495
Tel 206 885 1664

Metro Water Resources
821 2nd Avenue
MS81
Seattle, WA 98104
Attention: Louise Kultzer

Date Received: 11/ 1/91
Date Reported: 11/20/91

Project Name: Bio/Metro/MLT 91

WATER SAMPLES

AM TEST Identification Number	91-A011667
Client Identification	000
Sampling Date	10/31/91

PARAMETER	RESULT	Q	D.L.
Bacteriological			
Fecal Coliforms (CFU/100 ml)	1200		1
Conventionals			
Biochemical Oxygen Demand (mg/l)	< 10		10
Chemical Oxygen Demand (mg/l)	19.		10
Hardness (mg/l)	16.		1.0
Nitrate + Nitrite Nitrogen (mg/l)	0.25		0.01
Nitrite Nitrogen (mg/l)	0.064		0.001
Total Oil and Grease (mg/l)	640		1.0
Total Petroleum Hydrocarbon (mg/l)	640		1.0
Bioavailable Phosphorus	0.015		0.005
Ortho-Phosphate (mg/l)	0.036		0.005
Total Phosphorus (mg/l)	0.11		0.005
Total Suspended Solids (mg/l)	19.		1.0
Turbidity (NTU)	13.		0.01
Total Metals			
Aluminum (mg/l)	0.17		0.01
Copper (mg/l)	< 0.002		0.002
Iron (mg/l)	0.31		0.01
Lead (mg/l)	0.006		0.001
Zinc (mg/l)	0.038		0.002

AMTEST

ANALYSIS REPORT

AmTest Inc
Professional Analytical Services
14603 N.E. 87th St
Redmond, WA 98052
Fax: 206 883 3495
Tel: 206 885 1664

Metro Water Resources
821 2nd Avenue
MS81
Seattle, WA 98104
Attention: Louise Kultzer

Date Received: 11/ 1/91
Date Reported: 11/20/91

Project Name: Bio/Metro/MLT 91
Date Sampled: 10/31/91

PARAMETER	UNITS	RESULT
91-A011668		
Client ID: 000-A		
Fecal Coliforms	CFU/100ml	< 7

Fecal coliform results may not be accurate due to expired hold time prior to arrival at laboratory.

Reported by: Kathy Fugiel

AMTEST

ANALYSIS REPORT

Am Test Inc
Professional Analytical Services
14603 N E 87th St
Redmond, WA 98052
Fax 206 883 3495
Tel: 206 885 1664

Metro Water Resources
821 2nd Avenue
MS81
Seattle, WA 98104
Attention: Louise Kultzer

Date Received: 11/ 4/91
Date Reported: 11/26/91

Project Name: Bio/Metro/MLT 91
Date Sampled: 10/31/91

PARAMETER	UNITS	RESULT
91-A011674		
Client ID: 200		
DISSOLVED METALS		
Aluminum	mg/l	0.05
Copper	mg/l	0.005
Iron	mg/l	0.05
Lead	mg/l	< 0.001
Zinc	mg/l	< 0.002
91-A011675		
Client ID: 000		
DISSOLVED METALS		
Aluminum	mg/l	0.02
Copper	mg/l	0.004
Iron	mg/l	0.03
Lead	mg/l	< 0.001
Zinc	mg/l	0.015

Reported by: Kathy Fugiel

AMTEST

Am Test Inc

Professional
Analytical
Services

14603 N.E. 87th St
Redmond WA
98052

Fax 206 883 3495

Tel. 206 885 1664

METHODOLOGY REPORT

AM TEST IDENTIFICATION NUMBER 91-A011666
CLIENT ID 200

ANALYTE	METHOD	METHOD REFERENCE	DETECTION LIMIT	DATE ANALYZED
Fecal Coliforms	9222D	SM	1	11/ 1/91
Biochemical Oxygen Demand	405.1	EPA	1	11/ 8/91
Chemical Oxygen Demand	410.4	EPA	10	11/18/91
Hardness (as CaCO3)	130.2	EPA	1.0	11/ 4/91
Nitrate + Nitrite	353.2	EPA	0.010	11/12/91
Nitrite Nitrogen	354.1	EPA	0.001	11/ 4/91
Total Oil and Grease	413.2	EPA	1.0	11/ 7/91
Petroleum Hydrocarbon-TPH	418.1	EPA	1.0	11/ 7/91
Bioavailable Phosphorus				11/ 8/91
Ortho-Phosphate	365.2	EPA	0.005	11/ 4/91
Total Phosphorus	365.2	EPA	0.005	11/ 8/91
Total Suspended Solids	160.2	EPA	1.0	11/ 8/91
Turbidity	180.1	EPA	0.01	11/ 5/91
Aluminum	200.7	EPA	0.01	11/13/91
Copper	200.7	EPA	0.002	11/13/91
Iron	200.7	EPA	0.01	11/13/91
Lead	239.2	EPA	0.001	11/13/91
Zinc	200.7	EPA	0.002	11/13/91
Acid Dig. (Tot Metals)	3010	EPA		11/ 4/91

AMTEST

METRO Water Resources
Louise Kultzer

Date Received: 11/01/91
Date Reported: 11/20/91
Project: Bio/Metro/MLT 91

QUALITY CONTROL - SPIKE RECOVERY DATA

ANALYTES/SAMPLE NOS.		SPIKED ADDED (mg/l)	RECOVERY (%)
Iron			
	91-A012294	10.	85.
Zinc			
	91-A012294	1.0	90.
Lead			
	91-A011685	0.025	105.
Nitrate + Nitrite			
	91-A011963	0.50	80.
Nitrite			
	91-A011667	0.025	104.
Ortho Phosphate			
	91-A011666	0.050	90.
Total Phosphate			
	91-A011531	0.10	106.

REPORTED BY Kathy Fugiel

KF/pb

AMTEST

METRO Water Resources
Louise Kultzer

Date Received: 11/01/91
Date Reported: 11/20/91
Project: Bio/Metro/MLT 91

QUALITY CONTROL - DUPLICATE ANALYSIS

ANALYTES/SAMPLE NUMBERS	DUPLICATE #1 (mg/l)	DUPLICATE #2 (mg/l)	RELATIVE PERCENT DIFFERENCE (%)
Bioavailable Phosphorus			
91-A011666	<0.010	<0.010	-
Chemical Oxygen Demand			
91-A012855	11.	11.	0.
Hardness			
91-A011667	16.	16.	0.
Nitrate + Nitrite			
91-A012081	0.431	0.428	0.7
Nitrite			
91-A011666	0.044	0.044	0.
Ortho Phosphate			
91-A011667	0.036	0.035	2.8
Total Phosphate			
91-A011496	0.022	0.020	9.5
Total Suspended Solids			
91-A~~011051~~ 012051	8.	5.	46.
Turbidity			
91-A011026	48.	48.	0.
Iron			
91-A012293	<0.01	<0.01	-
Zinc			
91-A012293	<0.002	<0.002	-

< = less than

AMTEST

AmTest Inc

Professional
Analytical
Services

14603 N E 87th St
Redmond WA
98052

Fax. 206 883 3495

Tel 206 885 1664

11/20/91

Metro Water Resources
821 2nd Avenue
MS81
Seattle, WA 98104
Attention: Louise Kultzer

Dear Louise Kultzer,

Enclosed please find the analytical data for your Bio/Metro/MLT 91 project.

The following is a cross correlation of client and laboratory identification for your convenience.

CLIENT ID	AM TEST ID	TEST
200	91-A011666	BACT, CONV, MET,
000	91-A011667	BACT, CONV, MET,
000-A	91-A011668	BACT,

Your 3 water samples were received at AM TEST on 11/ 1/91.

At the time of receipt, the samples were logged in and properly maintained prior to subsequent analyses.

The analytical procedures used in the laboratory are well documented and are typically derived from the protocols of the EPA, USDA, FDA or the Army Corps of Engineers.

If you should have any questions pertaining to the data package, please feel free to contact me.

Sincerely,

Kathy Fugiel
AM TEST Inc.

BACT = Bacteriological
CONV = Conventionals
MET = Metals
ORG = Organics

AMTEST

AmTest Inc.

Professional
Analytical
Services

14603 N.E. 87th St.
Redmond, WA
98052

Fax: 206 883 3495

Tel: 206 885 1664

12/12/91

Metro Water Resources
821 2nd Avenue
MS81
Seattle, WA 98104
Attention: Louise Koltzer

Dear Louise Koltzer:

Enclosed please find the analytical data for your Bio/Metro/MLT91 project.

The following is a cross correlation of client and laboratory identification for your convenience.

CLIENT ID	AM TEST ID	TEST
000	91-A012885	BACT, CONV, MET,
100	91-A012886	BACT, CONV, MET,
000-A	91-A012887	CONV, MET,
100-A	91-A012888	CONV, MET,

Your four (4) water samples were received at AM TEST on 11/18/91.

At the time of receipt, the samples were logged in and properly maintained prior to subsequent analyses.

The analytical procedures used in the laboratory are well documented and are typically derived from the protocols of the EPA, USDA, FDA or the Army Corps of Engineers.

If you should have any questions pertaining to the data package, please feel free to contact me.

Sincerely,

Kathy Fugiel
Director of Inorganic Laboratory

BACT = Bacteriological
CONV = Conventionals
MET = Metals
ORG = Organics

ANALYSIS REPORT AMTEST

AmTest Inc.
Professional Analytical Services
14603 N.E. 87th St.
Redmond, WA 98052
Fax: 206 883 3495
Tel. 206 885 1664

Metro Water Resources
821 2nd Avenue
MS81
Seattle, WA 98104
Attention: Louise Koltzer

Date Received: 11/18/91
Date Reported: 12/12/91

Project Name: Bio/Metro/MLT91

WATER SAMPLES

AM TEST Identification Number	91-A012885
Client Identification	000
Sampling Date	11/17/91

PARAMETER	RESULT	Q	D.L.
Bacteriological			
Fecal Coliforms (CFU/100 ml)	32.		1
Conventionals			
Nitrate + Nitrite Nitrogen (mg/l)	0.060		0.01
Bioavailable Phosphorus	0.008		0.005
Total Phosphorus (mg/l)	0.029		0.005
Total Suspended Solids (mg/l)	57.		1.0
Turbidity (NTU)	8.7		0.01
Total Metals			
Aluminum (mg/l)	0.17		0.01
Copper (mg/l)	0.005		0.002
Iron (mg/l)	0.08		0.01
Lead (mg/l)	0.002		0.001
Zinc (mg/l)	0.016		0.002

ANALYSIS REPORT AMTEST

Metro Water Resources
Louise Koltzer

Date Received: 11/18/91
Date Reported: 12/12/91

WATER SAMPLES

AM TEST Identification Number	91-A012886
Client Identification	100
Sampling Date	11/17/91

PARAMETER	Result	Q	D.L.
Bacteriological			
Fecal Coliforms (CFU/100 ml)	6000		1
Conventionals			
Nitrate + Nitrite Nitrogen (mg/l)	0.060		0.01
Bioavailable Phosphorus	0.003		0.005
Total Phosphorus (mg/l)	0.015		0.005
Total Suspended Solids (mg/l)	4.0		1.0
Turbidity (NTU)	3.6		0.01
Total Metals			
Aluminum (mg/l)	0.07		0.01
Copper (mg/l)	0.005		0.002
Iron (mg/l)	0.05		0.01
Lead (mg/l)	0.001		0.001
Zinc (mg/l)	0.022		0.002

Fecal coliform results may not be accurate due to expired hold time prior to arrival at laboratory.

ANALYSIS REPORT AMTEST

Metro Water Resources
Louise Koltzer

Date Received: 11/18/91
Date Reported: 12/12/91

WATER SAMPLES

AM TEST Identification Number	91-A012887
Client Identification	000-A
Sampling Date	11/17/91

PARAMETER	Result	Q	D.L.
Conventionals			
Ortho-Phosphate (mg/l)	0.012		0.005
Dissolved Metals			
Aluminum (mg/l)	< 0.01		0.01
Copper (mg/l)	0.006		0.002
Iron (mg/l)	< 0.01		0.01
Lead (mg/l)	< 0.001		0.001
Zinc (mg/l)	0.003		0.002

ANALYSIS REPORT AMTEST

Metro Water Resources
Louise Koltzer

Date Received: 11/18/91
Date Reported: 12/12/91

WATER SAMPLES

AM TEST Identification Number	91-A012888
Client Identification	100-A
Sampling Date	11/17/91

PARAMETER	Result	Q	D.L.
Conventionals			
Ortho-Phosphate (mg/l)	0.005		0.005
Dissolved Metals			
Aluminum (mg/l)	< 0.01		0.01
Copper (mg/l)	0.008		0.002
Iron (mg/l)	< 0.01		0.01
Lead (mg/l)	0.001		0.001
Zinc (mg/l)	0.014		0.002

Reported by: Kathy Fugiel
Kathy Fugiel

AMTEST

AmTest Inc.

Professional
Analytical
Services

14603 N.E. 87th St.
Redmond, WA
98052

Fax: 206 883 3495

Tel: 206 885 1664

METHODOLOGY REPORT

AM TEST IDENTIFICATION NUMBER 91-A012885
CLIENT ID 000

ANALYTE	METHOD	METHOD REFERENCE	DETECTION LIMIT	DATE ANALYZED
Fecal Coliforms	9222D	SM	1	11/18/91
Nitrate + Nitrite	353.2	EPA	0.010	11/26/91
Bioavailable Phosphorus				12/ 9/91
Total Phosphorus	365.2	EPA	0.005	12/ 9/91
Total Suspended Solids	160.2	EPA	1.0	11/22/91
Turbidity	180.1	EPA	0.01	11/20/91
Aluminum	200.7	EPA	0.01	11/26/91
Copper	200.7	EPA	0.002	11/26/91
Iron	200.7	EPA	0.01	11/26/91
Lead	239.2	EPA	0.001	12/10/91
Zinc	200.7	EPA	0.002	11/26/91
Acid Dig. (Tot Metals)	3010	EPA		11/20/91

AMTEST

Beak Consultants

Louise Koltzer

Date Received: 11/18/91
Date Reported: 12/12/91
Project: Bio/Metro/MLT91

QUALITY CONTROL - DUPLICATE ANALYSIS

ANALYTE/SAMPLE NOS.	DUPLICATE #1 (mg/l)	DUPLICATE #2 (mg/l)	RELATIVE PERCENT DIFFERENCE (%)
Nitrate + Nitrite			
91-A013205	0.616	0.621	$\frac{.005}{.6185} \times 100$ ~~80.~~ 0.8
Total Phosphate			
91-A013067	0.128	0.132	~~30.~~ 3.0
Total Suspended Solids			
91-A012939	12.	12.	0.
Turbidity			
WS29A	2.7	2.7	0.
Aluminum			
91-A012604	2.3	2.9	$\frac{.6}{2.6}$ 23. correct
Copper			
91-A012604	<0.002	<0.002	-
Iron			
91-A012604	60.	59.	1.6
Zinc			
91-A012604	0.034	<0.020	- ~50%

< = less than

AMTEST

METRO Water Resources

Louise Koltzer

Date Received: 11/18/91
Date Reported: 12/12/91
Project: Bio/Metro/MLT91

QUALITY CONTROL - SPIKE RECOVERY DATA

ANALYTE/SAMPLE NOS.		SPIKED ADDED (mg/l)	RECOVERY (%)
Nitrate + Nitrite			
	91-A013205	0.50	104.
Total Phosphorus			
	91-A013067	0.10	101.
Aluminum			
	91-A012051	1.0	78.
Copper			
	91-A012051	1.0	100.
Iron			
	91-A012051	10.	77.
Zinc			
	91-A012051	1.0	91.

AMTEST

METRO Water Resources

Louise Koltzer

Date Received: 11/18/91
Date Reported: 12/12/91
Project: Bio/Metro/MLT91

QUALITY CONTROL - DETECTION LIMITS & EPA METHODS

PARAMETER	DETECTION LIMIT	EPA METHOD
Turbidity (NTU)	0.01	180.1
Total Suspended Solids (mg/l)	1.0	160.2
Nitrate + Nitrite Nitrogen (mg/l)	0.010	353.2
Soluble Reactive Phosphorus (mg/l)	0.005	365.2
Soluble Total Phosphorus (mg/l)	0.005	365.2
Bioavailable Phosphorus (mg/l)	0.005	365.2*
Fecal Coliform (CFU/100 mls)	2.5	9222B
Oil & Grease (mg/l)	1.0	413.2
Total Petroleum Hydrocarbons (mg/l)	1.0	418.1
Dissolved & Total Metals:		
Zinc (mg/l)	0.002	200.7
Copper (mg/l)	0.002	200.7
Lead (mg/l)	0.001	239.2
Aluminum (mg/l)	0.01	200.7
Iron (mg/l)	0.01	200.7

*Modified using METRO Method.

KF/pb

REPORTED BY Kathy Fugiel

AMTEST

AmTest Inc.

Professional
Analytical
Services

14603 N.E. 87th St.
Redmond, WA
98052

Fax: 206 883 3495

Tel: 206 885 1664

2/ 3/92

Metro Water Resources
821 2nd Avenue
MS81
Seattle, WA 98104
Attention: Louise Koltzer

Dear Louise Koltzer:

Enclosed please find the analytical data for your Bio/Metro/MLT91 project.

The following is a cross correlation of client and laboratory identification for your convenience.

CLIENT ID	MATRIX	AM TEST ID	TEST
000MC manually composited last hr of storm	water	92-A000429	BACT, CONV, MET,
100MC	water	92-A000430	BACT, CONV, MET,
000A > split, flow-proportioned	water	92-A000431	BACT, CONV, MET,
000B	water	92-A000432	BACT, CONV, MET,
000MC-A } DISS.	water	92-A000433	MET,
100MC-A	water	92-A000434	MET,
000A-A	water	92-A000435	MET,
000B-A	water	92-A000436	MET,
000 > grabs -	water	92-A000437	CONV, OIL + GREASE
100	water	92-A000438	CONV, " "

Your ten (10) samples were received at AM TEST on 1/10/92.

At the time of receipt, the samples were logged in and properly maintained prior to subsequent analyses.

The analytical procedures used in the laboratory are well documented and are typically derived from the protocols of the EPA, USDA, FDA or the Army Corps of Engineers.

If you should have any questions pertaining to the data package, please feel free to contact me.

Sincerely,

Kathy Fugiel

Kathy Fugiel
Director of Inorganic Laboratory

cc: David Rundstrom

BACT = Bacteriological
CONV = Conventionals
MET = Metals
ORG = Organics

ANALYSIS REPORT AMTEST

AmTest Inc.
Professional Analytical Services
14603 N.E. 87th St.
Redmond, WA 98052
Fax. 206 883 3495
Tel. 206 885 1664

Metro Water Resources
821 2nd Avenue
MS81
Seattle, WA 98104
Attention: Louise Koltzer
cc: David Rundstrom

Date Received: 1/10/92
Date Reported: 2/ 3/92

Project Name: Bio/Metro/MLT91

WATER SAMPLES

AM TEST Identification Number	92-A000429
Client Identification	000MC
Sampling Date	1/10/92

PARAMETER	RESULT	Q	D.L.
Bacteriological			
Fecal Coliforms (CFU/100 ml)	81.		1
Conventionals			
Nitrate + Nitrite Nitrogen (mg/l)	0.64		0.01
Bioavailable Phosphorus	< 0.018		0.005
Ortho-Phosphate (mg/l)	< 0.005		0.005
Total Phosphorus (mg/l)	0.024		0.005
Total Suspended Solids (mg/l)	10.		1.0
Turbidity (NTU)	6.8		0.01
Total Metals			
Aluminum (mg/l)	0.51		0.01
Copper (mg/l)	0.004		0.001
Iron (mg/l)	0.40		0.01
Lead (mg/l)	0.017		0.001
Zinc (mg/l)	0.034		0.002

ANALYSIS REPORT AMTEST

Metro Water Resources
Louise Koltzer

Date Received: 1/10/92
Date Reported: 2/ 3/92

WATER SAMPLES

AM TEST Identification Number 92-A000430
Client Identification 100MC
Sampling Date 1/10/92

PARAMETER	Result	Q	D.L.
Bacteriological			
Fecal Coliforms (CFU/100 ml)	12.		1
Conventionals			
Nitrate + Nitrite Nitrogen (mg/l)	0.47		0.01
Bioavailable Phosphorus	< 0.018		0.005
Ortho-Phosphate (mg/l)	< 0.005		0.005
Total Phosphorus (mg/l)	0.016		0.005
Total Suspended Solids (mg/l)	1.0		1.0
Turbidity (NTU)	4.9		0.01
Total Metals			
Aluminum (mg/l)	0.34		0.01
Copper (mg/l)	0.001		0.001
Iron (mg/l)	0.18		0.01
Lead (mg/l)	< 0.001		0.001
Zinc (mg/l)	0.026		0.002

ANALYSIS REPORT AMTEST

Metro Water Resources
Louise Koltzer

Date Received: 1/10/92
Date Reported: 2/ 3/92

WATER SAMPLES

AM TEST Identification Number 92-A000431
Client Identification 000A
Sampling Date 1/10/92

PARAMETER	Result	Q	D.L.
Bacteriological			
Fecal Coliforms (CFU/100 ml)	162.		1
Conventionals			
Nitrate + Nitrite Nitrogen (mg/l)	0.33		0.01
Bioavailable Phosphorus	< 0.018		0.005
Ortho-Phosphate (mg/l)	< 0.005		0.005
Total Phosphorus (mg/l)	0.13		0.005
Total Suspended Solids (mg/l)	66.		1.0
Turbidity (NTU)	33.		0.01
Total Metals			
Aluminum (mg/l)	0.58		0.01
Copper (mg/l)	0.012		0.001
Iron (mg/l)	0.52		0.01
Lead (mg/l)	0.007		0.001
Zinc (mg/l)	0.042		0.002

ANALYSIS REPORT AMTEST

Metro Water Resources
Louise Koltzer

Date Received: 1/10/92
Date Reported: 2/ 3/92

WATER SAMPLES

AM TEST Identification Number 92-A000432
Client Identification 000B
Sampling Date 1/10/92

PARAMETER	Result	Q	D.L.
Bacteriological			
Fecal Coliforms (CFU/100 ml)	275.		1
Conventionals			
Nitrate + Nitrite Nitrogen (mg/l)	0.32		0.01
Bioavailable Phosphorus	< 0.018		0.005
Ortho-Phosphate (mg/l)	< 0.005		0.005
Total Phosphorus (mg/l)	0.15		0.005
Total Suspended Solids (mg/l)	59.		1.0
Turbidity (NTU)	51.		0.01
Total Metals			
Aluminum (mg/l)	1.7		0.01
Copper (mg/l)	0.008		0.001
Iron (mg/l)	2.0		0.01
Lead (mg/l)	0.011		0.001
Zinc (mg/l)	0.065		0.002

AmTest Inc.
Professional Analytical Services
14603 N.E. 87th St.
Redmond, WA 98052
Fax: 206 883 3495
Tel: 206 885 1664

ANALYSIS REPORT

Metro Water Resources
821 2nd Avenue
MS81
Seattle, WA 98104
Attention: Louise Koltzer
cc: David Rundstrom

Date Received: 1/10/92
Date Reported: 2/ 3/92

Project Name: Bio/Metro/MLT91
Date Sampled: 1/10/92

PARAMETER	UNITS	RESULT
92-A000433		
Client ID: 000MC-A		
DISSOLVED METALS		
Aluminum	mg/l	0.07
Copper	mg/l	0.001
Iron	mg/l	0.04
Lead	mg/l	0.001
Zinc	mg/l	0.020
92-A000434		
Client ID: 100MC-A		
DISSOLVED METALS		
Aluminum	mg/l	0.06
Copper	mg/l	0.001
Iron	mg/l	0.04
Lead	mg/l	0.001
Zinc	mg/l	0.021
92-A000435		
Client ID: 000A-A		
DISSOLVED METALS		
Aluminum	mg/l	0.05
Copper	mg/l	0.001
Iron	mg/l	0.02
Lead	mg/l	0.001
Zinc	mg/l	0.024
92-A000436		
Client ID: 000B-A		
DISSOLVED METALS		
Aluminum	mg/l	0.04
Copper	mg/l	0.001
Iron	mg/l	0.02
Lead	mg/l	< 0.001
Zinc	mg/l	0.022

AMTEST

ANALYSIS REPORT

Metro Water Resources

Date Received: 1/10/92
Date Reported: 2/ 3/92

Attention: Louise Koltzer
cc: David Rundstrom

PARAMETER	UNITS	RESULT
92-A000437		
Client ID: 000		
Total Oil and Grease	mg/l	< 1
Petroleum Hydrocarbon-TPH	mg/l	< 1
92-A000438		
Client ID: 100		
Total Oil and Grease	mg/l	< 1
Petroleum Hydrocarbon-TPH	mg/l	< 1

Reported by: Kathy Fugiel

AMTEST

AmTest Inc.

Professional
Analytical
Services

14603 N.E. 87th St.
Redmond, WA
98052

Fax: 206 883 3495

Tel: 206 885 1664

METHODOLOGY REPORT

AM TEST IDENTIFICATION NUMBER 92-A000429
CLIENT ID 000MC

ANALYTE	METHOD	METHOD REFERENCE	DETECTION LIMIT	DATE ANALYZED
Fecal Coliforms	9222D	SM	1	1/10/92
Nitrate + Nitrite	353.2	EPA	0.010	1/15/92
Bioavailable Phosphorus				1/16/92
Ortho-Phosphate	365.2	EPA	0.005	1/10/92
Total Phosphorus	365.2	EPA	0.005	1/21/92
Total Suspended Solids	160.2	EPA	1.0	1/15/92
Turbidity	180.1	EPA	0.01	1/14/92
Aluminum	200.7	EPA	0.01	1/17/92
Copper	220.2	EPA	0.001	1/24/92
Iron	200.7	EPA	0.01	1/17/92
Lead	239.2	EPA	0.001	1/24/92
Zinc	200.7	EPA	0.002	1/17/92
Acid Dig. (Tot Metals)	3010	EPA		1/14/92

AMTEST

Metro Water Resources

Louise Koltzer

Date Received: 01/10/92
Date Reported: 02/03/92
Project Name: Bio/Metro/MLT91

QUALITY CONTROL - DUPLICATE ANALYSIS

ANALYTE/SAMPLE NOS.		DUPLICATE #1 (mg/l)	DUPLICATE #2 (mg/l)	RELATIVE PERCENT DIFFERENCE (%)
Bioavailable Phosphorus				
	92-A000429	<0.018	<0.018	-
Iron				
	92-A000429	0.4	0.4	0.
Zinc				
	92-A000429	0.34	0.30	12.
Aluminum				
	92-A000429	0.51	0.59	14.
Ortho - Phosphate				
	92-A000431	<0.005	<0.005	-
Turbidity				
	92-A000429	6.8	6.8	0.
Total Settleable Solids				
	92-A000429	10.	11.	9.5

< = less than

AMTEST

Metro Water Resources

Louise Koltzer

Date Received: 01/10/92
Date Reported: 02/03/92
Project Name: Bio/Metro/MLT91

QUALITY CONTROL - SPIKE RECOVERY DATA

ANALYTE/SAMPLE NOS.		SPIKED ADDED (mg/l)	RECOVERY (%)
Bioavailable Phosphorus			
	92-A000429	0.10	104.
Ortho - Phosphate			
	92-A000432	0.1	86.
Iron			
	92-A000430	0.1	98.3
Zinc			
	92-A000430	1.0	107.
Aluminum			
	92-A000430	0.1	97.

KF/pb

REPORTED BY Kathy Fugiel

AMTEST

AmTest Inc.

Professional
Analytical
Services

14603 N.E. 87th St.
Redmond, WA
98052

Fax: 206 883 3495

Tel: 206 885 1664

2/ 3/92

Metro Water Resources
821 2nd Avenue
MS81
Seattle, WA 98104
Attention: Louise Koltzer

Dear Louise Koltzer:

Enclosed please find the analytical data for your BIO/Metro/MLT91 project.

The following is a cross correlation of client and laboratory identification for your convenience.

CLIENT ID	MATRIX	AM TEST ID	TEST
000	water	92-A000753	BACT, CONV, MET,
100	water	92-A000754	BACT, CONV, MET,
000, Dissolved Metals	water	92-A000755	MET,
100, Dissolved Metals	water	92-A000756	MET,

Your four (4) samples were received at AM TEST on 1/16/92.

At the time of receipt, the samples were logged in and properly maintained prior to subsequent analyses.

The analytical procedures used in the laboratory are well documented and are typically derived from the protocols of the EPA, USDA, FDA or the Army Corps of Engineers.

If you should have any questions pertaining to the data package, please feel free to contact me.

Sincerely,

Kathy Fugiel
Director of Inorganic Laboratory

cc: David Rundstrom

BACT = Bacteriological
CONV = Conventionals
MET = Metals
ORG = Organics

ANALYSIS REPORT AMTEST

AmTest Inc.
Professional Analytical Services
14603 N.E. 87th St.
Redmond, WA 98052
Fax: 206 883 3495
Tel: 206 885 1664

Metro Water Resources
821 2nd Avenue
MS81
Seattle, WA 98104
Attention: Louise Koltzer
cc: David Rundstrom

Date Received: 1/16/92
Date Reported: 2/ 3/92

Project Name: BIO/Metro/MLT91

WATER SAMPLES

AM TEST Identification Number 92-A000753
Client Identification 000
Sampling Date 1/16/92

PARAMETER	RESULT	Q	D.L.
Bacteriological			
Fecal Coliforms (CFU/100 ml)	18.		1
Conventionals			
Nitrate + Nitrite Nitrogen (mg/l)	0.59		0.01
Total Oil and Grease (mg/l)	1.5		1.0
Total Petroleum Hydrocarbon (mg/l)	< 1		1.0
Bioavailable Phosphorus	0.026		0.005
Ortho-Phosphate (mg/l)	< 0.005		0.005
Total Phosphorus (mg/l)	0.12		0.005
Total Suspended Solids (mg/l)	91.		1.0
Turbidity (NTU)	47.		0.01
Total Metals			
Aluminum (mg/l)	2.6		0.01
Copper (mg/l)	0.008		0.001
Iron (mg/l)	3.6		0.01
Lead (mg/l)	0.019		0.001
Zinc (mg/l)	0.11		0.002

ANALYSIS REPORT AMTEST

Metro Water Resources
Louise Koltzer

Date Received: 1/16/92
Date Reported: 2/ 3/92

WATER SAMPLES

AM TEST Identification Number 92-A000754
Client Identification 100
Sampling Date 1/16/92

PARAMETER	Result	Q	D.L.
Bacteriological			
Fecal Coliforms (CFU/100 ml)	8.		1
Conventionals			
Nitrate + Nitrite Nitrogen (mg/l)	0.74		0.01
Total Oil and Grease (mg/l)	< 1		1.0
Total Petroleum Hydrocarbon (mg/l)	< 1		1.0
Bioavailable Phosphorus	0.006		0.005
Ortho-Phosphate (mg/l)	< 0.005		0.005
Total Phosphorus (mg/l)	0.031		0.005
Total Suspended Solids (mg/l)	7.0		1.0
Turbidity (NTU)	13.		0.01
Total Metals			
Aluminum (mg/l)	0.60		0.01
Copper (mg/l)	0.003		0.001
Iron (mg/l)	0.53		0.01
Lead (mg/l)	< 0.001		0.001
Zinc (mg/l)	0.049		0.002

ANALYSIS REPORT AMTEST

Metro Water Resources
Louise Koltzer

Date Received: 1/16/92
Date Reported: 2/ 3/92

WATER SAMPLES

AM TEST Identification Number 92-A000755
Client Identification 000, Dissolved Metals
Sampling Date 1/16/92

PARAMETER	Result	Q	D.L.
Dissolved Metals			
Aluminum (mg/l)	< 0.01		0.01
Copper (mg/l)	0.002		0.001
Iron (mg/l)	< 0.01		0.01
Lead (mg/l)	< 0.001		0.001
Zinc (mg/l)	0.003		0.002

ANALYSIS REPORT AMTEST

Metro Water Resources
Louise Koltzer

Date Received: 1/16/92
Date Reported: 2/ 3/92

WATER SAMPLES

AM TEST Identification Number 92-A000756
Client Identification 100, Dissolved Metals
Sampling Date 1/16/92

PARAMETER	Result	Q	D.L.
Dissolved Metals			
Aluminum (mg/l)	< 0.01		0.01
Copper (mg/l)	0.001		0.001
Iron (mg/l)	< 0.01		0.01
Lead (mg/l)	< 0.001		0.001
Zinc (mg/l)	0.002		0.002

Reported by: Kathy Fugiel

AMTEST

AmTest Inc.

Professional
Analytical
Services

14603 N.E. 87th St.
Redmond, WA
98052

Fax: 206 883 3495

Tel: 206 885 1664

METHODOLOGY REPORT

AM TEST IDENTIFICATION NUMBER 92-A000753
CLIENT ID 000

ANALYTE	METHOD	METHOD REFERENCE	DETECTION LIMIT	DATE ANALYZED
Fecal Coliforms	9222D	SM	1	
Nitrate + Nitrite	353.2	EPA	0.010	1/20/92
Total Oil and Grease	413.2	EPA	1.0	1/23/92
Petroleum Hydrocarbon-TPH	418.1	EPA	1.0	1/23/92
Bioavailable Phosphorus				1/24/92
Ortho-Phosphate	365.2	EPA	0.005	1/16/92
Total Phosphorus	365.2	EPA	0.005	1/21/92
Total Suspended Solids	160.2	EPA	1.0	1/17/92
Turbidity	180.1	EPA	0.01	1/16/92
Aluminum	200.7	EPA	0.01	1/24/92
Copper	220.2	EPA	0.001	1/24/92
Iron	200.7	EPA	0.01	1/24/92
Lead	239.2	EPA	0.001	1/24/92
Zinc	200.7	EPA	0.002	1/24/92
Acid Dig. (Tot Metals)	3010	EPA		1/20/92