Burlington, WA *Corporate Laboratory (a)*
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Bellingham, WA *Microbiology (b)*
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Portland, OR *Microbiology/Chemistry (c)*
9150 SW Pioneer Ct Ste W - Wilsonville, OR 97070 - 503.682.7802

Corvallis, OR *Microbiology/Chemistry (d)*
1100 NE Circle Blvd, Ste 130 - Corvallis, OR 97330 - 541.753.4946

Bend, OR *Microbiology (e)*
20332 Empire Blvd Ste 4 - Bend, OR 97701 - 541.639.8425

January 24, 2020

Mindy Collins
Department of Ecology
Bellingham Field Office
913 Squalicum Way Unit 101
Bellingham, WA 98225

RE: 20-01330 - Plantation

Dear Mindy Collins,

Your project: Plantation, was received on Friday January 10, 2020.

All samples were analyzed within the accepted holding times and were appropriately preserved and analyzed according to approved analytical protocols, unless noted in the data or QC reports. The quality control data was within laboratory acceptance limits, unless specified in the data or QC reports.

If you have questions phone us at 800 755-9295.

Respectfully

Lawrence J Henderson, PhD
Director of Laboratories, Vice President

Enclosures: Data Report
QC Reports
Chain of Custody

EDGE ANALYTICAL

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Data Report

Client Name: Department of Ecology
Bellingham Field Office
913 Squalicum Way Unit 101
Bellingham, WA 98225

Reference Number: **20-01330**
Project: Plantation

Report Date: 1/24/20

Date Received: 1/10/20
Approved by: ajw,bj
Authorized by:

Lawrence J Henderson, PhD
Director of Laboratories, Vice President

Sample Description: 20200109 Plant 1 150 yds Stream — Matrix SW — Sample Date: 1/9/20 2:50 pm
Lab Number: 2551 — Sample Comment: — Collected By:

CAS ID#	Parameter	Result	PQL	MDL	Units	DF	Method	Lab	Analyzed	Analyst	Batch	Comment
7440-38-2	**ARSENIC**	0.0024	0.0005	2.18E-05	mg/L	1.0	200.8/3010A	a	1/23/20	BJ	200.8_200123A2	
7440-39-3	**BARIUM**	0.0181	0.001	1.49E-05	mg/L	1.0	200.8/3010A	a	1/23/20	BJ	200.8_200123A2	
7440-43-9	**CADMIUM**	0.00004 J	0.00025	1.13E-05	mg/L	1.0	200.8/3010A	a	1/23/20	BJ	200.8_200123A2	
7440-47-3	**CHROMIUM**	0.0007 J	0.001	2.03E-05	mg/L	1.0	200.8/3010A	a	1/23/20	BJ	200.8_200123A2	
7440-50-8	**COPPER**	0.0020	0.002	2.76E-05	mg/L	1.0	200.8/3010A	a	1/23/20	BJ	200.8_200123A2	
7439-92-1	**LEAD**	0.0023	0.001	6.66E-06	mg/L	1.0	200.8/3010A	a	1/23/20	BJ	200.8_200123A2	
7782-49-2	**SELENIUM**	0.0005 J	0.001	2.66E-05	mg/L	1.0	200.8/3010A	a	1/23/20	BJ	200.8_200123A2	
7440-22-4	**SILVER**	0.0001 J	0.0002	1.17E-05	mg/L	1.0	200.8/3010A	a	1/23/20	BJ	200.8_200123A2	
7440-66-6	**ZINC**	0.0051	0.0025	0.00055	mg/L	1.0	200.8/3010A	a	1/23/20	BJ	200.8_200123A2	
7439-97-6	**MERCURY**	ND	0.0002	5.30E-05	mg/L	1.0	245.1	a	1/17/20	AJW	245.1_200117	
E-10195	**TOTAL ORGANIC CARBON**	1.80	0.15	0.076	mg/L	1.0	SM5310 B	a	1/18/20	BJ	TOC_200118A	

Sample Description: 20200109 Plant 2 50 yds Stream — Matrix SW — Sample Date: 1/9/20 3:05 pm
Lab Number: 2552 — Sample Comment: — Collected By:

CAS ID#	Parameter	Result	PQL	MDL	Units	DF	Method	Lab	Analyzed	Analyst	Batch	Comment
7440-38-2	**ARSENIC**	0.0019	0.0005	2.18E-05	mg/L	1.0	200.8/3010A	a	1/23/20	BJ	200.8_200123A2	
7440-39-3	**BARIUM**	0.0134	0.001	1.49E-05	mg/L	1.0	200.8/3010A	a	1/23/20	BJ	200.8_200123A2	
7440-43-9	**CADMIUM**	0.00002 J	0.00025	1.13E-05	mg/L	1.0	200.8/3010A	a	1/23/20	BJ	200.8_200123A2	
7440-47-3	**CHROMIUM**	0.0001 J	0.001	2.03E-05	mg/L	1.0	200.8/3010A	a	1/23/20	BJ	200.8_200123A2	
7440-50-8	**COPPER**	0.0012 J	0.002	2.76E-05	mg/L	1.0	200.8/3010A	a	1/23/20	BJ	200.8_200123A2	
7439-92-1	**LEAD**	0.0027	0.001	6.66E-06	mg/L	1.0	200.8/3010A	a	1/23/20	BJ	200.8_200123A2	
7782-49-2	**SELENIUM**	0.0008 J	0.001	2.66E-05	mg/L	1.0	200.8/3010A	a	1/23/20	BJ	200.8_200123A2	
7440-22-4	**SILVER**	0.00007 J	0.0002	1.17E-05	mg/L	1.0	200.8/3010A	a	1/23/20	BJ	200.8_200123A2	
7440-66-6	**ZINC**	0.0025	0.0025	0.00055	mg/L	1.0	200.8/3010A	a	1/23/20	BJ	200.8_200123A2	
7439-97-6	**MERCURY**	ND	0.0002	5.30E-05	mg/L	1.0	245.1	a	1/17/20	AJW	245.1_200117	

Notes:

ND = Not detected above the listed practical quantitation limit (PQL) or not above the Method Detection Limit (MDL), if requested.
PQL = Practical Quantitation Limit is the lowest level that can be achieved within specified limits of precision and accuracy during routine laboratory operating conditions.
D.F. - Dilution Factor

If you have any questions concerning this report contact us at the above phone number.

Form: cRslt_2.rpt

Reference Number: **20-01330**
Report Date: 1/24/20

Data Report

E-10195	**TOTAL ORGANIC CARBON**	1.88	0.15	0.076	**mg/L**	1.0	SM5310 B	a	1/18/20	BJ	TOC_200118A

Notes:

ND = Not detected above the listed practical quantitation limit (PQL) or not above the Method Detection Limit (MDL), if requested.
PQL = Practical Quantitation Limit is the lowest level that can be achieved within specified limits of precision and accuracy during routine laboratory operating conditions.
D.F. - Dilution Factor

SAMPLE INDEPENDENT QUALITY CONTROL REPORT

Calibration Check

Reference Number: **20-01330**
Report Date: 01/24/20

Batch		Analyte	Result	True Value	Units	Method	% Recovery	Limits*	QC Qualifier	QC Type	Comment
200.8_200123A2	0	LEAD	0.00101	0.001	mg/L	200.8	101	80-120		CAL	
	0	ARSENIC	0.00103	0.001	mg/L	200.8	103	80-120		CAL	
	0	BARIUM	0.00119	0.001	mg/L	200.8	119	80-120		CAL	
	0	CADMIUM	0.001	0.001	mg/L	200.8	100	80-120		CAL	
	0	CHROMIUM	0.00092	0.001	mg/L	200.8	92	80-120		CAL	
	0	COPPER	0.001	0.001	mg/L	200.8	100	80-120		CAL	
	0	SELENIUM	0.00108	0.001	mg/L	200.8	108	80-120		CAL	
	0	SILVER	0.001	0.001	mg/L	200.8	100	80-120		CAL	
	0	ZINC	0.00116	0.001	mg/L	200.8	116	80-120		CAL	
245.1_200117	0	MERCURY	0.00203	0.002	mg/L	245.1	102	95-105		CAL	
TOC_200118A	0	TOTAL ORGANIC CARBON	2.39	2.5	mg/L	SM5310 B	96	90-110		CAL	

*Notation:

% Recovery = (Result of Analysis)/(True Value) * 100

NA = Indicates % Recovery could not be calculated.

Limits are intended for water matrices only. These criteria are for guidance only when reported with soils/solids.

SAMPLE INDEPENDENT QUALITY CONTROL REPORT

Laboratory Fortified Blank

Reference Number: **20-01330**
Report Date: 01/24/20

Batch		Analyte	Result	True Value	Units	Method	% Recovery	Limits*	QC Qualifier	QC Type	Comment
200.8_200123A2	0	LEAD	0.0278	0.025	mg/L	200.8	111	85-115		LFB	
	0	ARSENIC	0.026	0.025	mg/L	200.8	104	85-115		LFB	
	0	BARIUM	0.0284	0.025	mg/L	200.8	114	85-115		LFB	
	0	CADMIUM	0.0252	0.025	mg/L	200.8	101	85-115		LFB	
	0	CHROMIUM	0.0272	0.025	mg/L	200.8	109	85-115		LFB	
	0	COPPER	0.0272	0.025	mg/L	200.8	109	85-115		LFB	
	0	SELENIUM	0.0232	0.025	mg/L	200.8	93	85-115		LFB	
	0	SILVER	0.0141	0.0125	mg/L	200.8	113	85-115		LFB	
	0	ZINC	0.0241	0.025	mg/L	200.8	96	85-115		LFB	
245.1_200117	0	MERCURY	0.00168	0.00167	mg/L	245.1	101	85-115		LFB	
TOC_200118A	0	TOTAL ORGANIC CARBON	0.97	1	mg/L	SM5310 B	97	90-110		LFB	

*Notation:

% Recovery = (Result of Analysis)/(True Value) * 100

NA = Indicates % Recovery could not be calculated.

Limits are intended for water matrices only. These criteria are for guidance only when reported with soils/solids.

SAMPLE INDEPENDENT QUALITY CONTROL REPORT

Laboratory Reagent Blank

Reference Number: **20-01330**
Report Date: 01/24/20

Batch		Analyte	Result	True Value	Units	Method	% Recovery	Limits*	QC Qualifier	QC Type	Comment
200.8_200123A2	0	LEAD	ND		mg/L	200.8		0-0		LRB	
	0	ARSENIC	ND		mg/L	200.8		0-0		LRB	
	0	BARIUM	ND		mg/L	200.8		0-0		LRB	
	0	CADMIUM	ND		mg/L	200.8		0-0		LRB	
	0	CHROMIUM	ND		mg/L	200.8		0-0		LRB	
	0	COPPER	ND		mg/L	200.8		0-0		LRB	
	0	SELENIUM	ND		mg/L	200.8		0-0		LRB	
	0	SILVER	ND		mg/L	200.8		0-0		LRB	
	0	ZINC	ND		mg/L	200.8		0-0		LRB	
245.1_200117	0	MERCURY	ND		mg/L	245.1		0-0		LRB	
TOC_200118A	0	TOTAL ORGANIC CARBON	ND		mg/L	SM5310 B		0-0		LRB	

*Notation:

% Recovery = (Result of Analysis)/(True Value) * 100

NA = Indicates % Recovery could not be calculated.

Limits are intended for water matrices only. These criteria are for guidance only when reported with soils/solids.

SAMPLE INDEPENDENT QUALITY CONTROL REPORT

Method Blank

Reference Number: **20-01330**
Report Date: 01/24/20

Batch		Analyte	Result	True Value	Units	Method	% Recovery	Limits*	QC Qualifier	QC Type	Comment
200.8_200123A2	0	LEAD	0.000096		mg/L	200.8		0-0		MB	
	0	ARSENIC	0.00028		mg/L	200.8		0-0		MB	
	0	BARIUM	ND		mg/L	200.8		0-0		MB	
	0	CADMIUM	ND		mg/L	200.8		0-0		MB	
	0	CHROMIUM	ND		mg/L	200.8		0-0		MB	
	0	COPPER	0.00006		mg/L	200.8		0-0		MB	
	0	SELENIUM	0.0002		mg/L	200.8		0-0		MB	
	0	SILVER	ND		mg/L	200.8		0-0		MB	
	0	ZINC	ND		mg/L	200.8		0-0		MB	
TOC_200118A	0	TOTAL ORGANIC CARBON	ND		mg/L	SM5310 B		0-0		MB	

*Notation:

% Recovery = (Result of Analysis)/(True Value) * 100

NA = Indicates % Recovery could not be calculated.

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SAMPLE INDEPENDENT QUALITY CONTROL REPORT

Quality Control Sample

Reference Number: **20-01330**
Report Date: 01/24/20

Batch		Analyte	Result	True Value	Units	Method	% Recovery	Limits*	QC Qualifier	QC Type	Comment
200.8_200123A2	0	LEAD	0.0395	0.04	mg/L	200.8	99	90-110		QCS	
	0	ARSENIC	0.0402	0.04	mg/L	200.8	101	90-110		QCS	
	0	BARIUM	0.0405	0.04	mg/L	200.8	101	90-110		QCS	
	0	CADMIUM	0.04	0.04	mg/L	200.8	100	90-110		QCS	
	0	CHROMIUM	0.0388	0.04	mg/L	200.8	97	90-110		QCS	
	0	COPPER	0.0384	0.04	mg/L	200.8	96	90-110		QCS	
	0	SELENIUM	0.0401	0.04	mg/L	200.8	100	90-110		QCS	
	0	SILVER	0.0209	0.02	mg/L	200.8	105	90-110		QCS	
	0	ZINC	0.0405	0.04	mg/L	200.8	101	90-110		QCS	
245.1_200117	0	MERCURY	0.00286	0.00285	mg/L	245.1	100	90-110		QCS	
TOC_200118A	0	TOTAL ORGANIC CARBON	9.21	10	mg/L	SM5310 B	92	90-110		QCS	

*Notation:

% Recovery = (Result of Analysis)/(True Value) * 100

NA = Indicates % Recovery could not be calculated.

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SAMPLE DEPENDENT
QUALITY CONTROL REPORT
Duplicate, Matrix Spike/Matrix Spike Duplicate and Confirmation Result Report

Batch	Sample	Analyte	Result	Duplicate Result	Units	%RPD	Limits	QC Qualifier	Type	Comments
Duplicate										
200.8_200123A2										
7440-38-2	2551	ARSENIC	0.0024	0.0025	mg/L	**4.1**	0-20		DUP	
7440-39-3	2551	BARIUM	0.0181	0.0194	mg/L	**6.9**	0-20		DUP	
7440-43-9	2551	CADMIUM	0.00004	0.00002	mg/L	**66.7**	0-20	IEV	DUP	
7440-47-3	2551	CHROMIUM	0.0007	0.0009	mg/L	**25.0**	0-20	IEV	DUP	
7440-50-8	2551	COPPER	0.0020	0.0018	mg/L	**10.5**	0-20		DUP	
7782-49-2	2551	SELENIUM	0.0005	0.0006	mg/L	**18.2**	0-20		DUP	
7440-22-4	2551	SILVER	0.0001	0.00008	mg/L	**17.4**	0-20		DUP	
7440-66-6	2551	ZINC	0.0051	0.0040	mg/L	**24.2**	0-20	INH	DUP	
7439-92-1	2551	LEAD	0.0023	0.0023	mg/L	**0.0**	0-20		DUP	
7440-50-8	2828	COPPER	0.0058	0.0058	mg/L	**0.0**	0-20		DUP	
7439-92-1	2828	LEAD	0.00096	0.00099	mg/L	**3.1**	0-20		DUP	
7440-66-6	2828	ZINC	0.0223	0.0234	mg/L	**4.8**	0-20		DUP	
7440-50-8	3604	COPPER	0.0023	0.0024	mg/L	**4.3**	0-20		DUP	
7439-92-1	3604	LEAD	0.00044	0.00047	mg/L	**6.6**	0-20		DUP	
7440-66-6	3604	ZINC	0.0363	0.0379	mg/L	**4.3**	0-20		DUP	
TOC_200118A										
E-10195	2551	TOTAL ORGANIC CARBON	1.80	1.79	mg/L	**0.6**	0-20		DUP	
E-10195	3008	TOTAL ORGANIC CARBON	0.45	0.46	mg/L	**2.2**	0-20		DUP	

%RPD = Relative Percent Difference

NA = Indicates %RPD could not be calculated

Matrix Spike (MS)/Matrix Spike Duplicate (MSD) analyses are used to determine the accuracy (MS) and precision (MSD) of a analytical method in a given sample matrix. Therefore, the usefulness of this report is limited to samples of similar matrices analyzed in the same analytical batch.

Only Duplicate sample with detections are listed in this report

Limits are intended for water matrices only. These criteria are for guidance only when reported with soils/solids.

FORM: QC Dependent.rpt

Reference Number: 20-01330
Report Date: 1/24/2020

Batch/CAS	Sample	Analyte	Result	Spike Result	Duplicate Spike Result	Spike Conc	Units	Percent Recovery MS	Percent Recovery MSD	Limits*	%RPD	Limits*	QC Qualifier	Type	Comments
Laboratory Fortified Matrix (MS)															
200.8_200123A2															
7440-38-2	2551	ARSENIC	0.0024	0.0274		0.025	mg/L	**100**		70-130	**NA**	0-20		LFM	
7440-39-3	2551	BARIUM	0.0181	0.0468		0.025	mg/L	**115**		70-130	**NA**	0-20		LFM	
7440-43-9	2551	CADMIUM	0.00004	0.0250		0.025	mg/L	**100**		70-130	**NA**	0-20		LFM	
7440-47-3	2551	CHROMIUM	0.0007	0.0278		0.025	mg/L	**108**		70-130	**NA**	0-20		LFM	
7440-50-8	2551	COPPER	0.0020	0.0284		0.025	mg/L	**106**		70-130	**NA**	0-20		LFM	
7782-49-2	2551	SELENIUM	0.0005	0.0222		0.025	mg/L	**87**		70-130	**NA**	0-20		LFM	
7440-22-4	2551	SILVER	0.0001	0.0139		0.0125	mg/L	**110**		70-130	**NA**	0-20		LFM	
7440-66-6	2551	ZINC	0.0051	0.0273		0.025	mg/L	**89**		70-130	**NA**	0-20		LFM	
7439-92-1	2551	LEAD	0.0023	0.0292		0.0250	mg/L	**108**		70-130	**NA**	0-20		LFM	
7440-50-8	2828	COPPER	0.0058	0.0310		0.025	mg/L	**101**		70-130	**NA**	0-20		LFM	
7439-92-1	2828	LEAD	0.00096	0.0274		0.025	mg/L	**106**		70-130	**NA**	0-20		LFM	
7440-66-6	2828	ZINC	0.0223	0.0444		0.025	mg/L	**88**		70-130	**NA**	0-20		LFM	
7440-50-8	3604	COPPER	0.0023	0.0280		0.025	mg/L	**103**		70-130	**NA**	0-20		LFM	
7439-92-1	3604	LEAD	0.00044	0.0270		0.025	mg/L	**106**		70-130	**NA**	0-20		LFM	
7440-66-6	3604	ZINC	0.0363	0.0588		0.025	mg/L	**90**		70-130	**NA**	0-20		LFM	
245.1_200117															
7439-97-6	1456	MERCURY	ND	0.00168	0.00165	0.00167	mg/L	**101**	**99**	70-130	**1.8**	0-20		LFM	
7439-97-6	1475	MERCURY	ND	0.00163	0.00165	0.00167	mg/L	**98**	**99**	70-130	**1.2**	0-20		LFM	
TOC_200118A															
E-10195	2551	TOTAL ORGANIC CARBON	1.80	5.55		4.00	mg/L	**94**		70-130	**NA**	0-20		LFM	
E-10195	3008	TOTAL ORGANIC CARBON	0.45	4.03		4.00	mg/L	**90**		70-130	**NA**	0-20		LFM	

%RPD = Relative Percent Difference

NA = Indicates %RPD could not be calculated

Matrix Spike (MS)/Matrix Spike Duplicate (MSD) analyses are used to determine the accuracy (MS) and precision (MSD) of a analytical method in a given sample matrix. Therefore, the usefulness of this report is limited to samples of similar matrices analyzed in the same analytical batch.

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Qualifier Definitions

Reference Number: 20-01330
Report Date: 01/24/20

Qualifier	Definition
IEV	Acceptance criteria do not apply to estimated values
INH	The sample was non-homogeneous
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

Note: Some qualifier definitions found on this page may pertain to results or QC data which are not printed with this report.