Technical Memorandum

WASHINGTON STATE DEPARTMENT OF Natural Resources

Date: October 11, 2012

To: Steve Teel, Dept. of Ecology, Toxics Cleanup Program/SW Region

From: John Felder, Dept. of Natural Resources/Engineering Division - Environmental Services

Ref: August 13 - 15, 2012 DNR Webster Nursery Groundwater Sampling Event
Former pesticide storage warehouse UST site, Thurston Co.
Agreed Order No. DE00TCP-SR295

This memorandum summarizes all pertinent information related to the reference sampling event. If questions arise, feel free to contact me at 360-902-1158, john.felder@dnr.wa.gov.

Summary

For the six wells sampled for pesticides (methods 525.2/508.1), locations SW-10 & -11 exceeded both MTCA and MCL standards for heptachlor epoxide, at concentrations of 0.41 & 1.43 ug/L respectively. The MTCA cleanup standard for heptachlor epoxide is 0.00962 ug/L. The drinking water MCL standard is 0.20 ug/L. A blind field duplicate sample for SW-11 was found to be 1.39 ug/L, agreeing closely with the paired sample. The results of this sampling event show an increase from the previous sampling event, but consistent with past results since 2001.

Methodology

All monitoring and sampling methods used, were in accordance with the Agreed Order. Groundwater elevations were measured with an electronic liquid level sensing meter. During groundwater purging, water quality parameters were measured using a Horiba water quality meter and inline flow-through cell. A Master Flex peristaltic pump was used for groundwater purging/sampling, as per EPA low flow sampling procedures (EPA/540/S-95/504, April 1996). Low flow sampling varied from 125 to 333 ml/minute for this event. Water samples were collected and preserved for shipping, following stabilization of water quality parameters. Pesticide samples were delivered to Edge Analytical Laboratories and Natural Attenuation Parameter (NAP) samples delivered to Water Management Laboratory. All samples were properly received by the labs under chain-of-custody. Other in-field water quality measurements were collected and are shown in attached tables. A change to previous sampling events was that Ferrous Iron analysis was conducted onsite, using a Hach brand field test kit.

Groundwater sampling results

Summarized sampling results, a combined well sampling location plan/groundwater elevation map, and laboratory analytical data sheets are attached.

For this event, detected pesticides were heptachlor epoxide @ SW-10 & 11 with concentrations of **0.41 & 1.43** ug/L respectively (**MTCA = 0.00962** ug/L), chlordane @ SW-10 & 11 with concentrations

of 0.06 & 0.05 ug/L respectively (MTCA = 0.25 ug/L), simazine @ SW-10 with a concentration of 0.32 ug/l (MTCA = 0.729 ug/l) and atrazine @ SW-15 with a concentration of 0.10 ug/L (MTCA = 0.398 ug/L).

For quality control purposes, SW-BFD (blind field duplicate for SW-11) exhibited a heptachlor epoxide concentration of 1.39 ug/L, a close correlation to the 1.43 ug/l paired split sample result.

Of the above detections, the SW-10 & 11 heptachlor epoxide concentrations were greater than the associated groundwater cleanup standard.

This is the second sampling event where natural attenuation monitoring parameters (Nitrate, TOC, sulfate, sulfide, ferrous iron) were collected. Additional data may need to be collected to draw any meaningful conclusions.

Review of field measured water quality parameters does show differences between groundwater samples from site non-compliant wells (SW-10 & -11) vs. compliant wells (SW-9, -14, -15 & -16). The non-compliant wells show higher conductivity, substantially lower DO & ORP, and somewhat lower pH values than the compliant wells. This appears to indicate anaerobic subsurface conditions and possible environmental limitations may exist, as related to bioremediation, in the area around the non-compliant wells. However, considering “normal” readings at SW-9 (about 25’ to 35’ separation from SW-10 & -11), this seems to be a very small area.

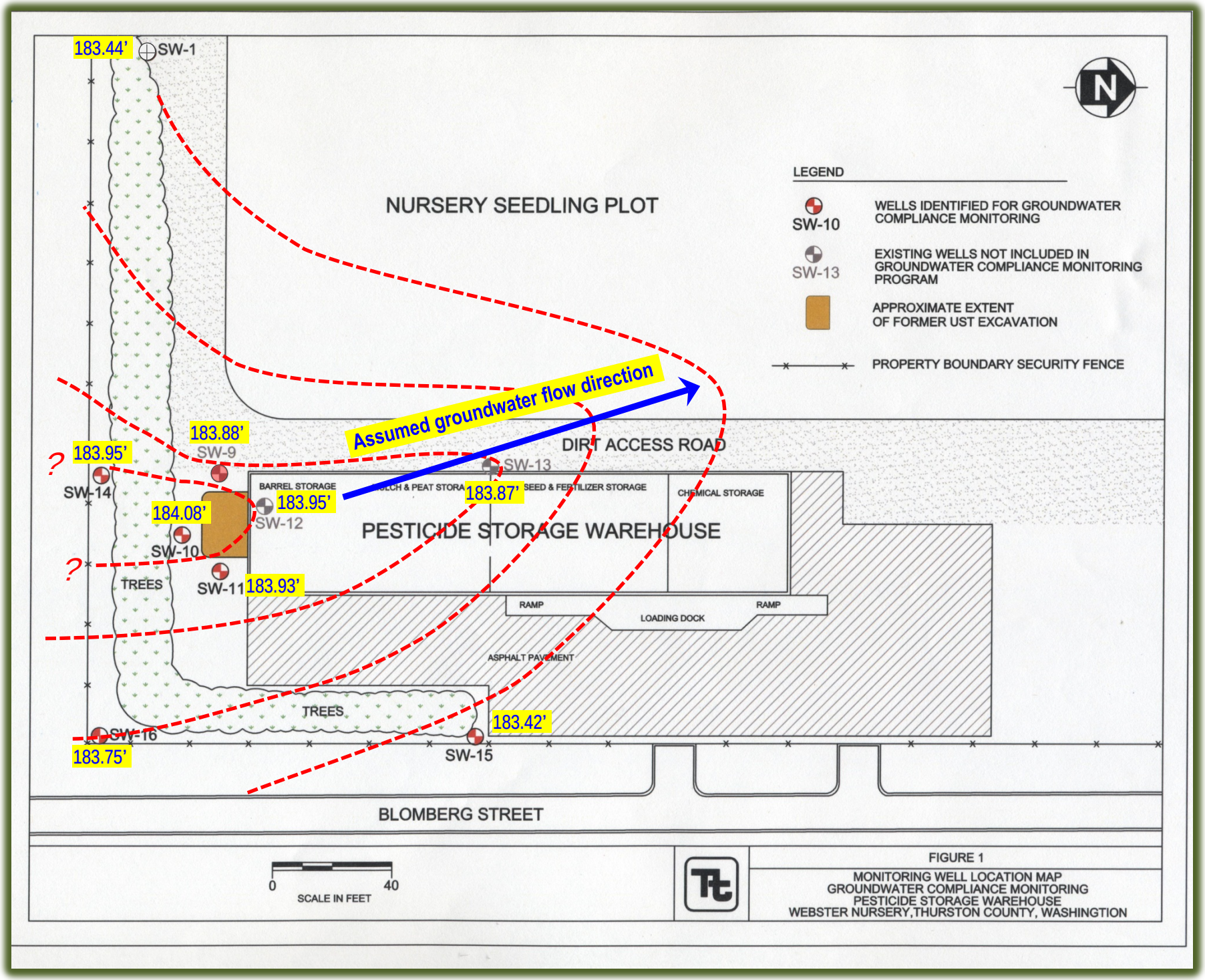
Conclusions

- Heptachlor epoxide continues to be the only contaminant exceeding MTCA groundwater cleanup standards and is only detected within 10 feet of the former UST site cleanup excavation perimeter. Concentrations over time are variable, ranging between about 0.3 and 1.5 ug/L, from 2001 to the present. Initial year 2000 concentrations were 2.0 to 2.5 ug/L. The lowest heptachlor epoxide concentration of 0.33 ug/L is still well above the MTCA cleanup standard of 0.00962 ug/L of the Agreed Order. If pesticide remediation is naturally occurring, the rate of reduction appears very slow and erratic. It is possible that residual concentrations of heptachlor epoxide exist in soil immediately adjacent to the former UST excavation. It is also possible that the heptachlor epoxide detections are colloidal in nature and not dissolved in groundwater.

- Chlordane and heptachlor related pesticide concentrations remain consistently below MTCA cleanup standards from February 2007 to the present. This confirms reduction of those analytes by natural processes (see Appendix A, Figures 8 & 9 and recent sample summary tables).

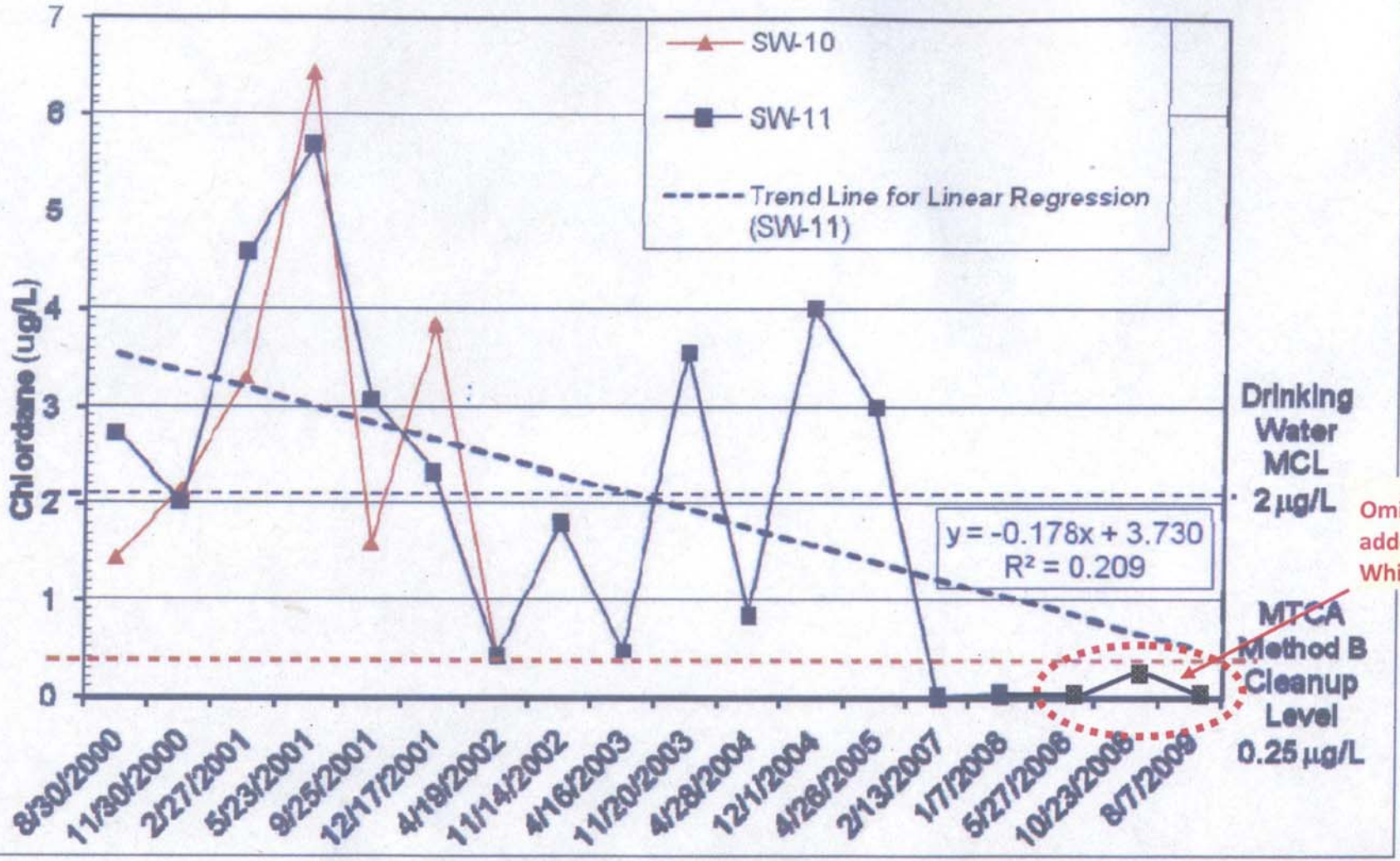
- After 13 years of groundwater monitoring at perimeter well locations SW-14, -15 and -16, there is no evidence of offsite pesticide migration from the release area. It is DNR’s contention that this site does not represent a concern to offsite public water supply users or the environment.

Semi-annual groundwater monitoring will continue as required under the Agreed Order. No ground disturbing activity is allowed at the release site as per the Agreed Order restrictive covenant.



August 13, 2012 Webster Nursery Groundwater Elevations & Flow Direction

Appendix A – 2000 to 2009 pesticide data trends



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SURVEYING ENVIRONMENTAL SERVICES
23412 68TH AVE S.
KENT, WA.
98032
Phone: 253-867-6070
Fax:253-867-6075

Figure 8

Chlordane vs. Time
August 2009

Washington State Department of Natural Resources
Webster Nursery
Tumwater, Washington

JOB No.
207-005-01
DATE
9/28/09

DNR additions 2-9-11

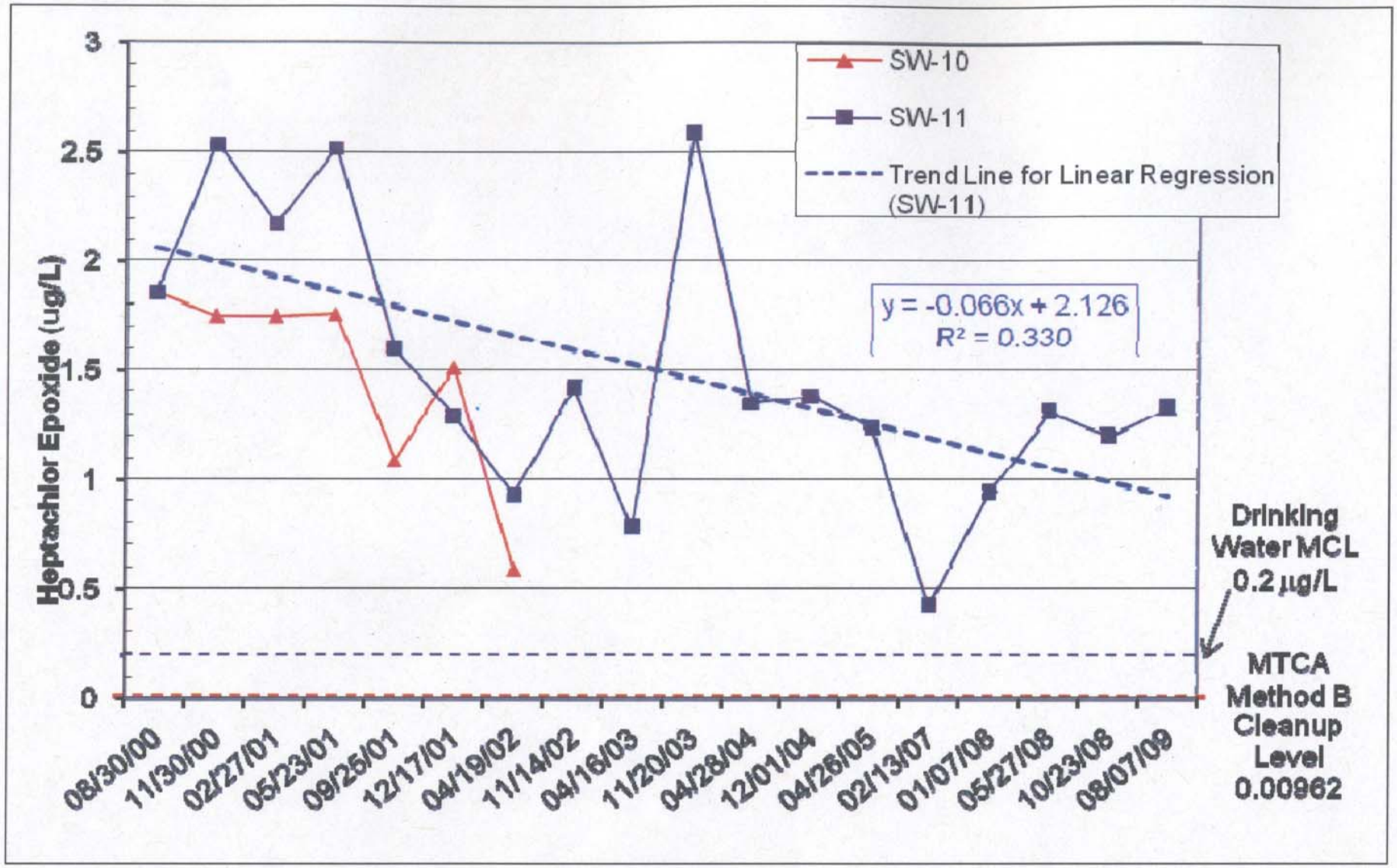

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Figure 6

Heptachlor Epoxide vs. Time
August 2009

Washington State Department of Natural Resources
Webster Nursery
Tumwater, Washington

JOB No.
207-005-01
DATE
9/28/09

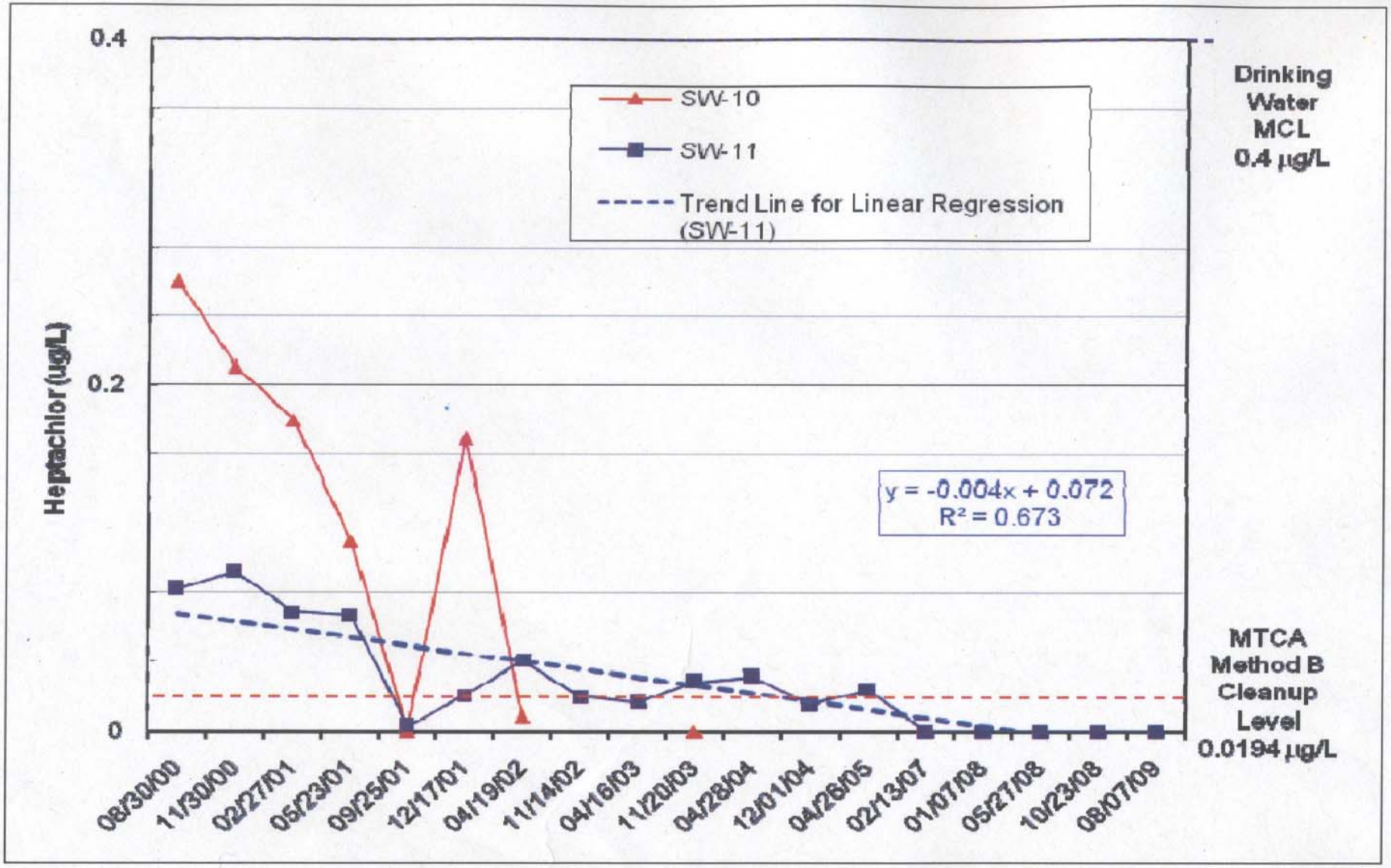

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Figure 9

Heptachlor vs. Time
August 2009

Washington State Department of Natural Resources
Webster Nursery
Tumwater, Washington

JOB No.
207-005-01
DATE
9/28/09

Appendix B – Post 2009 ground water quality data

Webster Nursery Groundwater Chlordane and Heptachlor Results

Alpha/Gamma Chlordane (ug/L) MTCA = 0.25

Date	SW-9	SW-10	SW-11	SW-14	SW-15	SW-16
1/13/2010	ND	nr	0.02/0.05*	ND	ND	ND
7/20/2010	ND	nr	0.03/0.17*	ND	ND	ND
1/24/2011	ND	nr	ND	ND	ND	ND
8/8/2011	ND	nr	ND	ND	ND	ND
2/28/2012	ND	0.08/0.04*	ND	ND	ND	ND
8/13/2012	ND	0.06	ND/0.05*	ND	ND	ND

Heptachlor (ug/L) MTCA = 0.0194

Date	SW-9	SW-10	SW-11	SW-14	SW-15	SW-16
1/13/2010	ND	nr	ND	ND	ND	ND
7/20/2010	ND	nr	ND	ND	ND	ND
1/24/2011	ND	nr	ND	ND	ND	ND
8/8/2011	ND	nr	ND	ND	ND	ND
2/28/2012	ND	ND	ND	ND	ND	ND
8/13/2012	ND	ND	ND	ND	ND	ND

Heptachlor Epoxide (ug/L) MTCA = 0.00962

Date	SW-9	SW-10	SW-11	SW-14	SW-15	SW-16
1/13/2010	ND	nr	**1.14**	ND	ND	ND
7/20/2010	ND	nr	**1.76**	ND	ND	ND
1/24/2011	ND	nr	**0.7**	ND	ND	ND
8/8/2011	ND	nr	**1.27**	ND	ND	ND
2/28/2012	ND	**0.34/0.33***	**0.45**	ND	ND	ND
8/13/2012	ND	**0.41**	**1.43/1.39***	ND	ND	ND

nr = not required
ND = non-detect
** = Blind Field Duplicate result*
Bold values are above MTCA standards

Webster Nursery Groundwater Natural Attenuation Monitoring Parameters

	Nitrate (mg/l)				TOC (mg/l)				Sulfate (mg/l)			
Date	**SW-9**	**SW-10**	**SW-11**	**SW-16**	**SW-9**	**SW-10**	**SW-11**	**SW-16**	**SW-9**	**SW-10**	**SW-11**	**SW-16**
2/28/12	0.5	<0.2	<0.2	<0.2	0.5	4.0	2.3	0.6	7.0	5.0	<1	1.0
8/13/12	0.7	<0.2	0.3	0.4	0.5	3.8	0.7	0.40	10	3	1	<1

	Sulfide (mg/l)				Ferrous Iron (mg/l)			
Date	**SW-9**	**SW-10**	**SW-11**	**SW-16**	**SW-9**	**SW-10**	**SW-11**	**SW-16**
2/28/12	*<0.1*	*<0.1*	*<0.1*	*<0.1*	*<0.03*	*0.42*	*1.2*	*<0.03*
8/13/12	<0.1	<0.1	<0.1	<0.1	0	2.8	1.8	0

Notes:

The 2/28/12 sulfide and ferrous iron samples (in italics) were flagged for exceeding fixed analytical lab holding times.

All sulfide sample results following the 2/28/12 sample event are preserved in the field.

All ferrous iron samples, following the 2/28/12 sample event, are performed onsite via Hach field test kit.

Webster Nursery field-measured water quality parameters

Temperature (degrees F)

Date	SW-9	SW-10	SW-11	SW-14	SW-15	SW-16
1/13/10	47.8	*nm*	50.4	52.0	48.2	51.8
7/20/10	52.0	*nm*	53.1	61.3	56.8	59.0
1/24/11	48.2	*nm*	49.5	49.3	49.6	50.9
8/8/11	52.9	*nm*	53.4	56.5	53.6	56.3
2/28/12	45.2	47.6	47.5	45.8	45.0	46.6
8/13/12	53.1	53.1	54.1	53.8	52.7	54.9

Conductivity (uS/cm)

SW-9	SW-10	SW-11	SW-14	SW-15	SW-16
nm	*nm*	*nm*	*nm*	*nm*	*nm*
nm	*nm*	*nm*	*nm*	*nm*	*nm*
nm	*nm*	*nm*	*nm*	*nm*	*nm*
0.096	*nm*	0.249	0.062	0.069	0.052
0.075	0.152	0.149	0.033	0.045	0.040
0.085	0.159	0.166	0.048	0.064	0.048

pH (SU)

Date	SW-9	SW-10	SW-11	SW-14	SW-15	SW-16
1/13/10	5.65	*nm*	5.42	5.76	5.84	5.85
7/20/10	5.25	*nm*	6.79	6.48	6.42	6.39
1/24/11	6.24	*nm*	6.11	5.82	7.27	5.95
8/8/11	5.95	*nm*	6.96	6.12	5.98	6.52
2/28/12	5.35	5.29	5.31	5.56	5.59	5.55
8/13/12	5.23	4.93	4.64	5.46	4.97	5.04

ORP (mV)

SW-9	SW-10	SW-11	SW-14	SW-15	SW-16
455	*nm*	407	444	449	429
374	*nm*	778	482	466	427
252	*nm*	221	275	231	230
316	*nm*	393	327	325	250
235	90	32 (-)	235	241	252
212	35	144	251	261	226

DO (mg/l)

Date	SW-9	SW-10	SW-11	SW-14	SW-15	SW-16
1/13/10	*nm*	*nm*	*nm*	*nm*	*nm*	*nm*
7/20/10	*nm*	*nm*	*nm*	*nm*	*nm*	*nm*
1/24/11	*nm*	*nm*	*nm*	*nm*	*nm*	*nm*
8/8/11	*nm*	*nm*	*nm*	*nm*	*nm*	*nm*
2/28/12	4.60	0.00	0.00	4.54	9.74	3.60
8/13/12	4.03	0.00	0.00	7.64	7.56	1.28

Turbidity (NTU)

SW-9	SW-10	SW-11	SW-14	SW-15	SW-16
nm	*nm*	*nm*	*nm*	*nm*	*nm*
nm	*nm*	*nm*	*nm*	*nm*	*nm*
nm	*nm*	*nm*	*nm*	*nm*	*nm*
nm	*nm*	*nm*	*nm*	*nm*	*nm*
10.6	14.3	12.7	*nm*	19.1	11.3
6.5	3.7	2.2	13.0	4.5	9.6

Notes:

All above measurments by Horiba water quality meter

nm = not measured

(-) = negative ORP value

Appendix C - Laboratory data sheets

EDGE ANALYTICAL LABORATORIES

Burlington WA
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1620 S Walnut St - 98233
800.755.9295 • 360.757.1400

Bellingham WA
Microbiology
805 Orchard Dr Ste 4 - 98225
360.671.0688

Portland OR
Microbiology/Chemistry
9150 SW Pioneer Ct Ste W- 97070
503.682.7802

September 13, 2012

John Felder
WADNR Engineering Division
1111 Washington Street SE
Olympia, WA 98504

RE: 12-14083 - Webster Nursery

Dear John Felder,

Your project: Webster Nursery, was received on Thursday August 16, 2012.
All samples were analyzed within the accepted holding times, were appropriately preserved and were analyzed according to approved analytical protocols. The quality control data was within laboratory acceptance limits, unless specified in the QA reports.

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

Respectfully Submitted,

Lawrence J Henderson, PhD
Director of Laboratories

Enclosures Data Report

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360.671.0688

Portland OR
Microbiology/Chemistry
9150 SW Pioneer Ct Ste W- 97070
503.682.7802

SYNTHETIC ORGANIC COMPOUNDS (SOC) REPORT

Client Name: WADNR Engineering Division
1111 Washington Street SE
Olympia, WA 98504

Project::
Field ID: SW-9
Sample Description: Nursery
Sampled By:
Sample Date: 8/14/12
Source Type:
Sampler Phone:

Reference Number: 12-14083
Project: Webster Nursery

Lab Number: 32153
Report Date: 8/28/12
Date Analyzed: 08/21/12
Date Extracted: 525_120821
Analyst: CO
Peer Review: PM
Analytical Method: 525.2
Pesticides by 525 - Washington Sta

CAS	COMPOUND	RESULTS	UNITS	PQL	MDL	MCL	COMMENT
EPA Regulated							
1912-24-9	ATRAZINE	**ND**	ug/L		0.03		
122-34-9	SIMAZINE	**ND**	ug/L		0.03		

NOTES:
ND = Not detected above the listed practical quantitation limit (PQL) or not above the Method Detection Limit (MDL), if requested.
MCL (Maximum Contaminant Level) maximum permissible level of a contaminant in water established by EPA; a blank MCL value indicates a level is not currently established.
PQL = Practical Quantitation Limit is the lowest level that can be achieved within specified limits of precision and accuracy during routine laboratory operating conditions.

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

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360.671.0688

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503.682.7802

SYNTHETIC ORGANIC COMPOUNDS (SOC) REPORT

Client Name: WADNR Engineering Division
1111 Washington Street SE
Olympia, WA 98504

Project::
Field ID: SW-10
Sample Description: Nursery
Sampled By:
Sample Date: 8/13/12
Source Type:
Sampler Phone:

Reference Number: 12-14083
Project: Webster Nursery

Lab Number: 32154
Report Date: 8/28/12
Date Analyzed: 08/21/12
Date Extracted: 525_120821
Analyst: CO
Peer Review:
Analytical Method: 525.2
Pesticides by 525 - Washington Sta

CAS	COMPOUND	RESULTS	UNITS	PQL	MDL	MCL	COMMENT
EPA Regulated							
1912-24-9	ATRAZINE	**ND N1**	ug/L		0.03		
122-34-9	SIMAZINE	**0.32**	ug/L		0.03		

NOTES:
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360.671.0688

Portland OR
Microbiology/Chemistry
9150 SW Pioneer Ct Ste W- 97070
503.682.7802

SYNTHETIC ORGANIC COMPOUNDS (SOC) REPORT

Client Name: WADNR Engineering Division
1111 Washington Street SE
Olympia, WA 98504

Project::
Field ID: SW-11
Sample Description: Nursery
Sampled By:
Sample Date: 8/13/12
Source Type:
Sampler Phone:

Reference Number: 12-14083
Project: Webster Nursery

Lab Number: 32155
Report Date: 8/28/12
Date Analyzed: 08/21/12
Date Extracted: 525_120821
Analyst: CO
Peer Review:
Analytical Method: 525.2
Pesticides by 525 - Washington Sta

CAS	COMPOUND	RESULTS	UNITS	PQL	MDL	MCL	COMMENT
EPA Regulated							
1912-24-9	ATRAZINE	**ND**	ug/L		0.03		
122-34-9	SIMAZINE	**ND**	ug/L		0.03		

NOTES:
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SYNTHETIC ORGANIC COMPOUNDS (SOC) REPORT

Client Name: WADNR Engineering Division
1111 Washington Street SE
Olympia, WA 98504

Project::
Field ID: SW-14
Sample Description: Nursery
Sampled By:
Sample Date: 8/15/12
Source Type:
Sampler Phone:

Reference Number: 12-14083
Project: Webster Nursery

Lab Number: 32156
Report Date: 8/28/12
Date Analyzed: 08/21/12
Date Extracted: 525_120821
Analyst: CO
Peer Review:
Analytical Method: 525.2
Pesticides by 525 - Washington Sta

CAS	COMPOUND	RESULTS	UNITS	PQL	MDL	MCL	COMMENT
EPA Regulated							
1912-24-9	ATRAZINE	**ND**	ug/L		0.03		
122-34-9	SIMAZINE	**ND**	ug/L		0.03		

NOTES:
ND = Not detected above the listed practical quantitation limit (PQL) or not above the Method Detection Limit (MDL), if requested.
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SYNTHETIC ORGANIC COMPOUNDS (SOC) REPORT

Client Name: WADNR Engineering Division
1111 Washington Street SE
Olympia, WA 98504

Project::
Field ID: SW-15
Sample Description: Nursery
Sampled By:
Sample Date: 8/14/12
Source Type:
Sampler Phone:

Reference Number: 12-14083
Project: Webster Nursery

Lab Number: 32157
Report Date: 8/28/12
Date Analyzed: 08/21/12
Date Extracted: 525_120821
Analyst: CO
Peer Review:
Analytical Method: 525.2
Pesticides by 525 - Washington Sta

CAS	COMPOUND	RESULTS	UNITS	PQL	MDL	MCL	COMMENT
EPA Regulated							
1912-24-9	ATRAZINE	**0.10**	ug/L		0.03		
122-34-9	SIMAZINE	**ND**	ug/L		0.03		

NOTES:
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503.682.7802

SYNTHETIC ORGANIC COMPOUNDS (SOC) REPORT

Client Name: WADNR Engineering Division
1111 Washington Street SE
Olympia, WA 98504

Project::
Field ID: SW-16
Sample Description: Nursery
Sampled By:
Sample Date: 8/14/12
Source Type:
Sampler Phone:

Reference Number: 12-14083
Project: Webster Nursery

Lab Number: 32158
Report Date: 8/28/12
Date Analyzed: 08/21/12
Date Extracted: 525_120821
Analyst: CO
Peer Review:
Analytical Method: 525.2
Pesticides by 525 - Washington Sta

CAS	COMPOUND	RESULTS	UNITS	PQL	MDL	MCL	COMMENT
EPA Regulated							
1912-24-9	ATRAZINE	**ND**	ug/L		0.03		
122-34-9	SIMAZINE	**ND**	ug/L		0.03		

NOTES:
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SYNTHETIC ORGANIC COMPOUNDS (SOC) REPORT

Client Name: WADNR Engineering Division
1111 Washington Street SE
Olympia, WA 98504

Project::
Field ID: SW-BFD
Sample Description: Nursery
Sampled By:
Sample Date: 8/14/12
Source Type:
Sampler Phone:

Reference Number: 12-14083
Project: Webster Nursery

Lab Number: 32159
Report Date: 8/28/12
Date Analyzed: 08/21/12
Date Extracted: 525_120821
Analyst: CO
Peer Review:
Analytical Method: 525.2
Pesticides by 525 - Washington Sta

CAS	COMPOUND	RESULTS	UNITS	PQL	MDL	MCL	COMMENT
EPA Regulated							
1912-24-9	ATRAZINE	**ND**	ug/L		0.03		
122-34-9	SIMAZINE	**ND**	ug/L		0.03		

NOTES:
ND = Not detected above the listed practical quantitation limit (PQL) or not above the Method Detection Limit (MDL), if requested.
MCL (Maximum Contaminant Level) maximum permissible level of a contaminant in water established by EPA; a blank MCL value indicates a level is not currently established.
PQL = Practical Quantitation Limit is the lowest level that can be achieved within specified limits of precision and accuracy during routine laboratory operating conditions.

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

FORM: SOC_gen.rpt

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9150 SW Pioneer Ct Ste W- 97070
503.682.7802

August 28, 2012

Case Narrative

Reference: **12-14083**

Lab Sample ID	Sample Information
32154	SW-10 - Nursery

Analytical Method	Notes	Created by
525.2	A trace of atrazine is possibly present less than 0.03 ug/L. The sample was analyzed as the MS/MSD and verified the simazine reported in the sample.	CO

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WSDOE Lab C567

DATA REPORT

Client Name: WADNR Engineering Division
1111 Washington Street SE
Olympia, WA 98504

Reference Number: 12-14083
Project: Webster Nursery

Lab Number: 32159
Field ID: SW-BFD
Sample Description: Nursery
Matrix: Water
Sample Date: 8/14/12
Extraction Date: 8/21/12
Extraction Method: 3535

Report Date: 9/13/12
Date Analyzed: 8/21/12
Analyst: BCV
Peer Review:
Analytical Method: 508.1
Batch: PST_120821

CAS	Compound	RESULT	Flag	UNITS	PQL	MRL	MDL	D.F.	COMMENT
72-54-8	4,4' - DDD	ND		ug/L	0.02	0.05	0.02	1.00	
72-55-9	4,4' - DDE	ND		ug/L	0.02	0.05	0.01	1.00	
50-29-3	4,4' - DDT	ND		ug/L	0.02	0.05	0.008	1.00	
309-00-2	ALDRIN	ND		ug/L	0.02	0.05	0.01	1.00	
319-84-6	BHC, ALPHA -	ND		ug/L	0.02	0.05	0.01	1.00	
319-85-7	BHC, BETA -	ND		ug/L	0.02	0.05	0.02	1.00	
319-86-8	BHC, DELTA -	ND		ug/L	0.02	0.05	0.01	1.00	
58-89-9	LINDANE (BHC - GAMMA)	ND		ug/L	0.02	0.05	0.01	1.00	
5103-71-9	CHLORDANE, ALPHA	ND		ug/L	0.02	0.05	0.01	1.00	
5103-74-2	CHLORDANE, GAMMA	0.05		ug/L	0.02	0.05	0.009	1.00	
57-74-9	CHLORDANE (technical)	ND		ug/L	0.5	0.5	0.29	1.00	
60-57-1	DIELDRIN	ND		ug/L	0.02	0.05	0.01	1.00	
959-98-8	ENDOSULFAN I	ND		ug/L	0.02	0.05	0.02	1.00	
33213-65-	ENDOSULFAN II	ND		ug/L	0.02	0.05	0.01	1.00	
1031-07-8	ENDOSULFAN SULFATE	ND		ug/L	0.02	0.05	0.08	1.00	
72-20-8	ENDRIN	ND		ug/L	0.02	0.05	0.01	1.00	
7421-93-4	ENDRIN ALDEHYDE	ND		ug/L	0.02	0.05	0.02	1.00	
53494-70-	ENDRIN KETONE	ND		ug/L	0.02	0.05	0.01	1.00	
76-44-8	HEPTACHLOR	ND		ug/L	0.02	0.05	0.007	1.00	
1024-57-3	HEPTACHLOR EPOXIDE "B"	1.39		ug/L	0.02	0.05	0.02	1.00	
72-43-5	METHOXYCHLOR	ND		ug/L	0.02	0.05	0.04	1.00	
8001-35-2	TOXAPHENE	ND		ug/L	1.0	1.0	0.85	1.00	

Notes:

Flags are data qualifiers. If there are data qualifiers on your report definitions can be found on an accompanying sheet.
ND - indicates the compound was not detected above the PQL or MDL.
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: c608.rpt

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WSDOE Lab C567

DATA REPORT

Client Name: WADNR Engineering Division
1111 Washington Street SE
Olympia, WA 98504

Reference Number: 12-14083
Project: Webster Nursery

Lab Number: 32158
Field ID: SW-16
Sample Description: Nursery
Matrix: Water
Sample Date: 8/14/12
Extraction Date: 8/21/12
Extraction Method: 3535

Report Date: 9/13/12
Date Analyzed: 8/21/12
Analyst: BCV
Peer Review:
Analytical Method: 508.1
Batch: PST_120821

CAS	Compound	RESULT	Flag	UNITS	PQL	MRL	MDL	D.F.	COMMENT
72-54-8	4,4' - DDD	ND		ug/L	0.02	0.05	0.02	1.00	
72-55-9	4,4' - DDE	ND		ug/L	0.02	0.05	0.01	1.00	
50-29-3	4,4' - DDT	ND		ug/L	0.02	0.05	0.008	1.00	
309-00-2	ALDRIN	ND		ug/L	0.02	0.05	0.01	1.00	
319-84-6	BHC, ALPHA -	ND		ug/L	0.02	0.05	0.01	1.00	
319-85-7	BHC, BETA -	ND		ug/L	0.02	0.05	0.02	1.00	
319-86-8	BHC, DELTA -	ND		ug/L	0.02	0.05	0.01	1.00	
58-89-9	LINDANE (BHC - GAMMA)	ND		ug/L	0.02	0.05	0.01	1.00	
5103-71-9	CHLORDANE, ALPHA	ND		ug/L	0.02	0.05	0.01	1.00	
5103-74-2	CHLORDANE, GAMMA	ND		ug/L	0.02	0.05	0.009	1.00	
57-74-9	CHLORDANE (technical)	ND		ug/L	0.5	0.5	0.29	1.00	
60-57-1	DIELDRIN	ND		ug/L	0.02	0.05	0.01	1.00	
959-98-8	ENDOSULFAN I	ND		ug/L	0.02	0.05	0.02	1.00	
33213-65-	ENDOSULFAN II	ND		ug/L	0.02	0.05	0.01	1.00	
1031-07-8	ENDOSULFAN SULFATE	ND		ug/L	0.02	0.05	0.08	1.00	
72-20-8	ENDRIN	ND		ug/L	0.02	0.05	0.01	1.00	
7421-93-4	ENDRIN ALDEHYDE	ND		ug/L	0.02	0.05	0.02	1.00	
53494-70-	ENDRIN KETONE	ND		ug/L	0.02	0.05	0.01	1.00	
76-44-8	HEPTACHLOR	ND		ug/L	0.02	0.05	0.007	1.00	
1024-57-3	HEPTACHLOR EPOXIDE "B"	ND		ug/L	0.02	0.05	0.02	1.00	
72-43-5	METHOXYCHLOR	ND		ug/L	0.02	0.05	0.04	1.00	
8001-35-2	TOXAPHENE	ND		ug/L	1.0	1.0	0.85	1.00	

Notes:

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WSDOE Lab C567

DATA REPORT

Client Name: WADNR Engineering Division
1111 Washington Street SE
Olympia, WA 98504

Reference Number: 12-14083
Project: Webster Nursery

Lab Number: 32157
Field ID: SW-15
Sample Description: Nursery
Matrix: Water
Sample Date: 8/14/12
Extraction Date: 8/21/12
Extraction Method: 3535

Report Date: 9/13/12
Date Analyzed: 8/21/12
Analyst: BCV
Peer Review:
Analytical Method: 508.1
Batch: PST_120821

CAS	Compound	RESULT	Flag	UNITS	PQL	MRL	MDL	D.F.	COMMENT
72-54-8	4,4' - DDD	ND		ug/L	0.02	0.05	0.02	1.00	
72-55-9	4,4' - DDE	ND		ug/L	0.02	0.05	0.01	1.00	
50-29-3	4,4' - DDT	ND		ug/L	0.02	0.05	0.008	1.00	
309-00-2	ALDRIN	ND		ug/L	0.02	0.05	0.01	1.00	
319-84-6	BHC, ALPHA -	ND		ug/L	0.02	0.05	0.01	1.00	
319-85-7	BHC, BETA -	ND		ug/L	0.02	0.05	0.02	1.00	
319-86-8	BHC, DELTA -	ND		ug/L	0.02	0.05	0.01	1.00	
58-89-9	LINDANE (BHC - GAMMA)	ND		ug/L	0.02	0.05	0.01	1.00	
5103-71-9	CHLORDANE, ALPHA	ND		ug/L	0.02	0.05	0.01	1.00	
5103-74-2	CHLORDANE, GAMMA	ND		ug/L	0.02	0.05	0.009	1.00	
57-74-9	CHLORDANE (technical)	ND		ug/L	0.5	0.5	0.29	1.00	
60-57-1	DIELDRIN	ND		ug/L	0.02	0.05	0.01	1.00	
959-98-8	ENDOSULFAN I	ND		ug/L	0.02	0.05	0.02	1.00	
33213-65-	ENDOSULFAN II	ND		ug/L	0.02	0.05	0.01	1.00	
1031-07-8	ENDOSULFAN SULFATE	ND		ug/L	0.02	0.05	0.08	1.00	
72-20-8	ENDRIN	ND		ug/L	0.02	0.05	0.01	1.00	
7421-93-4	ENDRIN ALDEHYDE	ND		ug/L	0.02	0.05	0.02	1.00	
53494-70-	ENDRIN KETONE	ND		ug/L	0.02	0.05	0.01	1.00	
76-44-8	HEPTACHLOR	ND		ug/L	0.02	0.05	0.007	1.00	
1024-57-3	HEPTACHLOR EPOXIDE "B"	ND		ug/L	0.02	0.05	0.02	1.00	
72-43-5	METHOXYCHLOR	ND		ug/L	0.02	0.05	0.04	1.00	
8001-35-2	TOXAPHENE	ND		ug/L	1.0	1.0	0.85	1.00	

Notes:

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WSDOE Lab C567

DATA REPORT

Client Name: WADNR Engineering Division
1111 Washington Street SE
Olympia, WA 98504

Reference Number: 12-14083
Project: Webster Nursery

Lab Number: 32156
Field ID: SW-14
Sample Description: Nursery
Matrix: Water
Sample Date: 8/15/12
Extraction Date: 8/21/12
Extraction Method: 3535

Report Date: 9/13/12
Date Analyzed: 8/21/12
Analyst: BCV
Peer Review:
Analytical Method: 508.1
Batch: PST_120821

CAS	Compound	RESULT	Flag	UNITS	PQL	MRL	MDL	D.F.	COMMENT
72-54-8	4,4' - DDD	ND		ug/L	0.02	0.05	0.02	1.00	
72-55-9	4,4' - DDE	ND		ug/L	0.02	0.05	0.01	1.00	
50-29-3	4,4' - DDT	ND		ug/L	0.02	0.05	0.008	1.00	
309-00-2	ALDRIN	ND		ug/L	0.02	0.05	0.01	1.00	
319-84-6	BHC, ALPHA -	ND		ug/L	0.02	0.05	0.01	1.00	
319-85-7	BHC, BETA -	ND		ug/L	0.02	0.05	0.02	1.00	
319-86-8	BHC, DELTA -	ND		ug/L	0.02	0.05	0.01	1.00	
58-89-9	LINDANE (BHC - GAMMA)	ND		ug/L	0.02	0.05	0.01	1.00	
5103-71-9	CHLORDANE, ALPHA	ND		ug/L	0.02	0.05	0.01	1.00	
5103-74-2	CHLORDANE, GAMMA	ND		ug/L	0.02	0.05	0.009	1.00	
57-74-9	CHLORDANE (technical)	ND		ug/L	0.5	0.5	0.29	1.00	
60-57-1	DIELDRIN	ND		ug/L	0.02	0.05	0.01	1.00	
959-98-8	ENDOSULFAN I	ND		ug/L	0.02	0.05	0.02	1.00	
33213-65-	ENDOSULFAN II	ND		ug/L	0.02	0.05	0.01	1.00	
1031-07-8	ENDOSULFAN SULFATE	ND		ug/L	0.02	0.05	0.08	1.00	
72-20-8	ENDRIN	ND		ug/L	0.02	0.05	0.01	1.00	
7421-93-4	ENDRIN ALDEHYDE	ND		ug/L	0.02	0.05	0.02	1.00	
53494-70-	ENDRIN KETONE	ND		ug/L	0.02	0.05	0.01	1.00	
76-44-8	HEPTACHLOR	ND		ug/L	0.02	0.05	0.007	1.00	
1024-57-3	HEPTACHLOR EPOXIDE "B"	ND		ug/L	0.02	0.05	0.02	1.00	
72-43-5	METHOXYCHLOR	ND		ug/L	0.02	0.05	0.04	1.00	
8001-35-2	TOXAPHENE	ND		ug/L	1.0	1.0	0.85	1.00	

Notes:

Flags are data qualifiers. If there are data qualifiers on your report definitions can be found on an accompanying sheet.
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WSDOE Lab C567

DATA REPORT

Client Name: WADNR Engineering Division
1111 Washington Street SE
Olympia, WA 98504

Reference Number: 12-14083
Project: Webster Nursery

Lab Number: 32155
Field ID: SW-11
Sample Description: Nursery
Matrix: Water
Sample Date: 8/13/12
Extraction Date: 8/21/12
Extraction Method: 3535

Report Date: 9/13/12
Date Analyzed: 8/21/12
Analyst: BCV
Peer Review:
Analytical Method: 508.1
Batch: PST_120821

CAS	Compound	RESULT	Flag	UNITS	PQL	MRL	MDL	D.F.	COMMENT
72-54-8	4,4' - DDD	ND		ug/L	0.02	0.05	0.02	1.00	
72-55-9	4,4' - DDE	ND		ug/L	0.02	0.05	0.01	1.00	
50-29-3	4,4' - DDT	ND		ug/L	0.02	0.05	0.008	1.00	
309-00-2	ALDRIN	ND		ug/L	0.02	0.05	0.01	1.00	
319-84-6	BHC, ALPHA -	ND		ug/L	0.02	0.05	0.01	1.00	
319-85-7	BHC, BETA -	ND		ug/L	0.02	0.05	0.02	1.00	
319-86-8	BHC, DELTA -	ND		ug/L	0.02	0.05	0.01	1.00	
58-89-9	LINDANE (BHC - GAMMA)	ND		ug/L	0.02	0.05	0.01	1.00	
5103-71-9	CHLORDANE, ALPHA	ND		ug/L	0.02	0.05	0.01	1.00	
5103-74-2	CHLORDANE, GAMMA	ND		ug/L	0.02	0.05	0.009	1.00	
57-74-9	CHLORDANE (technical)	ND		ug/L	0.5	0.5	0.29	1.00	
60-57-1	DIELDRIN	ND		ug/L	0.02	0.05	0.01	1.00	
959-98-8	ENDOSULFAN I	ND		ug/L	0.02	0.05	0.02	1.00	
33213-65-	ENDOSULFAN II	ND		ug/L	0.02	0.05	0.01	1.00	
1031-07-8	ENDOSULFAN SULFATE	ND		ug/L	0.02	0.05	0.08	1.00	
72-20-8	ENDRIN	ND		ug/L	0.02	0.05	0.01	1.00	
7421-93-4	ENDRIN ALDEHYDE	ND		ug/L	0.02	0.05	0.02	1.00	
53494-70-	ENDRIN KETONE	ND		ug/L	0.02	0.05	0.01	1.00	
76-44-8	HEPTACHLOR	ND		ug/L	0.02	0.05	0.007	1.00	
1024-57-3	HEPTACHLOR EPOXIDE "B"	1.43		ug/L	0.02	0.05	0.02	1.00	Field Dup: 1.44 ug/L
72-43-5	METHOXYCHLOR	ND		ug/L	0.02	0.05	0.04	1.00	
8001-35-2	TOXAPHENE	ND		ug/L	1.0	1.0	0.85	1.00	

Notes:

Flags are data qualifiers. If there are data qualifiers on your report definitions can be found on an accompanying sheet.
ND - indicates the compound was not detected above the PQL or MDL.
PQL = Practical Quantitation Limit is the lowest level that can be achieved within specified limits of precision and accuracy during routine laboratory operating conditions.
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WSDOE Lab C567

DATA REPORT

Client Name: WADNR Engineering Division
1111 Washington Street SE
Olympia, WA 98504

Reference Number: 12-14083
Project: Webster Nursery

Lab Number: 32154
Field ID: SW-10
Sample Description: Nursery
Matrix: Water
Sample Date: 8/13/12
Extraction Date: 8/21/12
Extraction Method: 3535

Report Date: 9/13/12
Date Analyzed: 8/21/12
Analyst: BCV
Peer Review:
Analytical Method: 508.1
Batch: PST_120821

CAS	Compound	RESULT	Flag	UNITS	PQL	MRL	MDL	D.F.	COMMENT
72-54-8	4,4' - DDD	ND		ug/L	0.02	0.05	0.02	1.00	
72-55-9	4,4' - DDE	ND		ug/L	0.02	0.05	0.01	1.00	
50-29-3	4,4' - DDT	ND		ug/L	0.02	0.05	0.008	1.00	
309-00-2	ALDRIN	ND		ug/L	0.02	0.05	0.01	1.00	
319-84-6	BHC, ALPHA -	ND		ug/L	0.02	0.05	0.01	1.00	
319-85-7	BHC, BETA -	ND		ug/L	0.02	0.05	0.02	1.00	
319-86-8	BHC, DELTA -	ND		ug/L	0.02	0.05	0.01	1.00	
58-89-9	LINDANE (BHC - GAMMA)	ND		ug/L	0.02	0.05	0.01	1.00	
5103-71-9	CHLORDANE, ALPHA	ND		ug/L	0.02	0.05	0.01	1.00	
5103-74-2	CHLORDANE, GAMMA	0.06		ug/L	0.02	0.05	0.009	1.00	
57-74-9	CHLORDANE (technical)	ND		ug/L	0.5	0.5	0.29	1.00	
60-57-1	DIELDRIN	ND		ug/L	0.02	0.05	0.01	1.00	
959-98-8	ENDOSULFAN I	ND		ug/L	0.02	0.05	0.02	1.00	
33213-65-	ENDOSULFAN II	ND		ug/L	0.02	0.05	0.01	1.00	
1031-07-8	ENDOSULFAN SULFATE	ND		ug/L	0.02	0.05	0.08	1.00	
72-20-8	ENDRIN	ND		ug/L	0.02	0.05	0.01	1.00	
7421-93-4	ENDRIN ALDEHYDE	ND		ug/L	0.02	0.05	0.02	1.00	
53494-70-	ENDRIN KETONE	ND		ug/L	0.02	0.05	0.01	1.00	
76-44-8	HEPTACHLOR	ND		ug/L	0.02	0.05	0.007	1.00	
1024-57-3	HEPTACHLOR EPOXIDE "B"	0.41		ug/L	0.02	0.05	0.02	1.00	
72-43-5	METHOXYCHLOR	ND		ug/L	0.02	0.05	0.04	1.00	
8001-35-2	TOXAPHENE	ND		ug/L	1.0	1.0	0.85	1.00	

Notes:

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WSDOE Lab C567

DATA REPORT

Client Name: WADNR Engineering Division
1111 Washington Street SE
Olympia, WA 98504

Reference Number: 12-14083
Project: Webster Nursery

Lab Number: 32153
Field ID: SW-9
Sample Description: Nursery
Matrix: Water
Sample Date: 8/14/12
Extraction Date: 8/21/12
Extraction Method: 3535

Report Date: 9/13/12
Date Analyzed: 8/21/12
Analyst: BCV
Peer Review:
Analytical Method: 508.1
Batch: PST_120821

CAS	Compound	RESULT	Flag	UNITS	PQL	MRL	MDL	D.F.	COMMENT
72-54-8	4,4' - DDD	ND		ug/L	0.02	0.05	0.02	1.00	
72-55-9	4,4' - DDE	ND		ug/L	0.02	0.05	0.01	1.00	
50-29-3	4,4' - DDT	ND		ug/L	0.02	0.05	0.008	1.00	
309-00-2	ALDRIN	ND		ug/L	0.02	0.05	0.01	1.00	
319-84-6	BHC, ALPHA -	ND		ug/L	0.02	0.05	0.01	1.00	
319-85-7	BHC, BETA -	ND		ug/L	0.02	0.05	0.02	1.00	
319-86-8	BHC, DELTA -	ND		ug/L	0.02	0.05	0.01	1.00	
58-89-9	LINDANE (BHC - GAMMA)	ND		ug/L	0.02	0.05	0.01	1.00	
5103-71-9	CHLORDANE, ALPHA	ND		ug/L	0.02	0.05	0.01	1.00	
5103-74-2	CHLORDANE, GAMMA	ND		ug/L	0.02	0.05	0.009	1.00	
57-74-9	CHLORDANE (technical)	ND		ug/L	0.5	0.5	0.29	1.00	
60-57-1	DIELDRIN	ND		ug/L	0.02	0.05	0.01	1.00	
959-98-8	ENDOSULFAN I	ND		ug/L	0.02	0.05	0.02	1.00	
33213-65-	ENDOSULFAN II	ND		ug/L	0.02	0.05	0.01	1.00	
1031-07-8	ENDOSULFAN SULFATE	ND		ug/L	0.02	0.05	0.08	1.00	
72-20-8	ENDRIN	ND		ug/L	0.02	0.05	0.01	1.00	
7421-93-4	ENDRIN ALDEHYDE	ND		ug/L	0.02	0.05	0.02	1.00	
53494-70-	ENDRIN KETONE	ND		ug/L	0.02	0.05	0.01	1.00	
76-44-8	HEPTACHLOR	ND		ug/L	0.02	0.05	0.007	1.00	
1024-57-3	HEPTACHLOR EPOXIDE "B"	ND		ug/L	0.02	0.05	0.02	1.00	
72-43-5	METHOXYCHLOR	ND		ug/L	0.02	0.05	0.04	1.00	
8001-35-2	TOXAPHENE	ND		ug/L	1.0	1.0	0.85	1.00	

Notes:

Flags are data qualifiers. If there are data qualifiers on your report definitions can be found on an accompanying sheet.
ND - indicates the compound was not detected above the PQL or MDL.
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: c608.rpt

Burlington WA
Corporate Office
1620 S Walnut St - 98233
800.755.9295 • 360.757.1400

Bellingham WA
Microbiology
805 Orchard Dr Ste 4 - 98225
360.671.0688

Portland OR
Microbiology/Chemistry
9150 SW Pioneer Ct Ste W- 97070
503.682.7802

SAMPLE INDEPENDENT QUALITY CONTROL REPORT

Laboratory Fortified Blank

Reference Number: 12-14083
Report Date: 09/13/12

Batch	Analyte	Result	True Value	Units	Method	% Recovery	Limits*	QC Qualifier	Type*	Comment
525_120821	ATRAZINE	0.51	0.5	ug/L	525.2	102	70-130		LFB	
	SIMAZINE	0.49	0.5	ug/L	525.2	98	70-130			
PST_120821	4,4' - DDD	0.47	0.5	ug/L	508.1	94	70-130		LFB	
	4,4' - DDE	0.37	0.5	ug/L	508.1	74	70-130			
	4,4' - DDT	0.46	0.5	ug/L	508.1	92	70-130			
	ALDRIN	0.44	0.5	ug/L	508.1	88	70-130			
	BHC, ALPHA -	0.36	0.5	ug/L	508.1	72	70-130			
	BHC, BETA -	0.42	0.5	ug/L	508.1	84	70-130			
	BHC, DELTA -	0.47	0.5	ug/L	508.1	94	70-130			
	DIELDRIN	0.58	0.5	ug/L	508.1	116	70-130			
	ENDOSULFAN I	0.43	0.5	ug/L	508.1	86	70-130			
	ENDOSULFAN II	0.51	0.5	ug/L	508.1	102	70-130			
	ENDOSULFAN SULFATE	0.53	0.5	ug/L	508.1	106	70-130			
	ENDRIN	0.50	0.5	ug/L	508.1	100	70-130			
	ENDRIN ALDEHYDE	0.38	0.5	ug/L	508.1	76	70-130			
	HEPTACHLOR	0.53	0.5	ug/L	508.1	106	70-130			
	HEPTACHLOR EPOXIDE "B"	0.55	0.5	ug/L	508.1	110	70-130			
	LINDANE (BHC - GAMMA)	0.46	0.5	ug/L	508.1	92	70-130			
	METHOXYCHLOR	0.54	0.5	ug/L	508.1	108	70-130			

*Notation:

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

NA = Indicates % Recovery could not be calculated.

QCS: Quality Control Sample, a solution containing known concentrations of method analytes which is used to fortify an aliquot of reagent matrix. The QCS is obtained from an external source and is used to check lab performance.

LFB: Laboratory Fortified Blank, an aliquot of reagent matrix to which known quantities of method analytes are added in the lab. The LFB is analyzed exactly like a sample, and its purpose is to determine whether method performance is within accepted control limits.

MB or LRB: Method Blank or Laboratory Reagent Blank, an aliquot of reagent matrix is analyzed exactly like a sample, and its purpose is to determine if there is background contamination.

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

FORM: QC Independent

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Bellingham WA
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360.671.0688

Portland OR
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9150 SW Pioneer Ct Ste W- 97070
503.682.7802

SAMPLE INDEPENDENT QUALITY CONTROL REPORT

Low Level Laboratory Fortified Blank

Reference Number: 12-14083
Report Date: 09/13/12

Batch	Analyte	Result	True Value	Units	Method	% Recovery	Limits*	QC Qualifier	Type*	Comment
525_120821	ATRAZINE	0.04	0.05	ug/L	525.2	80	50-150		LFBD	
	SIMAZINE	0.05	0.05	ug/L	525.2	100	50-150			

*Notation:

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FORM: QC Independent

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SAMPLE INDEPENDENT QUALITY CONTROL REPORT

Method Blank

Reference Number: 12-14083
Report Date: 09/13/12

Batch	Analyte	Result	True Value	Units	Method	% Recovery	Limits*	QC Qualifier	Type*	Comment
525_120821	ATRAZINE	ND		ug/L	525.2		0.03000		MB	
	SIMAZINE	ND		ug/L	525.2		0.03000			
PST_120821	4,4' - DDD	ND		ug/L	508.1		0.00300		MB	
	4,4' - DDE	ND		ug/L	508.1		0.00300			
	4,4' - DDT	ND		ug/L	508.1		0.00300			
	ALDRIN	ND		ug/L	508.1		0.00300			
	BHC, ALPHA -	ND		ug/L	508.1		0.00300			
	BHC, BETA -	ND		ug/L	508.1		0.00300			
	BHC, DELTA -	ND		ug/L	508.1		0.00300			
	CHLORDANE (technical)	ND		ug/L	508.1		0.02000			
	DIELDRIN	ND		ug/L	508.1		0.00300			
	ENDOSULFAN I	ND		ug/L	508.1		0.00300			
	ENDOSULFAN II	ND		ug/L	508.1		0.00300			
	ENDOSULFAN SULFATE	ND		ug/L	508.1		0.00300			
	ENDRIN	ND		ug/L	508.1		0.00300			
	ENDRIN ALDEHYDE	ND		ug/L	508.1		0.00300			
	ENDRIN KETONE	ND		ug/L	508.1		0.00300			
	HEPTACHLOR	ND		ug/L	508.1		0.00300			
	HEPTACHLOR EPOXIDE "B"	ND		ug/L	508.1		0.00300			
	LINDANE (BHC - GAMMA)	ND		ug/L	508.1		0.00300			
	METHOXYCHLOR	ND		ug/L	508.1		0.00300			
	TOXAPHENE	ND		ug/L	508.1		0.05000			

*Notation:

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

NA = Indicates % Recovery could not be calculated.

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FORM: QC Independent

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SAMPLE INDEPENDENT QUALITY CONTROL REPORT

Quality Control Sample

Reference Number: 12-14083
Report Date: 09/13/12

Batch	Analyte	Result	True Value	Units	Method	% Recovery	Limits*	QC Qualifier	Type*	Comment
PST_120821	ALDRIN	1.81	2.01	ug/L	508.1	90	70-130		QCS	
	DIELDRIN	2.16	2.46	ug/L	508.1	88	70-130			
	ENDRIN	0.66	0.627	ug/L	508.1	105	70-130			
	HEPTACHLOR	1.99	1.92	ug/L	508.1	104	70-130			
	HEPTACHLOR EPOXIDE "B"	1.97	1.91	ug/L	508.1	103	70-130			
	LINDANE (BHC - GAMMA)	1.73	1.91	ug/L	508.1	91	70-130			
	METHOXYCHLOR	21.46	15.5	ug/L	508.1	138	70-130	E		

*Notation:

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

NA = Indicates % Recovery could not be calculated.

QCS: Quality Control Sample, a solution containing known concentrations of method analytes which is used to fortify an aliquot of reagent matrix. The QCS is obtained from an external source and is used to check lab performance.

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FORM: QC Independent

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SAMPLE DEPENDENT QUALITY CONTROL REPORT

Duplicate, Matrix Spike/Matrix Spike Duplicate and Confirmation Result Report

Reference Number: 12-14083
Report Date: 9/13/2012

Duplicate

Batch	Sample	Analyte	Result	Duplicate Result	Units	%RPD	Limits	QC Qualifier	Type	Comments
525_120821										
PST_120821										
	32155	HEPTACHLOR EPOXIDE "B"	1.43	1.44	ug/L	**0.7**	0-30		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: cLFMD.rpt

Reference Number: 12-14083
Report Date: 9/13/2012

Matrix Spike

Batch	Sample	Analyte	Result	Spike Result	Duplicate Spike Result	Spike Conc	Units	Percent Recovery MS	Percent Recovery MSD	Limits*	%RPD	Limits*	QC Qualifier	Type	Comments
525_120821															
	32154	ATRAZINE	ND	0.53	0.56	0.5	ug/L	**106**	**112**	70-130	**5.5**	0-60		LFM	
	32154	SIMAZINE	0.32	0.74	0.78	0.5	ug/L	**84**	**92**	70-130	**9.1**	0-60		LFM	
PST_120821															
	32154	4,4' - DDD	ND	0.48	0.47	0.5	ug/L	**96**	**94**	65-135	**2.1**	0-150		LFM	
	32154	4,4' - DDE	ND	0.37	0.36	0.5	ug/L	**74**	**72**	65-135	**2.7**	0-150		LFM	
	32154	4,4' - DDT	ND	0.44	0.43	0.5	ug/L	**88**	**86**	65-135	**2.3**	0-150		LFM	
	32154	ALDRIN	ND	0.73	0.73	0.5	ug/L	**146**	**146**	65-135	**0.0**	0-150	CO	LFM	
	32154	BHC, ALPHA -	ND	0.47	0.48	0.5	ug/L	**94**	**96**	65-135	**2.1**	0-150		LFM	
	32154	BHC, BETA -	ND	0.45	0.44	0.5	ug/L	**90**	**88**	65-135	**2.2**	0-150		LFM	
	32154	BHC, DELTA -	ND	0.48	0.48	0.5	ug/L	**96**	**96**	65-135	**0.0**	0-150		LFM	
	32154	LINDANE (BHC - GAMMA)	ND	0.48	0.48	0.5	ug/L	**96**	**96**	65-135	**0.0**	0-150		LFM	
	32154	CHLORDANE, ALPHA	ND	0.48	0.48	0.5	ug/L	**96**	**96**	65-135	**0.0**	0-150		LFM	
	32154	CHLORDANE, GAMMA	0.06	0.54	0.55	0.5	ug/L	**96**	**98**	65-135	**2.1**	0-150		LFM	
	32154	DIELDRIN	ND	0.52	0.54	0.5	ug/L	**104**	**108**	65-135	**3.8**	0-150		LFM	
	32154	ENDOSULFAN I	ND	0.44	0.44	0.5	ug/L	**88**	**88**	65-135	**0.0**	0-150		LFM	
	32154	ENDOSULFAN II	ND	0.54	0.55	0.5	ug/L	**108**	**110**	65-135	**1.8**	0-150		LFM	
	32154	ENDOSULFAN SULFATE	ND	0.57	0.57	0.5	ug/L	**114**	**114**	65-135	**0.0**	0-150		LFM	
	32154	ENDRIN	ND	0.54	0.54	0.5	ug/L	**108**	**108**	65-135	**0.0**	0-150		LFM	
	32154	ENDRIN ALDEHYDE	ND	0.46	0.48	0.5	ug/L	**92**	**96**	65-135	**4.3**	0-150		LFM	
	32154	HEPTACHLOR	ND	0.56	0.57	0.5	ug/L	**112**	**114**	65-135	**1.8**	0-150		LFM	
	32154	HEPTACHLOR EPOXIDE "B"	0.41	0.84	0.86	0.5	ug/L	**86**	**90**	65-135	**4.5**	0-150		LFM	
	32154	METHOXYCHLOR	ND	0.60	0.59	0.5	ug/L	**120**	**118**	65-135	**1.7**	0-150		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.

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: cLFMD.rpt

Qualifier Definitions

Reference Number: 12-14083
Report Date: 09/13/12

Qualifier	Definition
CO	There is co-elution of a background compound, that could not be resolved at the amount fortified in the sample, result is biased high.
E	Indicates that the concentration exceeds the calibration range. Values which are outside the calibration curve are estimates only.
N1	See case narrative.

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

Cooler #1 of 2

Page 1 of 1

Chain of Custody / Analysis Request (Please complete all applicable sh

12-14083

32153 - 32159

17085

Report to:	WADNR Engineering Division	Bill to:	
Ship Address:	1111 Washington Street SE	Address:	SAME
City:	Olympia St: WA Zip: 98504	City:	St: Zip:
Attn:	John Felder	Phone:	FAX:
Phone:	360.902-1158 FAX:	P.O.#:	Attn:
Email:	john.felder@wadnr.gov	☐ Visa ☐ M/C ☐ A/E	Expires /
Project	Webster Nursery	Card#:	

Ref # 12-14083

Check Regulatory Program

- ☐ Safe Drinking Water Act
- ☐ Clean Water Act
- ☒ RCRA / CERCLA/MTCA
- ☐ Other

EDGE ANALYTICAL LABORATORIES
1620 S. Walnut St.
Burlington, WA 98233
1.800.755.9295

805 W. Orchard Dr. Suite 4
Bellingham, WA 98225

Instructions

1. Use one line per sample Location.
2. Be specific in analysis requests.
3. *(NEW)* **List each metal individually** *(NEW)*
4. Check off analyses to be performed for each sample Loaction.
5. Enter number of containers.

Turn Around Time Required

- ☒ Standard
- ☐ Half-time (50% surcharge)
- ☐ Quickest (100% surcharge) Phone Call Req.
- ☐ Emergency (Phone Call Req.)

Analyses Requested

	Field ID	Location	Grab/ Comp.	Sample Matrix*	Date	Time	525(Atrazine/Simazine only)508.1 (DUP)	525(Atrazine/Simazine only)508.1(MS/MSD)	525.2 (atrazine/simazine only) 508.1						Number of Containers	Special Instructions Conditions on Receipt
1	SW-9	Nursery	G	GW	8/14	~0925	☐	☐	☒	☐	☐	☐	☐	☐		
2	SW-10	"	"	"	8/13	~1800	☐	☒	☒	☐	☐	☐	☐	☐		
3	SW-11	"	"	"	8/13		☐	☐	☒	☐	☐	☐	☐	☐		
4							☐	☐	☐	☐	☐	☐	☐	☐		
5							☐	☐	☐	☐	☐	☐	☐	☐		
6							☐	☐	☐	☐	☐	☐	☐	☐		
7							☐	☐	☐	☐	☐	☐	☐	☐		
8							☐	☐	☐	☐	☐	☐	☐	☐		
9							☐	☐	☐	☐	☐	☐	☐	☐		
10							☐	☐	☐	☐	☐	☐	☐	☐		

CO017085

Sampled by: J. Felder Phone: 360-902-1158 FAX: Email: john.felder@dnr.wa.gov Total Containers 8

Sample Receipt Request (Must include FAX or Email) ☒

* **W** - water **SW** - surface water **WW** - waste water **OL** - oil
DW - drinking water **GW** - Ground water **S** - soil Other

Relinquished by	Date	Time	Received by	Date	Time
			Tricia	8/16/2015	

	Yes	No	N/A
Custody seals intact (93)	☐	☐	☒
Sample temp 2 C satisfactory	☒	☐	☐
Samples received intact	☒	☐	
Chain of custody & labels agree	☒	☐	

FORM: COC 01-06-2009

Cooler # 1 of 1

Chain of Custody / Analysis Request

(Please complete all applicable shaded sections)

Page_____ of_____

15561

Report to:	WADNR Engineering Division	Bill to:	SAME
Ship Address:	1111 Washington Street SE	Address:	
City:	Olympia St: WA Zip: 98504	City:	St: Zip:
Attn:	John Felder	Phone:	FAX:
Phone:	360.902-1158 FAX:	P.O.#:	Attn:
Email:	john.felder@wadnr.gov	☐ Visa ☐ M/C ☐ A/E	Expires /
Project	Webster Nursery	Card#:	

For Lab Use Only

Ref #

Check Regulatory Program

- ☐ Safe Drinking Water Act
- ☐ Clean Water Act
- ☒ RCRA / CERCLA/MTCA
- ☐ Other

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Bellingham, WA 98225

Instructions

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2. Be specific in analysis requests.
3. *(NEW)* **List each metal individually** *(NEW)*
4. Check off analyses to be performed for each sample Loaction.
5. Enter number of containers.

Turn Around Time Required

- ☒ Standard
- ☐ Half-time (50% surcharge)
- ☐ Quickest (100% surcharge) Phone Call Req.
- ☐ Emergency (Phone Call Req.)

Analyses Requested

	Field ID	Location	Grab/ Comp.	Sample Matrix*	Date	Time	525(Atrazine/Simazine only)508.1	525(Atrazine/Simazine only)508.1 (DUP)	525(Atrazine/Simazine only)508.1(MS/MSD)					Number of Containers	Special Instructions Conditions on Receipt
1	SW-14	Nursery	G	GW			☒	☐	☐	☐	☐	☐	☐		
2	SW-15	↓	↓	↓			☒	☐	☐	☐	☐	☐	☐		
3	SW-16						☒	☐	☐	☐	☐	☐	☐		
4	SW-BFD						☐	☒	☐	☐	☐	☐	☐		
5							☐	☐	☐	☐	☐	☐	☐		
6							☐	☐	☐	☐	☐	☐	☐		
7							☐	☐	☐	☐	☐	☐	☐		
8							☐	☐	☐	☐	☐	☐	☐		
9							☐	☐	☐	☐	☐	☐	☐		
10							☐	☐	☐	☐	☐	☐	☐		

CO015561

Sampled by: Phone: see above FAX: Email: see above Total Containers 8

Sample Receipt Request (Must include FAX or Email) ☒

* **W** - water **SW** - surface water **WW** - waste water **OL** - oil
DW - drinking water **GW** - Ground water **S** - soil Other_____

Relinquished by	Date	Time	Received by	Date	Time
			Tricia	4/14/2015	

	Yes	No	N/A
Custody seals intact	UPS	☐	☒
Sample temp 2 C satisfactory	☒	☐	☐
Samples received intact	☒	☐	
Chain of custody & labels agree	☒	☐	

FORM: COC 01-06-2009

WATER MANAGEMENT LABORATORIES INC.
1515 80th St. E.
Tacoma, WA 98404
(253) 531-3121

August 21, 2012

Washington State
Department of Natural Resources
1111 Washington Street
Olympia, WA 98504-7030
Attn: John Felder

Dear Sir:

Results of analysis of four water samples taken by you and received on 08-14-12 at 3:05 p.m. are as follows:

	Sample Identification			
Tests	**SW-10 8-13-12 1745**	**SW-11 8-13-12 1545**	**SW-9 8-14-12 0930**	**SW-16 8-14-12 1105**
Nitrate Nitrogen (mg/L)	< 0.2*	0.3	0.7	0.4
Total Organic Carbon (mg/L)	3.8	0.7	0.5	0.4
Sulfate (mg/L)	3	1	10	< 1*
Sulfide (mg/L)	< 0.1*	< 0.1*	< 0.1*	< 0.1*

* < is less than

Lab Number: 08944380

Samples were analyzed according to Standard Methods for the Examination of Water and Wastewater, 20th Edition and EPA Method 300.0, Determination of Inorganic Anions in Water by Ion Chromatography.

Chain of custody record is enclosed.

Sincerely,

Ricardo Lezama

Ricardo Lezama
Chemist

RL:aml
enclosure

R:\WASH\DEPTOFNATURALRESOURCES8-14

WATER MANAGEMENT LABORATORIES, INC.
1515 80TH STREET EAST, TACOMA, WA 98404
PHONE (253) 531-3121 FAX (253) 531-5287

****
CHAIN OF CUSTODY
****

LAB USE SAMPLE #	# OF CONTAINERS	TYPE OF SAMPLE: WATER	WASTE	OTHER	DATE TAKEN	TIME TAKEN	TAKEN BY (NAME)	SAMPLE IDENTIFICATION	TEST REQUESTED: Nitrates	TOC	Sulfates	Sulfides					LAB USE PRESERVED
1	3	X			8-13	1745	J Felder	SW-10	X	X	X	X					YES (NO)
2	3	X			8-13	1545	"	SW-11	X	X	X	X					SEAL
3	3	X			8-14	0930	"	SW-9	X	X	X	X					YES (NO)
4	3	X			8-14	1105	"	SW-16	X	X	X	X					INTACT
5																	YES NO
6																	DEPARTMENTS
7																	BACT
8																	INORG
9																	ORG

TOTAL # OF CONTAINERS: 12

REPORT TO: John Felder
Company Name: WA Dept Natural Resources
Address: 1111 Washington St.
Olympia, WA. 98504-7030
Phone: 360-902-1158 Fax: ( )

RELINQUISHED BY: J. Felder
DATE: 8-14-12 TIME: 1504

RECEIVED BY: Nancy Hatch
DATE: 8-14-12 TIME: 3:05 pm.

REMARKS: AW3294R

REJECT REASON: