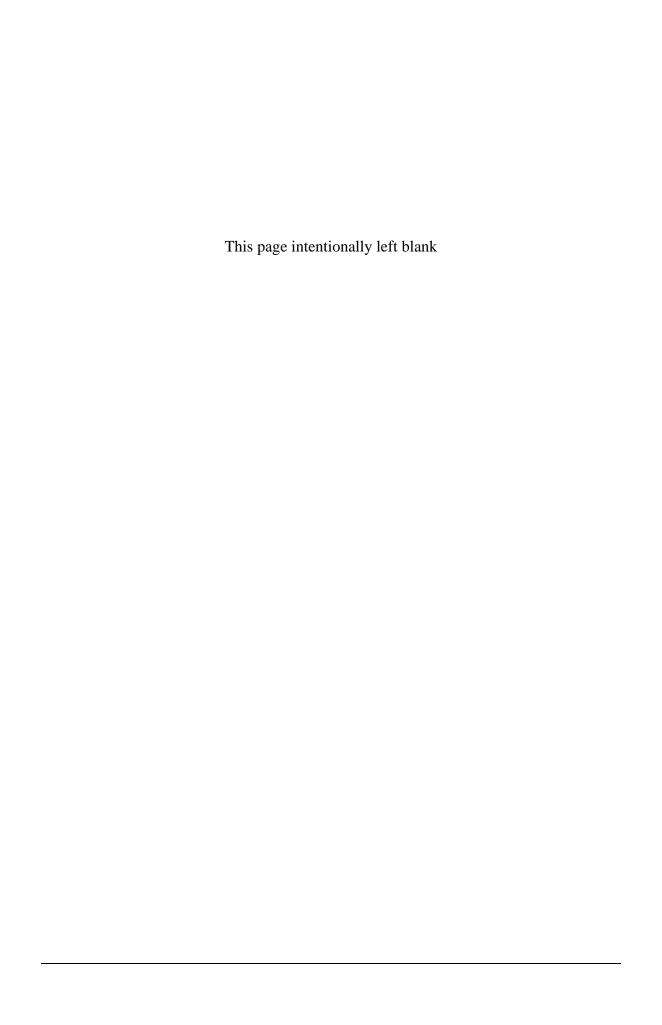
#### **APPENDIX A**

### STANDARD OPERATING PROCEDURE FOR STILL BOTTOM SAMPLING



#### **Standard Operating Procedure: Still Bottoms sample collection**

Revised: 29 October 2014

#### **Supplies & equipment:**

- Rolling cart
- Camera
- Disposable Tyvek lab coat
- Safety glasses
- Nitrile gloves
- Half-face APR with OV cartridges
- Clipboard
- Waste Sample Sheets
- Pen
- Sharpie
- Sample labels
- 6 Ziploc bags (quart)
- Roll of paper towels
- 6 pre-cut Benchkote pads
- 4-8 oz I-CHEM jars (I-CHEM #220-0250)
- Scissors
- Dry Cleaner Questionnaire
- Cooler
- Ice packs
- 3 Stainless steel ladles (Polar Ware Company #T1604)
- 3 Stainless steel pitchers (Polar Ware Company #T1063)
- 1 liter deionized water
- Gray plastic bin for secondary containment
- Plastic trash bags
- 5-gallon plastic bucket

#### **Procedure:**

- 1. Set up equipment in a location proximal to the dry cleaning machine. Use the rolling cart as a work surface, if feasible.
- 2. Put on all PPE except the respirator.
- 3. Label the sample jars.
- 4. Line the gray plastic bin with Benchkote and add the roll of paper towels.
- 5. Line the 5-gallon bucket with a trash bag.
- 6. Prepare the blank:

Add 500 ml of deionized water to the sample collection pitcher

Stir the sample ladle in the pitcher six times

Pour the contents of the pitcher into two labeled I-CHEM jars

Place the I-CHEM jars in the cooler

Dry the pitcher and ladle with clean paper towels

- 7. Put on the respirator.
- 8. Ask the operator to open the still door and ensure that all sampling equipment is located in the lined gray plastic bin.
- 9. As the waste begins to flow, collect ~ 500 ml of liquid from the lip of the still opening using the stainless steel pitcher.
- 10. Pour the contents of the pitcher into the first I-CHEM jar and secure the lid (this sample reserved for future chemical analysis).
- 11. Ask the operator to scrape the remaining material to the front of the still and collect semi-solid sample using the stainless steel ladle.
- 12. Deposit the semi-solid sample into a second I-CHEM jar and secure the lid (this sample reserved for future chemical analysis).
- 13. Then deposit a sample of the semi-solid material into the pitcher that contains the liquid material. Mix by gently stirring with the ladle two or three times.
- 14. Place this mixed sample into an I-CHEM jar and secure the lid (this sample will be used for the fish bioassay).
- 15. Place the sample jars in separate Ziploc bags.
- 16. Place the samples in the cooler with the ice packs.
- 17. Wipe the ladle with paper towels and place them the lined bucket.
- 18. Double-bag the waste and either place it in the dry cleaner's waste drum (if given permission) or transport in the cooler back to the lab.
- 19. Place the used sampling equipment in another plastic bag.
- 20. Ensure all contaminated materials are safely stored in the cooler.
- 21. Remove gloves, then respirator, then eye protection and lab coat.
- 22. Wash your hands.
- 23. Complete the Waste Sample form and the chain of custody form.

#### Labeling:

- 1. Label each I\_CHEM jar individually with the date, number assigned to the drycleaner, and sample number
  - a. XXMMDDYY ## BSS
    - i. XX= initials
    - ii. ##= drycleaner site designation number
    - iii. B= still bottoms
    - iv. SS= Sample number
- 2. Label the Ziploc bag with initials and the date

#### CHAIN OF CUSTODY RECORDS

Chain of Custody forms will be completed for all samples collected during the program. The Chain of Custody form will document the transfer of sample containers. Custody seals will be placed on each cooler. The cooler will then be sealed with packing tape. Sample container labels will include sample number, place of collection, date and time of collection. All samples will be kept on cooler blocks and delivered to the testing laboratory within 24 hours of collection. All samples will be delivered to the laboratory by same day or overnight delivery. All samples will be stored at  $<6^{\circ}$ C at the laboratory.

The laboratory will be notified in advance of the sampling schedule. The Chain of Custody record completed at the time of sampling will contain the sample number, date, time of sampling, and the name of the sampler. The Chain of Custody document will be signed, timed, and dated by the sampler when transferring the samples.

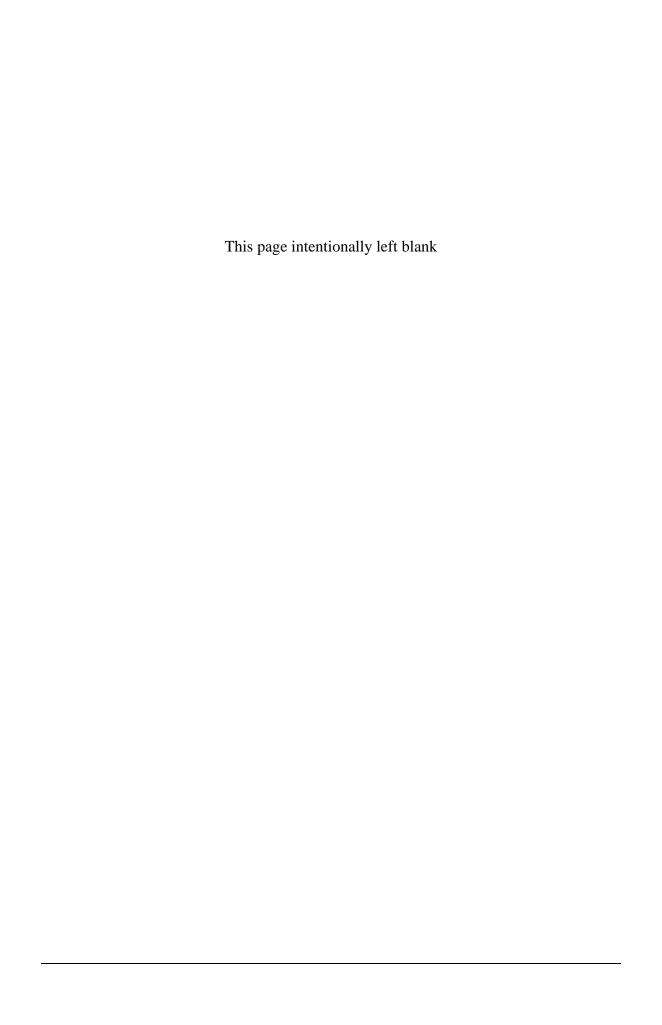
Each sample cooler being shipped to the laboratory will contain a Chain of Custody form.

The Chain of Custody form will consist of four copies, which will be distributed as follows:

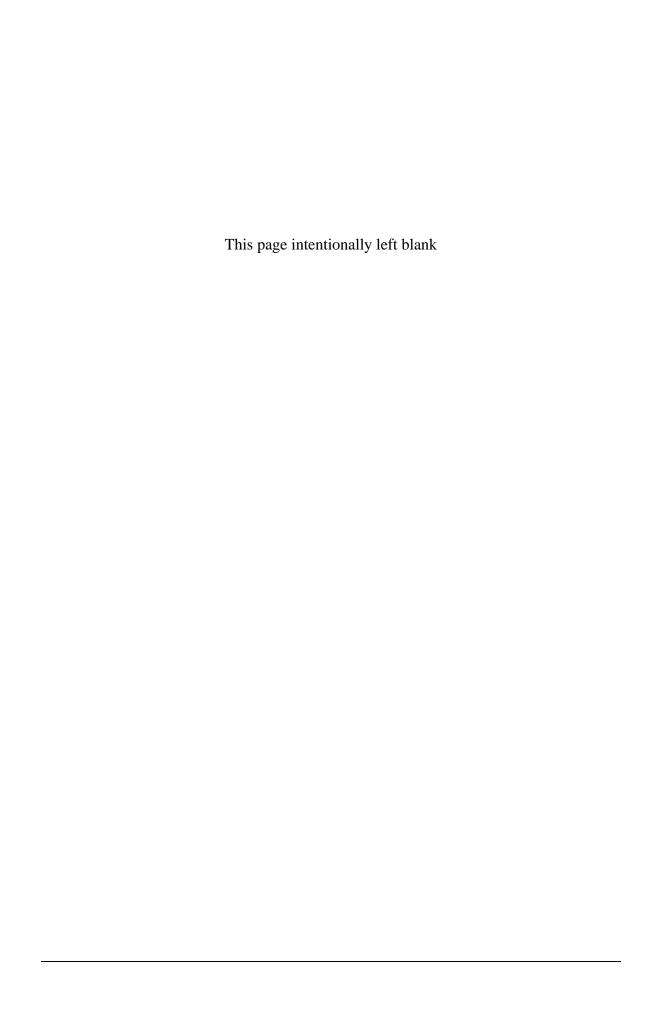
- The shipper will maintain a copy while the other three copies will be enclosed in a waterproof envelope within the cooler with the samples
- The shipper's copy will be kept together with the field log in a project folder for the specific sampling event. The cooler will then be sealed properly for shipment.
- Upon receiving the samples, the laboratory will complete the three remaining copies.
- The laboratory will retain one copy for their records.
- The laboratory will return one copy to the project officer or lead inspector upon receipt of the samples.
- One copy will be returned with the data deliverables package.

Upon receipt of the cooler at the laboratory, the Sample Custodian will inspect the shipping cooler and the custody seal. The Sample Custodian will note the condition of the cooler and the custody seal on the Chain of Custody record sheet. If the shipping cooler seal is intact, the sample containers will be accepted for analyses. The Sample Custodian will document the date and time of receipt of the container and sign the form. The Sample Custodian will record the temperature of one sample (or temperature blank) from each cooler, and the temperature will be noted on the Chain of Custody.

If damage or discrepancies are noticed (including sample temperature exceedances), they will be recorded in the remarks column of the record sheet, dated, and signed. Any damage or discrepancies will be reported to Dr. Steve Whittaker before the sample is processed. If the discrepancies will affect the integrity of the fish bioassay, the laboratory must contact the sample owner to discuss the variance before proceeding with the bioassay or request for another sample.

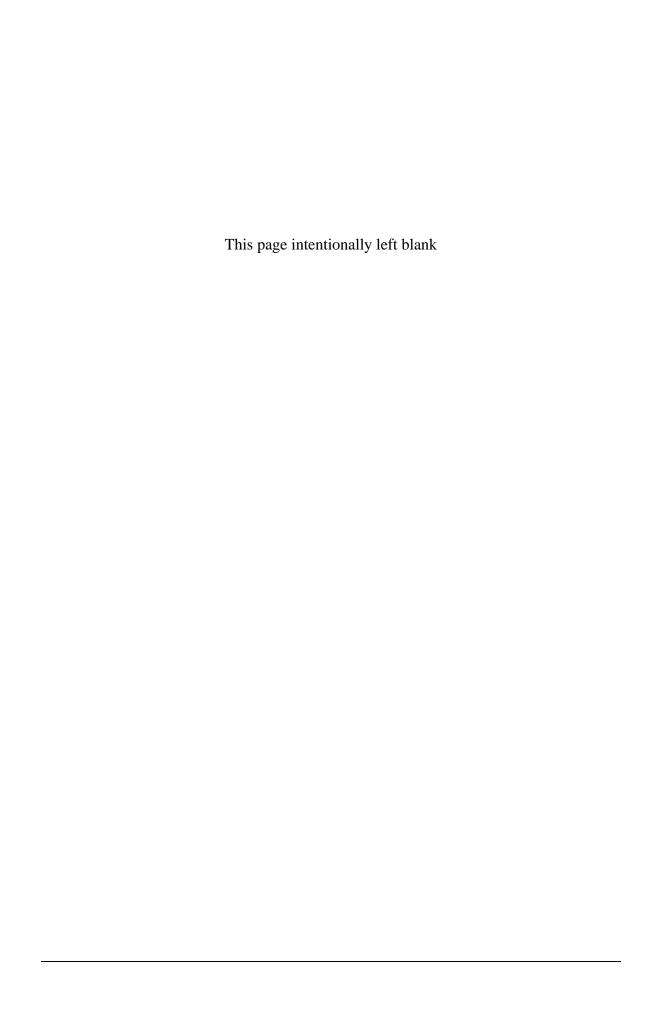


## APPENDIX B DRY CLEANING QUESTIONNAIRE

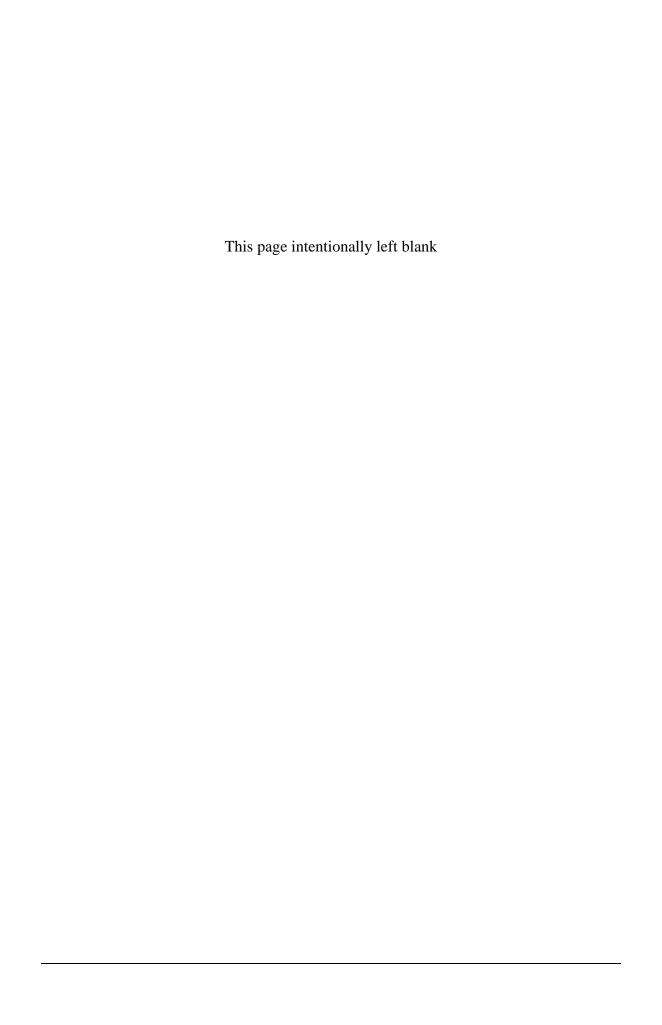


#### DRY CLEANING SAMPLING QUESTIONNAIRE

Interview date:	Interv	iewed by:		_
Business name / City:				
Interviewee name:	Job po	osition:		
Manufacturer of mach	nine:	Model of mac	hine:	-
What is the capacity of	f the machine?	pounds		
How many loads do yo	ou run per week?	per week		
How old is the dry clea	aning machine?	years		
How often do you clear	n out the still bottoms?	•	_times per month	
What type of gloves do	you wear when you cl	lean out the stil	l bottoms?	
What type of respirato	or do you wear when yo	ou clean out the	still bottoms?	
Have you ever used an What spot cleaners do			this machine?	Y/N
1			_	
2			_	
3			_	
4			_	
5			_	
6			_	
Observations:				

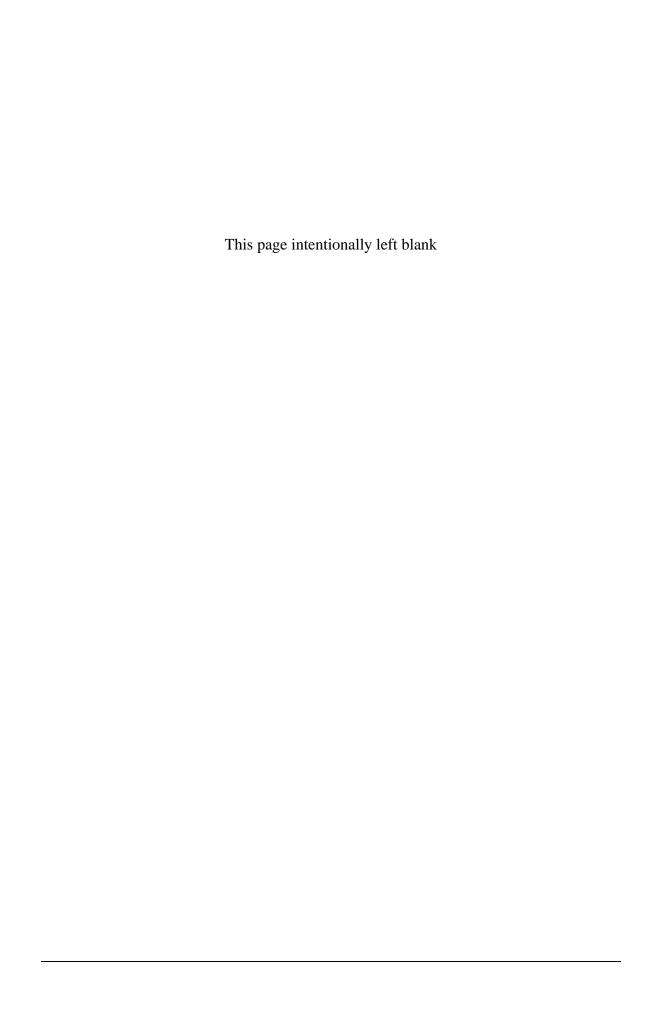


## APPENDIX C WASTE SAMPLING FORM

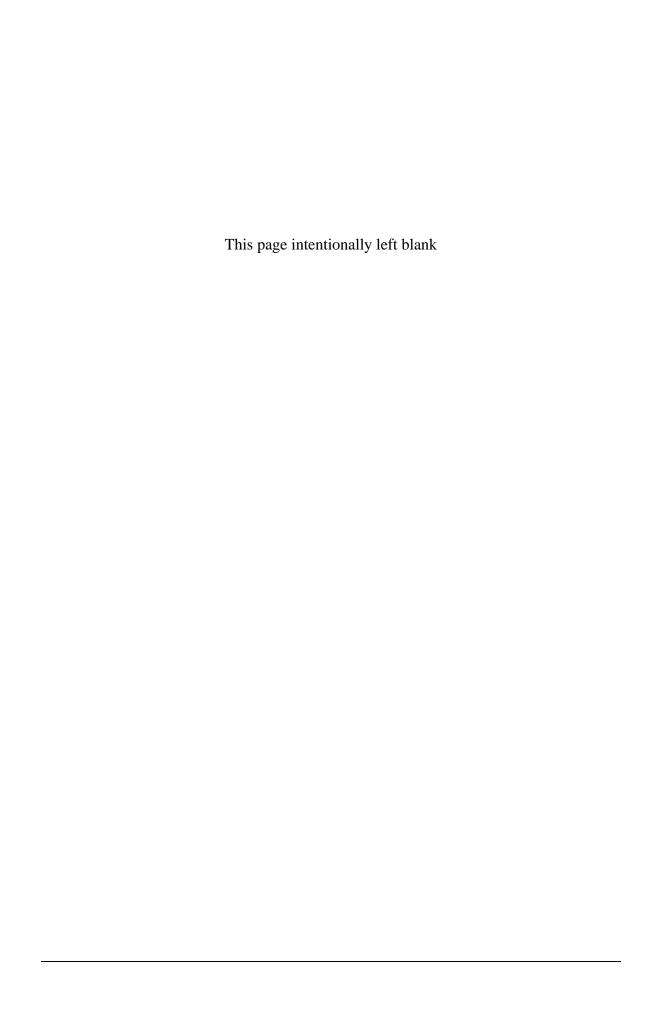


#### WASTE SAMPLE

Business name / City:	
Date sampled:	
Sampled by:	
Waste sampled:	
Sample #:	-
Comments:	_
	-
	-



Exh	ibit B:
Quest	ionnaire

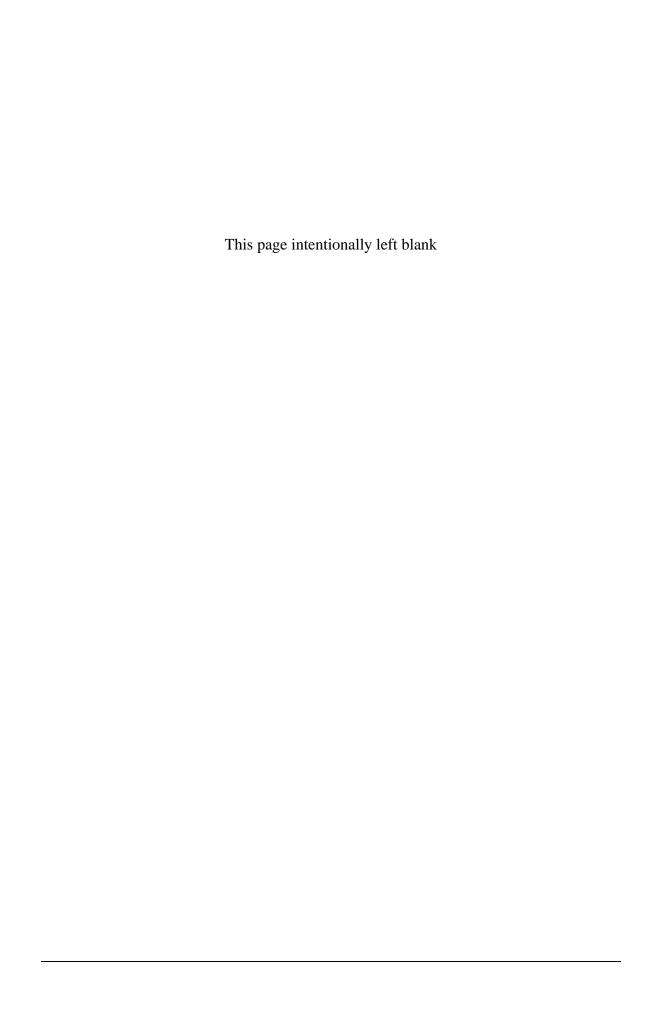


#### DRY CLEANING SAMPLING QUESTIONNAIRE

Interview date	:	Interviewed by: _		
Business name	: / City:			
Interviewee na	me:	Job position	on:	
• How los	ng has there been a	dry cleaner at this	location?	years
		:	Model of machin	e:
	s the capacity of the	e machine?	pounds	
• How m	any loads do you rı	un per week?	per week	
• Did you	ı buy the machine ı	new? Y/N		
• How los	ng have you had th	e machine?	years	
• How old	d is the dry cleanin	g machine?	years	
• Who cle	eans out the still bo	ottoms?		
• How of	ten do you clean ou	it the still bottoms?	times	per month
_	coveralls/gloves/res	spirator/eye protect	cleaning the still bott	
• What d			ed out?	
• How do	you dispose of the	still bottoms?		
• How of	ten do you dispose	of the separator wa	ter?	
• How do	you dispose of the	separator water? _		
Are you	ı an EnviroStar?	Y/N		
o 1	If yes, how many st	ars?		

1	(pre- / post- / both)
2	(pre- / post- / both)
3	(pre- / post- / both)
4	(pre- / post- / both)
5	(pre- / post- / both)
can LHWMP help you?	
	3 4 5 at is stopping you from buying you bought a new machine, wha

# Exhibit C: Fish Bioassay Results for Shops 01A and 02



July 24, 2015

Steve Whittaker Local Hazardous Waste Management Program CNK-PH-1100 401 Fifth Avenue, Suite 1100 Seattle, WA 98101-1818

#### Dear Steve:

Attached is a report on the toxicity test (Method DOE 80-12) initiated on 6-8-15. Detailed findings are in the "Results" section of the attached report. The table below shows a summary of the test results.

There was 100% mortality in the dry cleaning waste (perc waste) sample SW050915\_01\_W01 at the 100 mg/L test concentration and 100% survival at the 10 mg/L test concentration. Hence, this sample designates as a "Dangerous Waste" according to DOE 80-12 criteria.

There was 100% mortality in the dry cleaning waste (still bottom waste) sample SW053015\_02\_B01 at the 100 mg/L test concentration and 93% mortality (7% survival) at the 10 mg/L test concentration. This sample designates as an "Extremely Hazardous Waste" according to DOE 80-12 criteria.

#### Rainbow Trout

Sample	Sample Concentration mg/L	Percent Survival %	Designation	Designates (Yes/No)
SW050915_01_W01	10	100	Extremely Hazardous Waste	No
	100	. 0	Dangerous Waste	Yes
SW053015 02 B01	10	7	Extremely Hazardous Waste	Yes
	100	0	Dangerous Waste	

If you would like additional information, please call Francis Sweeney at 477-7117.

Sincerely,

Gary Yoshida

Day Hoskide

King County Environmental Laboratory

REPORT ON
TOXICITY TESTS FOR THE
DESIGNATION OF DANGEROUS WASTE
(METHOD DOE 80-12)
CONDUCTED ON
DRY CLEANING WASTE

KING COUNTY DEPARTMENT OF NATURAL RESOURCES AND PARKS
WATER AND LAND RESOURCES DIVISION
ENVIRONMENTAL LABORATORY SECTION
322 WEST EWING STREET
SEATTLE, WASHINGTON 98119

Test Date: June 8, 2015

KCEL Test Numbers: #7550 (Oncorhynchus mykiss: DOE 80-12, 96-Hour Acute Test)

Report Date: July 24, 2015

#### SAMPLE

Dry cleaning waste samples SW050915\_01\_W01 (collected on 5-9-15) and SW053015\_02\_B01 (collected on 5-30-15) were received by the King County Environmental Laboratory (KCEL), Aquatic Toxicology Section on 5-28-15 and 6-1-15, respectively. The samples were delivered in 250 mL glass wide mouth jars and were refrigerated in the dark at  $4 \pm 2.0^{\circ}$ C until test initiation.

#### CONTROL WATER

The control water for the test with rainbow trout is freshwater obtained from a 95 ft, deep well located at the KCEL. Stock cultures of trout are held in a flow-through system of well water (WW).

The WW is analyzed for metals monthly (last analyzed 5-15) and organics are measured annually (last analyzed on 3-15). Hardness, alkalinity, conductivity and pH are measured monthly.

Physical-chemical characteristics of the WW are listed in the following table:

Parameter	Value	Units
Conductivity	266	μmhos/cm
pH	7.94	
Total Hardness (calc.)	109	mg/L as CaCO3
Total Alkalinity	77	mg/L as CaCO <sub>3</sub>
Total Cd	<2	μg/L
Total Cr	< 3	μg/L
Total Cu	<4	μg/L
Total Ni	< 5	μg/L
Total Pb	< 20	μg/L
Total Zn	< 5	μg/L
Total Mercury	< 0.05	μg/L (measured 2-2015)
Volatile Organics	45 cmpds not detectable	
Organic Analysis (BNA'S):	69 cmpds not detectable	
Bis(2-Ethylhexyl)Phthalate	0.49	μg/L
Pesticides & PCB's:	28 cmpds not detected	

#### METHODS

The acute toxicity test #7550 was conducted as outlined in Washington State Department of Ecology, Publication 80-12, Part A: Static Acute Fish Toxicity Test Protocol (Revised June 2009). The test was conducted at 10 mg/L and 100 mg/L to determine whether the samples designate as "Extremely Hazardous Waste" or "Dangerous Waste", respectively.

#### Test Organisms

Swim-up (swim-up on 5-1-15) rainbow trout (Oncorhynchus mykiss) were purchased from Trout Lodge located in Sumner, Washington on 5-26-15. The trout were acclimated for a period of 13 days in well water with a mean temperature of 13.6 °C, a minimum of 13.5 °C and a maximum of 13.8 °C in a flow-through system at KCEL. During acclimation the fish were fed Zieglers Salmon Starter twice daily. Feed was withheld 48 hours prior to the start of the test.

Physical data (based on a randomly chosen control jar at the end of the test) on trout used in the tests is shown in the table below.

	Test #	Age (days-post swim-up at start of test)	Mean Standard Length (cm)	Mean Weight (grams)	Loading Wt./Vol. (g/L)
Ì	7550	38	3.6	0.52	0.52

As indicated in the table the mean weight of the trout used in the test was 0.52~g with a mean standard length of 3.6 cm. The loading in each jar was 0.52~g/L.

#### Extraction

For each sample three aliquots of 0.1 g (test concentration 10 mg/L) and three aliquots of 1.0 g (test concentration 100 mg/L) of the sample were weighed and each placed into a 1L, blue cap, wide-mouth glass extraction jar (total 6 jars). 200 mL of well water (diluted 20% with DI water) was added to each jar. The jars were then closed with a teflon lined cap and extracted on a rotary agitator for 16.5 hours.

#### Rainbow Trout - 96-Hour Static Acute Toxicity Tests

The test jars were 5-gal, glass wide mouth jars with inside measurements of 40 cm (height) and 25 cm (dia.). The liquid level at a volume of 10 L was 19.5 cm. The jars were partially covered during the test.

Well water (diluted 20% with DI water to keep the hardness below 100 mg/L) was measured (9.6 L for test and control jars) into each replicate. The solutions were maintained at  $12 \pm 1.0^{\circ}$ C in an environmental chamber (Hotpack Model 08082, s/n 79719). The D.O. at the start of the test (9.7-10.2 mg/L) was > 80% saturation (>8.6 mg/L).

The extracted samples were added to the test jars followed by a 200 mL WW (diluted 20% with DI) rinse of the extraction jar bringing the total volume in the test chambers to 10 L. The extraction jar (laid on its side) and teflon cap liner were placed on the bottom of the test chamber. Ten rainbow trout were placed randomly into each test jar.

Survival was monitored during the test and recorded at 24, 48, 72, and 96 hours. Dissolved oxygen, temperature and pH were recorded for the samples and controls at 0, 24, 48, 72 and 96 hours. The photoperiod was 16h L:8h D. The test was initiated at 0950 h on 6-8-15 and ended at 1010 h on 6-12-15.

#### Quality Assurance

The reference toxicant testing for the lot of fish used in this test was conducted on 6-1-15 (Test #7538). Cadmium nitrate was used as a reference toxicant for rainbow trout. The precision table located at the end of this report is maintained to monitor the sensitivity of these organisms to the reference toxicant and thereby provide an indication of their overall sensitivity to other compounds. The LC50 for the reference toxicant test (#7538) was 2.7  $\mu$ g Cd/L which is within the control limits (mean  $\pm$  2 SD) of 1.3 – 3.1  $\mu$ g/L Cd.

Temperature, pH and dissolved oxygen measurements remained within acceptable limits (USEPA, 2002) throughout the reference toxicant test for rainbow trout (#7538) and sample test (#7550). The test met acceptability criteria regarding control survival ( $\geq$  90%).

Physical-chemical methods are outlined in the table below:

Parameter	Method
Water Quality Tests	APHA (1992); US EPA (1991).
Temperature	Standard Mercury Thermometer (calibrated with a certified thermometer traceable to NBS records) and Onset, Tidbit (v2) UTBI-001 Temperature Logger (KCEL #436v1).
Dissolved Oxygen	YSI membrane electrode method (Method #4500-0 G; KCEL #434).
pH	Beckman 690 meter with automatic temperature compensation and Ross combination electrode (Method #4500-H; APHA 1992; KCEL #433).
Total Alkalinity	Potentiometric Method (Method #2320 B; KCEL #319v4).
Total Hardness	By calculation (Method #2340 B; KCEL #612v4).
Conductivity	Orion Model #122 Meter with 012210 conductivity cell (Method 2510B; KCEL #435).
Pesticides and PCB's	Continuous liquid extraction method (EPA Method #608; KCEL #733).
Organic Analysis	Continuous liquid extraction method for BNA's (EPA Method #625; KCEL #731).
Volatile Organics	Purge and trap method (EPA Method #624; KCEL #732).
Total Metals	ICP for Cd, Cr, Cu, Ni, Pb and Zn (EPA Method #200.7; KCEL #612v4); for Hg analysis (KCEL #604v5, 601v4, 605v0).

#### RESULTS

#### Rainbow trout

The following table contains survival percentages at 24-hour intervals during the 96-hour test in which rainbow trout were exposed to dilution water (controls) or to 10 and 100 mg/L sample concentrations.

	Sample	Percentage Survival (%)			Number	Number of	
	mg/L	24 h	48 h	72 h	96 h	Dead	Fish Tested
WW (control)	0	100	100	100	1,00	0	30
SW050915 01 W01	10	100	100	100	100	0	30
	100	0	0	0	0	30*	30
SW053015 02 B01	10	100	73	43	7	28	30
5020.70_02_02	100	0	0	0	0	30*	30

<sup>\*</sup> All dead within 60 minutes of test start.

#### Sample

As the table above shows for sample SW050915\_01\_W01 there was 100% mortality (all dead within 60 minutes of test initiation) in the 100 mg/L test concentration. In addition, there was 100% survival in the 10 mg/L test concentration. Hence, this sample designates as a "Hazardous Waste" according to DOE 80-12 criteria

For sample SW053015\_02\_B01 there was 100% mortality (all dead within 60 minutes of test initiation) in the 100 mg/L test concentration. In addition, there was 93% mortality in the 10 mg/L test concentration at the end of the test. Hence, this sample designates as an "Extremely Hazardous Waste" according to DOE 80-12 criteria.

#### WATER QUALITY

The following table contains measurements of Temperature, pH and Dissolved Oxygen taken throughout the 96 h test (or up to the time of 100% mortality). Measurement of Total Hardness, Total Alkalinity and Conductivity are taken from samples collected at the beginning (0-h) and end (96-h) of the test (unless otherwise noted).

	Sample:	Control	SW050915_01_W01		SW053015_02_B01	
Parameter		0 mg/L	10 mg/L	100 mg/L	10 mg/L	100 mg/L
	Mean	12.1	11.9	12.5	12.1	12.7
. (°C)	Min.	11.7	11.7	12.3**	11.7	12.5**
	Max.	12.8	12.6	12.6**	12.8	12.8**
pН	Mean	7.67	7.69	7.99	7.74	7.97
F	Min.	7.52	7.55	7.98**	7.61	7.96**
	Max.	7.96	7.98	7.99**	8.00	7.98**
D.O.	Mean	8.8	8.5	9.4	9.3	9,3
(mg/L)	Min.	8.2	8.1	9.4**	8.2	9.3**
(8/2-)	Max.	9.5	9.4	9.4**	9.3	9.4**
Tot, Hard	Oh	88	89	88	87	88
(mg/L as CaCO <sub>3</sub> )	96h	89	86	*	88	
Tot. Alk	0h	65	65	64	64	61
(mg/L as CaCO <sub>3</sub> )	96h	67	67	*	68	*
Cond	0h	221	221	222	222	224
(µmhos/cm)	96h	214	223	*	228	*

<sup>\*</sup> Not taken since all dead within 1 hour of test initiation

Additional water quality and QC data are listed on the attached photocopied pages from the laboratory notebook.

#### TESTED BY:

King County Environmental Laboratory 322 West Ewing Street Seattle WA 98119

<sup>\*\*</sup> Based on 0 hour readings only

#### REFERENCES

APHA. 1992. Standard Methods for the Examination of Water and Wastewater, 18<sup>th</sup> Edition. American Public Health Association, American Waterworks Association, Water Pollution Control Association. Washington D.C.

U.S. E.P.A. 1991. Code of Federal Regulations, 40CFR, Appendix A, July 1991 U.S. Environmental Protection Agency, Office of Federal Registry, Washington, D.C.

Washington State Department of Ecology. Biological Testing Methods for the designation of Dangerous Waste. DOE 80-12, revised June 2009.

US EPA. 2002. Methods for measuring the acute toxicity of effluents and receiving waters to freshwater and marine organisms. 5<sup>th</sup> edition. EPA-821-02-012, October 2002. US Environmental Protection Agency, Office of Water (4303T), Washington, DC.

#### DOE 80-12 Toxicity Test:

Statistics

Chain of Custody

Bench Sheets

#### Statistical Analysis for Sample SW053015-02-B01 (10mg/L concentration)

Summary table for the variance ratio F test to determine the appropriate t-test (equal or modified)

	Cont	trol	10 mg/L Concentration		
Replicate	Number Dead	Proportion Dead (p <sub>o</sub> )	Number Dead	Proportion Dead (p <sub>T</sub> )	
A	0	0	10	1	
- B	0	0	10	1	
С	- 0	0	8	0.8	
Mean (p <sub>m</sub> )		0		0.933	
Variance (s2)		0		0.01331	

 $s^2 = \sum (p - p_m)^2 / N - 1$  where  $p = p_c$  or  $p_t$ 

Since one of the variances is 0 (control) the variances are unequal. Use the modified t-test for analysis.

Summary table for the modified t-test.

	10 mg/L Concentration
Critical t df (N-1) <sup>a</sup>	2
Critical t (a = 0.10, one tailed)	-1.886
Calculated t statistic <sup>2</sup>	6.503
Calculated t statistic 6.503> Critical t -1.886.  H <sub>o</sub> : LC50 ≤ 10 mg/L (Extremely Waste Threshold). Waste Designates	Accept H <sub>o</sub>
H <sub>A</sub> : LC50 > 10 mg/L (Extremely Waste Threshold). Waste Does Not Designate	Accept the
Does waste designate?	Yes

<sup>\*</sup>N-1 is used in the modified t-test when either  $s_e^2$  or  $s_T^2 = 0$ 

$$^{2}$$
 t = (p<sub>Tm</sub> -p<sub>ers</sub> -0.5) /[(s<sub>T</sub><sup>2</sup> + s<sub>e</sub><sup>2</sup>)/N]<sup>0.5</sup>  
= (0.933 - 0 - 0.5)/[(0.0133 + 0)/3]<sup>0.5</sup> = 6.503

<sup>1 [(1 - 0.933)&</sup>lt;sup>2</sup> + (1 - 0.933)<sup>2</sup> + (0.8 - 0.933)<sup>2</sup>] / 3-1

1	1 1	1 1 1 1 1 1		1.1.1.1.1.1.1.1	
	1.3	.4			
	-		<del></del>		
	. ] ., [				
			-	1.	
		DOE 80-12 Hazardous W	Vaste Test, Project #	cleavers	Test #: 7550
- 6	-	Rainbow Trout 96-I	Hour Static Acute Test		Test Date: 6-8-15
	,	ORGANISMS	1		-1-15-
i	17.	fish received from	Tracet Lodge EL at 1355 hon 5-2 At Arrival: pH, D	Lot # (Swim-up date)	): S-1-19 Shipped via
		Pick up Arrived at KCI	3Lat /355 hon 5-2	26-15 in 160x Ca	uble. Plastic Bag.
	75	dead removed.	At Arrival: pH, D	$0.0. \ge 20$ mg/L,	Temp /2, 2 C. Into
		Tank # Hold in tan	nk with new well water and aer	ration for days.	Feed 2X/day with
		Ziegleis Starter #	<ol> <li>Refer to culture log for f</li> </ol>	eeding & holding inform	ation.
_		/			
		DILUTION WATER/SA	MPLE 7	Touch	4 1-1-4 90 100
		1. New Well Water (N W	W) 6-7, filtered thro	ugh nylon netting. Haror	ness must be between 80-100
	1.	mg/L. At start 1H≈ 1	mg/L. Dilute 206	w/ MilliQ DL	
-	14.1	Want D.O. @ 90-100%	6 saturation (9.8-10.7 mg/L) be	fore add sample. Acrate	with O <sub>2</sub> .
	1-1	.) '- evd	· · · N. Olemors	. *	
		2. Hazardous waste samp	les from Dry Cleaners	₩Лет #:	. t
		LIMS RBT80-12 Sample #	ř	wkgp #	- Not going to LIMS.
			Sample 1	Sample 2	
	3 - 12 -	Sample #:	Sample 1	Sample 2	
		Sample #:		SW 053015_02_B	
		Collect Date:		5-30-15 to	DM.
7	13.7	Collect Time:		h to	h
		Collected by:		Leve whofates	
		Delv'd to KCEL:	5-28-15 Kh on 10907	1350 h on 6-1-1	15
. []		By:		steve whitakes	-
			L B	JK	
$-\parallel$	100	Sample Container:	1250ml wide mouth	1 250ml wide 1	nouth
	33.4	Sample Volume:	250M	250ml	
		Sample Description:	Bank- leguid	Dark, thick like mo	145545.
	7.00	TT (at a colora D)	· · · · · · · · ·	Smels like resolve	
.		pH (at arrival):			
-		DO (mg/L) (at arrival):			
$\mathbb{H}$		Temp (°C) (at arrival): Storage:	In dark at 4 ± 2°C	In dark at 4 ± 2°C	
	1	Storage;	NY - 14 1	orange/ Red	
2.1	1. Py 1.	*	1/000		
	77.5				The second secon
+		PROCEDURE			
		1) Sample Extraction (Rota			
		Sample Extraction (Rota     a) Cut, crush or break s	solid samples into approx. 1-1.7	7 cm pieces. Used:	<del></del>
		Sample Extraction (Rota     a) Cut, crush or break s     b) Use sample and NW	solid samples into approx. 1-1.7 W volumes in table below:	3	
		Sample Extraction (Rota a) Cut, crush or break s b) Use sample and NW For 10 ppm: weigh	solid samples into approx. 1-1.7 W volumes in table below: O.(O g of sample into ea	3	de mouth bottles (Reps A-C
		Sample Extraction (Rota a) Cut, crush or break s b) Use sample and NW For 10 ppm: weigh for fish plus 1 for W	would samples into approx. 1-1.7 W volumes in table below:  other g of sample into eavy).	ach of $\stackrel{3}{4}$ – 1L blue cap wi	
		Sample Extraction (Rota a) Cut, crush or break s b) Use sample and NW For 10 ppm: weigh for fish plus 1 for W For 100 ppm: weigh	wolid samples into approx. 1-1.7  W volumes in table below:  out of g of sample into eavy).  b _ / O _ g of sample into e	ach of $\stackrel{3}{4}$ – 1L blue cap wi	ide mouth bottles (Reps A-C
		Sample Extraction (Rota     a) Cut, crush or break s     b) Use sample and NW     For 10 ppm: weigh     for fish plus 1 for W     For 100 ppm: weigh     for fish plus 1 for W	wolid samples into approx. 1-1.7 W volumes in table below:  other g of sample into eavy).  h / O g of sample into eavy).	ach of $\overset{3}{\cancel{4}}$ – 1L blue cap wi	ride mouth bottles (Reps A-C
		Sample Extraction (Rota     a) Cut, crush or break s     b) Use sample and NW     For 10 ppm: weigh     for fish plus 1 for W     For 100 ppm: weigh     for fish plus 1 for W     c) Add 200 mL of NW	would samples into approx. 1-1.7 W volumes in table below:  oto g of sample into eavy).  h / O g of sample into eavy).  W to each bottle and cap with 1	ach of $\overset{3}{\cancel{4}}$ – 1L blue cap wi each of $\overset{3}{\cancel{4}}$ – 1L blue cap w	ride mouth bottles (Reps A-C
		Sample Extraction (Rota     a) Cut, crush or break s     b) Use sample and NW     For 10 ppm: weigh     for fish plus 1 for W     For 100 ppm: weigh     for fish plus 1 for W     c) Add 200 mL of NW     d) Mix samples on rotal	wolumes into approx. 1-1.7 W volumes in table below:  output g of sample into eavy).  h / O g of sample into eavy).  W to each bottle and cap with 1 by agitator for 18 ± 2 h at 23 ±	ach of $\overset{3}{\cancel{4}}$ – 1L blue cap wi each of $\overset{3}{\cancel{4}}$ – 1L blue cap w	ride mouth bottles (Reps A-C
		Sample Extraction (Rota     a) Cut, crush or break s     b) Use sample and NW     For 10 ppm: weigh     for fish plus 1 for W     For 100 ppm: weigh     for fish plus 1 for W     c) Add 200 mL of NW	which is a sample of the samp	ach of $\overset{3}{\cancel{4}}$ – 1L blue cap wi each of $\overset{3}{\cancel{4}}$ – 1L blue cap w	ride mouth bottles (Reps A-C

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DOE 80-12 Hazardous Waste Test, Project #\_ Rainbow Trout 96-Hour Static Acute Test

Test	#:	7550
Test Date:		6-8-15

5 4 5 5						
Treatment	Sample Conc (mg/L)	Code	Rep	Random #	NWW (L) Final Vol.	Sample (g)
Control	0	Blue	A	11	10	0
			В	-3	10	0 .
			С	6	. 10	0
Sample 1	10	Green	A	15	10	0.1
			В ,	9	10	£ 4
	1	-	C	13	10	- 41
Sample 1	100	Yellow	A	14	10	1,0
		. *	В	8	10	n
			. C	12.	ie	16
Sample 2	. 10	Orange .	A	10	10	0.1
	7 7		В	2_	(C)	4.4
Nie			C	1	10	
Sample 2	· 100	Red	A	4	10	1,0
	,		В	5	10	- 11
		-	С	7.	10	1.6

2) Test Jars  a. Fill test jars with 9 ω L of NWW and place randomly into EC # 8556 , Lest	& west
shelf, b. Measure D.O. mg/L at 12°C. Aerate if < 80% saturation (8.6 mg/L).	
Aerate w/ O <sub>2</sub> @ L/min for sec per jar.	

	Before Aeration	· Aera	After Aeration	
AERATION		Start	End	
	D.O. (mg/L)	Date/Time	Date/Time	D.O. (mg/L)
Before Add Sample:		/	/	

#### 3) Extraction bottles:

- a. Rinse outside of extraction bottle with DW
- b. Pour contents into assigned jar
- c. Rinse extraction bottle with 200 mL NWW and pour into test jar, bringing total volume to \_\_/O\_L.
- 4) Place extraction bottle into test jar on its side, remove liner and place at bottom of test jar (prevent from floating). Setup at 0850-0015h.
- 5) Take 0h sample for pH, DO, Temp, Tot. Alk, Tot. Hard, Cond.
- 6) Add 10 fish per jar, one at a time to randomize, using dip net.
- 7) Counts verified by \_G-1 &
- 8) Start test at 0950 h on 6-3-15. Place Tidbit temp recorder (SN 9716078 shelf; SN 104694 48., West shelf) in jar w/water into EC.
  9) Measure pH, DO, Temp, cumulative survival and mortality (# Dead) daily in all reps/trtmt.
- 10) End test at 1010 h on 6-12-15 by 6-7
  11) Take 96h samples for pH, DO, Temp, Tot Alk, Tot Hard, Cond.

DOE 80-12 Hazardous Waste Test, Project # Dry Cleaners
Rainbow Trout 96-Hour Static Acute Test

Test#: 7550 Test Date: 6-8-15

#### MEASUREMENTS

		Sample Conc				Cumulative Su	rvival (# Alive/Re	ep)	Total
	Control	(mg/L)	Code	Rep	24 h	48 h	72 h	96 h	Alive
	Control	· . " ·	Blue	- A	10	10	10	10	10
-				В	10	10	10	10	10
	Sample 1	10		С	10	10	10	10	10
.,	Sample 1		Green	A B	10	10	10	10	10
				C	10	10	10	10	10
	Sample I	100	Yellow		And within	10 .	10	.10	10
		100	Tellow	A ·	TRET STUST	0	0	0	0
				C	, 0	0	0	Ö	P
	Sample 2	10	Orange		- 61 0	0	. 0	0	0
铁点			Orange	A	10	6	4	0	0
				C	/->	7	3	0	0
}	Sample 2	100			/0	9	6	. 2	2
	Janque A	. 100	Red	· A	Dend withing The of O	0	6	0	0
]				В	Shert of TEST: 0	. 0	0	.0	e i
				С	11 0	0	0	0	0
s	= stressed			Analyst:	ck7	GY	Gy	Gy	

-				1	Mortality (	#Dead/Re	p)				
Jar #	Fish #→	1	2	- 3	4	5	6	7	8	9 .	10
Yellow	Date	6-8-15	6-8-15	6-8-15	6-8-15	6-8-15	6-8-15	1/5-15	2 2 2	<del>                                     </del>	-
· A	Time-	1045	1045		1045	1045	1045		6-8-15	1	6-8-19
Yellow!	Date	6-8-15	6-8-15		-			1045	1045	1045	
' B	Time	1045	1045				6-8-15		1		6-0-15
Yellow	Date	6-8-15	6-8-15						1045		
ت .	Time	1045	1045	1045	1045		6-8-5				6-8-15
Red	Date	6-8-15	6-8-15		4	1045	1045	1045	1045		1045
-A	Time	1045	1045	1045	1045	1045	6-3-15			6-8-15	6-8-15
Red	Date		6-8-15	6815	6-8-15		1045	1045	1045	1045	1045
. 8	· Time	1045		1045	1045	1045		6-8-15	6-8-15	-	6-8-15
Red	Date			6-8-15			1045	1045	1045	1045	.1045
c_	Time	1045	1045	1045	6-8-15	6-8-15	6-8-65	6-8-15	6-5-15	4-8-15	6-8-15
GRAT		4-10-15	6-10-15	670-151	6-10-15	1045	1045	1045	1045	1045	1045
	Time	1045	1643	10451	1045	1310 1	6-11-15	1000	6-12-15		6-19-12
K B	bete	6-13-15	6-18-15	0-10-15	6-11-15	6-11-15	6-11-15	The second second	6-12-15	6-12-15	1000
ALC	Time	1045	1045	10.45	(310	13(0)	. 1310	1310	1000	1000	1000
1	Time	6-10-15	6-11-15	6-11-18	64146	4 - 1 - 1	5-12-15	6-12-15	6-12-18		
1 1	111142	1045	1310	13:0	12101	10001	1000	IDDO I	10.00		- 1 - 1 - 1

Test #: 7550 Test Date: 6-8-15

#### Chemistry

. 54 :	Sample					pH .				D.	O. (mg/	L)	-
Treatment	Conc (mg/L)	Code	Rep	0 h	24 h	48 h	72 h	96 h	0 h	24 h	48 h	72 h	96 h
Control	0	Blue	A	7,900	7.574	7.585	7.520	7.558	9.5	8,8	8.7	8,5	8,5
	'-'		В	7.940	7.658	7.642	7.596	7,609	9.5	8.8	8.7	8.6	8.7
			C	7,956	7.694	7.654	7,566	7,568	9.4	8.7.	8.4	8.2	8,3
Sample 1	10	Green	A	7.95 <b>2</b>	7,628	7,608	7.551	7.578	9,2	8,4	8/3	8.(	8,3
			В	7,977	7.651	7.641	7.568	7.595	9:4	8,5	8.1	8.(	8,5
. /			С	7.966	7,489	7,640	7,608	7,6Zb	9.3	8,7	8.3	8,3	8,5
Sample 1	100	Yellow	A	7.985.		1000	· ·	1-	9,4	~_	_	_	
			В	7,981	-	_	_		9.4			-	_ '
			С	7,993	-	( ( )	-		9.4			_	-
Sample 2	10	Orange	, A	7.996	7,720	7.700	7.663	7.651	9.3	8.8	8.8	8.6	8,4
			В	7.984	7.705	7,723	7,605	7.658	9.3	8:7	8.8	8.2	8.4
			C	7,980	7,730	7.744	7,623	7,631	9.2	8.8	8,9	8,2	8.≥
Sample 2	100	Red	Λ	7.962				-	9.3	-	_	~	٦.
;			В	7,975	7				9.4	-		-	
			С	7,962	-		_		9,3	_	-	<u>-</u> .	-
			Analyst:	Gy	GY.	Gey	Gy	Gy	· GY	GY .	e4	GY.	Gy.

		. Sample Conc	Samı	Sample#		alinity CaCO₃)	T. Hardness (mg/L as CaCO <sub>3</sub> )		Conductivity (µmhos/cm)	
Code ·	Trimt	(mg/L)	0 h	96 h	0 h	96 h	0 h	96 h_	0 h	96 h
Blue	Control	0	L629641	-6	64.6	67.2	83.1	39,1	221	214
Green	Sample 1	10	2	7	64.6	67.3	88.6	8614	221.	223
Yellow	Sample 1	100	->	-8	64,2		85:1	-	222	
Orange	Sample 2	10	-4	-9	64,2	67.8	87.2	87.5	222	228
Red	Sample 2	100	-5	-10	61.3	-	88.1		224	
- 11								Analyst:	Gy	Gy

DOE 80-12 Hazardous Waste Test, Project # Dry Cleaners
Rainbow Trout 96-Hour Static Acute Test

Test #: 7550 Test Date: 6-8-12

	Sample		i	T	'emperature	°C_(SN /5	0104270	)
Treatment	Conc (mg/L)	Code	Rep	0 h	24 h	48 h	72 h	96 h
Control -	0	Blue	A	12,4	168	11.7	14.8	157
W		1.	В	8,5i	1.51	11.9	12.1	12.0
		Ľ.	C	12.7	12.0	12,0	12.0	12:1
Sample 1	10	Green	· A	12.6	11.5	11.7	11.8 .	<i>ft</i> ,7
			В	12,2	11,8	11.8	1/,8	11,3
			C	12,4	11,9	11.8	. 1/.8	11.8
Sample 1	100	Yellow	A	12.5			-	
	H		В	12,6	-			~
			C	72.3	~	-	-	~ -
Sample 2	10	Orange	Α	12.3	11-8	. H.7	. 11.8	167
9			В	12.8	Cry44912,0	12.9	12,0	11.9
			C	12.8	1/2,0	12,1	12.0	12.1
Sample 2	. 100	Red	A	12.7	-	-		-
			В	12,5			_	~
			C	12.8	_	-		-
		A	nalyst:	GY	64	Gy	Qu	64

Test Orga	nism Data at 96	Hours	
Sampled I	rom: Contro	Rep	<u>A</u>
Fish	Length (cm).	Weight (g)	·
1	3,5	0.438	
. 2	3,6	0.584	
. 3	4,0	. 0,648:	
4	3.6	0.481	
. 5	3.7	0,483	
. 6	3.5	0.485	,
7	3.5	0.493	
	3,7	0.557	
9	34.	0,444	
. 10	3.7	0,559	
Mean:	3.4	0:517	Load Rate:
	Where: Wt Vol = To	Vt)(# Fish)]/ Vol = Mean Wt in g tal Test Vol in L ish = # Fish/Rep	(0.517 g)(10)/ 10 L = 0.52 g/L

Duy 0 1015 dyour rightly.

10 yellow + Red

Can't see 10 yellow too

Turbul

A4/11 prange some fish losing

NOTES

-45

Yeil B west Green & BC East Vell A, C Schelf.

Public Health Seattle & King County

-

Steve Whittaker, PhD Public Health Researcher

Local Hazardous Waste Management Program NACH-H-110 401 Sh Avenue, Sute 1100 Seettle, WA 98104-1818 steve.whittaken@kingcounty.gov www.kingcounty.gov/health

206-263-8499 Fax 206-296-0189 TTY Relay: 711

SAMPLE CHAIN OF CUSTODY

Page # of Of TURNAROUND TIME Standard (2 Weeks) CRUSH. 450ch prossoon SAMPLERS (signature) PROJECT NAMENO. REMARKS

SAMPLE DISPOSAL

Dispose after 30 days

Return samples

Will call with instructions

		SSA	)						٠.
	Notes	Fish blooksing							
Γ					-				
		-							
þ							_		
ANALYSES REQUESTED	-								
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CYSE	SHH		-		<del>                                     </del>	<u> </u>	$\vdash$	$\vdash$	-
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ľ	VOCs by8260								
	BLEX by 8021B								
	TPH-Gasoline								
	TPH-Diesel								
	# of containers	/							
	Sample Type containers	Still							
	Time								
	Date Time Sampled Sampled								
	Lab	5							
	Sample ID	S.5053015.02						÷	-

Relinqui	Received	Relinqui	Received	
Friedman & Bruya, Inc. 3012 16th Avenue West	Seattle, WA 98119-2029	Ph. (206) 285-8282	Fax (206) 283-5044	FORMS/COC/COC.DOC

L	STCNAMIBE	TO LANGE TO LANGE	CONTRACTOR	-	000
MC.	SIGNALURE	PKINI NAME,	COMPANI	DAIE	IIME
est	Relinquished by:	するおうがい	-PHSKC	5/1/9	(SO PM
729	Received by:	10/18/IL	VIEL .	クナナン	138
	Relinquished by:	21/1/	5		
	Received by:				

Public Health

SAMPLE CHAIN OF CUSTODY

Steve Whittaker, PhD
Public Health Researcher

Local Hazardous Waste Management Program
CNK-PH-1100
401 Sth Avenue, Suite 1100
Seettle, WA 99104-1818
Steve.whittaker@kingoounty.gov
TTY
Www.kingcounty.gov/health

206-263-8499 Fax 206-296-0189 TTY Relay: 711

Page # of TURNAROUND TIME	Standard (2 Weeks)  Rush charges authorized by	SAMPLE DISPOSAL	☐ Dispose after 30 days	□ Will call with instructions
SAMPLERS (signature).	PECC Sampling PO#	REMARKS		

_											
	Notes	HSW WSW									
Γ				Γ.	1		T				-
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₹.	VOCs by8260	<del>                                     </del>	<del> </del>	_	-	$\vdash$					
	BTEX by 8021B										
	TPH-Gasoline						T				
	TPH-Diesel										
	# of containers	_									
	Sample Type containers	PERC Waster									
	Time										
	Date Sampled	s/\/s	/,								
	Lab										
	Sample ID	500-10-315030cms									

	ž	ž	ž	28
Friedman & Bruya, Inc.	3012 16th Avenue West	Seattle, WA 98119-2029	Ph. (206) 285-8282	Fax (206) 283-5044

FORMS/COC/COC/DOC

c,	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
**	Relinquished by G. G. W. C.	Steve Whiteker	4	000/2/2	0
6	Received by: Ar Par	Inc. Belanor	2007	5/2/15	70:0
	Relinquished by:		1	2/28/13	
	Received by:				

#### Reference Toxicant Test:

Bench Sheets

**Precision Table** 

						18
Reference 1 ox		Hour Acute Stat w Trout	ic Renewal Tes	t Test	Test #: 7 5  Date: 6-1	~15
				1200		
ORGANISMS		+11.		. H em .	. =1.15	
Dick Arr	ived at KCEL a	act Lodge at 1355 h	on 626-15	in // au	e): 3-1-75	_ Shipped
dead	removed. At A	(rrival: pH —	, D.O. >	20 mg/I	. Temp '/2/2	. °C′. 1
Tank # 1 257	Hold in tank w	ith new well wate	er and aeration f	or & days.	<ul> <li>Feed 2X/dav w</li> </ul>	ith
- Elegles sk	when # (	Refer to culture	e log for feeding	& holding inform	mation.	
	V		,			
DILUTION W	ATER/TOXIO	CANT				
1. New Well V	Vater (NWW)	5-31-15 , file	tered through ny	lon netting.		
2. Cd Stock Sc	oln: Nominal <u>20</u>	mg Cd/L, g Cd(NO	Measured 20,	5 mg/L on _/	4 1 277	Prep /2
	opened	, lo	3)2*4F12O (MIF_/ t# 0.40730	) = 11 DW	#_ 1-1226	, re
LIMS RTA San	nple #: /3999	6-1	Wkgp #: _/	39996		
	-					
	<u> </u>		TIONS			
Cd Trtmt	Code	Cd Stock	NWW		Cd (µg/L)	,
(μg/L) 0	Code Blue	(mL/jar)	(L/jar) 6 L	Sample #	(Measured)	
	Diue ,	(NWW only)	(NWW only)			
0.75	Green	0.22	⊆ 6L			
1.5	Yellow	0.44	1		,	
3.0	Orange	.0.89	+	# L62956-1	2.93	
6.0	Red	1,77	<u> </u>			
12.0	White	3,55	· · · · ·			
PROCEDURE				1		,
1. Add 6 L	NWW to each	of 2 jars/trtmt; p	lace in 12°C EC	# 8556, Ea	st & we	st_sh
	C. Setup at					
		ration, aerate unt			/	
<ol> <li>Measure Ten</li> <li>Add Cd stool</li> </ol>	np, pH & DO. 1	in all trtmts.  Mix:	/ Samula for	Cd Sumple at	7 4 5 h	. Gru
5. Add 10 fish/	iar, one at a tim	e to randomize, u	using dip net. St	art count verified	ity: _v_ Anaiysi	& <del>-</del>
	0830 h	on 6-1-15	Place Tidb	it temp recorder	(SN 9716078	E.
<ol><li>Start test at</li></ol>	helf; SN <u>/ロリん</u>	68448	1/345 shel	f) in beaker w/W	W into EC.	* .
s		ord #/ weight/ ler	noth/ time dead	Record survival	daily. Measure	Temp, pH
7. Remove dead			ngur unic deug.			
7. Remove dead DO daily in a	all trtmts.		agair ame deaq.			
7. Remove dead DO daily in a 8. Renew solns	all trtmts. (≈ 80%) at 48h		inguir timo dougi			
7. Remove dead DO daily in a 8. Renew solns a) Siphon	all trtmts. (≈ 80%) at 48h <u>/. %</u> L from ea		igili tille detti.			
7. Remove dead DO daily in a 8. Renew solns a) Siphon b) Filter NW	all trtmts. (≈ 80%) at 48h <u>/l. %</u> L from ea /W into 4L grad	ich jar.				
7. Remove dead DO daily in a 8. Renew solns a) Siphon_ b) Filter NW c) Add Cd s	all trtmts. (≈ 80%) at 48h <u>/l. %</u> L from ea /W into 4L grad	ach jar. duated cylinder. aliquot during fil	lling as below:			
7. Remove dead DO daily in a 8. Renew solns a) Siphon b) Filter NW c) Add Cd s	all trunts. (≈ 80%) at 48h <del>1.8°</del> L from ea /W into 4L grad tock soln ⊆ 4L	ch jar. duated cylinder. aliquot during fil		3	6	12
7. Remove dead DO daily in a 8. Renew solns a) Siphon b) Filter NW c) Add Cd s	all trumts. (≈ 80%) at 48h d. 8° L from ea /W into 4L grad tock soln ⊆ 4L	ach jar. duated cylinder. aliquot during fil	lling as below:	3		
7. Remove dead DO daily in a 8. Renew solns a) Siphon b) Filter NW c) Add Cd s	all trunts. (≈ 80%) at 48h <del>1.8°</del> L from ea /W into 4L grad tock soln ⊆ 4L	ch jar. duated cylinder. aliquot during fil	Iling as below:		6	
7. Remove dead DO daily in a 8. Renew solns a) Siphon b) Filter NW c) Add Cd s	all trumts. (≈ 80%) at 48h  1.8° L from ea  /W into 4L grad tock soln ⊆ 4L  0 0	ch jar. duated cylinder. aliquot during fil	lling as below:	0,59	7.18	12 2.30

#### Reference Toxicant, Cd, 96-Hour Acute Static Renewal Test Rainbow Trout

Test #: 7538
Test Date: 6-1-15

#### MEASUREMENTS

			Cumulative S	Survival (#Alive/	Rep)		Tot
Code -	Cd (µg/L)	Rep	24 h	48 h	72 h	96 h	Aliv
Blue	0	A	10	10	10	10	1300
	0	В	10	10	10	10_	/x
Green	0.75	A	10	10	10	10	16
	0.75	В	10	10	10	10	
Yellow	1.5	A	10	10	10	10	
	1.5	В	10	10	10	10	1
Orange	3	· A	. 8	7	5	5	
	3	В	/0	5	4	2	
Red	6	A	3	P	0	رم	6
	. 6	В	- 3	. 0	0.	0	
White	12	·A	1	D.	0	0	
	12	В	1	0	0		ن
	Service Services	Analyst:	64	Gy .	64	Gy	13/20

- ( 100		3 F W. C					Daily #	Dead/Re	p				
Code	Rep	M. Jak	1 -	2	3	4	5	6	7	8	9	10	Mean
		Date	6-2	6-2	6-2	6.2	6.2	6-2	6-2	6.2	6-2	6-3	Samuel St. 198
int I	A	Time	1360	1300	1300	1300	1300	1300	1300	1300	1300	0730	51 65 6
White	/ '-	cm	3.2.	3,0	3.2	33	3,2	3,2	3.Z	3/0	3.1	3.1	3.15
		g	0,461	0,369	0.456	10,440	0,382	0.388	01416	0.422	0379	0.312	0.403
1.	-	Date	6-2	6-2	6-2	4-2	6-2	6-2	6-2	6-2	6-2-	6-3	<b>发生的现在分</b>
White	B	Time	1300	1300	1300	1300	1300	1300	1300	1300	1300	0730	Alexander of the second
201	9	Date	6-2	6-2	6-2	6-2	6-2	6-2	6-2	4-3.	, 6-3	6-3	
Rd	A	Time	1300	1300	. 1300	1300	1300	1300	1300	0730	0730	0730	M
5 (	ß	Date	6.2	6-2	6-2	6-2	6-2	4-2	6-2	6-3	6-3	6-3	rights.
Red	ā	Time	1300	1300	1300	1300	1300	1300	1300	0730	0730	0730	(A) (3.0)
		Date	6-2	6-2.	6-3.	6-4	6-4						4
orange	Α	Time	1300	1300	0750	1040	1040			'			
		Date	6.3	6-3	6-3	6-3	4-3	6-4	6-5	6-5			
brange	·B ·	Time	0730	0730	6730	0730	6730	1040	0900	0900			50 Star 10
7 2 7		Date								ļ .			7.5
1		Time											File Alfah
		Date											
-		Time											
		Date				-							
		Time											
		Date											AND S
		Time					L					L	The state

Load Rate = [(Wt)(# Fish)]/ Vol = ( \( \varrappi \) 403 \( g)( \) \( \varrappi \) \( \L = \) 0.67 \( g/L \)

Where: Wt = Mean Wt in g; Vol = Total Test Vol in L; # Fish = #Fish/Rep

#### Reference Toxicant, Cd, 96-Hour Acute Static Renewal Test Rainbow Trout

Test #: \_\_75-3%
Test Date: \_\_\_6-1-15

Chemistry

150104270 D.O. (mg/L) 0h | 24h | 48h | 72h | 96h pН Temp (°C) SN: 72h 96h Rep 0h 24h 48h 72h 96h 24h 48h Code Blue 12.0 11.7 11.8 8,016 7714 7.660 7.596 9.8 8,6 88 11.9 8,3 11.7 7.650 В 11,8 8,083 7,700 10.0 8.5 9.0 8,6 11.9 11,9 12.0 12,0 7,752 7,759 8.4 8,5 10.1 8.4 8,8 8,102 7,704 7.736 11.9 11.9 11.9 12.0 11,8 7.781 7,651 В 10.1 8.7 8.8 12,0 12, 2 7.794 7.715 12.0 11.9 11.9 81100 7,738 7,809 8.4 Yell 7.781 7,718 8,8 8,7 11.9 8,104 7,789 7,881 1001 11.8 11.8 //,7 11,8 В 8.7 8,4 12,0 12.1-119 12.2 10.1 8.8 7.717 11.8 8,106 7,735 7.788 7.736 3.1 Orng 9.2 9.3 101 9,0 11.7 8,116 7.703 7.823 7.839 8.4 11.8 11.8 11,8 11.7 7.826 В 9,4 11.9 10.1 8.7 9,0 9.4 11.7 11.8 11.7 1),7 3.115 7.750 7.822 7,879 7.886 Red A 9.6 8,125 7,742 7,929 10.1 8.8 11.5 11.7 11.5 В 9.6 10.1 8.8 11,9 11.9 7.912 8.128 7.749 Wht \_\_ 8.9 11,9 11.8 1400 8.118 7.753 7.931 10.1 В 12,0 12,0 10,18,9 8,110 7,779 7.930 12.1 Gy GY GΥ 67 64 GΥ GY GΥ 64 & Y 64

1 2 2		Random # Be	aker Position	1	
Code	Rep	Random Jar#	Code	Rep	Random Jar#
Blue	A	3	Orange	A	Ġ,
	В	11		В	. 7 :
Green	A	8	Red	A	6
	В .	. 2		В	9
Yellow	• A .	1	White	A	12
	В	4		В	_5

NOTES

wg13 9996

									. (/		
CETIS Ana	lytical Repo	rt						rt Date: Code:			:20 (p 1 of 2 21-3096-612
							lest				es, WQ Lab
Fish 96-h Acu	te Survival Test								CETISv1		
Analysis ID:	19-7586-6520		p = 11.14	96h Survival Ra		ner .		S Version: al Results:	Yes	.0.7	
Analyzed:	24 Jun-15 8:18		<del>,</del> –	Intrimmed Spe	arman-ran						
Batch ID:	00-5147-3809			Survival (96h)	040 (0000)		Analy Dilue	-	Water		
Start Date:	01 Jun-15 08:30			EPA/821/R-02-			Brine		Applicable		
Ending Date:	05 Jun-15 09:10			Oncorhynchus Frout Lodge Fit			Age:	31d	франция		
Duration:	4d 1h	500	irce:	Tout Loage FR							
Sample ID:	05-4172-3026	Cod		NG139996-1			Clien		nal Lab rence Toxic	ant	
	01 Jun-15 08:00			Cadmium nitrat			Proje	ct: Reid	rence roxic	Jeitt	
Receive Date:				Reference Toxi	cant						
Sample Age:	30m	Sta	tion:								
Spearman-Kä	rber Estimates										
Threshold Op	otion Ti	reshold	· Trim_	Mu	Sigma		EC50	95% LCL	95% UCL		
Control Thresh	nold 0		0.00%	0.432	0.03211		2.704	2.332	3.135		
Test Acceptal	bility Criteria										
Attribute		TAC Lim	ite	Overlap	Decision						
Control Resp	1	0.9 - NL		Yes	Passes A	cceptability	Criteria				
					Calc	ulated Varia	te(A/B)				
	Rate Summary	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	Α .	В
- 1-3	Control Type Dilution Water	2	1	1	1	0	0	0.0%	0.0%	20	20
0.75	Dilution vvaler	2	1	1	1	0	0	0.0%	0.0%	20	20
1.5		2	1 '	1	1	0	0	0.0%	0.0%	20	20
3	-	2	0.35	0.2	0.5	0.15	0.2121	60.61%	65.0%	7	20 20
6		2	0 .	0	0	0	0		100.0%	0	20
12		2	. 0	- 0	0	0			100.076		
96h Survival	Rate Detail										
C-µg/L.	Control Type	Rep 1	Rep 2								
0	Dilution Water	1	1								
0.75		1	, 1								
1.5		1	1					,			
3 ,		0.5	0.2							-	
6		0	0								
12											
96h Survival	Rate Binomials										
C-µg/L	Control Type	Rep 1	Rep 2								
0 .	Dilution Water	10/10	10/10								
0.75		10/10	10/10								
1.5		10/10	10/10								
3		5/10	2/10								

Cheillid Analyst: QA: 6-24-15

0/10 0/10

0/10

#### **CETIS Analytical Report**

Report Date:

24 Jun-15 08:20 (p 2 of 2) 7538RTAQC | 21-3096-6125

Fish 96-h Acute Survival Test

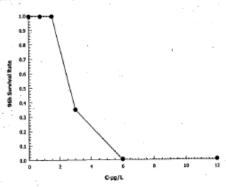
Test Code:

King County Metro Services, WQ Lab

Analysis ID: Analyzed: 19-7586-6520 24 Jun-15 8:18

Endpoint: 96h Survival Rate Analysis: Untrimmed Spearman-Kärber CETIS Version: CETISv1.8.7 Official Results: Yes

Graphics



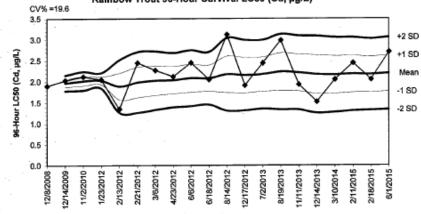
000-088-181-1

CETIS™ v1.8.7.16

CETIS Sun	nmary Repo	rt		,				Report Date: Test Code:			0 (p 1 of 1) -3096-6125
Fish 96-h Acu	te Survival Test					. 1		King	County Met	ro Service:	s, WQ Lab
Batch ID: Start Date: Ending Date: Duration:	00-5147-3809 01 Jun-15 08:30 05 Jun-15 09:10 4d 1h	0 P	est Type: rotocol: pecies: ource:	Survival (96h) EPA/821/R-02- Oncorhynchus Trout Lodge Fit	mykiss				Water Applicable		
Sample ID: Sample Date: Receive Date: Sample Age:		0 M S	ode: laterial: ource: tation:	WG139996-1 Cadmium nitra Reference Tox					mal Lab erence Toxic	ant	
Point Estimat	e Summary										
Analysis ID	Endpoint		Level		95% LCL	95% UCL	. TU	Method			
19-7586-6520	96h Survival Ra	ate	EC50	2.704	2.332	3.135		Spearmar	-Kärber		
Test Acceptal	•				T1 01+1	740 Lim	it.	Overlap	Decision		
Analysis ID	Endpoint		Attrib	ol Resp	Test Stat	0.9 - NL	iits	Yes		coeptability	Criteria
19-7586-6520		ate	Contro	oi resp		0.0 - 142					
	Rate Summary			95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
C-µg/L 0	Control Type Dilution Water	Count 2	Mean 1	1	1	1	1	0	0	0.0%	0.0%
0.75	Dilution water	2	1,	1	1	1	1	0	0	0.0%	0.0%
1.5		2	1	1	1	1	1	. 0	0 .	0.0%	0.0%
3		2	0.35	0	1	0.2	0.5	0.15	0.2121	60.61%	65.0%
6		2	0	0	0	0	0	0	0		100.0%
12		2	0	0	0	0	0	0	0		100.0%
96h Survival	Rate Detail	-									
C-µg/L	Control Type	Rep 1	Rep 2	2							
0	Dilution Water	1	1								
0.75		1-	1	-		. ,					
1.5		1	1								
3 .		0.5	0.2								
6		0	0								
12	'	0	0								
96h Survival	Rate Binomials										
C-µg/L	Control Type	Rep 1	Rep 2								
0	Dilution Water	10/10	10/10								
0.75		10/10	10/10	L.							
1.5		10/10	10/10	)							
3		5/10	2/10								
6		0/10	0/10								
12		0/10	0/10								
			-								

Analyst:\_\_\_\_\_ QA:\_\_\_\_

#### Control Chart for Acute Reference Toxicant Tests with Rainbow Trout 96-Hour Survival LC50 (Cd, µg/L)



Test Date

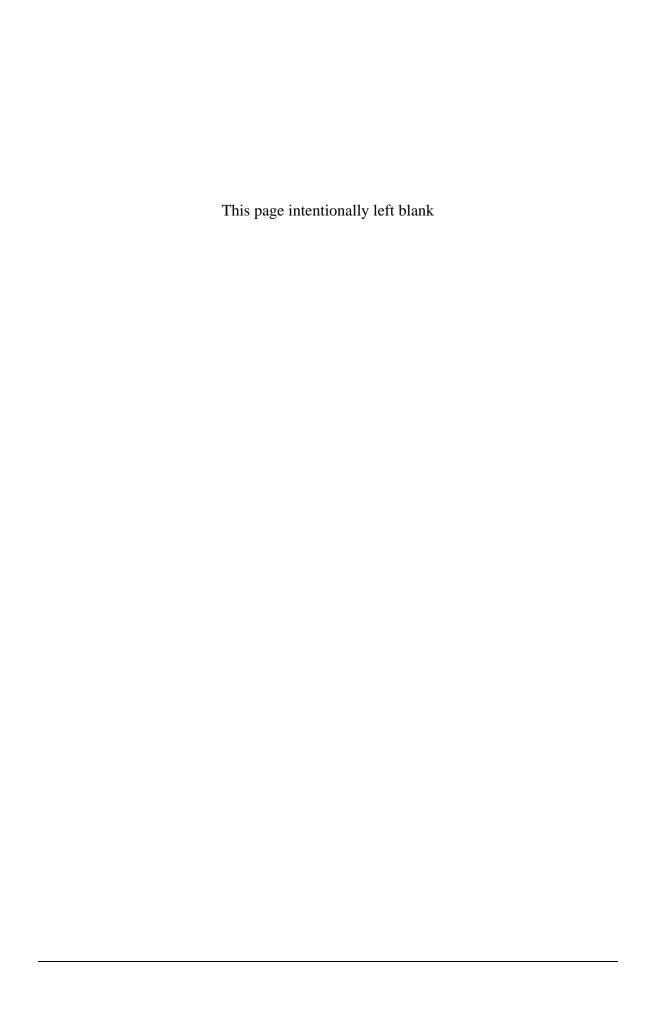
Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
12/8/2008	1.90					
.12/14/2009	2.03	1.9650	1,8731	1.7812	2.0569	2.1488
11/2/2010	2,12	2.0167	1.9061	1.7955	2.1273	2.2379
1/23/2012	2.05	2.0250	1.9332	1.8413	2.1168	2.2087
2/13/2012	1.35	. 1.8900	1.5778	1.2657	2.2022	2.5143
2/21/2012	2.45	1.9833	1.6225	1.2616	2.3442	2.7051
3/6/2012	2.27	2.0243	1.6775	1.3307	2.3711	2.7179
4/23/2012	2.12	2.0363	1.7134	1.3906	2,3591	2.6819
6/6/2012	2.45	2.0822	1.7502	1.4182	2.4142	2,7462
6/18/2012	2,05	2.0790	1,7658	1.4527	2.3922	2.7053
8/14/2012	3.12	2.1736	1.7414	1.3093	2.6058	3.0380
12/17/2012	1.91	2.1517	1.7326	1.3136	2.5707	2.9898
7/2/2013	2.44	2.1738	1.7648	1.3557	2.5829	2.9920
8/19/2013	2.98	2.2314	1.7832	1.3350	2.6797	3.1279
11/11/2013	1.93	2,2113	1.7725	1.3336	2.6502	3.0891
12/14/2013	1,52	2.1681	1.7103	1.2524	2,6260	3.0839
3/10/2014	2.05	2,1612	1.7169	1.2727	2.6054	3.0497
2/11/2015	2,44	2.1767	1.7407	1.3047	2,6126	3.0486
2/18/2015	2.05	2.1700	1.7453	1.3206	2.5947	3.0194
6/1/2015	2,70	2.1965	1.7665	1.3365	2.6265	3.0565

# Rainbow Trout (Onchorhyncus mykiss), Acute Test Precision 96-Hour Exposure to Reference Toxicant, Cd, µg/L Table 3 of 3

Cd, µg/L  15 1.5 3 6 12  991020#6 NWW  0 P 1.55  75 1.5 3 6 12  991020#6 NWW  0 P 1.31  SK 0  75 1.5 3 6 12  991020#6 NWW  0 P 1.31  SK 0  75 1.5 3 6 12  991020#6 NWW  0 P 1.31  SK 0  75 1.5 3 6 12  991020#6 NWW  0 P 1.31  SK 0  75 1.5 3 6 12  991020#6 NWW  0 P 1.31  SK 0  75 1.5 3 6 12  991020#6 NWW  0 P 1.78  SK 0  75 1.5 3 6 12  991020#6 NWW  0 P 2.03  PA 0  75 1.5 3 6 12  980228#1 NWW  0 P 2.45  PA 0  75 1.5 3 6 12  980228#1 NWW  0 P 2.45  PA 0  75 1.5 3 6 12  980228#1 NWW  0 P 2.45  PA 0  75 1.5 3 6 12  980228#1 NWW  0 P 2.45  PA 0  180 1.50  PA 0.60  PA 0.60			Rainhow Trout	Dilution Series	Ref. Tox.		Control	Pass/	Survival		Control	%
3826         060317         .75 I.S 3 6 12         991020#6         NWW         0         P         I.26         SK           4049         070209         .75 I.S 3 6 12         991020#6         NWW         0         P         1.31         SK           4049         070209         .75 I.S 3 6 12         991020#6         NWW         0         P         1.31         SK         0           4357         080320         .75 I.S 3 6 12         991020#6         NWW         0         P         1.31         SK         0           4635         081110         .75 I.S 3 6 12         991020#6         NWW         0         P         1.78         SK         0           4635         081110         .75 I.S 3 6 12         080228#1         NWW         0         P         1.78         SK         0           5500         101018         .75 I.S 3 6 12         080228#1         NWW         0         P         1.20         PA         0           6116         111226         (990 dd)         .75 I.S 3 6 12         080228#1         NWW         0         P         2.03         PA         0           6118         111226         .75 I.S 3 6 12         080228#1	Date	Test#	Lot#	Cd, µg/L	Lot#	Water	Mortality, %	Fail	LC50	Stats	Limits	cov
3932   060714   75 1.5 3 6 1.2   991020#6   NWW   0   P   1.26   SK   04049   070209   775 1.5 3 6 1.2   991020#6   NWW   0   P   1.31   SK   080320   775 1.5 3 6 1.2   991020#6   NWW   0   P   1.31   SK   080320   775 1.5 3 6 1.2   991020#6   NWW   0   P   1.78   SK   080320   775 1.5 3 6 1.2   080228#1   NWW   0   P   1.78   SK   080320   101018   775 1.5 3 6 1.2   080228#1   NWW   0   P   2.03   PA   080228#1   NWW   0   P   2.03   PA   080228#1   NWW   0   P   2.03   PA   080228#1   NWW   0   P   2.04   PA   080228#1   NWW   0   P   2.05   SK   080228#1   NWM   0   P   2.05   SK   080228#1   NWM   0   P   2.05   SK   080228#1   NWW   0   P   2.05   SK   080228#1   NWW   0   P   2.05   SK   080228#1   NWW   0   P   2.05   SK   080228#1	060424	3826	060317	m	991020#6	WWN	0	۵	1.5	SK	0.9 - 4.2	33
4049         070209         75 1.5 3 6 12         991020#6         NWW         0         P         1.31         SK         0           4222         070813         75 1.5 3 6 12         991020#6         NWW         0         P         1.78         SK         0           4357         080320         .75 1.5 3 6 12         080228#1         NWW         0         P         1.78         SK         0           5670         091117         .75 1.5 3 6 12         080228#1         NWW         0         P         1.20         PA         0           6104         111226         .75 1.5 3 6 12         080228#1         NWW         0         P         2.03         PA         0           6116         111226         .75 1.5 3 6 12         080228#1         NWW         0         P         2.05         PA         0           6118         111226         .75 1.5 3 6 12         080228#1         NWW         0         P         2.05         PA         1         0         0         P         2.05         PA         0         0         P         1.35         PA         0         0         P         1.35         PA         0         P         1.35 <td>608090</td> <td>3932</td> <td>060714</td> <td>.75 1.5 3 6 12</td> <td>991020#6</td> <td>NWW</td> <td>0</td> <td>Ь</td> <td>1.26</td> <td>SK</td> <td>0.72 - 4.23</td> <td>35.5</td>	608090	3932	060714	.75 1.5 3 6 12	991020#6	NWW	0	Ь	1.26	SK	0.72 - 4.23	35.5
4222         070813         .75 1.5 3 6 12         991020#6         NWW         0         P         1.31         SK         0           4653         081110         .75 1.5 3 6 12         991020#6         NWW         0         P         1.78         SK         0           4653         081110         .75 1.5 3 6 12         080228#1         NWW         0         P         2.03         PA         0           5550         101018         .75 1.5 3 6 12         080228#1         NWW         0         P         2.03         PA         0           6104         111226         .75 1.5 3 6 12         080228#1         NWW         0         P         2.05         PA         0           6116         111226         .75 1.5 3 6 12         080228#1         NWW         0         P         2.05         PA         0           6118         111226         .75 1.5 3 6 12         080228#1         NWW         0         P         2.12         SK         0           6159         120121 (340 old)         .75 1.5 3 6 12         080228#1         NWW         0         P         2.12         SK         0           6226         12051 (340 old)         .75 1.5 3 6 12	070305	4049	070209	m	991020#6	NWW	0	P	1.31	SK	0.61 - 4.12	37.2
4357         080320         75 1.5 3 6 12         991020#6         NWW         0         P         1.78         SK         0           4635         081110         .75 1.5 3 6 12         080228#1         NWW         0         P         1.90         PA         0           5077         1010118         .75 1.5 3 6 12         080228#1         NWW         0         P         2.03         PA         0           6116         111226         .75 1.5 3 6 12         080228#1         NWW         0         P         2.05         PA         0           6118         111226         .75 1.5 3 6 12         080228#1         NWW         0         P         2.05         PA         0           6118         111226         .75 1.5 3 6 12         080228#1         NWW         0         P         2.25         PA         0           6118         110226 (49d old)         .75 1.5 3 6 12         080228#1         NWW         0         P         2.25         PA         0           6118         110226 (49d old)         .75 1.5 3 6 12         080228#1         NWW         0         P         2.25         PA         0           6226         120213 (34d old)         .75	070904	4222	070813	m	991020#6	NWN	0	P	1.31	SK	0.51 - 4.02	38.8
4635         081110         .75 1.5 3 6 12         080228#1         NWW         0         P         1.90         PA         0           5677         091117         .75 1.5 3 6 12         080228#1         NWW         0         P         2.03         PA         0           6536         110206         .75 1.5 3 6 12         080228#1         NWW         0         P         2.05         PA         0           6118         111226         .75 1.5 3 6 12         080228#1         NWW         0         P         2.25         PA         0           6118         111226         .75 1.5 3 6 12         080228#1         NWW         0         P         2.45         PA         0           6124         120125 (414 old)         .75 1.5 3 6 12         080228#1         NWW         0         P         2.24         SK         0           6159         12021 (33d old)         .75 1.5 3 6 12         080228#1         NWW         0         P         2.24         SK         0           6159         12021 (34d old)         .75 1.5 3 6 12         080228#1         NWW         0         P         2.24         SK         0         0         0         0         0	080421	4357	080320	.75 1.5 3 6 12	991020#6	NWN	0	Ь	1.78	SK	0.46 - 3.99	39.7
5550         101018         .75 1.5 3 6 12         080228#1         NWW         0         P         2.03         PA         0           6104         111226         .75 1.5 3 6 12         080228#1         NWW         0         P         2.05         PA         0           6104         111226         .75 1.5 3 6 12         080228#1         NWW         0         P         2.05         PA         0           6118         111226         .75 1.5 3 6 12         080228#1         NWW         0         P         2.45         PA         0           6124         120125 (414 old)         .75 1.5 3 6 12         080228#1         NWW         0         P         2.45         PA         0           6159         120125 (414 old)         .75 1.5 3 6 12         080228#1         NWW         0         P         2.45         PA         0           6159         12021 (334 old)         .75 1.5 3 6 12         080228#1         NWW         0         P         2.12         SK         0         0         P         2.12         SK         0         0         0         0         0         0         0         0         0         0         0         0         0 <td>081208</td> <td>4635</td> <td>081110</td> <td></td> <td>080228#1</td> <td>NWW</td> <td>0</td> <td>Ъ</td> <td>1.90</td> <td>PA</td> <td>0.54 - 3.71</td> <td>37.3</td>	081208	4635	081110		080228#1	NWW	0	Ъ	1.90	PA	0.54 - 3.71	37.3
5550         101018         . 75 1.5 3 6 12         080228#1         NWW         0         P         2.12         SK         0           6104         111226         . 75 1.5 3 6 12         080228#1         NWW         0         P         2.05         PA         0           6116         111226         . 75 1.5 3 6 12         080228#1         NWW         0         P         2.45         PA         0           6118         111226         . 75 1.5 3 6 12         080228#1         NWW         0         P         2.45         PA         0           6124         120125 (414 old)         . 75 1.5 3 6 12         080228#1         NWW         0         P         2.12         PA         0           6211         120420 (474 old)         . 75 1.5 3 6 12         080228#1         NWW         0         P         2.12         PA         0           6226         12051 (384 old)         . 75 1.5 3 6 12         080228#1         NWW         0         P         2.12         PA         0           6238         120608 (674 old)         . 75 1.5 3 6 12         080228#1         NWW         0         P         2.05         PA         1.05         1.05         1.05         1.05	091214	5077	091117	3	080228#1	NWW	0	Ы	2.03	PA	0.55 3.61	36.8
6104         111226         75 1.5 3 6 12         080228#1         NWW         0         P         2.05         PA         0           6116         111226 (49d old)         75 1.5 3 6 12         080228#1         NWW         0         P         1.35         PA         0           6118         111226         .75 1.5 3 6 12         080228#1         NWW         0         P         2.45         PA         0           6124         120125 (41d old)         .75 1.5 3 6 12         080228#1         NWW         0         P         2.27         SK         0           6129         120420 (47d old)         .75 1.5 3 6 12         080228#1         NWW         0         P         2.45         PA         0           6338         120608 (67d old)         .75 1.5 3 6 12         080228#1         NWW         0         P         2.45         PA         0           6338         120608 (67d old)         .75 1.5 3 6 12         080228#1         NWW         0         P         2.45         PA         0           6338         120608 (67d old)         .75 1.5 3 6 12         121205         NWW         0         P         2.44         SK         0           6539         1	101102	5550	101018	'n	080228#1	NWW	0	Д.	2.12	SK	0.57 - 3.51	36.1
6116         111226 (49d old)         75 1.5 3 6 12         080228#1         NWW         0         P         1.35         PA         0           6118         111226         75 1.5 3 6 12         080228#1         NWW         0         P         2.45         PA         0           6124         120125 (41d old)         75 1.5 3 6 12         080228#1         NWW         0         P         2.27         SK         0           6129         120321 (33d old)         75 1.5 3 6 12         080228#1         NWW         0         P         2.12         PA         0           6221         120420 (47d old)         75 1.5 3 6 12         080228#1         NWW         0         P         2.05         PA         1           6328         120608 (67d old)         75 1.5 3 6 12         080228#1         NWW         0         P         2.45         PA         0           6539         121121 (26d old)         75 1.5 3 6 12         121205         NWW         0         P         2.44         SK         0           6706         130520 (43d old)         75 1.5 3 6 12         121205         NWW         0         P         2.98         TSK         0           6926 <t< td=""><td>120123</td><td>6104</td><td>111226</td><td></td><td>080228#1</td><td>NWW</td><td>0</td><td>Ь</td><td>2.05</td><td>PA</td><td>0.60 - 3.51</td><td>35.4</td></t<>	120123	6104	111226		080228#1	NWW	0	Ь	2.05	PA	0.60 - 3.51	35.4
6118         111226         .75 1.5 3 6 12         080228#1         NWW         0         P         2.45         PA         0           6124         120125 (41d old)         .75 1.5 3 6 12         080228#1         NWW         0         P         2.27         SK         0           6159         120321 (33d old)         .75 1.5 3 6 12         080228#1         NWW         0         P         2.12         PA         0           6226         120511 (38d old)         .75 1.5 3 6 12         080228#1         NWW         0         P         2.45         PA         0           6238         120608 (67d old)         .75 1.5 3 6 12         080228#1         NWW         0         P         2.05         PA         1.91         SK         0         0         P         2.05         N         0         0         P         1.91         SK         0         0         0         0         0         0         0         0	120213	9119	111226 (49d old)		080228#1	NWW	0	Ъ	1.35	PA	0.53 - 3.45	36.6
6124         120125 (41d old)         75 1.5 3 6 12         080228#1         NWW         0         P         2.27         SK         0           6159         120321 (33d old)         75 1.5 3 6 12         080228#1         NWW         0         P         2.12         PA         0           6210         120420 (47d old)         75 1.5 3 6 12         080228#1         NWW         0         P         2.45         PA         0           6226         120511 (38d old)         75 1.5 3 6 12         080228#1         NWW         0         P         2.05         PA         0	120212	6118	111226		080228#1	NWW	0	Ъ	2.45	PA	0.61 - 3.29	34.3
6159         120321 (33d old)         .75 1.5 3 6 12         080228#1         NWW         0         P         2.12         PA         0           6211         120420 (47d old)         .75 1.5 3 6 12         080228#1         NWW         0         P         2.45         PA         1           6226         120511 (38d old)         .75 1.5 3 6 12         080228#1         NWW         0         P         2.05         PA         1           6338         120608 (67d old)         .75 1.5 3 6 12         080228#1         NWW         0         P         3.12*         PA         0           6539         121121 (26d old)         .75 1.5 3 6 12         080228#1         NWW         0         P         1.91         SK         0           6706         130520 (43d old)         .75 1.5 3 6 12         121205         NWW         0         P         2.44         SK         0           6774         130710 (40d old)         .75 1.5 3 6 12         121205         NWW         0         P         1.93         TSK           6975         131118 (26d old)         .75 1.5 3 6 12         121205         NWW         0         P         1.52         PA           7440         15016 (33d old) <td>120306</td> <td>6124</td> <td>120125 (41d old)</td> <td>.75 1.5 3 6 12</td> <td>080228#1</td> <td>NWW</td> <td>0</td> <td>P</td> <td>2.27</td> <td>SK</td> <td>0.61 - 3.27</td> <td>34.3</td>	120306	6124	120125 (41d old)	.75 1.5 3 6 12	080228#1	NWW	0	P	2.27	SK	0.61 - 3.27	34.3
6211         120420 (47d old)         .75 1.5 3 6 12         080228#1         NWW         0         P         2.45         PA           6226         120511 (38d old)         .75 1.5 3 6 12         080228#1         NWW         0         P         2.05         PA           6338         120608 (67d old)         .75 1.5 3 6 12         080228#1         NWW         0         P         3.12*         PA         0           6539         121121 (26d old)         .75 1.5 3 6 12         080228#1         NWW         0         P         1.91         SK         0           6706         130520 (43d old)         .75 1.5 3 6 12         121205         NWW         0         P         2.44         SK         0           6774         130710 (40d old)         .75 1.5 3 6 12         121205         NWW         0         P         1.93         TSK         0           6972         131118 (26d old)         .75 1.5 3 6 12         121205         NWW         0         P         1.52         PA         1.52         PA         1.54         SK         1.44         SK         1.44         SK         1.44         SK         1.44         SK         1.44         SK         1.44         SK	120423	6159	120321 (33d old)	.75 1.5 3 6 12	080228#1	NWW	0	Ь	2,12	PA	0.88 - 2.82	26.2
6226         120511 (38d old)         .75 1.5 3 6 12         080228#1         NWW         0         P         2.05         PA           6338         120608 (67d old)         .75 1.5 3 6 12         080228#1         NWW         0         P         3.12*         PA         0           6539         121121 (26d old)         .75 1.5 3 6 12         080228#1         NWW         0         P         1.91         SK         0           6706         130520 (43d old)         .75 1.5 3 6 12         121205         NWW         0         P         2.44         SK         0           6774         130710 (40d old)         .75 1.5 3 6 12         121205         NWW         0         P         1.93         TSK         0           6972         131118 (26d old)         .75 1.5 3 6 12         121205         NWW         0         P         1.52         PA         1.55         PA         1.54         SK           7007         140212 (26d old)         .75 1.5 3 6 12         121205         NWW         0         P         2.05         SK           7440         150116 (33d old)         .75 1.5 3 6 12         121205         NWW         0         P         2.05         SK <td< td=""><td>120606</td><td>6211</td><td>120420 (47d old)</td><td>.75 1.5 3 6 12</td><td>080228#1</td><td>NWW</td><td>0</td><td>Ь</td><td>2.45</td><td>PA</td><td>1.02 - 2.60</td><td>21.8</td></td<>	120606	6211	120420 (47d old)	.75 1.5 3 6 12	080228#1	NWW	0	Ь	2.45	PA	1.02 - 2.60	21.8
6338         120608 (67d old)         .75 1.5 3 6 12         080228#1         NWW         0         P         3.12*         PA         0           6539         121121 (26d old)         .75 1.5 3 6 12         080228#1         NWW         0         P         1.91         SK         0           6706         130520 (43d old)         .75 1.5 3 6 12         121205         NWW         0         P         2.44         SK         0           6774         130710 (40d old)         .75 1.5 3 6 12         121205         NWW         0         P         2.98         TSK         0           6926         131011 (31d old)         .75 1.5 3 6 12         121205         NWW         0         P         1.93         TSK         0           7007         140212 (26d old)         .75 1.5 3 6 12         121205         NWW         0         P         2.05         SK           7440         150116 (23d old)         .75 1.5 3 6 12         121205         NWW         0         P         2.05         SK           7538         150501 (31d old)         .75 1.5 3 6 12         121205         NWW         0         P         2.05         SK	120618	6226	120511 (38d old)	.75 1.5 3 6 12	080228#1	NWW	0	Ь	2.05	PA	1.04 - 2.63	21.7
6539         121121 (26d old)         .75 1.5 3 6 12         080228#1         NWW         0         P         1.91         SK         0           6706         130520 (43d old)         .75 1.5 3 6 12         121205         NWW         0         P         2.44         SK         0           6774         130710 (40d old)         .75 1.5 3 6 12         121205         NWW         0         P         2.98         TSK         0           6926         131011 (31d old)         .75 1.5 3 6 12         121205         NWW         0         P         1.93         TSK         0           7007         140212 (26d old)         .75 1.5 3 6 12         121205         NWW         0         P         1.52         PA         0           7440         150116 (23d old)         .75 1.5 3 6 12         121205         NWW         0         P         2.05         SK           7440         150116 (33d old)         .75 1.5 3 6 12         121205         NWW         0         P         2.05         SK           7538         150501 (31d old)         .75 1.5 3 6 12         121205         NWW         0         P         2.70         SK	120814	6338	120608 (67d old)	.75 1.5 3 6 12	080228#1	NWW	0	Ъ	3.12*	PA	0.92 - 2.88	25.7
6706         130520 (43d old)         75 1.5 3 6 12         121205         NWW         0         P         2.44         SK         0           6774         130710 (40d old)         .75 1.5 3 6 12         121205         NWW         0         P         2.98         TSK         0           6926         131011 (31d old)         .75 1.5 3 6 12         121205         NWW         0         P         1.93         TSK         0           7007         140212 (26d old)         .75 1.5 3 6 12         121205         NWW         0         P         1.52         PA         0           7439         150116 (33d old)         .75 1.5 3 6 12         121205         NWW         0         P         2.05         SK           7440         150116 (33d old)         .75 1.5 3 6 12         121205         NWW         0         P         2.05         SK           7538         150501 (31d old)         .75 1.5 3 6 12         121205         NWW         0         P         2.70         SK	121217	6239	121121 (26d old)	.75 1.5 3 6 12	080228#1	NWW	0	Ь	1.91	SK	0.99 - 2.87	24.4
6774         130710 (40d old)         .75 1.5 3 6 12         121205         NWW         0         P         2.98         TSK           6926         131011 (31d old)         .75 1.5 3 6 12         121205         NWW         0         P         1.93         TSK           6972         131118 (26d old)         .75 1.5 3 6 12         121205         NWW         0         P         1.52         PA           7007         140212 (26d old)         .75 1.5 3 6 12         121205         NWW         0         P         2.05         SK           7440         150116 (26d old)         .75 1.5 3 6 12         121205         NWW         0         P         2.05         SK           7538         150501 (31d old)         .75 1.5 3 6 12         121205         NWW         0         P         2.05         SK	130702	90/9	130520 (43d old)	m	121205	NWW	0	Ь	2.44	SK	0.98 - 2.89	24.7
6926         131011 (31d old)         .75 1.5 3 6 12         121205         NWW         0         P         1.93         TSK         0           6972         131118 (26d old)         .75 1.5 3 6 12         121205         NWW         0         P         1.52         PA         0           7007         140212 (26d old)         .75 1.5 3 6 12         121205         NWW         0         P         2.05         SK           7440         150116 (26d old)         .75 1.5 3 6 12         121205         NWW         0         P         2.05         SK           7538         150501 (31d old)         .75 1.5 3 6 12         121205         NWW         0         P         2.05         SK	130819	6774	130710 (40d old)	m	121205	NWW	0	Ъ	2.98	TSK	0.96 - 3.06	26.2
6972         131118 (26d old)         .75 1.5 3 6 12         121205         NWW         0         P         1.52         PA         0           7007         140212 (26d old)         .75 1.5 3 6 12         121205         NWW         0         P         2.05         SK           7439         150116 (26d old)         .75 1.5 3 6 12         121205         NWW         0         P         2.44         SK           7440         150116 (33d old)         .75 1.5 3 6 12         121205         NWW         0         P         2.05         SK           7538         150501 (31d old)         .75 1.5 3 6 12         121205         NWW         0         P         2.70         SK	131111	6926	131011 (31d old)	.75 1.5 3 6 12	121205	NWW	0	Ы	1.93	TSK	0.97 - 3.06	25.8
7007 140212 (26d old) .75 1.5 3 6 12 121205 NWW 0 P 2.05 SK 7439 150116 (26d old) .75 1.5 3 6 12 121205 NWW 0 P 2.44 SK 7440 150116 (33d old) .75 1.5 3 6 12 121205 NWW 0 P 2.05 SK 7538 150501 (31d old) .75 1.5 3 6 12 121205 NWW 0 P 2.70 SK	131214	6972	131118 (26d old)		121205	NWW	0	Ы	1.52	PA	0.98 - 3.06	25.8
7439 150116 (26d old) .75 1.5 3 6 12 121205 NWW 0 P 2.44 SK 7440 150116 (33d old) .75 1.5 3 6 12 121205 NWW 0 P 2.05 SK 7538 150501 (31d old) .75 1.5 3 6 12 121205 NWW 0 P 2.70 SK	140310	7007	140212 (26d old)	3	121205	NWW	0	Ы	2.05	SK	1.08 3.03	23.8
7440 150116 (33d old) .75 1.5 3 6 12 121205 NWW 0 P 2.05 SK 7538 150501 (31d old) .75 1.5 3 6 12 121205 NWW 0 P 2.70 SK	150211	7439	150116 (26d old)	'n	121205	NWW	0	М	2.44	š	1.19 - 3.04	21.9
7538 150501 (31d old) .75 1.5 3 6 12 121205 NWW 0 P 2.70 SK	150218	7440	150116 (33d old)		121205	NWW	0	Ъ	2.05	SK	1.31 - 3.00	9.61
	150601	7538	150501 (31d old)	1.5 3 6	121205	NWW	0	Ъ	2.70	SK	1.34 - 3.06	19.6
					-							

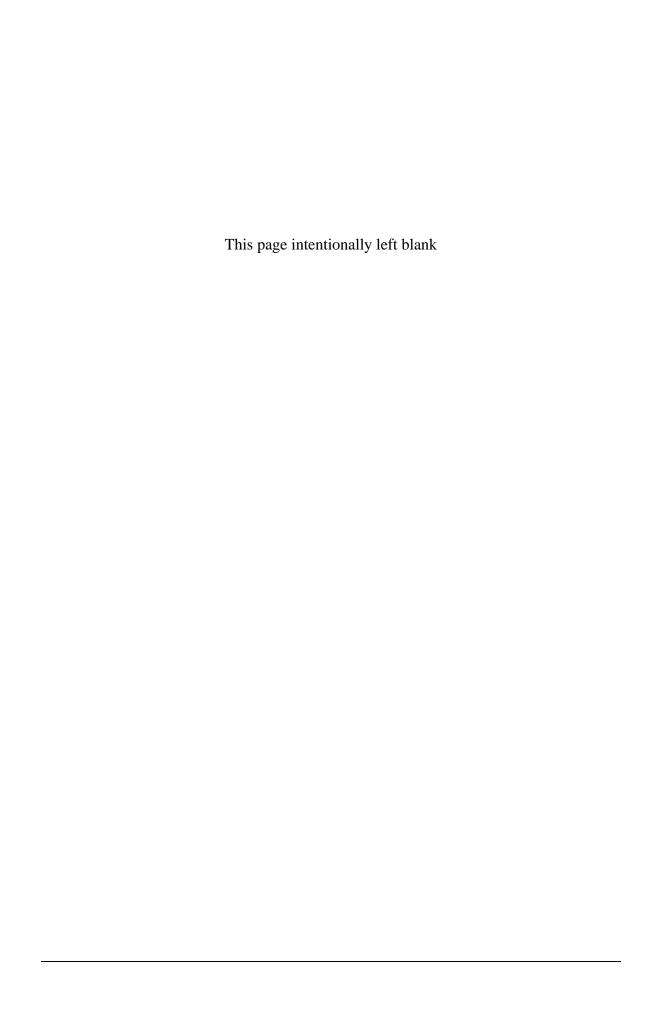
PA = Probit Analysis
MA = Moving Average
(T)SK = (Trimmed) Spearman Karber
GI = Graphical Interpolation

RW = Reconstituted Water WW = Well Water \* = Value Outside Control Limits



# Exhibit D:

# Fish Bioassay Results for Shop 03



August 7, 2015

Steve Whittaker Local Hazardous Waste Management Program CNK-PH-1100 401 Fifth Avenue, Suite 1100 Seattle, WA 98101-1818

#### Dear Steve:

Attached is a report on the toxicity test (Method DOE 80-12) initiated on 6-22-15 on Dry Cleaning Sample SB061315\_03\_SB(m).

Detailed findings are in the Results section of the attached report. The table below shows a summary of the test results. Sample SB061315\_03\_SB(m) had 100% mortality in the 100 mg/L test concentration and 100% survival in the 10 mg/L test concentration. Hence, this sample designates as a "Hazardous Waste" according to DOE 80-12 criteria.

#### Rainbow Trout

Sample	Sample Concentration mg/L	Percent Survival %	Designation	Designation (Yes/No)
SB061315 03 SB(m)	10	100	Extremely Hazardous Waste	No
	100	0	Dangerous Waste	Yes

If you would like additional information, please call Francis Sweeney at 477-7117.

Sincerely,

Hary Joshida Gary Yoshida

King County Environmental Laboratory

# REPORT ON TOXICITY TESTS FOR THE DESIGNATION OF DANGEROUS WASTE (METHOD DOE 80-12) CONDUCTED ON DRY CLEANING WASTE SAMPLES

KING COUNTY DEPARTMENT OF NATURAL RESOURCES AND PARKS
WATER AND LAND RESOURCES DIVISION
ENVIRONMENTAL LABORATORY SECTION
322 WEST EWING STREET
SEATTLE, WASHINGTON 98119

Test Date: June 22, 2015

KCEL Test Numbers: #7576 (Oncorhynchus mykiss: DOE 80-12, 96-Hour Acute Test)

Report Date: August 7, 2015

#### SAMPLE

Sample SB061315\_03\_SB(m) was received by the King County Environmental Laboratory (KCEL), Aquatic Toxicology Section on 6-15-15. The sample was collected on 6-13-15 and was delivered in a 250 mL wide mouth glass jar and refrigerated in the dark at  $4 \pm 2.0^{\circ}$ C until test initiation.

#### CONTROL WATER

The control water for the test with rainbow trout is freshwater obtained from a 95-ft. deep well located at the KCEL. Stock cultures of trout are cultured in a flow-through system of well water (WW).

The WW is analyzed for metals monthly (last analyzed 5-15) and organics are measured annually (last analyzed on 3-15). Hardness, alkalinity, conductivity and pH are measured at the beginning of each test.

Physical-chemical characteristics of the WW are listed in the following table:

Parameter	Value	Units
Conductivity	262	μmhos/cm
pH	8.01	
Total Hardness (calc.)	107	mg/L as CaCO <sub>3</sub>
Total Alkalinity	80	mg/L as CaCO3
Total Cd	< 2	μg/L
Total Cr	< 3	μg/L
Total Cu	< 4	μg/L
Total Ni	< 5	μg/L
Total Pb	< 20	μg/L
Total Zn	< 5	μg/L
Total Mercury	< 0.05	μg/L (measured 2-2015)
Volatile Organics	45 cmpds not detectable	,
Organic Analysis (BNA'S):	69 cmpds not detectable	
Bis(2-Ethylhexyl)Phthalate	0.49	μg/L
Pesticides & PCB's:	28 cmpds not detected	

#### METHODS

The acute toxicity test #7576 was conducted as outlined in Washington State Department of Ecology, Publication 80-12, Part A: Static Acute Fish Toxicity Test Protocol (Revised June 2009). The test was conducted at 10 mg/L and 100 mg/L to determine if the sample designates as "Extremely Hazardous Waste" or "Dangerous Waste", respectively.

#### Test Organisms

Swim-up (swim-up on 5-1-15) rainbow trout (Oncorhynchus mykiss) were purchased from Trout Lodge located in Summer, Washington on 5-26-15. The trout were acclimated for a period of 27 days in well water with a mean temperature of 13.6 °C, a minimum of 13.5 °C and a maximum of 13.8 °C in a flow-through

system at KCEL. During acclimation the fish were fed Zieglers Salmon Starter twice daily. Feed was withheld 48 hours prior to the start of the test.

Physical data (based on a randomly chosen control jar at the end of the test) on trout used in the tests is shown in the table below.

Test #	Age (days-post swim-up	Mean Standard	Mean Weight	Loading
	at start of test)	Length (cm)	(grams)	Wt./Vol. (g/L)
7576	52	3.8	0.68	0.68

As indicated in the table the mean weight of the trout used in the test was 0.68~g with a mean standard length of 3.8~cm. The loading in each test jar was 0.68~g/L.

#### Extraction

Three aliquots of 0.10 g (test concentration 10 mg/L) and three aliquots of 1.0 g (test concentration 100 mg/L) of the sample were weighed and each placed into a 1L, wide-mouth glass extraction jar (total 6 jars). 200 mL of well water (diluted 20% with DI water) was added to each jar. The jars were then closed with a teflon lined cap and extracted on a rotary agitator for 17.5 hours.

#### Rainbow Trout - 96-Hour Static Acute Toxicity Tests

The test jars were 5-gal, glass wide mouth jars with inside measurements of 40 cm (height) and 25 cm (dia.). The liquid level at a volume of 10 L was 19.5 cm. The jar opening was partially covered during the test.

Well water (diluted 20% with DI water to keep the hardness below 100 mg/L) was measured (9.6 L for test and control jars) into each replicate. The solutions were maintained at  $12 \pm 1.0^{\circ}$ C in an environmental chamber (Hotpack Model 08082, s/n 79719). The D.O. at the start of the test (9.6 - 9.7 mg/L) was > 80% saturation (>8.6 mg/L).

The extracted sample was added to the test jars followed by a 200 mL WW (diluted 20% with DI) rinse of the extraction jar bringing the total volume in the test chambers to 10 L. The extraction jar (laid on its side) and teflon liner were placed on the bottom of the test chamber. Ten rainbow trout were placed randomly into each test jar.

Mortality was monitored during the test and recorded at 24, 48, 72, and 96 hours. Dissolved oxygen, temperature and pH were recorded in each test and control jar at 0, 24, 48, 72 and 96 hours. The photoperiod was 16h L:8h D. The test was initiated at 0900 h on 6-22-15 and ended at 0915 h on 6-26-15.

#### Quality Assurance

The reference toxicant testing for the lot of fish used in this test was conducted on 6-1-15 (Test #7538). Cadmium nitrate was used as a reference toxicant for rainbow trout. The precision table located at the end of this report is maintained to monitor the sensitivity of these organisms to the reference toxicant and thereby provide an indication of their overall sensitivity to other compounds. The LC50 for the reference toxicant test (#7538) was 2.70  $\mu$ g Cd/L which is within the control limits (mean  $\pm$  2 SD) of 1.3  $\pm$  3.1  $\mu$ g/L Cd.

Temperature, pH and dissolved oxygen measurements remained within acceptable limits (USEPA, 2002) throughout the reference toxicant test for rainbow trout (#7538) and sample test (#7576). The test met acceptability criteria regarding control survival ( $\geq$  90%).

Physical-chemical methods are outlined in the table below:

Parameter	Method
Water Quality Tests	APHA (1992); US EPA (1991).
Temperature	Standard Mercury Thermometer (calibrated with a certified thermometer traceable to NBS records) and Onset, Tidbit (v2) UTBI-001 Temperature Logger (KCEL #436v1).
Dissolved Oxygen	YSI membrane electrode method (Method #4500-0 G; KCEL #434).
pH	Beckman 690 meter with automatic temperature compensation and Ross combination electrode (Method #4500-H; APHA 1992; KCEL #433).
Total Alkalinity	Potentiometric Method (Method #2320 B; KCEL #319v4).
Total Hardness	By calculation (Method #2340 B; KCEL #612v4).
Conductivity	Orion Model #122 Meter with 012210 conductivity cell (Method 2510B; KCEL #435).
Pesticides and PCB's	Continuous liquid extraction method (EPA Method #608; KCEL #733).
Organic Analysis	Continuous liquid extraction method for BNA's (EPA Method #625; KCEL #731).
Volatile Organics	Purge and trap method (EPA Method #624; KCEL #732).
Total Metals	ICP for Cd, Cr, Cu, Ni, Pb and Zn (EPA Method #200.7; KCEL #612v4); for Hg analysis (KCEL #604v5, 601v4, 605v0).

#### RESULTS

#### Rainbow trout

The following table contains survival percentages at 24-hour intervals during the 96-hour test in which rainbow trout were exposed to dilution water (controls) or to 10 and 100 mg/L sample concentrations.

	Sample	Pe	rcentage	Survival	(%)	Number	Number of
	mg/L	24 h	48 h	72 h	96 h	Dead	Fish Tested
WW (control)	0	100	100	100	100	0	30
SB061315 03 SB(	m) 10	100	100	100	100	. 0	30
02001010_00_00(	100	0*	0	0	0	30	30

<sup>\*</sup> All dead within 90 minutes of test initiation

#### Sample

As the table above shows for sample SB061315\_03\_SB(m) there was 100% mortality (all dead within 90 minutes of test initiation) in the 100 mg/L test concentration. There was 100% survival in the 10 mg/L test concentration. Hence, this sample designates as a "Hazardous Waste" according to DOE 80-12 criteria.

#### WATER QUALITY

The following table contains measurements of temperature, pH and dissolved oxygen taken throughout the 96 hour test. Measurement of Total Hardness, Total Alkalinity and Conductivity are taken from samples collected at the beginning (0-h) and end (96-h) of the test.

:	Sample:	Control	SB061315	03_SB(m)
Parameter		0 mg/L	10 mg/L	100 mg/L
Temperature	Mean	11.9	12,2	12.4
(°C)	Min.	11.8	12.1	12.3**
. ,	Max.	12.2	12.5	12.5**
pH	Mean	7.64	7.64	7.99
	Min.	7.51	7.49	7.97**
	Max.	7.97	8.02	8.00**
D.O.	Mean	8.3	8.0	9.7
(mg/L)	Min.	7.6	7.3	9.7**
	Max.	10.0	9.8	9.7**
Tot, Hard	0h	. 88	87	89
(mg/L as CaCO <sub>3</sub> )	96h	82	82	
Tot. Alk	0h	66	66	66
(mg/L as CaCO <sub>3</sub> )	96h	68	68	*
Cond	0h	217	218	219
(umhos/cm)	96h	221	224	

<sup>\*</sup> Not taken since all dead within 1.5 hour of test initiation

Additional water quality and QC data are listed on the attached photocopied pages from the laboratory notebook.

#### TESTED BY:

King County Environmental Laboratory 322 West Ewing Street Scattle WA 98119

<sup>\*\*</sup> Based on 0 hour readings only

#### REFERENCES

APHA. 1992. Standard Methods for the Examination of Water and Wastewater, 18<sup>th</sup> Edition. American Public Health Association, American Waterworks Association, Water Pollution Control Association. Washington D.C.

U.S. E.P.A. 1991. Code of Federal Regulations, 40CFR, Appendix A, July 1991. U.S. Environmental Protection Agency, Office of Federal Registry, Washington, D.C.

Washington State Department of Ecology. Biological Testing Methods for the designation of Dangerous Waste. DOE 80-12, revised June 2009.

US EPA. 2002. Methods for measuring the acute toxicity of effluents and receiving waters to freshwater and marine organisms. 5th edition. EPA-821-02-012, October 2002. US Environmental Protection Agency, Office of Water (4303T), Washington, DC.

#### DOE 80-12 Toxicity Test:

Bench Sheets

Chain of Custody

c) Add 200 mL of NWW to each bottle and cap with lid and teflon liner (avoid caps with adhesive on liner).

d) Mix samples on rotary agitator for 18 ± 2 h at 23 ± 2°C:

h on \_ 4-22-15

e) Start extraction at 140 h on 6-21-15 f) End extraction at 0735 h on 6-22-15

14		-   -				.   1				
							·			
OE 80-12 Ha ainbow Trou		Waste T 6-Hour S	est, Proj tatic Acu	ect # ite Test		<del>-</del> .	Tes	Test #:?: t Date:	2-15	
Treatment		e Conc z/L)	Code	Rep	Rand	om	NWW (L) Final Vol.	Sample (g)		
Control	$\overline{}$	0	Blue	A B	9		10	0	_	
Sample 1	1 . 1	0	Green		7.4		10	0,(		. 2
	- 1			B C	3 2		10	1.0	7	
Sample 1	1		Yellow	B C	5	-	10	11	-	7,
Sample 2		10	Orange	e A B					1	
Sample 2	1	00	Red	A B						-
	1			C				<u> </u>		
h Massu	D.O	9.6=9.7	mg/L a	at 12°C. Ae	rate if < 80° sec per jar.	% satu	ration (8.6 mg/	East &	west	-
AERATION	N	D.O. (		Acra Start Date/Time	End Date/Time		Aeration (mg/L)			
Before Add			4	I						
b. Pour of c. Rinse 4) Place extra	outside contents extraction bo	into assig on bottle ttle into t	ned jar with <u>200</u> 1 est jar on h.	its side, ren	nove mier a	na pia	ar, bringing to be at bottom of	tal volume to _ f test jar (prever	i L.	
5) Take 0h sa 6) Add 10 fis 7) Counts ve 8) Start test	ample for sh per jar rified by at <u>090</u>	pH, DO, one at a	Temp, T time to ra & n(-2	Z-15 I	sing dip ne الحث Place Tidbit shelft in i	temp i	yellow too recorder (SN _ ater into EC.	11166.10	, Eqs	<u>t</u>
9) Measure p 10) <b>End</b> test 11) Take 96	H, DO,	Temp, cu	mulative	survival and	u		d) daily in all :	eps/trunt.		

3 F	
1 6	

DOE 80-12 Hazard	ous Waste Test, Project #
Dainhow Trout	96-Hour Static Acute Test

Test #: 7576
Test Date: 6-22-15

#### MEASUREMENTS

	Sample			c	umulative Sur	vival (# Alive/Rep)		Tot#
Treatment	(mg/L)	Code	Rep	24 h	.48 h	72 h	96 h	Alive
Control	0	Blue	A	10	10	10	. 10	10
	-		В	10	10	10	. 10	10
			C .	. 10	10	10	10	10
Sample 1	10	Green	A	· Ip	10	10	10	10
			В	10	10	10	10	10
2	٠.		С.	.10	10	10	10	10
Sample 1	100	Yellow	. А	. 0	. 0	0	0	0
			В.	0	0	0	0.	0
			. c	0	0	0	. 0	0
Sample 2	10	Orange	Α			· .		
			В			,		
		'	С			-		
Sample 2	100	Red	1 A .	- 17			·	
	100		B					
			C.	7.				
	,		Analyst:	Gry	Gy	Gy	Gy.	

				N	fortality (	Dead/Rep	p)				
Jar #	Fish #→	1	2	3	4	5	6	7	8	9	10
Yellow	Date	6-22-15	6-22-15	6-22-45	6-22-15	6-22-15	6-22-15	6-22-15	4-22-15	6-22-15	6-22-15
R	Time	1030	1030	1030	1030	1030	1030	1030	1030	1090	1030
Yellow	Date	6-22-15	6-22-15	6-22-15	6-22-15	6-22-15	6-22-5	6-22-15	6-22-15	6-22-15	
B	Time	1030	1030	1030	1030	1030	1030	1030	1030	1030	1030
yellow	Date	6-22-15	6-22-15	6.22-15	6-22-15	6-22-15	6-22-15		6-22-15	6-22-15	
0	Time	1030	1030	1030	1030	1030	1030	1030	1030	/030	1030
	Date		1								
	Time			1							
7.0	Date									-	
	Time	7								-	
	Date					,					
1	Time							L	J		

1	6								) i					_				
_					,													

DOE 80-12 Hazard	ous Waste Test, Project #	
Dainhow Trout	96-Hour Static Acute Test	

Test #: 7576 Test Date: 4-22-15

#### Chemistry

	Sample			Γ		pН				D	O. (mg/	L)-	
Treatment	Conc (mg/L)	Code	Rep	0 h	24 h.	48 h	72 h	96 h	0 h	24 h	48 h	72 h	96 h
Control	0	Blue	A	7, 880	7.6/9 7.632y	7.520	7.507	7,522	9.7	7.2	7.6	7,6	7.6
			В	7.962	7,431	7.519	7.549	7.538	9,9	8.3	8,0	7,9	7.8
· \ ;;;			С	7.9.73		7, 553	7.616	7.543	10.0	5.3	8.1	8.1	7,9
Sample 1	10	Green	A	8,003	7.589	7.503	7,576	7,601	9.7	7.9	7.6	7.8	8.0
, je			В	8,013	7,590	7,490	7.521	7.521	9,7	7.8	7,3	7.3	7.4
			С	8,016	7.582	2,495	7.540	7.508	9,8	7.6	7.4	7.3	2.3
Sample 1	100	Yellow	Λ	7,995	-	-	_	~	9.7	-	-		
٠,		-	В	7.989	_	_	-	_	9.7	~	_	-,	-
			. C	7.974	-	~	-		9.7	-	_		-
Sample 2	10	Orange	Α.		:								
	1		В										
		7. 8	C										
Sample 2	100	Red	A	1									
			В				-						
			С	~	-								
1 - 1			Analyst:	GU	Gy	Gy	GΥ	Gy	Gy	Gy	Gy	G-y	Gγ

		Sample	Samp	de#		alinity CaCO <sub>3</sub> )		rdness : CaCO <sub>3</sub> )		os/em)
Code	Trtmt	(mg/L)	0 h	96 h	0 h	96 h	0,h_	96 h	0 h	96 h
Blue	Control	0	63073 -1	-4	66.1	67.6	87.6	81.6	217	221
Green .	Sample 1	10		5	66	€8	87.2	82,4	2(8	224
Yellow	Sample 1	100	-3	~ <sub>(</sub>	66	omit	88,8	pnit	219	out
Orange	Sample 2	10	4 ,		-					
Red	Sample 2	100	-					-		
		L	<u></u>					Analyst:	GY	GY

DOE 80-12 Hazardous Waste Test, Project #\_\_\_\_ Rainbow Trout 96-Hour Static Acute Test Test #: 75 76 Test Date: 4-22-15

	Sample			Te	mperature	°C (SN/50	104270	
Treatment	Conc (mg/L)	Code	Rep	0 h	24 h	48 h	72 h	96 h
Control	0	Blue	. A.	/2,2	11,8	//, 8	148	11.9
		1 . 1	.B	12.2	11.9	1/1,9	1/18	149
1.2			C	12.2	//.8	//,8_	1/,8	11.8
Sample 1	10	Green	A	12.5	. /2.1	121	12.1	12.1
		1	В	12.4	/z.3	12.1	12,1	12,2
			С	12.4	12,2	12,2	12,2	12,2
Sample 1	100	Yellow	Α '	12.5				-
		1 1	В	12.4	-			
			С	- /2.3	-			
Sample 2	10	Orange	Α					
7.7			. B					
41			C					
Sample 2	100	Red	Α					
			В.					
			С		- ·			1
			nalyst:	G.Y.	Gy	Gy	GY	Gy

Test Organ	nism Data at 96	Hours	
Sampled F	rom: Contro	Rép,	<u>A</u>
Fish	Length (cm)	Weight (g)	
1	3.8	0.642	
2	3.6	0.1554 "	
. 3	4.0	0.768 .:	
. 4	4.0	. 0,772	
. 5	3.8	0.707	
6:	. 3.7 .	0.673	
7	3.7	0.650	
8.	. 4.0	0.771	
9	3.8	0.4034	
10	3.4	0.606	
Mean:	3. %	0.678	Load Rate:
	Where:	Wt)(# Fish)]/ Vol 't = Mean Wt in g otal Test Vol in L	(_0.678_g)(_1.0) _/0_L =0.68_g/L

Green A, B, C west shelf Blue ABC Yellow C East shelf

Day 0: within minutes of fish.
being placed in test chamber (yellow)
fish 1-sing equilibrium.
0945- weight all deed.
1030. alldeed.

96h All fish look Normal IN

NOTES

#### Reference Toxicant Test:

Bench Sheets and Precision Table

	xicant, Cd, 96-	Hour Acute Sta	tic Renewal Te	st	Test #: 7	518
		w Trout		Test	Test #:7 Date: 6-	1-15
ORGANISM	e.				1	
7eo fish re	ceived from IT	out Lander.	T.	at # (Swim-up do	tal: 5-1-15	Chinned
pick up A	rrived at KCEL	at /355 h	on 5-24-15	in /bex	double Nos	Shipped vie
dea	d removed. At A	rrival: pH	, D.O>	ot # (Swim-up da in _ / bex zomg/l	., Temp //2/	C. Int
TOTAL PARTY	rioid in tank w	iin new well wat	er and aeration i	for 6 days g & holding infor	Feed 2X/dox :	with
City e15 3	MACI TI	Keier to cultur	e log for feeding	z & holding infor	mation.	
DILUTION	VATED TOWN	TI A TATOM				
1. New Well	WATER/TOXIO	<u>5-31-15</u> , fil	ternd through as	olon nattina		
2. Cd Stock S	Joln: Nominal 20	) mg Cd/L.	Measured 20	3 mg/L on /	2-20-12	Pron /2-
#	by add	g Cd(NO	3)2*4H2O (mfr_	3_mg/L on _/	# /-/226	rec'
	, opened	. 10	t# <u>049/30</u>	) ⊆ 1L DW.		
LIMS RTA Sa	mple #: <u>/3999</u>	6-1	Wkgp #: _/	39996		
<del>,</del>		SOLU	TIONS			7
Cd Trtmt	1	Cd Stock	NWW		Cd (µg/L)	
(µg/L)	Code	(mL/ jar)	(L/jar)	Sample #	(Measured)	
. 0	Blue	0	6 L			1
0.75	Green	(NWW only)	(NWW only)			1
1.5	Green Yellow	0.22	⊆ 6L .			
3.0	Orange	0.44	<u> </u>	¥1128-1	- 4.2	
6.0	Red	. 0.89	+	* L62956-1	2.43	-
		1,77				-
12.0	White	3.55	. •	, ,		
12.0	white	3,55	. •	L		
PROCEDURE	2		*			1
PROCEDURE	L NWW to each	of 2 jars/trtmt; p	lace in 12°C EC	#_8556 , Eu	st_& w	est_shelf.
PROCEDURE  1. Add  Bring to 12	L NWW to each	of 2 jars/trtmt; p		P	± & w	est_shelf.
PROCEDURE  1. Add  Bring to 12'  2. Measure December 12'	L NWW to each °C. Setup at O; if DO << satu	of 2 jars/trtmt; p h. ration, acrate unt	til DO ≥ 9 mg/I.	Ston seration		
PROCEDURE  1. Add Bring to 12' 2. Measure DO 3. Measure Te 4. Add Cd stoo	L NWW to each C. Setup at O; if DO << satu	of 2 jars/trtmt; ph. ration, acrate uni n all trtmts.  Mix:	til DO ≥ 9 mg/L.	Stop aeration.	48h	
PROCEDURE  1. Add   Bring to 12'  2. Measure DO  3. Measure Te  4. Add Cd stoo  5. Add 10 fish.	L NWW to each C. Setup at O; if DO << satump, pH & DO. ick soln to jars:/jar, one at a tim	of 2 jars/trtmt; ph. ration, acrate unt n all trtmts Mix: to randomize, u	til DO ≥ 9 mg/L.  Sample for using dip net. St	Stop aeration.  Cd: Acidi	fy: Analys	st: <u>_</u>
PROCEDURE  1. Add  Bring to 12'  2. Measure DO  3. Measure Te  4. Add Cd stoo  5. Add 10 fish  6. Start test at	L NWW to each C. Setup at O; if DO << saturation, pH & DO. if the physical part is set to the physical	of 2 jars/trtmt; ph. ration, acrate unt n all trtmts Mix: e to randomize, to	til DO ≥ 9 mg/L Sample for using dip net. St	Stop aeration.  Cd: Aciditart count verified bit temp recorder	48k ify: ✓ Analys 1 by <u>64</u> (SN 97/6079	st: <u>_</u>
PROCEDURE  1. Add  Bring to 12'  2. Measure DO  3. Measure Te  4. Add Cd stoo  5. Add 10 fish  6. Start test at	L NWW to each C. Setup at O; if DO << saturate, pH & DO. if ck soln to jars: //jar, one at a time - 0 8 30 heshelf; SN /04/4	of 2 jars/trtmt; ph. ration, acrate unt n all trtmts Mix: to randomize, to on (-1-(-5))	Sample for using dip net. St	Stop aeration.  Cd: Aciditant count verifies oit temp recorder f) in beaker w/W	t 48k ify: Analys I by <u>Gy</u> (SN <u>7716 079</u> W into EC	st: <u>CEY</u> & <u>-</u> , East
PROCEDURE  1. Add  Bring to 12'  2. Measure DO  3. Measure Te  4. Add Cd stoo  5. Add 10 fish  6. Start test at  7. Remove dea	L NWW to each C. Setup at O; if DO << saturate, pH & DO. ick soln to jars: //jar, one at a time //jar, one at a time //jar, shelf; SN / 1/2/4/4 ad fish daily; reco	of 2 jars/trtmt; ph. ration, acrate unt n all trtmts Mix: to randomize, to on (-1-(-5))	Sample for using dip net. St	Stop aeration.  Cd: Aciditart count verified bit temp recorder	t 48k ify: Analys I by <u>Gy</u> (SN <u>7716 079</u> W into EC	st: <u>CEY</u> &
PROCEDURE  1. Add  Bring to 12' 2. Measure DO 3. Measure Te 4. Add Cd stoo 5. Add 10 fish 6. Start test at 7. Remove dea DO daily in 8. Renew solns	L NWW to each  C. Setup at  O; if DO << saturate  O; if DO ick solution to jars:  /jar, one at a time  //jar,	of 2 jars/trtmt; ph. ration, acrate unt n all trtmts Mix:e to randomize, to one -   - (	Sample for using dip net. St	Stop aeration.  Cd: Aciditant count verifies oit temp recorder f) in beaker w/W	t 48k ify: Analys I by <u>Gy</u> (SN <u>7716 079</u> W into EC	st: <u>CEY</u> &
PROCEDURE  1. Add Bring to 12' 2. Measure DO 3. Measure Te 4. Add Cd stoo 5. Add 10 fish 6. Start test at 7. Remove dea DO daily in 8. Renew solns a) Siphon	L NWW to each C. Setup at D; if DO << saturate The saturate of the saturate C; if DO in the satu	of 2 jars/trtmt; ph. ration, acrate unt n all trtmts Mix: e to randomize, to on   - (.5) 34 48 ord #/ weight/ let ch jar.	Sample for using dip net. St	Stop aeration.  Cd: Aciditant count verifies oit temp recorder f) in beaker w/W	t 48k ify: Analys I by <u>Gy</u> (SN <u>7716 079</u> W into EC	st: <u>CEY</u> &
PROCEDURE  1. Add Bring to 12' 2. Measure DO 3. Measure Te 4. Add Cd stoo 5. Add 10 fish 6. Start test at 7. Remove dea DO daily in 8. Renew solns a) Siphon_ b) Filter NV	L NWW to each C. Setup at D; if DO << saturate The saturate of the saturate C; if DO in the satu	of 2 jars/trtmt; ph. ration, acrate unt n all trtmts Mix: e to randomize, to on (-1 - (-5) 23 + 4 % ord #/ weight/ ler ch jar. fuated cylinder.	Sample for using dip net. So Place Tidb (1965) shelt agth/time dead.	Stop aeration.  Cd: Aciditant count verifies oit temp recorder f) in beaker w/W	t 48k ify: Analys I by <u>Gy</u> (SN <u>7716 079</u> W into EC	st: <u>CEY</u> &
PROCEDURE  1. Add Bring to 12' 2. Measure DO 3. Measure Te 4. Add Cd stoo 5. Add 10 fish 6. Start test at 7. Remove dea DO daily in 8. Renew solns a) Siphon_ b) Filter NV	L NWW to each C. Setup at D; if DO << saturate The saturate of the saturate C; if DO in the satu	of 2 jars/trtmt; ph. ration, acrate unt n all trtmts Mix: e to randomize, to on   - (.5) 34 48 ord #/ weight/ let ch jar.	Sample for using dip net. So Place Tidb (1965) shelt agth/time dead.	Stop aeration.  Cd: Aciditant count verifies oit temp recorder f) in beaker w/W	t 48k ify: Analys I by <u>Gy</u> (SN <u>7716 079</u> W into EC	st: <u>CEY</u> &
PROCEDURE  1. Add Bring to 12' 2. Measure DO 3. Measure Te 4. Add Cd stoo 5. Add 10 fish 6. Start test at 7. Remove dea DO daily in 8. Renew solns a) Siphon_ b) Filter NV c) Add Cd	L NWW to each  C. Setup at  O; if DO << saturate  O; if DO ick soln to jars:  /jar, one at a time  /jar, one at a	of 2 jars/trtmt; ph. ration, acrate unt n all trtmts Mix: e to randomize, u on (-1 - ( 5 - ) 28 4 4 % ord #/ weight/ ler ch jar. fluated cylinder. aliquot during fil	Sample for using dip net. So Place Tide shelngth/ time dead.	Stop aeration.  Cd: Aciditat count verified in beaker w/W Record survival	ify: Analys I by GY (SN_97/6079 W into EC. daily. Measure	st: <u> </u>
PROCEDURE  1. Add Bring to 12' 2. Measure DO 3. Measure Te 4. Add Cd stoo 5. Add 10 fish 6. Start test at 7. Remove dea DO daily in 8. Renew solns a) Siphon_ b) Filter NV	L NWW to each  C. Setup at  O; if DO << saturate  O; if DO ick soln to jars:  /jar, one at a time  /jar, one at a	of 2 jars/trtmt; ph. ration, acrate unt n all trtmts Mix: e to randomize, u on (-1 - (.5) 28 4 48 ord #/ weight/ ler ch jar. tuated cylinder. aliquot during fil	Sample for using dip net. So Place Tide shelingth/ time dead.	Stop aeration.  Cd: Acidi art count verified it temp recorder f) in beaker w/W Record survival	ify: Analys I by GY (SN_9716079 W into EC. daily. Measure	st: <u>Exy</u> &, <u>Exst</u> Temp, pH &
PROCEDURE  1. Add Bring to 12' 2. Measure DO 3. Measure Te 4. Add Cd stoo 5. Add 10 fish 6. Start test at 7. Remove dea DO daily in 8. Renew solns a) Siphon_ b) Filter NV c) Add Cd Cd (µg/L):	L NWW to each C. Setup at O; if DO << saturate O; if DO ick soln to jars: /jar, one at a time //jar, one at a tim	of 2 jars/trtmt; ph. ration, acrate unt n all trtmts Mix: e to randomize, u on (-1 - ( 5 - ) 28 4 4 % ord #/ weight/ ler ch jar. fluated cylinder. aliquot during fil	Sample for using dip net. So Place Tide shelngth/ time dead.	Stop aeration.  Cd: Aciditat count verified in beaker w/W Record survival	ify: Analys I by GY (SN_97/6079 W into EC. daily. Measure	st: <u> </u>

#### Reference Toxicant, Cd, 96-Hour Acute Static Renewal Test Rainbow Trout

Test #: 7538 Test Date: 6-(-(5

# MEASUREMENTS

	r		Cumulative S	Survival (#Alive	Rep)		Tot#
Code	Cd (µg/L)	Rep	24 h	48 h	72 h	96 h	Alive
Blue	0	A	10	10	10	10	130010
	0	В	10	ID .	10	10	1× 10
Green	0.75	A	160	10	10	10	10.
	0.75	В	10	10	10	10	10
Yellow	1.5	A	10	10	10	10	10
	1.5	В .	10	10	10	10	10
Orange	3	- A	· 8	7	.5	5	.5
	3	В	/0	5	4		2
Red	6	A	3	0	0	ري	0
	6	В	3	. 0	0.,		0
White	12	- A	~ 1	p.	0	. 0	- 0
. ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	12	. B	. (	0	0		Ú
5 3 Y 2 4 4 5 Y		Analyst:	` G-4	6y	Gu	64	

s = stressed

भिज	·	355 (21)					Daily#	Dead/Re	р				
Code	Rep	STORY A	1	2	3	4	5	6	7	8	9	10	Mean
Code	2000	Date	6-2	6-2	6-2	6.2	6-2	6-2	6-2	6.2	6-2	6-3	42.50
ابادا	A	Time	1300	1300	1300	1300.	1300	1300	1300	1300	1300	0730	<b>基本</b>
White	71.	cm	3.2.	3,0	3.2	3.3	3,2	3.2	3.2	3,0	3. }	3, (	3.15
		- g - '	0.461	0,369	0,456	10,440	0,384	0.388	01416	0.422	0.378	0,3(2	0.403
1.		Date	6-2	6-2	6-2	6-2	6-2	6-2	6-2	6-2	6-2	6-3	18.33
White	B	Time	1300	1300	1300	1300	1300	1300	1300	1300	1300	0730	
- 1	7	Date	6-2	6-2	6-2	6-2	6-2	6-2	6-2	4-3.	. 6-3	6-3	Sing
Rid	A	Time	1300	1300	1300	1300	1300	1300	1300	€730	0730	0730	AL.
	0	Date	6.2	6-2	6-2	6-2	6-2	6-2	6-2	6-3	6-3	6-3	
Red	ġ	Time	1300	1300	1300	1300	1300	1300	1300	0730	0730	0730	attent.
		Date	6-2	6-2	6-3.	64	6-4						ale -
ORANGE	А	Time	1300	1300	0750	1040	1040						
		Date	6-3	6-3	6-3	6-3	4-3	6-4	4-5	6-5			188
or away	B	Time	0730		6730	0730	6730	1040	0900	0900			per in 2
1	-	Date	-	-			:						58787
1 1		Time											
		Date	-										
. "		Time											18.
		Date		-					-				-0.76
		Time											10 mm
77.7	-	Date							i				5000
		Time								L			

Load Rate = [(Wt)(# Fish)]/ Vol = ( 0.403 g)(10)/ 6 L = 0.67 g/L

Where: Wt = Mean Wt in g; Vol = Total Test Vol in L; #Fish = #Fish/Rep

11.22

#### Reference Toxicant, Cd, 96-Hour Acute Static Renewal Test Rainbow Trout

Test #: 75-35 Test Date: 6-1-15

Chemistry

	10.0				151	0104	270										
٠ſ			Temp	(°C) \$	in:					pH_					O. (mg		
-	Code	Rep	0h	24h	48h	72h	96h	0h	24h	48h	72h	96h	0h	24h	48h	72h	96h
Ī	Blue	A	11.7	11,8	11.9	12.0	11.7	8,016	7.650	7714	7.660	7.596	9.8	8,6	8,8	3.6	8.3
		В	11.9	12.0	11.9	12,0	11,8	8,083	7,700	7.752	7,759	7.674	10,0	8.5	9.0	8,6	8.4
1	Grn	A	11.9	11.9	11.9	/z, o	11,8	8,102	7,704	7.781	7.736	7.65	10,1	8.4	8,8	8,5	8.1
	I e	В	12,0	12.0	11.9	12, 2	11.9	8,100	7,738	7,809	7,794	7,715	10.1	8.7	9,1	8,8	8.4
	Yell	A	11.9	//.8	11.8	11.8	//.7	8,104	7.789	7,881	7.781	7,718	10.1	8.7	8.8	8,7	8.4
l		В	72,0	12.1-	11.9	12.2	1/48	8,106	7,735	7.798	7.736	7,717	101)	8.8	8.7	8.4	3.1
	Orng	A	11.8	11,8	11.7	W.8	14.7	8,116	7.703	7.823	7.839	7.826	10.1	8,4	9,0	9.2	9.3
l	*	В	11.7	11.8	11.7	11.9	1).7	8.115	7.750	7,822	7.886	7,879	10.1	8.7	9,0	9.4	9.4
	Red	A	11,5	11,7	11.5	-	-	8,125	7,742	7,929	-		10.1	8.8	9.6		~
		В	11.9	11,9	11.9	-	-	8.128	7.749	7.912	-	<u> </u>	10.1	8.8	9.6	-	-
	Wht	· A.	11.9	11.9	11,8		_	8.118	7.753	7,931	_	_	10.1	8.9	9.8	_	- ,
		В	12.1	12,0	12,0	-	-	8,110	7,779	7.930			10,1	9,8	9.6	-	7.
	An	alyst:	Czy	Gy	69	Gy.	Gy.	GΊ	Gγ	GY_	G.Y.	Gy	Gy	GΥ	Gγ	æγ	64
1			,!	ı	٠,		,					/	•				1.

	Random # Beaker Position												
Code	Rep	Random Jar #	Code	Rep	Random . Jar#								
Blue	Α	3	Orange	A	/iO								
	В	//		В	7 -								
Green	, A	- 8	Red	A	6								
	В	. 2		В	9								
Yellow	A	1	White	. A	12								
	В	4		В	.5								

NOTES

7538

wg13 9996

							1691	Code:		RTAQC	
Fish 96-h Ad	cute Survival Test	t							County Me		ces, wu
Analysis ID:	19-7586-6520			Sh Survival F				IS Version:	CETISv1	1.8.7	
Analyzed:	24 Jun-15 8:18	An An	alysis: U	ntrimmed Sp	earman-k	Kärber	Offic	ial Results	Yes		
Batch ID:	00-5147-3809	Tes		urvival (96h)			Anal	-			
Start Date:	01 Jun-15 08:3	0 Pro		PA/821/R-02		12)	Dilu		l Water		
Ending Date	: 05 Jun-15 09:1	0 Sp		ncorfiynchus			Brin		Applicable		
Duration:	4d 1h	So	urce: Ti	rout Lodge F	ish Farm		Age	: 31d			
Sample ID:	05-4172-3026	Co	de: V	/G139996-1			Clie		mal Lab		
Sample Date	e: 01 Jun-15 08:0	0 Ma	terial: C	admium nitra	ate .		Proj	ect: Refe	erence Toxi	cant	
Receive Dat	ie:	So	urce: R	eference To:	ricant						
Sample Age	30m	Sta	tion:								
Spearman-K	Kärber Estimates	-	-								
Threshold O	Option T	hreshold	Trim	Mu	Sigma		EC50		95% UCL		
Control Three	shold 0		0.00%	0.432	0.0321	1	2.704	2.332	3.135		
Fest Accept	ability Criteria										
Attribute	Test Stat	TAC Lim	its	Overlap	Decisi						
Control Resp	1	0.9 - NL		Yes	Passes	s Acceptability	Criteria				
6h Surviva	I Rate Summary				Ca	Iculated Vari	ate(A/B)				
C-µg/L	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	Α	В
)	Dilution Water	2	1	- 1	1	0	0	0.0%	0.0%	20	20
0.75		2	1	1 -	1	0.	0	0.0%	0.0%	20	20
.5	*,	2	1, 1	1	1	0	0	0.0%	0.0%	20	20 20
3		2	0.35	0.2	0.5	0.15	0.2121	60.61%	65.0%	7	20
3:		2	0	0	0	0	0 -		100.0%	0	20
12		2	0	. 0	0	0	0		100.076		
6h Surviva	Rate Detail										
C-µg/L	Control Type	Rep 1	Rep 2								
)	Dilution Water	1	1								
0.75	-	1	.1 -								
1.5		1	1					-			
3		0.5	0.2								
3	*	0	0								
2	<u> </u>	0	0								
6h Surviva	I Rate Binomials										
C-µg/L	Control Type	Rep 1	Rep 2								
)	Dilution Water	10/10	10/10								
		10/10	10/10								
0.75		10/10	10/10								
1.5		5/10	2/10								
1.5		0/10	0/10								

Analyst: ax: 6-24-15

CETIS™ v1.8.7.16

000-088-181-1

#### **CETIS Analytical Report**

Report Date: Test Code:

24 Jun-15 08:20 (p 2 of 2) 7538RTAQC | 21-3096-6125

Fish 96-h Acute Survival Test

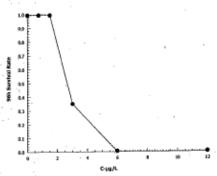
King County Metro Services, WQ Lab

Analysis ID: 19-7586-6520 Analyzed: 24 Jun-15 8:18

Endpoint: 98h Survival Rate
Analysis: Untrimmed Spearman-Kärber

CETIS Version: CETISv1.8.7 Official Results: Yes

Graphics



CETIS™ v1.8.7.16

000-088-181-1

#### 24 Jun-15 08:20 (p 1 of 1) Report Date: **CETIS Summary Report** Test Code: 7538RTAQC | 21-3096-6125 King County Metro Services, WQ Lab Fish 96-h Acute Survival Test GY . Test Type: Survival (96h) Analyst: 00-5147-3809 Diluent: Well Water Protocol: EPA/821/R-02-012 (2002) Start Date: 01 Jun-15 08:30 Not Applicable Oncorhynchus mykiss Brine: Species: Ending Date: 05 Jun-15 09:10 Age: 31d Trout Lodge Fish Farm Duration: 4d 1h Source: WG139996-1 Client: Internal Lab Sample ID: 05-4172-3026 Code: Reference Toxicant Project: Sample Date: 01 Jun-15 08:00 Material: Cadmium nitrate Source: Reference Toxicant Receive Date: Station: Sample Age: 30m Point Estimate Summary Method 95% LCL 95% UCL TU Analysis ID Endpoint μg/L Spearman-Kärber 19-7586-6520 96h Survival Rate EC50 2.704 2.332 3.135 Test Acceptability Overlap Decision Test Stat TAC Limits Attribute Analysis ID Endpoint Passes Acceptability Criteria 0.9 - NL Control Resn 1 19-7586-6520 96h Survival Rate 96h Survival Rate Summary %Effect 95% UCL Min Max Std Err Std Dev CV% 95% LCL Control Type Count Mean C-µg/L 0.0% 0.0% 0 0 Dilution Water 0 0 0.0% 0.0% 1 1 0.75 0.0% 0.0% 1 0 0 2 1.5 65.0% 0.2121 60.61% 0.2 0.5 0.15 0 1 0.35 3 2 100.0% 0 0 0 0 0 0 2 0 100.0% 0 0 2 0 0 0 0 12 96h Survival Rate Detail Control Type Rep.1 Rep 2 C-µg/L Dilution Water ũ 0.75 1 1.5 0.2 0.5 3. 6 . 0 0 0 12 96h Survival Rate Binomials Control Type Rep 1 Rep 2 C-µg/L 10/10 ۵ Dilution Water 10/10 10/10 10/10 0.75 10/10 10/10 1.5 2/10 3 : 5/10 0/10 0/10 6 -0/10 0/10 .... 12

Analyst:\_\_\_\_\_QA:\_\_\_\_

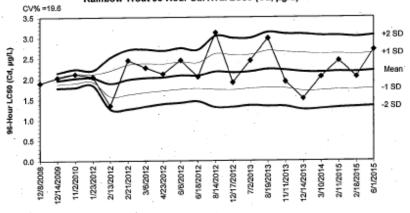
# Rainbow Trout (Onchorhyncus mykiss), Acute Test Precision 96-Hour Exposure to Reference Toxicant, Cd, µg/L Table 3 of 3

_	_	_	_	_	_		_	_	_	_	_	_	_	_	-	_	_		_	_	_	_	_			_	_	_	_
%	200	33	35.5	37.2	38.8	39.7	37.3	36.8	36.1	35.4	36.6	34.3	34.3	26.2	21.8	21.7	25.7	24.4	24.7	26.2	25.8	25.8	23.8	21.9	9.61	9.61			
Control	Limits	0.9 - 4.2	0.72 - 4.23	0.61 - 4.12	0.51 - 4.02	0.46 - 3.99	0.54-3.71	0.55 - 3.61	0.57 - 3.51	0.60-3.51	0.53 - 3.45	0.61 - 3.29	0.61-3.27	0.88-2.82	1.02 - 2.60	1.04 - 2.63	0.92 - 2.88	0.99 - 2.87	0.98 - 2.89	0.96 - 3.06	0.97 - 3.06	0.98-3.06	1.08 - 3.03	1.19 - 3.04	1.31 - 3.00	1.34 - 3.06			
	Stats	SK	SK	SK	SK	SK	PA	PA	SK	PA	- ba	PA	SK	PA	PA	PA	PA	SK	SK	TSK	TSK	PA	SK	SK	SK	SK			,
Survival	rcso	1.5	1.26	1.31	131	1.78	1.90	2.03	2.12	2.05	1.35	2.45	2.27	2.12	2.45	2.05	3.12*	191	2.44	2.98	1.93	1.52	2.05	2.44	2.05	2.70			
Pass/	Fail	Ъ	Ь	ы	Д	Ы	л Д.	4	4	Ы	Д	ď	Ы	Ъ	Ы	d,	Ы	Д.	d,	д	д	Ъ	Ы	Ā	Ъ	Ы			
Control	Mortality, .	0	0	0	0	0	0	0	0	0	0	۰	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
-	Water	NWW	NWW	NWW	NWW	NWW	NWW	NMN.	NWN	NWW	NWW	WWW.	NWW	NWW	NWW	NWN	WWN.	NWW	NWW	NWW	NWW	NWW	MMM	NWW	NWW	MMM			
Ref Tox.	# Tot	991020#6	991020#6	991020#6	991020#6	991020#6	080228#1	080228#1	080228#1	080228#1	080228#1	080228#1	080228#1	080228#1	080228#1	080228#1	080228#1	080228#1	121205	121205	121205	121205	121205	121205	121205	121205			
Dilution Series,	Cd, µg/L	.75 1.5 3 6 12	.75 1.5 3 6 12	.75 1.5 3 6 12	.75 1.5 3 6 12	.75 1.5 3 6 12	.75 1.5 3 6 12	.75 1.5 3 6 12	.75 1.5 3 6 12	.75 1.5 3 6 12	.75 1.5 3 6 12	.75 1.5 3 6 12	.75 1.5 3 6 12	.75 1.5 3 6 12	.75 1.5 3 6 12	.75 1.5 3 6 12	.75 1.5 3 6 12	.75 1.5 3 6 12	.75 1.5 3 6 12	.75 1.5 3 6 12	.75 1.5 3 6 12	.75 1.5 3 6 12	.75 1.5 3 6 12	.75 1.5 3 6 12	.75 1.5 3 6 12	.75 1.5 3 6 12			
Rainbow Trout	#10T	060317	060714	070209	070813	080320	081110	091117	101018	111226	111226 (49d old)	111226	120125 (41d old)	120321 (33d old)	120420 (47d old)	120511 (38d old)	120608 (67d old)	121121 (26d old)	130520 (43d old)	130710 (40d old)	131011 (31d old)	131118 (26d old)	140212 (26d old)	150116 (26d old)	150116 (33d old)	150501 (31d old)			
	I est #	3826	3932	4049	4222	4357	4635	5077	5550	6104	6116	6118	6124	6159	6211	6226	6338	6239	90/9	6774	6926	6972	7007	7439	7440	7538			
1	Date	060424	608090	070305	070904	080421	081208	091214	101102	120123	120213	120212	120306	120423	120606	120618	120814	121217	130702	130819	131111	131214	140310	150211	150218	150601	-		

PA = Probit Analysis
MA = Moving Average
(T)SK = (Trimmed) Spearman Karber
GI = Graphical Interpolation

RW = Reconstituted Water WW = Well Water \* = Value Outside Control Limits

#### Control Chart for Acute Reference Toxicant Tests with Rainbow Trout 96-Hour Survival LC50 (Cd, µg/L)

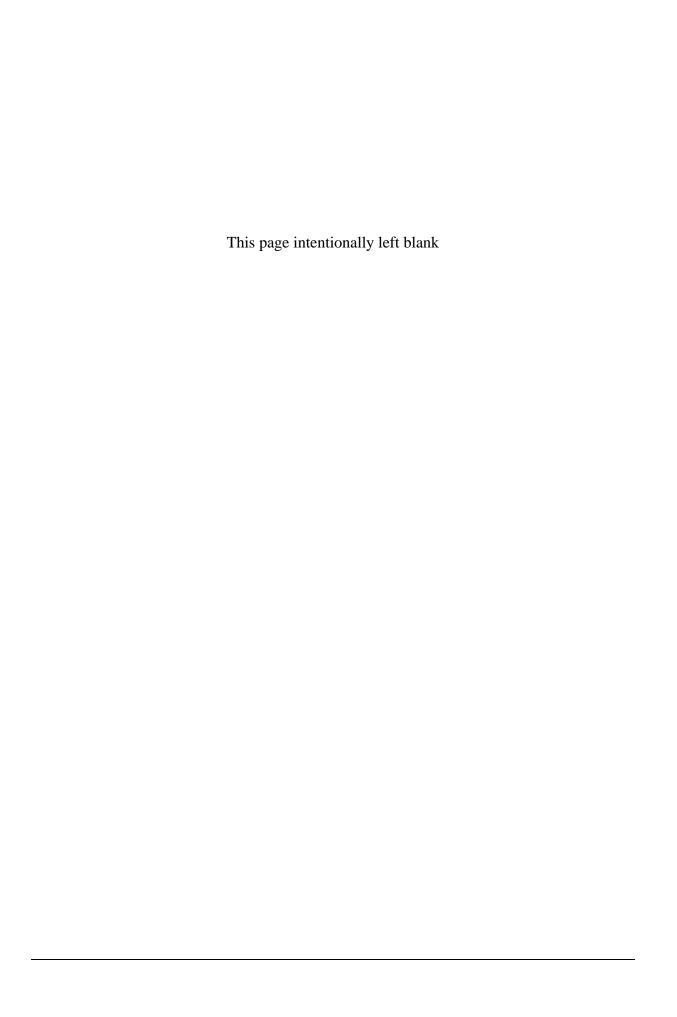


Test Date

Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
12/8/2008	1.90					
12/14/2009	2.03	1.9650	1.8731	1.7812	2.0569	2.1488
11/2/2010	2.12	2.0167	1.9061	1.7955	2.1273	2.2379
1/23/2012	2.05	2.0250	1.9332	1.8413	2.1168	2.2087
2/13/2012	1.35	1.8900	1.5778	1,2657	2.2022	2.5143
2/21/2012	2.45	1,9833	1.6225	1.2616	2.3442	2.7051
3/6/2012	2.27	2.0243	1.6775	1.3307	2.3711	2.7179
4/23/2012	2.12	2.0363	1.7134	1.3906	2.3591	2.6819
6/6/2012	2.45	2.0822	1.7502	1.4182	2.4142	2.7462
6/18/2012	2.05	2.0790	1,7658	1.4527	2.3922	2.7053
8/14/2012	3.12	2.1736	1.7414	1.3093	2.6058	3.0380
12/17/2012	1.91	2.1517	1.7326	1.3136	2.5707	2.9898
7/2/2013	2.44	2,1738	1.7648	1.3557	2.5829	2.9920
8/19/2013	2.98	2,2314	1.7832	1.3350	2.6797	3.1279
11/11/2013	1.93	2,2113	1.7725	1.3336	2.6502	3.0891
12/14/2013	1.52	2.1681	1.7103	1.2524	2.6260	3.0839
3/10/2014	2.05	2.1612	1.7169	1.2727	2.6054	3.0497
2/11/2015	2.44	2.1767	1.7407	1,3047	2,6126	3.0486
2/18/2015	2.05	2.1700	1,7453	1,3206	2.5947	3.0194
6/1/2015	2.70	2.1965	1.7665	1.3365	2.6265	3.0565

### **Exhibit E:**

# Fish Bioassay Results for Shops 01B and 04



## August 14, 2015

Steve Whittaker Local Hazardous Waste Management Program CNK-PH-1100 401 Fifth Avenue, Suite 1100 Seattle, WA 98101-1818

#### Dear Steve:

Attached is a report on the toxicity test (Method DOE 80-12) initiated on 7-2-15. Detailed findings are in the "Results" section of the attached report. The table below shows a summary of the test results.

There was 100% mortality in the dry cleaning waste (perc sludge) sample SW062615\_04\_SB(m) at the 100 mg/L test concentration and 100% survival at the 10 mg/L test concentration. Hence, this sample designates as a "Dangerous Waste" according to DOE 80-12 criteria.

There was 100% mortality in the dry cleaning waste (perc sludge) sample SW062715\_01\_SB(m) at the 100 mg/L test concentration and 100% survival at the 10 mg/L test concentration. This sample designates as a "Dangerous Waste" according to DOE 80-12 criteria.

#### Rainbow Trout

Sample	Sample Concentration mg/L	Percent Survival %	Designation	Designates (Yes/No)
SW062615_04_SB(m)	10	100	Extremely Hazardous Waste	No
	100	0	Dangerous Waste	Yes
SW062715_01_SB(m)	10	100	Extremely Hazardous Waste	No
	100	0	Dangerous Waste	Yes

If you would like additional information, please call Francis Sweeney at 477-7117.

Sincerely,

Gary Yoshida

Hay Joshida

King County Environmental Laboratory

REPORT ON
TOXICITY TESTS FOR THE
DESIGNATION OF DANGEROUS WASTE
(METHOD DOE 80-12)
CONDUCTED ON
DRY CLEANING WASTE

KING COUNTY DEPARTMENT OF NATURAL RESOURCES AND PARKS
WATER AND LAND RESOURCES DIVISION
ENVIRONMENTAL LABORATORY SECTION
322 WEST EWING STREET
SEATTLE, WASHINGTON 98119

Test Date: July 2, 2015

KCEL Test Numbers: #7600 (Oncorhynchus mykiss: DOE 80-12, 96-Hour Acute Test)

Report Date: August 14, 2015

#### SAMPLE

Dry cleaning waste samples SW062615\_04\_SB(m) collected on 6-26-15 and SW062715\_01\_SB(m) collected on 6-27-15 were received by the King County Environmental Laboratory (KCEL), Aquatic Toxicology Section on 6-29-15. The samples were delivered in 250 mL glass wide mouth jars and were refrigerated in the dark at  $4 \pm 2.0^{\circ}$ C until test initiation.

#### CONTROL WATER

The control water for the test with rainbow trout is freshwater obtained from a 95 ft. deep well located at the KCEL. Stock cultures of trout are held in a flow-through system of well water (WW).

The WW is analyzed for metals (last analyzed 5-15) and organics are measured annually (last analyzed on 3-15). Hardness, alkalinity, conductivity and pH are measured monthly.

Physical-chemical characteristics of the WW are listed in the following table:

Parameter	Value	Units
Conductivity	262	μmhos/cm
pH	8.01	
Total Hardness (calc.)	107	mg/L as CaCO <sub>3</sub>
Total Alkalinity	80	mg/L as CaCO <sub>3</sub>
Total Cd	<2	μg/L
Total Cr	< 3	μg/L
Total Cu	< 4	. μg/L
Total Ni	< 5	μg/L
Total Pb	< 20	μg/L
Total Zn	< 5	μg/L
Total Mercury	< 0.05	μg/L (measured 2-2015)
Volatile Organics	45 cmpds not detectable	
Organic Analysis (BNA'S):	69 cmpds not detectable	
Bis(2-Ethylhexyl)Phthalate	0.49	. μg/L
Pesticides & PCB's:	28 cmpds not detected	

#### METHODS

The acute toxicity test #7600 was conducted as outlined in Washington State Department of Ecology, Publication 80-12, Part A: Static Acute Fish Toxicity Test Protocol (Revised June 2009). The test was conducted at 10 mg/L and 100 mg/L to determine whether the samples designate as "Extremely Hazardous Waste" or "Dangerous Waste", respectively.

#### Test Organisms

Swim-up (swim-up on 5-1-15) rainbow trout (Oncorhynchus mykiss) were purchased from Trout Lodge located in Sumner, Washington on 5-26-15. The trout were acclimated for a period of 37 days in well water with a mean temperature of 13.7 °C, a minimum of 13.5 °C and a maximum of 13.9 °C in a flow-through system at KCEL. During acclimation the fish were fed Zieglers Salmon Starter twice daily. Feed was withheld 48 hours prior to the start of the test.

Physical data (based on a randomly chosen control jar at the end of the test) on trout used in the tests is shown in the table below.

Test #	Age (days-post swim-up	Mean Standard	Mean Weight	Loading
	at start of test)	Length (cm)	(grams)	Wt./Vol. (g/L)
7600	62	3.9	0.76	0.51

As indicated in the table the mean weight of the trout used in the test was 0.76 g with a mean standard length of 3.9 cm. The loading in each jar was 0.51 g/L.

#### Extraction

For each sample three aliquots of 0.15 g (test concentration 10 mg/L) and three aliquots of 1.5 g (test concentration 100 mg/L) of the sample were weighed and each placed into a 1L wide-mouth glass extraction jar (total 6 jars). 200 mL of well water (diluted 20% with DI water) was added to each jar. The jars were then closed with a teflon lined cap and extracted on a rotary agitator for 19.5 hours.

#### Rainbow Trout - 96-Hour Static Acute Toxicity Tests

The test jars were 5-gal, glass wide mouth jars with inside measurements of 40 cm (height) and 25 cm (dia.). The liquid level at a volume of 15 L was 28 cm. The jar opening was partially covered during the test

Well water (diluted 20% with DI water to keep the hardness below 100 mg/L) was measured (14.6 L for test and control jars) into each replicate. The solutions were maintained at  $12 \pm 1.0^{\circ}$ C in an environmental chamber (Hotpack Model 08082, s/n 79719). The D.O. at the start of the test (9.7 - 9.9 mg/L) was > 80% saturation (>8.6 mg/L).

The extracted samples were added to the test jars followed by a 200 mL WW (diluted 20% with DI) rinse of the extraction jar bringing the total volume in the test chambers to 15 L. The extraction jar (laid on its side) and teflon cap liner were placed on the bottom of the test chamber. Ten rainbow trout were placed randomly into each test jar.

Survival was monitored during the test and recorded at 24, 48, 72, and 96 hours. Dissolved oxygen, temperature and pH were recorded for the samples and controls at 0, 24, 48, 72 and 96 hours. The photoperiod was 16h L:8h D. The test was initiated at 1005 h on 7-2-15 and ended at 1000 h on 7-6-15.

#### Quality Assurance

The reference toxicant testing for the lot of fish used in this test was conducted on 6-1-15 (Test #7538). Cadmium nitrate was used as a reference toxicant for rainbow trout. The precision table located at the end of this report is maintained to monitor the sensitivity of these organisms to the reference toxicant and thereby provide an indication of their overall sensitivity to other compounds. The LC50 for the reference toxicant test (#7538) was 2.7  $\mu$ g Cd/L which is within the control limits (mean  $\pm$  2 SD) of 1.3 – 3.1  $\mu$ g/L Cd.

Temperature, pH and dissolved oxygen measurements remained within acceptable limits (USEPA, 2002) throughout the reference toxicant test for rainbow trout (#7538) and sample test (#7600). The tests met acceptability criteria regarding control survival (≥ 90%).

Physical-chemical methods are outlined in the table below:

Parameter	Method
Water Quality Tests	APHA (1992); US EPA (1991).
Temperature	Standard Mercury Thermometer (calibrated with a certified thermometer traceable to NBS records) and Onset, Tidbit (v2) UTBI-001 Temperature Logger (KCEL #436v1).
Dissolved Oxygen	YSI membrane electrode method (Method #4500-0 G; KCEL #434).
рН	Beckman 690 meter with automatic temperature compensation and Ross combination electrode (Method #4500-H; APHA 1992; KCEL #433).
Total Alkalinity	Potentiometric Method (Method #2320 B; KCEL #319v4).
Total Hardness	By calculation (Method #2340 B; KCEL #612v4).
Conductivity	Orion Model #122 Meter with 012210 conductivity cell (Method 2510B; KCEL #435).
Pesticides and PCB's	Continuous liquid extraction method (EPA Method #608; KCEL #733).
Organic Analysis	Continuous liquid extraction method for BNA's (EPA Method #625; KCEL #731).
Volatile Organics	Purge and trap method (EPA Method #624; KCEL #732).
Total Metals	ICP for Cd, Cr, Cu, Ni, Pb and Zn (EPA Method #200.7; KCEL #612v4); for Hg analysis (KCEL #604v5, 601v4, 605v0).

#### RESULTS

#### Rainbow trout

The following table contains survival percentages at 24-hour intervals during the 96-hour test in which rainbow trout were exposed to dilution water (controls) or to 10 and 100 mg/L sample concentrations.

	Sample	Per	rcentage	Survival	(%)	Number	Number of	
	mg/L	24 h	48 h	72 h	96 h	Dead	Fish Tested	
WW (control)	0	100	100	100	100	0	30	
SW062615 04 SB(m)	10	100	100	100	100	0	30	
	100	0	0	0	0	30*	30	
SW062715_01_SB(m)	10	100	100	100	100	0	30	
	100	0	0	0	0	30*	30	

<sup>\*</sup> All dead within 90 minutes of test start.

#### Sample

As the table above shows for sample SW062615\_04\_SB(m) there was 100% mortality (all dead within 90 minutes of test initiation) in the 100 mg/L test concentration and 100% survival in the 10 mg/L test concentration. Hence, this sample designates as a "Hazardous Waste" according to DOE 80-12 criteria.

For sample SW062715\_01\_SB(m) there was 100% mortality (all dead within 90 minutes of test initiation) in the 100 mg/L test concentration and 100% survival in the 10 mg/L test concentration. Hence, this sample designates as a "Hazardous Waste" according to DOE 80-12 criteria.

#### WATER QUALITY

The following table contains measurements of Temperature, pH and Dissolved Oxygen taken throughout the 96 h test (or up to the time of 100% mortality). Measurement of Total Hardness, Total Alkalinity and Conductivity are taken from samples collected at the beginning (0-h) and end (96-h) of the test (unless otherwise noted).

·	Sample:	Control	SW06261	5_04_SB(m)	SW062715_01_SB(m)		
Parameter		0 mg/L	10 mg/L	100 mg/L	10 mg/L	100 mg/L	
	Mean	12.0	12.3	12.5	12.2	12.5	
(°C)	Min.	11.8	11.8	12.3**	11.9	12.2**	
\ - <i>/</i>	Max.	12.5	12.9	12.7**	12.5	12.8**	
pH	Mean	7.65	7.67	7.98	7.71	7.98	
	Min.	7.42	7.43	7.96**	7.50	7.98**	
	Max.	7.95	7.97	7.98**	8.00	7.98**	
D.O.	Mean	8.3	8.0	9.5	8.2	9.4	
(mg/L)	Min.	7.3	6.8	9.4**	7.3	9.4**	
	Max.	9.6	9.4	9.5**	9.4	9.5**	
Tot, Hard	Oh	87	87	86	87	87	
(mg/L as CaCO <sub>3</sub> )	96h	85	86		86	*	
Tot. Alk	0h	65	65	65	65	65	
(mg/L as CaCO <sub>3</sub> )	96h	66	66	*	66	*	
Cond	0h	218	218	219	219	218	
(µmhos/cm)	96h	219	220		219	*	

<sup>\*</sup> Not taken since all dead within 90 minutes of test initiation

Additional water quality and QC data are listed on the attached photocopied pages from the laboratory notebook.

#### TESTED BY:

King County Environmental Laboratory 322 West Ewing Street Seattle WA 98119

<sup>\*\*</sup> Based on 0 hour readings only

#### REFERENCES

APHA. 1992. Standard Methods for the Examination of Water and Wastewater, 18<sup>th</sup> Edition. American Public Health Association, American Waterworks Association, Water Pollution Control Association. Washington D.C.

U.S. E.P.A. 1991. Code of Federal Regulations, 40CFR, Appendix A, July 1991 U.S. Environmental Protection Agency, Office of Federal Registry, Washington, D.C.

Washington State Department of Ecology. Biological Testing Methods for the designation of Dangerous Waste. DOE 80-12, revised June 2009.

US EPA. 2002. Methods for measuring the acute toxicity of effluents and receiving waters to freshwater and marine organisms. 5<sup>th</sup> edition. EPA-821-02-012, October 2002. US Environmental Protection Agency, Office of Water (4303T), Washington, DC.

# **DOE 80-12 Toxicity Test:**

Bench Sheets

Chain of Custody

PO# BO	7 MESI	Notes	15 N 5.00 N 5.1			PHSKS 6/29/15 IOAM  KIFL 6775 IOAM
<u> </u>	PERC S		PERC 1	Selvent 1		PRINT NAME PRINT NAME  DISAM LIME
	City, State, ZIP  Phone #  Fax #	Sample ID Sampled Sampled	SUSCISE SUSCIOUS ACM) 4/26/15	5/54/9 108-215-20005		Friedman & Bruya, Inc.  Seattle, WA 98119-2029 Ph. (206) 285-8282 Fax (206) 283-5044 Foreived by:

h on

f) End extraction at 0940

Control   Code   Rep     Random   NWW (L)	Sample (g)  0  0  0  0  0  15  11  11  11  0  15  11  11
Control   0   Blue   A   12   15 L   B   14   15   C   15   L   L   L   L   L   L   L   L   L	0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 -
B	0. 0. 0. 0. 1.5 1.5 1.5 1.5 1.5 1.5
C   D   15	0 - 0.15' '' 1.5' '' 0.15'
Sample 1         10         Green         A         3         15           B         15         15         15           C         2         15         15           Sample 1         100         Yellow         A         13         15           B         8         15         15         15           C         7         15         15           Sample 2         10         Orange         A         5         15           B         6         15         15           C         11         15         15	0.15 11 1.5 11 11 11 11
B   15   15     C   2   15     C   2   15     Sample 1   100   Yellow   A   13   15     B   8   15     C   7   15     Sample 2   10   Orange   A   5   15     B   6   75     C   11   15     C   15     C   17   15     C   17   15     C   18   15     C	1.5 1.5 11 11
Sample 1 100 Yellow A 13 15  B 8 15  C 7 15  Sample 2 10 Orange A 5 15  B 6 75  C 11 15	1.5 " " O <sub>1</sub> 15
Sample 1         100         Yellow         A         (3)         15           B         B         8         15           C         7         15           Sample 2         10         Orange         A         5         15           B         6         75         C         11         15	0,15
B   8   15   C   7   15   Sample 2   10   Orange   A   5   15     B   6   15   C   11   15	0,15
Sample 2 10 Orange A 5 15 B 6 15 C 11 15	0,15
B 6 /5 C 11 /5	
C 11 15	
	11
Sample 2 100   Red   A   /5	11
	11.5
B ? 15	- H
a. Fill test jars with 14.6 L of NWW and place randomly into EC # 556, East shelf. b. Measure D.O. 9.7 - 9.9 mg/L at 12°C. Aerate if < 80% saturation (8.6 mg/L).	<u> </u>
Aerate w/ O <sub>2</sub> @ L/min for sec per jar.	
Before Aeration Aeration After Aeration	
AERATION Start End	
Before Add Sample: D.O. (mg/L) Date/Time Date/Time D.O. (mg/L)	
Proceedings of the second of t	
Extraction bottles:	
<ul> <li>Rinse outside of extraction bottle with DW</li> </ul>	
b. Pour contents into assigned jar	
c. Rinse extraction bottle with 200 mL NWW and pour into test jar, bringing total volu	tme to /5_L.
Place extraction bottle into test jar on its side, remove liner and place at bottom of test jar floating). Setup at 2732 h.	
Take 0h sample for pH, DO, Temp, Tot. Alk, Tot. Hard, Cond.	r (prevent from
	r (prevent from
Add 10 fish per jar, one at a time to randomize, using dip net.	
Add 10 fish per jar, one at a time to randomize, using dip net.  Counts verified by 67 & - Cart see Yellow 1Red to Tur	b. d
Add 10 fish per jar, one at a time to randomize, using dip net.	b. d

	•
4	n
-	44

DOE 80-12 Hazardous Waste Test, Project # 421195
Rainbow Trout 96-Hour Static Acute Test

# MEASUREMENTS

· - 1	Sample				Cumulative Surv	iyal (# Alive/Rep)	~ , ·	Tot#
Treatment	Conc (mg/L)	Code	Rep	24 h	48 h	72 h	96 h	Alive
Control	0	Blue	A	10	. 10 .	16 -	PO	
		.	- B	10	10	10	10	
			С	10	10	10	10	
Sample 1	10	Green	Α	10	10	10	10	
			В	10	. 10	10 .	10	
			.c	10	(0	10	10	
Sample 1	100	Yellow	Α.	0	Ø	٠. ن	0	
-			В	. 0	0	O	٥	-
			C	0	0	0	0	20
Sample 2	10	Orange	A	10.	10	10	10	
1.	-		В	10	10	10	10	
			С	10.	io	10	10	
· Sample 2	100	Red	A	0	0	0	0	
		-	-B	. 0	0	0	0	1.
			c	. 0	0	0.	0.	
			Analyst:	64	64	Gry	GY	1 4

s = stressed

				N	fortality (f	/Dead/Rep	0)				
Jar	Fish #→	1 .	2	3	4	5	6	7	.8	9	10
#				2 - 05	7-2-15	7-2-15	72-15	7.2-15	7-2-15	7-2-15	7-2-15
Yellao	Date	7-2-15	7-2-15	7-2-15		1130	1130	1/30	1130	1130	1/30
Α	Time	1/30	1/30	1/30	1/30				7-2-15	7-2-15	7-2-15
Yellow	Date	7-2-15	7-2-15	7-2-15	7-2-15	7-2-15	7-2-15	7-2-15		1130	1/30
B	Time	1/30	1130	1/30	1130	1130	1/30	1130	1130		
Yellow	Date	7-2-15	7-2-15	7-2-15	7-2-15	7-2-15	7-2-15	7-2-15	7-2-15		7-2-15
LE-IDEC	Time	1/30	1130	1/30	1/30	1130	1130	1130	1/30	1/30	1130
Ped	Date	72-15	7-2-15	7-2-15	7-2-15	7-2-15	7-2-15	7-2-15	7-2-15		7-2-15
4	Time	1130	1/30	1170	1130	1130.	1130	1/30	1130	1130	1/30
	Date	7-2-15	7-2-15	7-2-15	7-2-15	7-2-15	7-2-15	7-2-15	7-2-15	7-2-15	7-2-15
Red	Time	1/30	1/30	1130	1130	1/30	1/30	1/30	//30		1130 .
B		-		7-2-15	7-2-15	7-2-15	7-2-15	7-2-15	7-2-15	7-2-15	7-2-15
Red	Date	7-2-15	7-2-(5			1/30	1130	1130	1/30	1/30	1130
0	Time	1/30	1/30	1130	1/30	1130	11130	1100	17.6		

DOE 80-12 Hazardous Waste Test, Project # 42/1/93
Rainbow Trout 96-Hour Static Acute Test

Test #: 5

#### Chemistry

Treatment	Sample	٠.				pН				D	. O. (mg	/L)	
	(mg/L)	Code	Rep	0 h.	24 h	48 h	72 h	96 h	0 h	24 h	48 h	72 h	96 h
Control	. 0	Blue	A	7844	7.619	7.609	7,541	7.423	9,5	8.5	8.1	7,8	7.6
			В	7.950	7,702		7,589		9.6	8,5	8.0	7.6	7.4
		-	С	7,939	7,731	7,673	7.567	7.493	9.5	8.8	8.1	7.5	7,3
Sample 1	10	Green	A	7,952	7,665	7.619	7,479		9.3	8.0	7.5	7.1	6.8
		-7.	В	7.971	7.696	7,673	7,599	7.534	9.4	8,5	8.0	7,8	7.5
			C	7.959	7.713	7,666	7.597	7.502	9.4	8.3	8.0	7,6	7.1
Sample 1	100	Yellow	A	7.979			,	-	9,5	· _	-	~	-
177			В	7.963	-	1	-	~.	9.5	-	~	-	-
			С	7,983	No.		_		9,4	-	-	-	
Sample 2	10	Orange	A	8,002	7.693	7.671	7.630	7.548	9.4	8,4	8.1	7.8	7,5
	,		В	7.981	7.701	7.669	7.635	7.581	9.4	8.4	7.9	8,0	7.5
			С	7.979	7.714	7,693	7.634	7.498	9,3	8,6	8,0	8,0	7.3
Sample 2	100	Red	A	7.980	-	-	-	٦,	9.4	_	_	-	-
			В	7,979	`				9.4	_	-	-	-
		-	С	7.975	_	~	-	_ '.	9.5	-	-	-	~
	- 1		Analyst:	Gy	Gy	GY	Gry	64	Gy	Gy	<b>G</b> Y	Gy	GΥ

		Sample Conc	Sam	ple#		alinity CaCO <sub>3</sub> )		rdness s CaCO <sub>3</sub> )		os/em)
Code	Trimt	(mg/L)	0 h	96 h	0 h	96 h	0 h	96 h	0 h	96 h
Blue	Control	0	L63[34-1	L63134 -6	65	65.9	87.3	85.1	218	219
Green	Sample 1	10	-2	-7	64.9	66.3	86.9	86,3	218	220
Yellow	Sample 1	100	-3	-8	64.8	omit	85.5	omit	219	omit
Orange	Sample 2	10	-4.	9	65.2	65.8	8711	85,9	219	219
Red	Sample 2	100	-5	-10	45	omit	8713	omit	218	omit
			- '-					Analyst:	6-v	64

DOE 80-12 Hazardous Waste Test, Project # 42// 93
Rainbow Trout 96-Hour Static Acute Test

Test #: 5 Test Date: 7600 7-2-15

	Sample			Т	emperature	°C (SN /	50 14 270	): ·
Treatment	Conc (mg/L)	Code	Rep	0 h	24 h	48 h	72 h 🤏	96 h
Control	0	Blue	A	. 12.5	12.0	14.8	11.8	11.8
			В	12.5	72. (	11.9	11.9	12.0
			. C .	12.4	12.1	11,9	12.0	12.0
Sample 1	10	Green	Α	12.9	12,5	/2,3	72.3	12,4
1.7%		1	В	. 12.5	12,1	11.8	11.8	11.9
			C	/2.7	12,4	12.2	12.2	/2,3
Sample 1	.100	Yellow	A	12.3	-		-	-
			В	12.5	-		-	
			C	12,7	_	-	-	
Sample 2	10	Orange	A	12.5	12.4	12.2	12,2	12.2
			В	12.5	12.4	12.1	12.2	12.3
			C	12.5	/2.1	11.9	11.9	11.9
Sample 2	100	Red	. A	12.6		700.	-	-
	- 1		В	12,2	~			-
			C	12,8		_		
		· A	nalyst:	64	Gy	Gy.	G-Y	64

Test Orga	nism Data at 96	Hours	
Sampled l	From: Contro	Rep _	3
Fish	Length (cm)	Weight (g)	
1	4.0	0.82	
. 2	4.0	0.783	
- 3	3.9	0.695	
4	3.9	0,750	
. 5-	4,1	0.873	
6	4.2	0,939	
7	4.0	0,760	
. 8	3.8	0.687	
9	3.7:	0.573	
10	3, 8	0.696	
Mean:	3.9	0.758	Load Rate:
	Where: Wr Vol = To	Wt)(# Fish)]/ Vol = Mean Wt in g tal Test Vol in L lish = # Fish/Rep	(0,75% g)(10 ) 15 L = 0.51 g/L

East west

Blue ABC Green AC

Freen B Yellow BC

Yellow B

Vellow B

Ped AC

had B

yellow + Red very turbed. Fish homey aguilibrary within minutes of being Placed in test sai. After the Nearly all dead. 1130 all dead in yellow and Red

All remaining Fish appear . Normal at end of test.

NOTES

# Reference Toxicant Test:

Bench Sheets

Precision Table

			77.1												
Reference To	xicant, Cd, 96	Hour Acute Sta	tic Renewal Te	st	Test#: 7	518									
	Rainbo	w Trout		Test	Test #: 7	-1-15									
ORGANISM	S				3										
700 fish re	ceived from 17	at 1355 h	L	or # (Swim-up da	to) 5-1-15	Skinned vi									
pich us A	rived at KCEL	at /355 1	1 on 5-24-5	in /bex	double blas	He Bey									
dea	I removed. At /	4rrival: pH	D.O. 2	ZOmg/	L, Temp //2/	2 °C. In									
T SHARES III	LIGHT III CHIEF W	vith new well wat . Refer to cultur	истали мегипоп т	ror /- daws	g Reed 7 X /deax	with									
Chry Car	PARCI.	Refer to cure.	e tog for recentifi	& holding into	mation.	· · · · · · · · · · · · · · · · · · ·									
DILLITION V	VATER/TOXIC	CLANDE													
<ol> <li>New Well</li> </ol>	Water (NWW)	5-31-15 , fil	itered through ny	olon notting											
2. Cd Stock S	oln: Nominal 2	mg Cd/L,	Measured Zo	3 mg/L on /	2-20-12	Pren /2>									
#	by add	0mg Cd/L, g Cd(NO	3)2*4H2O (mfr_/	Bakes	# 1-1226	rec , rec									
rin to not o	, opened	g Cd(NO; , lo	t# 049/30	) ⊆ 1L DW.											
LIMS RTA Sa	nple #: /3979	6-1	Wkgp #: _∕	39996	,										
· .		SOLU	TIONS			٦									
Cd Trtmt	-	Cd Stock	NWW		Cd (µg/L)	-									
(µg/L)	Code	(mL/ jar)	(L/ jar)	Sample #	(Measured)	1									
. 0	Blue	0	6 L			1									
0.75	Green	(NWW only)	(NWW only)												
1.5	Yellow	0,22	⊆6L .	<u> </u>	-	-									
3.0	Orange .	0.44	- <u>*</u>	¥ 162956-1	- 0.2										
6.0	Red	1,77	1	1 66 6756-1	2.43	1									
12.0	White	3,55	Ţ			-									
					-	1 -									
ROCEDURE															
. Add <u>@_1</u> Bring to 120	NWW to each C. Setup at	of 2 jars/trtmt; pl	lace in 12°C EC	# <u>8556, Ea</u>	<u>st_&amp; w</u>	est shelf									
Measure DC	if DO << satur	n. ration, acrate unti	: :1 DO > 0 ma/L	Oton countion											
					+ ush	•									
<ul> <li>Add Cd stoc</li> </ul>	k soln to jars:	✓ Mix: ✓	Sample for	Cd: Acidi	fy: Analys	st: GOY									
. A J.J. 10 C.L.	jar, one at a time	e to randomize, u	ising dip net. Str	art count verified	hu GV	& -									
Add 10 fish/	0830 nc	on 6-1-1.5	Place Tidbi	it temp recorder	(SN_9716078	Eest									
. Start test at	6. Start test at 0830 h on 6-1-15 Place Tidbit temp recorder (SN 9716-078 East shelf; SN 10468448 , 10051 shelf) in beaker w/WW into EC.														
Start test at	fish daily; reco	vrd #/ weight/ len	oth/ time dead	7. Remove dead fish daily; record #/ weight/ length/ time dead. Record survival daily. Measure Temp. pH &											
Remove dead DO daily in a	d fish daily; reco all trumts.	ord #/ weight/ len	gth/ time dead.	Record survival	daily. Measure	8. Renew solns (≈ 80%) at 48h:									
Remove dead DO daily in a Renew solns	d fish daily; reco all trumts. (≈ 80%) at 48h:	ord #/ weight/ len	igth/ time dead.	Record survival	daily. Measure										
Remove dead DO daily in a Renew solns a) Siphon	d fish daily; reco all trumts. (≈ 80%) at 48h: 1. & L from eac	ord #/ weight/ len ch jar.	ngth/ time dead.	Record survival	daily. Measure										
Remove dead DO daily in a Renew solns a) Siphon b) Filter NW	d fish daily; reco all trunts. (≈ 80%) at 48h: <u>1.8°</u> L from eac VW into 4L grad	ord #/ weight/ len ch jar. luated cylinder.	ngth/ time dead.	Record survival	daily. Measure										
Remove dead DO daily in a Renew solns a) Siphon b) Filter NW	d fish daily; reco all trunts. (≈ 80%) at 48h: <u>1.8°</u> L from eac VW into 4L grad	ord #/ weight/ len ch jar.	ngth/ time dead.	Record survival	daily. Measure										
Remove dead DO daily in a Renew solns a) Siphon b) Filter NW c) Add Cd s	d fish daily; reco all trunts. (≈ 80%) at 48h: <u>1.8°</u> L from eac VW into 4L grad	ord #/ weight/ len ch jar. luated cylinder. aliquot during fill	igth/ time dead.	Record survival		12									
Remove dead DO daily in a Renew solns a) Siphon b) Filter NW	d fish daily; reco all trunts. (≈ 80%) at 48h: d. s' _L from eac VW into 4L grad tock soln ⊆ 4L a	ord #/ weight/ len ch jar. luated cylinder. aliquot during fill 0.75	ling as below:	Record survival	6	12									
Remove dead DO daily in a Renew solns a) Siphon b) Filter NW c) Add Cd s	d fish daily; reco all trunts. (≈ 80%) at 48h: d. s' _L from eac /W into 4L grad tock soln ⊆ 4L a	ord #/ weight/ len ch jar. luated cylinder. aliquot during fill	igth/ time dead.	Record survival		12 2.36									
Start test at  Second S	d fish daily; reco all trunts. (≈ 80%) at 48h: 1.8° L from eac /W into 4L grad tock soln ⊆ 4L a	ch jar. luated cylinder. aliquot during fill	ling as below:	Record survival	6										
Start test at  Second S	d fish daily; reco all trunts. (≈ 80%) at 48h: 1.8° L from eac VW into 4L grad tock soln ⊆ 4L a	ord #/ weight/ len ch jar. luated cylinder. aliquot during fill 0.75	ling as below:	Record survival	6 // 7										

#### Reference Toxicant, Cd, 96-Hour Acute Static Renewal Test Rainbow Trout

Test #: \_ 7538 Test Date: 6-1-15

# MEASUREMENTS

						141	
7.77			Cumulative	Survival (#Alive	/Rep)		Tot#
Code	Cd (µg/L)	Rep	24 h	48 h	72 h	96 h	Alive
Blue	0	Α	10	10	10	10	100
	0	В	10	10	10.	10	/×
Green	0.75	A	100	10.	40	_IP_	10
	0.75	В	10	10	10	10	10
Yellow	1.5	A	10	10	IP	10	10
	1.5	В	10	10	10	10	12
Orange	3	· A	. 8	7	. 5	- 5_	
	. 3	. В	10	5	4	2	2
Red	. 6	A	3	0	0	(0)	0
777	6	В	3	. 0	0.	0	P
White	12	.A	- 1	D.	0	· · e _	- 0
	12	. B	· (	0	0	0	0
		Analyst:	, (E.A.	64	64	Gy.	100
s = stressed			·	.( -	/		

	-	man sa					Daily #	Dead/Re	ep .				
Code	Rep	THE STATE	1 -	2	3	4	5	6	7	8	9	10	Mean
·	200	Date	6-2	6-2	6-2	6.2	6-2	6-2	6-2	6.2	6-2	₹-3 .	Seader
امثاث	A	Time	1300	1300	1300	1300	1300	1300	1300	1300	1300	0730	143,476
White	71.	cm	3.2	3,0	3,2	33	3,2	3,2	3.Z	310	3. ]	3,1	3.15
		g	0,461	0,369	0.456	10,440	0,38Z	0.388	0146	0.422	0.379	0,312	0.403
1.		Date	6-2	6-2	6-2	4-2	6-2	4-2	6-2	6-2	6-2	6-3	ASSESS:
white	B	Time	1300	1300	1300	1300	1300	1300	1300	1300	1300	0730	
T.,	7.	Date	6-2	6-2	6-2	6-2-	6-2	6-2	6-2	4-3.	, 4-3	6-3	
Red	A	Time	1300		.1300	1300	1300	1300	1.300	0730	0730	0730	See Park High
2.	0	Date	6-2.	6-2	6-2	6-2	4-2.	4-2	6-2	6-3	6-3	6-3	Times in
Red	8	Time	1300	1300	1300	1300	1300	1300	1300	0730	0730	0730	Chalch
	-	Date	6-2	6-2	6-3.	6-4	6-4					1,4	1000
ORange	A	Time	1300	1300	0730	1040	1040						
		Date	6.3	6-3	6-3	6-3	6-3	6-4	6.5	6-5			
orange	B	Time	0730	0730	6730	0730	0730	1040	0900	0900			4.35
		Date		,			- 1						15055
] - 1		Time				- 1,						`	
		Date							,				
		Time											350000
. J	٠,	Date											
		Time								-			1.01
- 1		Date											P. P. SALIN
		Time											British A

Load Rate = [(Wt)(# Fish)]/ Vol = ( 0,403 g)(10)/ L L = 0,67 g/L

# Fish = #Fish/Rep Where: Wt = Mean Wt in g; Vol = Total Test Vol in L;

Reference Toxicant, Cd, 96-Hour Acute Static Renewal Test Rainbow Trout

Test #: 75-3%
Test Date: 6-1-15

Chemistry

150104270

	<del></del>		Transco	- (2co )		064	270	_	r-Pi	-17			1	- D	0 /	ar V	
١.	C-3-	D	$\overline{}$	24b	48h	72h	96h	Oh	24h	pH 48h	72h	96h	Oh.	24h	O. (mg	72h	96h
	Code Blue	A	11.7	24h	11.9	12.0	-	1	7.650		7.660	7,596			8,8	9.6	8,3
		В		12.0	11.9	12,0	-		7,700			7.674	10.0		9.0	8.6	8.4
1	Grn	A	11.9	11.9	11.9	12.0		8,102		7.781	7.736	7.65	10.1	8.4	8,8	8,5	8.1
	111	В	12,0	12.0	11.9	12. Z	11.9	8,100	7,738	7,809	7.794	7,715	10.1	8.7	9,1	8.8	8.4
	Yell	A	11.9	1/.8	11,8	11.8	//,7	8.104	7.789	7,881	7.781	7,718	101	8.7	8.8	8,7	3.4
		В	12,0	12.1-	11.9	12.2	1/18	8,106	7,735	7.788	7.736	7.717	10.1	8,8	8.7	8,4	3.1
[	Orng	A	11,8	14.8	11.7	11.8	147	8,116	7.703	7.823	7.839	7.826	10.1	8.4	9,0	9.2	9.3
	٠	B	11.7	11,8	11.7	11.9	11.7	8.115	7.750	7,822	7.886	7,879	10.1	8.7	9,0	9.4	9.4
	Red	A	11.5	11,7	11.5	-	-	8,125	7,742	7,929		-	10.1	8,8	9.6	cum	~
		В	11.9	11,9	11.9	2	-	8.128	7.749	7.912	·	-	10.1	8.8	9.6	~	-
	Wht	• <b>A</b>	11.9	1/19	11,8	-	-	8.118	7.753	7.931	-	-	10.1	8.9	9.8	_	- ,
		В	12.1	12,0	12,0	-		8,110	7,779	7.930	-		10,1	8.9	9.6	-	Ť.
L	An	alyst:	64	6y	64	Gy.	Gy.	GY	ęу	€Y	ĠΥ	64	Gy	Gγ	Gγ	æγ	64

		Random # Be	aker Position	1	
Code	Rep	Random Jar#	Code	Rep	Random . Jar#
Blue	A	3	Orange	A	/iO
1.1	В	11		B-	7 -
Green	. A	- 8	Red	A	6
	В	2		В.	9
Yellow	·A	1.	White	. A	12
	В	4		В	5

NOTES

7538

		,		•			-	aut Deter	wg 13	9,996 Jun-15(	7
CETIS Analy	tical Repo	ort .						ort Date: t Code:	7538	RTAQC	21-309
Fish 96-h Acute	Survival Test	ť						King	County Me	tro Serv	rices, W
,	19-7586-6520 24 Jun-15 8:18		dpoint:	96h Survival I Untrimmed S		ärber		'IS Version: cial Results		1.8.7	
7	0-5147-3809		st Type:	Survival (96h)			Anal	lyst: GY	-		
	01 Jun-15 08:3		otocol:	EPA/821/R-0	-	2)	Dilu		II Water		
Ending Date: .0	5 Jun-15 09:1	0 Sp	ecles:	Oncorfiynchu	ıs mykiss		Brin		Applicable		
Duration: 4	4d 1h	So	urce:	Trout Lodge F	Fish Farm		Age	: 31d			
Sample ID: (	05-4172-3026	Co	de:	WG139996-1			Clier		mal Lab		
Sample Date: 0	01 Jun-15 08:0	0 Ma	terial:	Cadmium nitr			Proj	ect: Ref	erence Toxi	cant -	
Receive Date:			urce:	Reference To	ocicant					-	
Sample Age: 3	30m	Sta	ation:								
Spearman-Kärb											
Threshold Option		hreshold	· Trim	Mu	Sigma		EC50	95% LCL	95% UCL 3.135		
Control Threshol	d 0		0.00%	0.432	0.03211		2.704	2.332	3.130		
Test Acceptabili	ity Criteria			1							
Attribute	Test Stat	TAC Lim	ilts	Overlap							
Control Resp	1	0.9 - NL		Yes	Passes	Acceptability	Criteria				
96h Survival Ra	te Summary				Cal	culated Varia	te(A/B)				,
	te Summary ntrol Type	Count	Mean		Max	Std Err	Std Dev	cv%	%Effect	Α	В 20
C-μg/L Cor 0 Dilu		2	1	. 1	Max 1	Std Err	Std Dev	0.0%	0.0%	20	20
С-µg/L. Сол 0 Dik 0.75	ntrol Type	2 2	1	1 1	Max 1 1	Std Err 0 0	Std Dev 0 0	0.0%	0.0%	20 20	20 20
С-µg/L Сог 0 Dilu 0.75 1.5	ntrol Type	2 2	1 1 1	1 1	Max 1 1	Std Err 0 0	Std Dev 0 0	0.0% 0.0% 0.0%	0.0% 0.0% 0.0%	20	20
С-µg/L Сол 0 Dik 0.75 1.5 3	ntrol Type	2 2 2 2	1 1 1 0.35	1 1 1 0.2	Max 1 1 1 0.5	Std Err 0 0 0 0 0.15	Std Dev 0 0 0 0 0.2121	0.0%	0.0%	20 20 20	20 20 20
C-μg/L Cor 0 Dilu 0.75 1.5 3 6	ntrol Type	2 2	1 1 1	1 1	Max 1 1	Std Err 0 0	Std Dev 0 0	0.0% 0.0% 0.0%	0.0% 0.0% 0.0% 65.0%	20 20 20 7	20 20 20 20
C-µg/L Cor 0 Dik 0.75 1.5 3 6	ntrol Type tion Water	2 2 2 2 2	1 1 1 0.35	1 1 1 02 0	Max 1 1 1 0.5	Std Err 0 0 0 0 0.15	Std Dev 0 0 0 0 0.2121	0.0% 0.0% 0.0%	0.0% 0.0% 0.0% 65.0% 100.0%	20 20 20 7 0	20 20 20 20 20
C-µg/L Coi 0 Dik 0.75 1.5 3 6 12	ntrol Type ution Water	2 2 2 2 2 2 2 2	1 1 1 0.35	1 1 02 0	Max 1 1 1 0.5	Std Err 0 0 0 0 0.15	Std Dev 0 0 0 0 0.2121	0.0% 0.0% 0.0%	0.0% 0.0% 0.0% 65.0% 100.0%	20 20 20 7 0	20 20 20 20 20
C-µg/L Coi 0 Dik 0.75 1.5 3 6 12 96h Survival Ra C-µg/L Coi	ntrol Type tion Water	2 2 2 2 2	1 1 0.35 0	1 1 02 0	Max 1 1 1 0.5	Std Err 0 0 0 0 0.15	Std Dev 0 0 0 0 0.2121	0.0% 0.0% 0.0%	0.0% 0.0% 0.0% 65.0% 100.0%	20 20 20 7 0	20 20 20 20 20
C-µg/L Coi 0 Dik 0.75 1.5 3 6 12 96h Survival Ra C-µg/L Coi	ntrol Type ution Water  te Detail ntrol Type	2 2 2 2 2 2 2 2	1 1 1 0.35 0 0	1 1 02 0	Max 1 1 1 0.5	Std Err 0 0 0 0 0.15	Std Dev 0 0 0 0 0.2121	0.0% 0.0% 0.0%	0.0% 0.0% 0.0% 65.0% 100.0%	20 20 20 7 0	20 20 20 20 20
C-µg/L Cor 0 Dilk 0.75 1.5 3 6 12 96h Survival Ra C-µg/L Cor 0 Dilk	ntrol Type ution Water  te Detail ntrol Type	2 2 2 2 2 2 2 2 7	1 1 1 0.35 0 0	1 1 02 0	Max 1 1 1 0.5	Std Err 0 0 0 0 0.15	Std Dev 0 0 0 0 0.2121	0.0% 0.0% 0.0%	0.0% 0.0% 0.0% 65.0% 100.0%	20 20 20 7 0	20 20 20 20 20
C-µg/L Cor 0 Dik 0.75 1.5 3 6 12 96h Survival Ra C-µg/L Cor 0 Dilu 0.75	ntrol Type ution Water  te Detail ntrol Type	2 2 2 2 2 2 PRep 1 1 1	1 1 1 0.35 0 0	1 1 02 0	Max 1 1 1 0.5	Std Err 0 0 0 0 0.15	Std Dev 0 0 0 0 0.2121	0.0% 0.0% 0.0%	0.0% 0.0% 0.0% 65.0% 100.0%	20 20 20 7 0	20 20 20 20 20
C-µg/L Cor 0 Dik 0.75 1.5 3 6 12 96h Survival Ra C-µg/L Cor 0 Dilu 0.75 1.5	ntrol Type ution Water  te Detail ntrol Type	2 2 2 2 2 2 2 1 1 1 1 1 1 1	1 1 1 0.35 0 0 Rep 2 1 1 1 0.2	1 1 02 0	Max 1 1 1 0.5	Std Err 0 0 0 0 0.15	Std Dev 0 0 0 0 0.2121	0.0% 0.0% 0.0%	0.0% 0.0% 0.0% 65.0% 100.0%	20 20 20 7 0	20 20 20 20 20
С-µg/L Сой 0 Ойк 0.75 1.5 3 6 12 96h Survival Ra C-µg/L Сой 0 Ойк 0.75 1.5 3	ntrol Type ution Water  te Detail ntrol Type	2 2 2 2 2 2 2 2 Rep 1 1 1 1 0.5	1 1 1 0.35 0 0 Rep 2 1 1 1	1 1 02 0	Max 1 1 1 0.5	Std Err 0 0 0 0 0.15	Std Dev 0 0 0 0 0.2121	0.0% 0.0% 0.0%	0.0% 0.0% 0.0% 65.0% 100.0%	20 20 20 7 0	20 20 20 20 20
С-µg/L Сой 0 Dik 1.5 3 6 12 96h Survival Ra C-µg/L Сой 0 Dik 0.75 1.5 3 6	ntrol Type stion Water  te Detail ntrol Type stion Water	2 2 2 2 2 2 2 1 1 1 1 1 0.5 0	1 1 1 0.35 0 0 Rep 2 1 1 1 0.2	1 1 02 0	Max 1 1 1 0.5	Std Err 0 0 0 0 0.15	Std Dev 0 0 0 0 0.2121	0.0% 0.0% 0.0%	0.0% 0.0% 0.0% 65.0% 100.0%	20 20 20 7 0	20 20 20 20 20
C-µg/L Cor 0 Dik 0.75 1.5 3 6 12 96h Survival Ra C-µg/L Cor 0 Dib 0.75 1.5 3 6 12	ntrol Type stion Water  te Detail ntrol Type stion Water	2 2 2 2 2 2 2 1 1 1 1 1 0.5 0	1 1 1 0.35 0 0 Rep 2 1 1 1 0.2	1 1 1 02 0 0	Max 1 1 1 0.5	Std Err 0 0 0 0 0.15	Std Dev 0 0 0 0 0.2121	0.0% 0.0% 0.0%	0.0% 0.0% 0.0% 65.0% 100.0%	20 20 20 7 0	20 20 20 20 20
C-µg/L Cor 0 Dik 0.75 1.5 3 6 12 96h Survival Ra C-µg/L Cor 0 Dib 0.75 1.5 3 6 12 98h Survival Ra C-µg/L Cor 0.75 1.5 3 6 12	ntrol Type stion Water  te Detail ntrol Type stion Water	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	1 1 1 0.35 0 0 Rep 2 1 1 1 0.2 0 0	1 1 1 02 0 0	Max 1 1 1 0.5	Std Err 0 0 0 0 0.15	Std Dev 0 0 0 0 0.2121	0.0% 0.0% 0.0%	0.0% 0.0% 0.0% 65.0% 100.0%	20 20 20 7 0	20 20 20 20 20
C-µg/L Cor 0 Dik 0.75 1.5 3 6 12 96h Survival Ra C-µg/L Cor 0.75 1.5 3 6 12 96h Survival Ra C-µg/L Cor 0.75 1.5	ntrol Type stion Water  te Detail ntrol Type stion Water  te Binomials ontrol Type	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	1 1 1 0.35 0 0 Rep 2 1 1 1 0.2 0 0	1 1 1 02 0 0	Max 1 1 1 0.5	Std Err 0 0 0 0 0.15	Std Dev 0 0 0 0 0.2121	0.0% 0.0% 0.0%	0.0% 0.0% 0.0% 65.0% 100.0%	20 20 20 7 0	20 20 20 20 20
C-µg/L Cor 0 Dik 0.75 1.5 3 6 12 96h Survival Ra C-µg/L Cor 0 Dib 0.75 1.5 3 6 12 96h Survival Ra C-µg/L Cor 0 Dib 0.75 0.75 0.75 0.75 0.75 0.75 0.75 0.75	ntrol Type stion Water  te Detail ntrol Type stion Water  te Binomials ontrol Type	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	1 1 1 0.35 0 0 Rep 2 1 1 1 0.2 0 0	1 1 1 02 0 0	Max 1 1 1 0.5	Std Err 0 0 0 0 0.15	Std Dev 0 0 0 0 0.2121	0.0% 0.0% 0.0%	0.0% 0.0% 0.0% 65.0% 100.0%	20 20 20 7 0	20 20 20 20 20
C-µg/L Cor 0 Dik 0.75 1.5 3 6 12 96h Survival Ra C-µg/L Cor 0 Dilu 0.75 1.5 3 6 12 96h Survival Ra C-µg/L Cor 0 Dilu 0.75 0 Dilu 0.75 0 Dilu 0.75	ntrol Type stion Water  te Detail ntrol Type stion Water  te Binomials ontrol Type	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	1 1 1 0.35 0 0 Rep 2 1 1 1 0.2 0 0	1 1 1 02 0 0	Max 1 1 1 0.5	Std Err 0 0 0 0 0.15	Std Dev 0 0 0 0 0.2121	0.0% 0.0% 0.0%	0.0% 0.0% 0.0% 65.0% 100.0%	20 20 20 7 0	20 20 20 20 20

Analyst:\_\_\_

CETIS™ v1.8.7.16

## **CETIS Analytical Report**

Report Date: Test Code:

24 Jun-15 08:20 (p 2 of 2) 7538RTAOC | 21-3096-6125

Fish 96-h Acute Survival Test

King County Metro Services, WQ Lab

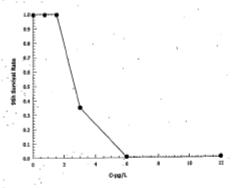
Analysis ID: Analyzed:

19-7586-6520 24 Jun-15 8:18 Endpoint: 96h Survival Rate

Analysis: Untrimmed Spearman-Kärber

CETIS Version: CETISv1.8,7 Official Results: Yes

Graphics



000-088-181-1

CETIS™ v1.8.7.16

Analyst:

JE 110 Guil	nmary Repo							Test Code:		RTAQC [ 2	
Fish 96-h Acu	te Survival Test								County Me	tro Service	s, WQ Lat
Batch ID:	00-5147-3809		Test Type:	Survival (96h) EPA/621/R-02-	040 (0000)			Analyst: G\ Diluent: W	/ . sll Water		
Start Date:	01 Jun-15 08:30	_	Protocol:	Oncorhynchus					t Applicable		
Ending Date:			Species:	Trout Lodge Fit				Age: 31			
Duration:	4d 1h		Source:		an Faith	-		9-1	ernal Lab		
Sample ID:	05:4172-3026		Code:	WG139996-1					ernar cab ference Toxi	rant	
Sample Date:	01 Jun-15 08:00	_	Material:	Cadmium nitrat				Project: Re	letetion Lovi	Jen K	
Receive Date:			Source:	Reference Toxi	cant						
Sample Age:	30m		Station:								
Point Estimate	e Summary				· '7						
Analysis ID	Endpoint		Leve	I μg/L	95% LCL	95% UCL	TU	Method			· ·
19-7586-6520	96h Survival Ra	ate	EC50	2.704	2.332	3.135		Spearma	n-Kärber		
Test Acceptab	ility										
Analysis ID	Endpoint		Attrib	oute	Test Stat	TAC Limi	its	Overlap			
19-7586-6520	96h Survival Ra	ite .	Contr	rol Resp	1	0.9 - NL		Yes	Passes A	cceptability	Criteria
96h Survival F	Rate Summary		-		,						
C-µg/L	Control Type	Coun	t Mear	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Dilution Water	2	. 1	1	1	1	1.	0	0	0.0%	0.0%
0.75		2	. 1	1	1	1	1	0	0	0.0%	0.0%
1.5		2	1	1	1	1	1	0	0	0.0%	0.0%
3		2	0.35	0	1	0.2	0.5	0.15	0.2121	60.61%	65.0% 100.0%
8		2	0	0	0	0	0	0 .	0		100.0%
12		2 ·	.0	. 0	0 .	. 0	0	0 .	0 -		100.076
96h Survival F	Rate Detail										
C-µg/L	Control Type	Rep 1		2							
0	Dilution Water	1.	. 1								
0.75	-	1-	1								
1.5		. 1	1								
3		0.5	0.2								
6		0	0								
12		0 .	0								<del></del>
96h Survival F	Rate Binomials										
C-µg/L	Control Type	Rep 1					_				
D	Dilution Water	10/10									
0.75		10/10							-		
1.5		10/10	-	)							
3		5/10	2/10								
6		0/10	0/10					-			
12		0/10	0/10								

Analyst:\_\_\_\_\_ QA:\_\_\_\_

# Rainbow Trout (Onchorhyncus mykiss), Acute Test Precision 96-Hour Exposure to Reference T. 96-Hour Exposure to Reference Toxicant, Cd. µg/L Table 3 of 3

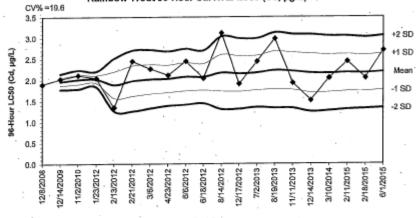
	_		_	_	_	_	_	_	_	_		_	_		_	_	_	_	_	-	_	-	-	_	_	_	_	-	-	-
% OO	3	33	35.5	37.2	38.8	39.7	37.3	36.8	36.1	35.4	36.6	34.3	34.3	26.2	21.8	21.7	25.7	24.4	24.7	26.2	25.8	25.8	23.8	21.9	19.6	19.6				
Control		0.9-4.2	0.72 - 4.23	0.61-4.12	0.51 - 4.02	0.46 - 3.99	0.54-3.71	0.55-3.61	0.57-3.51	0.60-3.51	0.53 - 3.45	0.61 - 3.29	0.61-3.27	0.88-2.82	1.02-2.60	1.04 - 2.63	0.92 - 2.88	0.99-2.87	0.98 - 2.89	0.96-3.06	0.97 - 3.06	0.98-3.06	1.08 - 3.03	1.19 - 3.04	1.31 - 3.00	1.34 - 3.06				
Stats		SK	SK	SK	SK	SK	PA	PA	SK	- PA	PA.	PA	SK	PA	PA	PA	-PA	SK	SK	TSK	TSK	PA	SK	SK	SK	SK				
Survival LC50		1.5	1.26	1.31	. 1.31	1.78	1.90	2.03	2.12	2.05	1.35	2.45	2.27	2.12	2.45	2.05	3.12*	1.91	2.44	2.98	1.93	1.52	2.05	2.44	2.05	2.70				
Pass/		a,	D.	p.	P.	Д	Ъ	d,	д	д	Д	д	d,	ы	Д	Δ,	Ъ	Ъ	g,	۵,	д	Д	ر م	ß,	d,	Ы				
Control Mortality,	%	0	0	0					0	0	0	0	0	0	. 0	0	0	0	0	0	0 .	0	0	0	0	0				
Water		NWW	NWW	NWW	NWW	NWW	NWW	. MMN	NWW	NWW	NWW	NWW	NWW	NWW	NWW	NWW	NWW	NWW	NWW	NWW	NWW	NWW	NWW	NWW	NWW	NWW.				
Ref. Tox. Lot#		991020#6	991020#6	991020#6	991020#6	991020#6	080228#1	080228#1	080228#1	080228#1	080228#1	080228#1	080228#1	080228#1	080228#1	080228#1	080228#1	080228#1	121205	121205	121205	121205	121205	121205	121205	121205				
Dilution Series, Cd, µg/L		.75 1.5 3 6 12	.75 1.5 3 6 12	.75 1.5 3 6 12	.75 1.5 3 6 12	.75 1.5'3 6 12	.75 1.5 3 6 12	.75 1.5 3 6 12	.75 1:5 3 6 12	.75 1.5 3 6 12	.75 1.5 3 6 12	.75 1.5 3 6 12	.75 1.5 3 6 12	.75 1.5 3 6 12	.75 1.5 3 6 12	.75 1.5 3 6 12	.75 1.5 3 6 12	.75 1.5 3 6 12	.75 1.5 3 6 12	.75 1.5 3 6 12	3 6	.75 1.5 3 6 12	.75 1.5 3 6 12	.75 1.5 3 6 12	1.5 3	.75 1.5 3 6 12				
Rainbow Trout		060317	060714	070209	-070813	080320	081110	091117	101018	111226	111226 (49d old)	111226	120125 (41d old)	120321 (33d old)	120420 (47d old)	. 120511 (38d old)	120608 (67d old)	121121 (26d old)	130520 (43d old)	130710 (40d old)	131011 (31d old)	131118 (26d old)	140212 (26d old)	150116 (26d old)	150116 (33d old)	150501 (31d old)		-		
Test#		3826	3932	4049	4222	4357	4635	2022	5550	6104	9119	6118	6124	6159	6211	9229	6338	6239	9029	6774	6926	6972	7007	7439	7440	7538				
Date		060424	608090	070305	070904	080421	081208	091214	101102	120123	120213	120212	120306	120423	120606	120618	120814	121217	130702	130819	131111	131214	140310	150211	150218	150601				

MA = Moving Average (T)SK = (Trimmed) Spearman Karber GI = Graphical Interpolation PA = Probit Analysis

RW = Reconstituted Water WW = Well Water

\* = Value Outside Control Limits

# Control Chart for Acute Reference Toxicant Tests with Rainbow Trout 96-Hour Survival LC50 (Cd, µg/L)



**Test Date** 

Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
12/8/2008	· 1.90					
12/14/2009	2.03	1.9650	1.8731	1.7812	2.0569	2.1488
11/2/2010	2.12	2.0167	1.9061	1.7955	2.1273	2.2379
1/23/2012	2.05	2.0250	1.9332	1,8413	2.1168	2,2087
2/13/2012	1.35	1.8900	1.5778	1.2657	2.2022	2.5143
2/21/2012	2.45	1.9833	1.6225	1.2616	2.3442	2.7051
3/6/2012	2.27	2.0243	1.6775	.1.3307	2.3711	2.7179
4/23/2012	2.12	2.0363	1.7134	1.3906	2.3591	2.6819
6/6/2012	2.45	2.0822	1.7502	1.4182	2.4142	2.7462
6/18/2012	2.05	2.0790	1.7658	1.4527	2.3922	- 2.7053
8/14/2012	3.12	2,1736	1.7414	1,3093	2.6058	3.0380
12/17/2012	1.91	2.1517	1.7326	1.3136	2.5707	2,9898
7/2/2013	2.44	2.1738	1.7648	1.3557	2.5829	2.9920
8/19/2013	2.98	2,2314	1.7832	1.3350	2.6797	3.1279
11/11/2013	1.93	2.2113	1.7725	1.3336	2.6502	3.0891
12/14/2013	1.52	2.1681	1.7103	1.2524	2.6260	3.0839
3/10/2014	2.05	2.1612	1.7169	1.2727	2.6054	3.0497
2/11/2015	2.44	2.1767	1.7407	1.3047	2,6126	3.0486
2/18/2015	2.05	2,1700	1.7453	1.3206	2.5947	3.0194
6/1/2015	2.70	2.1965	1.7665	1.3365	2.6265	3.0565