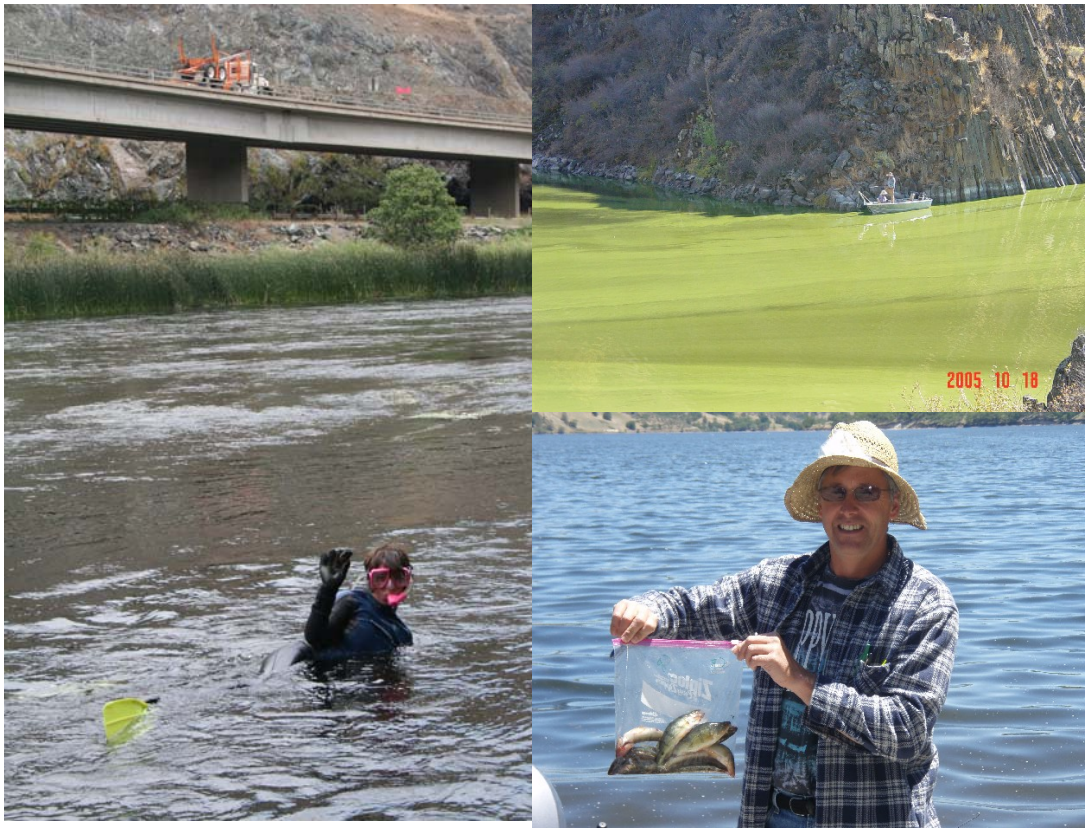
State Water Resources Control Board
Division of Water Rights

Final Report to the U.S. Environmental Protection Agency on Cyanotoxin Accumulation in Fish and Freshwater Mussels of the Klamath River

Water Quality Cooperative Agreement CP 96941301-2



November 2008

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The report can be accessed on line at
http://www.waterrights.ca.gov/FERC/ceqa_projects.html

Introduction

The Klamath River is one of the major salmon rivers on the West Coast of the United States. The Klamath River begins at Upper Klamath Lake in Oregon and enters the Pacific Ocean about 250 miles downstream in California. Below Upper Klamath Lake the river flows through a series of reservoirs that are part of the Klamath Hydroelectric Project. PacifiCorp owns and operates the project and is currently in the process of relicensing the project with the Federal Energy Regulatory Commission (FERC). Iron Gate and Copco Reservoirs, at about river miles 190 and 198 respectively, have been the focus of a number of studies starting in 2004 after high concentrations of the cyanotoxin microcystin were measured in Copco Reservoir. These reservoirs produce ideal conditions for the growth of large populations of cyanobacteria, including *Microcystis aeruginosa*. *Microcystis aeruginosa* and microcystin, the cyanotoxin it produces, has been studied extensively in the Klamath River since 2005. Some of the highest levels of microcystin ever recorded in the world have been measured in samples from Copco Cove in Copco Reservoir (Kann and Corum 2007).

High levels of microcystins can produce chronic and lethal health effects in humans and animals. Microcystins are the most commonly detected cyanotoxin across the globe (Blue Green Algae Work Group 2008). Cyanobacteria that are known to produce microcystins include *Microcystis*. Microcystins are cyclic heptapeptides with about 60 known structural variants that have significant influence on the toxicity and physio-chemical properties of the toxin. The most studied and common variant is microcystin-LR. The mechanism of toxicity of microcystins is the inhibition of protein phosphatases, which can cause internal hemorrhaging of the liver. Exposure to microcystins has the potential to cause acute and chronic injury, depending on the dose and duration of exposure. Microcystins are considered to be tumor promoters based on studies in mice that were initiated with a known carcinogen (Blue Green Algae Work Group 2008).

The Klamath River in California is listed as an impaired water body on the Clean Water Act (CWA) section 303(d) list for sediment, microcystin toxin, temperature, nutrients and dissolved oxygen. The US Environmental Protection Agency (USEPA) added the Klamath River segment including Iron Gate and Copco Reservoirs as impaired for microcystin toxin in May 2008. The North Coast Regional Water Quality Control Board (NCRWQCB) is in the process of developing a Total Maximum Daily Load (TMDL) for the Klamath River. Before the FERC can issue a new license for the Klamath Hydroelectric Project, PacifiCorp must obtain water quality certification, under section 401 of the CWA, from the State Water Resources Control Board (State Water Board). PacifiCorp has applied for water quality certification and the State Water Board is currently preparing an Environmental Impact Report.

Study Background

In 2007 the State Water Board, Division of Water Rights, received funding through a Water Quality Cooperative Agreement (CP 96941301-2) from the USEPA for the analysis of fish tissue and water from the Klamath River for the presence of the microcystin. The State Water Board entered into a contract with the San Jose State University Foundation/California Department of Fish and Game Water Pollution Control Lab (WPCL) to collect fish and analyze samples for microcystins. The WPCL is certified/registered as a State environmental testing laboratory pursuant to the provisions of the California Environmental Laboratory Improvement Act of 1988. The WPCL developed and validated a liquid chromatography-electrospray ionization tandem mass spectrometry (LC-ESI-MS/MS)

method to identify and quantify trace levels of cyanotoxins or microcystins in water, bivalves and fish tissue with enhanced sensitivity and specificity. The method enables confirmation and quantification of six microcystins (MC-LA, LF, LR, LW, RR and YR) with a single chromatographic run. The applied chromatography also allows determination of certain MC metabolites (Demethyl-LR and -RR).

This study had three primary objectives. The first objective was to perform a screening level analysis of microcystin accumulation in a range of aquatic species. The second objective was to provide microcystin levels in yellow perch to the Office of Environmental Health Hazard Assessment (OEHHA) that could be used to develop a public fish tissue consumption advisory. The third objective was to provide support for other studies by analyzing water samples for microcystin. Prior to collecting the yellow perch samples, State Water Board staff discussed with OEHHA staff the quantity of samples necessary to capture the range of variability between samples that is required to conduct a risk assessment and establish fish tissue advisories. Other than a study that showed trace amounts of microcystin in a few steelhead livers (Fetcho 2006), this is the most extensive study of microcystin accumulation in aquatic species of the Klamath River. The lack of existing information on microcystin accumulation in aquatic species in the Klamath River necessitated a flexible study design.

Yellow perch and freshwater mussels were the primary species targeted for this study. Yellow perch are the most abundant species in Iron Gate and Copco Reservoirs, and are a popular sport fish. The California Department of Fish and Game (DFG) does not impose catch limits for yellow perch, and catches of 50-100 yellow perch per day are not uncommon (Fish Sniffer and VisitUSA). High catch rates and a lack of limits may result in some individuals consuming large numbers of yellow perch. Consumption of yellow perch containing microcystin can cause chronic or acute health effects, depending on the toxin level, quantity consumed, and length of exposure.

The Karuk, Hoopa, and Yurok Tribes have lived on the Middle and Lower Klamath, and Trinity Rivers since time immemorial. Tribal people relied heavily on fish and other traditional foods, including freshwater mussels. Freshwater mussels (or clams) were a part of the traditional diet of tribal people on the Klamath River (Norgaard 2004). Anecdotal information indicates some tribal members may still collect and consume mussels from the Klamath River. River otters, raccoons, and other species also rely on mussels as a food source. Consumption of mussels containing microcystin can cause chronic or acute health effects, depending on the toxin level, quantity consumed, and length of exposure.

Mussels are very sensitive to environmental changes and may be indicators of degradation. Freshwater mussels are very long-lived species, and *Margaritifera falcata* (western pearlshells) can live for over a century. Almost three-quarters of all 297 native freshwater mussel species in North America are imperiled and almost 35 are extinct (Nedeau, Smith, and Stone). Mussels are one of the most endangered groups of animals on Earth, yet little is known about their life history, and habitat needs. The greatest threats to *Margaritifera falcata* come from water diversion projects for irrigation, power generation, and water supply, particularly in Washington, Oregon, Idaho, and California. *Gonidea angulata* (western ridged mussels) have been extirpated throughout their original range in California, particularly in southern California and the Central Valley. They have also been extirpated from many sites in the Snake and Columbia watersheds (Nedeau, Smith, and Stone).

Yearling Chinook salmon were also targeted for this study. Fish in the Iron Gate Hatchery are raised in water released from a mid-level outlet located in Iron Gate Dam. Constant

exposure to reservoir water makes these fish an ideal sentinel species for microcystin accumulation. Microcystin in hatchery fish could affect their overall health and resistance to endemic diseases such as *Ceratomyxa shasta* and *Parvicapsula minibicornis.*

The first collection of yellow perch and mussels was timed to correspond with the summer/fall period when the microcystin level is the highest in Iron Gate and Copco Reservoirs. After the first analysis of mussels and yellow perch showed high levels of microcystin, a second collection was developed and timed for a period when levels of microcystin is low. This analysis was designed to show if microcystin is stored for long periods in tissue or if depuration is occurring.

Sample Collection

Samples were collected by a number of different parties. Table 1 is a catalog of the samples analyzed during this study. WPCL staff collected yellow perch from Iron Gate and Copco Reservoirs in 2007. Tim Wilhite with the USEPA collected yellow perch in 2008. Dr. Kari Norgaard with Whitman College, and Susan Corum with the Karuk Tribe of California collected mussels. Water samples were originally collected by Susan Corum with the Karuk Tribe and later submitted by the USEPA Region 9 laboratory.

Table 1 – Catalog of Samples

TYPE OF SAMPLE	DATE COLLECTED	LOCATION COLLECTED
6 Chinook Salmon	August 13, 2007	Iron Gate Hatchery
1 Gonidea angulata	July 11, 2007	Klamath River near I-5
1 Gonidea angulata	July 20, 2007	Klamath River near Seiad Valley
1 Gonidea angulata	July 24, 2007	Klamath River near Big Bar River Access
1 Unknown Mussel	July 24, 2007	Klamath River near Big Bar River Access
13 Mussels (composite)	July 20, 2007	Klamath River
18 Yellow Perch (18 tissue, 3 liver composite)	September 7-8, 2007	Copco Reservoir, three locations
18 Yellow Perch (18 tissue, 3 liver composite)	September 7-8, 2007	Iron Gate Reservoir, three locations
3 Mussels	November 5, 2007	Klamath River at China Camp across from Happy Camp
3 Mussels	November 5, 2007	Klamath River at Brown Bear below Scott River
3 Mussels	November 5, 2007	Klamath River .5 miles above Seiad Valley
3 Mussels	November 5, 2007	Klamath River below I-5 Bridge
3 Mussels	November 6, 2007	Klamath River under Orleans Bridge
8 Yellow Perch (8 tissue, I liver composite)	June 12, 2008	Copco Reservoir at Copco Cove
8 Yellow Perch (8 tissue, I liver composite)	June 12, 2008	Copco Reservoir at Mallard Cove
9 Water Samples	July 23 and 24: August 21, 22, 23; September 18 and 19	Iron Gate Reservoir, Copco Reservoir, and Klamath River

Sample Results

The WPCL reports eight different analytes or congeners of microcystin, including RR, Demethyl-RR, LR, Demethyl-LR, YR, LA, LW, and LF. The tables below list total microcystin levels in nanograms per gram as an efficient way to evaluate and compare sample results. Total microcystin was calculated by summing reported levels for each of the analytes. There was variation in the type and levels of the analytes, and for this reason the complete lab sheets are included with this report. As stated above, sampling was divided into a period when toxin levels are typically high (e.g. late summer), and a period when levels are usually low (e.g. fall, winter, and spring).

Summer Bloom Period Samples

Yearly Chinook salmon were collected by DFG staff at the Iron Gate Hatchery (Table 2). These fish were from eggs collected in the fall of 2006.

Table 2 – Yearling Iron Gate Hatchery Salmon Summer 2007

Lab #	Date Collected	Tissue Type	Total Microcystin (ng/g)
L-463-07-01	8/13/2007	Fish Liver	301
L-463-07-01	8/13/2007	Fish Stomach	Non-detectable
L-463-07-01	8/13/2007	Fish Fillet	Non-detectable

Mussels were collected from five locations by Dr. Kari Nordaard starting at the Interstate 5 (I-5) Bridge downstream to the Big Bar River access (Table 3). Results show a general trend, with the highest concentration of microcystin at the I-5 location, and lower concentrations downstream. Due to the small sample size additional samples are needed to confirm this trend. A composite of 13 mussels, collected from various locations in the Middle Klamath River was also analyzed.

Table 3 – Mussels Summer 2007

Lab #	Date Collected	Species	Total Microcystin (ng/g)
L-405-07-1	7/11/2007	Gonidea angulata	2,803.1
L-405-07-2	7/11/2007	Gonidea angulata	412.54
L-405-07-2Dup	7/11/2007	Gonidea angulata	383.35
L-405-07-3A	7/11/2007	Gonidea angulata	889.8
L-405-07-3B	7/11/2007	Unknown	201.2
L-405-07-13	7/20/2007	13 Gonidea angulata	57
L-405-07-Dup	7/20/2007	13 Gonidea angulata	32.3
L-405-07-Trip	7/20/2007	13 Gonidea angulata	34.2

Yellow perch were collected from three locations by the WPCL, representing a lower, middle and upper section, in both Iron Gate and Copco Reservoir (Table 4). Iron Gate Reservoir is 6.8 miles long, and Copco Reservoir is 4.5 miles long. Past toxin testing of water has shown that there is a variation of toxin levels within the reservoirs during bloom periods. Between five and seven fish were collected at each location in each reservoir. Liver composites from each of these six groups were also analyzed. The number of fish collected, and spatial distribution of sample collection, demonstrates the range of variability in tissue toxin levels.

Table 4 – Yellow Perch Summer 2007

Lab #	Date Collected	Location	Tissue Type	Total Microcystin (ng/g)
L-524-07-1	9/6-7/2007	Lower Iron Gate Reservoir	Fillet IG-1	Non-detectable
L-524-07-2	9/6-7/2007		Fillet IG-2	63.7
L-524-07-3	9/6-7/2007		Fillet IG-3	2.23
L-524-07-4	9/6-7/2007		Fillet IG-4	59.01
L-524-07-5	9/6-7/2007		Fillet IG-5	3.09
L-524-07-6	9/6-7/2007		Fillet IG-6	2.27
L-524-07-7	9/6-7/2007	Middle Iron Gate Reservoir	Fillet IG-7	2.54
L-524-07-7Dup	9/6-7/2007		Fillet IG-7 Dup	Non-detectable
L-524-07-8	9/6-7/2007		Fillet IG-8	3.01
L-524-07-9	9/6-7/2007		Fillet IG-9	2.02
L-524-07-10	9/6-7/2007		Fillet IG-10	2.68
L-524-07-11	9/6-7/2007		Fillet IG-11	2.18
L-524-07-12	9/6-7/2007		Fillet IG-12	Non-detectable
L-524-07-13	9/6-7/2007	Upper Iron Gate Reservoir	Fillet IG-13	Non-detectable
L-524-07-14	9/6-7/2007		Fillet IG-14	229.23
L-524-07-15	9/6-7/2007		Fillet IG-15	106
L-524-07-16	9/6-7/2007		Fillet IG-16	73
L-524-07-17	9/6-7/2007		Fillet IG-17	82.04
L-524-07-18	9/6-7/2007		Fillet IG-18	157.23
L-524-07-19	9/6-7/2007	Lower Copco Reservoir	Fillet CP-1	77.7
L-524-07-20	9/7-8/2007		Fillet CP-2	97.37
L-524-07-21	9/7-8/2007		Fillet CP-3	82.1
L-524-07-22	9/7-8/2007		Fillet CP-4	61.56
L-524-07-23	9/7-8/2007		Fillet CP-5	183.47
L-524-07-24	9/7-8/2007		Fillet CP-6	171
L-524-07-25	9/7-8/2007		Fillet CP-7	80.92
L-524-07-26	9/7-8/2007	Middle Copco Reservoir	Fillet CP-8	147
L-524-07-27	9/7-8/2007		Fillet CP-9	350
L-524-07-28	9/7-8/2007		Fillet CP-10	405
L-524-07-29	9/7-8/2007		Fillet CP-11	422
L-524-07-30	9/7-8/2007		Fillet CP-12	240
L-524-07-31	9/7-8/2007	Upper Copco Reservoir	Fillet CP-13	181
L-524-07-32	9/7-8/2007		Fillet CP-14	251
L-524-07-33	9/7-8/2007		Fillet CP-15	125
L-524-07-33Dup	9/7-8/2007		Fillet CP-16	141
L-524-07-34	9/7-8/2007		Fillet CP-17	101
L-524-07-35	9/7-8/2007		Fillet CP-18	Non-detectable
L-524-07-36	9/7-8/2007		Fillet CP-19	86.3
L-524-07-37	9/6-8/2007	Iron Gate Reservoir	IG Liver Composite	Non-detectable
L-524-07-38	9/6-8/2007		IG Liver Composite	50.1
L-524-07-39	9/6-8/2007		IG Liver Composite	70.6
L-524-07-40	9/6-8/2007	Copco Reservoir	CP Liver Composite	177.7
L-524-07-41	9/6-8/2007		CP Liver Composite	473.2
L-524-07-42	9/6-8/2007		CP Liver Composite	228.48

Fall and Spring Non-Bloom Period Samples

Mussels were collected at five locations from the I-5 Bridge downstream to Happy Camp in November 2007, well after the end of the bloom season (Table 5). Toxin levels at this time in 2007 were lower than in 2005 and 2006 (Kann 2007). The data indicates that depuration appears to occur in a fairly short period.

Table 5 – Mussels Winter 2007

Lab #	Date Collected	Species	Total Microcystin (ng/g)
L-665-07-1	11/5/2007	Gonidea angulata	Non-detectable
L-665-07-2	11/5/2007	Gonidea angulata	Non-detectable
L-665-07-3	11/5/2007	Gonidea angulata	Non-detectable
L-665-07-4	11/5/2007	Gonidea angulata	Non-detectable
L-665-07-5	11/5/2007	Gonidea angulata	Non-detectable
L-665-07-6	11/5/2007	Gonidea angulata	Non-detectable
L-665-07-7	11/5/2007	Gonidea angulata	Non-detectable
L-665-07-8	11/5/2007	Gonidea angulata	Non-detectable
L-665-07-9	11/5/2007	Gonidea angulata	Non-detectable
L-665-07-10	11/5/2007	Gonidea angulata	Non-detectable
L-665-07-11	11/5/2007	Gonidea angulata	Non-detectable
L-665-07-11Dup	11/5/2007	Gonidea angulata	Non-detectable
L-665-07-12	11/5/2007	Gonidea angulata	Non-detectable
L-665-07-13	11/5/2007	Margaratifera falcata	Non-detectable
L-665-07-14	11/6/2007	Gonidea angulata	Non-detectable
L-665-07-15	11/6/2007	Gonidea angulata	Non-detectable

Tim Wilhite with USEPA collected yellow perch during the spring of 2008 (Table 6) prior to the algae bloom when toxin levels were generally low. The objective of this sampling was to determine the level of depuration that occurred over the winter period.

Table 6 – Yellow Perch Spring 2008

Lab #	Date Collected	Location	Tissue Type	Total Microcystin (ng/g)
L-387-08-1	6/12/2008	Copco Reservoir Mallard Cove	Fillet	Non-detectable
L-387-08-2	6/12/2008		Fillet	Non-detectable
L-387-08-3	6/12/2008		Fillet	Non-detectable
L-387-08-4	6/12/2008		Fillet	Non-detectable
L-387-08-5	6/12/2008		Fillet	Non-detectable
L-387-08-5Dup	6/12/2008		Fillet	Non-detectable
L-387-08-6	6/12/2008		Fillet	Non-detectable
L-387-08-7	6/12/2008		Fillet	Non-detectable
L-387-08-8	6/12/2008		Fillet	Non-detectable
L-387-08-9	6/12/2008		Liver Composite	Non-detectable
L-387-08-10	6/12/2008	Copco Reservoir Copco Cove	Fillet	Non-detectable
L-387-08-11	6/12/2008		Fillet	Non-detectable
L-387-08-12	6/12/2008		Fillet	Non-detectable
L-387-08-13	6/12/2008		Fillet	Non-detectable
L-387-08-14	6/12/2008		Fillet	Non-detectable
L-387-08-15	6/12/2008		Fillet	Non-detectable
L-387-08-16	6/12/2008		Fillet	Non-detectable
L-387-08-17	6/12/2008		Fillet	Non-detectable
L-387-08-18	6/12/2008		Liver Composite	Non-detectable

In 2007 the USEPA Region 9 laboratory analyzed microcystin in water samples using an enzyme-linked immunosorbent assay (ELISA) method for the Karuk Tribe. During the fall of 2007 toxin levels dropped more quickly than expected based on the *Microcystis aeruginosa* cell counts in the reservoirs. During the mid-September to October period this drop in toxin levels was more pronounced (Kann 2007). Duplicate samples were sent to the WPCL to confirm the ELISA method using the LC-ESI-MS/MS method. The ELISA method only reports total microcystin; it does not provide any analyte breakdown. The differentiation of analytes provided by the LC-ESI-MS/MS method and confirmation of toxin levels may help explain the cause of the conditions that occurred in 2007.

Table 7 – Water Samples

Lab #	Date Collected	Sample ID	Total Microcystin (ng/g)
L-722-07-1	7/23/2007	CRCC072307-SG	Non-detectable
L-722-07-2	7/24/2007	IR01072407-OO	Non-detectable
L-722-07-3	7/24/2007	CR01072407-OO	1,100.47
L-722-07-4	8/21/2007	CRCC082107-SG	21,223.1
L-722-07-5	8/22/2007	IR01082207-OO	41.33
L-722-07-6	8/23/2007	CR01082307-OO	43.451
L-722-07-6Dup	8/23/2007	CR01082307-OO	42.792
L-722-07-7	9/18/2007	KRBI091807-OC	Non-detectable
L-722-07-8	9/18/2007	IRJW091807-SG	Non-detectable
L-722-07-9	9/19/2007	CR01091907-OO	Non-detectable

Conclusion

Microcystin levels in yellow perch from Copco Reservoir were higher than Iron Gate Reservoir. Copco Reservoir typically has higher toxin levels than Iron Gate Reservoir. In addition, while microcystin concentrations were variable, they appear to roughly correlate to toxin levels at those locations in the reservoir. For example yellow perch in the middle section of Copco Reservoir had a higher average concentration than fish in the upper and lower sections. Additional analysis and study could confirm this observed trend. Given a high likelihood that yellow perch sampled in the spring of 2008 were representative of the fish population sampled in 2007 the data indicate that depuration had occurred.

The highest microcystin concentration in tissues collected for this study was from mussels collected near the I-5 Bridge. Generally it appears the microcystin levels in mussels decreases downstream from Iron Gate Dam. As a result of the small sample size additional sampling is required to confirm this trend. As with yellow perch, it appears that depuration had occurred, but additional sampling of representative populations is required to confirm this result. As described above, freshwater mussels are sensitive to environmental degradation. This study was not designed to evaluate the impacts of microcystins on this species. Additional study is required to understand the impacts of cyanotoxins on freshwater mussels

Kann (2008) used results from this study to evaluate the risk to humans from consuming fish or shellfish from the Klamath River and concluded the level of microcystin warrants the development of advisories for tissue consumption. In a letter to PacifiCorp dated August 6, 2008, OEHHA staff stated that based on the data collected in 2007, they would have recommended against consuming shellfish from the effected sections of the Klamath River, and yellow perch from Iron Gate and Copco Reservoirs.

The data collected during this study has provided new and important information on the impact of cyanotoxins in the Klamath River. As with many studies, it also shows that more information will be needed to understand the full impact of microcystin accumulation in mussels and fish, and the impact to wildlife (river otters, raccoons, etc.) and humans from consuming these species. The original objectives of this study have been met and exceeded. Data has been generated that can be used in regulatory processes, and to inform and protect the public and tribal members about risks of consuming fish and shellfish from the Klamath River. Information generated by this study can be used by the State Water Board in consideration of water quality certification for the Klamath Hydroelectric Project and by the NCRWQB in the TMDL process. The information can also be used by Tribes to help inform Tribal members on public health issues, and by OEHHA staff for development of a risk assessment and fish tissue advisories.

Acknowledgements

We want to thank Kari Norgaard, Susan Corum, and Tim Whilhite who volunteered to collect field samples for this study. This support provided substantial cost savings that allowed for analysis of additional samples. We also want to thank Gail Louis at USEPA for support and advice on complex contract matters.

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Appendicies:

Laboratory Report L-405-07: 4 mussels

Laboratory Report L-475-07: 13 mussels composite

Laboratory Report L-463-07: 3 salmon composites (liver, stomach, fillet

Laboratory Report L-524-07: 36 yellow perch, 6 liver composites

Laboratory Report L-665-07: 15 mussels

Laboratory Report L-387-08: 16 yellow perch, 2 liver composites

Laboratory Report L-722-07: 9 water samples

DEPARTMENT OF FISH AND GAME
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LABORATORY REPORT

Name:	Russ J. Kanz	**Lab Number:**	L-405-07
Agency:	State Water Resource Control Board	**Other Number:**	
Address:	P. O. Box 2000	**Date Sampled:**	7/11, 20, 24/07
City:	Sacramento, CA 95812-2000	**Date Received:**	7/25/07
		Date Completed:	8/20/07
		Index-PCA Code:	

RE: Microcystin analysis in tissue

RESULTS OF CHEMICAL ANALYSIS:

Four tissue samples from the Klamath River were extracted and analyzed by LC/MS/MS for microcystins. See attached sheets for results.

NA	Not Applicable
ND	Not Detected
MDL	Method Detection Limit
RL	Reporting Limit
LCS	Laboratory Control Spike
LCSD	Laboratory Control Spike Duplicate

Cost: To be invoiced per contract.

CC: Susan Corum
P. O. Box 282
Orleans, CA 95556

Project Chemist — Date: Aug 27 '07

Lead Pesticide Chemist — Date: 8.27.07

Laboratory Director — Date: 8-27-07

SWRCB L-405-07

WPCL Lab#	Estimated MDL	Reporting Limit	L-405-07-1	L-405-07-2	L-405-07-2Dup	L-405-07-3A	L-405-07-3B
Sample Identification			Gonedia angulata	G. angulata	G. angulata	G. angulata	Different Species
Location			Klamath R. near I5	Klamath River near Seiad Valley	Klamath River near Seiad Valley	Klamath River at Big Bar River access	Klamath River at Big Bar River access
Date Collected			11/Jul/2007	20/Jul/2007	20/Jul/2007	24/Jul/2007	24/Jul/2007
Time Collected			PM	PM	PM	AM	AM
Date Received			25/Jul/2007	25/Jul/2007	25/Jul/2007	25/Jul/2007	25/Jul/2007
Date Extracted			07/Aug/2007	07/Aug/2007	07/Aug/2007	07/Aug/2007	07/Aug/2007
Date Analyzed			08/Aug/2007	08/Aug/2007	08/Aug/2007	08/Aug/2007	08/Aug/2007
	Fresh Wt.	Fresh Wt.	Fresh Wt.	Fresh Wt.	Fresh Wt.	Fresh Wt.	Fresh Wt.
Microcystin Analytes	ppb (ng/g)	ppb (ng/g)	ppb (ng/g)	ppb (ng/g)	ppb (ng/g)	ppb (ng/g)	ppb (ng/g)
MCY-RR	0.500	1.00	**136**	**5.09**	**6.17**	ND	ND
MCY-Demethyl-RR*	0.500	1.00	ND	ND	ND	ND	ND
MCY-LR	0.500	1.00	**396**	**90.9**	**91.4**	**68.4**	**58.1**
MCY-Demethyl-LR*	0.500	1.00	**36.6**	**5.55**	**5.78**	**6.05**	**5.10**
MCY-YR	0.500	1.00	ND	ND	ND	ND	ND
MCY-LA	0.500	1.00	**2,220**	**311**	**280**	**432**	**138**
MCY-LW	0.500	1.00	ND	ND	ND	ND	ND
MCY-LF	0.500	1.00	**14.5**	ND	ND	ND	ND
* Demethyl analog quantified as parent compound.							

SWRCB L-405-07

WPCL Lab#	Estimated MDL	Reporting Limit		L-405-07-Blank	Spike Level	L-405-07-LCS	L-405-07-LCS	L-405-07-LCSD	L-405-07-LCSD
Sample Identification				WPCL Oyster		WPCL Oyster	WPCL Oyster	WPCL Oyster	WPCL Oyster
Location									
Date Collected									
Time Collected									
Date Received									
Date Extracted				07/Aug/2007		07/Aug/2007	07/Aug/2007	07/Aug/2007	07/Aug/2007
Date Analyzed				08/Aug/2007		08/Aug/2007	08/Aug/2007	08/Aug/2007	08/Aug/2007
	Fresh Wt.	Fresh Wt.		Fresh Wt.	Expected value	Amount Recovered		Amount Recovered	
Microcystin Analytes	ppb (ng/g)	ppb (ng/g)		ppb (ng/g)	ppb (ng/g)	ppb (ng/g)	% Recovery	ppb (ng/g)	% Recovery
MCY-RR	0.500	1.00		ND	25.0	**26.5**	**106**	**25.8**	**103**
MCY-Demethyl-RR*	0.500	1.00		ND	NA	NA	NA	NA	NA
MCY-LR	0.500	1.00		ND	25.0	**19.8**	**79.1**	**18.7**	**74.8**
MCY-Demethyl-LR*	0.500	1.00		ND	NA	NA	NA	NA	NA
MCY-YR	0.500	1.00		ND	25.0	**20.0**	**80.1**	**19.8**	**79.0**
MCY-LA	0.500	1.00		ND	25.0	**25.5**	**102**	**25.3**	**101**
MCY-LW	0.500	1.00		ND	25.0	**29.5**	**118**	**29.0**	**116**
MCY-LF	0.500	1.00		ND	25.0	**30.0**	**120**	**29.5**	**118**
* Demethyl analog quantified as parent compound.									

QA/QC Samples

DFG REQUEST FOR ANALYSIS AND CHAIN OF CUSTODY RECORD

Page 1 of 1

Sampler	Ph #	Send Results To	Lab Number
KARI NORGAARD	509 540 9351	RUSS J. KANZ State Water Resources Control Board	L-405-07
Address		**Address**	**Field Number**
511 Bryant Ave Whitman College		PO Box 2000	
City / **Zip**		**City** / **Zip**	**Lab Storage**
Walla Walla WA 99362		Sacramento CA 95812-2000	TSMRI Freezer
Date Required/Reason		**Copies To**	**Spill Title**
When possible 2007		Susan Corum	
Shipped Via		**Address**	**Suspect**
		PO Box 282	
		City / **Zip**	**Index-PCA**
		Orleans CA 95556	

☐ Fish & Wildlife Loss Date:_____ Region:_____

☐ DFG Code Violation:_____

☑ Suspected or Potential Problem

☐ Routine Analysis

Water Temp: F or C pH: DO: mg/L Conductivity: umhos/cm

Sample Identification/Location (Draw map on separate sheet if necessary)	Collection Date	Collection Time	Petroleum Fingerprint	Trace Elements (Specify Below)	Pesticides (Specify Below)	Myclostin	Sample Type: Water	Sample Type: Filtered Water	Sample Type: Soil	Sample Type: Tissue	Number of Containers: Plastic	Number of Containers: Glass	Number of Containers: VOA Vial	Preservation: Dry Ice/Temp	Preservation: Acid
① Gonedia angulata Klamath R. near I5	7-11-07	PM				X				X				X	
② G. angulata Klamath River near Seiad Valley	7-20-07	PM				X				X				X	
③ G. angulata Klamath River at Big Bar Recreation	7-24-07	AM				X				X				X	
BR Different Species - Same location as #3	7-24-07	AM				X				X				X	

Problem Description

Suspect/Incident Location

Comments/Special Instructions

Pollution Action Kit: Yes☐ No☐

Glove Size: Large ☐ Medium ☐

Hazmat Shipper Requested: Yes☐ No☐

Samples Relinquished By (Signature)	Print Name	Date	Received By (Signature)	Print Name	Date
Kari Bryant	KARI NORGAARD	7-24-07	Marida Martin	Marida Martin	7-24-07
Marida Martin	Marida Martin	7-25-07	DB Crane	DB CRANE	7-25-07

LAB COPIES: WHITE, CANARY, PINK SUBMITTER: GOLDENROD FG 1000 (Rev. 9/01)

Pesticide Investigations Lab
1701 Nimbus Road
Rancho Cordova, CA 95670
(916) 358-2950

☐

Petroleum Chemistry Lab
1995 Nimbus Road
Rancho Cordova, CA 95670
(916) 358-2803

☐

Water Pollution Control Lab
2005 Nimbus Road
Rancho Cordova, CA 95670
(916) 358-2858

☒

RK

DEPARTMENT OF FISH AND GAME
FISH AND WILDLIFE
WATER POLLUTION CONTROL LABORATORY
2005 NIMBUS ROAD
RANCHO CORDOVA, CA 95670
PHONE (916) 358-2858 ATSS 8-434-2858 FAX (916) 985-4301

LABORATORY REPORT

Name:	Russ J. Kanz	**Lab Number:**	L-475-07
Agency:	State Water Resource Control Board	**Other Number:**	
Address:	P. O. Box 2000	**Date Sampled:**	7/20/07
City:	Sacramento, CA 95812-2000	**Date Received:**	8/20/07
		Date Completed:	8/22/07
		Index-PCA Code:	

RE: Microcystin analysis in mussels

RESULTS OF CHEMICAL ANALYSIS:

One mussel composite sample from the Copco Reservoir was extracted and analyzed by LC/MS/MS for *microcystins*. *See attached sheets for results.*

NA	Not Applicable
ND	Not Detected
MDL	Method Detection Limit
RL	Reporting Limit
LCS	Laboratory Control Spike
LCSD	Laboratory Control Spike Duplicate

Cost: To be invoiced per contract.

358-C317

Lead Pesticide Chemist — Date 08.27.07

Laboratory Director — Date 8-27-07

Mekebri

SWRCB L-475-07

WPCL Lab#	Estimated MDL	Reporting Limit	L-475-07-13	L-475-07-13Dup	L-475-07-13Trip	QA/QC Samples	L-405-07-Blank
Sample Identification			mussels	mussels	mussels		WPCL Oyster
Date Collected			20/Jul/2007	20/Jul/2007	20/Jul/2007		
Time Collected							
Date Received			20/Aug/2007	20/Aug/2007	20/Aug/2007		
Date Extracted			20/Aug/2007	20/Aug/2007	20/Aug/2007		07/Aug/2007
Date Analyzed			21/Aug/2007	21/Aug/2007	21/Aug/2007		08/Aug/2007
	Fresh Wt.	Fresh Wt.	Fresh Wt.	Fresh Wt.	Fresh Wt.		Fresh Wt.
Microcystin Analytes	ppb (ng/g)	ppb (ng/g)	ppb (ng/g)	ppb (ng/g)	ppb (ng/g)		ppb (ng/g)
MCY-RR	0.500	1.00	ND	ND	ND		ND
MCY-Demethyl-RR*	0.500	1.00	ND	ND	ND		ND
MCY-LR	0.500	1.00	ND	ND	ND		ND
MCY-Demethyl-LR*	0.500	1.00	ND	ND	ND		ND
MCY-YR	0.500	1.00	ND	ND	ND		ND
MCY-LA	0.500	1.00	**57.0**	**32.3**	**34.2**		ND
MCY-LW	0.500	1.00	ND	ND	ND		ND
MCY-LF	0.500	1.00	ND	ND	ND		ND
* Demethyl analog quantified as parent compound.							

SWRCB L-475-07

WPCL Lab#	Estimated MDL	Reporting Limit	Spike Level	L-405-07-LCS	L-405-07-LCS	L-405-07-LCSD	L-405-07-LCSD
Sample Identification				WPCL Oyster	WPCL Oyster	WPCL Oyster	WPCL Oyster
Date Collected							
Time Collected							
Date Received							
Date Extracted				07/Aug/2007	07/Aug/2007	07/Aug/2007	07/Aug/2007
Date Analyzed				08/Aug/2007	08/Aug/2007	08/Aug/2007	08/Aug/2007
	Fresh Wt.	Fresh Wt.	Expected value	Amount Recovered		Amount Recovered	
Microcystin Analytes	ppb (ng/g)	ppb (ng/g)	ppb (ng/g)	ppb (ng/g)	% Recovery	ppb (ng/g)	% Recovery
MCY-RR	0.500	1.00	25.0	**26.5**	**106**	**25.8**	**103**
MCY-Demethyl-RR*	0.500	1.00	NA	NA	NA	NA	NA
MCY-LR	0.500	1.00	25.0	**19.8**	**79.1**	**18.7**	**74.8**
MCY-Demethyl-LR*	0.500	1.00	NA	NA	NA	NA	NA
MCY-YR	0.500	1.00	25.0	**20.0**	**80.1**	**19.8**	**79.0**
MCY-LA	0.500	1.00	25.0	**25.5**	**102**	**25.3**	**101**
MCY-LW	0.500	1.00	25.0	**29.5**	**118**	**29.0**	**116**
MCY-LF	0.500	1.00	25.0	**30.0**	**120**	**29.5**	**118**
* Demethyl analog quantified as parent compound.							

DFG REQUEST FOR ANALYSIS AND CHAIN OF CUSTODY RECORD

Page 1 of 1

Sampler	Ph #	Send Results To	Lab Number
COPCO RESEVOIR		SWRCB	L-475-07
Address		**Address**	**Field Number**
City	**Zip**	**City** / **Zip** / **CA**	**Lab Storage**
CA		**Copies To**	**Spill Title**
Date Required/Reason		**Address**	**Suspect**
Shipped Via		**City** / **Zip**	**Index-PCA**

☐ Fish & Wildlife Loss Date:_____ Region:_____

☐ DFG Code Violation:_____

☐ Suspected or Potential Problem

☐ Routine Analysis

Water Temp: F or C pH: DO: mg/L Conductivity: umhos/cm

Sample Identification/Location (Draw map on separate sheet if necessary)	Collection Date	Collection Time	Petroleum Fingerprint	Trace Elements (Specify Below)	Pesticides (Specify Below)	Analysis Requested >>>								Sample Type: Water	Sample Type: Filtered Water	Sample Type: Soil	Sample Type: Tissue	Number of Containers: Plastic	Number of Containers: Glass	Number of Containers: VOA Vial	Number of Containers	Preservation: Temp	Preservation: Acid	
												Micro Cysts												
-12 Yellow Perch												X					X							
13 MUSSELS	7-2007											X					X							

Problem Description

Suspect/Incident Location

Comments/Special Instructions

Pollution Action Kit: Yes☐ No☐

Glove Size: Large ☐ Medium ☐

Hazmat Shipper Requested: Yes☐ No☐

Samples Reliquished By (Signature)	Print Name	Date	Received By (Signature)	Print Name	Date
			Gregor Baltzell	GREGOR BALTZELL	8-20-07

LAB COPIES: WHITE, CANARY, PINK SUBMITTER: GOLDENROD FG 1000 (Rev. 9/01)

Pesticide Investigations Lab
1701 Nimbus Road
Rancho Cordova, CA 95670
(916) 358-2950

Petroleum Chemistry Lab
1995 Nimbus Road
Rancho Cordova, CA 95670
(916) 358-2803

Water Pollution Control Lab
2005 Nimbus Road
Rancho Cordova, CA 95670
(916) 358-2858

DEPARTMENT OF FISH AND GAME
FISH AND WILDLIFE
WATER POLLUTION CONTROL LABORATORY
2005 NIMBUS ROAD
RANCHO CORDOVA, CA 95670
PHONE (916) 358-2858 ATSS 8-434-2858 FAX (916) 985-4301

LABORATORY REPORT

Name:	Russ J. Kanz	**Lab Number:**	L-463-07
Agency:	State Water Resource Control Board	**Other Number:**	
Address:	P. O. Box 2000	**Date Sampled:**	8/13/07
City:	Sacramento, CA 95812-2000	**Date Received:**	8/14/07
		Date Completed:	8/21/07
		Index-PCA Code:	

RE: Microcystin analysis in tissue

RESULTS OF CHEMICAL ANALYSIS:

Three fish sample composites (liver, stomach and fillet) from the Irongate Hatchery were extracted and analyzed by LC/MS/MS for microcystins. See attached sheets for results.

NA	Not Applicable
ND	Not Detected
MDL	Method Detection Limit
RL	Reporting Limit
LCS	Laboratory Control Spike
LCSD	Laboratory Control Spike Duplicate

Cost: To be invoiced per contract.

Lead Pesticide Chemist — Date 8.27.07

Laboratory Director — Date 8-27-07

SWRCB L-463-07

WPCL Lab#	Estimated MDL	Reporting Limit	L-463-07-1	L-463-07-2	L-463-07-3	QA/QC Samples	L-405-07-Blank
Sample Identification			**fish liver**	**fish stomach**	**fish fillet**		**WPCL Oyster**
Date Collected			13/Aug/2007	13/Aug/2007	13/Aug/2007		
Time Collected							
Date Received			14/Aug/2007	14/Aug/2007	14/Aug/2007		
Date Extracted			16/Aug/2007	16/Aug/2007	16/Aug/2007		07/Aug/2007
Date Analyzed			17/Aug/2007	17/Aug/2007	17/Aug/2007		08/Aug/2007
	Fresh Wt.	**Fresh Wt.**	**Fresh Wt.**	**Fresh Wt.**	**Fresh Wt.**		**Fresh Wt.**
Microcystin Analytes	**ppb (ng/g)**	**ppb (ng/g)**	**ppb (ng/g)**	**ppb (ng/g)**	**ppb (ng/g)**		**ppb (ng/g)**
MCY-RR	0.500	1.00	ND	ND	ND		ND
MCY-Demethyl-RR*	0.500	1.00	ND	ND	ND		ND
MCY-LR	0.500	1.00	ND	ND	ND		ND
MCY-Demethyl-LR*	0.500	1.00	ND	ND	ND		ND
MCY-YR	0.500	1.00	ND	ND	ND		ND
MCY-LA	0.500	1.00	**301**	ND	ND		ND
MCY-LW	0.500	1.00	ND	ND	ND		ND
MCY-LF	0.500	1.00	ND	ND	ND		ND
* Demethyl analog quantified as parent compound.							

SWRCB L-463-07

WPCL Lab#	Estimated MDL	Reporting Limit	Spike Level	L-405-07-LCS	L-405-07-LCS	L-405-07-LCSD	L-405-07-LCSD
Sample Identification				WPCL Oyster	WPCL Oyster	WPCL Oyster	WPCL Oyster
Date Collected							
Time Collected							
Date Received							
Date Extracted				07/Aug/2007	07/Aug/2007	07/Aug/2007	07/Aug/2007
Date Analyzed				08/Aug/2007	08/Aug/2007	08/Aug/2007	08/Aug/2007
	Fresh Wt.	Fresh Wt.	Expected value	Recovered		Recovered	
Microcystin Analytes	ppb (ng/g)	ppb (ng/g)	ppb (ng/g)	ppb (ng/g)	% Recovery	ppb (ng/g)	% Recovery
MCY-RR	0.500	1.00	25.0	**26.5**	**106**	**25.8**	**103**
MCY-Demethyl-RR*	0.500	1.00	NA	NA	NA	NA	NA
MCY-LR	0.500	1.00	25.0	**19.8**	**79.1**	**18.7**	**74.8**
MCY-Demethyl-LR*	0.500	1.00	NA	NA	NA	NA	NA
MCY-YR	0.500	1.00	25.0	**20.0**	**80.1**	**19.8**	**79.0**
MCY-LA	0.500	1.00	25.0	**25.5**	**102**	**25.3**	**101**
MCY-LW	0.500	1.00	25.0	**29.5**	**118**	**29.0**	**116**
MCY-LF	0.500	1.00	25.0	**30.0**	**120**	**29.5**	**118**
* Demethyl analog quantified as parent compound.							

DFG REQUEST FOR ANALYSIS AND CHAIN OF CUSTODY RECORD

Page 1 of 1

Sampler	Ph #	Send Results To	Lab Number
Iron Gate Hatchery		Ross SWRCB	L463.07
Address		**Address**	**Field Number**
8638 Lakeview Rd.			
City	**Zip**	**City** / **Zip** / **CA**	**Lab Storage**
Hornbrook CA	96044 CA.		Freezer
Date Required/Reason		**Copies To** Iron Gate Hatchery	**Spill Title**
		Address	**Suspect**
Shipped Via		**City** / **Zip**	**Index-PCA**
Fedex			SWRCB

☐ Fish & Wildlife Loss Date:_____ Region:_____

☐ DFG Code Violation:_____

☐ Suspected or Potential Problem

☒ Routine Analysis

Analysis Requested >>>

Water Temp: F or C pH: DO: mg/L Conductivity: umhos/cm

Sample Identification/Location (Draw map on separate sheet if necessary)	Collection Date	Collection Time	Petroleum Fingerprint	Trace Elements (Specify Below)	Pesticides (Specify Below)	Liver	Stomach	Tissue	Sample Type: Water	Sample Type: Filtered Water	Sample Type: Soil	Sample Type: Tissue	Number of Containers: Plastic	Number of Containers: Glass	Number of Containers: VOA Vial	Preservation: Temp	Preservation: Acid
1-3 → 6 Fish composite For microcystin	8/13/07	—				✓	✓	✓					4			X	
4-9 → 6 Fish to be analyzed individually													4			X	
L-463-07-1 liver																	
2 stomach																	
3 tissue																	

Problem Description

Suspect/Incident Location Microcystin Analysis

Comments/Special Instructions

Pollution Action Kit: Yes☐ No☐

Glove Size: Large ☐ Medium ☐

Hazmat Shipper Requested: Yes☐ No☐

Samples Relinquished By (Signature)	Print Name	Date	Received By (Signature)	Print Name	Date
			Abdon Melcher	Abdon Melcher	8/14/07

LAB COPIES: WHITE, CANARY, PINK SUBMITTER: GOLDENROD FG 1000 (Rev. 9/01)

Pesticide Investigations Lab
1701 Nimbus Road
Rancho Cordova, CA 95670
(916) 358-2950

Petroleum Chemistry Lab
1995 Nimbus Road
Rancho Cordova, CA 95670
(916) 358-2803

Water Pollution Control Lab
2005 Nimbus Road
Rancho Cordova, CA 95670
(916) 358-2858

DEPARTMENT OF FISH AND GAME
FISH AND WILDLIFE
WATER POLLUTION CONTROL LABORATORY
2005 NIMBUS ROAD
RANCHO CORDOVA, CA 95670
PHONE (916) 358-2858 ATSS 8-434-2858 FAX (916) 985-4301

LABORATORY REPORT

Name:	Russ J. Kanz	**Lab Number:**	L-524-07
Agency:	State Water Resource Control Board	**Other Number:**	
Address:	P. O. Box 2000	**Date Sampled:**	09/06-07/07
City:	Sacramento, CA 95812-2000	**Date Received:**	09/11/07
		Date Completed:	11/14/07
		Index-PCA Code:	

RE: Microcystin analysis

RESULTS OF CHEMICAL ANALYSIS:

Forty-two tissue samples from the Copco and Irongate Reservoirs was extracted and analyzed by LC/MS/MS for microcystins. See attached sheets for results.

NA	Not Applicable
ND	Not Detected
MDL	Method Detection Limit
RL	Reporting Limit
MBlk	Method Blank
LCS	Laboratory Control Spike
LCSD	Laboratory Control Spike Duplicate
MS	Matrix Spike
MSD	Matrix Spike Duplicate

Cost: To be invoiced per contract.

Project Chemist — Nov-15'07 Date — Lead Pesticide Chemist — 11.15.07 Date

Laboratory Director — 11-15-07 Date

Klamath
L-524-07

WPCL Lab#	Estimated MDL	Reporting Limit	L-524-07-1	L-524-07-2	L-524-07-3	L-524-07-4	L-524-07-5
Sample Identification			**IG-1**	**IG-2**	**IG-3**	**IG-4**	**IG-5**
Date Collected			09/06-07/07	09/06-07/07	09/06-07/07	09/06-07/07	09/06-07/07
Time Collected			all day	all day	all day	all day	all day
Date Received			11/Sep/2007	11/Sep/2007	11/Sep/2007	11/Sep/2007	11/Sep/2007
Date Extracted			08/Oct/2007	08/Oct/2007	08/Oct/2007	08/Oct/2007	08/Oct/2007
Date Analyzed			09/Oct/2007	09/Oct/2007	09/Oct/2007	09/Oct/2007	09/Oct/2007
Matrix			***Tissue***	***Tissue***	***Tissue***	***Tissue***	***Tissue***
			Fresh Wt.	**Fresh Wt.**	**Fresh Wt.**	**Fresh Wt.**	**Fresh Wt.**
Microcystin Analytes	***ppb***	***ppb***	**ppb (ng/g)**	**ppb (ng/g)**	**ppb (ng/g)**	**ppb (ng/g)**	**ppb (ng/g)**
MCY-RR	2.00	5.00	ND	ND	ND	ND	ND
MCY-Demethyl-RR*	2.00	5.00	ND	ND	ND	ND	ND
MCY-LR	2.00	5.00	ND	ND	ND	ND	ND
MCY-Demethyl-LR*	2.00	5.00	ND	**63.7**	ND	**57.0**	ND
MCY-YR	2.00	5.00	ND	ND	**2.23**	**2.01**	**3.09**
MCY-LA	2.00	5.00	ND	ND	ND	ND	ND
MCY-LW	2.00	5.00	ND	ND	ND	ND	ND
MCY-LF	2.00	5.00	ND	ND	ND	ND	ND
* Demethyl analog quantified as parent compound.							

Klamath
L-524-07

WPCL Lab#	Estimated MDL	Reporting Limit	L-524-07-6	L-524-07-7	L-524-07-7Dup	L-524-07-8	L-524-07-9
Sample Identification			**IG-6**	**IG-7**	**IG-7**	**IG-8**	**IG-9**
Date Collected			09/06-07/07	09/06-07/07	09/06-07/07	09/06-07/07	09/06-07/07
Time Collected			all day	all day	all day	all day	all day
Date Received			11/Sep/2007	11/Sep/2007	11/Sep/2007	11/Sep/2007	11/Sep/2007
Date Extracted			08/Oct/2007	08/Oct/2007	08/Oct/2007	08/Oct/2007	08/Oct/2007
Date Analyzed			09/Oct/2007	09/Oct/2007	09/Oct/2007	09/Oct/2007	09/Oct/2007
Matrix			**Tissue**	**Tissue**	**Tissue**	**Tissue**	**Tissue**
			Fresh Wt.	**Fresh Wt.**	**Fresh Wt.**	**Fresh Wt.**	**Fresh Wt.**
Microcystin Analytes	**ppb**	**ppb**	**ppb (ng/g)**	**ppb (ng/g)**	**ppb (ng/g)**	**ppb (ng/g)**	**ppb (ng/g)**
MCY-RR	2.00	5.00	ND	ND	ND	ND	ND
MCY-Demethyl-RR*	2.00	5.00	ND	ND	ND	ND	ND
MCY-LR	2.00	5.00	ND	ND	ND	ND	ND
MCY-Demethyl-LR*	2.00	5.00	ND	ND	ND	ND	ND
MCY-YR	2.00	5.00	**2.27**	**2.54**	ND	**3.01**	**2.02**
MCY-LA	2.00	5.00	ND	ND	ND	ND	ND
MCY-LW	2.00	5.00	ND	ND	ND	ND	ND
MCY-LF	2.00	5.00	ND	ND	ND	ND	ND
** Demethyl analog quantified as parent compound.*							

Klamath
L-524-07

WPCL Lab#	Estimated MDL	Reporting Limit	L-524-07-10	L-524-07-11	L-524-07-12	L-524-07-13	L-524-07-14
Sample Identification			IG-10	IG-11	IG-12	IG-13	IG-14
Date Collected			09/06-07/07	09/06-07/07	09/06-07/07	09/06-07/07	09/06-07/07
Time Collected			all day	all day	all day	all day	all day
Date Received			11/Sep/2007	11/Sep/2007	11/Sep/2007	11/Sep/2007	11/Sep/2007
Date Extracted			08/Oct/2007	08/Oct/2007	08/Oct/2007	08/Oct/2007	08/Oct/2007
Date Analyzed			09/Oct/2007	09/Oct/2007	09/Oct/2007	09/Oct/2007	09/Oct/2007
Matrix			Tissue	Tissue	Tissue	Tissue	Tissue
			Fresh Wt.	Fresh Wt.	Fresh Wt.	Fresh Wt.	Fresh Wt.
Microcystin Analytes	ppb	ppb	ppb (ng/g)	ppb (ng/g)	ppb (ng/g)	ppb (ng/g)	ppb (ng/g)
MCY-RR	2.00	5.00	ND	ND	ND	ND	ND
MCY-Demethyl-RR*	2.00	5.00	ND	ND	ND	ND	ND
MCY-LR	2.00	5.00	ND	ND	ND	ND	ND
MCY-Demethyl-LR*	2.00	5.00	ND	ND	ND	ND	**227**
MCY-YR	2.00	5.00	**2.68**	**2.18**	ND	ND	**2.23**
MCY-LA	2.00	5.00	ND	ND	ND	ND	ND
MCY-LW	2.00	5.00	ND	ND	ND	ND	ND
MCY-LF	2.00	5.00	ND	ND	ND	ND	ND
* Demethyl analog quantified as parent compound.							

Klamath
L-524-07

WPCL Lab#	Estimated MDL	Reporting Limit	L-524-07-15	L-524-07-16	L-524-07-17	L-524-07-18	L-524-07-19
Sample Identification			**IG-15**	**IG-16**	**IG-17**	**IG-18**	**CP-1**
Date Collected			09/06-07/07	09/06-07/07	09/06-07/07	09/06-07/07	09/07-08/07
Time Collected			all day	all day	all day	all day	all day
Date Received			11/Sep/2007	11/Sep/2007	11/Sep/2007	11/Sep/2007	11/Sep/2007
Date Extracted			08/Oct/2007	08/Oct/2007	08/Oct/2007	08/Oct/2007	09/Oct/2007
Date Analyzed			09/Oct/2007	09/Oct/2007	09/Oct/2007	09/Oct/2007	09/Oct/2007
Matrix			**Tissue**	**Tissue**	**Tissue**	**Tissue**	**Tissue**
			Fresh Wt.	**Fresh Wt.**	**Fresh Wt.**	**Fresh Wt.**	**Fresh Wt.**
Microcystin Analytes	**ppb**	**ppb**	***ppb (ng/g)***	***ppb (ng/g)***	***ppb (ng/g)***	***ppb (ng/g)***	***ppb (ng/g)***
MCY-RR	2.00	5.00	ND	ND	ND	ND	ND
MCY-Demethyl-RR*	2.00	5.00	ND	ND	ND	ND	ND
MCY-LR	2.00	5.00	ND	ND	ND	ND	ND
MCY-Demethyl-LR*	2.00	5.00	**106**	**73.0**	**79.8**	**153**	**77.7**
MCY-YR	2.00	5.00	ND	ND	**2.24**	**4.23**	ND
MCY-LA	2.00	5.00	ND	ND	ND	ND	ND
MCY-LW	2.00	5.00	ND	ND	ND	ND	ND
MCY-LF	2.00	5.00	ND	ND	ND	ND	ND
** Demethyl analog quantified as parent compound.*							

Klamath
L-524-07

WPCL Lab#	Estimated MDL	Reporting Limit	L-524-07-20	L-524-07-21	L-524-07-22	L-524-07-23	L-524-07-24
Sample Identification			CP-2	CP-3	CP-4	CP-5	CP-6
Date Collected			09/07-08/07	09/07-08/07	09/07-08/07	09/07-08/07	09/07-08/07
Time Collected			all day	all day	all day	all day	all day
Date Received			11/Sep/2007	11/Sep/2007	11/Sep/2007	11/Sep/2007	11/Sep/2007
Date Extracted			09/Oct/2007	09/Oct/2007	09/Oct/2007	09/Oct/2007	09/Oct/2007
Date Analyzed			09/Oct/2007	09/Oct/2007	09/Oct/2007	09/Oct/2007	09/Oct/2007
Matrix			Tissue	Tissue	Tissue	Tissue	Tissue
			Fresh Wt.	Fresh Wt.	Fresh Wt.	Fresh Wt.	Fresh Wt.
Microcystin Analytes	ppb	ppb	ppb (ng/g)	ppb (ng/g)	ppb (ng/g)	ppb (ng/g)	ppb (ng/g)
MCY-RR	2.00	5.00	ND	ND	ND	ND	ND
MCY-Demethyl-RR*	2.00	5.00	ND	ND	ND	ND	ND
MCY-LR	2.00	5.00	ND	ND	ND	ND	ND
MCY-Demethyl-LR*	2.00	5.00	**95.2**	**82.1**	**58.4**	**181**	**171**
MCY-YR	2.00	5.00	**2.17**	ND	**3.16**	**2.47**	ND
MCY-LA	2.00	5.00	ND	ND	ND	ND	ND
MCY-LW	2.00	5.00	ND	ND	ND	ND	ND
MCY-LF	2.00	5.00	ND	ND	ND	ND	ND
* Demethyl analog quantified as parent compound.							

Klamath
L-524-07

WPCL Lab#	Estimated MDL	Reporting Limit	L-524-07-25	L-524-07-26	L-524-07-27	L-524-07-28	L-524-07-29
Sample Identification			CP-7	CP-8	CP-9	CP-10	CP-11
Date Collected			09/07-08/07	09/07-08/07	09/07-08/07	09/07-08/07	09/07-08/07
Time Collected			all day	all day	all day	all day	all day
Date Received			11/Sep/2007	11/Sep/2007	11/Sep/2007	11/Sep/2007	11/Sep/2007
Date Extracted			09/Oct/2007	09/Oct/2007	09/Oct/2007	09/Oct/2007	09/Oct/2007
Date Analyzed			09/Oct/2007	09/Oct/2007	09/Oct/2007	09/Oct/2007	09/Oct/2007
Matrix			Tissue	Tissue	Tissue	Tissue	Tissue
			Fresh Wt.	Fresh Wt.	Fresh Wt.	Fresh Wt.	Fresh Wt.
Microcystin Analytes	ppb	ppb	ppb (ng/g)	ppb (ng/g)	ppb (ng/g)	ppb (ng/g)	ppb (ng/g)
MCY-RR	2.00	5.00	ND	ND	ND	ND	ND
MCY-Demethyl-RR*	2.00	5.00	ND	ND	ND	ND	ND
MCY-LR	2.00	5.00	ND	ND	ND	ND	ND
MCY-Demethyl-LR*	2.00	5.00	**78.8**	**147**	**350**	**405**	**422**
MCY-YR	2.00	5.00	**2.12**	ND	ND	ND	ND
MCY-LA	2.00	5.00	ND	ND	ND	ND	ND
MCY-LW	2.00	5.00	ND	ND	ND	ND	ND
MCY-LF	2.00	5.00	ND	ND	ND	ND	ND
* Demethyl analog quantified as parent compound.							

Klamath
L-524-07

WPCL Lab#	Estimated MDL	Reporting Limit	L-524-07-30	L-524-07-31	L-524-07-32	L-524-07-33	L-524-07-33Dup
Sample Identification			CP-12	CP-13	CP-14	CP-15	CP-16
Date Collected			09/07-08/07	09/07-08/07	09/07-08/07	09/07-08/07	09/07-08/07
Time Collected			all day	all day	all day	all day	all day
Date Received			11/Sep/2007	11/Sep/2007	11/Sep/2007	11/Sep/2007	11/Sep/2007
Date Extracted			09/Oct/2007	09/Oct/2007	09/Oct/2007	09/Oct/2007	09/Oct/2007
Date Analyzed			09/Oct/2007	09/Oct/2007	09/Oct/2007	09/Oct/2007	09/Oct/2007
Matrix			Tissue	Tissue	Tissue	Tissue	Tissue
			Fresh Wt.	Fresh Wt.	Fresh Wt.	Fresh Wt.	Fresh Wt.
Microcystin Analytes	ppb	ppb	ppb (ng/g)	ppb (ng/g)	ppb (ng/g)	ppb (ng/g)	ppb (ng/g)
MCY-RR	2.00	5.00	ND	ND	ND	ND	ND
MCY-Demethyl-RR*	2.00	5.00	ND	ND	ND	ND	ND
MCY-LR	2.00	5.00	ND	ND	ND	ND	ND
MCY-Demethyl-LR*	2.00	5.00	**240**	**181**	**251**	**125**	**141**
MCY-YR	2.00	5.00	ND	ND	ND	ND	ND
MCY-LA	2.00	5.00	ND	ND	ND	ND	ND
MCY-LW	2.00	5.00	ND	ND	ND	ND	ND
MCY-LF	2.00	5.00	ND	ND	ND	ND	ND
* Demethyl analog quantified as parent compound.							

Klamath
L-524-07

WPCL Lab#	Estimated MDL	Reporting Limit	L-524-07-34	L-524-07-35	L-524-07-36	L-524-07-37	L-524-07-38
Sample Identification			CP-17	CP-18	CP-19	IG-37	IG-38
Date Collected			09/07-08/07	09/07-08/07	09/07-08/07	09/06-08/07	09/06-08/07
Time Collected			all day	all day	all day	all day	all day
Date Received			11/Sep/2007	11/Sep/2007	11/Sep/2007	11/Sep/2007	11/Sep/2007
Date Extracted			09/Oct/2007	09/Oct/2007	09/Oct/2007	09/Oct/2007	09/Oct/2007
Date Analyzed			09/Oct/2007	09/Oct/2007	09/Oct/2007	09/Oct/2007	09/Oct/2007
Matrix			Tissue	Tissue	Tissue	Liver	Liver
			Fresh Wt.	Fresh Wt.	Fresh Wt.	Fresh Wt.	Fresh Wt.
Microcystin Analytes	ppb	ppb	ppb (ng/g)	ppb (ng/g)	ppb (ng/g)	ppb (ng/g)	ppb (ng/g)
MCY-RR	2.00	5.00	ND	ND	ND	ND	ND
MCY-Demethyl-RR*	2.00	5.00	ND	ND	ND	ND	**37.4**
MCY-LR	2.00	5.00	ND	ND	ND	ND	ND
MCY-Demethyl-LR*	2.00	5.00	**101**	ND	**86.3**	ND	ND
MCY-YR	2.00	5.00	ND	ND	ND	ND	ND
MCY-LA	2.00	5.00	ND	ND	ND	ND	**12.7**
MCY-LW	2.00	5.00	ND	ND	ND	ND	ND
MCY-LF	2.00	5.00	ND	ND	ND	ND	ND
* Demethyl analog quantified as parent compound.							

Klamath
L-524-07

WPCL Lab#	Estimated MDL	Reporting Limit	L-524-07-39	L-524-07-40	L-524-07-41	L-524-07-42	QA/QC Samples
Sample Identification			IG-39	CP-40	CP-41	CP-42	
Date Collected			09/06-08/07	09/06-08/07	09/06-08/07	09/06-08/07	
Time Collected			all day	all day	all day	all day	
Date Received			11/Sep/2007	11/Sep/2007	11/Sep/2007	11/Sep/2007	
Date Extracted			09/Oct/2007	09/Oct/2007	09/Oct/2007	09/Oct/2007	
Date Analyzed			09/Oct/2007	09/Oct/2007	09/Oct/2007	09/Oct/2007	
Matrix			Liver	Liver	Liver	Liver	
			Fresh Wt.	Fresh Wt.	Fresh Wt.	Fresh Wt.	
Microcystin Analytes	ppb	ppb	ppb (ng/g)	ppb (ng/g)	ppb (ng/g)	ppb (ng/g)	
MCY-RR	2.00	5.00	**15.7**	ND	ND	ND	
MCY-Demethyl-RR*	2.00	5.00	**42.2**	**25.0**	**33.5**	**61.6**	
MCY-LR	2.00	5.00	ND	ND	ND	ND	
MCY-Demethyl-LR*	2.00	5.00	ND	**138**	**426**	**159**	
MCY-YR	2.00	5.00	ND	ND	ND	ND	
MCY-LA	2.00	5.00	**12.7**	**14.7**	**13.7**	**7.88**	
MCY-LW	2.00	5.00	ND	ND	ND	ND	
MCY-LF	2.00	5.00	ND	ND	ND	ND	
* Demethyl analog quantified as parent compound.							

Klamath
L-524-07

WPCL Lab#	Estimated MDL	Reporting Limit	L-524-07-MBlank	L-524-07-LCS	L-524-07-3MS	L-524-07-3MSD
Sample Identification			**Solvent Blank**	**American River Trout**	**IG-3**	**IG-3**
Date Collected					09/06-07/07	09/06-07/07
Time Collected					all day	all day
Date Received					11/Sep/2007	11/Sep/2007
Date Extracted			09/09/07	09/08/07	09/08/07	09/08/07
Date Analyzed			09/09/07	09/09/07	09/09/07	09/09/07
Matrix				**Tissue**	**Tissue**	**Tissue**
				Fresh Wt.	**Fresh Wt.**	**Fresh Wt.**
Microcystin Analytes	**ppb**	**ppb**	**ppb (ug/L)**	**Recovery (%)**	**Recovery (%)**	**Recovery (%)**
MCY-RR	2.00	5.00	ND	**105**	**112**	**115**
MCY-Demethyl-RR*	2.00	5.00	ND	NA	NA	NA
MCY-LR	2.00	5.00	ND	**107**	**82.9**	**77.5**
MCY-Demethyl-LR*	2.00	5.00	ND	NA	NA	NA
MCY-YR	2.00	5.00	ND	**115**	**72.0**	**87.3**
MCY-LA	2.00	5.00	ND	**103**	**73.5**	**72.9**
MCY-LW	2.00	5.00	ND	**101**	**75.4**	**74.3**
MCY-LF	2.00	5.00	ND	**103**	**82.8**	**80.7**
* Demethyl analog quantified as parent compound.						

Klamath
L-524-07

WPCL Lab#	Estimated MDL	Reporting Limit	L-524-07-26MS	L-524-07-26MSD
Sample Identification			**CP-8**	**CP-8**
Date Collected			09/07-08/07	09/07-08/07
Time Collected			all day	all day
Date Received			11/Sep/2007	11/Sep/2007
Date Extracted			09/09/07	09/09/07
Date Analyzed			09/09/07	09/09/07
Matrix			**Tissue**	**Tissue**
			Fresh Wt.	**Fresh Wt.**
Microcystin Analytes	**ppb**	**ppb**	**Recovery (%)**	**Recovery (%)**
MCY-RR	2.00	5.00	**125**	**118**
MCY-Demethyl-RR*	2.00	5.00	NA	NA
MCY-LR	2.00	5.00	**81.8**	**114**
MCY-Demethyl-LR*	2.00	5.00	NA	NA
MCY-YR	2.00	5.00	**97.9**	**116**
MCY-LA	2.00	5.00	**73.6**	**80.3**
MCY-LW	2.00	5.00	**83.8**	**92.0**
MCY-LF	2.00	5.00	**89.1**	**96.1**
* Demethyl analog quantified as parent compound.				

DFG REQUEST FOR ANALYSIS AND CHAIN OF CUSTODY RECORD

Page____ of ____

Sampler	Ph #	Send Results To	Lab Number
Glenn Arnold			L-524-07
Address		**Address**	**Field Number**
		City Zip CA	**Lab Storage** FRM F2
City Zip CA		**Copies To**	**Spill Title**
Date Required/Reason		**Address**	**Suspect**
Shipped Via		**City** Zip	**Index-PCA**

☐ Fish & Wildlife Loss Date:_____ Region:_____

☐ DFG Code Violation:_____

☐ Suspected or Potential Problem

☐ Routine Analysis

Water Temp: F or C **pH:** **DO:** mg/L **Conductivity:** u mhos/cm

Sample Identification/Location (Draw map on separate sheet if necessary)	Collection Date	Collection Time	Petroleum Fingerprint	Trace Elements (Specify Below)	Pesticides (Specify Below)	MIXED SYSTEMS	Sample Type: Water	Filtered Water	Soil	Tissue Fish	Number of Containers: Plastic	Glass	VOA Vial	Preservation: Temp	Acid
Copco Res 1 8 YP	9/7/07									X					
Iron Gate Res 1 8 YP	9/7/07									X					
Foil wrapped fish for dissection (See attached field correction sheet).															

Problem Description

Suspect/Incident Location

Comments/Special Instructions

Pollution Action Kit: Yes☐ No☐

Glove Size: Large ☐ Medium ☐

Hazmat Shipper Requested: Yes☐ No☐

Samples Relinquished By (Signature)	Print Name	Date	Received By (Signature)	Print Name	Date
			Laurie Smith	LAURIE SMITH	9/11/07

LAB COPIES: WHITE, CANARY, PINK **SUBMITTER: GOLDENROD** FG 1000 (Rev. 9/01)

Pesticide Investigations Lab
1701 Nimbus Road
Rancho Cordova, CA 95670
(916) 358-2950

Petroleum Chemistry Lab
1995 Nimbus Road
Rancho Cordova, CA 95670
(916) 358-2803

Water Pollution Control Lab
2005 Nimbus Road
Rancho Cordova, CA 95670
(916) 358-2858

L-524-07

TISSUE SAMPLING FIELD SHEET Sheet 1 of 1

Project: Klamath Algal Toxins -08 Lab Code:

Date: 9/07/07 Statnum:

Time: all day Statname: Copco Res.

Station Description: 3 sites: upper, middle, lower lake

Directions to Station:

County: USGS Map:

Lower Middle Upper Lat: 41.96884 – use photos 41.97255 Lon: 122.37634 122.27907 – not the site of fish, but marker Projection: NAD 83

Method	Effort	Species	Number	Size	Package #	Notes
Fishing	12 man hrs	Yellow	18+		18	grouped by site

Species Length/Weight

Species: Yellow Perch				Species:				Species:			
Total Number:				Total Number:				Total Number:			
ID #	FL	TL	WT	ID #	FL	TL	WT	ID #	FL	TL	WT
CP1	231	241	174	CP13	200	210	107				
CP2	221	232	150	CP14	192	200	83				
CP3	230	239	151	CP15	231	241	149 – DUP				
CP4	213	225	136	CP16	227	239	140				
CP5	206	217	114	CP17	202	211	100				
CP6	211	221	122	CP18	179	188	72				
CP7	215	224	119	37							
CP8	253	264	221	38							
CP9	225	235	145	39							
CP10	202	211	98	40							
CP11	205	217	121	41							
CP12	204	214	114	42							

MS/MSD

Additional Species: Crappie

Comments: windy

Organics Metals Archive Other

L-524-07

TISSUE SAMPLING FIELD SHEET Sheet 1 of 1

Project: Klamath Algal Toxins Lab Code:

Date: 9/6-7/07 Statnum:

Time: all day Statname: Irongate Res.

Station Description: 3 sites: upper, middle, lower lake

Directions to Station:

County: USGS Map:

Lat: 41.94408 Lon: 122.43002 Projection: NAD 83

lower 41.97065 122.41750

middle 41.96880 122.37637

upper

Method	Effort	Species	Number	Size	Package #	Notes
Fishing	24 hours	Yw Perch	18		18	grouped by site

Species Length/Weight

	Species: Yw Perch				Species: Yw Perch				Species:			
	Total Number: 12				Total Number: 6				Total Number:			
	ID #	FL	TL	WT	ID #	FL	TL	WT	ID #	FL	TL	WT
1	IG1	245	253	185	IG13	207	216	111				
2	IG2	221	231	171	IG14	194	205	102				
Lower 3	IG3	241	254	191	IG15	192	201	95	Upper			
4	IG4	227	231	167	IG16	187	197	83				
MS/MSD 5	IG5	242	253	222	IG17	179	189	75				
6	IG6	207	212	116	IG18	183	191	82				
Dup 7	IG7	246	259	195								
8	IG8	222	231	159								
Middle 9	IG9	223	232	146								
10	IG10	204	215	119								
11	IG11	209	216	116								
12	IG12	198	207	106								

Additional Species: LMB, Pumpkinseed Sunfish, Crappie

Comments: windy

Organics Metals Archive Other

DEPARTMENT OF FISH AND GAME
FISH AND WILDLIFE
WATER POLLUTION CONTROL LABORATORY
2005 NIMBUS ROAD
RANCHO CORDOVA, CA 95670
PHONE (916) 358-2858 ATSS 8-434-2858 FAX (916) 985-4301

RK

LABORATORY REPORT

Name:	Russ J. Kanz	**Lab Number:**	L-665-07
Agency:	State Water Resource Control Board	**Other Number:**	
Address:	P.O. Box 2000	**Date Sampled:**	11/05/07
City:	Sacramento, CA 95812-2000	**Date Received:**	11/15/07
		Date Completed:	02/14/08
		Index-PCA Code:	

RE: Microcystin analysis in mussels

RESULTS OF CHEMICAL ANALYSIS:

Fifteen mussel samples from the Klamath River Reservoir was extracted and analyzed by LC/MS/MS for *microcystins*. *See attached sheets for results.*

NA	Not Applicable
ND	Not Detected
MDL	Method Detection Limit
RL	Reporting Limit
LCS	Laboratory Control Spike
LCSD	Laboratory Control Spike Duplicate

Cost: To be invoiced per contract.

Cc: Susan Corum
Department of Natural Resources
P. O. Box 282
Orleans, CA 95556

Lead Pesticide Chemist — Date: 02/15/08

Laboratory Director — Date: 2/15/08

Klamath
L-665-07

WPCL Lab#	Estimated MDL	Reporting Limit	L-665-07-1	L-665-07-2	L-665-07-3	L-665-07-4	L-665-07-5
Sample Identification			**CH110507-A**	**CH110507-B**	**CH110507-C**	**BR110507-A**	**BR110507-B**
Date Collected			05/Nov/2007	05/Nov/2007	05/Nov/2007	05/Nov/2007	05/Nov/2007
Time Collected			16:00	16:00	16:00	13:00	13:00
Date Received			15/Nov/2007	15/Nov/2007	15/Nov/2007	15/Nov/2007	15/Nov/2007
Date Extracted			06/Dec/2007	06/Dec/2007	06/Dec/2007	06/Dec/2007	06/Dec/2007
Date Analyzed			07/Dec/2007	07/Dec/2007	07/Dec/2007	07/Dec/2007	07/Dec/2007
Matrix			**Mussel**	**Mussel**	**Mussel**	**Mussel**	**Mussel**
			Fresh Wt.	**Fresh Wt.**	**Fresh Wt.**	**Fresh Wt.**	**Fresh Wt.**
Microcystin Analytes	**ppb**	**ppb**	**ppb (ng/g)**	**ppb (ng/g)**	**ppb (ng/g)**	**ppb (ng/g)**	**ppb (ng/g)**
MCY-RR	2.00	5.00	ND	ND	ND	ND	ND
MCY-Demethyl-RR*	2.00	5.00	ND	ND	ND	ND	ND
MCY-LR	2.00	5.00	ND	ND	ND	ND	ND
MCY-Demethyl-LR*	2.00	5.00	ND	ND	ND	ND	ND
MCY-YR	2.00	5.00	ND	ND	ND	ND	ND
MCY-LA	2.00	5.00	ND	ND	ND	ND	ND
MCY-LW	2.00	5.00	ND	ND	ND	ND	ND
MCY-LF	2.00	5.00	ND	ND	ND	ND	ND
* Demethyl analog quantified as parent compound.							

Klamath
L-665-07

WPCL Lab#	Estimated MDL	Reporting Limit	L-665-07-6	L-665-07-7	L-665-07-8	L-665-07-9	L-665-07-10
Sample Identification			BR110507-C	SV110507-A	SV110507-B	SV110507-C	I5110507-A
Date Collected			05/Nov/2007	05/Nov/2007	05/Nov/2007	05/Nov/2007	05/Nov/2007
Time Collected			13:00	15:00	15:00	15:00	12:00
Date Received			15/Nov/2007	15/Nov/2007	15/Nov/2007	15/Nov/2007	15/Nov/2007
Date Extracted			06/Dec/2007	06/Dec/2007	06/Dec/2007	06/Dec/2007	06/Dec/2007
Date Analyzed			07/Dec/2007	07/Dec/2007	07/Dec/2007	07/Dec/2007	07/Dec/2007
Matrix			Mussel	Mussel	Mussel	Mussel	Mussel
			Fresh Wt.	Fresh Wt.	Fresh Wt.	Fresh Wt.	Fresh Wt.
Microcystin Analytes	ppb	ppb	ppb (ng/g)	ppb (ng/g)	ppb (ng/g)	ppb (ng/g)	ppb (ng/g)
MCY-RR	2.00	5.00	ND	ND	ND	ND	ND
MCY-Demethyl-RR*	2.00	5.00	ND	ND	ND	ND	ND
MCY-LR	2.00	5.00	ND	ND	ND	ND	ND
MCY-Demethyl-LR*	2.00	5.00	ND	ND	ND	ND	ND
MCY-YR	2.00	5.00	ND	ND	ND	ND	ND
MCY-LA	2.00	5.00	ND	ND	ND	ND	ND
MCY-LW	2.00	5.00	ND	ND	ND	ND	ND
MCY-LF	2.00	5.00	ND	ND	ND	ND	ND
* Demethyl analog quantified as parent compound.							

Klamath
L-665-07

WPCL Lab#	Estimated MDL	Reporting Limit	L-665-07-11	L-665-07-11Dup	L-665-07-12	L-665-07-13	L-665-07-14
Sample Identification			I5110507-B	I5110507-B	I5110507-C	OR110607-A	OR110607-B
Date Collected			05/Nov/2007	05/Nov/2007	05/Nov/2007	06/Nov/2007	06/Nov/2007
Time Collected			12:00	12:00	12:00		
Date Received			15/Nov/2007	15/Nov/2007	15/Nov/2007	15/Nov/2007	15/Nov/2007
Date Extracted			06/Dec/2007	06/Dec/2007	06/Dec/2007	06/Dec/2007	06/Dec/2007
Date Analyzed			07/Dec/2007	07/Dec/2007	07/Dec/2007	07/Dec/2007	07/Dec/2007
Matrix			Mussel	Mussel	Mussel	Mussel	Mussel
			Fresh Wt.	Fresh Wt.	Fresh Wt.	Fresh Wt.	Fresh Wt.
Microcystin Analytes	ppb	ppb	ppb (ng/g)	ppb (ng/g)	ppb (ng/g)	ppb (ng/g)	ppb (ng/g)
MCY-RR	2.00	5.00	ND	ND	ND	ND	ND
MCY-Demethyl-RR*	2.00	5.00	ND	ND	ND	ND	ND
MCY-LR	2.00	5.00	ND	ND	ND	ND	ND
MCY-Demethyl-LR*	2.00	5.00	ND	ND	ND	ND	ND
MCY-YR	2.00	5.00	ND	ND	ND	ND	ND
MCY-LA	2.00	5.00	ND	ND	ND	ND	ND
MCY-LW	2.00	5.00	ND	ND	ND	ND	ND
MCY-LF	2.00	5.00	ND	ND	ND	ND	ND
* Demethyl analog quantified as parent compound.							

Klamath
L-665-07

WPCL Lab#	Estimated MDL	Reporting Limit	L-665-07-15		L-665-07-MBlk	L-665-07-LCS	L-665-07-10MS	L-665-07-10MSD
Sample Identification			OR110607-C		Solvent Blank	WPCL mussel	I5110507-A	I5110507-A
Date Collected			06/Nov/2007				05/Nov/2007	05/Nov/2007
Time Collected							12:00	12:00
Date Received			15/Nov/2007				15/Nov/2007	15/Nov/2007
Date Extracted			06/Dec/2007		06/Dec/2007	06/Dec/2007	06/Dec/2007	06/Dec/2007
Date Analyzed			07/Dec/2007	QA/QC Samples	07/Dec/2007	07/Dec/2007	07/Dec/2007	07/Dec/2007
Matrix			Mussel			Mussel	Mussel	Mussel
			Fresh Wt.			Fresh Wt.	Fresh Wt.	Fresh Wt.
Microcystin Analytes	ppb	ppb	ppb (ng/g)		ppb (ug/L)	Recovery (%)	Recovery (%)	Recovery (%)
MCY-RR	2.00	5.00	ND		ND	85.4	92.5	94.0
MCY-Demethyl-RR*	2.00	5.00	ND		ND	NA	NA	NA
MCY-LR	2.00	5.00	ND		ND	114	107	115
MCY-Demethyl-LR*	2.00	5.00	ND		ND	NA	NA	NA
MCY-YR	2.00	5.00	ND		ND	109	117	121
MCY-LA	2.00	5.00	ND		ND	82.5	74.5	75.6
MCY-LW	2.00	5.00	ND		ND	81.9	74.3	79.0
MCY-LF	2.00	5.00	ND		ND	85.9	71.5	78.1

* Demethyl analog quantified as parent compound.

L-665-07

1/2

Chain of Custody for Klamath River Reservoir Nutrient Loading Study

Karuk DNR	39051 Hwy 96
PHONE 530-469-3456	Orleans, CA 95556
CONTACT Susan Corum	EMAIL scorum@karuk.us
Collected By SC	SIGNATURE Susan Corum

	Sample ID	Date	Time	Lab ID	Sample Description	Microcystin	Tissue or Water Sample
1	CH110507-A	11/5/07	1600		China Flat Klamath River ~~Downriver~~ Right across from Happy Camp	Y	Mussel Tissue
2	CH110507-B	↓	↓		"		
3	CH110507-C				"		
4	BR110507-A	11/5/07	1300		Brown Bear blw Scott + Shasta		
5	BR110507-B				"		
6	BR110507-C				"		
7	SV110507-A		1500		About ½ miles upstream Seiad Valley		
8	SV110507-B				"		
9	SV0110507-C				"		
10	IS110507-A		1200		Below I-5 Bridge Klamath River		
11	IS110507-B				"		
12	IS110507-C				"		

Date Shipped: 11/14/07 Carrier/ Shipping # FedEx

Date Received

Received by Received-Gregor Baltzell 11-15-07

Notes Do Not Process Samples until you talk to Russ Kanz Also, please Save mussel shells for aging + id confirmation individual

Ship to:

Dave Crane
CDFG Water Pollution Control Laboratory
2005 Nimbus Road
Rancho Cordova, CA 95670
(916) 358-2858
fax: (916) 985-4301

Bill and Send Results To:

Russ J. Kanz
State Water Resources Control Board
PO Box 2000
Sacramento, CA 95812-2000
(916) 341-5341

Please put mussel shells back in labeled bags + return to Susan Corum 39051 Hwy 96 Orleans CA 95556

L-665-07
2/2

Chain of Custody for Klamath River Reservoir Nutrient Loading Study

Karuk DNR	39051 Hwy 96
PHONE 530-469-3456	Orleans, CA 95556
CONTACT Susan Corum	EMAIL scorum@karuk.us
Collected By SC	SIGNATURE

	Sample ID	Date	Time	Lab ID	Sample Description	Water Sample	Tissue or Water Sample
1	OR110607-A	11/6/07			Under Orleans Bridge Klamath River	X	Mussel tissue
2	OR110607-B	"			"	X	
3	OR110607-C	"			"	X	"
4							
5							
6							
7							
8							
9							
10							
11							
12							

Date Shipped: 11/14/07 Carrier/ Shipping #_____

Date Received_____

Received by_____

Notes Please keep mussel shells w/ appropriate bags so we can ID + age @ latin date THANKS!

Ship to:

Dave Crane
CDFG Water Pollution Control Laboratory
2005 Nimbus Road
Rancho Cordova, CA 95670
(916) 358-2858
fax: (916) 985-4301

Bill and Send Results To:

Russ J. Kanz
State Water Resources Control Board
PO Box 2000
Sacramento, CA 95812-2000
(916) 341-5341

Received
Gregor Baltzell 11-15-07

DEPARTMENT OF FISH AND GAME
FISH AND WILDLIFE
WATER POLLUTION CONTROL LABORATORY

2005 NIMBUS ROAD
RANCHO CORDOVA, CA 95670
PHONE (916) 358-2858 ATSS 8-434-2858 FAX (916) 985-4301

LABORATORY REPORT

Name:	Russ J. Kanz	**Lab Number**:	L-387-08
Agency:	State Water Resource Control Board	**Other Number**:	
Address:	P. O. Box 2000	**Date Sampled:**	06/12/08
City:	Sacramento, CA 95812-2000	**Date Received:**	06/19/08
		Date Completed:	07/22/08
		Index-PCA Code:	

RE: Microcystin analysis in yellow perch

RESULTS OF CHEMICAL ANALYSIS:

Sixteen fish tissue samples and two liver composites from Copco Reservoir were extracted and analyzed by LC/MS/MS for microcystins. See attached sheets for results.

NA	Not Applicable
ND	Not Detected
MDL	Method Detection Limit
RL	Reporting Limit
LCS	Laboratory Control Spike
MS	Matrix Spike
MSD	Matrix Spike Duplicate

Cost: To be invoiced per contract.

Project Chemist — 8/3/08 Date

Lead Pesticide Chemist — 08/04/08 Date

Laboratory Director — 8/4/08 Date

SWRCB
L-387-08 (Yellow Perch)

WPCL Lab#	Estimated MDL	Reporting Limit	L-387-08-1	L-387-08-2	L-387-08-3	L-387-08-4	L-387-08-5	L-387-08-5Dup
Sample Identification			**CC1**	**CC2**	**CC3**	**CC4**	**CC5**	**CC5**
Date Collected			12/Jun/2008	12/Jun/2008	12/Jun/2008	12/Jun/2008	12/Jun/2008	12/Jun/2008
Time Collected								
Date Received			19/Jun/2008	19/Jun/2008	19/Jun/2008	19/Jun/2008	19/Jun/2008	19/Jun/2008
Date Extracted			04/Jul/2008	04/Jul/2008	02/Jul/2008	02/Jul/2008	02/Jul/2008	02/Jul/2008
Date Analyzed			10/Jul/2008	10/Jul/2008	10/Jul/2008	10/Jul/2008	10/Jul/2008	10/Jul/2008
Matrix			**fish tissue**	**fish tissue**	**fish tissue**	**fish tissue**	**fish tissue**	**fish tissue**
Biotoxin Analytes	**ppb**	**ppb**	**ppb (ng/g)**	**ppb (ng/g)**	**ppb (ng/g)**	**ppb (ng/g)**	**ppb (ng/g)**	**ppb (ng/g)**
MCY-RR	0.50	1.00	ND	ND	ND	ND	ND	ND
MCY-Demethyl-RR*	0.50	1.00	ND	ND	ND	ND	ND	ND
MCY-LR	0.50	1.00	ND	ND	ND	ND	ND	ND
MCY-Demethyl-LR*	0.50	1.00	ND	ND	ND	ND	ND	ND
MCY-YR	0.50	1.00	ND	ND	ND	ND	ND	ND
MCY-LA	0.50	1.00	ND	ND	ND	ND	ND	ND
MCY-LW	0.50	1.00	ND	ND	ND	ND	ND	ND
MCY-LF	0.50	1.00	ND	ND	ND	ND	ND	ND
Domoic acid	1.000	2.00	ND	ND	ND	ND	ND	ND

* Demethyl-RR and -LR are quantified as parent analog compound.

SWRCB
L-387-08 (Yellow Perch)

WPCL Lab#	Estimated MDL	Reporting Limit	L-387-08-6	L-387-08-7	L-387-08-8	L-387-08-9	L-387-08-10	L-387-08-11
Sample Identification			CC6	CC7	CC8	CC1-8	CR50	CR51
Date Collected			12/Jun/2008	12/Jun/2008	12/Jun/2008	12/Jun/2008	12/Jun/2008	12/Jun/2008
Time Collected							1400	1400
Date Received			19/Jun/2008	19/Jun/2008	19/Jun/2008	19/Jun/2008	19/Jun/2008	19/Jun/2008
Date Extracted			02/Jul/2008	04/Jul/2008	04/Jul/2008	02/Jul/2008	02/Jul/2008	02/Jul/2008
Date Analyzed			10/Jul/2008	10/Jul/2008	10/Jul/2008	10/Jul/2008	10/Jul/2008	10/Jul/2008
Matrix			fish tissue	fish tissue	fish tissue	liver comp.	fish tissue	fish tissue
Biotoxin Analytes	ppb	ppb	ppb (ng/g)	ppb (ng/g)	ppb (ng/g)	ppb (ng/g)	ppb (ng/g)	ppb (ng/g)
MCY-RR	0.50	1.00	ND	ND	ND	ND	ND	ND
MCY-Demethyl-RR*	0.50	1.00	ND	ND	ND	ND	ND	ND
MCY-LR	0.50	1.00	ND	ND	ND	ND	ND	ND
MCY-Demethyl-LR*	0.50	1.00	ND	ND	ND	ND	ND	ND
MCY-YR	0.50	1.00	ND	ND	ND	ND	ND	ND
MCY-LA	0.50	1.00	ND	ND	ND	ND	ND	ND
MCY-LW	0.50	1.00	ND	ND	ND	ND	ND	ND
MCY-LF	0.50	1.00	ND	ND	ND	ND	ND	ND
Domoic acid	1.000	2.00	ND	ND	ND	ND	ND	ND

* Demethyl-RR and -LR are quantified as parent analog compound.

SWRCB
L-387-08 (Yellow Perch)

WPCL Lab#	Estimated MDL	Reporting Limit	L-387-08-12	L-387-08-13	L-387-08-14	L-387-08-15	L-387-08-16	L-387-08-17
Sample Identification			**CR52**	**CR53**	**CR54**	**CR55**	**CR56**	**CR57**
Date Collected			12/Jun/2008	12/Jun/2008	12/Jun/2008	12/Jun/2008	12/Jun/2008	12/Jun/2008
Time Collected			1400	1400	1400	1400	1400	1400
Date Received			19/Jun/2008	19/Jun/2008	19/Jun/2008	19/Jun/2008	19/Jun/2008	19/Jun/2008
Date Extracted			02/Jul/2008	02/Jul/2008	02/Jul/2008	02/Jul/2008	02/Jul/2008	02/Jul/2008
Date Analyzed			10/Jul/2008	10/Jul/2008	10/Jul/2008	10/Jul/2008	10/Jul/2008	10/Jul/2008
Matrix			**fish tissue**	**fish tissue**	**fish tissue**	**fish tissue**	**fish tissue**	**fish tissue**
Biotoxin Analytes	**ppb**	**ppb**	**ppb (ng/g)**	**ppb (ng/g)**	**ppb (ng/g)**	**ppb (ng/g)**	**ppb (ng/g)**	**ppb (ng/g)**
MCY-RR	0.50	1.00	ND	ND	ND	ND	ND	ND
MCY-Demethyl-RR*	0.50	1.00	ND	ND	ND	ND	ND	ND
MCY-LR	0.50	1.00	ND	ND	ND	ND	ND	ND
MCY-Demethyl-LR*	0.50	1.00	ND	ND	ND	ND	ND	ND
MCY-YR	0.50	1.00	ND	ND	ND	ND	ND	ND
MCY-LA	0.50	1.00	ND	ND	ND	ND	ND	ND
MCY-LW	0.50	1.00	ND	ND	ND	ND	ND	ND
MCY-LF	0.50	1.00	ND	ND	ND	ND	ND	ND
Domoic acid	1.000	2.00	ND	ND	ND	ND	ND	ND

* Demethyl-RR and -LR are quantified as parent analog compound.

SWRCB
L-387-08 (Yellow Perch)

WPCL Lab#	Estimated MDL	Reporting Limit	L-387-08-18		L-387-08-Control	L-387-08-LCS	L-387-08-6-MS	L-387-08-6-MSD
Sample Identification			CR50-57		WPCL-119-07	WPCL-119-07	CC6	CC6
Date Collected			12/Jun/2008				12/Jun/2008	12/Jun/2008
Time Collected			1400					
Date Received			19/Jun/2008				19/Jun/2008	19/Jun/2008
Date Extracted			02/Jul/2008		02/Jul/2008	02/Jul/2008	02/Jul/2008	02/Jul/2008
Date Analyzed			10/Jul/2008		10/Jul/2008	10/Jul/2008	10/Jul/2008	10/Jul/2008
Matrix			liver comp.		fish tissue	fish tissue	fish tissue	fish tissue
Biotoxin Analytes	ppb	ppb	ppb (ng/g)		% Recovery	% Recovery	% Recovery	% Recovery
MCY-RR	0.50	1.00	ND	QA/QC Samples	ND	93.0	118	115
MCY-Demethyl-RR*	0.50	1.00	ND		ND	NA	NA	NA
MCY-LR	0.50	1.00	ND		ND	116	107	108
MCY-Demethyl-LR*	0.50	1.00	ND		ND	NA	NA	NA
MCY-YR	0.50	1.00	ND		ND	98.0	112	109
MCY-LA	0.50	1.00	ND		ND	67.5	61.3	62.1
MCY-LW	0.50	1.00	ND		ND	76.0	74.4	68.7
MCY-LF	0.50	1.00	ND		ND	54.5	58.5	57.8
Domoic acid	1.000	2.00	ND		ND	NA	NA	NA

* Demethyl-RR and -LR are quantified as parent analog compound.

DFG REQUEST FOR ANALYSIS AND CHAIN OF CUSTODY RECORD

Page 1 of 1

Sampler: Susan Corum — Ph #:	Send Results To: Russ Kanz rkanz@waterboards.ca.gov	Lab Number: L-387-08
Address: PO Box 282	Address: PO Box 2000	Field Number:
City: Orleans — Zip: CA 95556	City: Sacramento CA — Zip: 95812-2000	Lab Storage:
Date Required/Reason:	Copies To: Susan Corum	Spill Title:
Shipped Via:	Address: PO Box 282	Suspect:
	City: Orleans CA — Zip: 95556	Index-PCA:

☐ Fish & Wildlife Loss Date:_____ Region:_____

☐ DFG Code Violation:_____

☐ Suspected or Potential Problem

☒ Routine Analysis

Water Temp: F or C pH: DO: mg/L Conductivity: umhos/cm

Analysis Requested >>>

Sample Identification/Location (Draw map on separate sheet if necessary)	Collection Date	Collection Time	Petroleum Fingerprint	Trace Elements (Specify Below)	Pesticides (Specify Below)	Microcystins	Sample Type: Water	Sample Type: Filtered Water	Sample Type: Soil	Sample Type: Tissue	Number of Containers: Plastic	Number of Containers: Glass	Number of Containers: VOA Vial	Preservation: Temp	Preservation: Acid
Copco Reservoir	6/12/08									Fish					
9 Copco Cove Yellow Perch						X				X					
10 Mallard Cove yellow perch						X				X					

Problem Description

Suspect/Incident Location

Comments/Special Instructions

Pollution Action Kit: Yes☐ No☐

Glove Size: Large ☐ Medium ☐

Hazmat Shipper Requested: Yes☐ No☐

6-19-08

Samples Relinquished By (Signature)	Print Name	Date	Received By (Signature)	Print Name	Date
Sus Cum	Susan Corum	6/18/08	Maryn Battell	GREGOR BATTELL	9:15

LAB COPIES: WHITE, CANARY, PINK SUBMITTER: GOLDENROD FG 1000 (Rev. 9/01)

Pesticide Investigations Lab
1701 Nimbus Road
Rancho Cordova, CA 95670
(916) 358-2950

Petroleum Chemistry Lab
1995 Nimbus Road
Rancho Cordova, CA 95670
(916) 358-2803

Water Pollution Control Lab
2005 Nimbus Road
Rancho Cordova, CA 95670
(916) 358-2858

Tissue Sampling Field Sheet Sheet 1 of 1

Project: Copco Reservoir Perch/microcystin Lab Code:

Date: 06/12/2008 Samplers: Tim Wilhite
Ron Presley

Time: 1400 hrs

Station Description: Mallard Cove

County: Siskiyou

Lat: Long:

L-387-08

	ID#	FL cm	TL cm	WT g	ID#	FL	TL	WT
10	CR50	23.5	24.3	159				
11	CR51	23.5	25.0	148				
12	CR52	17.5	18.1	66				
13	CR53	20.2	21.0	93				
14	CR54	16.6	17.1	53				
15	CR55	15.0	15.9	45				
16	CR56	15.5	16.2	42				
17	CR57	15.8	16.2	43				
	CR58	14.6	15.8	42				
	CR59	15.0	16.6	44				

Additional Species:

Comments

All fish caught were Yellow Perch

Organics Metals Archive Other

Cosco Cove
Yellow Perch
6/12/08

L-387-08

ID	Fork length (mm)	wt. (grams)
1 CC1	159	56.78
2 CC2	188	74.14
3 CC3	200	86.06
4 CC4	164	52.04
5 CC5	169	54.38
6 CC6	193	83.02
7 CC7	187	63.16
8 CC8	195	78.62
CC9	138	30.64

Collected by Tim Wilhite - USEPA
Packaged + measured by Susan Corum - Karuk Tribe

DEPARTMENT OF FISH AND GAME
FISH AND WILDLIFE
WATER POLLUTION CONTROL LABORATORY
2005 NIMBUS ROAD
RANCHO CORDOVA, CA 95670
PHONE (916) 358-2858 ATSS 8-434-2858 FAX (916) 985-4301

LABORATORY REPORT

Name:	Russ J. Kanz	**Lab Number**:	L-722-07
Agency:	State Water Resource Control Board	**Other Number**:	
Address:	P. O. Box 2000	**Date Sampled:**	07/23-09/19/07
City:	Sacramento, CA 95812-2000	**Date Received:**	12/12/07
		Date Completed:	07/23/08
		Index-PCA Code:	

RE: Microcystin analysis in water

RESULTS OF CHEMICAL ANALYSIS:

Nine water samples from Klamath River were extracted and analyzed by LC/MS/MS for microcystins. These samples were previously frozen and sonicated at EPA Region 9 lab. See attached sheets for results.

NA	Not Applicable
ND	Not Detected
MDL	Method Detection Limit
RL	Reporting Limit
MBlk	Method Blank
LCS	Laboratory Control Spike
LCSD	Laboratory Control Spike Duplicate
MS	Matrix Spike
MSD	Matrix Spike Duplicate

Cost: To be invoiced per contract.

Project Chemist — Date: 8/3/08

Lead Pesticide Chemist — Date: 08/04/08

Laboratory Director — Date: 8/4/08

WPCL Lab#	Estimated MDL	Reporting Limit	L-722-07-1	L-722-07-2	L-722-07-3	L-722-07-4	L-722-07-5
Sample Identification			CRCC072307-SG	IR01072407-OO	CR01072407-OO	CRCC082107-SG	IR01082207-OO
Date Collected			23/Jul/2007	24/Jul/2007	24/Jul/2007	21/Aug/2007	22/Aug/2007
Time Collected			15:20	12:00	10:00	0:00	15:00
Date Received			12/Dec/2007	12/Dec/2007	12/Dec/2007	12/Dec/2007	12/Dec/2007
Date Extracted			12/Jul/2008	12/Jul/2008	12/Jul/2008	12/Jul/2008	12/Jul/2008
Date Analyzed			19/Jul/2008	19/Jul/2008	19/Jul/2008	19/Jul/2008	19/Jul/2008
Matrix			Water	Water	Water	Water	Water
Microcystin Analytes	**ppb (µg/L)**	**ppb (µg/L)**	**ppb (µg/L)**	**ppb (µg/L)**	**ppb (µg/L)**	**ppb (µg/L)**	**ppb (µg/L)**
MCY-RR	0.50	1.00	ND	ND	**1.67**	**407**	ND
MCY-Demethyl-RR*	0.50	1.00	ND	ND	ND	ND	ND
MCY-LR	0.50	1.00	ND	ND	**27.6**	**2,000**	**3.93**
MCY-Demethyl-LR*	0.50	1.00	ND	ND	ND	ND	ND
MCY-YR	0.50	1.00	ND	ND	ND	**369**	ND
MCY-LA	0.50	1.00	ND	ND	**1,070**	**18,400**	**37.4**
MCY-LW	0.50	1.00	ND	ND	ND	ND	ND
MCY-LF	0.50	1.00	ND	ND	**1.20**	**47.1**	ND

* Demethyl analog quantified as parent compound.

WPCL Lab#	Estimated MDL	Reporting Limit	L-722-07-6	L-722-07-6 Dup	L-722-07-7	L-722-07-8	L-722-07-9
Sample Identification			CR01082307-OO	CR01082307-OO	KRBI091807-OC	IRJW091807-SG	CR01091907-OO
Date Collected			23/Aug/2007	23/Aug/2007	18/Sep/2007	18/Sep/2007	19/Sep/2007
Time Collected			10:20	10:20	13:40	15:25	9:50
Date Received			12/Dec/2007	12/Dec/2007	12/Dec/2007	12/Dec/2007	12/Dec/2007
Date Extracted			12/Jul/2008	12/Jul/2008	12/Jul/2008	12/Jul/2008	12/Jul/2008
Date Analyzed			19/Jul/2008	19/Jul/2008	19/Jul/2008	19/Jul/2008	19/Jul/2008
Matrix			Water	Water	Water	Water	Water
Microcystin Analytes	**ppb (µg/L)**	**ppb (µg/L)**	**ppb (µg/L)**	**ppb (µg/L)**	**ppb (µg/L)**	**ppb (µg/L)**	**ppb (µg/L)**
MCY-RR	0.50	1.00	**0.671**	**0.702**	ND	ND	ND
MCY-Demethyl-RR*	0.50	1.00	ND	ND	ND	ND	ND
MCY-LR	0.50	1.00	**6.68**	**6.49**	ND	ND	ND
MCY-Demethyl-LR*	0.50	1.00	ND	ND	ND	ND	ND
MCY-YR	0.50	1.00	ND	ND	ND	ND	ND
MCY-LA	0.50	1.00	**36.1**	**35.6**	ND	ND	ND
MCY-LW	0.50	1.00	ND	ND	ND	ND	ND
MCY-LF	0.50	1.00	ND	ND	ND	ND	ND

* Demethyl analog quantified as parent compound.

WPCL Lab#	Estimated MDL	Reporting Limit		L-722-07-MBlk	L-722-07-LCS	L-722-07-LCSD	L-722-07-8 MS	L-722-07-8 MSD
Sample Identification							IRJW091807-SG	IRJW091807-SG
Date Collected							18/Sep/2007	18/Sep/2007
Time Collected							15:25	15:25
Date Received							12/Dec/2007	12/Dec/2007
Date Extracted				12/Jul/2008	12/Jul/2008	12/Jul/2008	12/Jul/2008	12/Jul/2008
Date Analyzed				19/Jul/2008	19/Jul/2008	19/Jul/2008	19/Jul/2008	19/Jul/2008
Matrix					Water	Water	Water	Water
Microcystin Analytes	ppb (µg/L)	ppb (µg/L)	QA/QC Samples	ppb (ug/L)	Recovery (%)	Recovery (%)	Recovery (%)	Recovery (%)
MCY-RR	0.50	1.00		ND	**87.5**	**89.7**	**99.1**	**99.7**
MCY-Demethyl-RR*	0.50	1.00		ND	NA	NA	NA	NA
MCY-LR	0.50	1.00		ND	**95.3**	**97.5**	**95.0**	**97.3**
MCY-Demethyl-LR*	0.50	1.00		ND	NA	NA	NA	NA
MCY-YR	0.50	1.00		ND	**96.1**	**95.8**	**95.1**	**99.1**
MCY-LA	0.50	1.00		ND	**95.0**	**92.4**	**83.2**	**82.0**
MCY-LW	0.50	1.00		ND	**82.7**	**80.0**	**26.0**	**13.0**
MCY-LF	0.50	1.00		ND	**81.0**	**74.1**	**11.0**	**7.60**

* Demethyl analog quantified as parent compound.

ENVIRONMENTAL PROTECTION AGENCY
Region 9 Laboratory

CHAIN OF CUSTODY RECORD

1337 S. 46th St., Bldg. 201
Richmond, CA 94804-4698

L-722-07

PROJ. NO.

PROJECT NAME: KLAMATH RIVER

SAMPLERS: *(Signature)*
SUSAN CORUM

	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NO. OF CON-TAINERS	MICROCYSTIN	REMARKS
1	7/23/07	1520	W		X	CRCC072307-SG	1	X	
2	7/24/07	1200	W		X	IR01072407-00	1	X	
3	7/24/07	1000	W		X	CR01072407-00	1	X	
4	8/21/07	0000	W		X	CRCC082107-SG	1	X	
5	8/22/07	1500	W		X	IR01082207-00	1	X	
6	8/23/07	1020	W		X	CR01082307-00	1	X	
7	9/18/07	1340	W		X	KRBI091807-OC	1	X	
8	9/18/07	1525	W		X	IRIW091807-SG	1	X	
9	9/19/07	0950	W		X	CR01091907-00	1	X	

SAMPLES PREVIOUSLY FROZEN AND SONICATED AT EPA REGION 9 LAB.
ANDREW LINCOFF
520-412-2330

Relinquished by: *(Signature)* C. Lincoff	Date / Time 12/11/07 1400	Received by: *(Signature)*	
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	
Received for Laboratory by: *(Signature)*	Date / Time	Temp.	Seals Intact (Y/N)

Relinquished by: *(Signature)*	Date / Time 12-12-07 10:00	Received by: *(Signature)* Meagan Battjell
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*

Conditions / Remarks

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

9-1634