

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

Prepared by Russ J. Kanz Staff Environmental Scientist rkanz@waterboards.ca.gov P.O. Box 2000 Sacramento, CA 95812-2000

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.

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.

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

Table 1 – Catalog of Samples

## 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.

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

## Table 2 – Yearling Iron Gate Hatchery Salmon Summer 2007

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.

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

Table 3 – Mussels Summer 2007

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.

Lab #	Date Collected	Location	Tissue Type	Total Microcystin (ng/g)
L-524-07-1	9/6-7/2007		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	Lower	Fillet IG-3	2.23
L-524-07-4	9/6-7/2007	Iron Gate	Fillet IG-4	59.01
L-524-07-5	9/6-7/2007	Reservoir	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		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	Middle	Fillet IG-8	3.01
L-524-07-9	9/6-7/2007	Iron Gate	Fillet IG-9	2.02
L-524-07-10	9/6-7/2007	Reservoir	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		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	Upper	Fillet IG-15	106
L-524-07-16	9/6-7/2007	Iron Gate	Fillet IG-16	73
L-524-07-17	9/6-7/2007	Reservoir	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		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	Lower	Fillet CP-3	82.1
L-524-07-22	9/7-8/2007	Сорсо	Fillet CP-4	61.56
L-524-07-23	9/7-8/2007	Reservoir	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		Fillet CP-8	147
L-524-07-27	9/7-8/2007	Middle	Fillet CP-9	350
L-524-07-28	9/7-8/2007	Copco	Fillet CP-10	405
L-524-07-29	9/7-8/2007	Reservoir	Fillet CP-11	422
L-524-07-30	9/7-8/2007		Fillet CP-12	240
L-524-07-31	9/7-8/2007		Fillet CP-13	181
L-524-07-32	9/7-8/2007	1	Fillet CP-14	251
L-524-07-33	9/7-8/2007	Upper	Fillet CP-15	125
L-524-07-33Dup	9/7-8/2007	Copco	Fillet CP-16	141
L-524-07-34	9/7-8/2007	Reservoir	Fillet CP-17	101
L-524-07-35	9/7-8/2007	1	Fillet CP-18	Non-detectable
L-524-07-36	9/7-8/2007	1	Fillet CP-19	86.3
L-524-07-37	9/6-8/2007	Iron Gate	IG Liver Composite	Non-detectable
L-524-07-38	9/6-8/2007	Reservoir	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	Сорсо	CP Liver	177.7
	0,0 0,2001	Reservoir	Composite	
L-524-07-41	9/6-8/2007		CP Liver	473.2
	0,0 0,2001		Composite	10.2
L-524-07-42	9/6-8/2007	1	CP Liver	228.48
	0,0 0,2001		Composite	220.70

Table 4 – Yellow Perch Summer 2007

## 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.

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	Non-detectable
		falcata	
L-665-07-14	11/6/2007	Gonidea angulata	Non-detectable
L-665-07-15	11/6/2007	Gonidea angulata	Non-detectable

Table 5 – Mussels Winter 2007

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.

Lab #	Date Collected	Location	Tissue Type	Total Microcystin (ng/g)
L-387-08-1	6/12/2008		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	Сорсо	Fillet	Non-detectable
L-387-08-5	6/12/2008	Reservoir	Fillet	Non-detectable
L-387-08-5Dup	6/12/2008	Mallard	Fillet	Non-detectable
L-387-08-6	6/12/2008	Cove	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		Fillet	Non-detectable
L-387-08-11	6/12/2008		Fillet	Non-detectable
L-387-08-12	6/12/2008	Canaa	Fillet	Non-detectable
L-387-08-13	6/12/2008	Copco Reservoir	Fillet	Non-detectable
L-387-08-14	6/12/2008	Copco	Fillet	Non-detectable
L-387-08-15	6/12/2008	Cove	Fillet	Non-detectable
L-387-08-16	6/12/2008	0000	Fillet	Non-detectable
L-387-08-17	6/12/2008		Fillet	Non-detectable
L-387-08-18	6/12/2008		Liver Composite	Non-detectable

Table 6 – Yellow Perch Spring 2008

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.

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	IR01072407-00	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

## Table 7 – Water Samples

### 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.

## **References:**

Blue Green Algae Work Group of the State Water Resources Control Board, Department of Public Health, and Office of Environmental Health and Hazard Assessment. 2008. Cyanobacteria in California Recreational Water Bodies Providing Voluntary Guidance about Harmful Algal Blooms, Their Monitoring, and Public Notification, Draft. September 2008

Fetcho, K. 2006. Klamath River Blue-Green Algae Bloom Report. January 2006. Yurok Tribe Environmental Program. http://www.yuroktribe.org/departments/ytep/Water.htm

Kann, Jacob and Corum, Susan, 2007. Summary of 2006 Toxic *Microcystis aeruginosa* and Microcystin Trends in Copco and Iron Gate Reservoirs, CA. June 2007. Karuk Tribe Department of Natural Resources

Kann, Jacob. 2007. Technical Memorandum: Toxic Cyanobacteria Results for Copco/Iron Gate Reservoirs: October 29-30, 2007. November 6, 2007. Aquatic Ecosystem Sciences LLC for the Karuk Tribe of California

Kann, Jacob. 2008. Microcystin Bioaccumulation in Klamath River Fish and Freshwater Mussel Tissue: Preliminary 2007 Results. April 2008. Aquatic Ecosystem Sciences LLC for the Karuk Tribe of California

Norgaard, Kari Marie. 2004. The Effects of Altered Diet on the Health of the Kaurk People: A Preliminary Report. August 2004. The Karuk Tribe of California, Department of Natural Resources

Nedeau, Ethan; Smith, Allan K.; and Stone, Jen. Freshwater Mussels of the Pacific Northwest. www.fws.gov/pacifi c/columbiariver/musselwg.htm

Fish Sniffer. http://www.fishsniffer.com/dbacher/110702irongate.html

VisitUSA. http://www.visitusa.com/california/lakes/copcoandirongatereservoirs.htm

## 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 **FISH AND WILDLIFE** WATER POLLUTION CONTROL LABORATORY

2005 NIMBUS ROAD

189 g

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

LABORATORY REPORT

Name: Russ J. Kanz State Water Resource Control Board Agency: Address: P. O. Box 2000 Sacramento, CA 95812-2000 Citv:

Lab Number: Other Number: Date Sampled: Date Received: Date Completed: Index-PCA Code: L-405-07

7/11, 20, 24/07 7/25/07 8/20/07

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
- Method Detection Limit MDL
- RL **Reporting Limit**
- Laboratory Control Spike LCS
- Laboratory Control Spike Duplicate LCSD

Cost: To be invoiced per contract.

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

ct Chemist

Laboratory Director

027.07

## SWRCB L-405-07

	C					
		Gonedia angulata	G. angulata	G. angulata	G. angulata	Different Species
		Kismath D near IS	Klamath River near	Klamath River near	Klamath River at Big	Klamath River at Big
		Nallaul N. 16al IJ	Seiad Valley	Seiad Valley	Bar River access	Bar River access
		11/Jul/2007	20/Jul/2007	20/Jul/2007	24/Jul/2007	24/Jul/2007
		PM	PM	PM	AM	AM
		25/Jul/2007	25/Jul/2007	25/Jul/2007	25/Jul/2007	25/Jul/2007
		07/Aug/2007	07/Aug/2007	07/Aug/2007	07/Aug/2007	07/Aug/2007
		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.
(g/gn) dqd	(g/gu) dqd	ppb (ng/g)	(b/bu) qdd	(g/gu) qdd	(g/gu) qdd	(g/gu) qdd
0.500	1.00	136	5.09	6.17	N	ND
0.500	1.00	ND	DN	N	ND	Ŋ
0.500	1.00	396	90.9	91.4	68.4	58.1
0.500	1.00	36.6	5.55	5.78	6.05	5.10
0.500	1.00	D	ND	ND	ND	ND
0.500	1.00	2,220	311	280	432	138
0.500	1.00	ND	dN	ND	dN	Ŋ
0.500	1.00	14.5	ND	D	DN	N
	<b>b</b> (ng/g) 0.500 0.500 0.500 0.500 0.500 0.500 0.500	esh Wt. Fresh Wt. b (ng/g) ppb (ng/g) 0.500 1.00 0.500 1.00 0.500 1.00 0.500 1.00 0.500 1.00 0.500 1.00 0.500 1.00	Go Go Fresh Wt. 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.	Gonedia angulata           Klamath R. near IS           11/Jul/2007           PM           25/Jul/2007           PM           25/Jul/2007           PM           1.00	Gonedia angulata         G. angulata           Klamath R. near IS         Klamath River near           Klamath R. near IS         Selad Valley           11/Jul/2007         20/Jul/2007           PM         PM           25/Jul/2007         25/Jul/2007           07/Aug/2007         07/Aug/2007           08/Aug/2007         08/Aug/2007           1.00         136           1.00         136           1.00         396           1.00         396           1.00         396           1.00         311           1.00         ND           1.00         ND           1.00         ND           1.00         311           1.00         ND           ND         ND           1.00         ND           ND         ND           ND         ND           ND         ND	Gonecia angulata         G. angulata         G. angulata         G. angulata           Klamath R. near IS         Klamath River near         K           I1/Juli/2007         20/Juli/2007         20/Juli/2007         20/Juli/2007         Seiad Valley         K           PM         PM         PM         PM         PM         PM         PM         PM         PM         20/Juli/2007         20/Juli/2007         20/Juli/2007         20/Juli/2007         07/Aug/2007         07/Aug/2007         07/Aug/2007         08/Aug/2007         08/Aug/2007         08/Aug/2007         08/Aug/2007         08/Aug/2007         0         100         136         5.09         6.17         ND         ND

Microcystins Page 2 of 3

\*. \* \*

.\*

## SWRCB L-405-07

	WPCL Oyster		WPCL Uyster	WPCL Oyster	WPCL Oyster	WPCL Oyster
-	8					
	ples					
			07/Aug/2007	07/Aug/2007	07/Aug/2007	07/Aug/2007
			08/Aug/2007	08/Aug/2007	08/Aug/2007	08/Aug/2007
Fresh Wt. Fresh Wt.		Expected value	Amount Recovered		Amount Recovered	
(b/bu) qdd (b/bu) qdd	(g/gn) dqd	(g/gu) qdd	(ng/g)	% Recovery	(g/gn) dqq	% Recovery
1.00	ND	25.0	26.5	106	25.8	103
1.00	N	NA	NA	NA	AN	NA
1.00	DN	25.0	19.8	79.1	18.7	74.8
1.00	N	NA	NA	NA	NA	NA
1.00	ND	25.0	20.0	80.1	19.8	79.0
1.00	N	25.0	25.5	102	25.3	101
1.00	ND	25.0	29.5	118	29.0	116
1.00	ND	25.0	30.0	120	29.5	118
t compound.						
	Fresh Wt.           ppb (ng/g)           1.00           1.00           1.00           1.00           1.00           1.00           1.00           1.00           1.00           1.00           1.00           1.00           1.00           1.00	1     1     1     1     1     0 </td <td>wrcc Cyster           07/Aug/2007           1.00           1.00           1.00           1.00           1.00           1.00           1.00           1.00           1.00           1.00           1.00           1.00           1.00           1.00           ND           ND      N</td> <td>wrcc.cyster           07/Aug/2007           08/Aug/2007           1.00           1.00           1.00           1.00           1.00           1.00           1.00           1.00           1.00           1.00           1.00           1.00           ND           25.0           ND           25.0           25.0           25.0     <!--</td--><td>WFCL Cyster         WFCL Cyster           07/Aug/2007         07/Aug/2007           07/Aug/2007         07/Aug/2007           08/Aug/2007         07/Aug/2007           100         ND           ND         25.0           25.0         19.8           1.00         ND           ND         25.0           25.0         25.0           25.0         25.0           25.0         25.0           25.0         25.0           25.0         25.0           25.0         25.0           25.0         25.0           25.0         20.0           25.0         20.0           25.0         25.0           <td< td=""><td>WTCL Cyster         WTCL Cyster         WTCL Cyster         WTCL Cyster           07/Aug/2007         07/Aug/2007         07/Aug/2007         07/Aug/2007         07/Aug/2007           08/Aug/2007         08/Aug/2007         08/Aug/2007         08/Aug/2007         08/Aug/2007         08/Aug/2007           100         ND         25.0         26.5         106         4           100         ND         25.0         19.8         79.1         4           100         ND         25.0         25.5         106         102         102         102         11.0         10.0         11.0</td></td<></td></td>	wrcc Cyster           07/Aug/2007           1.00           1.00           1.00           1.00           1.00           1.00           1.00           1.00           1.00           1.00           1.00           1.00           1.00           1.00           ND           ND      N	wrcc.cyster           07/Aug/2007           08/Aug/2007           1.00           1.00           1.00           1.00           1.00           1.00           1.00           1.00           1.00           1.00           1.00           1.00           ND           25.0           ND           25.0           25.0           25.0 </td <td>WFCL Cyster         WFCL Cyster           07/Aug/2007         07/Aug/2007           07/Aug/2007         07/Aug/2007           08/Aug/2007         07/Aug/2007           100         ND           ND         25.0           25.0         19.8           1.00         ND           ND         25.0           25.0         25.0           25.0         25.0           25.0         25.0           25.0         25.0           25.0         25.0           25.0         25.0           25.0         25.0           25.0         20.0           25.0         20.0           25.0         25.0           <td< td=""><td>WTCL Cyster         WTCL Cyster         WTCL Cyster         WTCL Cyster           07/Aug/2007         07/Aug/2007         07/Aug/2007         07/Aug/2007         07/Aug/2007           08/Aug/2007         08/Aug/2007         08/Aug/2007         08/Aug/2007         08/Aug/2007         08/Aug/2007           100         ND         25.0         26.5         106         4           100         ND         25.0         19.8         79.1         4           100         ND         25.0         25.5         106         102         102         102         11.0         10.0         11.0</td></td<></td>	WFCL Cyster         WFCL Cyster           07/Aug/2007         07/Aug/2007           07/Aug/2007         07/Aug/2007           08/Aug/2007         07/Aug/2007           100         ND           ND         25.0           25.0         19.8           1.00         ND           ND         25.0           25.0         25.0           25.0         25.0           25.0         25.0           25.0         25.0           25.0         25.0           25.0         25.0           25.0         25.0           25.0         20.0           25.0         20.0           25.0         25.0 <td< td=""><td>WTCL Cyster         WTCL Cyster         WTCL Cyster         WTCL Cyster           07/Aug/2007         07/Aug/2007         07/Aug/2007         07/Aug/2007         07/Aug/2007           08/Aug/2007         08/Aug/2007         08/Aug/2007         08/Aug/2007         08/Aug/2007         08/Aug/2007           100         ND         25.0         26.5         106         4           100         ND         25.0         19.8         79.1         4           100         ND         25.0         25.5         106         102         102         102         11.0         10.0         11.0</td></td<>	WTCL Cyster         WTCL Cyster         WTCL Cyster         WTCL Cyster           07/Aug/2007         07/Aug/2007         07/Aug/2007         07/Aug/2007         07/Aug/2007           08/Aug/2007         08/Aug/2007         08/Aug/2007         08/Aug/2007         08/Aug/2007         08/Aug/2007           100         ND         25.0         26.5         106         4           100         ND         25.0         19.8         79.1         4           100         ND         25.0         25.5         106         102         102         102         11.0         10.0         11.0

Microcystins Page 3 of 3

,•

~ 1

4

а	. ,										Ð	0	ତ	99	)													
LAB COPIES: WHITE, CANARY, PINK SUBN		marta matic no	Son Brand Kt	Samples Reliquished By (Signature)	Comments/Special Instructions	Suspect/Incident Location	Problem Description			- as a	Different Species - Same location	G. angulatu Elemate liver	18	Somedia angulata here Is	(Draw map on separate sheet if necessary)	Sample Identification/Location	D Routine Analysis	Suspected or Potential Problem	DFG Code Violation:	E Fish & Wildlife Loss Date: Re	Shipped Via	Date Required/Reason	1 AM	City/1/2 1/2 //2 Zip	$\lambda $	SAPARD 509 54 935/ 88	DFG REC	
SUBMITTER: GOLDENROD		Marida Martin	RINGRAMED	Print Name							MA 10-26-1 Am	were 7-24-07 AM	hear 7-20-07 PM	K. 7-11-07 PM	Date Time	Collection	Requested >>>	Analysis		Region:	city Or/ears	Address Dr 282	L		Address Box 2000	D KUSS J. KANZ	QUEST FOR ANALY	
		7 Co-35-1	7-24-07 M	Date							X	×	×	X	Trac (Sp Pes (Sp	ce El ecify ticid ecify	emen Belo es Belo	w)		Water Temp:	\$	92	rung	12 CA	60	State	SIS AND CHA	$\mathbf{)}$
		Rune	Jan In mastin	Received By (Signature)																ForC pH:	210 95556			-P/296 47		Water Lesonger Control Boar of	DFG REQUEST FOR ANALYSIS AND CHAIN OF CUSTODY RECORD	
			17		-					 			-		Wat Filte Soli	ered	Wate	r	Sample Type	<u>ö</u>	Inde	Suspect	Spit	2020	Field	Lab	ECORD	
			Jaricha Martin	Print Name	Hazmat Shipper Requested: Yes No	Glove Size: Large 🗆 M	Pollution Action Kit: Ye				×	7	+	*	Tiss Plas Gizs	sue stic			e Number of Containers	mg/L Conductivity:	Index-PCA	pect	Spill Title	" TSMRI	1 7	Lab Number L-405-	Page	
FG 1000 (Rev. 9/01)		7-25-07	7-2407	Date							×	X	×		Ack	; ;		<u>ب</u>	Preservation	umhos/cm				Freezer		-07		)
		X	1 20 R	005 N anch	Polluti limbus o Core 58-28	: Ro Iova	ad				19 Ra	trole 195 Ni 1nchd 16) 31	imbu o Cor	s Roa dova	d					17 Ra	sticide 01 Nim ncho C 16) 358	bus Ro ordov	ad					

南欧に



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

2005 NIMBUS ROAD RANCHO CORDOVA, CA 95670

FAX (916) 985-4301 PHONE (916) 358-2858 ATSS 8-434-2858

n in MG 20

## LABORATORY REPORT

Russ J. Kanz Name: Agency: State Water Resource Control Board Address: P. O. Box 2000 City: Sacramento, CA 95812-2000

Lab Number: L-475-07 Other Number: **Date Sampled: 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.

358-0317

0**8**,27.07

Laboratory Director

8-27-07

Mekebri

7/20/07

## SWRCB L-475-07

WPCL Lab#	Estimated MDL	Reporting Limit	L-475-07-13	L-475-07-13Dup	L-475-07-13Trip		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	ple	07/Aug/2007
Date Analyzed			21/Aug/2007	21/Aug/2007	21/Aug/2007	am	08/Aug/2007
						S	
	Fresh Wt.	Fresh Wt.	Fresh Wt.	Fresh Wt.	Fresh Wt.	ac	Fresh Wt.
Microcystin Analytes	(b/bu) qdd	(pdd (pdd)	(g/g) dqd	ppb (ng/g)	(g/gn) dqq	2A/	(p/gn) dqq
MCY-RR	0.500	1.00	ND	ND	ND	C	ND
MCY-Demethyl-RR*	0.500	1.00	ND	ND	ND		ND
MCY-LR	0.500	1.00	N	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	D		ND
* Demethyl analog guantified as parent compound	fied as narent com						

Microcystins Page 2 of 3

## SWRCB L-475-07

	WPCL Oyster	WPCL Oyster	WPCL Oyster	WPCL Oyster
	07/Aug/2007	07/Aug/2007	07/Aug/2007	07/Aug/2007
	08/Aug/2007	08/Aug/2007	08/Aug/2007	08/Aug/2007
Expected value	Amount Recovered		Amount Recovered	
(g/gu) qdd	(£/ɓu) qdd	% Recovery	(pdd (ng/g)	% Recovery
25.0	26.5	106	25.8	103
NA	NA	AN	NA	NA
25.0	19.8	79.1	18.7	74.8
NA	NA	NA	AN	AN
25.0	20.0	80.1	19.8	79.0
25.0	25.5	102	25.3	101
25.0	29.5	118	29.0	116
25.0	30.0	120	29.5	118
	p pe	A A A A A A A A A A A A A A A A A A A	WPCL Oyster         WPCL           07/Aug/2007         07/Aug           08/Aug/2007         08/Aug           08/Aug/2007         08/Aug           Amount Recovered         % Rec           26.5         10           NA         79           NA         79           NA         79           NA         79           NA         79           NA         79           NA         10           20.0         80           25.5         10           29.5         11           30.0         12	WPCL Oyster         WPCL Oyster         WPCL Oyster         N           07/Aug/2007         07/Aug/2007         07/Aug/2007         08/Aug/2007           08/Aug/2007         08/Aug/2007         08/Aug/2007         Amount Recovered         Amount Precovered         AmountPrecovered <t< td=""></t<>

Microcystins Page 3 of 3

.

•	• . •	, ,								,	3 W		-12														
LAB COPIES: WHITE, CANARY, PINK S				Samples Reliquished By (Signature)	Comments/Special Instructions	Suspect/Incident Location	Problem Description				MUSSELS		Yellow Perch	(Draw map on separate sheet if necessary)	Sample Identification/Location	C Routine Analysis	Suspected or Potential Problem	DFG Code Violation:	Fish & Wildlife Loss Date:	Shipped Via	Date Required/Reason	CA	City		Address	COPCO RESEVOIR	DFG R
SUBMITTER: GOLDENROD				Print Name							7-2007	-		Date Time	Collection	Requested >>>	Analysis		Region:	City	Address	Coples To			Address	Send Results	DFG REQUEST FOR ANALYSIS AND
				Date										Trac (Sp Pes	ce El ecify ticido	m Fin emen Belov	w)	Int	Water Temp:			- - - - - - - - - - - - - - - - - - -	ÇA			"PCB	
			Maril	Received															F or C	Zip			Ţ	Zin			CHAIN OF CU
			1 Saltal	ed By (Signature)							X		X	M	ic	Percy	/sti	r\$	pH:								CUSTODY RECORD
			W GRE					 						Wat Filte Soll	bered 1	Water		Sample Type	DO:	Index-PCA	Suspect	Spill Title	Lao o		Field	Lab N	CORD
		<b>4</b>	N)	Print Name	Hazmat Shipper Requested: Yes No		Pollution Action Kit: Ye							Pias Glas VO/	rtic			Number of Containers	mg/L Conductivity:	-PCA	i i i i i i i i i i i i i i i i i i i	Title			Field Number	L-475-0-	Page
FG 1000 (Rev. 9/01)				Date	id: Yes⊡ No⊡	Medium 🗆	YesD NoD							Tem Acid					u mhos/cm							7	
			20 Re	05 N. алсћа	Polluti imbus o Cord 58-285	Roa iova,	ď		 	199 Rai	troleu 95 Nir ncho 6) 35	nbu: Con	s Roa dova,	ď			[		170 Rar	ticide 1 Nimi ncho C 5) 358-	ous Ro ordova	ad					



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

2005 NIMBUS ROAD

21 17 AUG 30 - PM 12: CO

성만 관 등 문 방

977 E.B.O

## LABORATORY REPORT

Name:Russ J. KanzAgency:State Water Resource Control BoardAddress:P. O. Box 2000City:Sacramento, CA 95812-2000

Lab Number:	L-463-07
Other Number:	
Date Sampled:	8/13/07
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.

NANot ApplicableNDNot DetectedMDLMethod Detection LimitRLReporting LimitLCSLaboratory Control SpikeLCSDLaboratory Control Spike Duplicate

Cost: To be invoiced per contract.

ad Pesticide Chemist

027.07

8-27 Date

Laboratory Director

# SWRCB L-463-07

. . . .

Sample Identificationfish liverfish liverfish filletfish filletWCL OysterDate Collected13/Aug/200713/Aug/200713/Aug/200713/Aug/200713/Aug/2007Date Collected14/Aug/200714/Aug/200714/Aug/200714/Aug/200714/Aug/2007Date Extracted111/Aug/200716/Aug/200716/Aug/200716/Aug/2007Date Extracted111/Aug/200716/Aug/200716/Aug/200716/Aug/2007Date Extracted111/Aug/200717/Aug/200717/Aug/200716/Aug/2007Date Extracted111/Aug/20071/Aug/20071/Aug/20071/Aug/2007Date Extracted111/Aug/20071/Aug/20071/Aug/20071/Aug/2007Date Analyzed111/Aug/20071/Aug/20071/Aug/20071/Aug/2007Date Analyzed111/Aug/20071/Aug/20071/Aug/20071/Aug/2007Date Analyzed111/Aug/20071/Aug/20071/Aug/20071/Aug/2007Date Analyzed1111/Aug/20071/Aug/2007Date Analyzed11111/Aug/20071/Aug/2007Date Analyzed111111Date Analyzed111111Date Analyzed101111Date Analyzed100001Date Analyzed0 <th>WPCL Lab#</th> <th>Estimated MDL</th> <th>Reporting Limit</th> <th>L-463-07-1</th> <th>L-463-07-2</th> <th>L-463-07-3</th> <th></th> <th>L-405-07-Blank</th>	WPCL Lab#	Estimated MDL	Reporting Limit	L-463-07-1	L-463-07-2	L-463-07-3		L-405-07-Blank
lected         13/lug/2007         13/lug/2007         13/lug/2007         13/lug/2007           lected         1         <	Sample Identification			fish liver	fish stomach	fish fillet		WPCL Oyster
Indected	Date Collected	-		13/Aug/2007	13/Aug/2007	13/Aug/2007		
eived         14/Aug/2007         14/Aug/2007         14/Aug/2007         14/Aug/2007           racted         1         16/Aug/2007         16/Aug/2007         16/Aug/2007         16/Aug/2007           racted         1         17/Aug/2007         16/Aug/2007         16/Aug/2007         16/Aug/2007           rived         Fresh Wt.         Fresh Wt.         Fresh Wt.         Fresh Wt.         17/Aug/2007           rived         Papb (ng/g)         Ppb (ng/g)         Ppb (ng/g)         Ppb (ng/g)         Ppb (ng/g)           rint Analytes         Ppb (ng/g)         Ppb (ng/g)         Ppb (ng/g)         Ppb (ng/g)         Ppb (ng/g)           rint Analytes         Ppb (ng/g)         Ppb (ng/g)         Ppb (ng/g)         Ppb (ng/g)         Ppb (ng/g)           rint Analytes         Ppb (ng/g)         Ppb (ng/g)         Ppb (ng/g)         Ppb (ng/g)         Ppb (ng/g)           rint Analytes         Pob (ng/g)         Ppb (ng/g)         Ppb (ng/g)         Ppb (ng/g)         Ppb (ng/g)           rint Analytes         Pob (ng/g)         Ppb (ng/g)         Ppb (ng/g)         Ppb (ng/g)         Ppb (ng/g)           rint Analytes         Pob (ng/g)         Ppb (ng/g)         Ppb (ng/g)         Ppb (ng/g)         Ppb (ng/g)           rint An	Time Collected							
rated         16/Aug/2007         16/Aug/2007         16/Aug/2007         16/Aug/2007         16/Aug/2007         16/Aug/2007         16/Aug/2007         16/Aug/2007         17/Aug/2007         17/Aug/2007         17/Aug/2007         17/Aug/2007         17/Aug/2007         17/Aug/2007         16/Aug/2007         16/Aug/2007         16/Aug/2007         17/Aug/2007         10/Aug/2007 <th< th=""><th>Date Received</th><th></th><th></th><th>14/Aug/2007</th><th>14/Aug/2007</th><th>14/Aug/2007</th><th>S</th><th></th></th<>	Date Received			14/Aug/2007	14/Aug/2007	14/Aug/2007	S	
Iyzed         17/Aug/2007         17/Aug/2007         17/Aug/2007         17/Aug/2007           Fresh Wr.         Fr	Date Extracted			16/Aug/2007	16/Aug/2007	16/Aug/2007	əlc	07/Aug/2007
Fresh Wt.         MD	Date Analyzed			17/Aug/2007	17/Aug/2007	17/Aug/2007	lwe	08/Aug/2007
Itin Analytes         ppb (ng/g)         ppp (ng/g)         pp (ng/g)         pp (n		Fresh Wt.	Fresh Wt.	Fresh Wt.	Fresh Wt.	Fresh Wt.	oc s	Fresh Wt.
0.500       1.00       ND	<b>Microcystin Analytes</b>	(6/6u) qdd	(6/6u) qdd	(6/6u) qdd	(b/ɓu) qdd	(ɓ/ɓu) qdd	/ <b>V</b> (	(b/ɓu) qdd
nethyl-IR*         0.500         1.00         ND         ND         ND           nethyl-LR*         0.500         1.00         ND         ND         ND           nethyl-LR*         0.500         1.00         ND         ND         ND           nethyl-LR*         0.500         1.00         ND         ND         ND           0.500         1.00         ND         ND         ND         ND           10.500         1.00         ND         ND         ND         ND	MCY-RR	0.500	1.00	QN	Ð	Q	<u>ר</u>	Q
0.500       1.00       ND       ND       ND       ND         nethyl-LR*       0.500       1.00       ND       ND       ND         0.500       1.00       ND       ND       ND       ND         1.00       0.500       1.00       ND       ND       ND         1.01       0.500       1.00       ND       ND       ND         1.100       1.00       ND       ND       ND       ND         1.100       1.00       ND       ND       ND       ND         1.100       1.00       ND       ND       ND       ND         1.100       1.100       ND       ND       ND       ND         1.100       1.100       ND       ND       ND       ND         1.100	MCY-Demethyl-RR*	0.500	1.00	QN	Q	QN	-	Q
nethyl-LR*       0.500       1.00       ND       ND       ND         0.500       1.00       ND       ND       ND       ND         1.00       0.500       1.00       ND       ND       ND         1.01       0.500       1.00       ND       ND       ND       ND         1.01       0.500       1.00       ND       ND       ND       ND       ND         1.01       1.00       ND       ND       ND       ND       ND       ND       ND         1.01       1.00       1.00       ND       ND       ND       ND       ND       ND       ND         1.01       1.00       1.00       ND       <	MCY-LR	0.500	1.00	QN	Q	9	İ	Q
0.500       1.00       ND       ND         0.500       1.00       0.00       1.00       ND         0.500       1.00       0.00       1.00       ND         0.500       1.00       ND       ND       ND         0.500       1.00       ND       ND       ND         0.500       1.00       ND       ND       ND         1.00       1.00       ND       ND       ND         1.100       ND       ND       ND       ND	MCY-Demethyl-LR*	0.500	1.00	QN	Q	QN		Q
0.500       1.00       301       ND	MCY-YR	0.500	1.00	QN	QN	QN		QN
0.500     1.00     ND     ND       0.500     1.00     ND     ND     ND       value     0.500     1.00     ND     ND       value     0.500     1.00     ND     ND	MCY-LA	0.500	1.00	301	Q	QN		QN
0.500     1.00     ND     ND       nyl analog quantified as parent compound.	MCY-LW	0.500	1.00	Q	Q	Q		Q
* Demethyl analog quantified as parent compound.	MCY-LF	0.500	1.00	ND	QN	QN		DN
* Demethyl analog quantified as parent compound.					-			
	* Demethyl analog quantit	fied as parent com	pound.					

Microcystins Page 2 of 3

# SWRCB L-463-07

ī,

.

.

Estimated MUL	Reporting Limit	Spike Level	L-405-07-LCS	L-405-07-LCS	L-405-07-LCSD	E-405-07-ECSD
			WPCL Oyster	WPCL Oyster	WPCL Oyster	WPCL Oyster
	-		(	•		
			07/Aug/2007	07/Aug/2007	07/Aug/2007	07/Aug/2007
			08/Aug/2007	08/Aug/2007	08/Aug/2007	08/Aug/2007
Fresh Wt.	Fresh Wt.	Expected value	Recovered		Recovered	
(b/gu) qdd	(b/bu) qdd	ppb (ng/g)	(g/gn) dqq	% Recovery	(b/gu) qdd	% Recovery
0.500	1.00	25.0	26.5	106	25.8	103
0.500	1.00	NA	NA	NA	NA	NA
0.500	1.00	25.0	19.8	79.1	18.7	74.8
0.500	1.00	NA	NA	NA	NA	NA
0.500	1.00	25.0	20.0	80.1	19.8	79.0
0.500	1.00	25.0	25.5	102	25.3	101
0.500	1.00	25.0	29.5	118	29.0	116
0.500	1.00	25.0	30.0	120	29.5	118
	Fresh Wt. 0.500 0.500 0.500 0.500 0.500 0.500 0.500 0.500 0.500 0.500 0.500		Keporting Limit Fresh Wt. 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.	Fresh Wt.         Expected value           ppb (ng/g)         ppb (ng/g)           1.00         25.0           1.00         25.0           1.00         25.0           1.00         25.0           1.00         25.0           1.00         25.0           1.00         25.0           1.00         25.0           1.00         25.0           1.00         25.0           1.00         25.0           1.00         25.0           1.00         25.0           25.0         25.0           1.00         25.0	Reporting Limit         Spike Level         L-405-0/-LCS         L-405-0/-LCS           WPCL Oyster         WPCL Oyster         WPCL         Oyster         WPCL           Fresh Wt.         Expected value         07/Aug/2007         07/Aug/2007         07/Aug/2007           Fresh Wt.         Expected value         Recovered         08/Aug/2007         08/Aug/2007         08/Aug/2007           1.00         25.0         25.0         26.5         1           1.00         NA         NA         1         7           1.00         25.0         19.8         7           1.00         25.0         25.0         30.0         1           1.00         25.0         25.5         1         1           1.00         25.0         25.0         30.0         1	Reporting Limit         Spike Level         L-405-07-LCS         L-405-07-LCS           WPCL Oyster         WPCL Oyster         WPCL Oyster         WPCL Oyster           MPCL Oyster         WPCL Oyster         WPCL Oyster         WPCL Oyster           MPCL Oyster         WPCL Oyster         WPCL Oyster         WPCL Oyster           MPCL Oyster         07/Aug/2007         07/Aug/2007         07/Aug/2007           Fresh Wt.         Expected value         Recovered         07/Aug/2007           1.00         25.0         26.5         106           1.00         NA         NA         NA           1.00         25.0         19.8         79.1           1.00         25.0         20.0         80.1           1.00         25.0         25.5         112           1.00         25.0         25.5         118           1.00         25.0         30.0         120

Microcystins Page 3 of 3

÷

,

۲ هر ۵	•			1,6						·		モーン	ר פ		n V	5								1 <b>1</b> 2			. '		
LAB COPIES: WHITE, CANARY, PINK SU			Samples Reliquished By (Signeture)	Comments/Special Instructions	Suspect/Incident Location	Problem Description	Ś		6-463-07-11		5	In a inc	-> 6 Figh to be		-> FA N	6 Fish come	Sample Identification/Location (Draw map on separate sheet if necessary)	X Routine Analysis	U Suspected of Potential Problem			shipped Via FRACX	Date Required/Reason	Horn Brook in a	city City DC dC dC		I Can Gali Hatcheu	Sampler Ph #	DFG RE
SUBMITTER: GOLDENROD			Print Name		Michour		HISSUE	stomach	liver			ملرمار \		0°		white 13/13/07 -	Collection Date Time	Requested >>>	Analysis		Region:	City	Address	A. Copies To		Address	Ross	# Send Results To	DFG REQUEST FOR ANALYSIS AND CHAIN OF
			Date		A NEW												Petrole Trace E (Specif Pesticii (Specif	lement y Belov des	x v)	it	Water Temp:			for a	CA		SW		'SIS AND C
		Abden H	Received	C	Amany Si S											く く く	Liv sto F:				ForC	diZ		Grate Hat	Zip		RCB		
		elle h	By (Signature)														Water			_	pH: DO:		9	cherry					CUSTODY RECORD
		· Abden	Print Nam	Hazmat Sh	Glove Size:	Pollution Action Kit:							6			t	Filtered Soli Tissue Plastic		Sample Type Numo		ma/L Co	Index-PCA	Suspect	Spill Title	Lab Storage	Field Number	47	Lab Number	RD
		Melcehas	Name	Hazmat Shipper Requested: Yes  No	: Large 🗆 Medium 🗆	tion Kit: Yes⊡											Glass VOA VI	al				URCE		0	وتعر		163.07		Page
FG 1000 (Rev. 9/01)		G/14107	Date			No							*			*	Temp Acid		Preservation		umhos/cm								
		20 	05 N anch	Pollut limbus o Core 58-28	s Ro dov	oad				_			19 Ra	95 NI	mbu: Cor	s Ro dova	istry La ad , CA 95				170 Ra	sticide 01 Niml ncho C (6) 358-	bus Ro ordovi	ad					



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

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

## LABORATORY REPORT

Name: Russ J. Kanz Agency: State Water Resource Control Board P. O. Box 2000 Address: Sacramento, CA 95812-2000 City:

Lab Number: Other Number: **Date Sampled: Date Received: Date Completed:** Index-PCA Code:

L-524-07

09/06-07/07 09/11/07 11/14/07

### 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.

NANot ApplicableNDNot DetectedMDLMethod Detection LimitRLReporting LimitMBlkMethod BlankLCSLaboratory Control SpikeLCSDLaboratory Control Spike DuplicatMSMatrix SpikeMSDMatrix Spike Duplicate	te
---	----



Cost: To be invoiced per contract.

Project Chemist

Laboratory Director

ar-1507 Date

5.07

11-15-07 Date

Sample Identification			<b>I</b> G-1	IG-2	IG-3	IG-4	IG-5
Date Collected		-	09/06-07/07	09/06-07/07	70/20-90/60	09/06-07/07	09/06-07/07
Time Collected			all day	all day	all day	all day	all day
Date Received	3		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	qdd	ddd	(g/g) dqd	(pyb) ddd	(tig/g) dqq	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	D	ND	ND	ND
* Demethyl analog guantified as parent compound							

Microcystins Page 2 of 12

e , 2

.

L-524-07	Klamath
----------	---------

WPCL Lab#	Estimated MDL	<b>Reporting Limit</b>	L-524-07-6	L-524-07-7	L-524-07-7Dup	L-524-07-8	L-524-07-9
Sample Identification			ÍG-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
Matríx			Tissue	Tissue	Tissue	Tissue	Tissue
			Fresh Wt.	Fresh Wt.	Fresh Wt.	Fresh Wt.	Fresh Wt.
Microcystin Analytes	qdd	ddđ	(g/gn) dqd	ppb (ng/g)	(ppb (ng/g)	(ng/g) dqd	(g/gu) qdd
MCY-RR	2.00	5.00	ND	ND	ND	ND	ND
MCY-Demethyl-RR*	2.00	5.00	ND	ND	ND	ND	<b>N</b>
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	DN	ND	ND	ND
MCY-LW	2.00	5.00	ND	ND	DN	DN	ND
MCY-LF	2.00	5.00	ND	ND	ND	ND	D
* Demethid analog quantified as naront compound	fied as naront com	No inclusion					

•.`

,

٠

L-524-07	Klamath
----------	---------

					-		
Sample Identification			IG-10	IQ-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				
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.				
Microcystin Analytes	ddd	ddd	(g/gn) dqq	(ng/g)	(g/gn) dqd	(p/gn) dqq	(b/bu) qdd
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	DN	ND	ND	ND
MCY-LW	2.00	5.00	ND	ND	D	D	ND
MCY-LF	2.00	5.00	ND	DN	ND	ND	ND
		-					
Demetry analog quantified as parent compound	led as parent comp	ound.					

Microcystins Page 4 of 12

•

.

•

L-524-07	Klamath
----------	---------

WPCL Lab#	Estimated MDL	<b>Reporting Limit</b>	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				
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.				
Microcystin Analytes	ddd	ddd	(pyb (ng/g)	(ng/g) dqq	ppb (ng/g)	(g/gu) qdd	(b/ðu) qdd
MCY-RR	2.00	5.00	ND	ND	ND	ND	ND
MCY-Demethyl-RR*	2.00	5.00	ND	ND	ND	ND	DN
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	dN
MCY-LW	2.00	5.00	ND	ND	ND	ND	ND
MCY-LF	2.00	5.00	ND	ND	ND	ND	ND
				2			
- Demethy analog quantitied as parent compound	ned as parent com	oouna.					

*.* .

.

•

WPCL Lab#	Estimated MDL	<b>Reporting Limit</b>	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				
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.				
<b>Microcystin Analytes</b>	ppb	ddd	ppb (ng/g)	(g/gn) dqd	(p/gn) dqq	(g/gn) dqd	(b/bu) qdd
MCY-RR	2.00	5.00	ND	ND	ND	D	ND
MCY-Demethyl-RR*	2.00	5.00	ND	ND	ND	ND	ND
MCY-LR	2.00	5.00	DN	ND	DN	DN	DN
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	D	ND
MCY-LW	2.00	5.00	ND	ND	ND	DN	ND
MCY-LF	2.00	5.00	ND	ND	ND	ND	ND
* Demethyl analog quantified as parent compound.	ified as parent comp	ound.					

Microcystins Page 6 of 12

. .

.

•

.

WPCL Lab#	Estimated MDL	<b>Reporting Limit</b>	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				
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.				
Microcystin Analytes	ppb	qdd	(pdd (pdd)	(pdd (ng/g)	(b/gu) qdd	(ppb (ng/g)	(D/Gu) qdd
MCY-RR	2.00	5.00	ND	ND	ND	DN	ND
MCY-Demethyl-RR*	2.00	5.00	ND	ND	ND	dN	ND
MCY-LR	2.00	5.00	ND	ND	ND	D	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	DN
MCY-LA	2.00	5.00	ND	ND	ND	DN	ND
MCY-LW	2.00	5.00	ND	ND	ND	dN	ND
MCY-LF	2.00	5.00	ND	dN	DN	ND	ND
	-	•					
<ul> <li>Demethyl analog quantified as parent compound.</li> </ul>	ied as parent comp	bound.					

• . •

.

L-524-07	Klamath
----------	---------

WPCL Lab#	Estimated MDL	<b>Reporting Limit</b>	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				
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.				
Microcystin Analytes	ddd	ddd	ppb (ng/g)	(pdd (ng/g)	(b/ðu) qdd	(p/gn) dqq	(ppb (ng/g)
MCY-RR	2.00	5.00	ND	ND	ND	D	ND
MCY-Demethyl-RR*	2.00	5.00	ND	ND	ND	ND	N
MCY-LR	2.00	5.00	ND	ND	dn	ND	ND
MCY-Demethyl-LR*	2.00	5.00	240	181	251	125	141
MCY-YR	2.00	5.00	ND	ND	dn	ND	ND
MCY-LA	2.00	5.00	ND	ND	ND	ND	ND
MCY-LW	2.00	5.00	ND	ND	ND	ND	ß
MCY-LF	2.00	5.00	ND	ND	ND	ND	ND
* Demethyl analog quantified as parent compound	ied as parent comp	bound.					

, **'** 

				· · · · · · · · · · · · · · · · · · ·			
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	ddd	ppb (ng/g)	(pdd (ng/g	ppb (ng/g)	(pdd) (bdd)	(b/bu) qdd
MCY-RR	2.00	5,00	ND	ND	ND	ND	DN
MCY-Demethyl-RR*	2.00	5.00	ND	ND	ND	ND	37.4
MCY-LR	2.00	5,00	ND	dN	ND	DN	ΔN
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	DN	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
-							
Demenity allary quantities as parent compound.	ווכע מש עמוסנוו נעווון						

Microcystins Page 9 of 12

• • • • •

.

WPCL Lab#	Estimated MDL	<b>Reporting Limit</b>	L-524-07-39	L-524-07-40	L-524-07-41	L-524-07-42
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	ddd	ddd	(g/gu) dqq	(b/gu) qdd	(pdd (ng/g)	(g/gu) qdd
MCY-RR	2.00	5.00	15.7	ND	ND	ND
MCY-Demethyi-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	DN	ND	ND
MCY-LA	2.00	5.00	12.7	14.7	13.7	7.88
MCY-LW	2.00	5.00	ND	ŊŊ	ND	ND
MCY-LF	2.00	5.00	DN	D	ND	ND
	2.00	5.00	ND	ND	ND	UN

Microcystins Page 10 of 12

WPCL Lab#	Estimated MDL	Reporting Limit L-524-07-MBlank	L-524-07-MBlank	L-524-07-LCS	L-524-07-3MS	L-524-07-3MSD
Sample Identification			Solvent Blank		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			70/09/07	09/08/07	09/08/07	70/80/60
Date Analyzed			70/09/07	09/09/07	09/09/07	70/60/60
Matrix				Tissue	Tissue	Tissue
				Fresh Wt.	Fresh Wt.	Fresh Wt.
<b>Microcystin Analytes</b>	ppb	ddd	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.	fied as parent comp	bound.				

• • • • • •

WPCL Lab#	Estimated MDL	<b>Reporting Limit</b>	_	L-524-07-26MS L-524-07-26MSD
Sample Identification	,		CP-8	CP-8
Date Collected			70/80-20/60	09/07-08/07
Time Collected			all day	all day
Date Received			11/Sep/2007	11/Sep/2007
Date Extracted			09/09/07	70/60/60
Date Analyzed			09/09/07	70/09/07
Matrix			Tissue	Tissue
			Fresh Wt.	Fresh Wt.
<b>Microcystin Analytes</b>	dqq	ddd	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	ied as parent comp	oound.		
	ļ			

Microcystins Page 12 of 12

• •

•

			Samples Reliquished By (Signature)		Comments/Special Instructions	Suspect/Incident Location	Problem Description	" the stand of the	- aloce reciperte	1 dec 1 attached	Tesh mi dassection	for unapped		Iron Gate Res 18 YP	Copro Res 1840	(Draw map on separate sheet if necessary)	Sample Identification/Location	C Routine Analysis	Suspected or Potential Problem	DFG Code Violation:	Fish & Wildlife Loss Date: Region:	Shipped Via	Date Required/Reason		City Zip		yunn the vara	A hand	Samoler Dh #
			Print Name						and the second s					49/2/67	1/2/07	Date Time	Collection	Requested >>>	Analysis		ו:   	City	Address	Copies To		City	Address		Ph # Send Results To
			Date		-			-								Tra (Sp Pes (Sp	roleur ce Ele eclfy tlicide eclfy	ment Belov S Belov	(*) (*) (*)		Water Temp:				CA				
	-	101140	Received														<u>   (  </u>	20		γ5	ForC	د Zip	- - - -			Zin			
	•	YW H	ceived By (Signature)				•									Wat	ter	· · · · ·		S	pH: DO:								
-		LHURK	Prin		Hazmat S	Glove Size:	Pollution		· · · · · · · · · · · · · · · · · · ·				-	X	X	Soil	ue 🕹		4	Sample Type Nun		Index-PCA	Suspect	Spill Title		I ah Storana	Field Number	1	Lab Number
		HUMS	Print Name		per Reque	Large 🗆	Pollution Action Kit: Yes	*								Gla				Number of Containers	mg/L Conductivity:				12111 V			574-67	- age
		201116	Date	-	: Yes I No I	Medium 🗆							· · ·			Ten Acit				Preservation	u mhos/cm				1000			<b>N</b>	

I.	ISSUE SAN	APLING ]	FIELD SH	EET		tabi a		: 	Sheet	t0	f
P	roject: <u> </u>	lama	HG A	laal	Torle	15	L:	ab Code:		· · ·	· ·
D	Date:	1076	)¥ 07	$\odot$		, .Sta	tnum:	and the second		· · · · · · · · · · · · · · · · · · ·	
T	'ime:	allab	¥			Sta	tname:	උනු	R	Re	8.
St	tation Descr	iption:					. 01	7 1		IN	. • •
, 			3 BIR		ope	er	made	$\mathcal{Q}, \mathcal{U}$	JCLPY	(96)	<u>e</u>
										·····	
D	irections to	Station:	2 · · 2 · · · · ·		·····					· ·	<u> </u>
		. <u></u>								 ,	
	ounty:						USGS M				
ser L	- 430 7	884 884		Lon: <u>1</u> 2		·		rojectior	,		3
<del>p</del> er_	. 4(.97	7255					7 - 18				5,60
	Method	Effort 12 may	Species	Numbe		lize	Package		1	Notes	
1	-onine	12 may	KUS, LUNK	<u>4 /8</u>	<u> </u>		18	- gre	KJOOL	<u>67 80</u>	<u>e</u>
			[	- <del> </del>							
		<u> </u>		<u> </u>			1	ł			
											·····
	pecies Leng	. :									
S	pecies: >	a Pel		Species: Total N				Species	5: Numher:		
S		a Pel	 WT	Species: Total N ID #			WT	Species Total I ID #	5: Number: FL	TL	w
S	pecies: >	er:	WT //74	Total N	umber:	TL		Total I	Number:	the second s	W
S	pecies: > otal Numbe D # FL	(4) R/ er: 1 24/ ( 28/		Total N	umber: FL		07	Total N ID #	Number:	the second s	W
S	pecies: > otal Numbe D # FL	er:	174	Total N	umber: FL 200 /92 23/	210 200 24	0707083	Total I	Number:	the second s	w
S	pecies: > otal Numbe D # FL	(4) R/ er: 1 24/ ( 28/	174	Total N	umber: FL 200 /92 23/ 227	2/0 20 24 23	0 107 0 83 1 149 1 140	Total I ID #	Yumber: FL	the second s	w
S	pecies: > otal Numbe D # FL	(4) R/ er: 1 24/ ( 28/	174	Total N ID# P/3 P/4 P/4 P/6 P/6 P/6	umber: FL 200 /92 23/ 227 202	2/0 20 24 23 21	107 83 149 140 100	Total I ID #	Number:	the second s	W
S	pecies: > otal Numbe D # FL	(4) R/ er: 1 24/ ( 28/	174 2150 151 136 114 114	Total N ID # P /3 P /4 P /4 P /4 P /4 P /4 P /4 P /4 P /4	umber: FL 200 /92 23/ 227	2/0 20 24 23	107 83 149 140 100	Total I ID #	Yumber: FL	the second s	W
MOCONCHER - 1	pecies: > otal Numbe D # FL	(4) R/ er: 1 24/ ( 28/	174 150 151 186 186 114 122 122 119	Total N ID# P/3 P/4 P/4 P/6 P/6 P/6	umber: FL 200 /92 23/ 227 202	2/0 20 24 23 21	107 83 149 140 100	Total I ID #	Yumber: FL	the second s	
S	pecies: $\rangle$ otal Number D # FL P 1 23 P 2 22 P 3 28 P 3 28 P 4 21 P 5 20 P 6 21 P 7 21	(4) R/ er: 1 24/ ( 28/	174 2150 151 136 136 114 122 119 221	Total N ID # 20 13 20 14 20 14 20 14 20 14 20 14 20 14 20 18 37 37 39	umber: FL 200 /92 23/ 227 202	2/0 20 24 23 21	107 83 149 140 100	Total I ID #	Yumber: FL	the second s	
MOCONCHER - 1	pecies: $\rangle$ otal Number D # FL P 1 23 P 2 22 P 3 28 P 3 28 P 4 21 P 5 20 P 6 21 P 7 21	(4) R/ er: 1 24/ ( 28/	174 2150 151 136 136 136 114 122 119 122 119 221 145	Total N ID # 20 13 20 14 20 14 20 14 20 14 20 14 20 14 20 18 37 37 39	umber: FL 200 /92 23/ 227 202	2/0 20 24 23 21	107 83 149 140 100	Total I ID #	Yumber: FL	the second s	
MOCONCHER - 1	pecies: $\rangle$ otal Number D # FL P 1 23 P 2 22 P 3 28 P 3 28 P 4 21 P 5 20 P 6 21 P 7 21	(4) R/ er: 1 24/ ( 28/	174 150 151 136 136 114 122 119 122 145 145	Total N ID # 30 P 13 30 P 14 30 P 14 31 37 39 39 39	umber: FL 200 /92 23/ 227 202	2/0 20 24 23 21	107 83 149 140 100	Total I ID #	Yumber: FL	the second s	
MOCONCHER - 1	pecies: $\rangle$ otal Number D # FL P 1 23 P 2 22 P 3 28 P 3 28 P 4 21 P 5 20 P 6 21 P 7 21	(4) R/ er: 1 24/ ( 28/	174 150 151 136 114 122 19 221 145 145 98 121	Total N ID # 2P 13 2P 14 2P 14 2P 14 2P 14 2P 16 2P 16 2P 16 37 39 39 39	umber: FL 200 /92 23/ 227 202	2/0 20 24 23 21	107 83 149 140 100	Total I ID #	Yumber: FL	the second s	
DANCEDDADALEN	$\begin{array}{c c} pecies: \\ \hline otal Number \\ \hline D \# & FL \\ \hline D \# & FL \\ \hline P & 23 \\ \hline P &$	$ \begin{array}{c} (1) & P_{1} \\ (1) & P_{2} \\ (1) & 2 \\ (1) & 2 \\ (1) & 2 \\ (1) & 2 \\ (2) & 2 \\ (1) & 2 \\ (2) & 2 \\ (2) & 2 \\ (3) & 2 \\ $	$   \begin{array}{c}     174 \\     74 \\     750 \\     751 \\     136 \\     122 \\     114 \\     122 \\     121 \\     78 \\     121 \\     121 \\     121 \\     124 $	Total N ID # 30 P 13 30 P 13 30 P 14 30 P 16 31 55 39 40 41 42	umber: FL 200 /92 23/ 227 202	2/0 20 24 23 21	107 83 149 140 100	Total I ID #	Yumber: FL	the second s	
DANCEDDADALEN	pecies: $\rangle$ otal Number D # FL P ( 23 P2 22 P3 23 P3 23 P3 23 P3 23 P3 23 P3 23 P3 23 P4 21 P5 20 P6 21 P7 21 P8 25 P9 22 P0 20 P(1 20)	$ \begin{array}{c} (1) & P_{1} \\ (1) & P_{2} \\ (1) & 2 \\ (1) & 2 \\ (1) & 2 \\ (1) & 2 \\ (2) & 2 \\ (1) & 2 \\ (2) & 2 \\ (2) & 2 \\ (2) & 2 \\ (3) & 2 \\ $	174 150 151 136 114 122 19 221 145 145 98 121	Total N ID # 30 P 13 30 P 13 30 P 14 30 P 16 31 55 39 40 41 42	umber: FL 200 /92 23/ 227 202	2/0 20 24 23 21	107 83 149 140 100	Total I ID #	Yumber: FL	the second s	
A DANCADARCE	$\begin{array}{c c} pecies: \\ \hline otal Number \\ \hline D \# & FL \\ \hline D \# & FL \\ \hline P & 23 \\ \hline P &$	$ \begin{array}{c} (1) & P_{1} \\ (1) & P_{2} \\ (1) & 2 \\ (1) & 2 \\ (1) & 2 \\ (1) & 2 \\ (2) & 2 \\ (1) & 2 \\ (2) & 2 \\ (2) & 2 \\ (2) & 2 \\ (3) & 2 \\ $	174 2150 151 136 136 122 122 122 124 124 124 124 124 121 124	Total N ID # 30 P 13 30 P 13 30 P 14 30 P 16 31 55 39 40 41 42	umber: FL 200 /92 23/ 227 202	2/0 20 24 23 21	107 83 149 140 100	Total I ID #	Yumber: FL	the second s	
A DANCADARCE	pecies: $\rangle$ otal Number D# FL P ( 23 P2 22 P3 22 P3 22 P3 22 P3 22 P3 22 P3 22 P3 22 P4 21 P5 20 P6 21 P7 21 P8 25 P6 22 P7 20 P( 20) P( 20)	$\begin{array}{c c}  & & Pc \\  & TL \\  & I \\  & 24 \\  & 28 \\  & 24 \\  & 28 \\  & 28 \\  & 24 \\  & 225 \\  &$	174 2150 151 136 136 122 122 122 124 124 124 124 124 121 124	Total N ID # 30 P 13 30 P 13 30 P 14 30 P 16 31 55 39 40 41 42	umber: FL 200 /92 23/ 227 202	2/0 20 24 23 21	107 83 149 140 100	Total I ID #	Yumber: FL	the second s	

	<b>4</b>											24-0
, , , , , , , , , , , , , , , , , , ,	TISSU	E SAM	PLING F	TELD SH	IEET			یں۔ •یہ	s sin	Sheet	o	f
	Project	<u> </u>	lance	Al	Ala	al	Tox.	<u>às</u> L	ab Code:		·	
	Date:	<u> 2/a</u>	<u>s-7/</u>	OF			1. J	tnum:			· · ·	
	Time:		UL H	by	•		Sta	tname:	Zna	201	e K	<u>es,</u>
	Station	Descrip	ntion:	Saite	<u>s</u> :	4) 1000 1000	~ 1	nild	o la	ver	Lata	o
	·					20						
•	Directio	ons to S	tation:	••	<u></u>		÷ .	N. Car				
									 	· ·	·	
	County					·		USGS Ma		Q*		
loover	Lat:	(1, 9)	4406 7865		12		750		rojection	:_ <u></u>	9D 8	3
upper	Meth		688C	Species		2.37 er S	ize	Package	#	N	otes	. '
	Fish	ing	4 men to		18			18	gnou	jool	y sit	è
											·	
								· · · · · · · · · · · · · · · · · · ·			· · · · · · · · · · · · · · · · · · ·	
	Species	Length	/Weight	·		-						
·	Species	: ``	1W PC	h	Species	: Y	wPe	1	Species		. <u> </u>	
	Total N	umber		2	Total N	lumber:	1	6		umber:	· · · · · · · · · · · · · · · · · · ·	
	ID #	FL.	TL	WT	ID #	FL	TL	WT	<b>ID</b> #	FL	TL	WT
/	$\frac{16}{722}$	245 22/	$\frac{1253}{02}$	182	<u>IG13</u>	207	216					
, ,	イワムー			1 1 21 5 1	772 111	10//						
LOWEVS	IG3		23/	191	1614	194	205		-16			
Lowers	<u>IG 3</u> IG 4	24	254	191 191	1014	194 192 187	205 20/	95	Uper			
74	IG3 IG4 IG5			191 167 222	15	194 192 187 179	205	95	Uper			
74	IG 3 IG 4 IG 5 IG 6			191 191 167 222 116	15	187	205 201 197	95	Upper			
74	IG 3 IG 4 IG 5 IG 6 IG 7			191 191 222 116 195	15	187	205 201 197 189	4000	Upper			
5 m 40 m 5	163 164 165 166 167 168			191 107 222 116 195 159	15	187	205 201 197 189	4000	Upper			
5 m 50 m 5	163 164 165 166 167 167 167			$141 \\ 191 \\ 107 \\ 222 \\ 116 \\ 195 \\ 159 \\ 159 \\ 146 $	15	187	205 201 197 189 189	4000	Upper			
5 m 50 m 5	103 104 105 106 107 107 107	24/ 22/ 24/ 207 24/ 207 24/ 22/ 22/ 22/ 22/ 22/ 207		$141 \\ 191 \\ 167 \\ 222 \\ 116 \\ 195 \\ 159 \\ 146 \\ 195 \\ 195 $	15	187	205 201 197 189	4000	Upper			
5 m 50 m 5	IC 3 IC 4 IC 5 IC 6 IC 7 IC 7 IC 7 IC 7 IC 10 IC			191 197 222 195 195 195 195 140 195 140 196 196 196 196 196 196 197 100 107 1000 10000 10000 10000 10000 10000 10000 100000	15	187	205 201 197 189 189	4000	Upper			
5 m 50 m 5	IC4 IC5 IC6 IC7 IC7 IC7 IC10 IC11 IC12	2.4/ 222 207 242 207 246 222 223 204 204 204 198	254 231 253 2/2 253 231 232 215 216 207	167 222 116 195 159 146 199 146 199 146 199	16/5 16/6 16/7	187	205	920 H 20 97 20 17 20 17 20				
5 m 50 m 5	IC3 IC4 IC5 IC6 IC6 IC7 IC7 IC1 IC12 Addition	2.4/ 221 207 242 207 242 207 207 204 204 204 198 198	254 231 253 2/2 253 231 232 215 216 207	167 222 116 195 159 146 199 146 199 146 199	16/5 16/6 16/7	187	205	4000			2007	pie
5 m 50 m 5	IC4 IC5 IC6 IC7 IC7 IC10 IC11 IC12 Addition	2.4/ 221 207 242 207 242 207 207 204 204 204 198 198	254 231 253 2/2 253 231 232 215 216 207	167 222 116 195 159 146 199 146 199 146 199	16/5 16/6 16/7	187	205	920 H 20 97 20 17 20 17 20			2007	pie



# 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
Agency:	State Water Resource Control Board
Address:	P.O. Box 2000
City:	Sacramento, CA 95812-2000

Lab Number:	L-665-07
Other Number:	
Date Sampled:	11/05/07
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

150 13

KK

Cost: To be invoiced per contract.

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

Pesticide Chem

02/15/08 Date

2/15/0P

Laboratory Director

# 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.				
Microcystin Analytes	ddd	ppb	(g/gu) qdd	(p/gn) ddd	(p/gn) dqd	(b/bu) qdd	(g/gu) qdd
MCY-RR	2.00	5.00	ND	DN	ND	ND	N
MCY-Demethyl-RR*	2.00	5.00	ND	ND	ND	ND	DN
MCY-LR	2.00	5.00	ND	ND	ND	ND	ND
MCY-Demethyl-LR*	2.00	5.00	ND	DN	ND	ND	ND
MCY-YR	2.00	5.00	ND	ND	ND	ND	ND
MCY-LA	2.00	5.00	N	ND	ND	N	ND
MCY-LW	2.00	5.00	ND	ND	ND	ND	ND
MCY-LF	2.00	5.00	ND	ND	D	ND	ND
* Demethyl analog quantified as parent compound	lified as parent com	pound.					

# Klamath L-665-07

WPCL Lab#	Estimated MDL	<b>Reporting Limit</b>	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.
<b>Microcystin Analytes</b>	ddd	ddd	(10 (pdd	ppb (ng/g)	(g/gu) qdd	(pdd (pdd)	(g/gu) qdd
MCY-RR	2.00	5.00	ND	ND		ND	ND
MCY-Demethyl-RR*	2.00	5.00	DN	ND	ND	ND	ND
MCY-LR	2.00	5.00	ND	ND	D	ND	ND
MCY-Demethyl-LR*	2.00	5.00	R	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	dN	ND	N	ND	ND
MCY-LF	2.00	5.00	ND	ND	ND	ND	ND
* Demethyl analog quantified as parent compound.	ified as parent comp	bound.					
						-	

# Klamath L-665-07

.

WPCL Lab#	Estimated MDL	Heporting Limit	L-000-0/-11	dnr11-/0-04-1	1-000-0/-12	L-000-0/-10	L-000-0/-14
Sample Identification			I5110507-B	I5110507-B	15110507-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	qdd	qdd	(g/gu) qdd	(b/gu) qdd	(p/gn) dqd	(pyb) (pdd	(pdd (ng/g)
MCY-RR	2.00	5.00	ND	QN	ND	DN	ND
MCY-Demethyl-RR*	2.00	5,00	Ŋ	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	D	ND
MCY-YR	2.00	5.00	ND	ND	ND	ND	ND
MCY-LA	2.00	5.00	ND	N	N	dN	ND
MCY-LW	2.00	5.00	N	S	ND	ND	ND
MCY-LF	2.00	5.00	ND	ND	ND	DN	D
* Demethyl analog guantified as parent compound							
	fied as narent comr	2 md					

• • • •

L-665-07	Klamath
----------	---------

Microcystins Page 5 of 5

• • • • • • •

L-665-07

..

aruk DNR	th River Reservoir Nutrient Loading S 39051 Hwy 96	tudy	12
IONE 530-469-3456			
DNTACT Susan Corum	Orleans, CA 95556		
	EMAIL scorum@karuk.us	_	
ollected By	SIGNATURE Con Cu		
and some the second s		C. C.	
	Aina Flat Klemeth River		Muscul
CHILDSOF.A. INKIDIEDOS	Heppy Comp	V	Mussel Tissae
这些我们就能说出了这些你的,你是你们的你们,你们就是你们的你们的?""你就是你们的你们,你们们的你们,你们们们你能不能不能是我们的,我就是你们的你,你不能能能做你		/	ISSAR
SHROSOT-B	$H_{1}$		
CH110507-C V V BR110507-AW51071300 - BO			
	with Bear bly Scott + Shriston	5	
BR110507-B	<u>  </u>		
	Dort 'E mile upstream Seind Valley		
SV 110 SO7+B	100 C MAR YSPERVICE 140 VALVY		
SV0110507-C	<u> </u>		
	low I-5 Budge Klamath Ruep		
IG110507-B	<u> </u>	0	
Date Shipped: 111407 (	Carrier/Shipping #_ Fedux		
Date Received	Pece	ived-	Gregor Balt
Notes DO NOT PROUSS 2	samples until you talk to	s Ku	ss kanz!
Ship to:	Bill and Send Results To:	Als	D' Please
Dave Crane CDFG Water Pollution Control Laboratory	Russ J. Kanz State Water Resources Control Board	Savi	e mussel
2005 Nimbus Road Rancho Cordova, CA 95670	PO Box 2000 Sacramento, CA 95812-2000	shell	Is for ag
(916) 358-2858 fax: (916) 985-4301	(916) 341-5341 individual	410	1 confirma
	and the second		
Please but mussel sh	ells back in labeled		na
	Susan Corum		· · · ·
+ return to	J GI	· –	: : :
Chain of Custody Kame Tribe Department of Notural Resources		of Z	
Karuk Tribe Department of Natural Resources	Drleans CA 95556	2	

L-665-07 2/2

Chain of Custody for k	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	SIGNATURE C
Somne D Time Lab.	De la superior de la
	Linde Ridge
ORIIO407-A MULIY	Under Orleans Bridge X Mussel Klamathe River X Hissil
	1 Fission the Fill
2 OP10007-B-	
3 OF110407-C V	
5	
7	
8	
9	
11	
12	
Date Shipped: 111407	Carrier/ Shipping #
Date Received	A
Received by NotesPU98P	p mussel stills w/ appropriate bags 50
Ship to: We can	ID + gr @ latu date THANKS
Dave Crane CDFG Water Pollution Control Laborator 2005 Nimbus Road Rancho Cordova, CA 95670 (916) 358-2858 fax: (916) 985-4301	Russ J. Kanz Y State Water Resources Control Board PO Box 2000 Sacramento, CA 95812-2000 (916) 341-5341
	Received
	Received Gregor Baltzell 11-15-07
Chain of Custody	Page Zof Zo
Karuk Tribe Department of Natural Resou	irces



# 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: Agency: Address:	Russ J. Kanz State Water Resource Control Board P. O. Box 2000 Sacromonto, CA 95812-2000	
City:	Sacramento, CA 95812-2000	

Lab Number:	L-387-08
Other Number:	
Date Sampled:	06/12/08
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.

d Ch С 36

Laboratory Director

8/3/08 Date

8/4/08 Date

WPCL Lab#	Estimated MDL Reporting Limit	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			5	CC2	ខ្ល	cc4	CC5	င်င
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
<b>Biotoxin Analytes</b>	bbp	dqq	(b/gn) dqq	(g/gn) dqq	(6/6u) qdd	(6/6u) qdd	( <u>6/</u> 6u) qdd	(6/6u) qdd
MCY-RR	0.50	1.00	QN	QN	QN	QN	QN	Q
MCY-Demethyl-RR*	0.50	1.00	QN	Q	QN	QN	Q	Q
MCY-LR	0.50	1.00	QN	QN	Q	Q	Q	ON .
MCY-Demethyl-LR*	0.50	1.00	QN	Q	Q	QN	Q	Q
MCY-YR	0.50	1.00	QN	QN	Q	QN	QN	QN
MCY-LA	0.50	1.00	QN	Q	Q	QN	Q	Q
MCY-LW	0.50	1.00	Q	ON	Q	QN	Q	ON .
MCY-LF	0.50	1.00	Q	Q	QN	QN	Q	Q
Domoic acid	1.000	2.00	Q	Q	QN	QN	Q	QN
* Demethyl-RR and -LR are quantified as parent analog compound.	are quantified as pare	ent analog			· · · · · · · · · · · · · · · · · · ·			

Biotoxins Page 2 of 5

,

•

•

• ر

•

•

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	800	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	bpb	bpb	(g/gn) dqq	ppb (ng/g)	(b/gn) dqq	(6/6u) qdd	(b/ɓu) qdd	(6/6u) qdd
MCY-RR	0.50	1.00	QN	QN	QN	Q	QN	Q
MCY-Demethyl-RR*	0.50	1.00	QN	QN	QN	QN	QN	QN
MCY-LR	0.50	1 00	QN	Q	QN	Q	DN	QN
MCY-Demethyl-LR*	0.50	1.00	QN	Q	Q	Q	<u>ON</u>	Q
MCY-YR	0.50	1.00	ŊŊ	Q	QN	Q	QN	QN
MCY-LA	0.50	1.00	QN	Q	Q	Q	QN	Q
MCY-LW	0.50	1.00	Q	Q	â	QN	Q	QN
MCY-LF	0.50	1.00	Q	Q	QN	Q	DN	Q
Domoic acid	1.000	2.00	QN	Q	QN	Q	QN	QN
* Demethyl-RR and -LR are quantified as parent analog compound.	re quantified as par	ent analog						

Biotoxins Page 3 of 5

÷ (

•

•

•

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					
Biotoxin Analytes	qdd	dqq	ppb (ng/g)	(6/6u) qdd	(b/gn) dqq	(g/gn) dqq	(6/ɓu) qdd	(ɓ/ɓu) qdd
MCY-RR	0.50	1.00	QN	Q	QN	Q	QN	QN
MCY-Demethyl-RR*	0.50	1.00	Q	Q	Q	Q	QN	Q
MCY-LR	0.50	1.00	Q	Q	QN	Q	Q.	QN
MCY-Demethyl-LR*	0.50	1.00	QN	QN	QN	ON .	Q	QN
MCY-YR	0.50	1.00	QN	QN	Q	Q	QN	QN
MCY-LA	0.50	1.00	Q	QN	QN	QN	Q	QN
MCY-LW	0.50	1.00	QN	ON.	Q	Q	QN	QN
MCY-LF	0.50	1.00	Q	Q	Q	Q	Q	ŊŊ
Domoic acid	1.000	2.00	QN	Q	QN	Q	QN	QN
* Demethyl-RR and -LR are quantified as parent analog compound.	are quantified as par	rent analog					- -	

Biotoxins Page 4 of 5

• •

•

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	900 CC	SCG
Date Collected		· · · · · · · · · · · · · · · · · · ·	12/Jun/2008				12/Jun/2008	12/Jun/2008
I time Collected 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
<b>Biotoxin Analytes</b>	dqq	ppb	(ɓ/ɓu) qdd	. 1	% Recovery	% Recovery	% Recovery	% Recovery
MCY-RR	0.50	1.00	Q	səld	Q	93.0	118	115
MCY-Demethyl-RR*	0.50	1.00	QN	lmes	ND	NA	AN	NA
MCY-LR	0.50	1.00	Ŋ	סכ/ע ע/סכ	Q	116	107	108
MCY-Demethyl-LR*	0.50	1.00	QN	Ö	QN	N	NA	NA
MCY-YR	0.50	1.00	Ŋ		QN	98.0	112	-109
MCY-LA	0.50	1.00	QN		QN	67.5	61.3	62.1
MCY-LW	0.50	1.00	QN		QN	76.0	74.4	68.7
MCY-LF	0.50	1.00	QN		QN	54.5	58.5	57.8
Domoic acid	1.000	2.00	QN		Q	AN	NA	AN
* Demethyl-RR and -LR are quantified as parent analog compound.	are quantified as par	ent analog			-			

Biotoxins Page 5 of 5



# 

Sugar Current     Russ La       Uddress     Box 202     Address PO BOx       Po Box 202     Zip     City       Contents     Zip     City       Dife Contents     Address     Box       Dife Loss     Date:     Region:       Dife Code Violation:     Region:     Ma       Dife Analysis     Region:     Ma       Sample Identification/Location     Bate     Ma       Reguested Soc     Reguested Soc     Ma       Conc Reference     Collection     Bate       Dife Dife Reference     Ma     Bate <th>Handlight interesting to the set of the set</th> <th></th> <th></th> <th></th> <th>VOA Vial Pisetic PCA PCA PCA Mumber C C PCA PCA PCA PCA PCA PCA PCA PC</th> <th>Acid Lemp Contraction</th> <th>a, CA 95670 B, CA 95670 B, CA 95670 B, CA 95670 B, CA 95670 Fancho Cordova, CA 95670 Fancho Cordova, CA 95670 Fancho Cordova, CA 95670</th>	Handlight interesting to the set of the set				VOA Vial Pisetic PCA PCA PCA Mumber C C PCA PCA PCA PCA PCA PCA PCA PC	Acid Lemp Contraction	a, CA 95670 B, CA 95670 B, CA 95670 B, CA 95670 B, CA 95670 Fancho Cordova, CA 95670 Fancho Cordova, CA 95670 Fancho Cordova, CA 95670
Address       Zip     City       City     Copies       Control     Address       Address     Address       Address     Address       Ital Problem     Region:       Ital Problem     Analy			Mater				a, CA 95670 Rancho Cordova, CA 95670
Zip City     City       CA     SS & Copies 1       CA     Address       Address     Address       Ital Problem     Region:       Region:     City       Region:     City       City     City		Zip 9581					ad 1701 Nimbus Road a, CA 95670 Rancho Cordova, CA 95670
Copies T CAPS Copies T Address Address City C City C C City C City C C City C C C			Water				a, CA 95670 Cordova, CA 9 Rancho Cordova, CA 9
Date:	C Constitution of the set of the	ASS For C					a, CA 95670 Cordova Rancho Cordova
Idifie Loss Date:	Peroleum Fingerprint       Peroleum Fingerprint       Peroleum Fingerprint	ASS For C	Щ				a, CA 95670 CM Mimb
blem blem tion/Location titest if necessary)	Petroleumi Fingerprint       Petroleumi Fingerprint       Petroleumi Fingerprint		Water	Hose Hose	Glass of Conduct		ен оталова (с. 1986) С. 1960 (с. 1995) С. 1960
Ial Problem fification/Location manue sheet if necessary) Vellow Perch	Petroleum Fingeiprint (Specify Below) (Specify Below) (Specify Below)	SUHSMONTIN XX			S S S S S S S S S S S S S S S S S S S		DBC
al Problem ntification/Location Site	Petroleum Fingerpi Petroleum Fingerpi (voisEbendiy Below) Pessfoldes (woise fingerpi Pessfoldes	4Smanin XX			Class Clas Cla		DBC
Identification/Location on separate street # necessary) work	анарана ан	101M XX	Mater	lio2	Glass		peo
de llow Perch	S) S) S) J		M	25	0		pec
dellaw Perch				×			אי 22
							snqu
and Co		- - -		<u>प्र</u>			oyor NiN Si
							1651 1661
							]
							Ţ.—
							996 א ניסן ד
roblem Description			and a start of the s	Polly			pe
uspecVIncident Location				Glov	Glove Size: Large D	Medium C	evob oS 2
omments/Special Instructions							nquı
Samoles Reliquished By (Spinaure) Print Name	Sector Date	AReceived By (Stanati	Sanauna		Print Name	Date	nyou N SC
Sis	<u>dalalu</u>	I what I	ALL LANK	GREER	SR BHUZE	24-9:15	ଞ୍ଚ ଅ
							1
							<b>[</b> <sup>1</sup> .

# **Tissue Sampling Field Sheet**

Sheet | of |

Ron Presley

Project: Copeo Reservoir Perch / micro cystin Date: 06/12/2008 Time: 1400 bes

Lab Code:

Samplers: Tim Wilhite

Time: 1400 hrs Station Description: Mallard Cove

County: Siskiyou

Long:

L-387-08

#* <b>D</b> #	FLCM	TL cm	WT 9	<b>D#</b>	FL	TL	WT
<u>Ch</u> ZO		24.3	159				
GEFT	235	250	148				
GR 52	料7.5	A state of a set of the set of the set of a set of the	66				
	Do.J.		93				
		17.1	53				
CR55	and a second of particular second	15.9	45				
C.656	15.5	16.2	42				
<u>CR57</u>	15.8	162	43				
CR 58	14.6	15.8	42				
CR59	15.0	16.6	44				
				····	<u>+</u>		<u></u>
						n de la composición de la comp	

# Additional Species:

Comments

All fish caught were Yellow Perch

Organics

Metals

Archive

Other

Cosco Gove Yellus Perch G12108 L-387-08

TD	Furk leng the (mm)	wt. (Grams)
ાલ	159	SLaF8
2 aZ	188	74.14
3 003	Z00	86.06
4 004	164	52.04
5 CC6	6	54.38
6006		83.02
7.007		63.16
१८०९		78.62
CC9	138	30.64

Collected by Tim Wilhite - USEPA Packaged & measured by Susan Corum -Kamk Tibe



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

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

# LABORATORY REPORT

Name: Russ J. Kanz State Water Resource Control Board Agency: P. O. Box 2000 Address: Sacramento, CA 95812-2000 City:

Lab Number: Other Number: **Date Sampled: Date Received:** Date Completed: Index-PCA Code: L-722-07

07/23-09/19/07 12/12/07 07/23/08

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 Not Detected ND Method Detection Limit MDL **Reporting Limit** RL MBik Method Blank Laboratory Control Spike LCS Laboratory Control Spike Duplicate LCSD Matrix Spike MS Matrix Spike Duplicate MSD

Cost: To be invoiced per contract.

t Chemist

Laboratory Director

1 ead Pesticide Chemist

# Klamath L-722-07

	L-722-07-1	L-722-07-2	L-722-07-3	L-722-07-4	L-722-07-5
	CRCC072307-SG	IR01072407-00		CRCC082107-SG	IR01082207-00
	23/Jul/2007	24/Jul/2007	24/Jul/2007	21/Aug/2007	22/Aug/2007
	15:20	12:00	10:00	0:00	15:00
	12/Dec/2007	12/Dec/2007	12/Dec/2007	12/Dec/2007	12/Dec/2007
	12/Jul/2008	12/Jul/2008	12/Jul/2008	12/Jul/2008	12/Jul/2008
	19/Jul/2008	19/Jul/2008	19/Jul/2008	19/Jul/2008	19/Jul/2008
	Water	Water	Water	Water	Water
) ppb (µg/L)	(T/Brl) qdd	ppb (µg/L)	(Light) qdd	(J/L)	(lıg/L)
1.00					
	ND	D	1.67	407	D
1.00	88	N N	1.67 ND	<b>407</b>	N N
1.00	888	A N N	1.67 ND 27.6	407 2,000	3.93 3.93
1.00 1.00	8888	e e e e	1.67 ND 27.6	407 2,000 ND	ND 3.93
1.00 1.00	88888	88888	1.67 27.6 ND	407 2,000 369	ND 3.93 ND
1.00 1.00 1.00	888888	88888	1.67 ND 27.6 ND 1,070	407 2,000 ND 369	ND 37.4
1.00 1.00 1.00	8888888	888888	1.67 ND 27.6 ND 1,070 ND	407 2,000 18,400 ND	ND 37.4
	Estimated MDL Reporting Limit	Reporting Limit	Reporting Limit         L-722-07-1           CRCC072307-SG         23/Jul/2007           15:20         15:20           12/Dec/2007         12/Jul/2008           19/Jul/2008         19/Jul/2008           Water         Water	Reporting Limit         L-722-07-1         L-722-07-2           CRCC072307-SG         IR01072407-CO           23/Jul/2007         IR01072407-CO           15:20         12/Dec/2007           12/Dec/2007         12/Dec/2007           12/Jul/2008         12/Jul/2008           19/Jul/2008         19/Jul/2008           19/Jul/2008         19/Jul/2008           Water         Water	Reporting Limit         L-722-07-1         L-722-07-2         L-722-07-3           CRCC072307-SG         IR01072407-OO         CR01072407-OO         C           23/Jul/2007         24/Jul/2007         24/Jul/2007         CR01072407-OO         C           15:20         15:20         12:00         10:00

Microcystins Page 2 of 4

•,

•

٠

,

# Klamath L-722-07

WPCL Lab#	Estimated MDL	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			CR01082307-00	CR01082307-00	KRB1091807-OC	IRJW091807-SG CR01091907-OO	CR01091907-00
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)	(1/6rl) qdd	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	ZD	ND	ND
MCY-Demethyl-RR*	0.50	1.00	ND	DN	ZD	ND	ND
MCY-LR	0.50	1,00	6.68	6.49	ND	dN	ND
MCY-Demethyl-LR*	0.50	1.00	ND	ND	D	ß	ND
MCY-YR	0.50	1.00	ND	ND	ND	D	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	ß	ND
* Demethyl analog quantified as parent compound.	fied as parent com	pound.					

Microcystins Page 3 of 4

.

•

•

•

# Klamath L-722-07

WPCL Lab#	Estimated MDL	Reporting Limit		L-722-07-MBIK	L-722-07-LCS	L-722-07-LCSD	L-722-07-8 MS	L-722-07-8 MSD
Sample Identification					•		IRJW091807-SG IRJW091807-SG	IRJW091807-SG
Date Collected							18/Sep/2007	18/Sep/2007
Time Collected	L	-				-	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			nples		Water	Water	Water	Water
Microcystin Analytes	ppb (µg/L)	(Jug/L)	QC Sa	ppb (ug/L)	Recovery (%)	Recovery (%)	Recovery (%)	Recovery (%)
MCY-RR	0.50	1.00	QA/	ND	87.5	89.7	99.1	99.7
MCY-Demethyl-RR*	0.50	1.00		ND	NA	AN	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	ŊĄ	NA	NA
MCY-YR	0.50	1.00		Ŋ	96.1	95.8	95.1	99.1
MCY-LA	0.50	1.00		DN	95.0	92.4	83.2	82.0
MCY-LW	0.50	1.00		B	82.7	80.0	26.0	13.0
MCY-LF	0.50	1.00		Ŋ	81.0	74.1	11.0	7.60
* Demethyl analog quantified as parent compound	ified as parent com	Ipound.					· · · · · · · · · · · · · · · · · · ·	

Microcystins Page 4 of 4

۴

.

•

э

			Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files	Copy to Coc	Shipment;	ompanies	inal Acc	ution: Origi	Distribu	
	Conditions / Remarks		Seals Intact (Y/N)	Temp.	Time	Date	(ure)	oy: (Signat	aboratory t	Received for Laboratory by: (Signature)
Date / Time Received by: (Signature)	Relinquished by: (Signature)		Received by: (Signature)	Received	Date / Time	Date	+	lro)	y: (Sighat	Relinquished by: (Signature)
12-12-07 10:00 / regin Datist					111/07/400	2/11/07	+		X	K.K
Date / Time Received by: (Signature)	Relinquished by: (Signature)		Received by: (Signature)	Received	Date / Time	- Date		len (	y: (Signaty	Relinquished by: (Signature)
510-412-2530					ł					
ANDREW LINCOFF							-	_		
AT EPA REGION 9 LAB.							-			
FLOZEN AND SONICATED					   . 				-	-
SAMPLES PREVIOUSLY							- <u> </u>		+	
			- 00	KO1091907-00	100	CKO	$\mathbf{X}$		250 h	m 0560101211
			7-56-	108160	50	HR			25	21/18/07/1525
			-091807-OC	0816		KRB	×		40 4	9/18/07/1340 W
		-	-082307-00	2307	201	CRO	$\times$		120 W	8/23/07/2020
	×	~	CR01-082207-00	220	408	IRO	$\times$		200	8/22/07/1500 W
	×	~~	- SC-	082107		CRCC	$\times$		2000	8/21/07/0000
		~	-00		10	CRO	$\times$		100 W	7(24/07/1000
			1-00	07240-	[ [ ]	IROJ	$\times$		M 001	7/24/07/12.00
	X 	-	-25-20	-07230	n I	CRC	$\times$	٤		7/23/07 1520
		IAINERS	CATION	SAMPLE IDENTIFICATION	SAMP		GRAB	MATRIX COMP.	TIME MA	DATE -
REMARKS		CON-				CORUM	90,	Z	ls: (Signature) SUSAN	SAMPLERS: (Signature)
111-722-07	11/2/	NO.		RIVER	RIV	FTH	TNAM	PROJECT NAME		PROJ. NO
1337 S. 46th St., Bldg. 201 Richmond, CA 94804-4698	CHAIN OF CUSTODY RECORD	USTOD	CHAIN OF (			BENCY	ONAC	ROTECTI	INTAL PR	ENVIRONMENTAL PROTECTION AGENCY Region 9 Laboratory

9- 1634

- quaron - quaron