

TECHNICAL MEMORANDUM

Results of Cyanobacteria and Microcystin Monitoring in the Vicinity of the Klamath Hydroelectric Project

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Date: August 17, 2020



Introduction

This technical memorandum summarizes the results for the 2020 public health monitoring for cyanobacteria species and an associated toxin, microcystin, from Upper Klamath Lake and within PacifiCorp's Klamath Hydroelectric Project (Project) from Keno Reservoir to the Klamath River downstream Iron Gate Dam. Microcystin results from 2020 baseline monitoring program are also included in the results summaries below. This monitoring is particularly focused on *Microcystis aeruginosa* (MSAE) which is known to produce microcystin. This monitoring also assesses the presence of other potentially-toxigenic cyanobacteria, including *Dolichospermum* sp., and others. Monitoring is being conducted pursuant to Interim Measure 15, Water Quality Monitoring Activities, contained in the Klamath Hydroelectric Settlement Agreement (KHSA) executed between the United States Department of Interior, the states of California and Oregon, PacifiCorp, and other parties.

Results from the baseline and public health sampling are used in coordination with the appropriate public health authority to determine if public health advisories are warranted^{1,2}. In addition to PacifiCorp's website (<https://www.pacifiCorp.com/energy/hydro/klamath-river.html>), these memos are also posted on the Klamath Basin Monitoring Program's (KBMP) website (www.kbmp.net) and inform the Blue Green Algae tracker on the KBMP website.

The data in Appendix 1 and Appendix 2 summarize results from all of the 2020 public health sampling events to date and microcystin results from the 2020 baseline sampling events, respectively.

¹ The California State Water Resources Control Board (SWRCB) provides guidelines for posting advisories in recreation water (California SWRCB 2016) for Project waters in California. SWRCB recommends posting advisories in recreation waters at three levels based on laboratory testing for microcystin. The posting levels are Caution, Warning, and Danger at microcystin concentrations of 0.8, 6, and 20 µg/L respectively. Toxin producing cells at concentrations of over 4,000 cells/mL or blooms, scums, or mats would result in posting at the Caution level.

² Postings of Project waters in Oregon are coordinated with the Oregon Health Authority (OHA). The health advisory guideline for recreational use in Oregon waters is microcystin concentrations of 8 µg/L (OHA 2019).

Methods

PacifiCorp and the Oregon Department of Environmental Quality (ODEQ) are conducting public health sampling at ten sites (Table 1). Samples are collected and sent for laboratory analysis of potentially toxigenic cyanobacteria, notably MSAE and microcystin, from:

- Three shoreline sites in Upper Klamath Lake, Oregon
- One shoreline site in Keno Reservoir, Oregon
- One shoreline site in J.C. Boyle Reservoir, Oregon
- Four shoreline sites in coves in Copco and Iron Gate reservoirs (i.e., two cove sites in each reservoir), California
- One Klamath River site below Iron Gate Dam near the hatchery bridge, California

| Table 1. Sites of cyanobacteria and microcystin public health monitoring in Upper Klamath Lake, Keno Reservoir, J.C Boyle Reservoir, Copco Reservoir, Iron Gate Reservoir, and the Klamath River during 2020. | | | |
|--|------------------------|-----------------|---------|
| Location | Approximate River Mile | Sampling Entity | Site ID |
| Upper Klamath Lake at Eagle Ridge County Park | N/A | ODEQ | UKEP |
| Upper Klamath Lake at Howard's Bay Park | N/A | ODEQ | UKHP |
| Upper Klamath Lake at Moore Park | N/A | ODEQ | UKMP |
| Keno Reservoir at Keno Park | 234.0 | ODEQ | KEKP |
| J.C. Boyle Reservoir at Topsy Campground | 225.0 | ODEQ | BRTC |
| Copco Reservoir at Mallard Cove | 201.5 | PacifiCorp | CRMC |
| Copco Reservoir at Copco Cove | 200.0 | PacifiCorp | CRCC |
| Iron Gate Reservoir at Camp Creek | 192.8 | PacifiCorp | IRCC |
| Iron Gate Reservoir at John Williams Campground | 192.4 | PacifiCorp | IRJW |
| Klamath River below Iron Gate dam near Hatchery Bridge | 189.7 | PacifiCorp | KRBI |

Samples are planned to be taken once in May, November, and December and twice per month in June, July, August, September, and October.

In addition to public health sampling, monthly and bi-monthly baseline sampling for microcystin is conducted by PacifiCorp and the U.S. Bureau of Reclamation (BOR) from May through October at 12 locations extending from Link River Dam to the Klamath River downstream of Iron Gate Reservoir (Table 2).

| Table 2. Sites of microcystin baseline monitoring from Link River Dam to the Klamath River downstream of Iron Gate reservoir during 2020. | | | | |
|--|------------------------|-----------|-----------------|---------|
| Site Description | Approximate River Mile | Depth (m) | Sampling Entity | Site ID |
| Link River Dam | 254.4 | 0.5 | BOR | KR254.4 |
| Keno Reservoir at Miller Island | 246.0 | 0.5 | BOR | KR246.0 |
| Klamath River below Keno Dam near a USGS Gage | 231.8 | 0.5 | BOR | KBK |
| Klamath River below JC Boyle Reservoir | 224.6 | 0.5 | PacifiCorp | KR22460 |
| Klamath River at USGS Gage | 219.5 | 0.5 | PacifiCorp | KR21950 |
| Klamath River above Shovel Creek | 206.4 | 0.5 | PacifiCorp | KR20642 |
| Copco Reservoir at Buoy Line (surface) | 198.7 | 0.5 | PacifiCorp | KR19874 |
| Copco Reservoir at Buoy Line (integrated) | 198.7 | 0-8 | PacifiCorp | KR19874 |
| Klamath River below Copco 2 Reservoir | 196.5 | 0.5 | PacifiCorp | KR19645 |
| Iron Gate Reservoir at Log Boom (surface) | 190.2 | 0.5 | PacifiCorp | KR19019 |
| Iron Gate Reservoir at Log Boom (integrated) | 190.2 | 0-8 | PacifiCorp | KR19019 |
| Klamath River below Hatchery Bridge | 189.7 | 0.5 | PacifiCorp | KR18973 |

Public health samples are taken as grab samples offshore according to the standard operating procedure (SOP) developed by the Klamath Blue Green Algae Working Group (www.kbmp.net/collaboration/klamath-hydroelectric-settlement-agreement-monitoring). Samples collected for potentially toxic phytoplankton are preserved in Lugol’s solution and sent to Aquatic Analysts in Friday Harbor, Washington for analysis. The samples are labeled “Rush” for timely analysis and only potentially toxic cyanobacteria are identified and enumerated. Results for cyanobacteria species are reported as individual cells per milliliter.

Samples for determination of microcystin toxin are placed in a cooler on ice and shipped to the U.S. Environmental Protection Agency (EPA) Region 9 Laboratory in Richmond, California. The samples are analyzed using the competitive Enzyme-Linked ImmunoSorbent Assay (ELISA) method based on the EnviroLogix QuantiPlate Kit with a detection limit of 0.10 µg/L and a quantification limit of 0.15 µg/L. This test method does not distinguish between the specific microcystin congeners, but detects their presence to differing degrees. That is, ELISA test results yield one value as the sum of measurable microcystin variants.

Results

All public health samples (Table 3) and baseline microcystin samples (Tables 4 and 5) were collected as planned. The EPA laboratory has partially re-opened and results from July and August microcystin sampling are now available. Appendix 3 includes the raw phytoplankton results for the samples reported in Table 3.

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Table 3. Summary of available public health laboratory algal identification and enumeration and microcystin results from sampling July and August 2020.

| Date | Time | Site ID | RM | Sampling Entity | Sample ID | Depth | MSAE ⁽¹⁾ | AFA ⁽²⁾ | DKFA ⁽³⁾ | Other ^{(4),(5),(6),(7),(8),(9),(10),(11),(12), or (13)} | Microcystin (µg/L) |
|-----------|-------|---------|-------|-----------------|-----------|-------|---------------------|--------------------|---------------------|--|-----------------------|
| 7/8/2020 | 14:30 | CRMC | 201.5 | PacifiCorp | KR20815 | SG | 276,238 | 56,375 | 20,500 | 0 | 28 ^{A3, J} |
| 7/8/2020 | 12:05 | CRCC | 200.0 | PacifiCorp | KR20816 | SG | 975 | 9,341 | 115 | 0 | 0.17 |
| 7/8/2020 | 9:30 | IRCC | 192.8 | PacifiCorp | KR20817 | SG | 261 | 93,478 | 6,681 | 0 | 0.44 |
| 7/8/2020 | 9:15 | IRJW | 192.4 | PacifiCorp | KR20818 | SG | 379 | 28,928 | 252 | 0 | 0.27 |
| 7/8/2020 | 15:15 | KRBI | 189.7 | PacifiCorp | KR20819 | SG | 0 | 195 | 0 | 54 ¹⁰ | ND |
| 7/13/2020 | 11:45 | UKEP | N/A | ODEQ | UKEP20203 | SG | 0 | 832,032 | 0 | 0 | 0.43 |
| 7/13/2020 | 12:12 | UKHP | N/A | ODEQ | UKHP20203 | SG | 0 | 105,703 | 0 | 0 | 0.11 ^{C1, J} |
| 7/13/2020 | 12:35 | UKMP | N/A | ODEQ | UKMP20203 | SG | 0 | 3,695,193 | 0 | 0 | 0.10 ^{C1, J} |
| 7/13/2020 | 10:45 | KEKP | 234 | ODEQ | KEKP20203 | SG | 15,445 | 171,874 | 0 | 0 | 3.7 |
| 7/13/2020 | 10:20 | BRTC | 225 | ODEQ | BRTC20203 | SG | 0 | 11,528 | 0 | 0 | 0.13 ^{C1, J} |
| 7/21/2020 | 16:55 | CRMC | 201.5 | PacifiCorp | KR20820 | SG | 230,075 | 107,148 | 1,634 | 0 | 22 |
| 7/21/2020 | 15:45 | CRCC | 200.0 | PacifiCorp | KR20821 | SG | 168,695 | 2,645,867 | 17,443 | 0 | 43 |
| 7/21/2020 | 15:15 | IRCC | 192.8 | PacifiCorp | KR20822 | SG | 0 | 42,019 | 0 | 67,423,099 ⁵ | 37 |
| 7/21/2020 | 15:00 | IRJW | 192.4 | PacifiCorp | KR20823 | SG | 0 | 6,025 | 1,148 | 80,130 ⁵ | 2.5 |
| 7/21/2020 | 17:30 | KRBI | 189.7 | PacifiCorp | KR20824 | SG | 0 | 0 | 0 | 0 | ND |
| 7/28/2020 | 11:30 | UKEP | N/A | ODEQ | UKEP20204 | SG | 0 | 45,794 | 289 | 0 | ND |
| 7/28/2020 | 11:56 | UKHP | N/A | ODEQ | UKHP20204 | SG | 0 | 245,721 | 0 | 0 | ND |
| 7/28/2020 | 12:15 | UKMP | N/A | ODEQ | UKMP20204 | SG | 0 | 1,023,597 | 0 | 0 | ND |
| 7/28/2020 | 10:38 | KEKP | 234 | ODEQ | KEKP20204 | SG | 0 | 198,948 | 0 | 0 | ND |
| 7/28/2020 | 10:15 | BRTC | 225 | ODEQ | BRTC20204 | SG | 0 | 0 | 0 | 0 | ND |
| 8/10/2020 | 11:37 | UKEP | N/A | ODEQ | UKEP20205 | SG | NA | NA | NA | NA | 3.2 |
| 8/10/2020 | 12:05 | UKHP | N/A | ODEQ | UKHP20205 | SG | NA | NA | NA | NA | ND |
| 8/10/2020 | 12:23 | UKMP | N/A | ODEQ | UKMP20205 | SG | NA | NA | NA | NA | 0.10 ^{C1, J} |
| 8/10/2020 | 10:42 | KEKP | 234 | ODEQ | KEKP20205 | SG | NA | NA | NA | NA | ND |
| 8/10/2020 | 10:21 | BRTC | 225 | ODEQ | BRTC20205 | SG | NA | NA | NA | NA | ND |

¹MSAE = *Microcystis aeruginosa* (cells/mL)

²AFA = *Aphanizomenon flos-aquae* (cells/mL)

³DKFA = *Dolichospermum flos-aquae* (cells/mL)

Other = Cells/mL of either ⁴*Planktothrix (Oscillatoria) sp.*, ⁵*Gloeotrichia echinulata*, ⁶*Dolichospermum sp.*, ⁷*Lyngbya sp.*, ⁸*Dolichospermum circinalis*, ⁹*Dolichospermum planctonica*, ¹⁰*Planktothrix (Oscillatoria) limosa*, ¹¹*Pseudanabaena spp.*, ¹²*Limnothrix sp.*, or ¹³*Cylindrospermopsis sp.*

“ND” value indicates a result less than the laboratory analytical detection limit (0.1 µg/L)

“A3” the sample was prepped/analyzed past the recommended holding time

“C1” indicates the reported concentration for this analyte is below the quantitation limit.

“J” indicates the reported result for this analyte should be considered an estimated value.

“O” value indicates non-detect by analytical laboratory

“*” value indicates no result available

“NA” indicates Not Applicable; analyses for toxic algae from public health samples are only conducted from May – July.

Table 4. Summary of July and August 2020 baseline laboratory microcystin results for samples collected in Oregon.

| Date | Time | Site ID | RM | Sampling Entity | Sample ID | Depth (m) | Microcystin (µg/L) |
|-----------|-------|---------|-------|-----------------|-------------|-----------|-----------------------|
| 7/7/2020 | 09:15 | KR254.4 | 254.4 | BOR | 2020KHSA-40 | 0.5 | ND ^{A3, J} |
| 7/7/2020 | 08:20 | KR246.0 | 246.0 | BOR | 2020KHSA-43 | 0.5 | ND ^{A3, J} |
| 7/7/2020 | 10:40 | KBK | 231.8 | BOR | 2020KHSA-44 | 0.5 | 0.13 ^{A3, J} |
| 7/7/2020 | 15:00 | KR22460 | 224.6 | PacifiCorp | KR20082 | 0.5 | ND |
| 7/7/2020 | 15:35 | KR21950 | 219.5 | PacifiCorp | KR20083 | 0.5 | ND |
| 7/21/2020 | 09:00 | KR254.4 | 254.4 | BOR | 2020KHSA-46 | 0.5 | ND |
| 8/4/2020 | 09:00 | KR254.4 | 254.4 | BOR | 2020KHSA-51 | 0.5 | ND |
| 8/4/2020 | 11:00 | KR246.0 | 246.0 | BOR | 2020KHSA-54 | 0.5 | ND |
| 8/4/2020 | 10:10 | KBK | 231.8 | BOR | 2020KHSA-55 | 0.5 | ND |

"ND" value indicates a result less than the laboratory analytical detection limit (0.1 µg/L)

"A3" the sample was prepped/analyzed past the recommended holding time

"J" indicates the reported result for this analyte should be considered an estimated value.

Table 5. Summary of July 2020 baseline laboratory microcystin results for samples collected in California.

| Date | Time | Site ID | RM | Sampling Entity | Sample ID | Depth (m) | Microcystin (µg/L) |
|-----------|-------|---------|-------|-----------------|-----------|-----------|-----------------------|
| 7/8/2020 | 13:50 | KR20642 | 206.4 | PacifiCorp | KR20078 | 0.5 | ND |
| 7/8/2020 | 10:55 | KR19874 | 198.7 | PacifiCorp | KR20074 | 0.5 | 0.40 |
| 7/8/2020 | 11:10 | KR19874 | 198.7 | PacifiCorp | KR20075 | 0-8 | ND |
| 7/8/2020 | 10:00 | KR19645 | 196.5 | PacifiCorp | KR20073 | 0.5 | ND |
| 7/8/2020 | 7:10 | KR19019 | 190.2 | PacifiCorp | KR20069 | 0.5 | 0.23 |
| 7/8/2020 | 7:35 | KR19019 | 190.2 | PacifiCorp | KR20070 | 0-8 | 0.13 ^{C1, J} |
| 7/8/2020 | 15:20 | KR18973 | 189.7 | PacifiCorp | KR20068 | 0.5 | ND |
| 7/8/2020 | 15:30 | KR18973 | 189.7 | PacifiCorp | KR20081 | 0.5 | ND |
| 7/21/2020 | 17:35 | KR18973 | 189.7 | PacifiCorp | KR20084 | 0.5 | ND |

"ND" value indicates a result less than the laboratory analytical detection limit (0.1 µg/L)

"C1" indicates the reported concentration for this analyte is below the quantitation limit.

"J" indicates the reported result for this analyte should be considered an estimated value.

References

California SWRCB 2016. Draft Statewide Voluntary Guidance on CyanoHABs in Recreational Waters. Available online at:

http://www.mywaterquality.ca.gov/monitoring_council/cyanohab_network/docs/triggers.pdf

Oregon Health Authority. 2019. Oregon Harmful Algal Bloom Surveillance (HABS) Program – Recreational Use Public Health Advisory Guidelines, Cyanobacterial Blooms in Freshwater Bodies. 27 pp. Available online at:

<https://www.oregon.gov/oha/PH/HEALTHYENVIRONMENTS/RECREATION/HARMFULALGAE/BL/OOMS/Documents/Advisory-Guidelines-Harmful-Cyanobacterial-Blooms-Recreational-Waters.pdf>

Appendix 1 Cyanobacteria Species and Microcystin Data for 2020 Public Health Samples

| Table A1. Summary of 2020 public health laboratory algal identification and enumeration microcystin results. | | | | | | | | | | | |
|---|-------|---------|-------|-----------------|-----------|-------|---------------------|--------------------|---------------------|---|-----------------------|
| Date | Time | Site ID | RM | Sampling Entity | Sample ID | Depth | MSAE ⁽¹⁾ | AFA ⁽²⁾ | DKFA ⁽³⁾ | Other ^{(4),(5), (6), (7), (8), (9), (10), (11), (12), or (13)} | Microcystin (µg/L) |
| 5/28/2020 | 16:25 | CRMC | 201.5 | PacifiCorp | KR20800 | SG | 0 | 0 | 0 | 588 ¹⁰ | * |
| 5/28/2020 | 14:50 | CRCC | 200.0 | PacifiCorp | KR20801 | SG | 0 | 0 | 0 | 17,134 ¹⁰ | * |
| 5/28/2020 | 14:10 | IRCC | 192.8 | PacifiCorp | KR20802 | SG | 0 | 0 | 0 | 0 | * |
| 5/28/2020 | 13:45 | IRJW | 192.4 | PacifiCorp | KR20803 | SG | 0 | 0 | 0 | 0 | * |
| 5/28/2020 | 15:30 | KRBI | 189.7 | PacifiCorp | KR20804 | SG | 0 | 0 | 0 | 132 ¹⁰ | * |
| 5/XX/2020 | XX:XX | UKEP | N/A | ODEQ | XXXX | SG | NS | NS | NS | NS | NS |
| 5/XX/2020 | XX:XX | UKHP | N/A | ODEQ | XXXX | SG | NS | NS | NS | NS | NS |
| 5/XX/2020 | XX:XX | UKMP | N/A | ODEQ | XXXX | SG | NS | NS | NS | NS | NS |
| 5/XX/2020 | XX:XX | KEKP | 234 | ODEQ | XXXX | SG | NS | NS | NS | NS | NS |
| 5/XX/2020 | XX:XX | BRTC | 225 | ODEQ | XXXX | SG | NS | NS | NS | NS | NS |
| 6/9/2020 | 18:20 | CRMC | 201.5 | PacifiCorp | KR20805 | SG | 0 | 0 | 0 | 0 | * |
| 6/9/2020 | 15:05 | CRCC | 200.0 | PacifiCorp | KR20806 | SG | 0 | 0 | 0 | 0 | * |
| 6/9/2020 | 12:20 | IRCC | 192.8 | PacifiCorp | KR20807 | SG | 0 | 0 | 0 | 0 | * |
| 6/9/2020 | 11:10 | IRJW | 192.4 | PacifiCorp | KR20808 | SG | 0 | 889 | 0 | 0 | * |
| 6/9/2020 | 16:00 | KRBI | 189.7 | PacifiCorp | KR20809 | SG | 0 | 0 | 0 | 0 | * |
| 6/15/2020 | 11:04 | UKEP | N/A | ODEQ | UKEP20001 | SG | 0 | 113,266 | 4,131 | 0 | * |
| 6/15/2020 | 11:26 | UKHP | N/A | ODEQ | UKHP20001 | SG | 0 | 133,581 | 0 | 0 | * |
| 6/15/2020 | 11:47 | UKMP | N/A | ODEQ | UKMP20001 | SG | 0 | 78,771 | 515 | 0 | * |
| 6/XX/2020 | XX:XX | KEKP | 234 | ODEQ | KEKP20001 | SG | * | * | * | * | * |
| 6/15/2020 | 10:05 | BRTC | 225 | ODEQ | BRTC20001 | SG | 0 | 6,765 | 82 | 0 | * |
| 6/23/2020 | 11:05 | CRMC | 201.5 | PacifiCorp | KR20810 | SG | 0 | 0 | 0 | 0 | * |
| 6/23/2020 | 09:40 | CRCC | 200.0 | PacifiCorp | KR20811 | SG | 689 | 11,581 | 0 | 0 | * |
| 6/23/2020 | 09:05 | IRCC | 192.8 | PacifiCorp | KR20812 | SG | 599 | 82 | 3,050 | 381 ¹⁰ | * |
| 6/23/2020 | 08:50 | IRJW | 192.4 | PacifiCorp | KR20813 | SG | 0 | 17 | 0 | 51 ¹³ | * |
| 6/23/2020 | 11:50 | KRBI | 189.7 | PacifiCorp | KR20814 | SG | 0 | 0 | 0 | 0 | * |
| 6/30/2020 | 11:30 | UKEP | N/A | ODEQ | UKEP20202 | SG | 0 | 540,815 | 0 | 0 | * |
| 6/30/2020 | 11:58 | UKHP | N/A | ODEQ | UKHP20202 | SG | 0 | 233,242 | 0 | 0 | * |
| 6/30/2020 | 12:18 | UKMP | N/A | ODEQ | UKMP20202 | SG | 0 | 181,709 | 0 | 0 | * |
| 6/30/2020 | 10:36 | KEKP | 234 | ODEQ | KEKP20202 | SG | 0 | 137,471 | 0 | 0 | * |
| 6/30/2020 | 10:12 | BRTC | 225 | ODEQ | BRTC20202 | SG | 0 | 16,363 | 0 | 743 ¹⁰ | * |
| 7/8/2020 | 14:30 | CRMC | 201.5 | PacifiCorp | KR20815 | SG | 276,238 | 56,375 | 20,500 | 0 | 28 ^{A3, J} |
| 7/8/2020 | 12:05 | CRCC | 200.0 | PacifiCorp | KR20816 | SG | 975 | 9,341 | 115 | 0 | 0.17 |
| 7/8/2020 | 9:30 | IRCC | 192.8 | PacifiCorp | KR20817 | SG | 261 | 93,478 | 6,681 | 0 | 0.44 |
| 7/8/2020 | 9:15 | IRJW | 192.4 | PacifiCorp | KR20818 | SG | 379 | 28,928 | 252 | 0 | 0.27 |
| 7/8/2020 | 15:15 | KRBI | 189.7 | PacifiCorp | KR20819 | SG | 0 | 195 | 0 | 54 ¹⁰ | ND |
| 7/13/2020 | 11:45 | UKEP | N/A | ODEQ | UKEP20203 | SG | 0 | 832,032 | 0 | 0 | 0.43 |
| 7/13/2020 | 12:12 | UKHP | N/A | ODEQ | UKHP20203 | SG | 0 | 105,703 | 0 | 0 | 0.11 ^{C1, J} |
| 7/13/2020 | 12:35 | UKMP | N/A | ODEQ | UKMP20203 | SG | 0 | 3,695,193 | 0 | 0 | 0.10 ^{C1, J} |
| 7/13/2020 | 10:45 | KEKP | 234 | ODEQ | KEKP20203 | SG | 15,445 | 171,874 | 0 | 0 | 3.7 |
| 7/13/2020 | 10:20 | BRTC | 225 | ODEQ | BRTC20203 | SG | 0 | 11,528 | 0 | 0 | 0.13 ^{C1, J} |
| 7/21/2020 | 16:55 | CRMC | 201.5 | PacifiCorp | KR20820 | SG | 230,075 | 107,148 | 1,634 | 0 | 22 |
| 7/21/2020 | 15:45 | CRCC | 200.0 | PacifiCorp | KR20821 | SG | 168,695 | 2,645,867 | 17,443 | 0 | 43 |
| 7/21/2020 | 15:15 | IRCC | 192.8 | PacifiCorp | KR20822 | SG | 0 | 42,019 | 0 | 67,423,099 ⁵ | 37 |

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Table A1 cont.

| Date | Time | Site ID | RM | Sampling Entity | Sample ID | Depth | MSAE ⁽¹⁾ | AFA ⁽²⁾ | DKFA ⁽³⁾ | Other ^{(4),(5), (6), (7), (8), (9), (10), (11), (12), or (13)} | Microcystin (µg/L) |
|-----------|-------|---------|-------|-----------------|-----------|-------|---------------------|--------------------|---------------------|---|-----------------------|
| 7/21/2020 | 15:00 | IRJW | 192.4 | PacifiCorp | KR20823 | SG | 0 | 6,025 | 1,148 | 80,130 ⁵ | 2.5 |
| 7/21/2020 | 17:30 | KRBI | 189.7 | PacifiCorp | KR20824 | SG | 0 | 0 | 0 | 0 | ND |
| 7/28/2020 | 11:30 | UKEP | N/A | ODEQ | UKEP20204 | SG | 0 | 45,794 | 289 | 0 | ND |
| 7/28/2020 | 11:56 | UKHP | N/A | ODEQ | UKHP20204 | SG | 0 | 245,721 | 0 | 0 | ND |
| 7/28/2020 | 12:15 | UKMP | N/A | ODEQ | UKMP20204 | SG | 0 | 1,023,597 | 0 | 0 | ND |
| 7/28/2020 | 10:38 | KEKP | 234 | ODEQ | KEKP20204 | SG | 0 | 198,948 | 0 | 0 | ND |
| 7/28/2020 | 10:15 | BRTC | 225 | ODEQ | BRTC20204 | SG | 0 | 0 | 0 | 0 | ND |
| 8/10/2020 | 11:37 | UKEP | N/A | ODEQ | UKEP20205 | SG | NA | NA | NA | NA | 3.2 |
| 8/10/2020 | 12:05 | UKHP | N/A | ODEQ | UKHP20205 | SG | NA | NA | NA | NA | ND |
| 8/10/2020 | 12:23 | UKMP | N/A | ODEQ | UKMP20205 | SG | NA | NA | NA | NA | 0.10 ^{C1, J} |
| 8/10/2020 | 10:42 | KEKP | 234 | ODEQ | KEKP20205 | SG | NA | NA | NA | NA | ND |
| 8/10/2020 | 10:21 | BRTC | 225 | ODEQ | BRTC20205 | SG | NA | NA | NA | NA | ND |

¹MSAE = *Microcystis aeruginosa* (cells/mL)

²AFA = *Aphanizomenon flos-aquae* (cells/mL)

³DKFA = *Dolichospermum flos-aquae* (cells/mL)

Other = Cells/mL of either ⁴*Planktothrix (Oscillatoria) sp.*, ⁵*Gloeotrichia echinulata*, ⁶*Dolichospermum sp.*, ⁷*Lyngbya sp.*,
⁸*Dolichospermum circinalis*, ⁹*Dolichospermum planctonica*, ¹⁰*Planktothrix (Oscillatoria) limosa*, ¹¹*Pseudanabaena spp.*,
¹²*Limnothrix sp.*, or ¹³*Cylindrospermopsis sp.*

"ND" value indicates a result less than the laboratory analytical detection limit (0.1 µg/L)

"C1" indicates the reported concentration for this analyte is below the quantitation limit.

"A3" the sample was prepped/analyzed past the recommended holding time.

"J" indicates the reported result for this analyte should be considered an estimated value.

"0" value indicates non-detect by analytical laboratory

"**" value indicates no result available

"NS" indicates Not Sampled

"NA" indicates Not Applicable; analyses for toxic algae from public health samples are only conducted from May – July.

Appendix 2

Microcystin Data for 2020 Baseline Samples

| Table A2-1. Summary of 2020 baseline laboratory microcystin results for samples collected in Oregon. | | | | | | | |
|--|-------|---------|-------|-----------------|-------------|-----------|-----------------------|
| Date | Time | Site ID | RM | Sampling Entity | Sample ID | Depth (m) | Microcystin (µg/L) |
| 5/17/2020 | 11:40 | KR246.0 | 246.0 | BOR | 2020KHSA-22 | 0.5 | * |
| 5/17/2020 | 10:30 | KBK | 231.8 | BOR | 2020KHSA-23 | 0.5 | * |
| 5/17/2020 | 07:40 | KR22460 | 224.6 | PacifiCorp | KR20047 | 0.5 | * |
| 5/17/2020 | 08:40 | KR21950 | 219.5 | PacifiCorp | KR20048 | 0.5 | * |
| 6/9/2020 | 08:50 | KR246.0 | 246.0 | BOR | 2020KHSA-32 | 0.5 | * |
| 6/9/2020 | 11:35 | KBK | 231.8 | BOR | 2020KHSA-33 | 0.5 | * |
| 6/8/2020 | 15:05 | KR22460 | 224.6 | PacifiCorp | KR20064 | 0.5 | * |
| 6/8/2020 | 15:50 | KR21950 | 219.5 | PacifiCorp | KR20065 | 0.5 | * |
| 7/7/2020 | 09:15 | KR254.4 | 254.4 | BOR | 2020KHSA-40 | 0.5 | ND ^{A3, J} |
| 7/7/2020 | 08:20 | KR246.0 | 246.0 | BOR | 2020KHSA-43 | 0.5 | ND ^{A3, J} |
| 7/7/2020 | 10:40 | KBK | 231.8 | BOR | 2020KHSA-44 | 0.5 | 0.13 ^{A3, J} |
| 7/7/2020 | 15:00 | KR22460 | 224.6 | PacifiCorp | KR20082 | 0.5 | ND |
| 7/7/2020 | 15:35 | KR21950 | 219.5 | PacifiCorp | KR20083 | 0.5 | ND |
| 7/21/2020 | 09:00 | KR254.4 | 254.4 | BOR | 2020KHSA-46 | 0.5 | ND |
| 8/4/2020 | 09:00 | KR254.4 | 254.4 | BOR | 2020KHSA-51 | 0.5 | ND |
| 8/4/2020 | 11:00 | KR246.0 | 246.0 | BOR | 2020KHSA-54 | 0.5 | ND |
| 8/4/2020 | 10:10 | KBK | 231.8 | BOR | 2020KHSA-55 | 0.5 | ND |

"ND" value indicates a result less than the laboratory analytical detection limit (0.1 µg/L)

"A3" the sample was prepped/analyzed past the recommended holding time

"J" indicates the reported result for this analyte should be considered an estimated value.

"*" value indicates no result available

Table A2-2. Summary of 2020 baseline laboratory microcystin results for samples collected in California.

| Date | Time | Site ID | RM | Sampling Entity | Sample ID | Depth (m) | Microcystin (µg/L) |
|-----------|-------|---------|-------|-----------------|-----------|-----------|-----------------------|
| 5/16/2020 | 18:20 | KR20642 | 206.4 | PacifiCorp | KR20043 | 0.5 | * |
| 5/16/2020 | 15:10 | KR19874 | 198.7 | PacifiCorp | KR20039 | 0.5 | * |
| 5/16/2020 | 16:10 | KR19874 | 198.7 | PacifiCorp | KR20040 | 0-8 | * |
| 5/16/2020 | 14:20 | KR19645 | 196.5 | PacifiCorp | KR20038 | 0.5 | * |
| 5/16/2020 | 11:10 | KR19019 | 190.2 | PacifiCorp | KR20034 | 0.5 | * |
| 5/16/2020 | 11:40 | KR19019 | 190.2 | PacifiCorp | KR20035 | 0-8 | * |
| 6/9/2020 | 17:45 | KR20642 | 206.4 | PacifiCorp | KR20060 | 0.5 | * |
| 6/9/2020 | 13:50 | KR19874 | 198.7 | PacifiCorp | KR20056 | 0.5 | * |
| 6/9/2020 | 14:10 | KR19874 | 198.7 | PacifiCorp | KR20057 | 0-8 | * |
| 6/9/2020 | 12:55 | KR19645 | 196.5 | PacifiCorp | KR20055 | 0.5 | * |
| 6/9/2020 | 09:15 | KR19019 | 190.2 | PacifiCorp | KR20051 | 0.5 | * |
| 6/9/2020 | 09:50 | KR19019 | 190.2 | PacifiCorp | KR20052 | 0-8 | * |
| 7/8/2020 | 13:50 | KR20642 | 206.4 | PacifiCorp | KR20078 | 0.5 | ND |
| 7/8/2020 | 10:55 | KR19874 | 198.7 | PacifiCorp | KR20074 | 0.5 | 0.40 |
| 7/8/2020 | 11:10 | KR19874 | 198.7 | PacifiCorp | KR20075 | 0-8 | ND |
| 7/8/2020 | 10:00 | KR19645 | 196.5 | PacifiCorp | KR20073 | 0.5 | ND |
| 7/8/2020 | 7:10 | KR19019 | 190.2 | PacifiCorp | KR20069 | 0.5 | 0.23 |
| 7/8/2020 | 7:35 | KR19019 | 190.2 | PacifiCorp | KR20070 | 0-8 | 0.13 ^{C1, J} |
| 7/8/2020 | 15:20 | KR18973 | 189.7 | PacifiCorp | KR20068 | 0.5 | ND |
| 7/8/2020 | 15:30 | KR18973 | 189.7 | PacifiCorp | KR20081 | 0.5 | ND |
| 7/21/2020 | 17:35 | KR18973 | 189.7 | PacifiCorp | KR20084 | 0.5 | ND |

"ND" value indicates a result less than the laboratory analytical detection limit (0.1 µg/L)

"C1" indicates the reported concentration for this analyte is below the quantitation limit.

"J" indicates the reported result for this analyte should be considered an estimated value.

"*" value indicates no result available

Appendix 3 Laboratory Phytoplankton Results

Phytoplankton Sample Analysis

Sample: Klamath Basin
 Sample ID: KR20815
 Sample Depth:
 Sample Date: 8-Jul-20 1430

Total Density (#/mL): 16,827
 Total Biovolume (um³/mL): 7,135,025
 Trophic State Index: 64.0

| Species | Density #/mL | Density Percent | Biovolume um ³ /mL | Biovolume Percent |
|-----------------------------|--------------|-----------------|-------------------------------|-------------------|
| 1 Microcystis aeruginosa | 13,154 | 78.2 | 2,209,900 | 31.0 |
| 2 Aphanizomenon flos-aquae | 2,819 | 16.8 | 3,551,625 | 49.8 |
| 3 Dolichospermum flos-aquae | 854 | 5.1 | 1,373,500 | 19.3 |

Microcystis aeruginosa cells/mL = 276,238

Dolichospermum flos-aquae cells/mL = 20,500

Aphanizomenon flos-aquae cells/mL = 56,375

Note: Toxic Algae Only

Phytoplankton Sample Analysis

Sample: Klamath Basin
 Sample ID: KR20816
 Sample Depth:
 Sample Date: 8-Jul-20 1205

Total Density (#/mL): 528
 Total Biovolume (um³/mL): 603,996
 Trophic State Index: 46.2

| Species | Density #/mL | Density Percent | Biovolume um ³ /mL | Biovolume Percent |
|-----------------------------|--------------|-----------------|-------------------------------|-------------------|
| 1 Aphanizomenon flos-aquae | 425 | 80.4 | 588,503 | 97.4 |
| 2 Microcystis aeruginosa | 98 | 18.5 | 7,804 | 1.3 |
| 3 Dolichospermum flos-aquae | 6 | 1.1 | 7,689 | 1.3 |

Aphanizomenon flos-aquae cells/mL = 9,341

Microcystis aeruginosa cells/mL = 975

Dolichospermum flos-aquae cells/mL = 115

Note: Toxic Algae Only

Phytoplankton Sample Analysis

Sample: Klamath Basin
 Sample ID: KR20817
 Sample Depth:
 Sample Date: 8-Jul-20 930

Total Density (#/mL): 4,484
 Total Biovolume (um³/mL): 6,338,868
 Trophic State Index: 63.2

| Species | Density #/mL | Density Percent | Biovolume um ³ /mL | Biovolume Percent |
|-----------------------------|--------------|-----------------|-------------------------------|-------------------|
| 1 Aphanizomenon flos-aquae | 4,249 | 94.8 | 5,889,120 | 92.9 |
| 2 Dolichospermum flos-aquae | 209 | 4.7 | 447,659 | 7.1 |
| 3 Microcystis aeruginosa | 26 | 0.6 | 2,088 | 0.0 |

Aphanizomenon flos-aquae cells/mL = 93,478

Dolichospermum flos-aquae cells/mL = 6,681

Microcystis aeruginosa cells/mL = 261

Note: Toxic Algae Only

Phytoplankton Sample Analysis

Sample: Klamath Basin
 Sample ID: KR20818
 Sample Depth:
 Sample Date: 8-Jul-20 915

Total Density (#/mL): 1,687
 Total Biovolume (um³/mL): 1,842,402
 Trophic State Index: 54.3

| Species | Density #/mL | Density Percent | Biovolume um ³ /mL | Biovolume Percent |
|-----------------------------|--------------|-----------------|-------------------------------|-------------------|
| 1 Aphanizomenon flos-aquae | 1,607 | 95.3 | 1,822,461 | 98.9 |
| 2 Dolichospermum flos-aquae | 42 | 2.5 | 16,913 | 0.9 |
| 3 Microcystis aeruginosa | 38 | 2.2 | 3,029 | 0.2 |

Aphanizomenon flos-aquae cells/mL = 28,928

Microcystis aeruginosa cells/mL = 379

Dolichospermum flos-aquae cells/mL = 252

Note: Toxic Algae Only

Phytoplankton Sample Analysis

Sample: Klamath Basin
 Sample ID: KR20819
 Sample Depth:
 Sample Date: 8-Jul-20 1515

Total Density (#/mL): 14
 Total Biovolume (um³/mL): 15,617
 Trophic State Index: 20.3

| Species | Density #/mL | Density Percent | Biovolume um ³ /mL | Biovolume Percent |
|----------------------------|--------------|-----------------|-------------------------------|-------------------|
| 1 Aphanizomenon flos-aquae | 11 | 80.0 | 12,265 | 78.5 |
| 2 Oscillatoria limosa | 3 | 20.0 | 3,353 | 21.5 |

Aphanizomenon flos-aquae cells/mL = 195

Oscillatoria limosa cells/mL = 54

Note: Toxic Algae Only

Phytoplankton Sample Analysis

Sample: Klamath Basin
 Sample Site: UKEP20203
 Sample Depth:
 Sample Date: 13-Jul-20 1145

Total Density (#/mL): 34,668
 Total Biovolume (um³/mL): 52,418,002
 Trophic State Index: 78.4

| Species | Density #/mL | Density Percent | Biovolume um ³ /mL | Biovolume Percent |
|----------------------------|--------------|-----------------|-------------------------------|-------------------|
| 1 Aphanizomenon flos-aquae | 34,668 | 100.0 | 52,418,002 | 100.0 |

Aphanizomenon flos-aquae cells/mL = 832,032

Note: Toxic Algae Only

Phytoplankton Sample Analysis

Sample: Klamath Basin
 Sample Site: UKHP20203
 Sample Depth:
 Sample Date: 13-Jul-20 1212

Total Density (#/mL): 5,285
 Total Biovolume (um³/mL): 6,659,297
 Trophic State Index: 63.5

| Species | Density #/mL | Density Percent | Biovolume um ³ /mL | Biovolume Percent |
|----------------------------|--------------|-----------------|-------------------------------|-------------------|
| 1 Aphanizomenon flos-aquae | 5,285 | 100.0 | 6,659,297 | 100.0 |

Aphanizomenon flos-aquae cells/mL = 105,703

Note: Toxic Algae Only

Phytoplankton Sample Analysis

Sample: Klamath Basin
~~UKMP20203~~
Sample Site: UKMP20203
Sample Depth:
Sample Date: 13-Jul-20 1235

Total Density (#/mL): 167,963
Total Biovolume (um³/mL): 232,797,180
Trophic State Index: 89.2

| Species | Density #/mL | Density Percent | Biovolume um ³ /mL | Biovolume Percent |
|----------------------------|--------------|-----------------|-------------------------------|-------------------|
| 1 Aphanizomenon flos-aquae | 167,963 | 100.0 | 232,797,180 | 100.0 |

Aphanizomenon flos-aquae cells/mL = 3,695,193

Note: Toxic Algae Only

Phytoplankton Sample Analysis

Sample: Klamath Basin
 Sample Site: KEKP20203
 Sample Depth:
 Sample Date: 13-Jul-20 1045

Total Density (#/mL): 8,155
 Total Biovolume (um³/mL): 10,951,639
 Trophic State Index: 67.1

| Species | Density #/mL | Density Percent | CELLS | |
|----------------------------|--------------|-----------------|-------------------------------|-------------------|
| | | | Biovolume um ³ /mL | Biovolume Percent |
| 1 Aphanizomenon flos-aquae | 6,611 | 81.1 | 10,828,078 | 98.9 |
| 2 Microcystis aeruginosa | 1,545 | 18.9 | 123,562 | 1.1 |

Microcystis aeruginosa cells/mL = 15,445
 Aphanizomenon flos-aquae cells/mL = 171,874

Note: Toxic Algae Only

Phytoplankton Sample Analysis

Sample: Klamath Basin
 Sample Site: BRTC20203
 Sample Depth:
 Sample Date: 13-Jul-20 1020

Total Density (#/mL): 678
 Total Biovolume (um³/mL): 726,282
 Trophic State Index: 47.5

| Species | Density #/mL | Density Percent | Biovolume um ³ /mL | Biovolume Percent |
|----------------------------|--------------|-----------------|-------------------------------|-------------------|
| 1 Aphanizomenon flos-aquae | 678 | 100.0 | 726,282 | 100.0 |

Aphanizomenon flos-aquae cells/mL = 11,528

Note: Toxic Algae Only

Phytoplankton Sample Analysis

Sample: Klamath Basin
 Sample ID: KR20820
 Sample Depth:
 Sample Date: 21-Jul-20 1655

Total Density (#/mL): 20,379
 Total Biovolume (um³/mL): 8,700,378
 Trophic State Index: 65.4

| Species | Density #/mL | Density Percent | Biovolume um ³ /mL | Biovolume Percent |
|-----------------------------|--------------|-----------------|-------------------------------|-------------------|
| 1 Microcystis aeruginosa | 14,380 | 70.6 | 1,840,603 | 21.2 |
| 2 Aphanizomenon flos-aquae | 5,953 | 29.2 | 6,750,293 | 77.6 |
| 3 Dolichospermum flos-aquae | 47 | 0.2 | 109,482 | 1.3 |

Microcystis aeruginosa cells/mL = 230,075
 Aphanizomenon flos-aquae cells/mL = 107,148
 Dolichospermum flos-aquae cells/mL = 1,634

Note: Toxic Algae Only

Phytoplankton Sample Analysis

Sample: Klamath Basin
 Sample ID: KR20821
 Sample Depth:
 Sample Date: 21-Jul-20 1545

Total Density (#/mL): 132,775
 Total Biovolume (um³/mL): 169,207,855
 Trophic State Index: 86.9

| Species | Density #/mL | Density Percent | Biovolume um ³ /mL | Biovolume Percent |
|-----------------------------|--------------|-----------------|-------------------------------|-------------------|
| 1 Aphanizomenon flos-aquae | 120,267 | 90.6 | 166,689,600 | 98.5 |
| 2 Microcystis aeruginosa | 12,050 | 9.1 | 1,349,557 | 0.8 |
| 3 Dolichospermum flos-aquae | 459 | 0.3 | 1,168,698 | 0.7 |

Aphanizomenon flos-aquae cells/mL = 2,645,867

Microcystis aeruginosa cells/mL = 168,695

Dolichospermum flos-aquae cells/mL = 17,443

Note: Toxic Algae Only

Phytoplankton Sample Analysis

Sample: Klamath Basin
 Sample ID: KR20822
 Sample Depth:
 Sample Date: 21-Jul-20 1515

Total Density (#/mL): 201,689
 Total Biovolume (um³/mL): 4,587,417,932
 Trophic State Index: 110.7

| Species | Density #/mL | Density Percent | Biovolume um ³ /mL | Biovolume Percent |
|----------------------------|--------------|-----------------|-------------------------------|-------------------|
| 1 Gloeotrichia echinulata | 198,888 | 98.6 | 4,584,770,758 | 99.9 |
| 2 Aphanizomenon flos-aquae | 2,801 | 1.4 | 2,647,174 | 0.1 |

Gloeotrichia echinulata cells/mL = 67,423,099

Aphanizomenon flos-aquae cells/mL = 42,019

Note: Toxic Algae Only

Phytoplankton Sample Analysis

Sample: Klamath Basin
 Sample ID: KR20823
 Sample Depth:
 Sample Date: 21-Jul-20 1500

Total Density (#/mL): 947
 Total Biovolume (um³/mL): 5,905,288
 Trophic State Index: 62.7

| Species | Density #/mL | Density Percent | Biovolume um ³ /mL | Biovolume Percent |
|-----------------------------|--------------|-----------------|-------------------------------|-------------------|
| 1 Gloeotrichia echinulata | 602 | 63.6 | 5,448,837 | 92.3 |
| 2 Aphanizomenon flos-aquae | 287 | 30.3 | 379,563 | 6.4 |
| 3 Dolichospermum flos-aquae | 57 | 6.1 | 76,888 | 1.3 |

Gloeotrichia echinulata cells/mL = 80,130
 Aphanizomenon flos-aquae cells/mL = 6,025
 Dolichospermum flos-aquae cells/mL = 1,148

Note: Toxic Algae Only

Phytoplankton Sample Analysis

Sample: Klamath Basin
 Sample ID: KR20824
 Sample Depth:
 Sample Date: 21-Jul-20 1730

Total Density (#/mL): <5
 Total Biovolume (um³/mL):
 Trophic State Index:

| Species | Density #/mL | Density Percent | Biovolume um ³ /mL | Biovolume Percent |
|--------------------------|--------------|-----------------|-------------------------------|-------------------|
| - | - | - | - | - |
| 1 No Toxic Algae Present | <5 | - | - | - |

Note: Toxic Algae Only

Phytoplankton Sample Analysis

Sample: Klamath Basin
Sample Site: UKEP20204
Sample Depth:
Sample Date: 28-Jul-20 1130

Total Density (#/mL): 2,110
Total Biovolume (um³/mL): 2,904,382
Trophic State Index: 57.5

| Species | Density #/mL | Density Percent | Biovolume um ³ /mL | Biovolume Percent |
|-----------------------------|--------------|-----------------|-------------------------------|-------------------|
| 1 Aphanizomenon flos-aquae | 2,082 | 98.6 | 2,885,012 | 99.3 |
| 2 Dolichospermum flos-aquae | 29 | 1.4 | 19,370 | 0.7 |

Aphanizomenon flos-aquae cells/mL = 45,794

Dolichospermum flos-aquae cells/mL = 289

Note: Toxic Algae Only

Phytoplankton Sample Analysis

Sample: Klamath Basin
 Sample Site: UKHP20204
 Sample Depth:
 Sample Date: 28-Jul-20 1156

Total Density (#/mL): 11,169
 Total Biovolume (um³/mL): 15,480,416
 Trophic State Index: 69.6

| Species | Density #/mL | Density Percent | Biovolume um ³ /mL | Biovolume Percent |
|----------------------------|--------------|-----------------|-------------------------------|-------------------|
| 1 Aphanizomenon flos-aquae | 11,169 | 100.0 | 15,480,416 | 100.0 |

Aphanizomenon flos-aquae cells/mL = 245,721

Note: Toxic Algae Only

Phytoplankton Sample Analysis

Sample: Klamath Basin
 Sample Site: UKMP20204
 Sample Depth:
 Sample Date: 28-Jul-20 1215

Total Density (#/mL): 48,743
 Total Biovolume (um³/mL): 64,486,582
 Trophic State Index: 79.9

| Species | Density #/mL | Density Percent | Biovolume um ³ /mL | Biovolume Percent |
|----------------------------|--------------|-----------------|-------------------------------|-------------------|
| 1 Aphanizomenon flos-aquae | 48,743 | 100.0 | 64,486,582 | 100.0 |

Aphanizomenon flos-aquae cells/mL = 1,023,597

Note: Toxic Algae Only

Phytoplankton Sample Analysis

Sample: Klamath Basin
 Sample Site: KEKP20204
 Sample Depth:
 Sample Date: 28-Jul-20 1038

Total Density (#/mL): 11,053
 Total Biovolume (um³/mL): 12,533,735
 Trophic State Index: 68.1

| Species | Density #/mL | Density Percent | Biovolume um ³ /mL | Biovolume Percent |
|----------------------------|--------------|-----------------|-------------------------------|-------------------|
| 1 Aphanizomenon flos-aquae | 11,053 | 100.0 | 12,533,735 | 100.0 |

Aphanizomenon flos-aquae cells/mL = 198,948

Note: Toxic Algae Only

Phytoplankton Sample Analysis

Sample: Klamath Basin
 Sample Site: BRTC20204
 Sample Depth:
 Sample Date: 28-Jul-20 1015

Total Density (#/mL): <4
 Total Biovolume (um³/mL):
 Trophic State Index:

| Species | Density #/mL | Density Percent | Biovolume um ³ /mL | Biovolume Percent |
|--------------------------|--------------|-----------------|-------------------------------|-------------------|
| - | - | - | - | - |
| 1 No Toxic Algae Present | <4 | | | |

Note: Toxic Algae Only