

**Microcystin, Cylindrospermopsin, Saxitoxin & Anatoxin-a Report**  
**Project: Utah DEQ – Division of Water Quality**

<u>Sample ID/Site</u>	<u>Date Collected</u>
3732 S. 3600 W.	7/20/16
8945 S. Homestead	7/20/16
5500 S. Jordan Canal Rd.	7/20/16
3150 W. 5400 S.	7/20/16
3855 W. 7800 S.	7/20/16

**Toxins** – microcystins/nodularins (MCs), cylindrospermopsin (CYN), saxitoxin (STX), anatoxin-a (ANTX-A)

**Sample Prep**

Samples were ultrasonicated to lyse cells and release toxins. Samples were filtered prior to ANTX-A analysis, with a duplicate lab fortified matrix (LFM) prepared at 0.1 µg/L. LFM for CYN (1 µg/L) and STX (0.2 µg/L) and MC-LR (1.0 µg/L) were also prepared.

**Analytical Methodology****MC**

The Adda (Abraxis) microcystins enzyme linked immunosorbent assay (ELISA) was utilized for the quantitative and sensitive congener-independent detection of MCs. The current assay is sensitive to down to a LOD/LOQ of 0.15 µg/L for total MCs. The average recoveries of laboratory fortified blanks (LFB) spiked with 1.0 µg/L MCLR was 105% and 112%.

**CYN**

A cylindrospermopsin ELISA (Abraxis) was utilized for the quantitative detection of CYN. The current assay is sensitive down to a LOD/LOQ limit of 0.10 µg/L for CYN. The average LFB recovery was 95%.

## STX

A saxitoxin enzyme linked immunosorbent assay (ELISA) was utilized for the quantitative detection of STX. The current assay is sensitive down to a LOD/LOQ limit of 0.05 µg/L STX. The average LFB recovery was 100%.

## ANTX-A

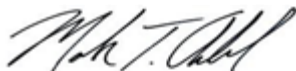
Liquid chromatography-mass spectrometry/ mass spectrometry (LC-MS/MS) was utilized for the determination of ANTX-A. The  $[M+H]^+$  ion for ANTX-A ( $m/z$  166) was fragmented and the product ions ( $m/z$  56, 91, 107, 131 & 149) were monitored.

### Summary of Results

<u>Sample</u>	<u>MC levels</u> (µg/L)	<u>CYN levels</u> (µg/L)	<u>STX levels</u> (µg/L)	<u>ANTX-A levels</u> (µg/L)
3732 S. 3600 W.	ND	ND	ND	ND
8945 S. Homestead	ND	ND	ND	ND
5500 S. Jordan Canal Rd.	ND	ND	ND	ND
3150 W. 5400 S.	ND	ND	ND	ND
3855 W. 7800 S.	ND	ND	ND	ND
<i>Detection Limits (µg/L)</i>	<i>0.15</i>	<i>0.10</i>	<i>0.05</i>	<i>0.05</i>

ND = Not detected above the detection limit

Submitted by:



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Date:

7/26/16