Little Colorado River Watershed

Watershed Description

This watershed is defined by the Little Colorado River, from its headwaters to the Colorado River, and tributaries to the San Juan River which flow into north and east into New Mexico and Utah. This area contains horizontally stratified sandstone and limestone which have eroded to form canyon and plateaus. In a few areas, igneous rocks have deposited on sedimentary formations due to volcanic activity. Natural erosion can be easily increased by human activities in such locations.

Land ownership is divided approximately as: 60% tribal, 12% federal, 12% private, 6% state. This 26,794 square mile watershed is sparsely populated outside of Flagstaff, with 236,500 people (including Flagstaff) (2000 census). Land use is primarily open grazing, forestry, recreation, and mining. The area contains four national monuments, four wilderness areas, and two national forests with varying levels of use restrictions.

Elevations range from 12,600 feet (above sea level) at Humphrey's Peak near Flagstaff to 2,700 feet near the Colorado River. However, most of the watershed is above 5000 feet elevation, with desert highlands flora and fauna, and coldwater aquatic communities where perennial waters exist.

Water Resources

The climate provides approximately 10 inches of rain and 15 to 20 inches of snow yearly. Snow melt has been a primary source of water for this region. The flow on the Little Colorado River is "interrupted" (stretches of perennial, intermittent, and ephemeral flow). Perennial flow is generally limited to headwaters streams.

An estimate of surface water resources in the Little Colorado Watershed is provided in the following table. Waters on Tribal lands are not assessed by ADEQ; therefore, those statistics are shown separately.

Estimated Surface Water Resources in the Little Colorado Watershed

	Perennial	Intermittent	Ephemeral
Stream miles	640	1,655	9,635
	Perennial	Non-perennial	
Lake acres	16,050	6,830	

Additional Water Resources Located on Tribal Lands – Not assessed

	Perennial	Intermittent	Ephemeral
Stream miles	305	170	15,310
	Perennial	Non-perennial	
Lake acres	5,295	118	

Ambient monitoring focuses on perennial waters; however, special investigations may identify water quality problems on intermittent and even ephemeral waters. Estimated miles and acres are based on USGS digitized hydrology at 1:100,000 and have been rounded to the nearest 5 miles or 5 acres.

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Assessments

The Little Colorado River Watershed can be separated into the following drainage areas (subwatersheds):

14080105	La Plata River Drainage Area (Tribal Land – Not assessed)
14080106	Charco River Drainage Area (Tribal Land – Not assessed)
14080201	Cottonwood Creek Drainage Area (Tribal Land – Not assessed)
14080204	Chinle Wash Drainage Area (Tribal Land – Not assessed)
14080205	Oljeto Wash Drainage Area (Tribal Land – Not assessed)
15020001	Little Colorado River Headwaters Drainage Area
15020002	Upper Little Colorado River Drainage Area
15020003	Carrizo Wash Drainage Area
15020004	Zuni River Drainage Area
15020005	Silver Creek Drainage Area
15020006	Upper Puerco River Drainage Area (Tribal Land – Not assessed)
15020007	Lower Puerco River Drainage Area
15020008	Middle Little Colorado River Drainage Area
15020009	Wide Ruin Wash Drainage Area
15020010	Chevelon Canyon Drainage Area
15020011	Puerco Colorado Wash Drainage Area
15020012	Oraibi Wash Drainage Area (Tribal Land – Not assessed)
15020013	Polacca Wash Drainage Area (Tribal Land – Not assessed)
15020014	Jadito Wash Drainage Area (Tribal Land – Not assessed)
15020015	Canyon Diablo Drainage Area
15020016	Lower Little Colorado River Drainage Area
15020017	Dinnebito Wash Drainage Area (Tribal Land – Not assessed)
15020018	Moenkopi Wash Drainage Area (Tribal Land – Not assessed)

These drainage areas and the surface waters assessed as “attaining” or “impaired” are illustrated on the following watershed map. Methods used to complete these assessments are described in the “Surface Water Assessment Methods and Technical Support” document.

ED_013248_00000576-00002

BARBERSHOP CANYON CREEK

Headwaters - East Clear Creek
15020008-537
10.229 Miles

Category 2
Attaining some uses

FC - Attaining • FBC - Attaining • AGL - Attaining
AWC - Inconclusive

Use Support

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
Dissolved oxygen	7.0 mg/L	11/12/2013	6.11 mg/L	AWC is inconclusive with 1 exceedance in 3 samples.

Monitoring Summary

Sampling period: 11/12/2013 - 5/21/2014

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
BELOW MERRITT DRAW	LCBRB006.74	100410	ADEQ	Ambient Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(3) Antimony, arsenic, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, selenium, zinc	(3) Ammonia, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(1-3) Dissolved oxygen, *E. coli*, pH, SSC, total dissolved solids, bottom deposits, biocriteria

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	Dissolved oxygen
Missing Core Parameters	None
Missing Seasonal Distribution	None
Lab Detection Limits Not Low Enough	Cadmium (dissolved), copper (dissolved), lead (dissolved), selenium, mercury (dissolved)

Priority	Monitoring Recommendations
Low	Collect more dissolved oxygen samples due to the exceedance. There was a biocriteria violation in 2007, but the sample collected in 2014 had a higher IBI score and the biocriterion was met in this assessment period. Use lower detection limits especially for dissolved cadmium and dissolved copper since they are part of A&W core parameters.

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BEAR CANYON LAKE

15020008-0130
55 Acres

Category 3N
Inconclusive

FC - Inconclusive • FBC - Inconclusive • AGI - Inconclusive
AGL - Inconclusive • AWC - Inconclusive

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
Dissolved oxygen	7.0 mg/L	7/30/2014	6.09 mg/L	AWC is inconclusive with 1 exceedance in 6 samples.
Iron (dissolved)	1000 ug/L	6/25/2014	1710 ug/L	AWC is attaining. High dissolved iron due to low pH conditions at the bottom of the lake and considered to be a natural background.
		9/24/2014	2560 ug/L	
pH	6.5 SU	8/21/2013	5.63 SU	AGL, FBC and AWC are attaining. All exceedances occurred between 10 and 13 meters deep. Low pH considered to be due to natural conditions in this narrow deep lake.
		6/25/2014	5.94 SU	
		7/30/2014	6.18 SU	
		9/24/2014	5.88 SU	

Monitoring Summary

Sampling period: 7/13/2010 - 9/24/2014

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
AT DAM	LCBCL-A	100969	ADEQ	Clean Lakes Program

Metal Samples	Nutrients & Related Samples	Other Samples
(1-4) Antimony, arsenic, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, selenium, zinc	(2-3) Ammonia, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(6) Dissolved oxygen, pH, total dissolved solids

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Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	Dissolved oxygen
Missing Core Parameters	Zinc (dissolved), *E. coli*
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, boron, manganese, copper, lead, mercury
Lab Detection Limits Not Low Enough	Cadmium (dissolved), copper (dissolved), lead (dissolved), mercury (dissolved), selenium

Priority	Monitoring Recommendations
Low	Collect more dissolved oxygen samples due to the exceedance. Collect core parameters to represent at least 3 seasons during an assessment period.

Impairment Discussion
Delist pH from the 303(d) list. Low pH and high iron values near the bottom of the lake are not attaining due to naturally occurring conditions (N subcategory).

ED_013248_00000576-00005

BILLY CREEK

Headwaters - Show Low Creek
15020005-019
7.65 Miles

Category 2
Attaining some uses

FC - Attaining • FBC - Attaining • AGL - Attaining
AWC - Inconclusive

Use Support

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
Biocriteria	IBI ≥ 52 attaining IBI 46 - 51 inconclusive IBI ≤ 45 violating	5/13/2014	IBI 16	AWC is inconclusive with 1 violation.

Monitoring Summary

Sampling period: 9/17/2013 - 5/14/2015

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
AT PINTOP, AZ	LCBIL005.75	100946	ADEQ	TMDL Monitoring
NEAR PINETOP WWTP	LCBIL000.15	109702	ADEQ	Ambient Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(4) Antimony, arsenic, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, selenium, zinc	(4-5) Ammonia, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(1-4) Dissolved oxygen, *E. coli*, pH, SSC, total dissolved solids, biocriteria, bottom deposits

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	Biocriteria
Missing Core Parameters	None
Missing Seasonal Distribution	None
Lab Detection Limits Not Low Enough	Cadmium (dissolved), copper (dissolved), selenium, mercury (dissolved)

Priority	Monitoring Recommendations
Medium	Collect another macroinvertebrate sample to verify the biocriteria violation. Use lower detection limits for dissolved cadmium and dissolved copper.

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BLACK CANYON LAKE

15020010-0180
37.4 Acres

Category 5
Impaired

IMPAIRMENT STATUS

Ammonia (2010)

FC - Inconclusive • FBC - Inconclusive • DWS - Inconclusive
AWC - Impaired • AGL - Inconclusive • AGI - Inconclusive

Monitoring Summary

Sampling period: No current data

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
N/A				

Metal Samples	Nutrients & Related Samples	Other Samples
(0) None	(0) None	(0) None

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	All designated uses
Missing Seasonal Distribution	All designated uses
Lab Detection Limits Not Low Enough	None

Priority	Monitoring Recommendations
High	Collect samples in support of TMDL development.

Impairment Discussion
Remains impaired for ammonia (2010). No data since 2004.

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BLUE RIDGE RESERVOIR

15020008-0200
290 Acres

Category 2
Attaining some uses

FC - Attaining • FBC - Inconclusive • AGI - Inconclusive
AGL - Inconclusive • AWC - Inconclusive

Use Support

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
pH	9.0 SU	7/12/2010	10 SU	AGI, AGL, FBC and AWC are inconclusive with 2 exceedances in 6 samples.
		5/7/2012	9.3 SU	

Monitoring Summary

Sampling period: 7/12/2010 - 11/11/2013

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
AT MID LAKE	LCBRR-NLS	105799	ADEQ	Ambient Monitoring
AT DAM USGS 09398300	LCBRR-A	100974	SRP	Data Sharing Partnership

Metal Samples	Nutrients & Related Samples	Other Samples
(7-10) Antimony, arsenic, barium, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, nickel, selenium, silver, thallium, zinc	(1-8) Ammonia, nitrate, nitrite, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(1-10) Dissolved oxygen, *E. coli*, pH, total dissolved solids, tetrachloroethane, tetrachloroethylene, toluene, trichloroethane_111, trichloroethane_112, trichloroethylene, trihalomethanes, vinylchloride, xylene

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	pH
Missing Core Parameters	Zinc (dissolved), nitrogen, cadmium (dissolved), copper (dissolved), *E. coli*
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, nitrogen, cadmium (dissolved), copper (dissolved), *E. coli*
Lab Detection Limits Not Low Enough	Cadmium (dissolved), carbontetrachloride, copper (dissolved), lead (dissolved), mercury (dissolved)

Priority	Monitoring Recommendations
Low	Collect more pH samples due to the exceedances. Collect core parameters to represent at least 3 seasons during an assessment period.

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CARNERO LAKE

15020001-0260
67 Acres

Category 3
Inconclusive

Little Colorado

FC - Inconclusive • FBC - Inconclusive • AGL - Inconclusive
AWC - Inconclusive

Use Support

No Exceedances

Monitoring Summary

Sampling period: 10/8/2010 - 4/26/2011

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
AT DEEPEST PART OF LAKE	LCCAR-A	101839	AGF	Data Sharing Partnership

Metal Samples	Nutrients & Related Samples	Other Samples
(1) Arsenic, copper, manganese, zinc, selenium	(1-2) Ammonia, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(1-2) pH, total dissolved solids

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, copper, lead, mercury (or mercury in fish tissue)
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, copper, lead, mercury
Lab Detection Limits Not Low Enough	Selenium

Priority	Monitoring Recommendations
Low	Collect core parameters to represent at least 3 seasons during an assessment period.

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CHEVELON CANYON

Black Canyon - Little Colorado River
15020010-001
19.339 Miles

Category 3
Inconclusive

FC - Inconclusive • FBC - Inconclusive • AGI - Inconclusive
AGL - Inconclusive • AWC - Inconclusive

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Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
Dissolved oxygen	7.0 mg/L	9/29/2010	4.52 mg/L	AWC is inconclusive with 1 exceedance in 2 samples.

Monitoring Summary

Sampling period: 9/29/2010 - 8/3/2012

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
AT ROCK ART ACCESS	LCCHC007.60	105149	USGS	Data Sharing Partnership
BELOW DIVERSION DAM NEAR WINSLOW	LCCHC000.91	100341	AGF	Data Sharing Partnership
ABOVE COW BELL CANYON	LCCHC008.09	105148	USGS	Data Sharing Partnership
AT MOUTH OF BABBITT TANK CANYON, USGS 345214110315600	LCCHC009.38	110162	USGS	Data Sharing Partnership

Metal Samples	Nutrients & Related Samples	Other Samples
(0) None	(0) None	(1-6) Dissolved oxygen, pH, SSC, total dissolved solids

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	Dissolved oxygen
Missing Core Parameters	Zinc (dissolved), nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, boron, manganese, copper, lead, mercury (or mercury in fish tissue)
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, boron, dissolved oxygen, copper, lead, mercury
Lab Detection Limits Not Low Enough	None

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Priority	Monitoring Recommendations
Low	Collect more dissolved oxygen samples due to the exceedance. Collect core parameters to represent at least 3 seasons during an assessment period.

ED_013248_00000576-00011

CHEVELON CANYON

Headwaters - West Chevelon Creek
15020010-006
31.58 Miles

Category 2
Attaining some uses

FC - Attaining • FBC - Attaining • AGI - Attaining
AGL - Attaining • AWC - Inconclusive

Use Support

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
Dissolved oxygen	7.0 mg/L	5/11/2011	5.87 mg/L	AWC is inconclusive with 1 exceedance in 3 samples.
Biocriteria	IBI ≥ 52 attaining IBI 46 - 51 inconclusive IBI ≤ 45 violating	5/19/2014	IBI 23	AWC is inconclusive with 1 violation. There was a previous violation in 2010. Impairment decisions cannot be made until the Impaired Waters Identification Rule is updated.

Monitoring Summary

Sampling period: 12/9/2010 - 5/19/2014

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
AT TELEPHONE RIDGE	LCCHC073.26	100445	ADEQ	Ambient Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(3) Antimony, arsenic, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, selenium, zinc	(3) Ammonia, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(1-5) Dissolved oxygen, *E. coli*, pH, SSC, total dissolved solids, bottom deposits, biocriteria

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	Biocriteria, dissolved oxygen
Missing Core Parameters	None
Missing Seasonal Distribution	None
Lab Detection Limits Not Low Enough	Cadmium (dissolved), copper (dissolved), mercury (dissolved)

Priority	Monitoring Recommendations
High	There were two biocriteria standard violations (2010 and 2014) in this reach, but impairment decisions cannot be made until the Impaired Waters Identification Rule is updated. Collect additional samples to identify possible stressors on benthic macroinvertebrates. Collect more dissolved oxygen samples due to the exceedance. Use lower detection limits for dissolved cadmium and dissolved copper.

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CLEAR CREEK

Sand Draw - Little Colorado
15020008-006
35.493 Miles

Category 3
Inconclusive

DWS - Inconclusive • FC - Inconclusive • FBC - Inconclusive
AGL - Inconclusive • AWC - Inconclusive

No Exceedances

Monitoring Summary

Sampling period: 12/2/2010 - 12/2/2010

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
ABOUT 2.3 MILES UP-STREAM FROM HIGH-WAY 99 BRIDGE	LCCLE004.27	105154	USGS	Data Sharing Partnership

Metal Samples	Nutrients & Related Samples	Other Samples
(0) None	(0) None	(1) Dissolved oxygen, pH

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, nitrite/nitrate, fluoride, arsenic, chromium, copper, lead, mercury (or mercury in fish tissue)
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, nitrite/nitrate, fluoride, arsenic, chromium, copper, lead, mercury
Lab Detection Limits Not Low Enough	None

Priority	Monitoring Recommendations
Low	Not enough data to assess. Collect core parameters to represent at least 3 seasons during an assess-ment period.

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COLTER CREEK

Headwaters - Nutrioso Creek
15020001-293
8.578 Miles

Category 3
Inconclusive

FC - Inconclusive • FBC - Inconclusive • AGL - Inconclusive
AWC - Inconclusive

Use Support

No Exceedances

Monitoring Summary

Sampling period: 10/9/2013 - 5/21/2014

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
NEAR NUTRIOSO, AZ	LCCOL003.03	100935	ADEQ	Ambient Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(4) Antimony, arsenic, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, selenium, zinc	(4) Ammonia, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(1-4) Dissolved oxygen, *E. coli*, pH, SSC, total dissolved solids, bottom deposits, biocriteria

Data Gaps and Monitoring Needs

Parameters Needing More Samples to Assess	Biocriteria
Missing Core Parameters	*E. coli*
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, copper, lead, mercury
Lab Detection Limits Not Low Enough	Cadmium (dissolved), copper (dissolved), mercury (dissolved)

Priority	Monitoring Recommendations
Medium	Collect core parameters to represent at least 3 seasons during an assessment period. Collect a verification sample for biocriteria (IBI on 5/21/14 was 51 and inconclusive). Use lower detection limits for dissolved copper, dissolved cadmium and dissolved mercury. All dissolved copper samples had a detection limit of 10 ug/L, which was not low enough for A&W criteria.

ED_013248_00000576-00014

EAST CLEAR CREEK

Yeager Canyon - Willow Creek
15020008-008
17.442 Miles

Category 2
Attaining some uses

Little Colorado

FC - Attaining • FBC - Attaining • AGI - Attaining
AGL - Attaining • AWC - Inconclusive

Use Support

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
Biocriteria	IBI ≥ 52 attaining IBI 46 - 51 inconclusive IBI ≤ 45 violating	5/20/2014	IBI 23	AWC is inconclusive with 1 biocriteria violation. There was a previous violation in 2010. Impairment decisions cannot be made until the Impaired Waters Identification Rule is updated.

Monitoring Summary

Sampling period: 9/23/2013 - 5/20/2014

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
ABOVE MACKS CROSSING	LCECL009.39	100538	ADEQ	Ambient Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(4) Antimony, arsenic, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, selenium, zinc	(3-4) Ammonia, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(1-4) Dissolved oxygen, *E. coli*, pH, SSC, total dissolved solids, bottom deposits, biocriteria

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	Biocriteria
Missing Core Parameters	None
Missing Seasonal Distribution	None
Lab Detection Limits Not Low Enough	Cadmium (dissolved), selenium, mercury (dissolved)

Priority	Monitoring Recommendations
High	There were two biocriteria standard violations (2010 and 2014) in this reach, but impairment decisions cannot be made until the Impaired Waters Identification Rule is updated. Collect additional samples to identify possible stressors on benthic macroinvertebrates. Use a lower reporting limit for dissolved cadmium.

ED_013248_00000576-00015

HALL CREEK

Headwaters - Little Colorado River
15020001-012
14.304 Miles

Category 2
Attaining some uses

FC - Attaining • FBC - Attaining • AGI - Attaining
AGL - Attaining • AWC - Inconclusive

Use Support

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
SSC	25 mg/L	10/29/2013	29 mg/L	AWC is inconclusive. Insufficient number of samples to calculate a median.
		3/17/2014	53.1 mg/L	

Monitoring Summary

Sampling period: 9/26/2013 - 3/17/2014

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
ABOVE HIGHWAY 273	LCHAL008.83	101263	ADEQ	Ambient Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(3) Antimony, arsenic, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, selenium, zinc	(3) Ammonia, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(3) Dissolved oxygen, *E. coli*, pH, SSC, total dissolved solids

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	None
Missing Seasonal Distribution	None
Lab Detection Limits Not Low Enough	Cadmium (dissolved), copper (dissolved), lead (dissolved), selenium, zinc (dissolved), mercury (dissolved)

Priority	Monitoring Recommendations
Medium	Collect more SSC samples due to the exceedances. Collect a minimum of 4 SSC samples over 1 or 2-year period to determine a median value. Use lower detection limits for dissolved cadmium, copper, lead, mercury and zinc - detection limits were greater than A&W chronic criteria. Collect low level mercury samples.

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KNOLL LAKE

15020008-0750
59 Acres

Category 3
Inconclusive

FC - Inconclusive • FBC - Inconclusive • AGL - Inconclusive
AWC - Inconclusive

Use Support

No Exceedances

Monitoring Summary

Sampling period: 7/13/2010 - 7/13/2010

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
AT MID LAKE	LCKNO-NLS	105819	ADEQ	Clean Lakes Program

Metal Samples	Nutrients & Related Samples	Other Samples
(1) Antimony, arsenic, beryllium, boron, cadmium, copper, lead, manganese, mercury, selenium, zinc	(1) Ammonia, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(1) Dissolved oxygen, pH, total dissolved solids

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, copper, lead, mercury (or mercury in fish tissue)
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, copper, lead, mercury
Lab Detection Limits Not Low Enough	Cadmium (dissolved), copper (dissolved), lead (dissolved), mercury (dissolved)

Priority	Monitoring Recommendations
Low	Collect core parameters to represent at least 3 seasons during an assessment period.

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LAKE MARY (LOWER)

15020015-0890
764 Acres

Category 4A
Not attaining

IMPAIRMENT STATUS

Mercury in fish tissue (EPA 2002)

DWS - Inconclusive • FC - Not Attaining • FBC - Inconclusive
AGL - Inconclusive • AWC - Inconclusive

No Exceedances

Monitoring Summary

Sampling period: No current data

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
N/A				

Metal Samples	Nutrients & Related Samples	Other Samples
None	None	None

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	All designated uses
Missing Seasonal Distribution	All designated uses
Lab Detection Limits Not Low Enough	None

Priority	Monitoring Recommendations
Medium	Collect fish tissue data. Collect core parameters to represent at least 3 seasons during an assessment period.

Impairment Discussion
Mercury TMDL completed in 2011.

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LAKE MARY (UPPER)

15020015-0900
861 Acres

Category 4A
Not attaining

IMPAIRMENT STATUS

Mercury in fish tissue (EPA 2002)

DWS - Inconclusive • FC - Not Attaining • FBC - Inconclusive
AGL - Inconclusive • AWC - Inconclusive

No Exceedances

Monitoring Summary

Sampling period: No samples

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
N/A				

Metal Samples	Nutrients & Related Samples	Other Samples
(0) None	(0) None	(0) None

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	All designated uses
Missing Seasonal Distribution	All designated uses
Lab Detection Limits Not Low Enough	N/A

Priority	Monitoring Recommendations
Medium	Collect fish tissue data. Collect core parameters to represent at least 3 seasons during an assessment period.

Impairment Discussion
Mercury TMDL completed in 2011.

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LEE VALLEY CREEK

Headwaters - Lee Valley Reservoir
15020001-232A
1.6 Miles

Category 3
Inconclusive

Use Support

FC - Inconclusive • FBC - Inconclusive • AWC - Inconclusive

No Exceedances

Monitoring Summary

Sampling period: 9/25/2013 - 10/29/2013

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
ABOVE LEE VALLEY RESERVOIR	LCLVL001.32	101243	ADEQ	Ambient Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(2) Antimony, arsenic, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, selenium, zinc	(2) Ammonia, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(1-2) Dissolved oxygen, *E. coli*, pH, SSC, total dissolved solids, bottom deposits

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, mercury
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, mercury
Lab Detection Limits Not Low Enough	Cadmium (dissolved), copper (dissolved), lead (dissolved), zinc (dissolved), mercury (dissolved)

Priority	Monitoring Recommendations
Low	Collect core parameters to represent at least 3 seasons during an assessment period. Use lower detection limits for hardness (< 13 mg/L) and the following dissolved metals: copper (< 10 ug/L), cadmium (< 1.0 ug/L), zinc (< 50 ug/L) and mercury.

ED_013248_00000576-00020

LEE VALLEY RESERVOIR

15020001-0770
37.8 Acres

Category 3
Inconclusive

FC - Inconclusive • FBC - Inconclusive • AGI - Inconclusive
AGL - Inconclusive • AWC - Inconclusive

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
pH	9.0 SU	8/13/2013	9.7 SU	AWC, FBC, AGL and AGI are inconclusive with 1 exceedance in 7 samples.
Nitrogen	1.1 mg/L	10/8/2010	2.05 mg/L	FBC and AWC are inconclusive with 6 exceedances in 7 samples (binomial).
		9/13/2011	1.56 mg/L	
		11/5/2012	2.54 mg/L	
		5/13/2013	1.26 mg/L	
		8/13/2013	3.15 mg/L	
		10/22/2013	1.39 mg/L	

Monitoring Summary

Sampling period: 10/8/2010 - 10/22/2013

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
AT DAM	LCLEE-A	101356	AGF	Data Sharing Partnership

Metal Samples	Nutrients & Related Samples	Other Samples
(1) Arsenic, copper, manganese, zinc, selenium	(3-7) Ammonia, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(1-7) Dissolved oxygen, pH, total dissolved solids

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	pH, nitrogen
Missing Core Parameters	Zinc (dissolved), dissolved oxygen, cadmium (dissolved), copper (dissolved), *E. coli*, boron, manganese, copper, lead, mercury (or mercury in fish tissue)
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, cadmium (dissolved), copper (dissolved), *E. coli*, boron, manganese, copper, lead, mercury
Lab Detection Limits Not Low Enough	Selenium

ED_013248_00000576-00021

Priority	Monitoring Recommendations
Medium	Collect additional pH and nitrogen samples due to the exceedances. Collect a minimum of 20 nitrogen samples to determine impairment.

ED_013248_00000576-00022

LITTLE COLORADO EAST FORK

Headwaters - Little Colorado River
15020001-230
10.597 Miles

Category 2
Attaining some uses

FC - Attaining • FBC - Attaining • AGL - Attaining
AWC - Inconclusive

Use Support

No Exceedances

Monitoring Summary

Sampling period: 9/25/2013 - 4/29/2014

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
1.5 MILES UPSTREAM FROM PHELPS CABIN	LCELR008.70	107402	ADEQ	Ambient Monitoring
BELOW COULTER RES-ERVOIR	LCELR005.67	109742	ADEQ	Ambient Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(6) Antimony, arsenic, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, selenium, zinc	(6) Ammonia, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(2-6) Dissolved oxygen, *E. coli*, pH, SSC, total dissolved solids, biocriteria, bottom deposits

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	None
Missing Seasonal Distribution	Dissolved oxygen
Lab Detection Limits Not Low Enough	Cadmium (dissolved), copper (dissolved), lead (dissolved), zinc (dissolved), mercury (dissolved)

Priority	Monitoring Recommendations
Low	Collect core parameters to represent at least 3 seasons during an assessment period. Use lower detection limits for hardness (< 13 mg/L) and the following dissolved metals: copper (< 10 ug/L), cadmium (< 0.5 ug/L), zinc (< 50 ug/L) and mercury.

ED_013248_00000576-00023

LITTLE COLORADO RIVER

Coyote Creek - Lyman Lake
15020001-005
3.427 Miles

Category 4A
Not attaining

IMPAIRMENT STATUS

Turbidity / SSC (1998)

FC - Attaining • FBC - Inconclusive • AGI - Attaining
AGL - Attaining • AWC - Not Attaining

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
SSC	25 mg/L	10/9/2013	35 mg/L	AWC is attaining with no median exceedances.
		1/21/2015	30.6 mg/L	
Biocriteria	IBI ≥ 52 attaining IBI 46 - 51 inconclusive IBI ≤ 45 violating	5/20/2014	IBI 27	AWC is inconclusive with 1 biocriteria violation.

Monitoring Summary

Sampling period: 10/9/2013 - 6/9/2015

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
ABOVE LYMAN LAKE USGS 09384000	LCLCR323.60	101174	ADEQ	Ambient Monitoring
ABOVE LYMAN LAKE	LCLCR323.69	101723	ADEQ	TMDL Monitoring
AT RICHVILLE VALLEY NEAR SPRINGERVILL, AZ. SITE 14	LCLCR324.92	103963	ADEQ	TMDL Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(4) Antimony, arsenic, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, selenium, zinc	(4) Ammonia, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(2-6) Dissolved oxygen, *E. coli*, pH, SSC, total dissolved solids, biocriteria, bottom deposits

ED_013248_00000576-00024

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	Biocriteria
Missing Core Parameters	*E. coli*
Missing Seasonal Distribution	*E. coli*
Lab Detection Limits Not Low Enough	Cadmium (dissolved), selenium, mercury (dissolved)

Priority	Monitoring Recommendations
Medium	Continue effectiveness monitoring for SSC. Collect a verification sample for biocriteria. Collect core parameters to represent at least 3 seasons during an assessment period.

Impairment Discussion
Reach remains not-attaining for SSC. Turbidity TMDL approved in 2002. ADEQ has funded many projects in the Coyote Creek watershed that drains into the LCR. Sediment loading has considerably decreased since the last assessment. Although there were 2 single sample exceedances, either the annual median of 4 samples or 2-year median of 6 samples did not exceed the standard. Collect more samples to verify attainment.

ED_013248_00000576-00025

LITTLE COLORADO RIVER

Carnero Creek - Coyote Creek
15020001-007
3.079 Miles

Category 3
Inconclusive

FC - Inconclusive • FBC - Inconclusive • AGI - Inconclusive
AGL - Inconclusive • AWC - Inconclusive

Draft

No Exceedances

Monitoring Summary

Sampling period: 6/9/2015 - 6/9/2015

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
AT NEILSON SPRING	LCLCR325.37	110608	ADEQ	TMDL Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(0) None	(0) None	(1) Dissolved oxygen, pH, SSC, total dissolved solids

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, boron, manganese, copper, lead, mercury (or mercury in fish tissue)
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, boron, manganese, copper, lead, mercury
Lab Detection Limits Not Low Enough	None

Priority	Monitoring Recommendations
Low	Collect core parameters to represent at least 3 seasons during an assessment period.

ED_013248_00000576-00026

LITTLE COLORADO RIVER

Chevelon Creek - Cottonwood Wash
15020008-014
8.51 Miles

Category 3
Inconclusive

DWS - Inconclusive • FC - Inconclusive • FBC - Inconclusive
AGI - Inconclusive • AGL - Inconclusive
AWW - Inconclusive

Draft Report

No Exceedances

Monitoring Summary

Sampling period: 12/1/2010 - 12/3/2010

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
1.3 MILES DOWN-STREAM FROM CHEV-ELON CANYON	LCLCR185.36	105171	USGS	Data Sharing Partnership
2.7 MILES DOWN-STREAM FROM CHEV-ELON CANYON	LCLCR184.28	105172	USGS	Data Sharing Partnership
3.5 MI DS OF CHEVELON CANYON MOUTH USGS	LCLCR182.60	109325	USGS	Data Sharing Partnership
BELOW MOUTH OF CHEV-ELON CANYON NEAR WINSLOW, AZ.	LCLCR186.28	105170	USGS	Data Sharing Partnership

Metal Samples	Nutrients & Related Samples	Other Samples
(0) None	(0) None	(3-4) Dissolved oxygen, pH

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	Zinc (dissolved), nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, nitrite/nitrate, fluoride, arsenic, chromium, boron, manganese, copper, lead, mercury (or mercury in fish tissue)
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, nitrite/nitrate, fluoride, arsenic, chromium, boron, manganese, copper, lead, mercury
Lab Detection Limits Not Low Enough	None

Priority	Monitoring Recommendations
Low	Not enough data to assess. Collect core parameters to represent at least 3 seasons during an assessment period.

ED_013248_00000576-00027

LITTLE COLORADO RIVER

34°59'17.66"/110°37'14.43" - Jacks Canyon
15020008-005
1.824 Miles

Category 3
Inconclusive

DWS - Inconclusive • FC - Inconclusive • FBC - Inconclusive
AGI - Inconclusive • AGL - Inconclusive • AWW - Inconclusive

Discussion Draft

No Exceedances

Monitoring Summary

Sampling period: 12/2/2010 - 12/2/2010

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
ABOVE MOUTH OF CLEAR CREEK NEAR WINSLOW, AZ.	LCLCR177.08	103981	USGS	Data Sharing Partnership
BELOW MOUTH OF CLEAR CREEK NEAR WINSLOW, AZ.	LCLCR176.92	103983	USGS	Data Sharing Partnership

Metal Samples	Nutrients & Related Samples	Other Samples
(0) None	(0) None	(2) Dissolved oxygen, pH

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, nitrite/nitrate, fluoride, arsenic, chromium, boron, manganese, copper, lead, mercury (or mercury in fish tissue)
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, nitrite/nitrate, fluoride, arsenic, chromium, boron, manganese, copper, lead, mercury
Lab Detection Limits Not Low Enough	None

Priority	Monitoring Recommendations
Low	Not enough data to assess. Collect core parameters to represent at least 3 seasons during an assessment period.

ED_013248_00000576-00028

LITTLE COLORADO RIVER

HUC 15020001 boundary - Reach 15020002-025
15020002-024
13.866 Miles

Category 3
Inconclusive

DWS - Inconclusive • FC - Inconclusive • FBC - Inconclusive
AGI - Inconclusive • AGL - Inconclusive • AWC - Inconclusive

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
Dissolved oxygen	7.0 mg/L	5/10/2011	6.7 mg/L	AWC is inconclusive with 1 exceedance in 1 sample.
SSC	25 mg/L	5/10/2011	109.9 mg/L	AWC is inconclusive with 1 exceedance in 1 sample.

Monitoring Summary

Sampling period: 5/10/2011 - 5/10/2011

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
SOUTH OF SALADO	LCLCR311.31	104720	ADEQ	TMDL Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(0) None	(0) None	(1) Dissolved oxygen, pH, SSC, total dissolved solids

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	SSC, dissolved oxygen
Missing Core Parameters	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, nitrite/nitrate, fluoride, arsenic, chromium, boron, manganese, copper, lead, mercury (or mercury in fish tissue)
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, nitrite/nitrate, fluoride, arsenic, chromium, boron, manganese, copper, lead, mercury
Lab Detection Limits Not Low Enough	None

Priority	Monitoring Recommendations
Low	Collect additional SSC and dissolved oxygen samples due to the exceedances. Collect core parameters to represent at least 3 seasons during an assessment period.

ED_013248_00000576-00029

LITTLE COLORADO RIVER

Milky Wash - Silver Creek
15020002-005
16.499 Miles

Category 3
Inconclusive

DWS - Inconclusive • FC - Inconclusive • FBC - Inconclusive
AGI - Inconclusive • AGL - Inconclusive • AWC - Inconclusive

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
Dissolved oxygen	7.0 mg/L	9/8/2010	5.55 mg/L	AWC is inconclusive with 1 exceedance in 2 samples.
E. coli	235 cfu/100 mL	8/6/2010	12033 cfu/100 mL	FBC is inconclusive. No data in the last 3 years of assessment.
		9/8/2010	3873 cfu/100 mL	
SSC	25 mg/L	8/6/2010	18692 mg/L	AWC is inconclusive. The exceedance occurred during a storm event. Insufficient number of samples to assess.

Monitoring Summary

Sampling period: 8/6/2010 - 9/8/2010

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
BELOW MEXICAN HOLLOW WASH	LCLCR232.24	106442	ADEQ	TMDL Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(0) None	(0) None	(1-2) Dissolved oxygen, *E. coli*, pH, SSC, total dissolved solids

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	Dissolved oxygen
Missing Core Parameters	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, nitrite/nitrate, fluoride, arsenic, chromium, lead, boron, manganese, copper, lead, mercury (or mercury in fish tissue)
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, nitrite/nitrate, fluoride, arsenic, chromium, lead, boron, manganese, copper, lead, mercury
Lab Detection Limits Not Low Enough	None

ED_013248_00000576-00030

Priority	Monitoring Recommendations
Medium	Collect additional SSC, dissolved oxygen and *E. coli* samples due to the exceedances. Collect core parameters to represent at least 3 seasons during an assessment period.

ED_013248_00000576-00031

LITTLE COLORADO RIVER

Nutrioso Creek - Carnero Creek
15020001-009
12.108 Miles

Category 4A
Not attaining

Turbidity / SSC (1998)

IMPAIRMENT STATUS

FC - Attaining • FBC - Inconclusive • AGI - Attaining
AGL - Attaining • AWC - Not Attaining

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
Dissolved oxygen	7.0 mg/L	9/18/2013	6.64 mg/L	AWC is inconclusive with 1 exceedance in 8 samples.
E. coli	235 cfu/100 mL	9/18/2013	261.3 cfu/100 mL	FBC is inconclusive with 1 exceedance in 3 samples.
SSC	25 mg/L	9/18/2013	120 mg/L	AWC is attaining with no median exceedances. The exceedance on 9/18/13 occurred within 48 hours after a storm event and was excluded from the median calculation.
		6/9/2015	41.6 mg/L	
Nitrogen	1.5 mg/L	9/18/2013	1.9 mg/L	AWC and FBC are inconclusive with 1 exceedance in 9 samples. The standard only applies when in-stream turbidity is < 50 NTU, but no turbidity measurement was associated with this sample.

Monitoring Summary

Sampling period: 3/17/2011 - 6/9/2015

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
AT WENIMA BRIDGE	LCLCR336.76	102567	ADEQ	TMDL Monitoring
BELOW MASS WASTING SITE	LCLCR336.15	108703	ADEQ	TMDL Monitoring
UPSTREAM OF PROPERTY FENCE LINE	LCLCR335.52	108704	ADEQ	TMDL Monitoring
AT WENIMA WILDLIFE AREA ON HOOPER ROAD	LCLCR336.72	102290	ADEQ	Ambient Monitoring
BELOW WENIMA RESTORATION	LCLCR335.06	109923	ADEQ	TMDL Monitoring
BEGINING OF THE WENIMA WILDLIFE REFUGE	LCLCR336.78	104562	AGF	Data Sharing Partnership

ED_013248_00000576-00032

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
UPSTREAM OF WENIMA RESTORATION	LCLCR336.89	108702	ADEQ	TMDL Monitoring
BELOW SPRINGERVILLE WWTP	LCLCR340.02	100331	ADEQ	TMDL Monitoring
AT CONFLUENCE WITH CARNERO CREEK	LCLCR328.04	102289	ADEQ	TMDL Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(4-7) Antimony, arsenic, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, selenium, zinc	(4-10) Ammonia, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(1-21) Dissolved oxygen, *E. coli*, pH, SSC, total dissolved solids, biocriteria, bottom deposits

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	Nitrogen, dissolved oxygen, *E. coli*
Missing Core Parameters	None
Missing Seasonal Distribution	None
Lab Detection Limits Not Low Enough	Cadmium (dissolved), copper (dissolved), selenium, mercury (dissolved)

Priority	Monitoring Recommendations
Medium	Continue effectiveness monitoring.

Impairment Discussion
Reach remains not-attaining for SSC. Turbidity TMDL approved in 2002. ADEQ funded the Wenima Restoration Project in 2009, which was completed in 2013. Sediment loading has considerably decreased since the last assessment. Although there were 2 single sample exceedances, either the annual median of 4 samples or 2-year median of 5 samples did not exceed the standard. Collect more samples to verify attainment.

ED_013248_00000576-00033

LITTLE COLORADO RIVER

Silver Creek - Carr L Wash
15020002-004
6.067 Miles

Category 4A
Not attaining

IMPAIRMENT STATUS

SSC (2006/8) and E. coli (2004)

DWS - Inconclusive • FC - Inconclusive • FBC - Not Attaining
AGI - Inconclusive • AGL - Inconclusive • AWC - Not Attaining

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
E. coli	235 cfu/100 mL	8/6/2010	5794 cfu/100 mL	FBC remains not-attaining. No new data in the last 3 years of assessment.
		9/8/2010	4884 cfu/100 mL	
SSC	25 mg/L	8/6/2010	13121 mg/L	AWC remains not-attaining. The exceedance occurred during a storm event. Insufficient number of samples to assess.

Monitoring Summary

Sampling period: 8/6/2010 - 9/8/2010

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
NEAR WOODRUFF BRIDGE, AZ USGS 09394500	LCLCR226.31	100334	ADEQ	TMDL Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(0) None	(0) None	(1-2) Dissolved oxygen, *E. coli*, pH, SSC, total dissolved solids

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, nitrite/nitrate, fluoride, arsenic, chromium, lead, boron, manganese, copper, mercury (or mercury in fish tissue)
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, nitrite/nitrate, fluoride, arsenic, chromium, lead, boron, manganese, copper, mercury
Lab Detection Limits Not Low Enough	None

ED_013248_00000576-00034

Priority	Monitoring Recommendations
Medium	Collect additional *E. coli* and SSC samples to monitor effectiveness of TMDL strategies, once implemented. Collect core parameters to represent at least 3 seasons during an assessment period.

Impairment Discussion
Remains not attaining for *E. coli* (2004) and SSC (2006). TMDLs completed in 2014.

ED_013248_00000576-00035

LITTLE COLORADO RIVER

Water Canyon - Nutrioso Creek
15020001-010
3.801 Miles

Category 4A
Not attaining

IMPAIRMENT STATUS

Turbidity / SSC (1998)

FC - Inconclusive • FBC - Inconclusive • AGI - Inconclusive
AGL - Inconclusive • AWC - Not Attaining

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
SSC	25 mg/L	6/9/2015	51.2 mg/L	AWC remains not-attaining. Not enough data to calculate a median.

Monitoring Summary

Sampling period: 6/9/2015 - 6/9/2015

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
ON THE EAST SIDE OF WET LAND AREA	LCLCR340.65	100333	ADEQ	TMDL Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(0) None	(0) None	(1) Dissolved oxygen, pH, SSC, total dissolved solids

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, boron, manganese, copper, lead, mercury (or mercury in fish tissue)
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, boron, manganese, copper, lead, mercury
Lab Detection Limits Not Low Enough	None

ED_013248_00000576-00036

Priority	Monitoring Recommendations
Medium	Continue effectiveness monitoring.

Impairment Discussion
Remains not attaining for turbidity/SSC. Turbidity TMDL approved in 2002. Not enough data to assess.

ED_013248_00000576-00037

LITTLE COLORADO RIVER

West Fork Little Colorado -Water Canyon
15020001-011
19.776 Miles

Category 3
Inconclusive

FC - Inconclusive • FBC - Inconclusive • AGI - Inconclusive
AGL - Inconclusive • AWC - Inconclusive

No Exceedances

Monitoring Summary

Sampling period: 4/10/2014 - 6/10/2015

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
@ COUNTY ROAD 4124 PULLOUT	LCLCR350.73	102283	ADEQ	TMDL Monitoring
AT COUNTY ROAD N 4036 (X DIAMOND RANCH)	LCLCR352.03	102279	ADEQ	TMDL Monitoring
ABOVE BIG DITCH IN-TAKE	LCLCR349.82	109922	ADEQ	TMDL Monitoring
BELOW COON CREEK	LCLCR347.91	110462	ADEQ	TMDL Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(0) None	(0) None	(5) Dissolved oxygen, pH, SSC, total dissolved solids

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	Zinc (dissolved), nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, boron, manganese, copper, lead, mercury
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, boron, manganese, copper, lead, mercury
Lab Detection Limits Not Low Enough	None

Priority	Monitoring Recommendations
Low	Collect core parameters to represent at least 3 seasons during an assessment period.

ED_013248_00000576-00038

LITTLE COLORADO RIVER

reach 15020002-025 - Big Hollow Wash
15020002-023
16.308 Miles

Category 3
Inconclusive

DWS - Inconclusive • FC - Inconclusive • FBC - Inconclusive
AGI - Inconclusive • AGL - Inconclusive • AWC - Inconclusive

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
Dissolved oxygen	7.0 mg/L	5/10/2011	4.26 mg/L	AWC is inconclusive with 1 exceedance in 1 sample.
SSC	25 mg/L	5/10/2011	48.825 mg/L	AWC is inconclusive with 1 single sample exceedance. Not enough data to calculate a median.

Monitoring Summary

Sampling period: 5/10/2011 - 5/10/2011

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
AT THE RESERVOIR	LCLCR301.17	103962	ADEQ	TMDL Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(0) None	(0) None	(1) Dissolved oxygen, pH, SSC, total dissolved solids

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	SSC, dissolved oxygen
Missing Core Parameters	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, nitrite/nitrate, fluoride, arsenic, chromium, lead, boron, manganese, copper, mercury
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, nitrite/nitrate, fluoride, arsenic, chromium, lead, boron, manganese, copper, mercury
Lab Detection Limits Not Low Enough	None

Priority	Monitoring Recommendations
Low	Collect additional SSC and dissolved oxygen samples due to the exceedances. Collect core parameters to represent at least 3 seasons during an assessment period.

ED_013248_00000576-00039

LITTLE COLORADO WEST FORK

Government Springs - Little Colorado River
15020001-013B
2.226 Miles

Category 2
Attaining some uses

FC - Attaining • FBC - Attaining • AGL - Attaining
AWC - Inconclusive

Use Support

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
SSC	25 mg/L	4/25/2012	30 mg/L	AWC is inconclusive. Insufficient number of samples to calculate a median.
Bottom deposits	< 30% fines	6/10/2013	33%	AWC is inconclusive with 1 violation in 2 samples.

Monitoring Summary

Sampling period: 8/15/2011 - 6/10/2013

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
AT GOVERNMENT SPRINGS	LCWLR000.92	100328	ADEQ	Ambient Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(5) Antimony, arsenic, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, selenium, zinc	(5) Ammonia, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(2-5) Dissolved oxygen, *E. coli*, pH, SSC, total dissolved solids, bottom deposits, biocriteria

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	SSC, bottom deposits
Missing Core Parameters	None
Missing Seasonal Distribution	None
Lab Detection Limits Not Low Enough	Cadmium (dissolved), copper (dissolved), lead (dissolved), zinc (dissolved), mercury (dissolved)

Priority	Monitoring Recommendations
Medium	Collect more SSC and bottom deposit samples due to the exceedances. Collect a minimum of 4 SSC samples to determine a median value. Use lower detection limits for dissolved cadmium, copper, lead, mercury and zinc - detection limits were greater than A&W chronic criteria. There was one dissolved copper exceedance in the last assessment.

ED_013248_00000576-00040

LITTLE COLORADO WEST FORK

Headwaters - Government Springs
15020001-013A
9.075 Miles

Category 2
Attaining some uses

Little Colorado

Use Support

FC - Attaining • FBC - Attaining • AWC - Inconclusive

No Exceedances

Monitoring Summary

Sampling period: 9/17/2013 - 4/30/2014

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
2.5 MILES UPSTREAM OF SHEEP CROSSING CAMPGROUND	LCWLR007.37	107383	ADEQ	Ambient Monitoring
ABOVE GOVERNMENT SPRINGS	LCWLR001.23	100695	ADEQ	Ambient Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(6) Antimony, arsenic, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, selenium, zinc	(6) Ammonia, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(1-6) Dissolved oxygen, *E. coli*, pH, SSC, total dissolved solids, bottom deposits, biocriteria

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	None
Missing Seasonal Distribution	None
Lab Detection Limits Not Low Enough	Cadmium (dissolved), copper (dissolved), lead (dissolved), selenium, zinc (dissolved), mercury (dissolved)

Priority	Monitoring Recommendations
Low	Unable to determine attainment of A&W due to high detection limits of dissolved metal core parameters. Use lower detection limits for dissolved copper (< 10 ug/L), dissolved cadmium (< 1.0 ug/L) and dissolved zinc (< 50 ug/L).

ED_013248_00000576-00041

LONG LAKE (LOWER)

15020008-0820
323.1 Acres

Category 4A
Not attaining

IMPAIRMENT STATUS

Mercury in Fish Tissue (2004)

FC - Not Attaining • FBC - Inconclusive
AWC - Inconclusive • AGL - Inconclusive • AGI - Inconclusive

No Exceedances

Monitoring Summary

Sampling period: No samples

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
N/A				

Metal Samples	Nutrients & Related Samples	Other Samples
(0) None	(0) None	(0) None

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	All core parameters
Missing Seasonal Distribution	All core parameters
Lab Detection Limits Not Low Enough	N/A

Priority	Monitoring Recommendations
Medium	Collect fish tissue data. Collect at least 3 of each core parameter to represent 3 seasons over the assessment period.

Impairment Discussion
Remains not attaining for mercury in fish tissue. TMDL approved in 2011.

ED_013248_00000576-00042

LYMAN RESERVOIR

15020001-0850
1308 Acres

Category 5
Impaired

IMPAIRMENT STATUS

Mercury in fish tissue (EPA 2004)

FC - Impaired • FBC - Inconclusive • AGI - Inconclusive
AGL - Inconclusive • AWC - Inconclusive

No Exceedances

Monitoring Summary

Sampling period: No samples

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
N/A				

Metal Samples	Nutrients & Related Samples	Other Samples
(0) None	(0) None	(0) None

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	All core parameters
Missing Seasonal Distribution	All core parameters
Lab Detection Limits Not Low Enough	N/A

Priority	Monitoring Recommendations
High	Collect samples in support of TMDL development.

Impairment Discussion
Remains not attaining for mercury in fish tissue. TMDL approved in 2011. Fish consumption advisory issued in 2002 and still in effect.

ED_013248_00000576-00043

NELSON RESERVOIR

15020001-1000
67.1 Acres

Category 3
Inconclusive

FC - Inconclusive • FBC - Inconclusive • AGI - Inconclusive
AGL - Inconclusive • AWC - Inconclusive

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
pH	9.0 SU	8/7/2012	9.6 SU	FBC, AWC, AGL and AGI are inconclusive with 2 exceedances in 6 samples (binomial).
		8/14/2013	9.5 SU	

Monitoring Summary

Sampling period: 9/14/2011 - 10/23/2013

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
AZGF UPPER END SITE	LCNEL-AZGF	110426	AGF	Data Sharing Partnership
AT DAM	LCNEL-A	101840	AGF	Data Sharing Partnership

Metal Samples	Nutrients & Related Samples	Other Samples
(1) Manganese	(4-8) Ammonia, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(7) pH, total dissolved solids

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	pH
Missing Core Parameters	Zinc (dissolved), dissolved oxygen, cadmium (dissolved), copper (dissolved), *E. coli*, boron, manganese, copper, lead, mercury (or mercury in fish tissue)
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, cadmium (dissolved), copper (dissolved), *E. coli*, boron, manganese, copper, lead, mercury
Lab Detection Limits Not Low Enough	None

Priority	Monitoring Recommendations
Low	Collect more pH samples due to the exceedances. Collect core parameters to represent at least 3 seasons during an assessment period.

NUTRIOSO CREEK

Headwaters - Nelson Reservoir
15020001-017A
13.3 Miles

Category 2
Attaining some uses

FC - Attaining • FBC - Attaining • AGI - Attaining
AGL - Attaining • AWC - Inconclusive

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
Copper (dissolved)	10.5 ug/L chronic @ 120 mg/L hardness	7/1/2010	11 ug/L	AWC is inconclusive with 1 chronic exceedance. Two out of five samples had the detection limit greater than the chronic criterion.
Dissolved oxygen	7.0 mg/L	5/20/2014	5.79 mg/L	AWC is inconclusive with 1 exceedance in 6 samples.
SSC	25 mg/L	9/18/2013	31 mg/L	AWC is attaining with no median exceedances (5 samples over a 2-year period)
		1/20/2015	41.3 mg/L	
		6/9/2015	65.2 mg/L	

Monitoring Summary

Sampling period: 7/1/2010 - 6/9/2015

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
AT PADDY CREEK RESTAURANT	LCNUT025.35	102006	ADEQ	Ambient Monitoring
BELOW EC BAR LAST SITE	LCNUT017.83	109962	ADEQ	TMDL Monitoring
AT COUNTY ROAD 2112	LCNUT021.45	101999	ADEQ	TMDL Monitoring
BELOW RIGGS CREEK	LCNUT015.01	110442	ADEQ	TMDL Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(5) Antimony, arsenic, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, selenium, zinc	(5) Ammonia, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(2-11) Dissolved oxygen, *E. coli*, pH, SSC, total dissolved solids

ED_013248_00000576-00045

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	Dissolved oxygen, copper (dissolved)
Missing Core Parameters	None
Missing Seasonal Distribution	None
Lab Detection Limits Not Low Enough	Cadmium (dissolved), copper (dissolved), selenium, mercury (dissolved)

Priority	Monitoring Recommendations
Medium	Collect additional dissolved copper and dissolved oxygen due to the exceedances. Use lower detection limits for dissolved cadmium and copper.

ED_013248_00000576-00046

NUTRIOSO CREEK

Nelson Reservoir - Picnic Creek
15020001-017B
13.5 Miles

Category 4A
Not attaining

IMPAIRMENT STATUS

Turbidity/SSC (1998)

FC - Attaining • FBC - Attaining • AGI - Attaining
AGL - Attaining • AWC - Not Attaining

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
Dissolved oxygen	7.0 mg/L	6/9/2015	4.71 mg/L	AWC is inconclusive with 1 exceedance in 4 samples.
SSC	25 mg/L	9/18/2013	39 mg/L	AWC is attaining with no median exceedances. The exceedance on 9/18/13 occurred during a storm event and was excluded from the median calculation.
		5/28/2014	34.1 mg/L	
Biocriteria	IBI ≥ 52 attaining IBI 46 - 51 inconclusive IBI ≤ 45 violating	5/28/2014	IBI 17	AWC is inconclusive with 1 violation of biocriteira.

Monitoring Summary

Sampling period: 9/18/2013 - 6/9/2015

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
DOWNSTREAM OF NELSON RESERVOIR	LCNUT013.33	101722	ADEQ	TMDL Monitoring
AT HIGHWAY 180 NEAR MILEPOST 407	LCNUT011.29	101988	ADEQ	Ambient Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(4) Antimony, arsenic, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, selenium, zinc	(4) Ammonia, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(1-5) Dissolved oxygen, *E. coli*, pH, SSC, total dissolved solids, bottom deposits, biocriteria

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	Dissolved oxygen, biocriteria
Missing Core Parameters	None
Missing Seasonal Distribution	None
Lab Detection Limits Not Low Enough	Cadmium (dissolved), selenium, mercury (dissolved)

ED_013248_00000576-00047

Priority	Monitoring Recommendations
Medium	Continue effectiveness monitoring. Collect a follow-up macroinvertebrate sample to confirm the bioassessment result.

Impairment Discussion
Remains not attaining for turbidity/SSC. Turbidity TMDL completed in 2000. Although there were no SSC median exceedances, the biocriteria violation could indicate a persistent fine sediment problem.

ED_013248_00000576-00048

NUTRIOSO CREEK

Picnic Creek - Little Colorado River
15020001-015
3.461 Miles

Category 4A
Not attaining

Turbidity/SSC (1998)

IMPAIRMENT STATUS

FC - Inconclusive • FBC - Inconclusive • AGI - Inconclusive
AGL - Inconclusive • AWC - Not Attaining

No Exceedances

Monitoring Summary

Sampling period: 6/9/2015 - 6/9/2015

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
AT MOUTH NEAR SPRINGERVILLE, AZ.	LCNUT000.01	104318	ADEQ	TMDL Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(0) None	(0) None	(1) Dissolved oxygen, pH, SSC, total dissolved solids

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, boron, manganese, copper, lead, mercury
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, boron, manganese, copper, lead, mercury
Lab Detection Limits Not Low Enough	None

Priority	Monitoring Recommendations
Medium	Collect more samples for effectiveness monitoring.

Impairment Discussion
Remains not attaining for turbidity/SSC. Turbidity TMDL completed in 2000. Need more data.

ED_013248_00000576-00049

PINTAIL LAKE

15020005-5000
25.7 Acres

Category 5
Impaired

IMPAIRMENT STATUS

Ammonia (2010)

PBC - Inconclusive • AWEDW - Impaired

No Exceedances

Monitoring Summary

Sampling period: No current data

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
N/A				

Metal Samples	Nutrients & Related Samples	Other Samples
None	None	None

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	All designated uses
Missing Seasonal Distribution	All designated uses
Lab Detection Limits Not Low Enough	None

Priority	Monitoring Recommendations
High	Collect samples in support of TMDL development.

Impairment Discussion
Remains impaired for ammonia (2010). No data since 2005.

ED_013248_00000576-00050

PUERCO RIVER

Dead Wash - Ninemile Wash
15020007-007
0.2 Miles

Category 5
Impaired

Copper(2010) and E. coli (2012/14)

IMPAIRMENT STATUS

DWS - Inconclusive • FC - Inconclusive • FBC - Impaired
AGI - Inconclusive • AGL - Inconclusive
AWW - Impaired

No Exceedances

Monitoring Summary

Sampling period: No samples

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
N/A				

Metal Samples	Nutrients & Related Samples	Other Samples
(0) None	(0) None	(0) None

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	All core parameters
Missing Seasonal Distribution	All core parameters
Lab Detection Limits Not Low Enough	N/A

Priority	Monitoring Recommendations
High	Collect samples in support of TMDL development.

Impairment Discussion
Remains impaired for copper (2010) and *E. coli* (2012/14).

ED_013248_00000576-00051

RAINBOW LAKE

15020005-1170
110 Acres

Category 4A
Not attaining

Narrative nutrients, pH and dissolved oxygen (1992)

IMPAIRMENT STATUS

FC - Inconclusive • FBC - Not Attaining • AGI - Not Attaining
AGL - Not Attaining • AWC - Not Attaining

No Exceedances

Monitoring Summary

Sampling period: 5/13/2015 - 5/14/2015

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
AT DAM	LCRAI-A	100069	ADEQ	TMDL Monitoring
MID LAKE	LCRAI-B	100070	ADEQ	TMDL Monitoring
MID LAKE NEAR INLET	LCRAI-C	100071	ADEQ	TMDL Monitoring
WEST BAY AT LARSON RD (SWALE AREA)	LCRAI-SWALE	110588	ADEQ	TMDL Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(1) Arsenic, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, selenium, zinc	(4) Ammonia, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(3) pH

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	Zinc (dissolved), dissolved oxygen, cadmium (dissolved), copper (dissolved), *E. coli*, boron, manganese, copper, lead, mercury (or mercury in fish tissue)
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, boron, manganese, copper, lead, mercury
Lab Detection Limits Not Low Enough	Cadmium (dissolved)

ED_013248_00000576-00052

Priority	Monitoring Recommendations
Medium	Continue effectiveness monitoring for nutrients, pH and dissolved oxygen. Collect core parameters to represent at least 3 seasons during an assessment period.

Impairment Discussion
Remains not attaining for narrative nutrients, pH and dissolved oxygen (1992). Narrative nutrient TMDL completed in 2000. ADEQ is working with the watershed group to collect more data and determine possible Best Management Practices.

ED_013248_00000576-00053

RIVER RESERVOIR

15020001-1220
140.5 Acres

Category 3
Inconclusive

FC - Inconclusive • FBC - Inconclusive • AGI - Inconclusive
AGL - Inconclusive • AWC - Inconclusive

No Exceedances

Monitoring Summary

Sampling period: 9/12/2011 - 11/5/2012

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
AT DAM SITE	LCRIV-A	105269	AGF	Data Sharing Partnership
MID LAKE	LCRIV-B	102556	AGF	Data Sharing Partnership

Metal Samples	Nutrients & Related Samples	Other Samples
(1) Manganese	(2-4) Ammonia, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(4) pH, total dissolved solids

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	Zinc (dissolved), dissolved oxygen, pH, cadmium (dissolved), copper (dissolved), *E. coli*, boron, manganese, copper, lead, mercury (or mercury in fish tissue)
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, pH, cadmium (dissolved), copper (dissolved), *E. coli*, boron, manganese, copper, lead, mercury
Lab Detection Limits Not Low Enough	None

Priority	Monitoring Recommendations
Low	Collect core parameters to represent at least 3 seasons during an assessment period.

ED_013248_00000576-00054

ROSEY CREEK

Headwaters - Benny Creek @ 34 02'28.72"/109 27'24.3"
15020001-222
3.059 Miles

Category 2
Attaining some uses

Use Support

FC - Attaining • FBC - Attaining • AWC - Inconclusive

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
SSC	25 mg/L	9/17/2013	34 mg/L	AWC is attaining. The exceedance occurred within 48 hours of a storm event.
Biocriteria	IBI ≥ 52 attaining IBI 46 - 51 inconclusive IBI ≤ 45 violating	4/28/2014	IBI 39	AWC is inconclusive with 1 biocriteria violation.

Monitoring Summary

Sampling period: 9/17/2013 - 4/28/2014

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
NEAR GREER	LCROS000.25	109782	ADEQ	Ambient Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(4-5) Antimony, arsenic, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, selenium, zinc	(4) Ammonia, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(1-4) Dissolved oxygen, *E. coli*, pH, SSC, total dissolved solids, bottom deposits, biocriteria

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	Biocriteria
Missing Core Parameters	None
Missing Seasonal Distribution	None
Lab Detection Limits Not Low Enough	Cadmium (dissolved), copper (dissolved), lead (dissolved), selenium, mercury (dissolved)

Priority	Monitoring Recommendations
Medium	Collect another macroinvertebrate sample to confirm the biocriteria violation. Use lower detection limits especially for dissolved cadmium and dissolved copper (they are core parameters, and all 4 samples had detection limits greater than AWC chronic criteria).

ED_013248_00000576-00055

RUDD CREEK

Headwaters - Nutrioso Creek
15020001-026
10.585 Miles

Category 3
Inconclusive

FC - Inconclusive • FBC - Inconclusive • AGL - Inconclusive
AWC - Inconclusive

Use Support

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
Copper (dissolved)	8.03 ug/L chronic @ 88 mg/L hardness	7/1/2010	16 ug/L	AWC is inconclusive with 1 exceedance in 1 sample.
Dissolved oxygen	7.0 mg/L	7/1/2010	6.73 mg/L	AWC is inconclusive with 1 exceedance in 1 sample.

Monitoring Summary

Sampling period: 7/1/2010 - 7/1/2010

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
DOWNSTREAM OF ST. MARY LAKE	LCRUD008.43	107482	ADEQ	Ambient Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(1) Antimony, arsenic, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, selenium, zinc	(1) Ammonia, nitrogen, phosphorus, total Kjeldahl nitrogen	(1) Dissolved oxygen, *E. coli*, pH, total dissolved solids, bottom deposits, biocriteria

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	Copper (dissolved), dissolved oxygen
Missing Core Parameters	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, copper, lead, mercury
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, copper, lead, mercury
Lab Detection Limits Not Low Enough	Cadmium (dissolved), copper (dissolved), mercury (dissolved)

Priority	Monitoring Recommendations
Medium	Collect core parameters to represent at least 3 seasons during an assessment period. Collect more dissolved copper and dissolved oxygen due to exceedances.

ED_013248_00000576-00056

SHOW LOW CREEK

Headwaters - Linden Wash
15020005-012
19.51 Miles

Category 2
Attaining some uses

FC - Attaining • FBC - Attaining • AGI - Attaining
AGL - Attaining • AWC - Inconclusive

Use Support

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
SSC	25 mg/L	5/12/2014	44.1 mg/L	AWC is attaining with no median exceedances.
Biocriteria	IBI ≥ 52 attaining IBI 46 - 51 inconclusive IBI ≤ 45 violating	5/12/2014	IBI 15	AWC is inconclusive with 1 violation. Three other violations occurred in this reach in 2007.
Bottom deposits	< 30% fines	5/12/2014	97%	AWC is inconclusive with 1 exceedance.

Monitoring Summary

Sampling period: 9/17/2013 - 5/12/2014

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
BELOW PORTER CREEK AND BILLY CREEK CONFLUENCE	LCSHL031.05	104679	ADEQ	Ambient Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(4) Antimony, arsenic, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, selenium, zinc	(3-4) Ammonia, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(1-4) Dissolved oxygen, *E. coli*, pH, SSC, total dissolved solids, bottom deposits, biocriteria

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	Biocriteria, bottom deposits
Missing Core Parameters	None
Missing Seasonal Distribution	None
Lab Detection Limits Not Low Enough	Cadmium (dissolved), copper (dissolved), pH, selenium, mercury (diss)

Priority	Monitoring Recommendations
High	There were four biocriteria standard violations in this reach, but impairment decisions cannot be made until the Impaired Waters Identification Rule is updated. Collect additional samples to identify possible stressors on benthic macroinvertebrate communities. Collect another bottom deposit sample due to the exceedance. Use lower detection limits for dissolved cadmium and dissolved copper.

ED_013248_00000576-00057

SILVER CREEK

Headwaters - Show Low Creek
15020005-013
33.615 Miles

Category 2
Attaining some uses

FC - Attaining • FBC - Attaining • AGI - Attaining
AGL - Attaining • AWC - Inconclusive

Use Support

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
Biocriteria	IBI ≥ 52 attaining IBI 46 - 51 inconclusive IBI ≤ 45 violating	5/9/2011	IBI 22	AWC is inconclusive with 1 violation. There were two other biocriteria violations in 2007. Impairment decisions cannot be made until the Impaired Waters Identification Rule is updated.

Monitoring Summary

Sampling period: 8/26/2010 - 5/11/2011

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
BELOW AGFD HATCHERY	LCSIL043.84	101125	ADEQ	TMDL - Little Colorado River
BELOW BOURDON RANCH ROAD	LCSIL042.58	108502	ADEQ	TMDL - Little Colorado River
BELOW HATCHERY NEAR BOURDEN RANCH HOUSE	LCSIL043.30	105372	ADEQ	Ambient Monitoring, TMDL - Little Colorado River

Metal Samples	Nutrients & Related Samples	Other Samples
(4) Antimony, arsenic, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, selenium, zinc	(4) Ammonia, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(4-9) Dissolved oxygen, *E. coli*, pH, SSC, total dissolved solids, bottom deposits, biocriteria

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	Biocriteria
Missing Core Parameters	None
Missing Seasonal Distribution	None
Lab Detection Limits Not Low Enough	Cadmium (dissolved), copper (dissolved), mercury (dissolved)

Priority	Monitoring Recommendations
High	There were three biocriteria violations in this reach, but impairment decisions cannot be made until the Impaired Waters Identification Rule is updated. Collect additional samples to identify possible stressors on benthic macroinvertebrates. Use lower detection limits for dissolved cadmium and dissolved copper.

ED_013248_00000576-00058

SILVER CREEK

Sevenmile Dr - Little Colorado River
15020005-001
9.28 Miles

Category 3
Inconclusive

FC - Inconclusive • FBC - Inconclusive • AGI - Inconclusive
AGL - Inconclusive • AWC - Inconclusive

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
Dissolved oxygen	7.0 mg/L	8/6/2010	6.63 mg/L	AWC is inconclusive with 2 exceedances in 2 samples (binomial).
		9/8/2010	5.68 mg/L	
E. coli	235 cfu/100 mL	9/8/2010	4884 cfu/100 mL	FBC is inconclusive. No data in the last 3 years of assessment (7/1/12 - 6/30/15).
SSC	25 mg/L	8/6/2010	194 mg/L	AWC is attaining. The exceedance occurred within 48 hours of a storm event.

Monitoring Summary

Sampling period: 8/6/2010 - 9/8/2010

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
AT WOODRUFF DAM	LCSIL000.06	104877	ADEQ	TMDL Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(0) None	(0) None	(1-2) Dissolved oxygen, *E. coli*, pH, SSC, total dissolved solids

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	Dissolved oxygen, *E. coli*
Missing Core Parameters	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, boron, manganese, copper, lead, mercury (or mercury in fish tissue)
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, boron, manganese, copper, lead, mercury
Lab Detection Limits Not Low Enough	None

ED_013248_00000576-00059

Priority	Monitoring Recommendations
Low	Collect dissolved oxygen and *E. coli* samples due to the exceedances. Collect core parameters to represent at least 3 seasons during an assessment period.

ED_013248_00000576-00060

SILVER CREEK

Show Low Creek - Cottonwood
15020005-009
10.684 Miles

Category 2
Attaining some uses

FC - Attaining • FBC - Inconclusive • AGI - Attaining
AGL - Attaining • AWC - Inconclusive

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
Dissolved oxygen	7.0 mg/L	11/13/2013	6.71 mg/L	AWC is inconclusive with 1 exceedance in 4 samples.
E. coli	235 cfu/100 mL	9/16/2013	829.7 cfu/100 mL	FBC is inconclusive with 1 exceedance in 4 samples.
SSC	25 mg/L	9/16/2013	230 mg/L	AWC is inconclusive. The exceedances on 9/16/13 and 11/13/13 occurred within 48 hours of storm events and were excluded from the median calculation. Insufficient number of samples left to assess.
		11/13/2013	41 mg/L	
		3/24/2014	39.9 mg/L	
		5/12/2014	122 mg/L	
Bottom deposits	< 30% fines	5/12/2014	97%	AWC is inconclusive.
Biocriteria	IBI ≥ 52 attaining IBI 46 - 51 inconclusive IBI ≤ 45 violating	5/12/2014	IBI 25	AWC is inconclusive with 1 violation.

Monitoring Summary

Sampling period: 9/16/2013 - 5/12/2014

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
SOUTHEAST OF PINE-DALE AND HIGHWAY 77 JUNCTION	LCSIL027.05	107382	ADEQ	Ambient Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(4) Antimony, arsenic, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, selenium, zinc	(4) Ammonia, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(1-4) Dissolved oxygen, *E. coli*, pH, SSC, total dissolved solids, bottom deposits, biocriteria

ED_013248_00000576-00061

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	Biocriteria, bottom deposits, dissolved oxygen, *E. coli*, SSC
Missing Core Parameters	None
Missing Seasonal Distribution	None
Lab Detection Limits Not Low Enough	Cadmium (dissolved), selenium, mercury (dissolved)

Priority	Monitoring Recommendations
Medium	Collect additional dissolved oxygen, *E. coli*, SSC, bottom deposits and biocriteria samples due to the exceedances. Use a lower detection limit (< 0.5 ug/L) for dissolved cadmium (all samples had detection limits greater than A&W chronic criteria).

ED_013248_00000576-00062

SOLDIER ANNEX LAKE

15020008-1430
122 Acres

Category 4A
Not attaining

IMPAIRMENT STATUS

Mercury in fish tissue (EPA 2004)

FC - Not Attaining • FBC - Inconclusive • AGI - Inconclusive
AGL - Inconclusive • AWC - Inconclusive

No Exceedances

Monitoring Summary

Sampling period: No samples

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
N/A				

Metal Samples	Nutrients & Related Samples	Other Samples
(0) None	(0) None	(0) None

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	All core parameters
Missing Seasonal Distribution	All core parameters
Lab Detection Limits Not Low Enough	N/A

Priority	Monitoring Recommendations
Medium	Conduct effectiveness monitoring.

Impairment Discussion
Fish consumption advisory issued in 2003 and still in effect. Remains not attaining for mercury in fish tissue (2004, EPA). Mercury TMDL completed in 2011.

ED_013248_00000576-00063

SOLDIER LAKE

15020008-1440
28 Acres

Category 4A
Not attaining

IMPAIRMENT STATUS

Mercury in fish tissue (EPA 2004)

FC - Not Attaining • FBC - Inconclusive • AGI - Inconclusive
AGL - Inconclusive • AWC - Inconclusive

No Exceedances

Monitoring Summary

Sampling period: No samples

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
N/A				

Metal Samples	Nutrients & Related Samples	Other Samples
(0) None	(0) None	(0) None

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	All core parameters
Missing Seasonal Distribution	All core parameters
Lab Detection Limits Not Low Enough	None

Priority	Monitoring Recommendations
Medium	Conduct effectiveness monitoring.

Impairment Discussion
Fish consumption advisory issued in 2003 and still in effect. Remains not attaining for mercury in fish tissue (2004, EPA). Mercury TMDL completed in 2011.

ED_013248_00000576-00064

South Fork Little Colorado

Headwaters - Little Colorado River
15020001-027
11.935 Miles

Category 2
Attaining some uses

FC - Attaining • FBC - Inconclusive • AGL - Attaining
AWC - Inconclusive

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
Nitrogen	1.1 mg/L	3/17/2014	2.57 mg/L	AWC and FBC are inconclusive with 1 exceedance in 3 samples (binomial).

Monitoring Summary

Sampling period: 6/10/2013 - 6/10/2015

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
AT CAMPGROUNDS	LCSLR001.42	100644	ADEQ	Ambient Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(3) Antimony, arsenic, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, selenium, zinc	(3) Ammonia, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(1-5) Dissolved oxygen, *E. coli*, pH, SSC, total dissolved solids, biocriteria

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	Nitrogen
Missing Core Parameters	None
Missing Seasonal Distribution	None
Lab Detection Limits Not Low Enough	Cadmium (dissolved), copper (dissolved), lead (dissolved), selenium, mercury (dissolved)

Priority	Monitoring Recommendations
Low	Collect additional nitrogen samples due to the exceedance. Use lower reporting limits for dissolved copper (< 10 ug/L) and dissolved cadmium (< 0.5 ug/L) especially since they are part of A&W core parameters.

ED_013248_00000576-00065

TELEPHONE LAKE

15020005-1500
22.3 Acres

Category 5
Impaired

IMPAIRMENT STATUS

Ammonia (2010)

PBC - Inconclusive • AWEDW - Impaired

No Exceedances

Monitoring Summary

Sampling period: No samples

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
N/A				

Metal Samples	Nutrients & Related Samples	Other Samples
None	None	None

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	All core parameters
Missing Seasonal Distribution	All core parameters
Lab Detection Limits Not Low Enough	N/A

Priority	Monitoring Recommendations
High	Collect samples in support of TMDL development.

Impairment Discussion
Remains impaired for ammonia (2010).

ED_013248_00000576-00066

WALNUT CREEK (WAN)

Pine Lake - Billy Creek
15020005-238
6.17 Miles

Category 3
Inconclusive

FC - Inconclusive • FBC - Inconclusive • AGL - Inconclusive
AWC - Inconclusive

Use Support

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
Lead (dissolved)	3.2 ug/L chronic @ 123 mg/L hardness	5/14/2015	4.5 ug/L	AWC is inconclusive with 1 exceedance in 1 sample.

Monitoring Summary

Sampling period: 5/14/2015 - 5/14/2015

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
AT HOMESTEAD ROAD	LCWAN002.19	105249	ADEQ	TMDL Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(1) Arsenic, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, selenium, zinc	(3) Ammonia, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(1) pH

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	Lead (dissolved)
Missing Core Parameters	Zinc (dissolved), dissolved oxygen, pH, pH, cadmium (dissolved), copper (dissolved), *E. coli*, copper, lead, mercury (or mercury in fish tissue)
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, pH, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, copper, lead, mercury
Lab Detection Limits Not Low Enough	Cadmium (dissolved)

Priority	Monitoring Recommendations
Medium	Collect additional lead samples due to the exceedance. Collect core parameters to represent at least 3 seasons during an assessment period. Use a lower reporting limit for dissolved cadmium.

ED_013248_00000576-00067

WILLOW SPRINGS LAKE

15020010-1670
160 Acres

Category 3
Inconclusive

FC - Inconclusive • FBC - Inconclusive • AGL - Inconclusive
AGL - Inconclusive • AWC - Inconclusive

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
Dissolved oxygen	7.0 mg/L	7/29/2014	6.39 mg/L	AWC is inconclusive with 1 exceedance in 5 samples.
pH	6.5 SU	6/24/2014	5.83 SU	AGL, FBC and AWC are attaining. The exceedance occurred at 12-14 meters deep. Low pH considered to be due to natural conditions in this narrow deep lake.

Monitoring Summary

Sampling period: 7/14/2010 - 9/23/2014

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
AT DAM	LCWIS-A	100091	ADEQ	Clean Lakes Program

Metal Samples	Nutrients & Related Samples	Other Samples
(1-4) Antimony, arsenic, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, selenium, zinc	(2-3) Ammonia, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(5) Dissolved oxygen, pH, total dissolved solids

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	Dissolved oxygen
Missing Core Parameters	Zinc (dissolved), *E. coli*
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, boron, manganese, copper, lead, mercury
Lab Detection Limits Not Low Enough	Cadmium (dissolved), copper (dissolved), lead (dissolved), mercury (dissolved), selenium

Priority	Monitoring Recommendations
Low	Collect more dissolved oxygen samples due to the exceedance. Collect core parameters to represent at least 3 seasons during an assessment period.

ED_013248_00000576-00068

WOODS CANYON CREEK

Headwaters - Chevelon Creek
15020010-084
12.9 Miles

Category 3
Inconclusive

FC - Inconclusive • FBC - Inconclusive • AGL - Inconclusive
AWC - Inconclusive

Use Support

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
Dissolved oxygen	7.0 mg/L	12/10/2010	5.25 mg/L	AWC is inconclusive with 1 exceedance in 2 samples.

Monitoring Summary

Sampling period: 12/10/2010 - 5/11/2011

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
BELOW WOODS CANYON LAKE DAM	LCWCY005.01	108522	ADEQ	TMDL Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(0) None	(0) None	(2) Dissolved oxygen, pH, SSC, total dissolved solids

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	Dissolved oxygen
Missing Core Parameters	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, copper, lead, mercury (or mercury in fish tissue)
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, copper, lead, mercury
Lab Detection Limits Not Low Enough	None

Priority	Monitoring Recommendations
Low	Collect more dissolved oxygen samples due to the exceedance. Collect core parameters to represent at least 3 seasons during an assessment period.

ED_013248_00000576-00069

WOODS CANYON LAKE

15020010-1700
70 Acres

Category 3N
Inconclusive

FC - Inconclusive • FBC - Inconclusive • AGI - Inconclusive
AGL - Inconclusive • AWC - Inconclusive

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
Dissolved oxygen	7.0 mg/L	7/30/2014	6.22 mg/L	AWC is inconclusive with 1 exceedance in 5 samples.
Iron (dissolved)	1000 ug/L	6/25/2014	2670 ug/L	AWC is attaining. High dissolved iron due to low pH conditions at the bottom of the lake and considered to be a natural background.
		9/24/2014	4890 ug/L	
Lead (dissolved)	0.541 ug/L	6/25/2014	0.62 ug/L	AWC is inconclusive with 1 exceedance in 2 samples.
pH	6.5 SU	8/22/2013	5.74 SU	AGL, FBC and AWC are attaining. All exceedances occurred between 9 and 10 meters deep. Low pH considered to be due to natural conditions in this narrow deep lake.
		6/25/2014	5.62 SU	
		9/24/2014	6.17 SU	

Monitoring Summary

Sampling period: 8/22/2013 - 9/24/2014

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
AT DAM	LCWCL-A	100092	ADEQ	Clean Lakes Program

Metal Samples	Nutrients & Related Samples	Other Samples
(2-3) Arsenic, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, selenium, zinc	(1-2) Ammonia, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(5) Dissolved oxygen, pH, total dissolved solids

ED_013248_00000576-00070

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	Dissolved oxygen, lead (dissolved)
Missing Core Parameters	Zinc (dissolved), nitrogen, phosphorus, *E. coli*, boron, manganese, copper, lead, mercury (or mercury in fish tissue)
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, boron, manganese, copper, lead, mercury
Lab Detection Limits Not Low Enough	Cadmium (dissolved), copper (dissolved), lead (dissolved), selenium

Priority	Monitoring Recommendations
Low	Collect additional dissolved oxygen and dissolved lead samples due to the exceedances. Collect core parameters to represent at least 3 seasons during an assessment period. Note: Low pH and high iron values near the bottom of the lake are not attaining due to natural conditions (N subcategory).

ED_013248_00000576-00071