CHAPTER 11: COLORADO RIVER WEST WATERSHED MANAGEMENT UNIT WATER QUALITY ASSESSMENT

11.1 INTRODUCTION

The West Colorado Watershed Management Unit includes all streams located in the USGS Hydrological Units (HUCs) listed in Table 11-1. Some of the largest streams in the WMU follow: Price River, Huntington Creek, Cottonwood Creek, Ferron Creek, San Rafael River, Escalante River, Muddy Creek, Dirty Devil River, Fremont River, and portions of the Green River.

Biological, water chemistry and field data collected from January 1, 2004 through December 31, 2008 were used to make assessments. Water quality data were compared against standards established for each of the designated beneficial uses. Figure 11-1 shows the beneficial use classifications for this watershed management unit.

11.2 IMPAIRED WATERS

The list of streams and lakes impaired and requiring a TMDL (Category 5; Section 303d) for the Bear River are presented in Table 11-2. New listings for 2010 include Price River-3, Upper Quitchupah Creek, Lower Quitchupah Creek, Lower Bowns Reservoir, and Wide Hollow Reservoir. Paria-3 and Huntington Creek-2 are requested to be removed from the 303d list because these reaches are now meeting the TDS standards (Table 11-3). Assessment results for all AUs for streams are presented in Table 11-4 and for lakes in Table 11-5. Lake assessments are further discussed in the next section.

11.3 LAKE ASSESSMENTS

Water quality assessment for lakes includes determination of Carlson's trophic state index (TSI), water chemistry, phytoplankton species dominance, reported fish kills, and water quality trends.

Table 11-6 shows TSIs based on each sample collected from May through September by sample date. Table 11-7 contains a summary of lake trophic status by study periods. Note that some of the changes in TSIs between assessment periods are due to the variability in the lakes and reservoirs and some is due to switching methodologies between 2008 and 2010. The reported TSI for 2010 is based on Chl-a whereas prior reporting cycles averaged the TSI based on secchi disk depth (TSI-SD), Chl-a (TSI-Chla), and total phosphorus (TSI-TP). Table 11-7 includes the TSIs using both the 2008 and 2010 method using the 2010 data.

TSI values for some lakes and reservoirs differed between the 2008 and 2010 methods. Small differences are defined as a difference in TSIs of 6-10, medium differences 11-20, and large differences as greater than 20. Small differences were observed for Mill Meadow and Wide Hollow Reservoirs. Medium differences were observed for Forsyth and Joes Valley Reservoirs. A large difference was observed for Huntington Lake North. The small and medium differences suggest little difference in trophic state between the new and older methods.

Huntington Lake North is classified oligotrophic whether using the old TSI method or the 2010 IR method. Table 11-6 shows that the TSI-SD is markedly higher than either the TSI-Chla or TSI-TP. This suggests Huntington Lake North is phosphorus limited which is supported by phosphorus concentrations measured in the lake.

For the purpose of assessing trends, the TSI's from the most recent five assessment periods were considered. Consistent trends that resulted in a net TSI change of five or changes greater than 10 between 2008 and 2010, which are not attributable to the change in TSI methodology alone, include: Johnson and Mill Meadow Reservoirs that both show an increasing trend in TSI scores. Conversely, Electric Lake and Forsyth Reservoir show a decreasing trend in TSI.

HEALTH ADVISORIES

Joes Valley Reservoir, Calf Creek, and Pine Creek have fish consumption advisories for mercury.

TABLES

Table 11-1 USGS Hydrological Units in the Colorado River West Watershed Management Unit

USGS Hydrological Units in the Colorado River West Watershed Management Unit	
Hydrological Unit Code	**Hydrological Unit Name**
14060007	Price
14060008	Lower Green
14060009	San Rafael
14070001	Upper Lake Powell
14070002	Muddy
14070003	Fremont
14070004	Dirty Devil
14070005	Escalante
14070006	Lower Lake Powell

Table 11-2 Impaired Streams and Lakes Requiring a TMDL in the Colorado River West Watershed

Impaired Streams and Lakes Requiring a TMDL in the Colorado River West Watershed				
AU ID	**AU Name**	**Water Type**	**Size**	**Location Description**
UT14060007-007_00	Price River-3	RIVER	16.648 MILES	Price River and tributaries from Coal Creek confluence to Carbon Canal Diversion
Cause	**Cycle First Listed**	**TMDL Status**	**Use**	**Source**
Benthic-Macroinvertebrate Bioassessments	2010	Low Priority	Non-Game Fish and Other Aquatic Life	• Source Unknown
AU ID	**AU Name**	**Water Type**	**Size**	**Location Description**
UT14060009-010_00	Huntington Creek-1	RIVER	25.789 MILES	Huntington Creek and tributaries from confluence with Cottonwood Creek to Highway 10
Cause	**Cycle First Listed**	**TMDL Status**	**Use**	**Source**
Selenium	2006	Low Priority	Non-Game Fish and Other Aquatic Life	• Agriculture • Natural Sources

Impaired Streams and Lakes Requiring a TMDL in the Colorado River West Watershed				
AU ID	**AU Name**	**Water Type**	**Size**	**Location Description**
UT14060009-013_00	Upper San Rafael	RIVER	23.254 MILES	San Rafael River from Buckhorn Crossing to confluence of Huntington and Cottonwood Creeks
Cause	**Cycle First Listed**	**TMDL Status**	**Use**	**Source**
Benthic-Macroinvertebrate Bioassessments	2008	Low Priority	Non-Game Fish and Other Aquatic Life	• Source Unknown
AU ID	**AU Name**	**Water Type**	**Size**	**Location Description**
UT14070002-002_00	Upper Quitchipah Creek	RIVER	29.022 MILES	Quitchipah Creek from U-10 to headwaters
Cause	**Cycle First Listed**	**TMDL Status**	**Use**	**Source**
Benthic-Macroinvertebrate Bioassessments	2010	Low Priority	Cold Water Aquatic Life	• Source Unknown
AU ID	**AU Name**	**Water Type**	**Size**	**Location Description**

Impaired Streams and Lakes Requiring a TMDL in the Colorado River West Watershed				
UT14070002-007_00	Lower Quitchipah Creek	RIVER	9.952 MILES	Quitchipah Creek from confluence with Ivie Creek to U-10 crossing
Cause	**Cycle First Listed**	**TMDL Status**	**Use**	**Source**
Benthic-Macroinvertebrate Bioassessments	2010	Low Priority	Non-Game Fish and Other Aquatic Life	• Source Unknown
AU ID	**AU Name**	**Water Type**	**Size**	**Location Description**
UT14070003-008_00	Fremont River-3	RIVER	82.881 MILES	Fremont River and tributaries from east boundary of Capitol Reef National Park to Bicknell
Cause	**Cycle First Listed**	**TMDL Status**	**Use**	**Source**
Benthic-Macroinvertebrate Bioassessments	2008	Low Priority	Cold Water Aquatic Life	• Source Unknown
AU ID	**AU Name**	**Water Type**	**Size**	**Location Description**
UT14070006-004_00	Chance Creek	RIVER	16.719 MILES	Chance Creek and tributaries from Lake Powell to headwaters

Impaired Streams and Lakes Requiring a TMDL in the Colorado River West Watershed				
Cause	**Cycle First Listed**	**TMDL Status**	**Use**	**Source**
Benthic-Macroinvertebrate Bioassessments	2008	Low Priority	Cold Water Aquatic Life	• Source Unknown
AU ID	**AU Name**	**Water Type**	**Size**	**Location Description**
UT14070007-001_00	Paria River-1	RIVER	16.766 MILES	Paria River from start of Paria River Gorge to headwaters
Cause	**Cycle First Listed**	**TMDL Status**	**Use**	**Source**
Temperature, water	2008	Low Priority	Non-Game Fish and Other Aquatic Life	• Drought-related Impacts • Agriculture
Total Dissolved Solids	2000	Low Priority	Agricultural	• Natural Sources
AU ID	**AU Name**	**Water Type**	**Size**	**Location Description**
UT14070007-005_00	Paria River-3	RIVER	9.226 MILES	Paria River and tributaries from Arizona-Utah state line to Cottonwood Creek confluence

Impaired Streams and Lakes Requiring a TMDL in the Colorado River West Watershed				
Cause	**Cycle First Listed**	**TMDL Status**	**Use**	**Source**
Benthic-Macroinvertebrate Bioassessments	2008	Low Priority	Non-Game Fish and Other Aquatic Life	• Source Unknown
AU ID	**AU Name**	**Water Type**	**Size**	**Location Description**
UT-L-14070003-019_00	Forsyth Reservoir	FRESHWATER LAKE	158 ACRES	LL= 383109/113109 26S 3E 24,25 USGS MAP AND DATE: FORSYTH RESERVOIR, UTAH-1968 WATERSHED: UM CREEK, WMU Colorado River West
Use	**Attainment**	**Threatened**	**Cause**	**Cycle First Listed**
Agricultural	Fully Supporting	N		
Cold Water Aquatic Life	Not Supporting	N	Oxygen, Dissolved Phosphorus (Total)	2006 1992
Secondary Recreation	Not Assessed	N		
AU ID	**AU Name**	**Water Type**	**Size**	**Location Description**

Impaired Streams and Lakes Requiring a TMDL in the Colorado River West Watershed				
UT-L-14060007-004_00	Lower Gooseberry Reservoir	FRESHWATER LAKE	57 ACRES	LL= 394230/1111730 13S 6E 6,7 USGS MAP AND DATE: FAIRVIEW LAKES, UTAH-1978 WATERSHED: GOOSEBERRY CREEK , WMU Colorado River Southeast
Cause	**Cycle First Listed**	**TMDL Status**	**Use**	**Source**
Oxygen, Dissolved pH Phosphorus (Total)	2006 1992 1992	Low Priority Low Priority Low Priority	Cold Water Aquatic Life Cold Water Aquatic Life Cold Water Aquatic Life	• Managed Pasture Grazing • Other Recreational Pollution Sources • Rangeland Grazing • Source Unknown
AU ID	**AU Name**	**Water Type**	**Size**	**Location Description**
UT-L-14070003-044_00	Lower Bowns Reservoir	FRESHWATER LAKE	90 ACRES	LL= 380635/1111612 31S 6E 17 USGS MAP AND DATE: GROVER 15' QUAD.-1952 WATERSHED: OAK CREEK; WMU Colorado River West
Cause	**Cycle First Listed**	**TMDL Status**	**Use**	**Source**

Impaired Streams and Lakes Requiring a TMDL in the Colorado River West Watershed				
Oxygen, Dissolved	2010	Low Priority	Cold Water Aquatic Life	• Rangeland Grazing
Temperature, water	2010	Low Priority	Cold Water Aquatic Life	
pH	2006	Low Priority	Cold Water Aquatic Life	
AU ID	**AU Name**	**Water Type**	**Size**	**Location Description**
UT-L-14070005-011_00	Wide Hollow Reservoir	FRESHWATER LAKE	145 ACRES	LL= 374714/1113813 35S 2E 1,2,12 USGS MAP AND DATE: WIDE HOLLOW RESERVOIR, UTAH, QUAD-1964 WATERSHED: ESCALANTE RIVER, WMU Colorado River West
Cause	**Cycle First Listed**	**TMDL Status**	**Use**	**Source**
Temperature, water	2010	Low Priority	Cold Water Aquatic Life	
pH	2010	Low Priority	Cold Water Aquatic Life	

Table 11-3 Request for Removal from 303d List – Colorado River West Watershed

Request for Removal from 303d List Colorado River West Watershed							
Assessment Unit	**AU Name**	**Location Description**	**Water Type**	**Size**	**Cause**	**Reason for Removal**	**Delisting Comment**
UT14070007-005_00	Paria River-3	Paria River and tributaries from Arizona-Utah state line to Cottonwood Creek confluence	RIVER	9.226 MILES	Total Dissolved Solids	Applicable WQS attained; reason for recovery unspecified	N/A
UT14060009-004_00	Huntington Creek-2	Huntington Creek and tributaries from Highway 10 crossing to USFS boundary	River	19.241 Miles	Total Dissolved Solids	Applicable WQS attained; due to restoration activities	Approved TMDL, 11137, for TDS and TDS meeting WQS 2010.

Table 11-4 Assessment Summary for Colorado River West Watershed Streams

Assessment Summary for Colorado River West Watershed Streams						
AU ID	**AU Name**		**Water Type**	**Size**	**Location Description**	
UT-L-14060007-004_00	Lower Gooseberry Reservoir		FRESHWATER LAKE	57 ACRES	LL= 394230/1111730 13S 6E 6,7 USGS MAP AND DATE: FAIRVIEW LAKES, UTAH-1978 WATERSHED: GOOSEBERRY CREEK , WMU Colorado River Southeast	
Use	**Attainment**	**Threatened**	**Cause**	**Cycle First Listed**	**TMDL Status**	**Source**
Agricultural	Fully Supporting	N				• Managed Pasture Grazing • Other Recreational Pollution Sources
Cold Water Aquatic Life	Not Supporting	N	Oxygen, Dissolved pH Phosphorus (Total)	2006 1992 1992	Low Priority Low Priority Low Priority	• Rangeland Grazing • Source Unknown

Assessment Summary for Colorado River West Watershed Streams						
Domestic Water Supply	Fully Supporting	N				
Secondary Recreation	Not Assessed	N				
AU ID	**AU Name**		**Water Type**	**Size**	**Location Description**	
UT-L-14060007-005_00	Scofield Reservoir		FRESHWATER LAKE	2815 ACRES	LL= 394610/1110910 12S 7E 4,9,10,16,17,18,20,21,28,29 USGS MAP AND DATE: SCOFIELD RES. QUAD-1978 WATERSHED: PRICE RIVER, WMU Colorado River West	
Use	**Attainment**	**Threatened**	**Cause**	**Cycle First Listed**	**TMDL Status**	**Source**
Agricultural	Fully Supporting	N				• Industrial Point Source Discharge • Managed Pasture Grazing
Cold Water Aquatic Life	Not Supporting	N	Oxygen, Dissolved pH Phosphorus (Total)	2006 2006 1994	Completed Completed Completed	• Other Recreational Pollution Sources • Septage Disposal • Subsurface (Hardrock) Mining
Domestic Water Supply	Fully Supporting	N				
Secondary Recreation	Not Assessed	N				

Assessment Summary for Colorado River West Watershed Streams

AU ID	AU Name	Water Type	Size	Location Description
UT-L-14070003-010_00	Johnson Valley Reservoir	FRESHWATER LAKE	704 ACRES	LL= 383605/1113800 25S 2,3E 23-26,30 USGS MAP AND DATE: FISHLAKE, 1968 WATERSHED: FREMONT RIVER, WMU Colorado River West

Use	Attainment	Threatened	Cause	Cycle First Listed	TMDL Status	Source
Agricultural	Fully Supporting	N	Phosphorus (Total)	1992	Completed	• Managed Pasture Grazing • Other Recreational Pollution Sources • Source Unknown
Cold Water Aquatic Life	Not Supporting	N				
Secondary Recreation	Not Assessed	N				

AU ID	AU Name	Water Type	Size	Location Description
UT-L-14070003-015_00	Mill Meadow Reservoir	FRESHWATER LAKE	156 ACRES	LL= 383024/1113353 26N 3E 27,34,35 USGS MAP AND DATE: FORSYTH RESERVOIR, UTAH-1968 WATERSHED: UM CREEK, WMU Colorado River West

Use	Attainment	Threatened	Cause	Cycle First Listed	TMDL Status	Source

Assessment Summary for Colorado River West Watershed Streams						
Agricultural Cold Water Aquatic Life Secondary Recreation	Fully Supporting Not Supporting Not Assessed	N N N	Phosphorus (Total)	1992	Completed	• Grazing in Riparian or Shoreline Zones • Other Recreational Pollution Sources • Rangeland Grazing • Silviculture Plantation Management
AU ID	**AU Name**		**Water Type**	**Size**	**Location Description**	
UT-L-14070003-019_00	Forsyth Reservoir		FRESHWATER LAKE	158 ACRES	LL= 383109/113109 26S 3E 24,25 USGS MAP AND DATE: FORSYTH RESERVOIR, UTAH-1968 WATERSHED: UM CREEK, WMU Colorado River West	
Use	**Attainment**	**Threatened**	**Cause**	**Cycle First Listed**	**TMDL Status**	**Source**
Agricultural Cold Water Aquatic Life Secondary Recreation	Fully Supporting Not Supporting Not Assessed	N N N	Oxygen, Dissolved Phosphorus (Total)	2006 1992	Completed Completed	• Grazing in Riparian or Shoreline Zones • Managed Pasture Grazing • Other Recreational Pollution Sources • Rangeland Grazing

Assessment Summary for Colorado River West Watershed Streams

AU ID	AU Name	Water Type	Size	Location Description
UT-L-14070003-044_00	Lower Bowns Reservoir	FRESHWATER LAKE	90 ACRES	LL= 380635/1111612 31S 6E 17 USGS MAP AND DATE: GROVER 15' QUAD.-1952 WATERSHED: OAK CREEK; WMU Colorado River West

Use	Attainment	Threatened	Cause	Cycle First Listed	TMDL Status	Source
Agricultural	Fully Supporting	N				• Rangeland Grazing
Cold Water Aquatic Life	Not Supporting	N	Oxygen, Dissolved pH Temperature, water	2010 2006 2010	Low Priority Low Priority Low Priority	
Secondary Recreation	Not Assessed	N				

AU ID	AU Name	Water Type	Size	Location Description
UT-L-14070005-011_00	Wide Hollow Reservoir	FRESHWATER LAKE	145 ACRES	LL= 374714/1113813 35S 2E 1,2,12 USGS MAP AND DATE: WIDE HOLLOW RESERVOIR, UTAH, QUAD-1964 WATERSHED: ESCALANTE RIVER, WMU Colorado River West

Use	Attainment	Threatened	Cause	Cycle First Listed	TMDL Status	Source

Assessment Summary for Colorado River West Watershed Streams						
Agricultural	Fully Supporting	N				
Cold Water Aquatic Life	Not Supporting	N	pH Temperature, water	2010 2010	Low Priority Low Priority	
Secondary Recreation	Not Assessed	N				

Table 11-5 Assessment Results for Colorado River West Watershed Management Unit Lakes

Assessment Results for Colorado River West Watershed Management Unit Lakes

					Parameters Not Supporting 2010							*Assessment Cycle*				
Assessment Unit ID	*Name*	*Assessment Category 2008*	*Assessment Category 2010*	*Parameters Not Supporting 2008*	*DO*	*pH*	*T*	*Other*	*Total P > 0.025 mg/L or TSI>50*	*Winter DO/Fish Kills*	*Cyano Bacteria Present*	*2002*	*2004*	*2006*	*2008*	*2010*
UT-L-14060009-024	***Cleveland Reservoir***	***2***	***3B***		***FS***	***FS***	***NS***		***No***		***Y***	***FS***	***FS***	***FS***	***FS***	***NS***
UT-L-14070003-018	***Cook Lake***	***2***	***2***						***ND***		***ND***	***NS***	***FS***	***FS***	***FS***	
UT-L-14070003-027	***Donkey Reservoir***	***2***	***2***						***ND***		***N***	***FS***	***FS***	***FS***	***FS***	
UT-L-14060009-003	***Duck Fork Reservoir***	***2***	***2***						***ND***	***DO***	***N***	***FS***	***FS***	***FS***	***FS***	
UT-L-14060009-025	***Electric Lake***	***2***	***3B***		***FS***	***FS***	***NS***		***No***		***Y***	***FS***	***FS***	***FS***	***FS***	***NS***

Assessment Results for Colorado River West Watershed Management Unit Lakes

Assessment Unit ID	Name	Assessment Category 2008	Assessment Category 2010	Parameters Not Supporting 2008	Parameters Not Supporting 2010: DO	pH	T	Other	Total P > 0.025 mg/L or TSI>50	Winter DO/Fish Kills	Cyano Bacteria Present	Assessment Cycle: 2002	2004	2006	2008	2010
UT-L-14060007-001	***Fairview Lake #2***	***2***	***2***						***ND***		***N***	***FS***	***FS***	***FS***	***FS***	
UT-L-14060009-001	***Ferron Reservoir***	***2***	***2***						***ND***		***N***	***FS***	***FS***	***NS***	***FS***	
UT-L-14070003-006	***Fish Lake***	***2***	***2***		***FS***	***FS***	***FS***		***No***		***N***	***FS***	***FS***	***FS***	***FS***	***FS***
UT-L-14070003-019	***Forsyth Reservoir***	***4A***	***4A***		***FS***	***FS***	***FS***		***No***		***N***	***NS***	***NS***	***NS***	***NS***	***FS***
UT-L-14060009-034	***Huntington Lake North***	***2***	***2***		***FS***	***FS***	***FS***		***No***		***N***	***FS***	***FS***	***FS***	***FS***	***FS***

Assessment Results for Colorado River West Watershed Management Unit Lakes

Assessment Unit ID	Name	Assessment Category 2008	Assessment Category 2010	Parameters Not Supporting 2008	Parameters Not Supporting 2010				Total P > 0.025 mg/L or TSI>50	Winter DO/Fish Kills	Cyano Bacteria Present	Assessment Cycle				
					DO	pH	T	Other				2002	2004	2006	2008	2010
UT-L-14060009-018	***Huntington Reservoir***	***2***	***2***								***N***	***FS***	***FS***	***FS***	***FS***	
UT-L-14060009-017	***Joes Valley Reservoir***	***2***	***3B***		***FS***	***NS***	***NS***		***No***		***N***	***FS***	***FS***	***FS***	***FS***	***NS***
UT-L-14070003-010	***Johnson Valley Reservoir***	***4***	***4A***		***FS***	***FS***	***FS***		***TP, TSI***	***DO***	***Y***	***NS***	***NS***	***NS***	***FS***	***FS***
UT-L-14070006-001	***Lake Powell***	***1***	***1***		***FS***	***FS***	***FS***				***ND***	***FS***	***FS***	***FS***	***FS***	***FS***
UT-L-14070003-044	***Lower Bowns Reservoir***	***5***	***5, 3B***	***pH***	***NS***	***NS***	***NS***		***TP***		***Y***	***FS***	***NS***	***NS***	***NS***	***NS***

Assessment Results for Colorado River West Watershed Management Unit Lakes

Assessment Unit ID	Name	Assessment Category 2008	Assessment Category 2010	Parameters Not Supporting 2008	Parameters Not Supporting 2010				Total P > 0.025 mg/L or TSI>50	Winter DO/Fish Kills	Cyano Bacteria Present	Assessment Cycle				
					DO	pH	T	Other				2002	2004	2006	2008	2010
UT-L-14060007-004	***Lower Gooseberry Reservoir***	***5***	***5***		***FS***	***FS***	***FS***		***No***	***DO/FK***	***Y***	***NS***	***NS***	***NS***	***FS***	***FS***
UT-L-14070003-015	***Mill Meadow Reservoir***	***4***	***4***	***pH***	***FS***	***FS***	***FS***		***TP, TSI***		***Y***	***NS***	***NS***	***NS***	***NS***	***FS***
UT-L-14060009-023	***Miller Flat Reservoir***	***2***	***2***								***Y***	***FS***	***FS***	***FS***	***FS***	
UT-L-14060009-026	***Millsite Reservoir***	***2***	***2***								***N***	***FS***	***FS***	***FS***	***FS***	
UT-L-14070005-008	***Posey Lake***	***2***	***2***	***FS***							***N***	***FS***	***FS***	***FS***	***FS***	

Assessment Results for Colorado River West Watershed Management Unit Lakes

					Parameters Not Supporting 2010							*Assessment Cycle*				
Assessment Unit ID	*Name*	*Assessment Category 2008*	*Assessment Category 2010*	*Parameters Not Supporting 2008*	*DO*	*pH*	*T*	*Other*	*Total P > 0.025 mg/L or TSI>50*	*Winter DO/Fish Kills*	*Cyano Bacteria Present*	*2002*	*2004*	*2006*	*2008*	*2010*
UT-L-14060007-005	***Scofield Reservoir***	***4***	***4***	***FS***					***No***		***Y***	***NS***	***NS***	***NS***	***FS***	
UT-L-14070005-011	***Wide Hollow Reservoir***	***5***	***5***	***T, pH***	***FS***	***NS***	***NS***		***No***		***N***	***NS***	***NS***	***NS***	***NS***	***NS***

Assessment Results for Colorado River West Watershed Management Unit Lakes

					Parameters Not Supporting 2010							*Assessment Cycle*				
Assessment Unit ID	*Name*	*Assessment Category 2008*	*Assessment Category 2010*	*Parameters Not Supporting 2008*	*DO*	*pH*	*T*	*Other*	*Total P > 0.025 mg/L or TSI>50*	*Winter DO/Fish Kills*	*Cyano Bacteria Present*	*2002*	*2004*	*2006*	*2008*	*2010*

Notes:

FS Fully Supporting

NS Not Supporting

Y Yes

N No

DO Dissolved Oxygen

FK Fish Kill

T Temperature

Total P Total Phosphorus

NA Not Analyzed

TDS Total Dissolved Solids

Table 11-6 Individual Lake and Reservoir 2010 Trophic State Index (TSI)

Individual Lake and Reservoir 2010 Trophic State Index (TSI)						
Watershed Management Unit	**Assessment Unit**	**Name**	**Date**	**TSI-SD**	**TSI-Chla**	**TSI-TP**
Colorado River West	UT-L-14060009-024	Cleveland Reservoir	7/31/2007	45	43	48
Colorado River West	UT-L-14060009-025	Electric Lake	7/31/2007	40	34	37
Colorado River West	UT-L-14070003-006	Fish Lake	9/24/2008	33	40	37
Colorado River West	UT-L-14070003-019	Forsyth Reservoir	7/6/2007	37	8	
Colorado River West	UT-L-14060009-034	Huntington Lake North	8/16/2007	56	8	37
Colorado River West	UT-L-14060009-017	Joes Valley Reservoir	8/1/2007	45	19	37

Individual Lake and Reservoir 2010 Trophic State Index (TSI)						
Watershed Management Unit	**Assessment Unit**	**Name**	**Date**	**TSI-SD**	**TSI-Chla**	**TSI-TP**
Colorado River West	UT-L-14070003-010	Johnson Valley Reservoir	8/1/2007	70	68	63
Colorado River West	UT-L-14070003-044	Lower Bowns Reservoir	7/11/2007	40	41	37
Colorado River West	UT-L-14070003-044	Lower Bowns Reservoir	6/25/2008	45	38	37
Colorado River West	UT-L-14070003-044	Lower Bowns Reservoir	7/22/2008	41	37	61
Colorado River West	UT-L-14070003-044	Lower Bowns Reservoir	8/6/2008	47	41	37
Colorado River West	UT-L-14070003-044	Lower Bowns Reservoir	9/23/2008	51	63	53
Colorado River West	UT-L-14060007-004	Lower Gooseberry Reservoir	7/31/2007	48	40	37

Individual Lake and Reservoir 2010 Trophic State Index (TSI)						
Watershed Management Unit	**Assessment Unit**	**Name**	**Date**	**TSI-SD**	**TSI-Chla**	**TSI-TP**
Colorado River West	UT-L-14070003-015	Mill Meadow Reservoir	8/1/2007	66	77	64
Colorado River West	UT-L-14060007-005	Scofield Reservoir	7/23/2007	47	34	47
Colorado River West	UT-L-14060007-005	Scofield Reservoir	7/23/2007		34	47
Colorado River West	UT-L-14070005-011	Wide Hollow Reservoir	6/28/2007	37	35	38
Colorado River West	UT-L-14070005-011	Wide Hollow Reservoir	7/22/2008			62

Notes:

TSI-SD = Trophic State Index from secchi disk

TSI-Chla = Trophic State Index from chlorophyll-a

TSI-TP = Trophic State Index from total phosphorus

Table 11-7 Summary of Individual Lake and Reservoir Trophic State Index (TSI)

Summary of Individual Lake and Reservoir Trophic State Index (TSI)														
Watershed Management Unit	Assessment Unit	Lake / Reservoir	Assessment Cycle Trophic State Index										Trophic State	
			1992	1994	1996	1998	2000	2002	2004	2008	2010 Old Method	2010 Current Method	2010 Old Method	2010 Current Method
Colorado River West	UT-L-14060009-024	Cleveland Reservoir	42	52	43	36	47	47	39	50	45	43	M	M
Colorado River West	UT-L-14060009-025	Electric Lake Reservoir	39	50	44	40	44	48	40	NA	37	34	O	O
Colorado River West	UT-L-14070003-006	Fish Lake	41	40	34	34	34	36	36	35	37	40	O	M
Colorado River West	UT-L-14070003-019	Forsyth Reservoir	62	53	57	49	55	51	46	50	27	8	O	O
Colorado River West	UT-L-14060009-034	Huntington Lake North	37	45	38	35	44	46	31	35	34	8	O	O
Colorado River West	UT-L-14060009-017	Joes Valley Reservoir	31	35	32	37	44	41	35	50	34	19	O	O

Summary of Individual Lake and Reservoir Trophic State Index (TSI)														
Watershed Management Unit	Assessment Unit	Lake / Reservoir	Assessment Cycle Trophic State Index										Trophic State	
			1992	1994	1996	1998	2000	2002	2004	2008	2010 Old Method	2010 Current Method	2010 Old Method	2010 Current Method
Colorado River West	UT-L-14070003-010	Johnson Reservoir	64	68	65	64	58	60	64	60	67	68	E	E
Colorado River West	UT-L-14070003-044	Lower Bowns Reservoir	50	41	47	48	41	40	44	56	39	44	O	M
Colorado River West	UT-L-14060007-004	Lower Gooseberry Reservoir	46	44	41	40	46	45	38	45	42	40	M	M
Colorado River West	UT-L-14070003-015	Mill Meadow Reservoir	67	69	56	60	50	56	46	63	69	77	E	H
Colorado River West	UT-L-14060007-005	Scofield Reservoir	63	56	53	42	45	46	44	52	43	34	M	O

Summary of Individual Lake and Reservoir Trophic State Index (TSI)														
Watershed Management Unit	Assessment Unit	Lake / Reservoir	Assessment Cycle Trophic State Index										Trophic State	
			1992	1994	1996	1998	2000	2002	2004	2008	2010 Old Method	2010 Current Method	2010 Old Method	2010 Current Method
Colorado River West	UT-L-14070005-011	Wide Hollow Reservoir	46	44	48	41	41	DRY	DRY	39	43	35	M	O

Notes:

2010 Old Method TSI calculated using the 2008 Integrated Report Methodology

2010 Current Method TSI calculated using the 2010 Integrated Report Methodology of only chlorophyll-a

O = Oligotrophic

M = Mesotrophic

E = Eutrophic

H = Hypereutrophic

Figures

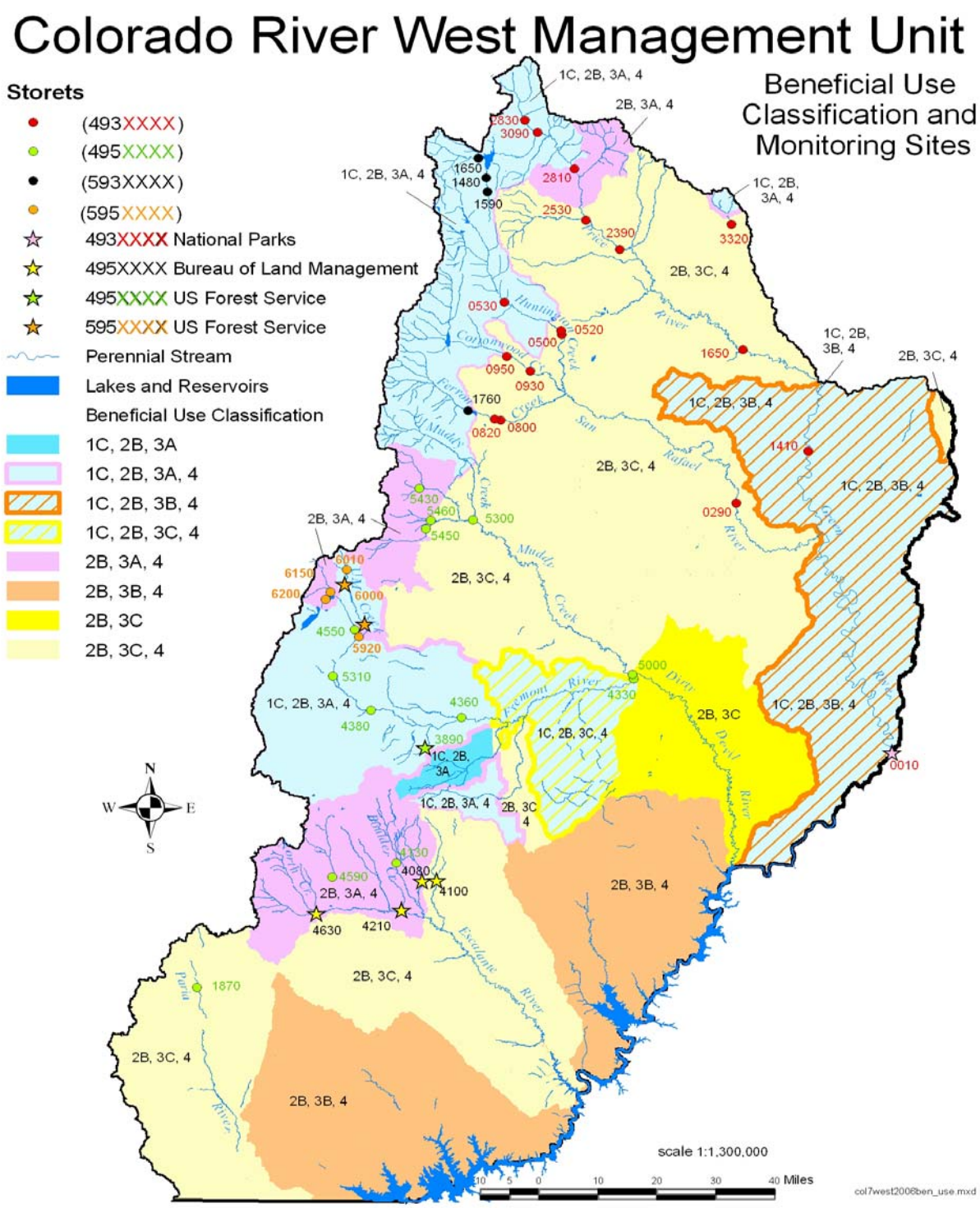

Figure 11-1 Beneficial Use Classes for Colorado River West Watershed Management Unit