

Chapter 2.11 Colorado River West Watershed Management Unit Water Quality Assessment

2.11.1 Introduction

The West Colorado Watershed Management Unit includes all streams located in the U.S.G.S. Hydrological Units (HUCs) listed in Table 2.11.1. Some of the major streams are the Price River, Huntington Creek, Cottonwood Creek, Ferron Creek, San Rafael River, Escalante River, Muddy Creek, Dirty Devil River, the Fremont River, and portions of the Green River.

Table 2.11.1. U.S.G.S. 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

2.11.2 Water Quality Assessment Results

Water quality and field data collected between January 1, 2002 and December 31, 2006 were assessed for beneficial use support. Assessments made for the 2006 intensive survey were reassessed to determine if the assessment was changed. Field and water chemistry data were compared against the water quality standards for the designated beneficial

Overall Beneficial Use Support

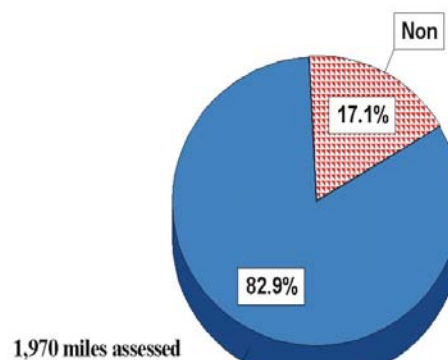


Figure 2.11.1. Overall Beneficial Use Support

Figure 2.11.1. Over all beneficial use support. use classifications assigned to the rivers and streams to determine beneficial use support. (Figure 2.11.1). Benthic macroinvertebrate data were used to assess some streams under DWQ's narrative standard (Chapter 2.15).

2.11.2.1 Overall Beneficial Use Support --There are an estimated 2,551 perennial stream miles within the West Colorado River Watershed Management Unit. An assessment of at least one beneficial use was made on 1,970.1 miles of streams. Of these 1,633.0 (82.9%) miles were assessed as fully supporting at least one beneficial use and 337.1 miles (17.1%) were assessed as not supporting at least one designated beneficial use (Figure 2.11.2).

2.11.2.2 Beneficial Use Assessment By Categories--Table 2.11.2 lists the streams miles that were assigned to each of the assessment categories. An AU can be placed in multiple categories when it is assessed. Therefore the number of stream miles listed in the table may exceed the number assessed.

Table 2.11.2. Stream Miles By Assessment Category – Colorado River West Watershed Management Unit		
Category	Category Definitions	Stream Miles
1	All beneficial uses fully supported.	0.0
2	Beneficial uses assessed are fully supported.	1,633.0
3A	No data or insufficient data to make an assessment.	470.4
3B	Lakes that are not supported for one cycle only.	
3C	Insufficient data to assess but an assessment plan is in place.	0.0
4A	Approved TMDL	88.2
4B	Pollution control requirements are expected to result in full beneficial use support in near future.	0.0
4C	Impaired by pollution, no TMDL required.	0.0
5	Impaired by pollutant, TMDL required.	278.2

2.11.2.3. Individual Use Support--Table 2.11.3 lists the beneficial use support by individual beneficial use classes. Of the Class 1C (source of drinking water) stream miles, 859.6 miles. All are fully supporting this beneficial use. The aquatic life beneficial is supported in 1,691.9 stream miles (85.9%) and 278.2 stream miles (14.1%) are not supporting aquatic life. Of the, 1,617.5 miles assessed for agricultural use, 1,532.6 miles (94.8 %) were are supported and 84.9 (5.2%) are not supported.

2.11.2.4 Total l Waters Impaired by Various Causes--Table 2.11.4 is a list of streams miles affected by the various causes identified as generally affecting water quality. The causes of water quality impairment were unknown causes, temperature, metals, total dissolved solids, dissolved oxygen and nutrients (total phosphorus) (Table 2.11.4) (Figure 2.11.4). The relative percent impact by causes is illustrated in Figure 2.11.5

2.11.2.5. Total Waters Impaired by Various Sources The sources of

impairment were unknown sources, agricultural activities, natural sources, habitat modification and drought (Figure 2.11.6). The relative percent impacts by sources are illustrated in Figure 2.11.7.

Table 2.11.3 Individual Beneficial Use Support – Colorado River West Watershed Management Unit (Stream Miles)				
	Size	Size Fully	Size Not	
Use	Assessed	Supporting	Supporting	Totals
Aquatic Life	1,970.1	,1691.9	248.9	1,970.1
Fish Consumption	0.0	0.0	0.0	0.0
Swimming	0.0	0.0	0.0	0.0
Secondary Contact	0.0	0.0	0.0	0.0
Drinking Water	859.6	859.6	0.0	859.6
Agricultural	1,970.1	1,532.6	84.9	1617.5
Use				
Aquatic Life		85.9%	14.1%	100.0%
Fish Consumption		0.0%	0.0%	100.0%
Swimming		0.0%	0.0%	100.0%
Secondary Contact		0.0%	0.0%	100.0%
Drinking Water		100.0%	0.0%	100.0%
Agricultural		94.8%	5.2%	100.0%

Colorado River West Management Unit

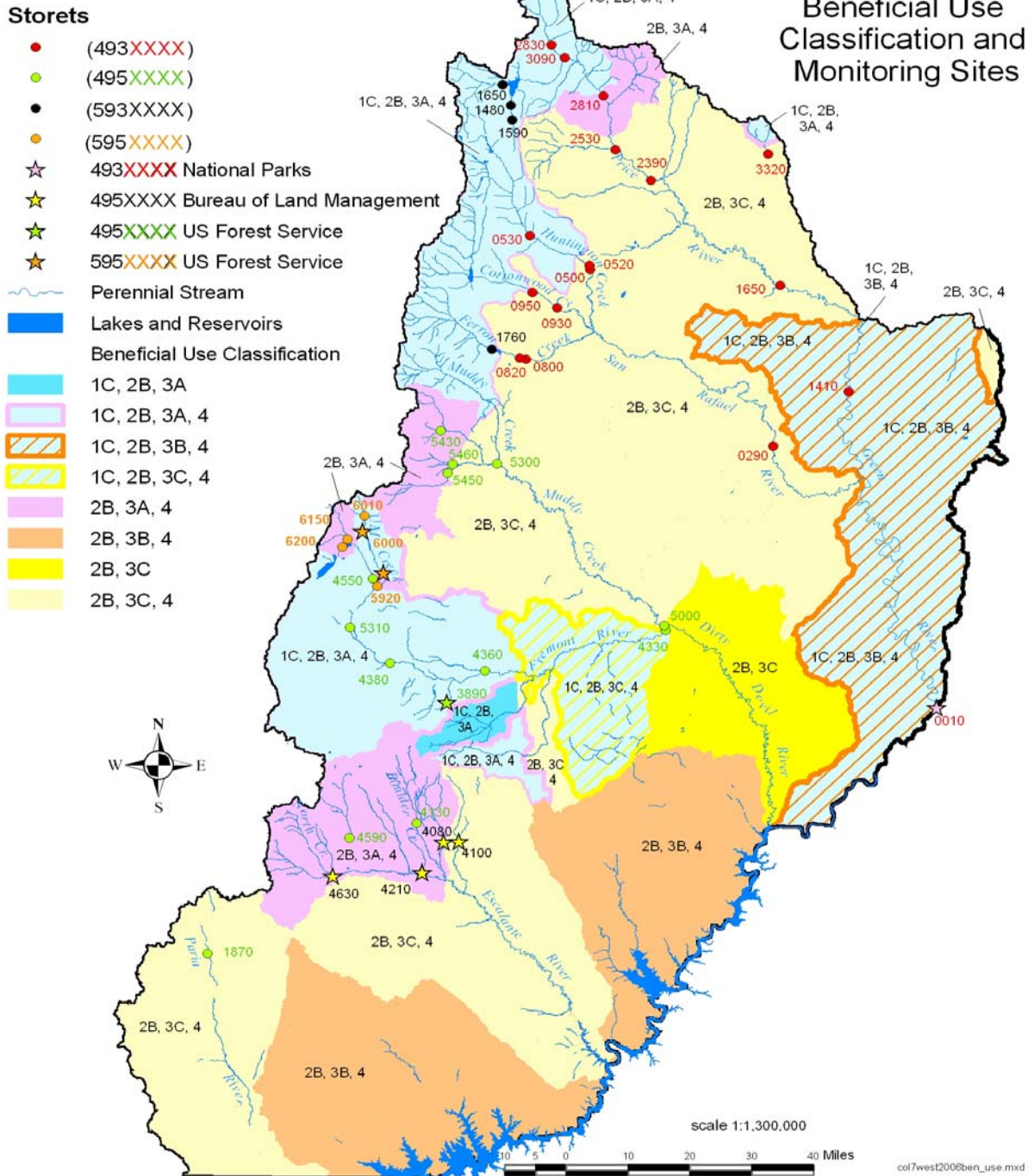


Figure 2.6.2. Beneficial use classifications – Colorado River West Watershed Management Unit.

Colorado River West Management Unit

Assessment Categories 2008

Storets

- 493XXXX
- 495XXXX
- 593XXXX
- 595XXXX
- 599XXXX
- ★ 495XXXX Bureau of Land Management
- ★ 493XXXX National Parks
- ★ 495XXXX US Forest Service
- ★ 595XXXX US Forest Service

● Lakes and Reservoirs

2008 Assessment Categories

- 2: Assessed Classes Supporting
- 3A: Not Assessed (need more data)
- 4A: All TMDLs Approved
- 4A, 5: Some TMDLs approved, Others Required
- 5: TMDL Required

*4C: A pollution parameter listed as category 4C does not require a TMDL analysis.

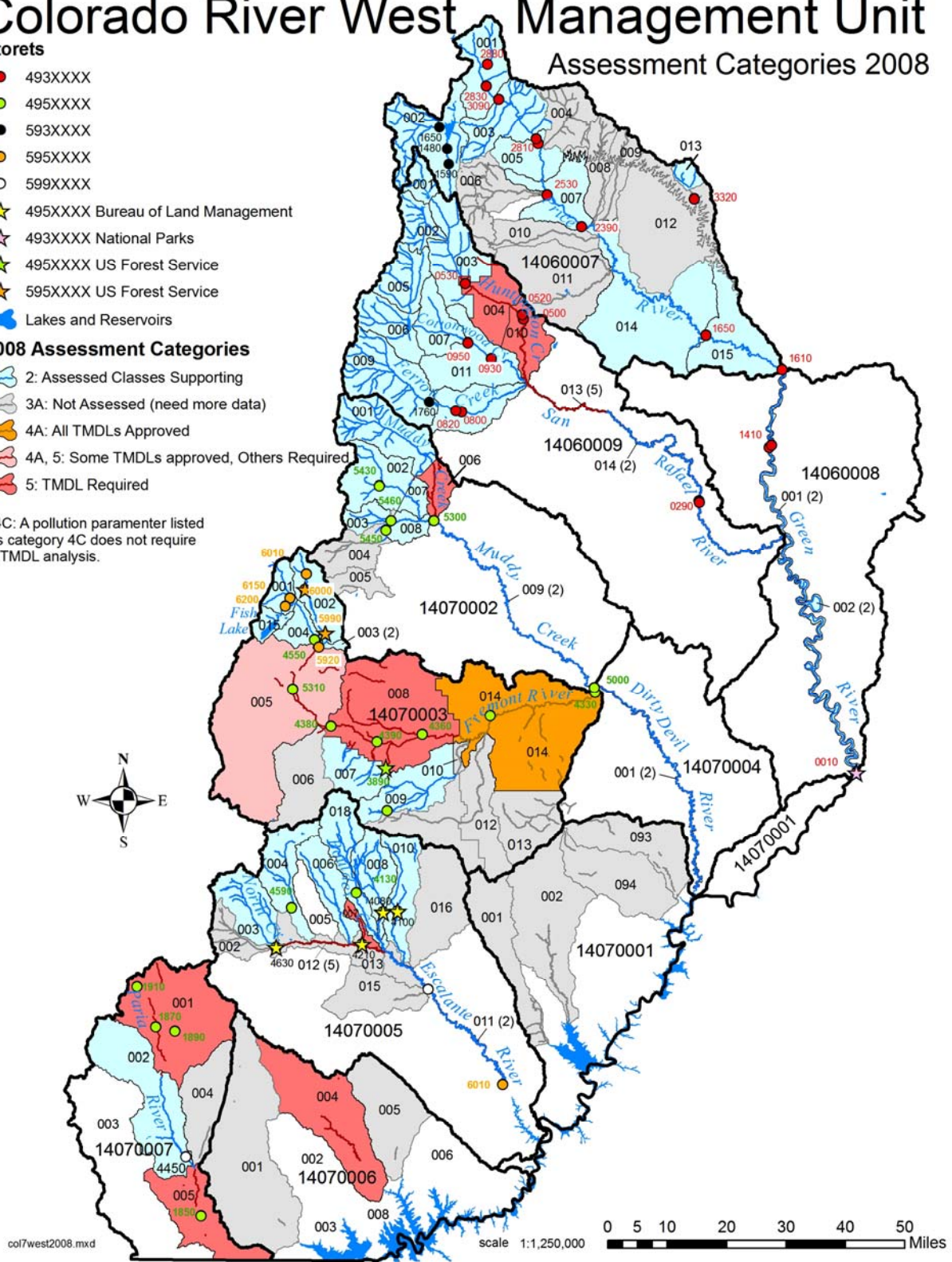


Figure 2.3.3. Beneficial use assessment by category – Colorado River West Watershed Management Unit.

Table 2.11.4 Total Waters Impaired by Various Cause Categories (Stream Miles) – Colorado River West Watershed Management Unit	
Cause Category	Stream Miles
Cause unknown	0.0
Unknown toxicity	0.0
Pesticides	0.0
Priority organics	0.0
Nonpriority organics	0.0
Metals	45.9
Ammonia	0.0
Chlorine	0.0
Other inorganics	0.0
Nutrients	29.3
pH	0.0
Siltation/Sediments	0.0
Organic enrichment/low DO	29.3
Salinity/TDS/Chlorides	84.9
Thermal modifications	70.9
Flow alterations	0.0
Other habitat alterations	0.0
Pathogen Indicators	0.0
Radiation	0.0
Oil and grease	0.0
Taste and odor	0.0
Noxious aquatic plants	0.0
Total toxics	0.0
Turbidity	0.0
Benthic Macroinvertebrates	213.2
Other (specify)	0.0

Table 2.11.5. Total Waters Impaired by Various Source Categories (Stream Miles) – Colorado River West Watershed Management Unit.	
Source Category	Stream Miles
Industrial Point Sources	0.0
Municipal Point Sources	0.0
Combined Sewer Overflow	0.0
Agriculture	140.0
Silviculture	0.0
Construction	0.0
Urban Runoff/Storm Sewers	0.0
Resource Extraction	0.0
Land Disposal	0.0
Hydromodification	0.0
Habitat Modification	0.0
Marinas	0.0
Atmospheric Deposition	0.0
Contaminated Sediments	0.0
Unknown Source	232.4
Natural Sources	130.7
Reservoir Releases	0.0
Recreation	0.0
Aquaculture	0.0
Extreme Drought	51.9
Out of State	0.0

Percent of Stream Miles Affected By Causes

2008 Integrated Report Assessment - Colorado River West Management Unit

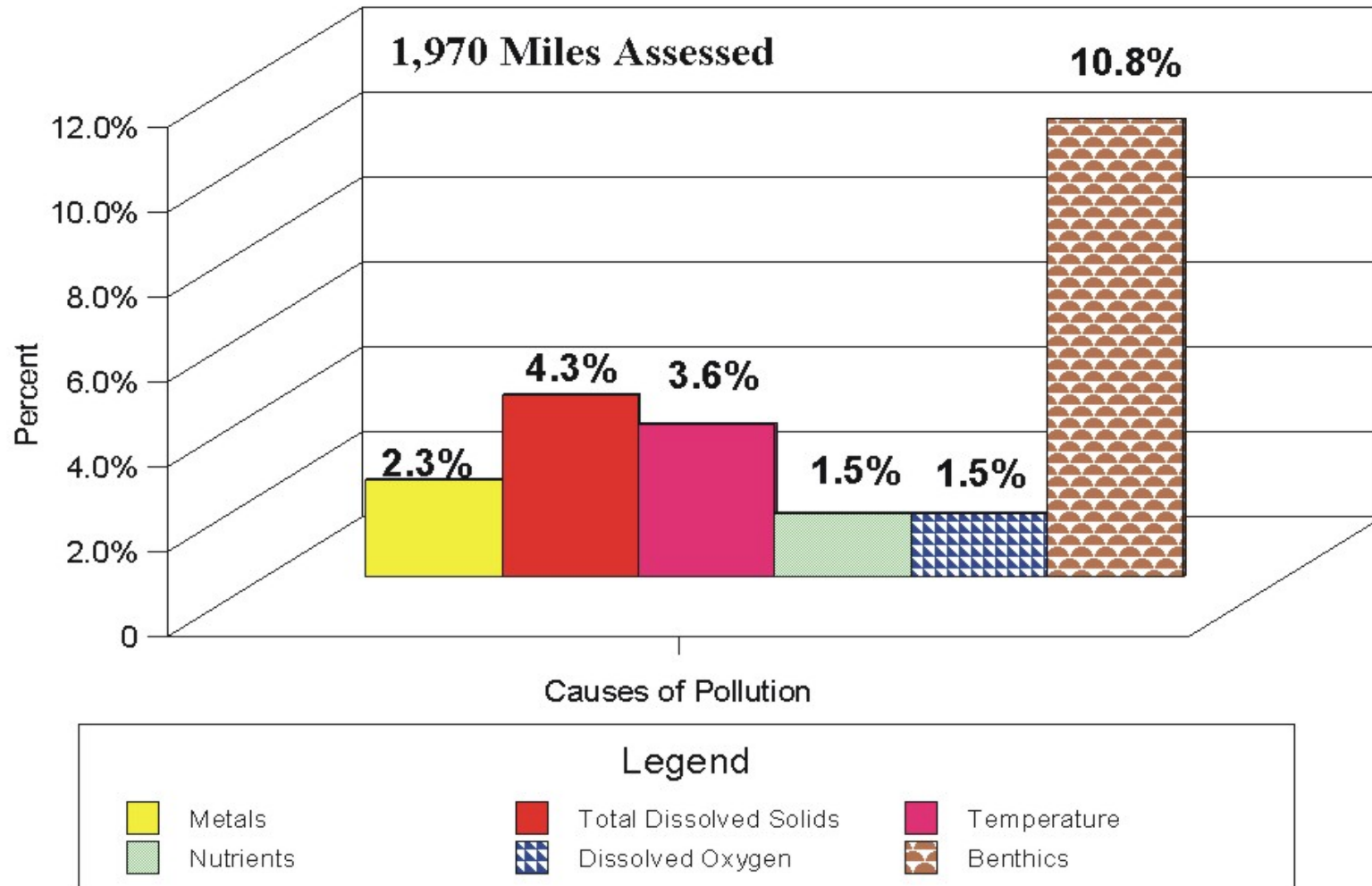


Figure 2.11.4. Percent impact by causes on stream water quality – Colorado River West Watershed Management Unit.

Causes of Stream Water Quality Impairments

2008 Integrated Report Assessment - Colorado River West Watershed Management Unit

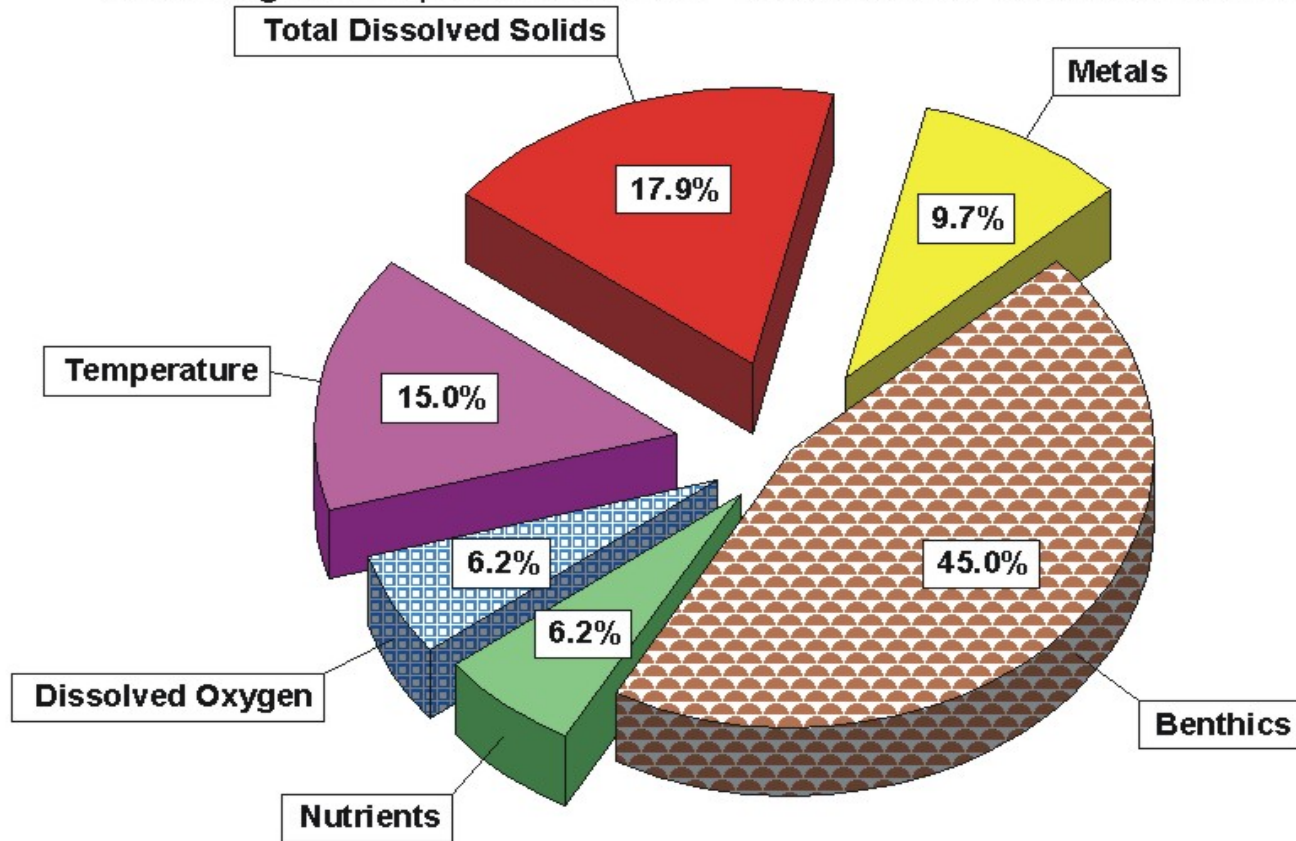


Figure 2.11.7. Relative percent contribution of causes on stream water quality – Colorado River West Watershed Management Unit.

Percent of Stream Miles Affected By Sources

2008 Integrated Report Assessment - Colorado River West Mangement Unit

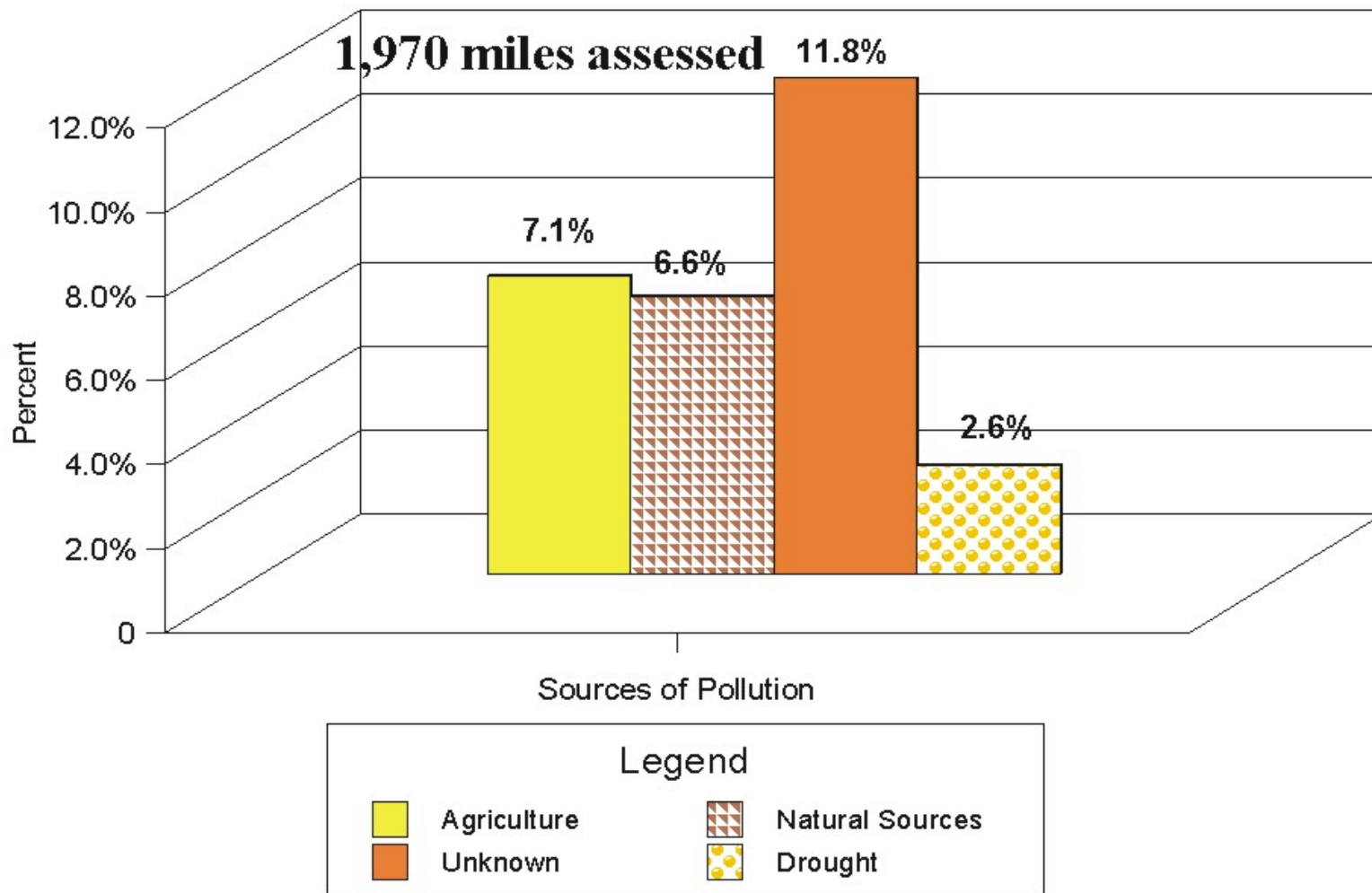


Figure 2.11.6. Percent impact by sources on stream water quality – Colorado River West Watershed Management Unit.

Sources of Stream Water Quality Impairment

2008 Integrated Report Assessment - Colorado River West

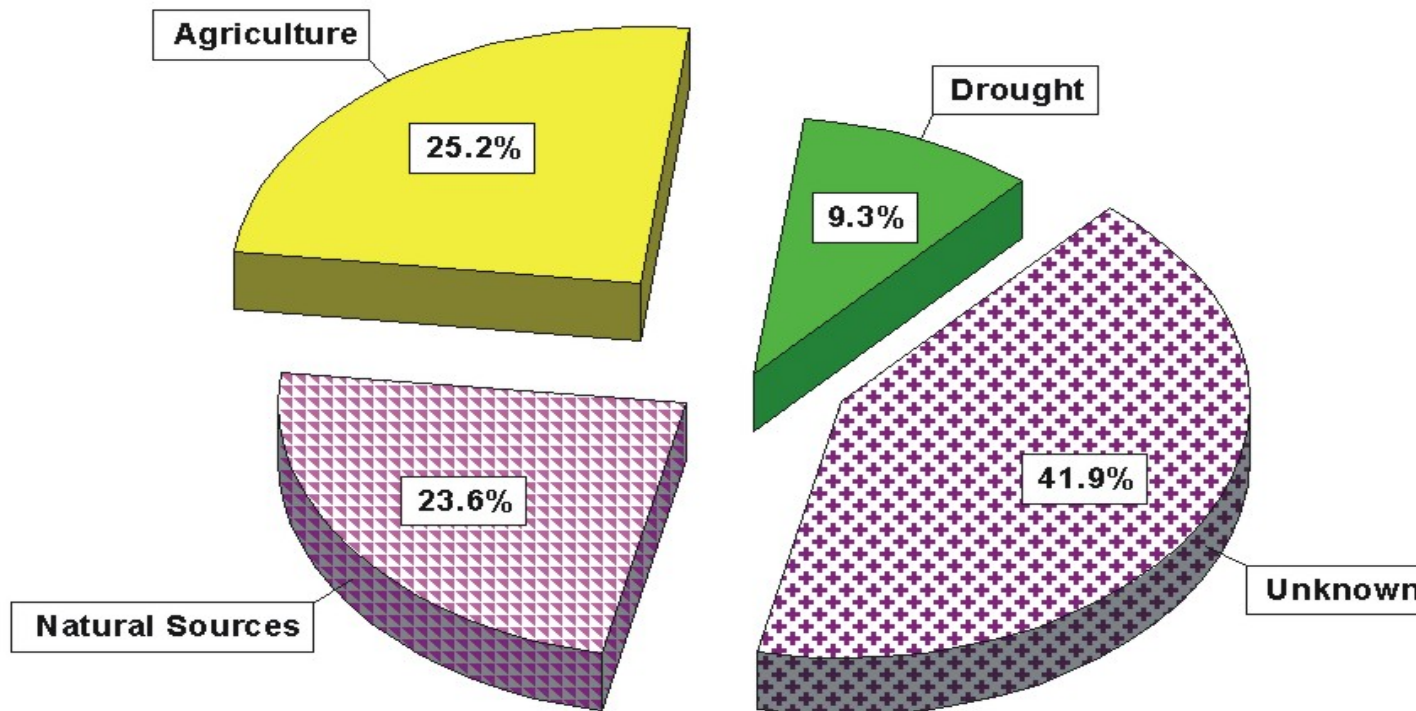


Figure 2.11.7. Relative percent contribution of sources on stream water quality – Colorado River West Watershed Management Unit.

Table 2.11.6. Impaired Waters Located in the Colorado River West Watershed Management Unit.

Assessment	Assessment	Assessment	Beneficial Use	Beneficial		Pollutant	
Unit	Unit	Unit	Class	Use	Support	Or	Stream
ID	Name	Description	Impaired	Support	Category	Pollution	Miles
UT14070003-005	Fremont River-2	Fremont River and tributaries from Bicknell to Mill Meadow Reservoir near USFS boundary	3A	NS	4A	Organic Enrichment/Low DO	29.34
UT14070003-005	Fremont River-2	Fremont River and tributaries from Bicknell to Mill Meadow Reservoir near USFS boundary	3A	NS	4A	Total Phosphorus	29.34
UT14070003-014	Fremont River-4	Fremont River and tributaries from confluence with Dirty Devil to east boundary of Capitol Reef National Park, except Pleasant and Sandy Creeks	4	NS	4A	Salinity/TDS/Chlorides	58.89
UT14060009-004	Huntington Creek-2	Huntington Creek and tributaries from Highway 10 crossing to USFS boundary	3A	NS	5	Temperature	19.24
UT14060009-010	Huntington Creek-1	Huntington Creek and tributaries from confluence with Cottonwood Creek to Highway 10	3C	NS	5	Selenium	25.79
UT14060009-013	Upper San Rafael	San Rafael River from Buckhorn Crossing to confluence of Huntington and Cottonwood Creeks	3C	NS	5	Benthic Macroinvertebrate Assessment Impairment	23.3
UT14070002-006	Middle Muddy	Muddy Creek and tributaries from Ivie Creek confluence to U-10 crossing	3C	NS	5	Selenium	20.06
UT14070003-005	Fremont River-2	Fremont River and tributaries from Bicknell to Mill Meadow Reservoir near USFS boundary	3A	NS	5	Benthic Macroinvertebrate Assessment Impairment	29.34
UT14070003-008	Fremont River-3	Fremont River and tributaries from east boundary of Capitol Reef National Park to Bicknell	3A	NS	5	Benthic Macroinvertebrate Assessment Impairment	82.88
UT14070005-007	Calf Creek	Calf Creek and tributaries from confluence with Escalante River to headwaters	3A	NS	5	Benthic Macroinvertebrate Assessment Impairment	8.13
UT14070005-007	Calf Creek	Calf Creek and tributaries from confluence with Escalante River to headwaters	3A	NS	5	Temperature	8.13
UT14070005-012	Upper Escalante	Escalante River from Boulder Creek confluence to Birch Creek confluence	3A	NS	5	Benthic Macroinvertebrate Assessment Impairment	26.78

Table 2.11.6. Impaired Waters Located in the Colorado River West Watershed Management Unit.

Assessment	Assessment	Assessment	Beneficial Use	Beneficial		Pollutant	
Unit	Unit	Unit	Class	Use	Support	Or	Stream
ID	Name	Description	Impaired	Support	Category	Pollution	Miles
UT14070005-012	Upper Escalante	Escalante River from Boulder Creek confluence to Birch Creek confluence	3A	NS	5	Temperature	26.78
UT14070006-004	Chance Creek	Chance Creek and tributaries from Lake Powell to headwaters	3A	NS	5	Benthic Macroinvertebrate Assessment Impairment	16.72
UT14070007-001	Paria River-1	Paria River from start of Paria River Gorge to headwaters	3C	NS	5	Benthic Macroinvertebrate Assessment Impairment	16.77
UT14070007-001	Paria River-1	Paria River from start of Paria River Gorge to headwaters	3C	NS	5	Temperature	16.77
UT14070007-001	Paria River-1	Paria River from start of Paria River Gorge to headwaters	4	NS	5	Salinity/TDS/Chlorides	16.77
UT14070007-005	Paria River-3	Paria River and tributaries from Arizona-Utah state line to Cottonwood Creek confluence	3C	NS	5	Benthic Macroinvertebrate Assessment Impairment	9.23
UT14070007-005	Paria River-3	Paria River and tributaries from Arizona-Utah state line to Cottonwood Creek confluence	4	NS	5	Salinity/TDS/Chlorides	9.23