

Chapter 2.4 Bear River Watershed Management Unit

2.4.1 Introduction

The Bear River Basin is part of the Great Basin Hydrologic region, and is comprised of the U.S.G.S. Hydrological Units (HUCs) listed in Table 2.4-1. The Bear River is the principal stream within this drainage area. It flows north out of Utah into Wyoming, then back into Utah, returns to Wyoming, then crosses into Idaho, then flows southwest into Utah and empties into the Great Salt Lake. The Bear River is the longest river (approximately 500 miles long) in the United States whose waters do not eventually empty into an ocean. Originally the Bear River did not flow into Bear Lake, but since the early 1900's, it has been diverted into Bear Lake at Stewart Dam. Water flows from Bear Lake into the Bear River via a canal. Other streams of interest include the Logan, Blacksmith Fork, Cub River and the Little Bear Rivers.

Table 2.4-1 U.S.G.S. Hydrological Units in the Bear River Watershed Management Unit

Hydrological Unit Code	Hydrological Unit Name
16010101	Upper Bear
16010102	Central Bear
16010201	Bear Lake
16010202	Middle Bear
16010203	Little Bear - Logan
16010204	Lower Bear - Malad

2.4.2 Water Quality Assessment Results

Water chemistry and field data collected from January 1, 2002 through December 31, 2006 were used to make assessments. Benthic macroinvertebrate data were collected at several monitoring sites (Chapter 2.15) were used to assess aquatic life beneficial uses under the State's narrative standard. Water quality data were compared against standards established for each of the designated beneficial uses that can be assigned to rivers and streams within the state to determine beneficial use support. The designated beneficial use classes assigned to rivers and streams in the Bear River Watershed Management Unit are mapped in Figure 2.4-1.

2.4.1.1 Overall Beneficial Use Support

An assessment of beneficial use support was made for 1,043.2 miles. Based upon at least one beneficial use being assessed, 741.71 miles (71.1%) were assessed as fully supporting and 28.9% as not supporting (Figure 2.4-2).

Bear River Management Unit

Beneficial Use Classification and Monitoring Sites

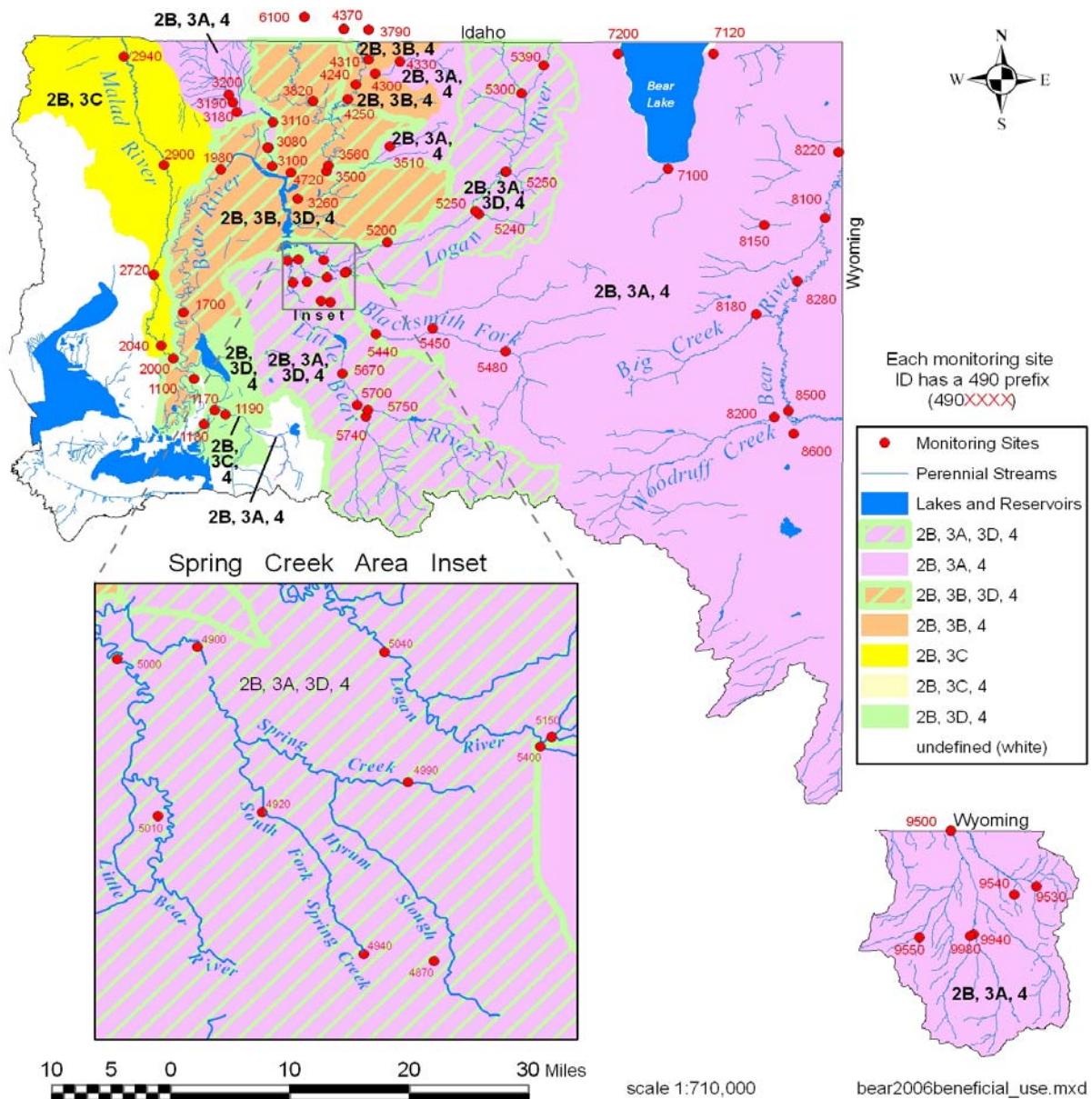


Figure 2.4-1 River and stream beneficial use classes – Bear River Watershed Management Unit

Overall Beneficial Use Support

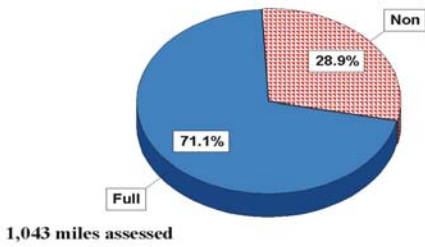


Figure 2.4-2 Overall Beneficial Use Support

2.4.1.2 Assessment by Categories

Table 2.4-2 is a list of streams miles assigned to the various beneficial use categories during the assessment. Figure 2.4-3 is a map of the stream miles that were assessed during this cycle.

Table 2.4-2 Stream Miles by Assessment Category – Bear River Watershed Management Unit

Category	Category Definition	Stream Miles
1	All beneficial uses fully supported.	
2	Beneficial uses assessed are fully supported.	741.71
3A	No data or insufficient data to make an assessment.	178.28
3B	Lakes that are not supported for one cycle only.	
3C	Insufficient data to assess but an assessment plan is in place.	
4A	Approved TMDL	172.46
4B	Pollution control requirements are expected to result in full beneficial use support in near future.	
4C	Impaired by pollution, no TMDL required.	
5	Impaired by pollutant, TMDL required.	176.01

2.4.1.3 Individual Beneficial Use Support

Use support by individual beneficial use designations is summarized in Table 2.4-3. For aquatic life, 910.79 miles were assessed. Of these, 859.08 miles (77.1%), are supporting aquatic life. There are 51.71.0 (28.9%) miles not supporting aquatic life. Of the 910.79 miles assessed for agricultural use, 859.1 miles (94.3%) are fully supporting and 51.7 miles (5.7%) are not supporting this beneficial use. Of the stream miles assessed for swimming and secondary contact recreation (34.2 miles), were not supporting this beneficial use. They were impaired by pH and pathogens.

Table 2.4-3 Individual Use Support Summary – Bear River Watershed Management Unit

	Size	Size Fully	Size Not	
	Assessed	Supporting	Supporting	Totals
Use				
Drinking Water				
Fish Consumption	0	0	0	0
Swimming	34.2	0	34.2	34.2
Secondary Contact	34.2	0	34.2	34.2
Aquatic Life	1,043.6	741.47	301.96	1,043.67
Agricultural	910.79	859.08	51.71	910.79
Drinking Water				
Fish Consumption	0	0	0	0
Swimming		0	100.0%	100.0%
Secondary Contact		0	100.0%	100.0%
Aquatic Life		77.1%	28.9%	100.0%
Agricultural		94.3%	5.7%	100.0%

Bear River Management Unit

2008 Assessment Categories

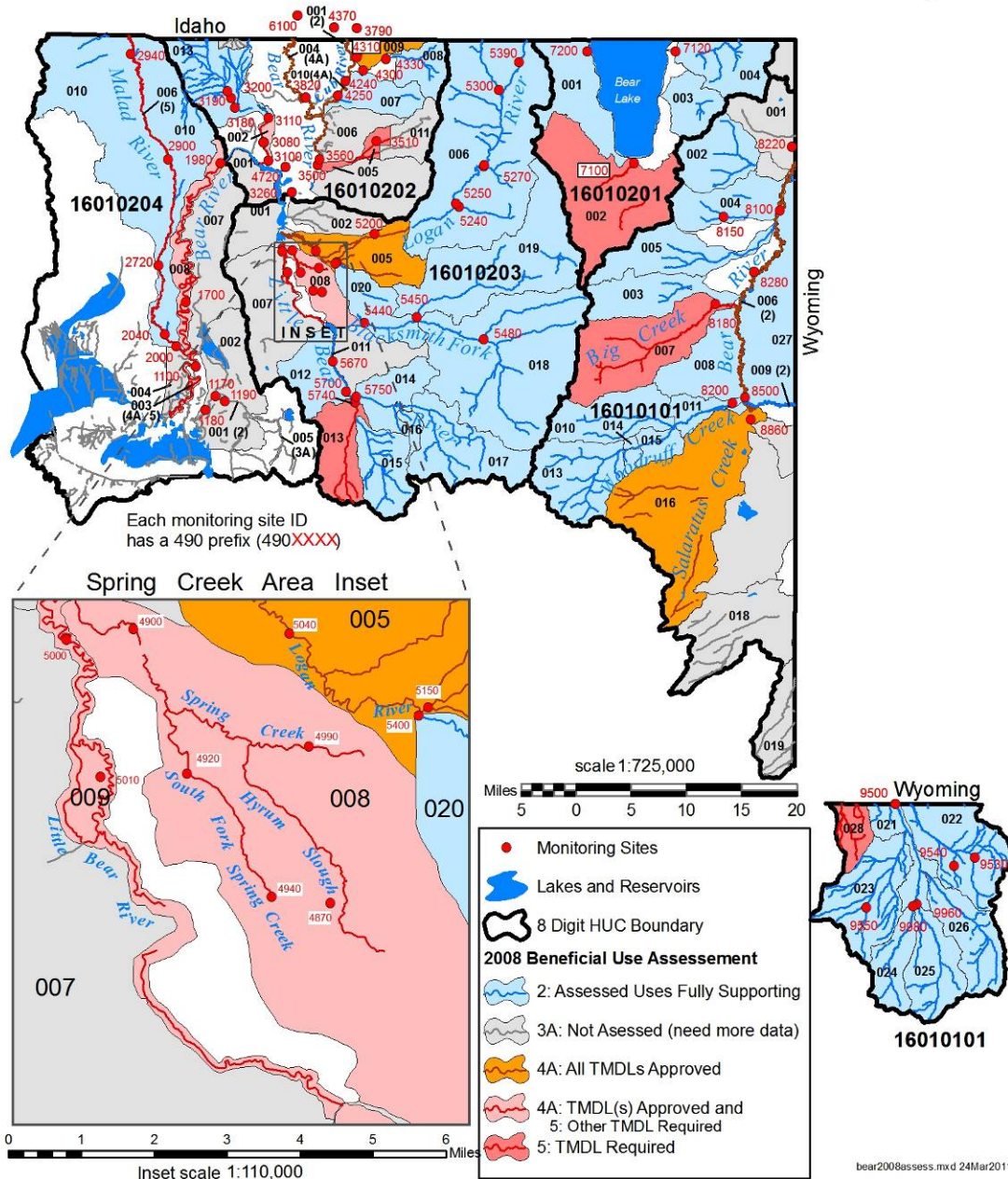


Figure 2.4-3 2008 Assessment Categories – Bear River Watershed Management Unit

2.4.1.4 Total Impaired Waters by Various Causes

Table 2.4-4 is a list of the stream miles affected by the various causes categories identified as generally affecting water quality in the Bear River Watershed Management Unit. The major cause of water quality impairment is total phosphorus, a nutrient (Figure 2.4-4). Other factors affecting beneficial uses are temperature, total dissolved solids, and pH. Unknown causes affect 51.96 stream miles. The relative percent impact by causes is shown in Figure 2.4-5.

2.4.1.5 Total Waters Impaired by Various Sources

Table 2.4-5 is a list of the stream miles affected by various source categories. Sources of impairment include agriculture, unknown sources, industrial point sources, municipal point sources, natural sources, urban runoff, hydromodification, and habitat modification. The percent of the stream miles affected by sources is illustrated in Figure 2.4-6. The relative percent impacts by sources are illustrated in Figure 2.4-7.

2.4.1.6 Impaired Assessment Units

Table 2.4-6 is a list of the impaired waters in the Bear River Watershed Management Unit.

Table 2.4-4 Total Waters Impaired by Various Cause Categories (Stream Miles) - Bear River Watershed Management Unit	
Cause Category	Stream Miles
Benthic Macroinvertebrate Assessment Impairment	68.36
E. coli	7.36
Flow Alteration	
Netals	
Organic Enrichment/Low DO	7.36
Other Habitat Alterations	
pH	26.84
Radiation	
Salinity/TDS/Chlorides	24.87
Siltation	
Temperature	63.34
Total Phosphorus	172.46
Unionized Ammonia	7.36

Table 2.4-4 Total Waters Impaired by Various Cause Categories (Stream Miles) – Bear River Watershed Management Unit

Table 2.4-5 Total Waters Impaired by Various Source Categories (Stream Miles) – Bear River Watershed Management Unit

Table 2.4-5. Total Waters Impaired by Various Source Categories (Stream Miles) – Bear River Watershed Management Unit.	
Source Category	Stream Miles
Agriculture	172.46
Aquaculture	
Construction	
Drought	
Habitat Modification (other than Hydromodification)	14.31
Hydromodification	11.96
Industrial Point Sources	66.37
Land Development	
Major Municipal Point Source	
Municipal Point Sources	66.37
Natural Sources	17.51
Resource Extraction	
Septic	
Source Unknown	151.74
Sources outside State Jurisdiction or Borders	
Urban Runoff/Storm Sewers	36.2

Percent of Stream Miles Affected By Causes

2008 Integrated Report Assessment - Bear River Watershed Management Unit

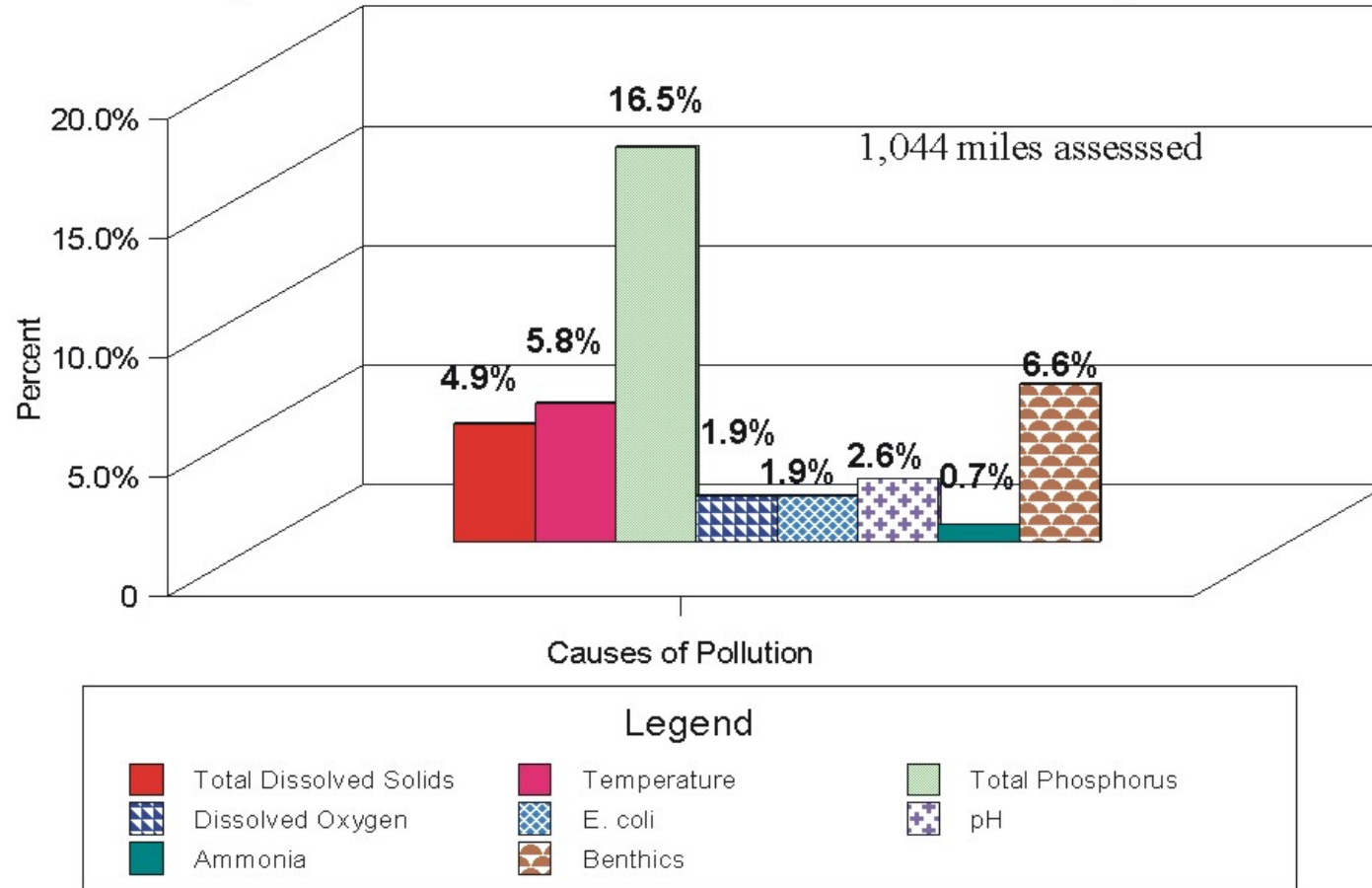


Figure 2.4-4 Percent of assessed stream miles impacted by various causes – Bear River Watershed Assessment Unit

Causes of Stream Water Quality Impairments

2008 Integrated Report Assessment - Bear River Watershed Management Unit.

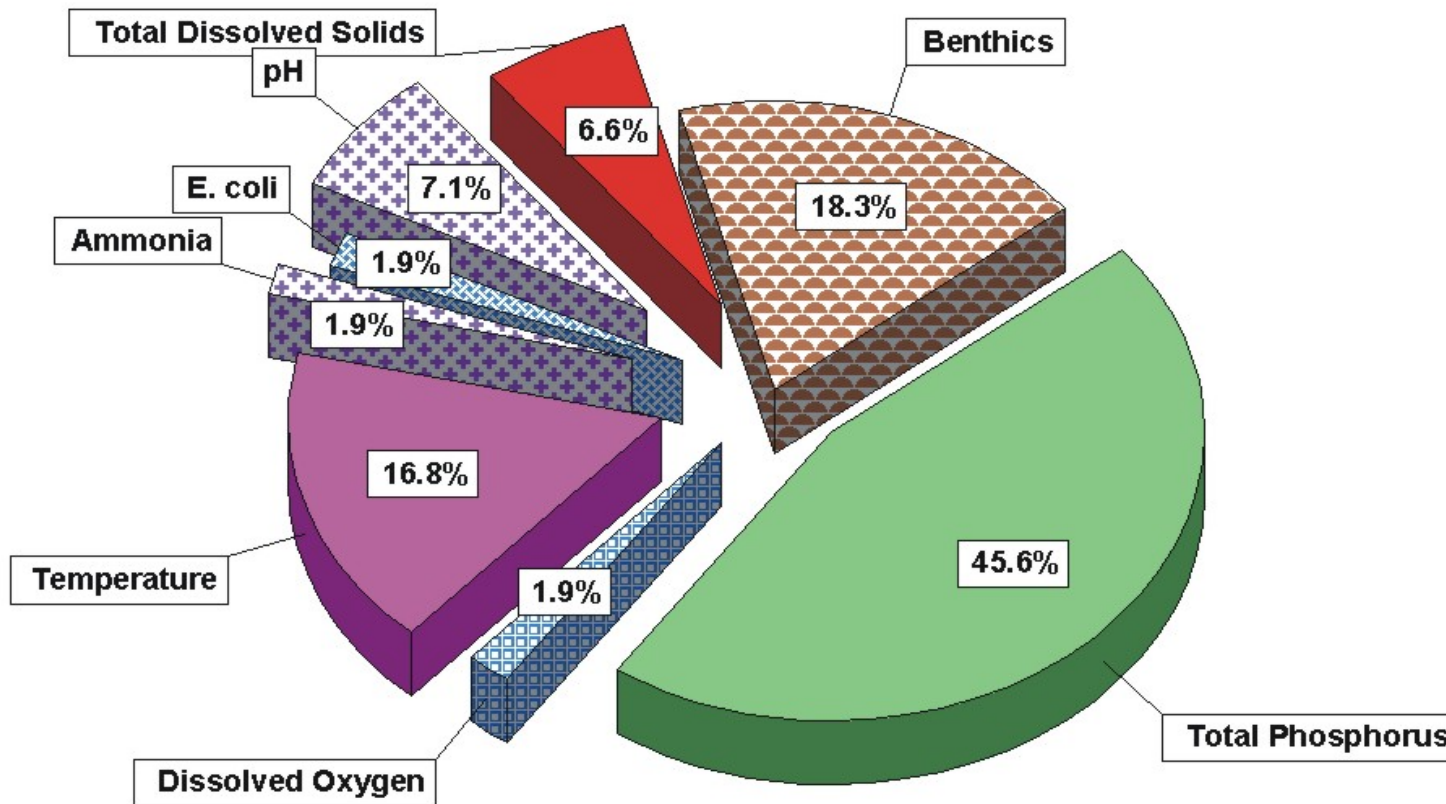


Figure 2.4-5 Relative percent impact by causes on water quality – Bear River Watershed Management Unit

Percent of Stream Miles Affected By Sources

2008 Integrated Report Assessment - Bear River Watershed Management Unit

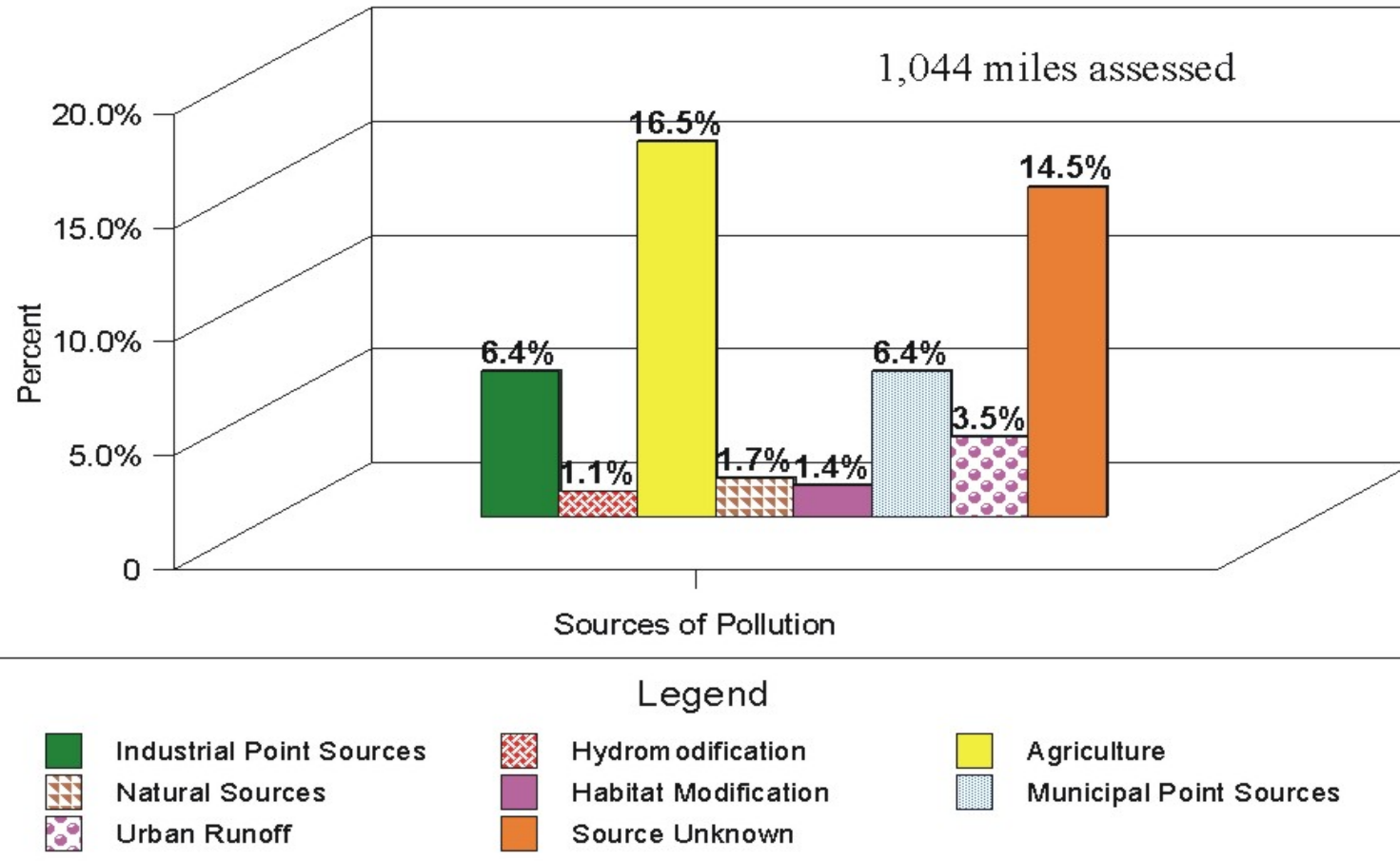


Figure 2.4-6 Percent of stream miles impacted by various sources – Bear River Watershed Management Unit

Sources of Stream Water Quality Impairment

2008 Integrated Report Assessment - Bear River Watershed Unit

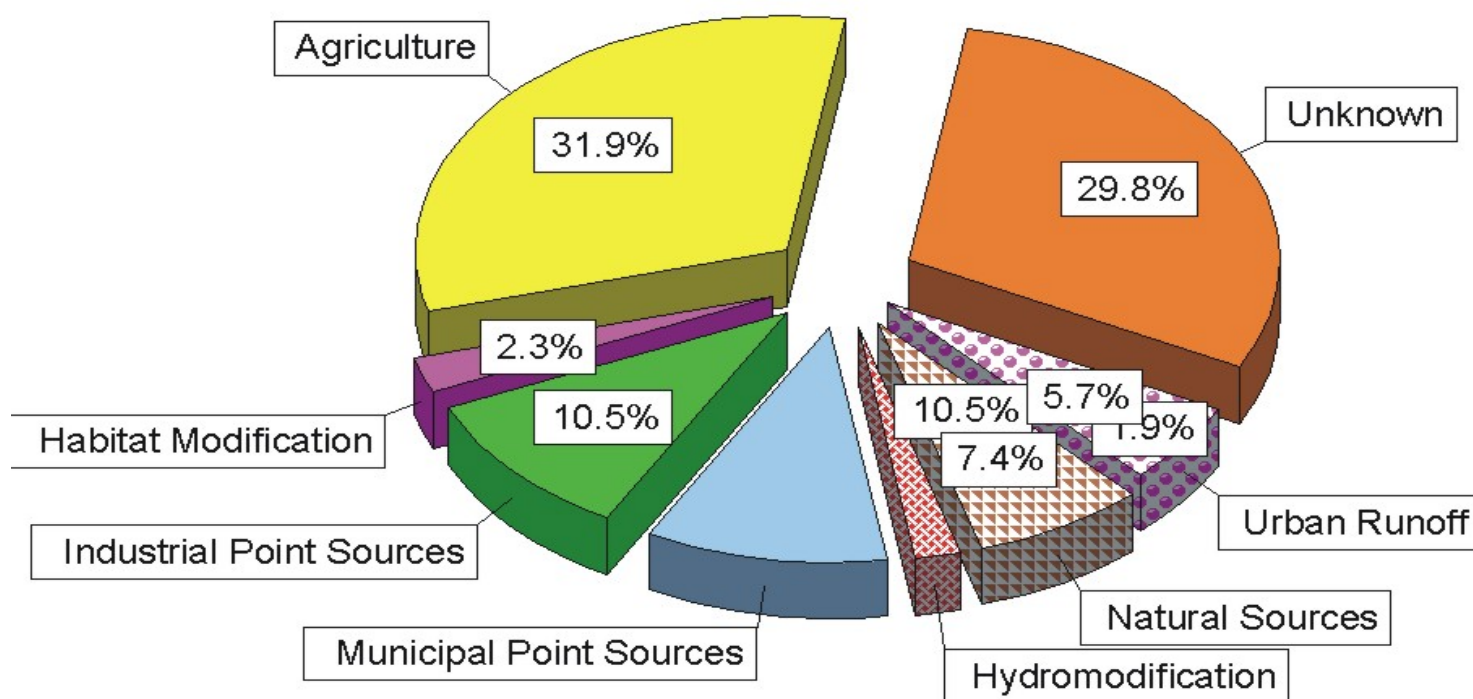


Figure 2.4-7 Relative percent impact by sources on stream water quality – Bear River Watershed Management Unit

Table 2.4-6 Impaired Waters Located in the Bear River Watershed Management Unit

	Assessment Unit	Assessment Unit	Assessment Unit	Beneficial Use Class	Beneficial Use Support	Support Category	Pollutant Or Pollution	Stream Miles
	ID	Name	Description	Impaired	Support	Category		
Bear River	UT16010101-007	Big Creek	Big Creek and tributaries from Bear River to headwaters	2B	NS	5	pH	26.84
Bear River	UT16010101-007	Big Creek	Big Creek and tributaries from Bear River to headwaters	3A	NS	5	pH	26.84
Bear River	UT16010101-007	Big Creek	Big Creek and tributaries from Bear River to headwaters	4	NS	5	pH	26.84
Bear River	UT16010101-007	Big Creek	Big Creek and tributaries from Bear River to headwaters	3A	NS	5	Temperature	26.84
Bear River	UT16010101-028	Yellow Creek	Yellow Creek and tributaries from Utah-Wyoming border to headwaters	3A	NS	5	Benthic macroinvertebrate assessment impairment	16.4
Bear River	UT16010201-002	Laketown	Laketown and Big Creek and other tributaries from Bear Lake to headwaters	3A	NS	5	Temperature	11.5
Bear River	UT16010202-002	Newton Creek	Newton Creek from confluence with Cutler Reservoir to Newton Reservoir	3A	NS	5	Temperature	5.16
Bear River	UT16010202-005	Summit Creek Lower	Summit Creek and tributaries from confluence with Bear River to USFS boundary	3A	NS	5	Temperature	6.8
Bear River	UT16010203-008	Spring Creek	Spring Creek and tributaries from confluence with Little Bear River to headwaters	4	NS	5	TDS	7.36
Bear River	UT16010203-008	Spring Creek	Spring Creek and tributaries from confluence with Little Bear River to headwaters	3A	NS	5	Benthic macroinvertebrate assessment impairment	7.36
Bear River	UT16010203-008	Spring Creek	Spring Creek and tributaries from confluence with Little Bear River to headwaters	3A	NS	5	Temperature	7.36

	Assessment	Assessment	Assessment	Beneficial Use	Beneficial		Pollutant	
	Unit	Unit	Unit	Class	Use	Support	Or	Stream
	ID	Name	Description	Impaired	Support	Category	Pollution	Miles
Bear River	UT16010203-009	Little Bear River-1	Little Bear River from Cutler Reservoir to Hyrum Reservoir	3A	NS	5	Temperature	16.52
Bear River	UT16010203-009	Little Bear River-1	Little Bear River from Cutler Reservoir to Hyrum Reservoir	3A	NS	5	Benthic Macroinvertebrate Assessment Impairment	16.52
Bear River	UT16010203-009	Little Bear River-1	Little Bear River from Cutler Reservoir to Hyrum Reservoir	3C	NS	5	Benthic Macroinvertebrate Assessment Impairment	16.52
Bear River	UT16010203-013	South Fork Little Bear	South Fork Little Bear and tributaries from confluence with Little Bear River to headwaters, except Davenport Creek	3A	NS	5	Temperature	16
Bear River	UT16010204-003	Bear River-1	Bear River from Great Salt Lake to Malad River confluence	4	NS	5	TDS	17.51
Bear River	UT16010204-006	Malad River-1	Malad River from confluence with Bear River to Utah-Idaho state line	3C	NS	5	Benthic macroinvertebrate assessment impairment	51.96
Bear River	UT16010204-008	Bear River-2	Bear River from Malad River confluence to Cutler Reservoir	3B	NS	5	Benthic macroinvertebrate assessment impairment	41.5
Bear River	UT16010204-008	Bear River-2	Bear River from Malad River confluence to Cutler Reservoir	3D	NS	5	Benthic macroinvertebrate assessment impairment	41.5

Chapter 2.5 Weber River Watershed Management Unit Assessment

2.5.1 Introduction

The Weber River rises in Summit County near Reids Peak (11,708 ft), then flows west to Oakley, Utah; then turns and flows in a north westerly direction to the Great Salt Lake (4,200 ft). The Weber River is approximately 125 miles long; one-half of which lies in Summit County, 25 miles flow in Morgan County and 30 miles in Weber County. The Ogden River, the major tributary to the Weber River, lies within Weber County and enters the Weber River about 12 miles upstream from its mouth. The other major tributaries to the Weber River are East Canyon Creek, Lost Creek, Chalk Creek, and Beaver Creek. Two smaller tributaries that can affect the water quality of the Weber River are Echo Creek and Silver Creek.

Table 2.5-1 U.S.G.S. Hydrological Units in the Weber River Watershed Management Unit

Hydrological Unit Code	Hydrological Unit Name
16020101	Upper Weber
16020102	Lower Weber

2.5.2 Water Quality Assessment Results

Data collected from January 1, 2002 through December 31, 2006 were used to assess the rivers and streams in this watershed management unit. Data included the intensive survey data and data collected at long-term and point source sites. The designated beneficial use classes assigned to rivers and streams are mapped in Figure 2.5-2. Water chemistry and field data were compared against state standards to determine beneficial use support. Benthic macroinvertebrate data were used to assess Figure 2.5-1. beneficial use support under the narrative standard (Chapter 2.15). The beneficial uses assigned to rivers and streams are mapped in Figure 2.5-3.

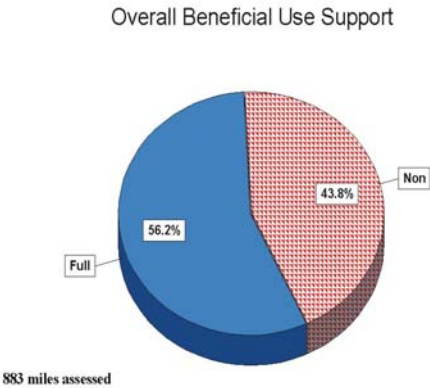


Figure 2.5-1 Overall Beneficial Use Support

2.5.2.1 Overall Beneficial Use Support

An assessment of beneficial use support was made for 882.6 miles. Based upon at least one beneficial use being assessed, 496.10 miles (56.2%) were assessed fully supporting and 386.5 miles (43.8%) as not supporting (Figure 2.5-1).

2.5.1.2 Assessment by Categories

Table 2.5-2 is a list of streams miles assigned to the various beneficial use categories during the assessment. Figure 2.5-3 is a map of the beneficial use support by categories.

Table 2.5-2 Stream Miles by Assessment Category – Weber River Watershed Management Unit

Category	Category Definition	Stream Miles
1	All beneficial uses fully supported.	
2	Beneficial uses assessed are fully supported.	498.6
3A	No data or insufficient data to make an assessment.	165.5
3B	Lakes that are not supported for one cycle only.	
3C	Insufficient data to assess but an assessment plan is in place.	
4A	Approved TMDL	234.5
4B	Pollution control requirements are expected to result in full beneficial use support in near future.	
4C	Impaired by pollution, no TMDL required.	137.0
5	Impaired by pollutant, TMDL required.	173.4

2.5.1.3 Individual Beneficial Use Support

Table 2.5-3 lists the beneficial use support by individual beneficial use classes. For the aquatic life beneficial use, 561.63 stream miles (59.1%) are supporting their aquatic life beneficial uses. There are 389.2 miles (40.9%) not supporting aquatic life beneficial uses. Of the 840.35 miles assessed for agricultural use, all are fully supporting. Of the miles assessed as a source of drinking water, 7.2.09 miles (97.0%) are fully supported and 21.4 miles (3.0%) as not supporting. Silver Creek is the stream that does not meet drinking water standards.

Table 2.5-3 Individual Use Support Summary – Weber River Watershed Management Unit

	Size	Size Fully	Size Not	
	Assessed	Supporting	Supporting	Totals
Use				
Drinking Water	723.46	702.09	21.37	723.46
Fish Consumption				
Swimming	586.51	561.63	24.88	586.51
Secondary Contact	586.51	561.63	24.88	586.51
Aquatic Life	950.78	561.63	389.15	950.78
Agricultural	840.35	840.35		840.35
Drinking Water		97.0%	3.0%	100.0%
Fish Consumption				
Swimming		95.8%	4.2%	100.0%
Secondary Contact		95.8%	4.2%	100.0%
Aquatic Life		59.1%	40.9%	100.0%

Weber River Basin

Beneficial Use Classification and Monitoring Sites

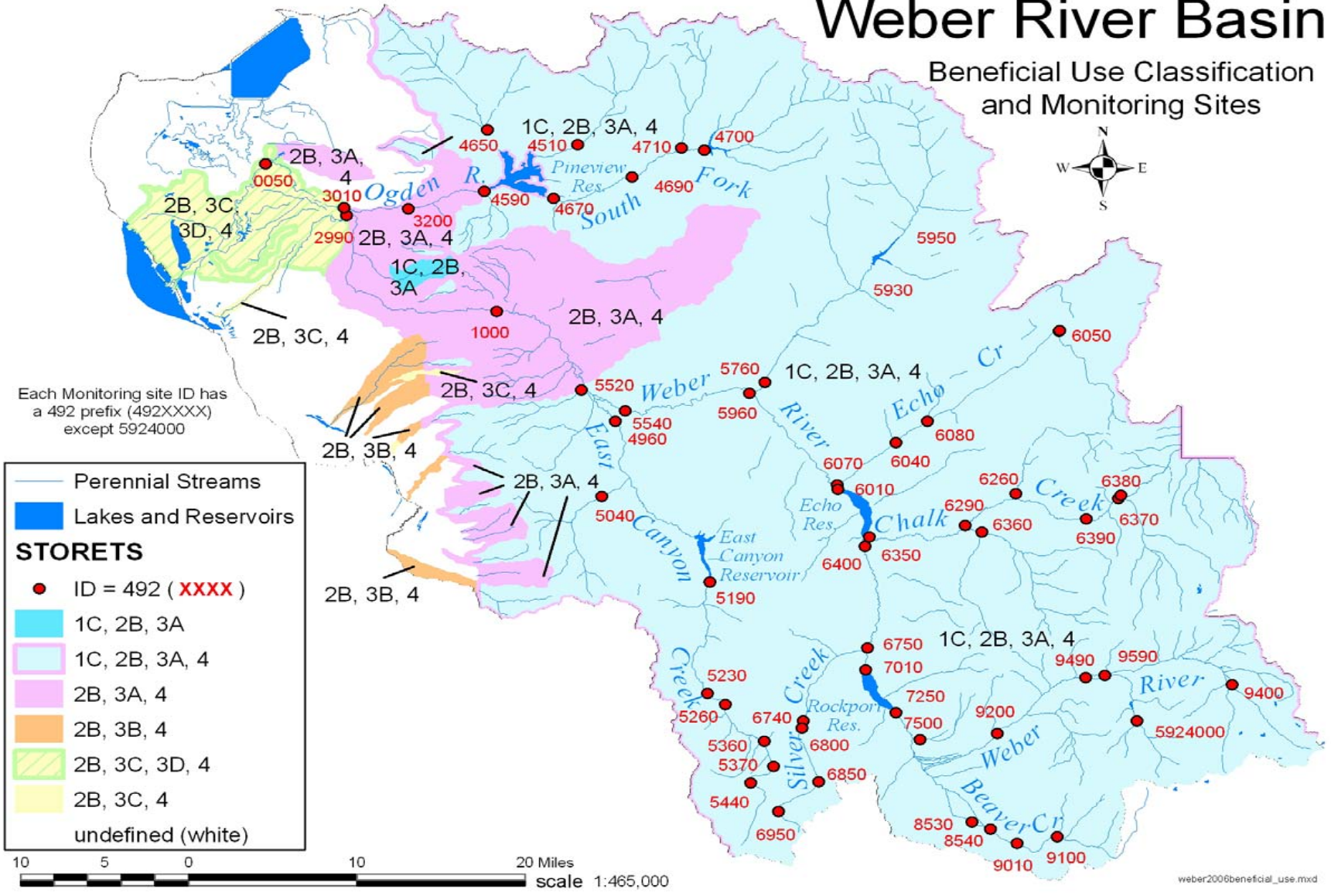


Figure 2.5-2 Weber River Watershed Management Unit beneficial use classifications

Weber River Management Unit

Assessment Categories 2008

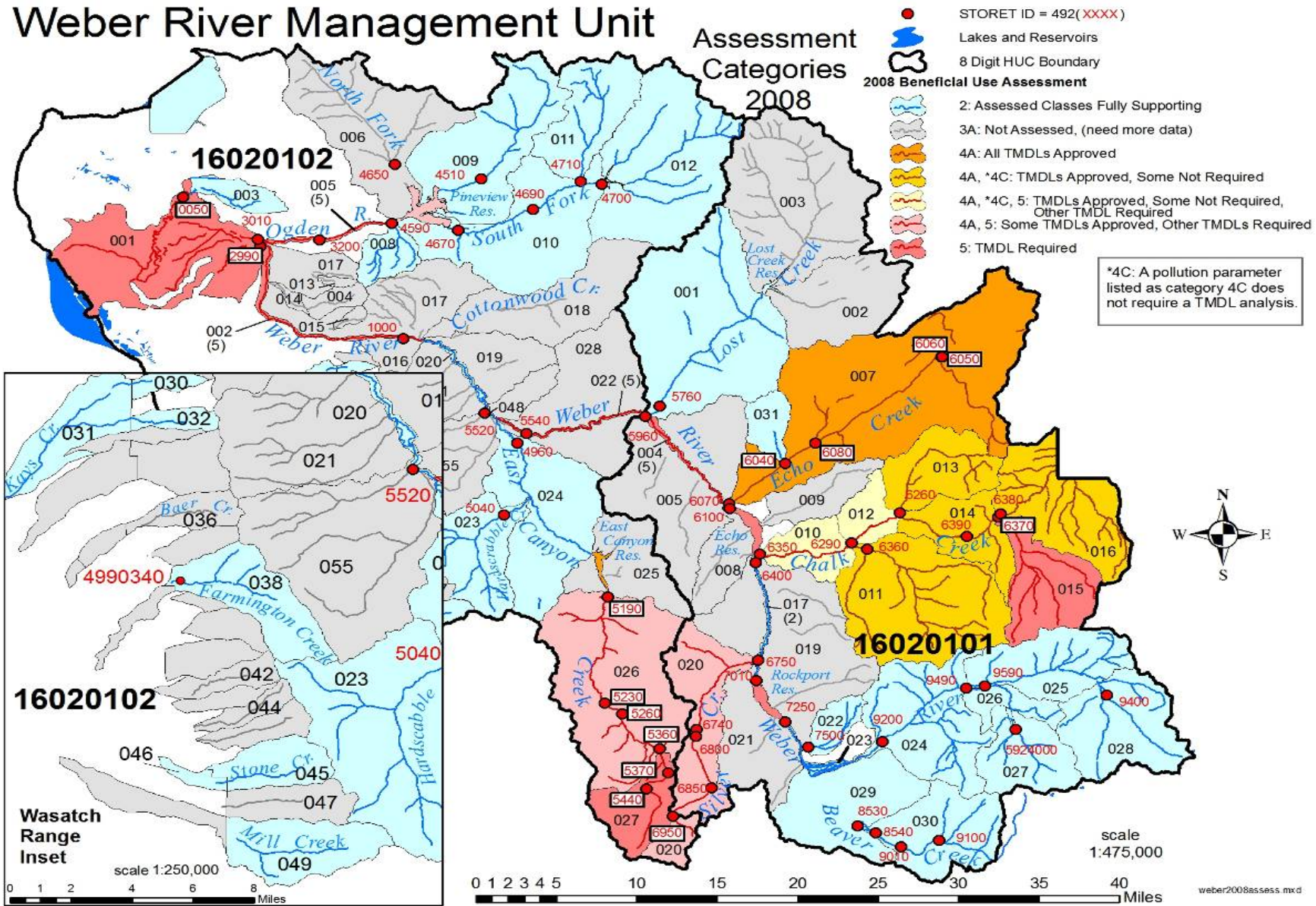


Figure 2.5-3 Weber River Watershed Management Unit assessment by categories

2.5.1.4 Total Waters Impaired by Various Causes

Table 2.5-4 is a list of stream miles affected by the various causes of pollution. The causes of water quality impairment are nutrients (total phosphorus) sediment (siltation/sediment), habitat alterations such as loss of riparian habitat and in-stream structure and function, dissolved oxygen, flow alterations and metals. The percent of stream miles impaired by these causes is illustrated in Figure 2.5-4. Metals are the cause of impairment in Silver Creek. Historical mining practices and tailings are the source of the contamination. The relative percent impact by causes are illustrated in Figure 2.5-5.

2.5.1.5 Total Waters Impaired by Various Sources

Table 2.5-5 contains a list of sources that caused stream impairments. The sources of impairment are agricultural activities, hydromodification, habitat modification, resource extraction, natural sources, unknown, and urban runoff. The percent of stream miles impaired by these sources are illustrated in Figure 2.5-6. The relative percent impact by sources is illustrated in Figure 2.5-7.

2.5.1.6 Impaired Assessment Units

Table 2.5-6 is a list of the impaired waters in the Weber River Watershed Management Unit

Table 2.5-4 Total Waters Impaired by Various Cause Categories - Weber Watershed Management Unit

Cause Category	Stream Miles
Benthic macroinvertebrate assessment impairment	141.43
E. coli	
Flow Alteration	
Metals	21.37
Organic Enrichment/Low DO	34.66
Other Habitat Alterations	136.97
pH	
Radiation	
Salinity/TDS/Chlorides	
Siltation	181.12
Temperature	
Total Phosphorus	182.2
Unionized Ammonia	

Table 2.5-5 Total Waters Impaired by Various Source Categories - Weber Watershed Management Unit

Cause Category	Stream Miles
Agriculture	226.35
Aquaculture	
Construction	34.66
Drought	
Habitat Modification (other than Hydromodification)	136.97
Hydromodification	147.54
Industrial Point Sources	
Land Development	34.66
Municipal Point Sources	34.66
Natural Sources	129.3
Resource Extraction	158.34
Septic	
Source Unknown	141.43
Sources outside State Jurisdiction or Borders	
Urban Runoff/Storm Sewers	34.66

Percent of Stream Miles Affected By Causes

2008 Integrated Report Assessment - Weber River Watershed Management Unit

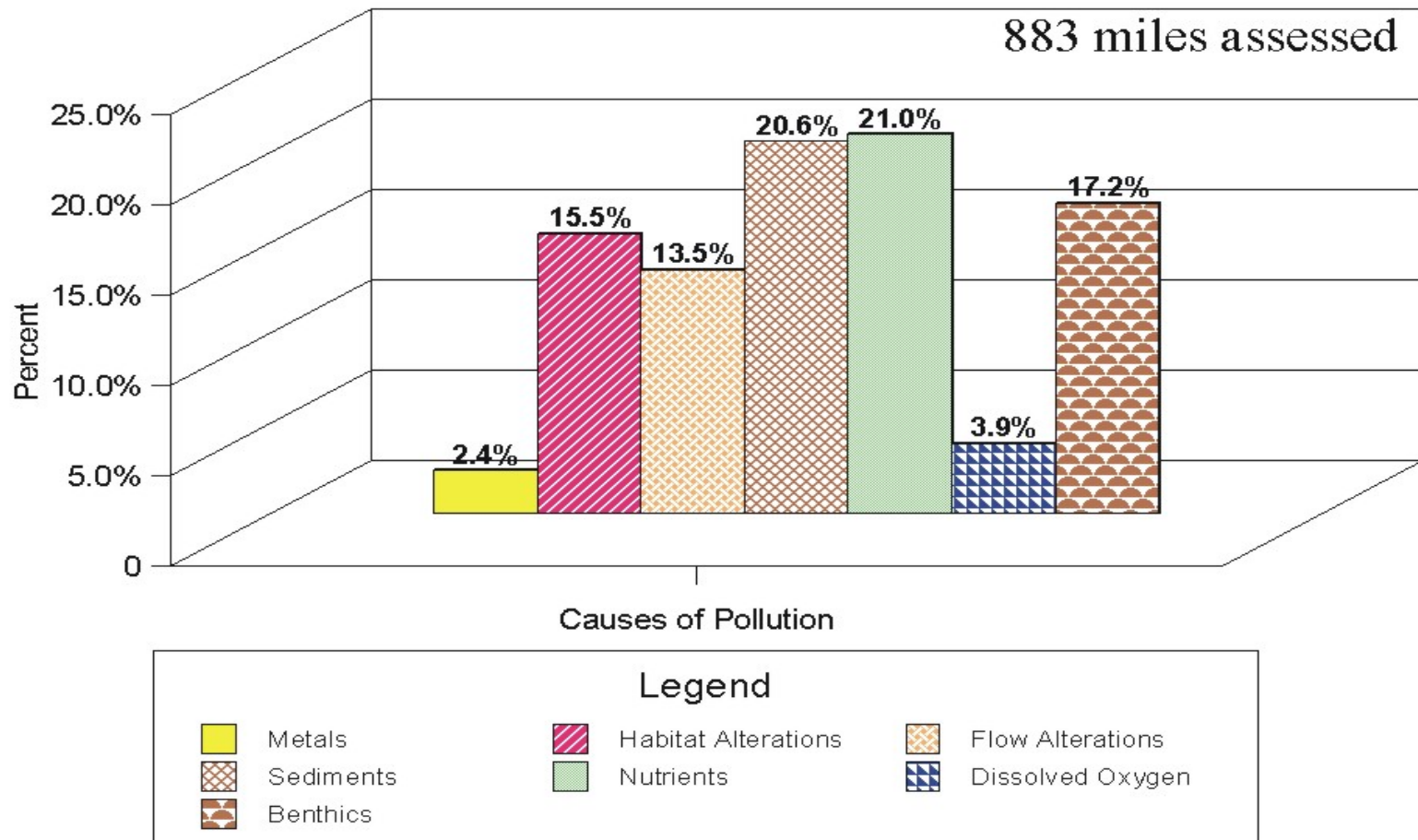


Figure 2.5-4 Percent impact by causes on stream water quality - Weber River Watershed Management

Causes of Stream Water Quality Impairments

2008 Integrated Report Assessment - Weber River Watershed Management Unit

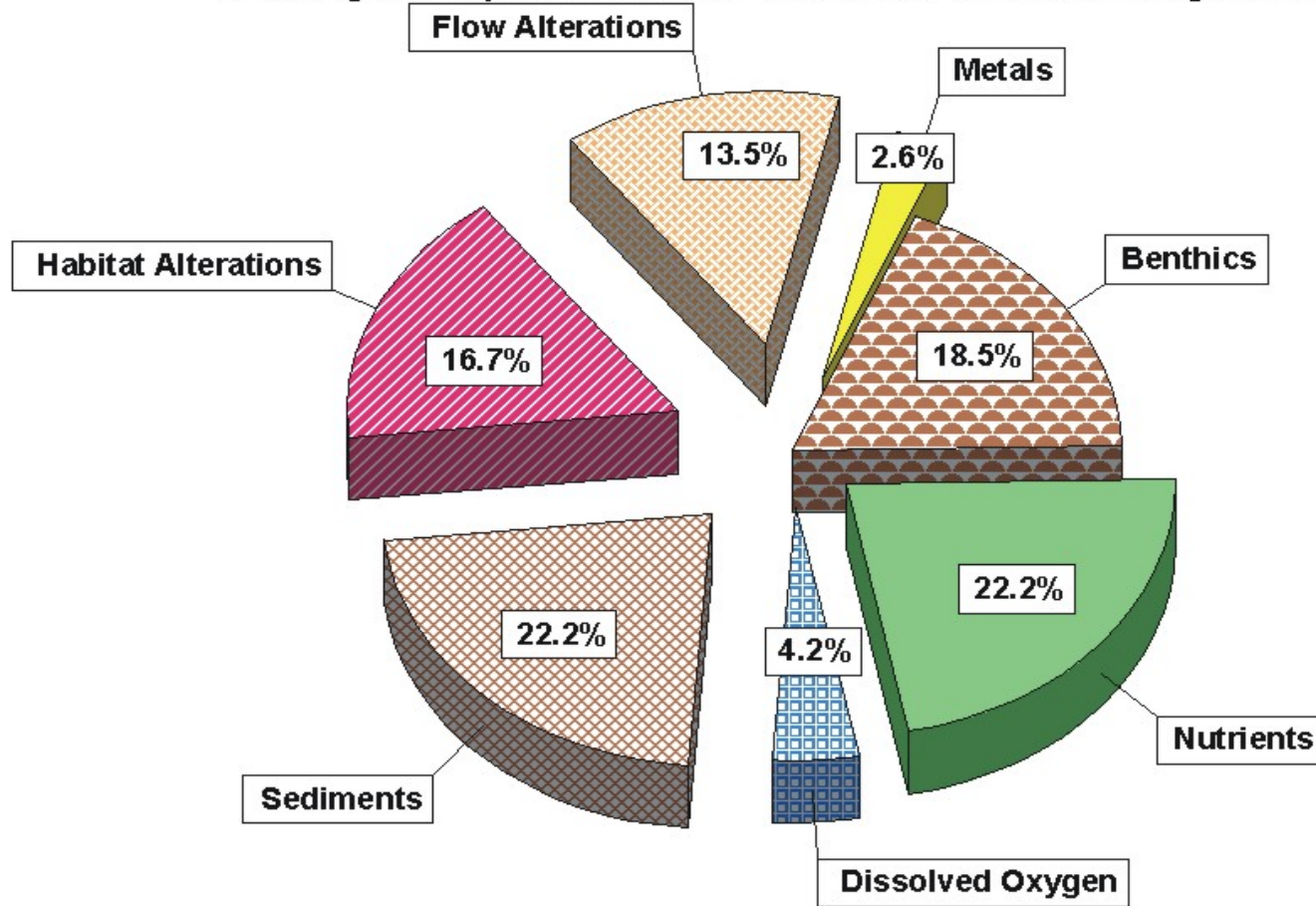


Figure 2.5-5 Relative percent contribution of causes on stream water quality – Weber River Watershed Management Unit

Percent of Stream Miles Affected By Sources

2008 Integrated Report Assesment - Weber River Watershed Mangement Unit

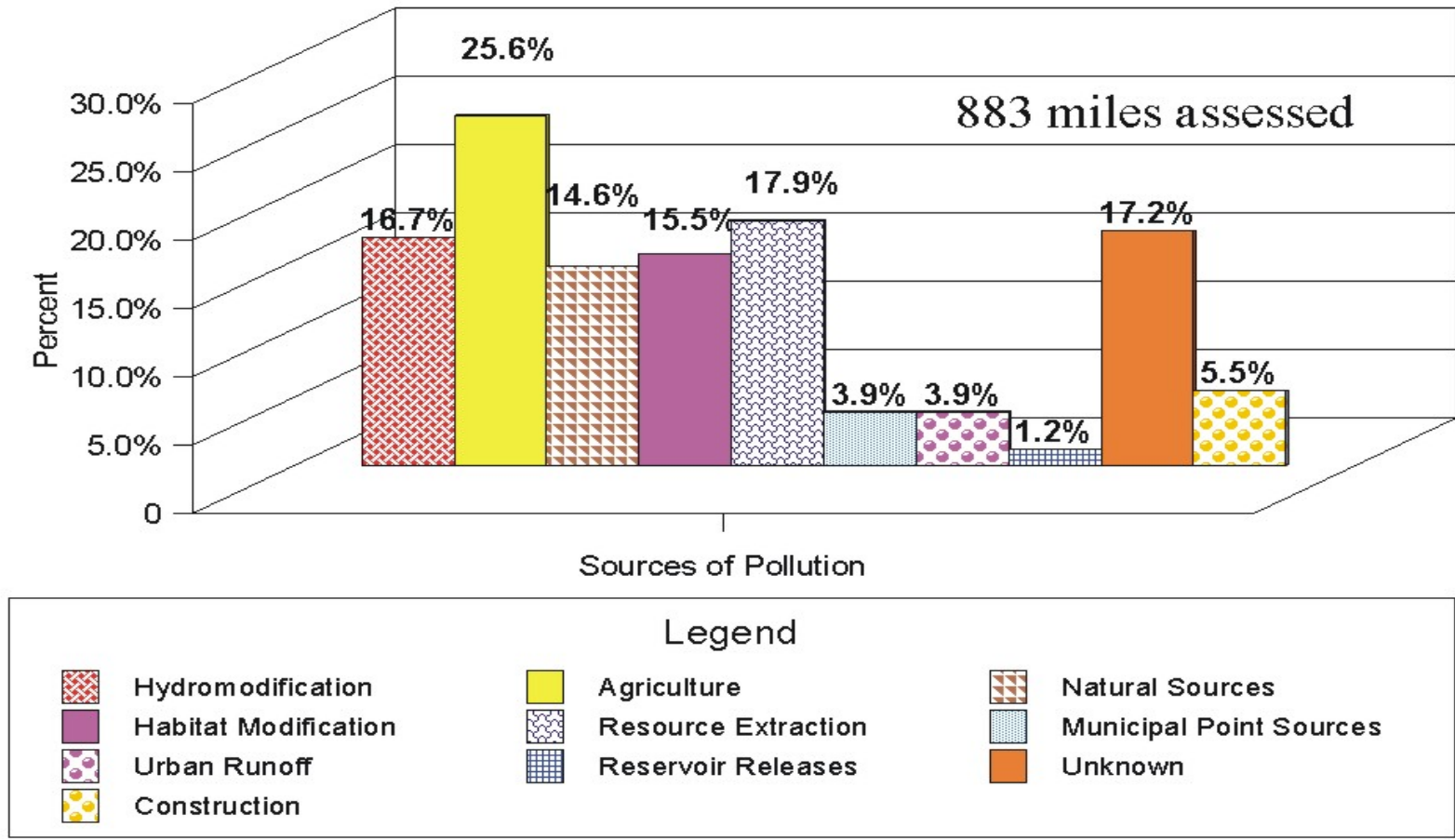


Figure 2.5-6 Percent of assessed stream miles impacted by various sources – Weber River Watershed Management Unit.

Sources of Stream Water Quality Impairment

2008 Integrated Report Assessment - Weber River Watershed Management Unit

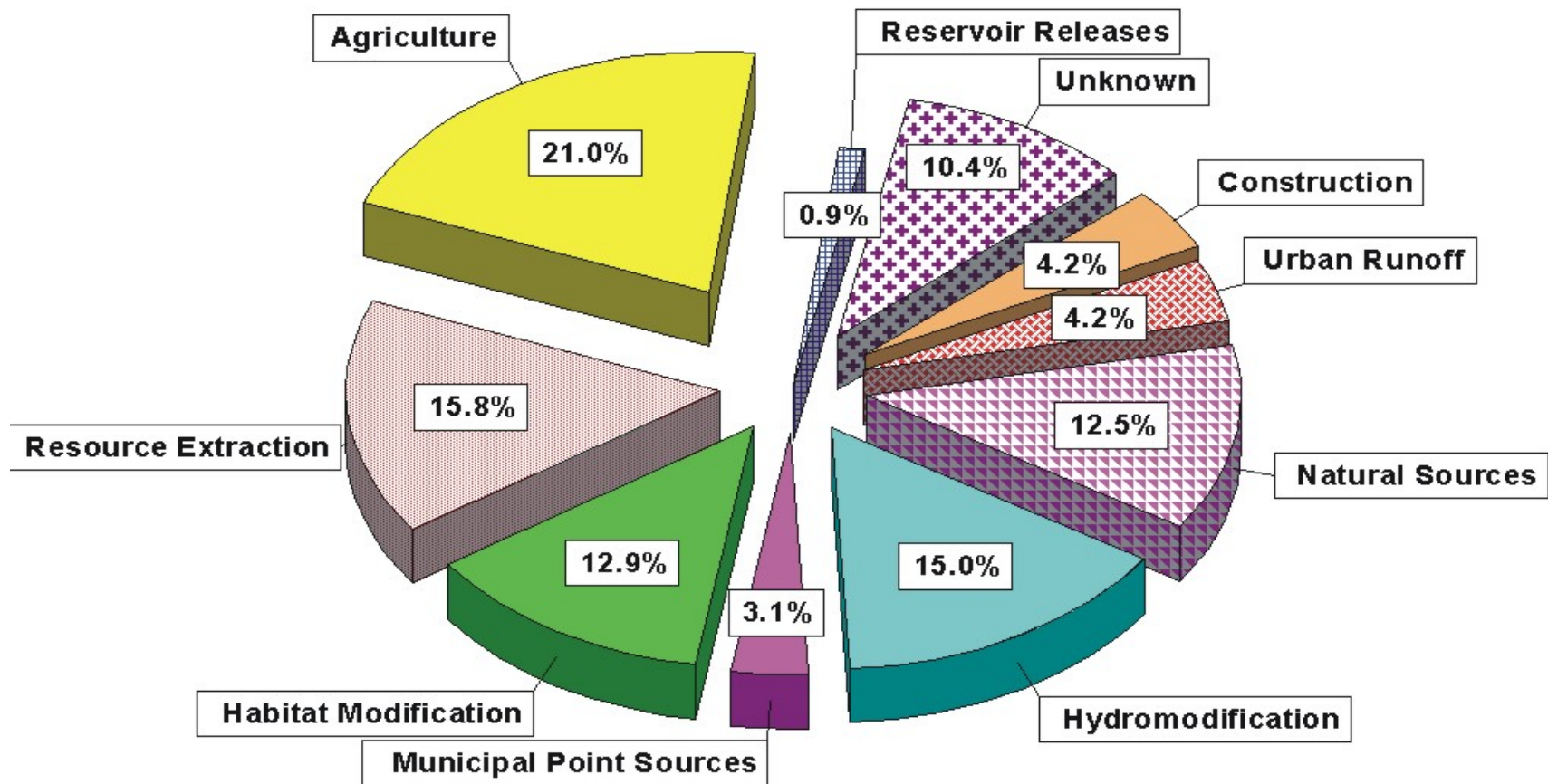


Figure 2.5-7 Relative percent impact by causes on water quality – Weber River Watershed Management Unit

Table 2.5-6 Impaired Waters Located in the Weber River Watershed Management Unit

Water Management Unit	Assessment Unit ID	Assessment Unit Name	Assessment Unit Description	Beneficial Use Class Impaired	Beneficial Use Support	Support Category	Pollutant Or Pollution	Stream Miles
Weber River	UT16020101-004	Weber River-7	Weber River segment between confluence of Lost Creek and Echo Reservoir	3A	NS	5	Total Phosphorus	10.57
Weber River	UT16020101-004	Weber River-7	Weber River segment between confluence of Lost Creek and Echo Reservoir	3A	NS	5	Benthic macroinvertebrate assessment impairment	10.57
Weber River	UT16020101-010	Chalk Creek-1	Chalk Creek and tributaries from confluence with Weber River to South Fork confluence	3A	NS	5	Benthic macroinvertebrate assessment impairment	7.67
Weber River	UT16020101-010	Chalk Creek-2	Chalk Creek and tributaries from South Fork confluence to Huff Creek confluence	3A	NS	5	Benthic macroinvertebrate assessment impairment	4.49
Weber River	UT16020101-015	East Fork Chalk Creek	East Fork Chalk Creek and tributaries from confluence with Chalk Creek to headwaters	3A	NS	5	Benthic macroinvertebrate assessment impairment	28.42
Weber River	UT16020101-020	Silver Creek	Silver Creek and tributaries from confluence with Weber River to headwaters	1C	NS	5	Arsenic	21.37
Weber River	UT16020101-020	Silver Creek	Silver Creek and tributaries from confluence with Weber River to headwaters	3A	NS	5	Benthic macroinvertebrate assessment impairment	21.37
Weber River	UT16020102-001	Weber River-1	Weber River and tributaries from Great Salt Lake to Slaterville Diversion	3C	NS	5	Benthic macroinvertebrate assessment impairment	60.15
Weber River	UT16020102-002	Weber River-3	Weber River from Ogden River confluence to Cottonwood Creek confluence	3A	NS	5	Benthic macroinvertebrate assessment impairment	17.86
Weber River	UT16020102-005	Ogden River-1	Ogden River from confluence with Weber River to Pineview Reservoir	3A	NS	5	Benthic macroinvertebrate assessment impairment	9.66
Weber River	UT16020102-022	Weber River-6	Weber River between East Canyon Creek confluence and Lost Creek confluence	3A	NS	5	Benthic macroinvertebrate assessment impairment	12.37
Weber River	UT16020102-026	East Canyon Creek-2	East Canyon Creek from East Canyon Reservoir to headwaters	3A	NS	5	Benthic Macroinvertebrate Assessment Impairment	34.66
Weber River	UT16020102-027	Kimball Creek	Kimball Creek and tributaries from East Canyon Creek confluence to headwaters, including McLeod Creek	3A	NS	5	Benthic macroinvertebrate assessment impairment	12.97

Chapter 2.6 Utah Lake-Jordan River Watershed Management Unit Assessment

2.6.1 Introduction

The Utah Lake-Jordan River Watershed Management Unit lies in north-central Utah and includes those streams that drain into Utah Lake and the Jordan River and its tributaries from Utah Lake to the Great Salt Lake. Utah Lake receives water from the Provo and Spanish Fork Rivers, and numerous tributaries that drain the Wasatch Mountains around it. In addition, the Duchesne Tunnel and Weber River diversions empty into the Provo River and a third diversion carries Strawberry Reservoir water into the lake via Diamond Fork and Spanish Fork Rivers. There are numerous streams that drain the Wasatch and Oquirrh Mountain ranges that flow into the Jordan River. Some of these streams are Little Cottonwood Creek, Big Cottonwood Creek, and Bingham Canyon Creek.

This management unit includes all streams located in the U.S.G.S Hydrological Units (HUCs) listed in Table 2.6-1 and is located in the north central part of the state.

Table 2.6-1 Hydrological Unit Codes and Names

Hydrological Unit Code	Hydrological Unit Name
16020201	Utah Lake
16020202	Spanish Fork
16020203	Provo
16020204	Jordan

2.6.2 Water Quality Assessment Results

Assessments were made using data from January 1, 2002 through December 31, 2007. The intensive survey data were used in the 2006 assessment. The majority of the Jordan River / Utah Lake Watershed is monitored annually. The DWQ, Salt Lake City, Salt Lake County, United States Geological Survey and the Provo River Committee collect data annually for a variety of reasons. These data are compared to the State standards to determine beneficial use support. In addition, benthic macroinvertebrate data are used to assess the aquatic life beneficial use classification (Chapter 2.15). The designated beneficial use for rivers and streams is mapped in Figure 2.6-2

2.6.2.1 Overall Beneficial Use Support

There are an estimated 1,314 perennial stream miles within the Utah Lake-Jordan River Watershed Management Unit.

Of the miles assessed, 842.7 (79.2%) are supporting at least one beneficial use, 221.8 (20.8%) miles were not supporting at least one designated beneficial use (Figure 2.6-1).

Overall Beneficial Use Support

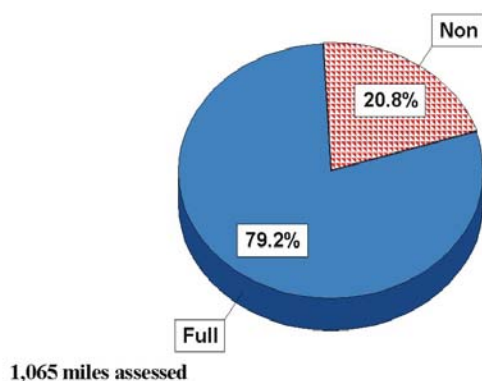


Figure 2.6-1 Overall Beneficial Use Support

2.6.2.2 Beneficial Use Assessment by Categories

A list of the categories and the stream miles included in each of the assessment categories is in Table 2.6-2. Figure 2.6-3 is a map of the beneficial use assessment for the rivers and streams.

Table 2.6-2 Stream Miles by Assessment Category – Jordan River/Utah Lake Watershed Management Unit

Category	Category Definition	Stream Miles
1	All beneficial uses assessed, all fully supported.	47.34
2	Beneficial uses assessed are fully supported.	789.96
3A	No data or insufficient data to make an assessment.	105.47
3B	Lakes that are not supported for one cycle only.	
3C	Insufficient data to assess but an assessment plan is in place.	
4A	Approved TMDL	39.95
4B	Pollution control requirements are expected to result in full beneficial use support in near future.	
4C	Impaired by pollution, no TMDL required.	32.51
5	Impaired by pollutant, TMDL required.	156.72

2.6.2.3 Individual Use Support

The individual support by class is listed in the following table. The miles and percentage of support listed.

Table 2.6-3 Individual Beneficial Use Support Summary Jordan River/Utah Lake Watershed Management Unit (Stream Miles)

	Size	Size Fully	Size Not	
Use	Assessed	Supporting	Supporting	Totals
Drinking Water	418.54	414.45	4.09	418.54
Fish Consumption	0.00	0.00	0.00	0.00
Swimming	118.03	96.94	21.09	118.03
Secondary Contact	118.03	96.94	21.09	118.03
Aquatic Life	1,092.64	902.74	189.90	1,092.64
Agricultural	948.21	893.31	54.90	948.21
	1,032.36	837.30	195.06	1,032.36
Drinking Water				
Fish Consumption		99.0%	1.0%	100.0%
Swimming		0	0	0
Secondary Contact		82.1%	21.8%	100.0%
Aquatic Life		82.1%	21.8%	100.0%
Agricultural		82.6%	21.0%	100.0%
		94.2%	6.1%	100.0%

2.6.2.4 Total Waters Impaired by Various Causes

The causes of impairment are listed in Table 2.6-4. The causes of impairment are temperature, flow and habitat alterations, total dissolved solids, metals, nutrients (total phosphorus), sediments, dissolved oxygen, and pathogens. The percent of miles impacted are illustrated in Figure 2.6-4. The relative contribution of each cause to water quality impairment is illustrated in Figure 2.6-5.

2.6.2.5 Total Waters Impaired by Various Sources

The major sources of impairment are unknown sources, hydromodification, urban runoff, industrial and municipal point sources, habitat modifications, agricultural activities, resource extraction and natural sources illustrated in Figure 2.6-6. The relative percent impairment by sources is illustrated in Figure 2.6-7.

2.6.2.6 Impaired Assessment Units

Table 2.6-6 is a list of the impaired waters in the Jordan River/Utah Lake Watershed Management Unit.

Jordan River / Utah Lake Management Unit

303(d) Listed Streams 2008

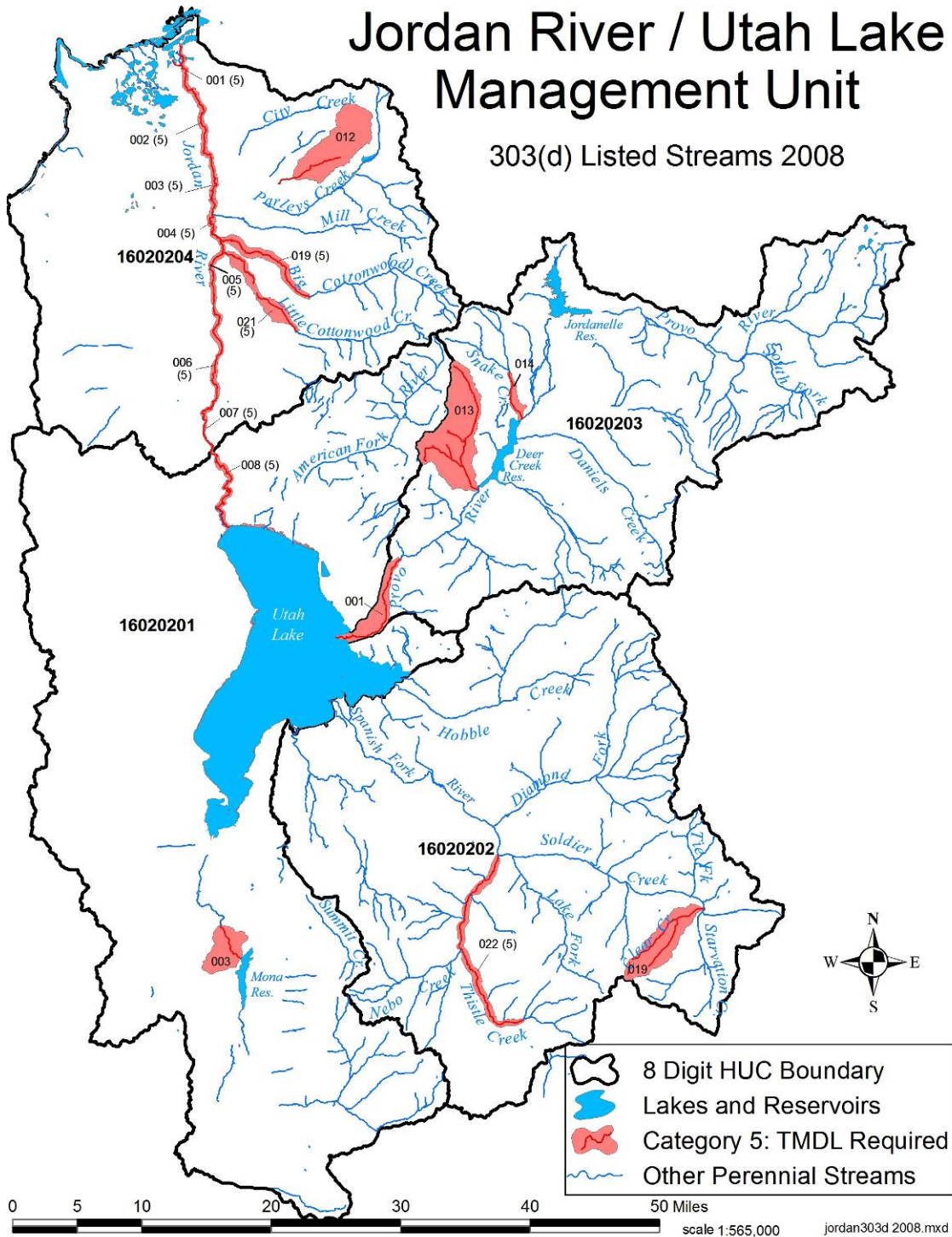


Figure 2.6-2 Beneficial use classifications – Jordan River/Utah Lake Watershed Management Unit

Jordan River / Utah Lake Management Unit

Assessment Categories 2008

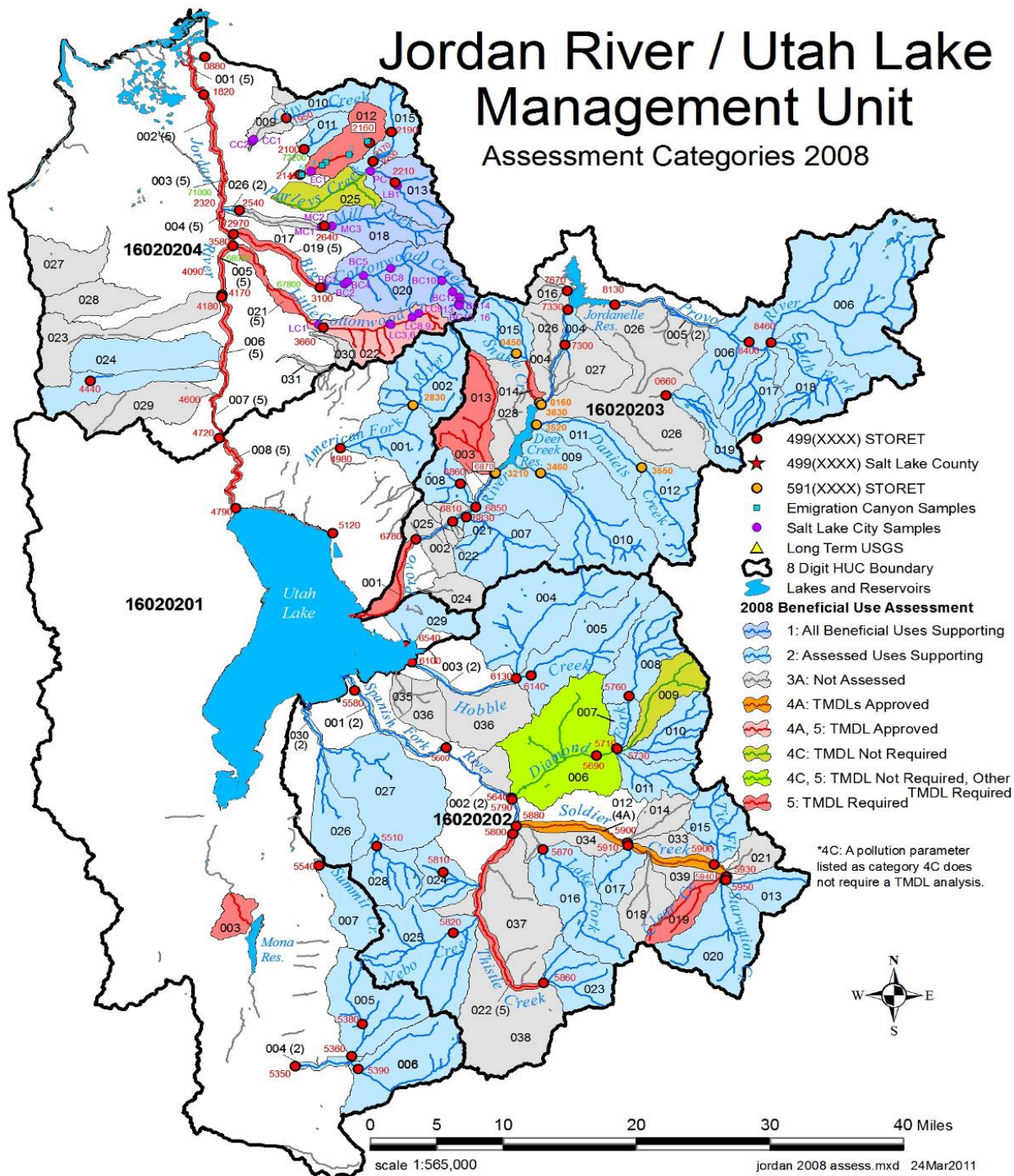


Figure 2.6-3 Beneficial use assessment by category -Jordan River/Utah Lake Watershed Management Unit

Table 2.6-4 Total Waters Impaired by Various Cause Categories - Jordan River/Utah Lake Watershed Management Unit

Table 2.6-4. Total Waters Impaired by Various Cause Categories - Jordan River/Utah Lake Watershed Management Unit.	
Cause Category	Stream Miles
Benthic macroinvertebrate assessment impairment	60.31
E. coli	17.65
Flow Alteration	32.51
Metals	25.58
Organic Enrichment/Low DO	16.26
Other Habitat Alterations	32.51
pH	3.44
Radiation	
TDS	51.46
Siltation	18.46
Temperature	40.87
Total Phosphorus	22.66
Unionized Ammonia	

Table 2.6-5 Total Waters Impaired by Various Sources – Jordan River/Utah Lake Watershed Management Unit

Table 2.6-5. Total Waters Impaired by Various Sources - Jordan River/Utah Lake Watershed Management Unit.	
Source Category	Stream Miles
Agriculture	48.83
Aquaculture	
Construction	
Drought	
Habitat Modification (other than Hydromodification)	32.51
Hydromodification	50.97
Industrial Point Sources	44.88
Land Development	
Municipal Point Sources	44.88
Natural Sources	17.65
Resource Extraction	21.49
Septic	4.29
Source Unknown	105.27
Sources outside State Jurisdiction or Borders	
Urban Runoff/Storm Sewers	62.6

Percent of Stream Miles Affected By Causes

2008 Integrated Report Assessment - Jordan River/Utah Lake

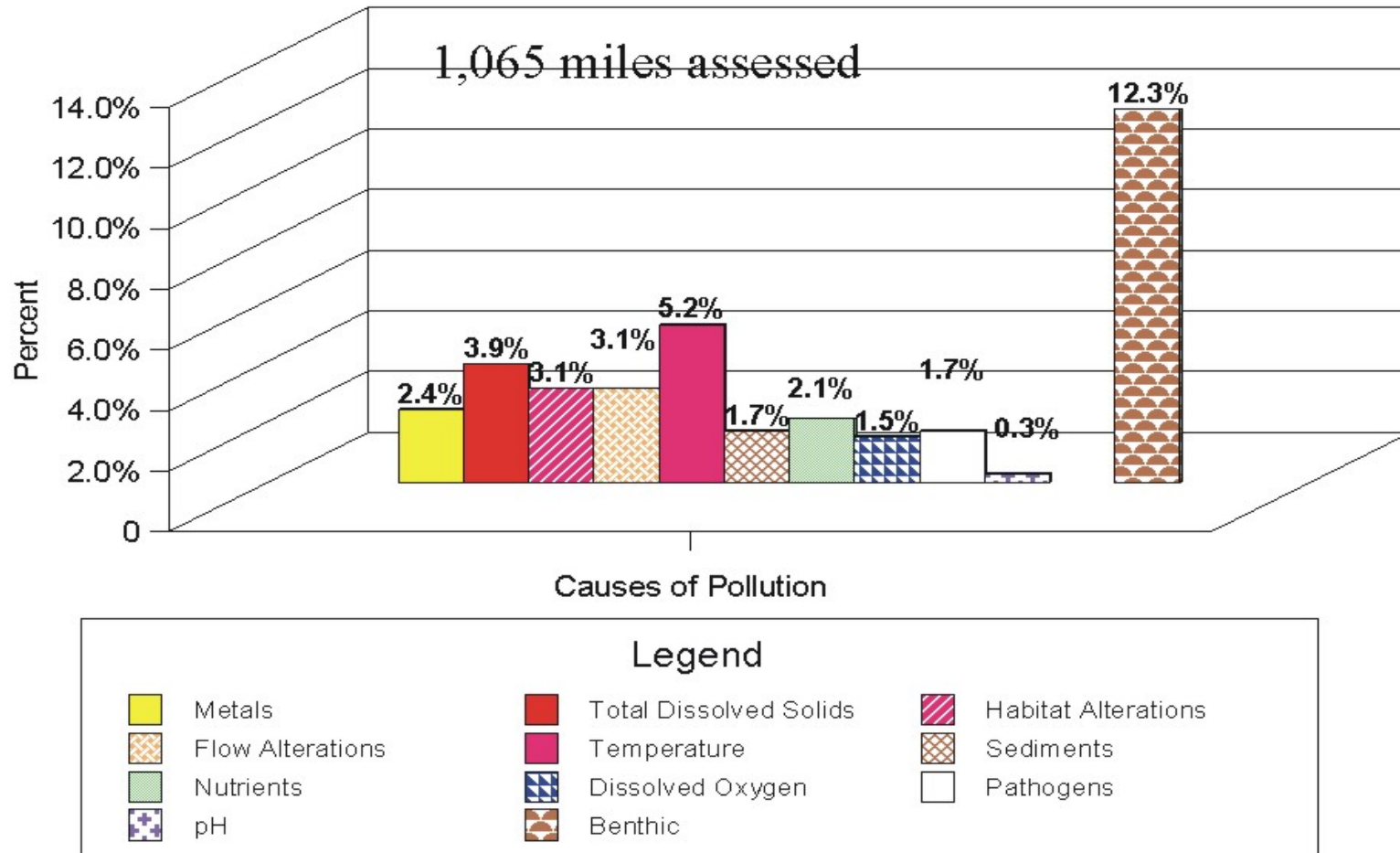


Figure 2.6-4 Percent of stream miles affected by various causes – Jordan River / Utah Lake Watershed Management Unit

Causes of Stream Water Quality Impairments

2008 Integrated Report Assessment - Jordan River / Utah Lake

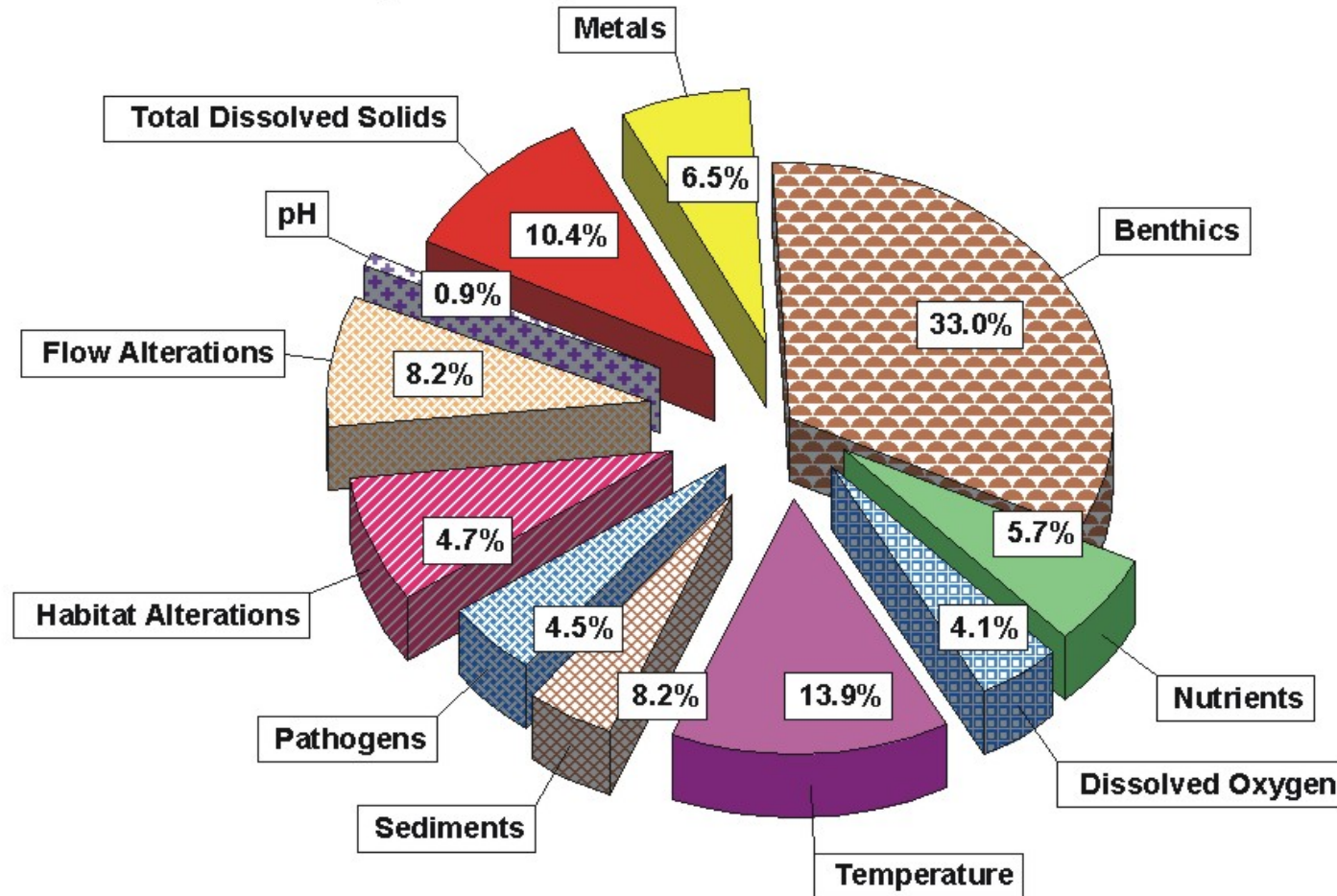


Figure 2.6-5 Relative percent impacted by causes on water quality – Jordan River / Utah Lake Watershed Management Unit

Percent of Stream Miles Affected By Sources

2008 Integrated Report Assessment - Jordan River / Utah Lake

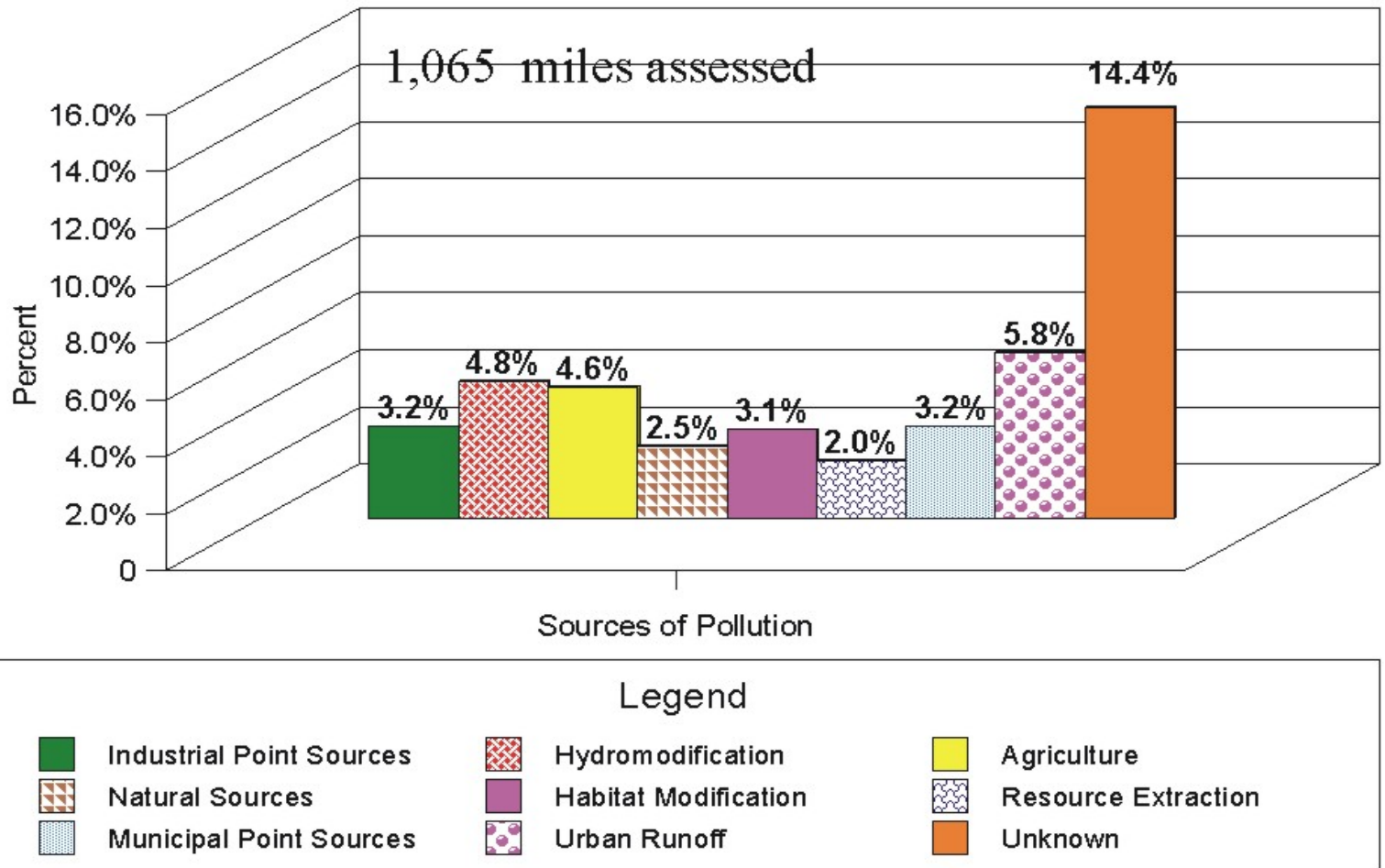


Figure 2.6-6 Percent of assessed stream miles impacted by various sources – Jordan River / Utah Lake Watershed Management Unit

Sources of Stream Water Quality Impairment

2008 Integrated Report Assessment - Jordan River / Utah Lake

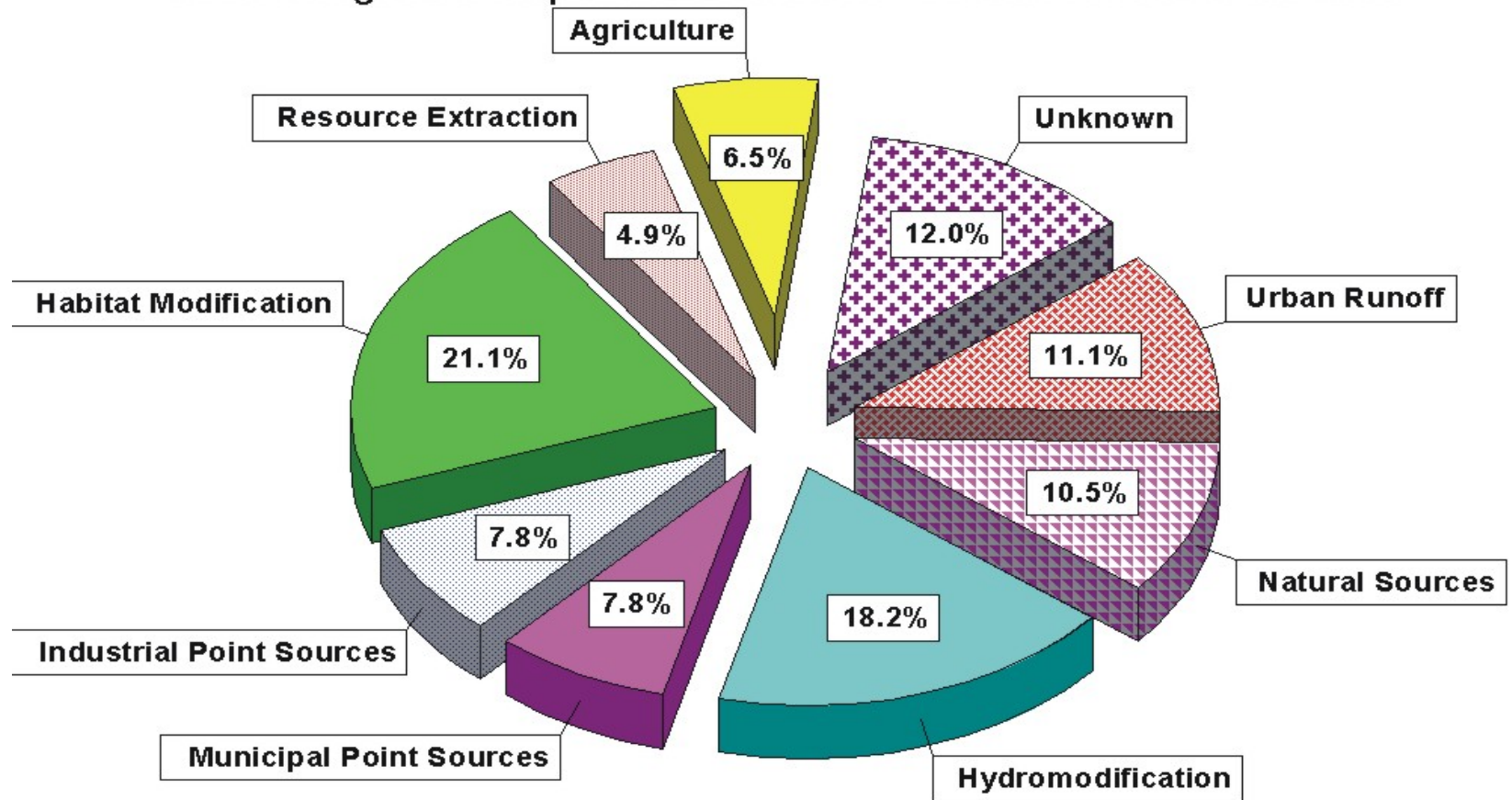


Figure 2.6-7 Relative percent impact by various sources on water quality – Jordan River / Utah Lake Watershed Management Unit

Table 2.6-6 Impaired Waters Located in the Jordan/Utah Lake 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
Jordan River/ Utah Lake	UT16020201-003	Currant Creek	Current Creek from mouth of Goshen Canyon to Mona Reservoir	2B	NS	5	pH	3.44
Jordan River/ Utah Lake	UT16020201-003	Currant Creek	Current Creek from mouth of Goshen Canyon to Mona Reservoir	3A	NS	5	pH	3.44
Jordan River/ Utah Lake	UT16020201-003	Currant Creek	Current Creek from mouth of Goshen Canyon to Mona Reservoir	3A	NS	5	Temperature	3.44
Jordan River/ Utah Lake	UT16020201-003	Currant Creek	Current Creek from mouth of Goshen Canyon to Mona Reservoir	4	NS	5	pH	3.44
Jordan River/ Utah Lake	UT16020201-008	Jordan river-8	Jordan River from Narrows to Utah Lake	4	NS	5	TDS	14.15
Jordan River/ Utah Lake	UT16020202-006	Diamond Fork-1	Diamond Fork Creek and tributaries from confluence with Spanish Fork River to Sixth Water confluence	3A	NS	5	Benthic Macroinvertebrate Assessment Impairment	20.06
Jordan River/ Utah Lake	UT16020202-019	Clear Creek	Clear Creek and tributaries from confluence with Soldier Creek to headwaters	3A	NS	5	Benthic macroinvertebrate assessment impairment	12.63
Jordan River/ Utah Lake	UT16020202-022	Thistle Creek-1	Thistle Creek from confluence with Soldier Creek to confluence with Little Clear Creek	3A	NS	5	Benthic macroinvertebrate assessment impairment	18.28
Jordan River/ Utah Lake	UT16020203-001	Provo River-1	Provo River from Utah Lake to Murdock Diversion	3A	NS	5	Benthic macroinvertebrate assessment impairment	10.26
Jordan River/ Utah Lake	UT16020203-013	Provo Deer Creek	Provo Deer Creek and tributaries from confluence with Provo River to headwaters	3A	NS	5	Benthic macroinvertebrate assessment impairment	19.14
Jordan River/ Utah Lake	UT16020203-014	Snake Creek-1	Snake Creek from confluence with Provo River to Wasatch Mountain State Park Golf Course	1C	NS	5	Arsenic	4.09
Jordan River/ Utah Lake	UT16020204-001	Jordan River-1	Jordan River from Farmington Bay upstream contiguous with the Davis County line	3B	NS	5	Dissolved Oxygen	7.60

	Assessment	Assessment	Assessment	Beneficial Use	Beneficial		Pollutant	
	Unit	Unit	Unit	Class	Use	Support	Or	Stream
	ID	Name	Description	Impaired	Support	Category	Pollution	Miles
Jordan River/ Utah Lake	UT16020204-001	Jordan River-1	Jordan River from Farmington Bay upstream contiguous with the Davis County line	3B	NS	5	Benthic Macroinvertebrate Assessment Impairment	7.60
Jordan River/ Utah Lake	UT16020204-002	Jordan River-2	Jordan River from Davis County line upstream to North Temple Street	2B	NS	5	Benthic Macroinvertebrate Assessment Impairment	4.46
Jordan River/ Utah Lake	UT16020204-002	Jordan River-2	Jordan River from Davis County line upstream to North Temple Street	2B	NS	5	E. coli	4.46
Jordan River/ Utah Lake	UT16020204-002	Jordan River-2	Jordan River from Davis County line upstream to North Temple Street	3B	NS	5	Dissolved Oxygen	4.46
Jordan River/ Utah Lake	UT16020204-003	Jordan River-3	Jordan River from North Temple to 2100 South	2B	NS	5	E. coli	4.20
Jordan River/ Utah Lake	UT16020204-003	Jordan River-3	Jordan River from North Temple to 2100 South	3B	NS	5	Dissolved Oxygen	4.20
Jordan River/ Utah Lake	UT16020204-003	Jordan River-3	Jordan River from North Temple to 2100 South	3B	NS	5	Total Phosphorus	4.20
Jordan River/ Utah Lake	UT16020204-003	Jordan River-3	Jordan River from North Temple to 2100 South	3B	NS	5	Benthic Macroinvertebrate Assessment Impairment	4.20
Jordan River/ Utah Lake	UT16020204-004	Jordan River-4	Jordan River from 2100 South to the confluence with Little Cottonwood Creek	4	NS	5	TDS	9.41
Jordan River/ Utah Lake	UT16020204-005	Jordan River-5	Jordan River from the confluence with Little Cottonwood Creek to 7800 South	2B	NS	5	E. coli	4.7
Jordan River/ Utah Lake	UT16020204-005	Jordan River-5	Jordan River from the confluence with Little Cottonwood Creek to 7800 South	3A	NS	5	Temperature	4.7

	Assessment	Assessment	Assessment	Beneficial Use	Beneficial		Pollutant	
	Unit	Unit	Unit	Class	Use	Support	Or	Stream
	ID	Name	Description	Impaired	Support	Category	Pollution	Miles
Jordan River/ Utah Lake	UT16020204-005	Jordan River-5	Jordan River from the confluence with Little Cottonwood Creek to 7800 South	4	NS	5	TDS	4.7
Jordan River/ Utah Lake	UT16020204-006	Jordan River-6	Jordan River from 7800 South to Bluffdale	3A	NS	5	Temperature	10.29
Jordan River/ Utah Lake	UT16020204-006	Jordan River-6	Jordan River from 7800 South to Bluffdale	4	NS	5	TDS	10.29
Jordan River/ Utah Lake	UT16020204-006	Jordan River-6	Jordan River from 7800 South to Bluffdale	3A	NS	5	Benthic macroinvertebrate impairment	10.29
Jordan River/ Utah Lake	UT16020204-007	Jordan River-7	Jordan River from Bluffdale to Narrows	3A	NS	5	Temperature	4.18
Jordan River/ Utah Lake	UT16020204-007	Jordan River-7	Jordan River from Bluffdale to Narrows	4	NS	5	TDS	4.18
Jordan River/ Utah Lake	UT16020204-007	Jordan River-7	Jordan River from Bluffdale to Narrows	3A	NS	5	Benthic macroinvertebrate impairment	4.18
Jordan River/ Utah Lake	UT16020204-012	Emigration Creek	Emigration Creek and tributaries from Foothill BLVD to headwaters	2B	NS	5	E. coli	4.29
Jordan River/ Utah Lake	UT16020204-025	Parley Canyon Creek-1	Parleys Canyon Creek and tributaries from 1300 East to Mountain Dell Reservoir	3A	NS	4C	Direct Habitat Modification	11.43
Jordan River/ Utah Lake	UT16020204-019	Big Cottonwood Creek-1	Big Cottonwood Creek and tributaries from Jordan River to Big Cottonwood WTP	3A	NS	5	Temperature	9.53
Jordan River/ Utah Lake	UT16020204-021	Little Cottonwood Creek-1	Little Cottonwood Creek and tributaries from Jordan River confluence to Metropolitan WTP	3A	NS	5	Temperature	8.73
Jordan River/ Utah Lake	UT16020204-021	Little Cottonwood Creek-1	Little Cottonwood Creek and tributaries from Jordan River confluence to Metropolitan WTP	4	NS	5	TDS	8.73
Jordan River/ Utah Lake	UT16020204-021	Little Cottonwood Creek-1	Little Cottonwood Creek and tributaries from Jordan River confluence to Metropolitan WTP	3A	NS	5	Benthic macroinvertebrate impairment	8.73

	Assessment	Assessment	Assessment	Beneficial Use	Beneficial		Pollutant	
	Unit	Unit	Unit	Class	Use	Support	Or	Stream
	ID	Name	Description	Impaired	Support	Category	Pollution	Miles
Jordan River/ Utah Lake	UT16020204-022	Little Cottonwood Creek-2	Little Cottonwood Creek and tributaries from Metropolitan WTP to headwaters	3A	NS	5	Benthic macroinvertebrate impairment	21.5

Chapter 2.7 Uinta Watershed Management Unit Water Quality Assessment

2.7.1 Introduction

The Uinta Watershed Management Unit lies in northeastern Utah and includes the U.S.G.S. hydrological units listed in Table 2.7-1. This unit includes the Green River and the tributaries streams that flow into it downstream to approximately where the Price River enters the Green River. Tributary streams include those on the north and south slopes of the Uinta Mountains. Major streams on the north slope include the West Fork Blacks Fork, East Fork Blacks Fork, Blacks Fork, West Fork Smiths Fork, East Fork Smiths Fork, Henry's Fork and Burnt Fork Rivers. Major south slope streams include Currant Creek, Duchesne River, Rock Creek, Lake Fork Creek, Yellowstone River, Uinta River, Ashley Creek, and Brush Creek. Two other major rivers are the Strawberry and White Rivers. The Strawberry River, located in the western part of the management unit, flows east to join the Duchesne River downstream from Starvation Reservoir. The White River flows west from the Utah-Colorado border to join the Green River near the confluence of the Duchesne and Green Rivers. Smaller tributaries to the south include Nine Mile Creek and Range Creek.

Table 2.7-1 U.S.G.S. Hydrological Units in the Uinta Watershed Management Unit

Number	Name
14040106	Upper Green-Flaming Gorge Reservoir
14040107	Blacks Fork
14040108	Muddy
14050007	Lower White
14060001	Lower Green-Diamond
14060002	Ashley-Brush
14060003	Duchesne
14060004	Strawberry
14060005	Lower Green - Desolation Canyon
14060006	Willow

2.7.2. Water Quality Assessment Results

Data collected from January 1, 2002 through December 31, 2006, including the intensive survey from July 1, 2005 to June 30, 2006 were used to make beneficial use assessments. Figure 2.7-1 is a map of the designated beneficial uses assigned to the rivers and streams in the management unit. Benthic macroinvertebrate data were used to assess some streams (Chapter 2.15).

2.7.2.1 Assessment by Categories

Table 2.7-2 is a list of stream miles assigned to the various assessment categories. The Uinta Watershed Management Unit beneficial use assessment by categories is mapped in Figure 2.7-2.

Table 2.7-2 Stream Miles by Assessment Category – Uinta Watershed Management Unit

Category	Category Definition	Stream Miles
1	All beneficial uses fully supported.	
2	Beneficial uses assessed are fully supported.	2,379.2
3A	No data or insufficient data to make an assessment.	400.3
3B	Lakes that are not supported for one cycle only.	
3C	Insufficient data to assess but an assessment plan is in place.	
4A	Approved TMDL	213.4
4B	Pollution control requirements are expected to result in full beneficial use support in near future.	
4C	Impaired by pollution, no TMDL required.	99.0
5	Impaired by pollutant, TMDL required.	428.5

2.7.2.2 Overall Beneficial Use Support

There are an estimated 3,445 perennial stream miles within the Uinta Watershed Management Unit. An assessment of the support of beneficial use was made for 3,013.6 miles. The assessment was based upon at least one beneficial use being assessed. There are 2,378 miles (78.9%) listed as fully supporting and 635.0 miles (21.1%) are not supporting at least one designated beneficial use.

2.7.2.3 Individual Use Support

Use support by individual beneficial use designations is summarized in Table 2.7-3. The drinking water use was assessed on 1,627.8 miles of streams. Of these stream miles, about 1,529.9 miles (94.0%) are supporting this beneficial use and 97.9 miles or 6.0% are not.

Streams classified for agricultural use have 2,343.1 (86.7%) that are supported and 360.5 miles (14.4%) that are not supporting agricultural usage.

A total of 3,099.2 stream miles were assessed for aquatic life, of which 2,653.0 (85.6%) are supporting this beneficial use. A total of 446.2 miles (14.4%) are not supporting.

Table 2.7-3 Individual Beneficial Use Support – Uinta Watershed Management Unit

	Size	Size Fully	Size Not	
	Assessed	Supporting	Supporting	Totals
Use				
Drinking Water	1,627.8	1,529.9	97.9	1,627.8
Fish Consumption				
Swimming	498.2	52.0	446.2	498.2
Secondary Contact	498.2	52.0	446.2	498.2
Aquatic Life	3,099.2	2,653.0	446.2	3,099.2
Agricultural	2,703.6	2,343.1	360.5	2,703.6
Overall	3,013.6	2,378.5	635.1	3,013.6
Drinking Water		94.0%	6.0%	100.0%
Fish Consumption				
Swimming		10.4%	89.6%	100.0%
Secondary Contact		10.4%	89.6%	100.0%
Aquatic Life		85.6%	14.4%	100.0%
Agricultural		86.7%	13.3%	100.0%

2.7.2.4 Total Waters Impaired by Various Causes

Stream miles impacted by specific causes are summarized in Table 2.7-4. The causes of water quality impairment are metals, total dissolved solids, thermal modifications, habitat and flow alterations. The impact of causes are illustrated in Figure 2.7-3 and the relative impact is illustrated in Figure 2.7-4.

2.7.2.5 Total Waters Impaired by Various Sources

Stream miles impacted by source categories are summarized in Table 2.7-5. The sources of impairment are agricultural activities, unknown and natural sources, habitat and hydromodification, and industrial and municipal discharges (Figure 2.7-5). The relative percent impact by each source is illustrated in Figure 2.7-6.

2.7.2.6 Impaired Assessment Units

Table 2.7-6 is a list of the impaired waters in the Uinta Watershed Management Unit.

Table 2.7-4 Total Waters Impaired by Various Cause Categories (Stream Miles)

Cause Category	Total Miles Affected
Benthic macroinvertebrate assessment impairment	39.46
E. coli	
Flow Alteration	64.16
Netals	232.58
Organic Enrichment/Low DO	
Other Habitat Alterations	98.99
pH	
Radiation	
TDS	331.85
Siltation	
Temperature	156.44
Total Phosphorus	
Unionized Ammonia	

Table 2.7-5 Total Waters Impaired by Various Source Categories (Stream Miles)

Source Category	Total Miles Affected
Agriculture	315.13
Aquaculture	
Construction	
Drought	
Habitat Modification (other than Hydromodification)	132.83
Hydromodification	95.84
Industrial Point Sources	8.1
Land Development	
Municipal Point Sources	8.1
Natural Sources	354.59
Resource Extraction	
Septic	
Source Unknown	299.69
Sources outside State Jurisdiction or Borders	
Urban Runoff/Storm Sewers	315.13

Uinta Basin Management Unit

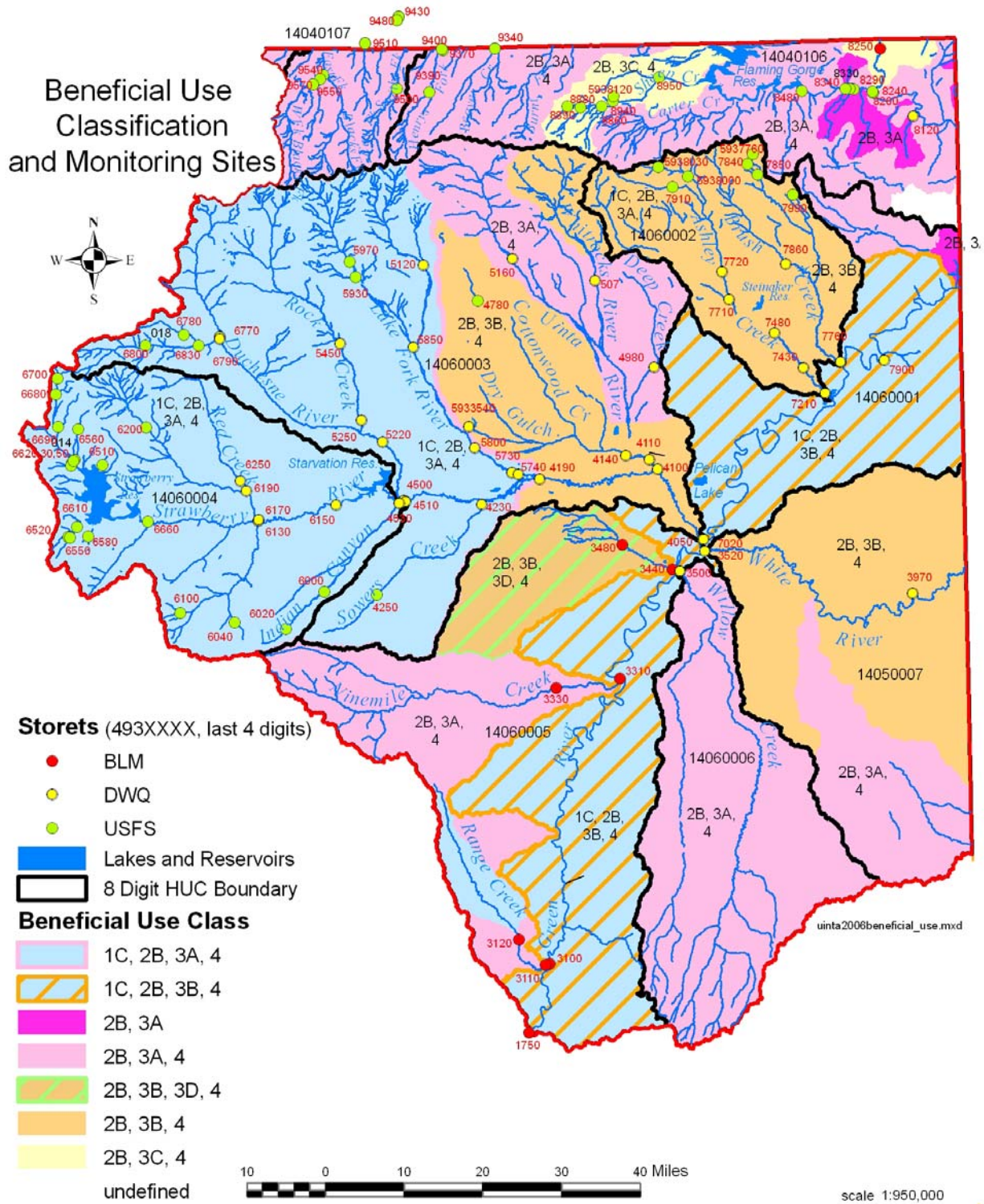


Figure 2.7-1 Beneficial use classifications – Uinta Watershed Management Unit

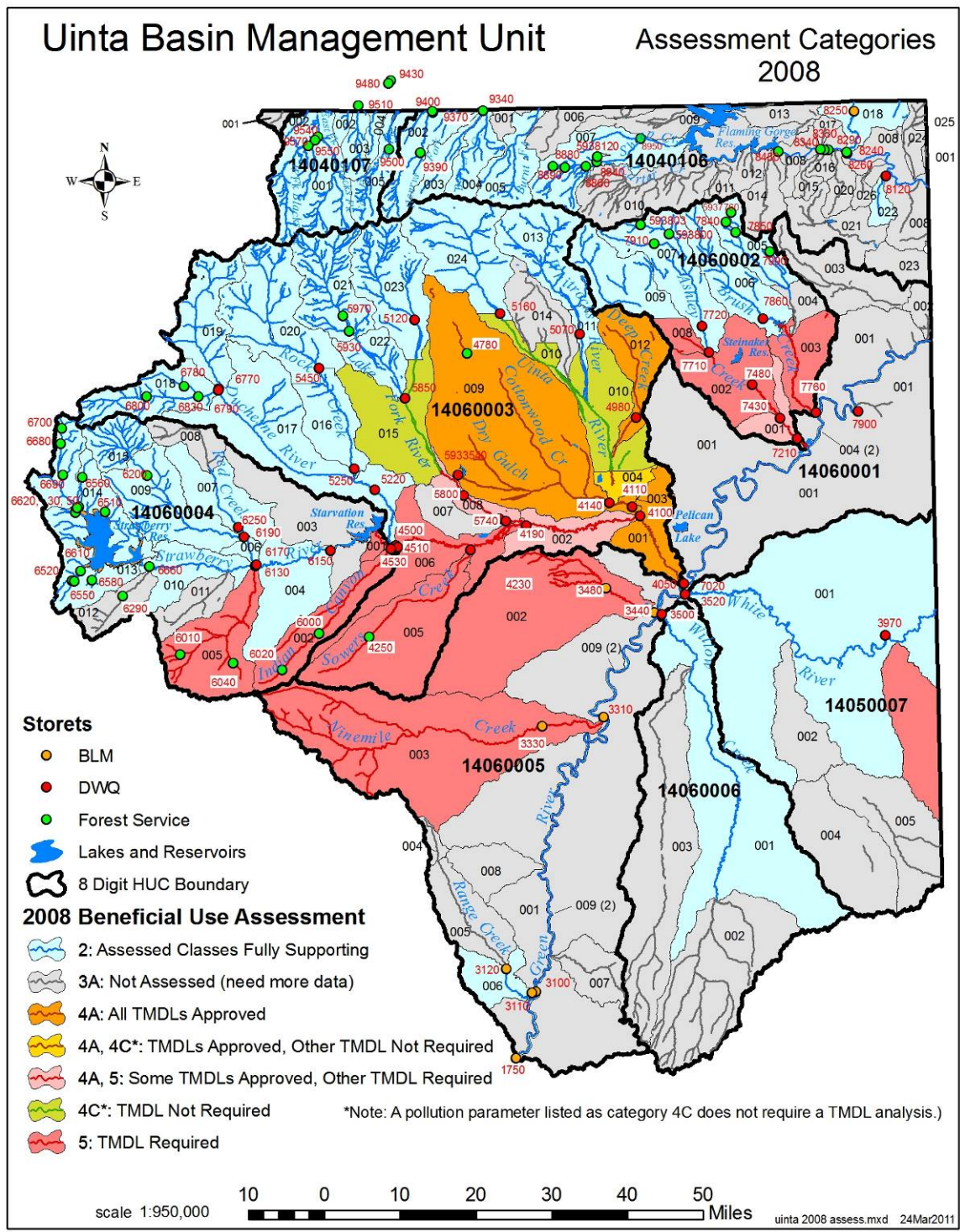


Figure 2.7-2 Beneficial use assessment by categories – Uinta Watershed Management Unit

Percent of Stream Miles Affected By Causes

2008 Integrated Report Assessment - Uinta Watershed Management Unit

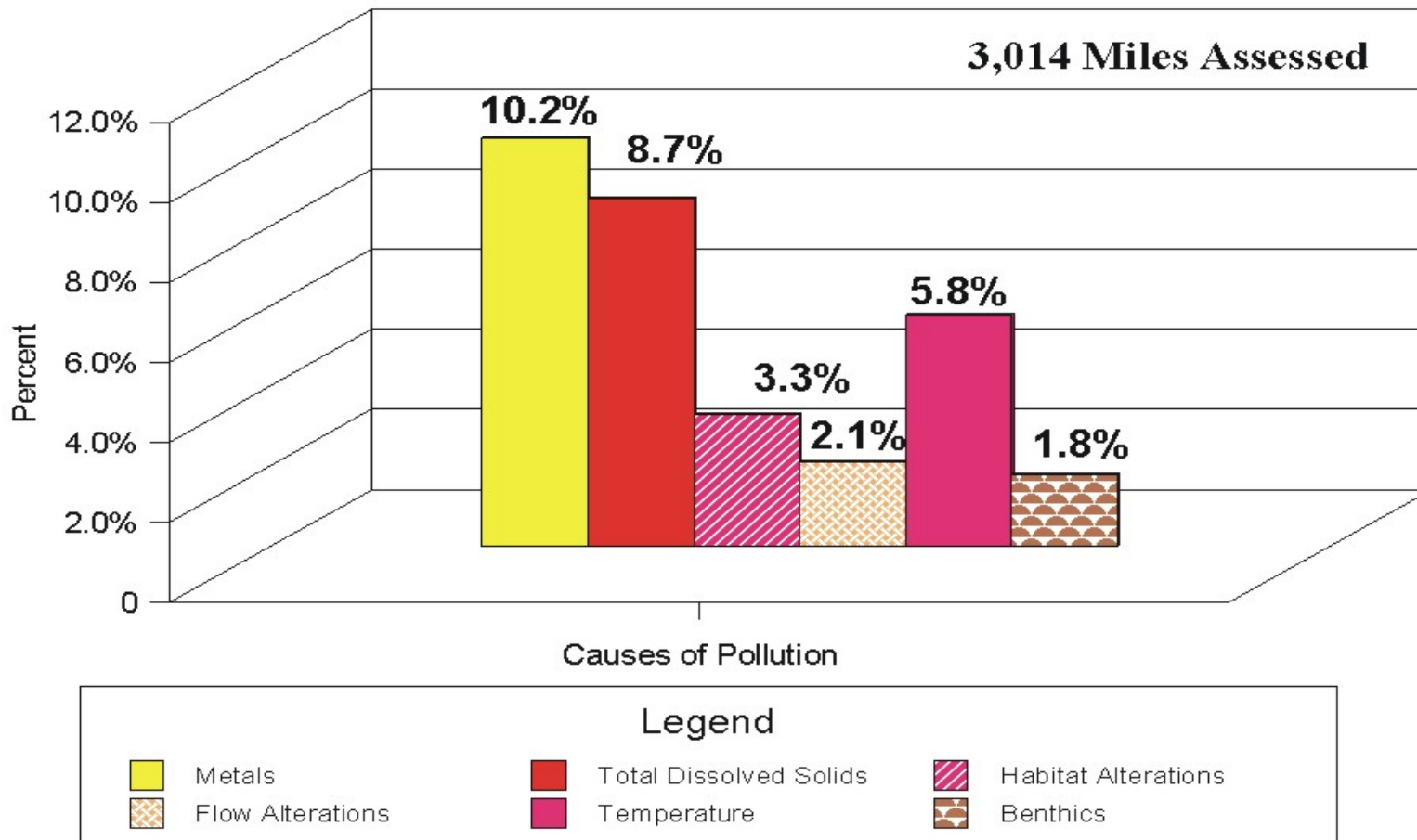


Figure 2.7-3 Percent impact by causes on stream water quality – Uinta Watershed Management Unit

Causes of Stream Water Quality Impairments

2008 Integrated Report Assessment - Uinta Watershed Management Unit

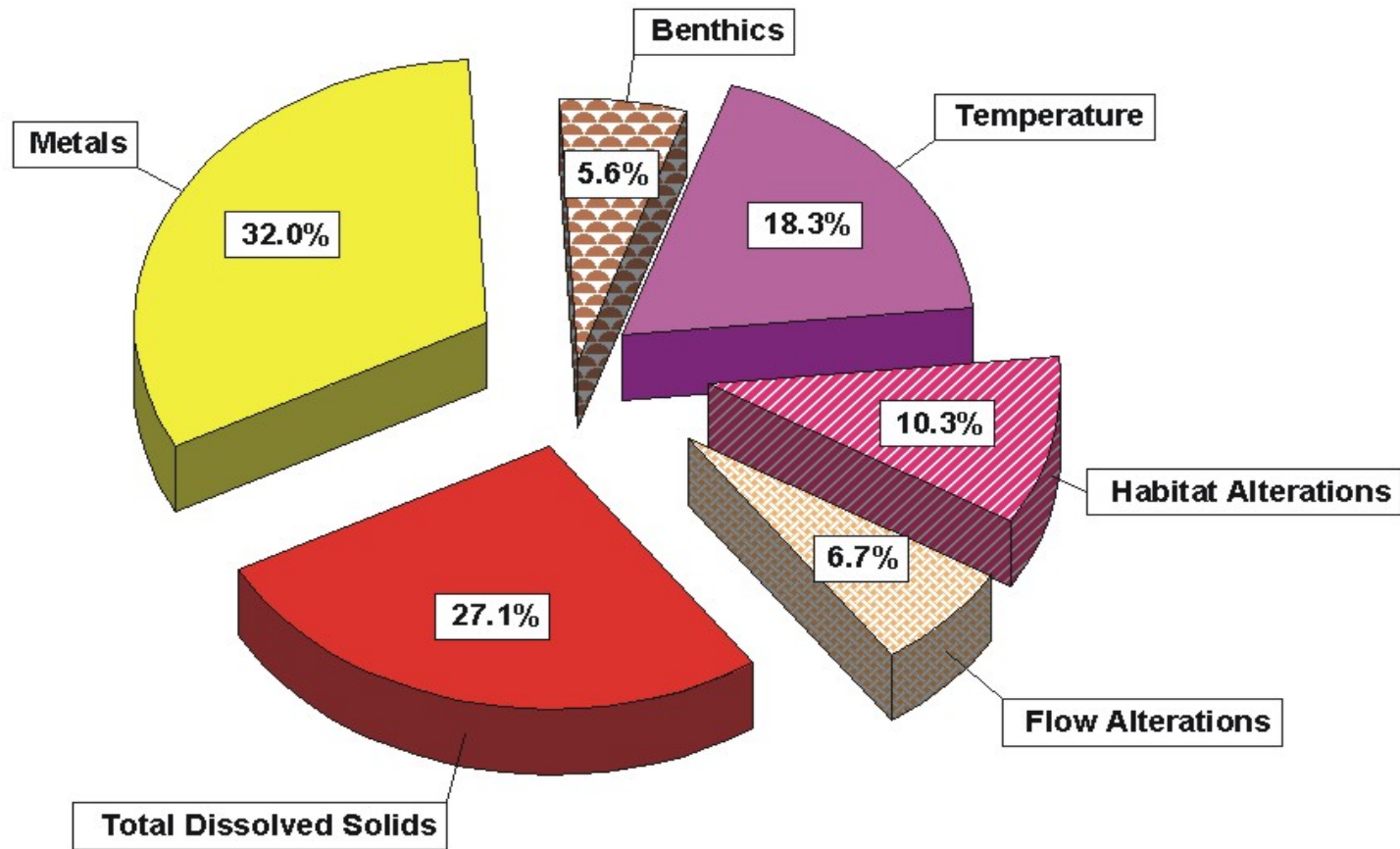


Figure 2.7-4 Relative percent contribution of causes on stream water quality – Uinta Watershed Management Unit

Percent of Stream Miles Affected By Sources

2008 Integrated Report Assessment - Uinta Watershed Mangement Unit

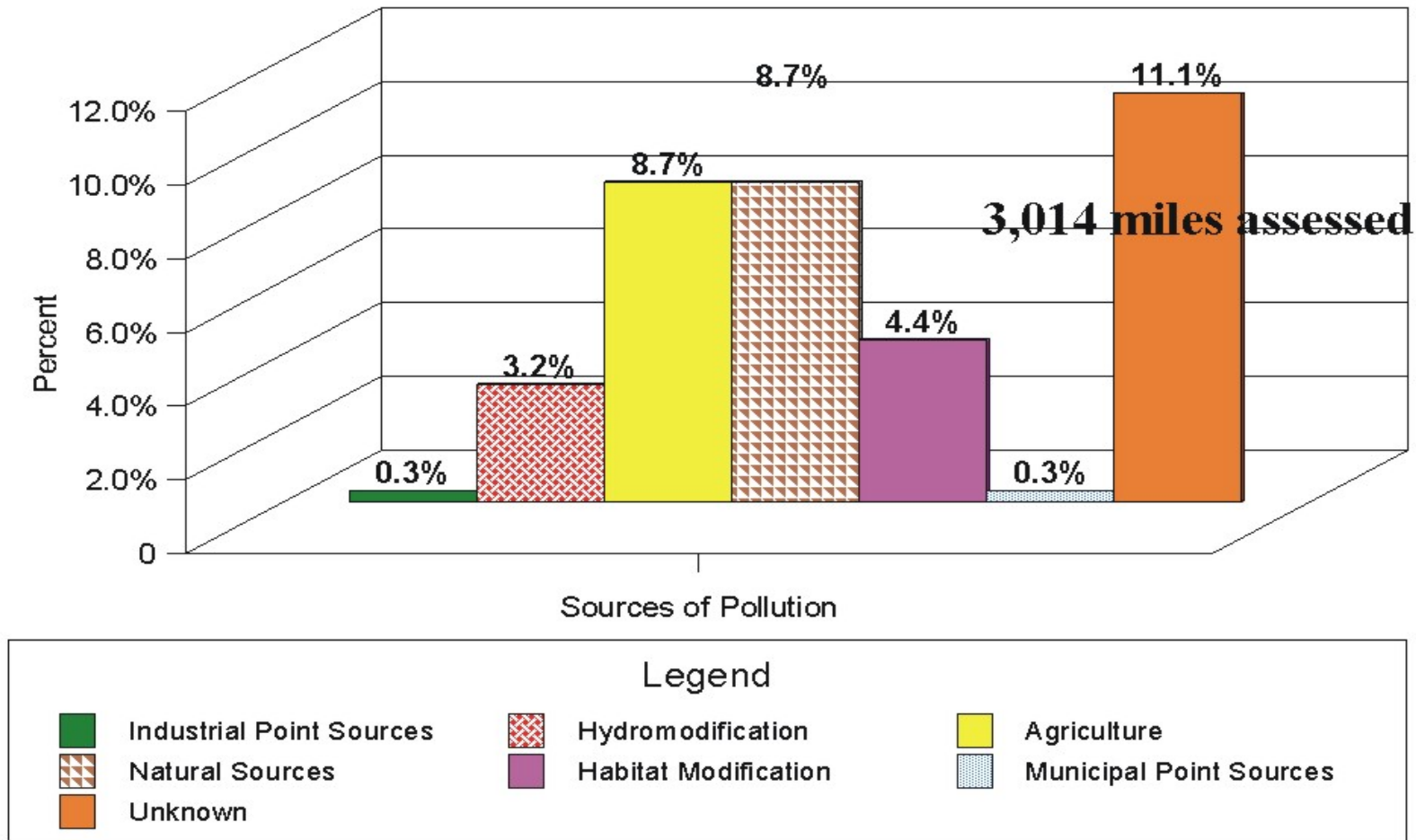


Figure 2.7-5 Percent impact by sources on stream water quality – Uinta Watershed Management Unit

Sources of Stream Water Quality Impairment

2008 Integrated Report Assessment - Uinta Watershed Management Unit

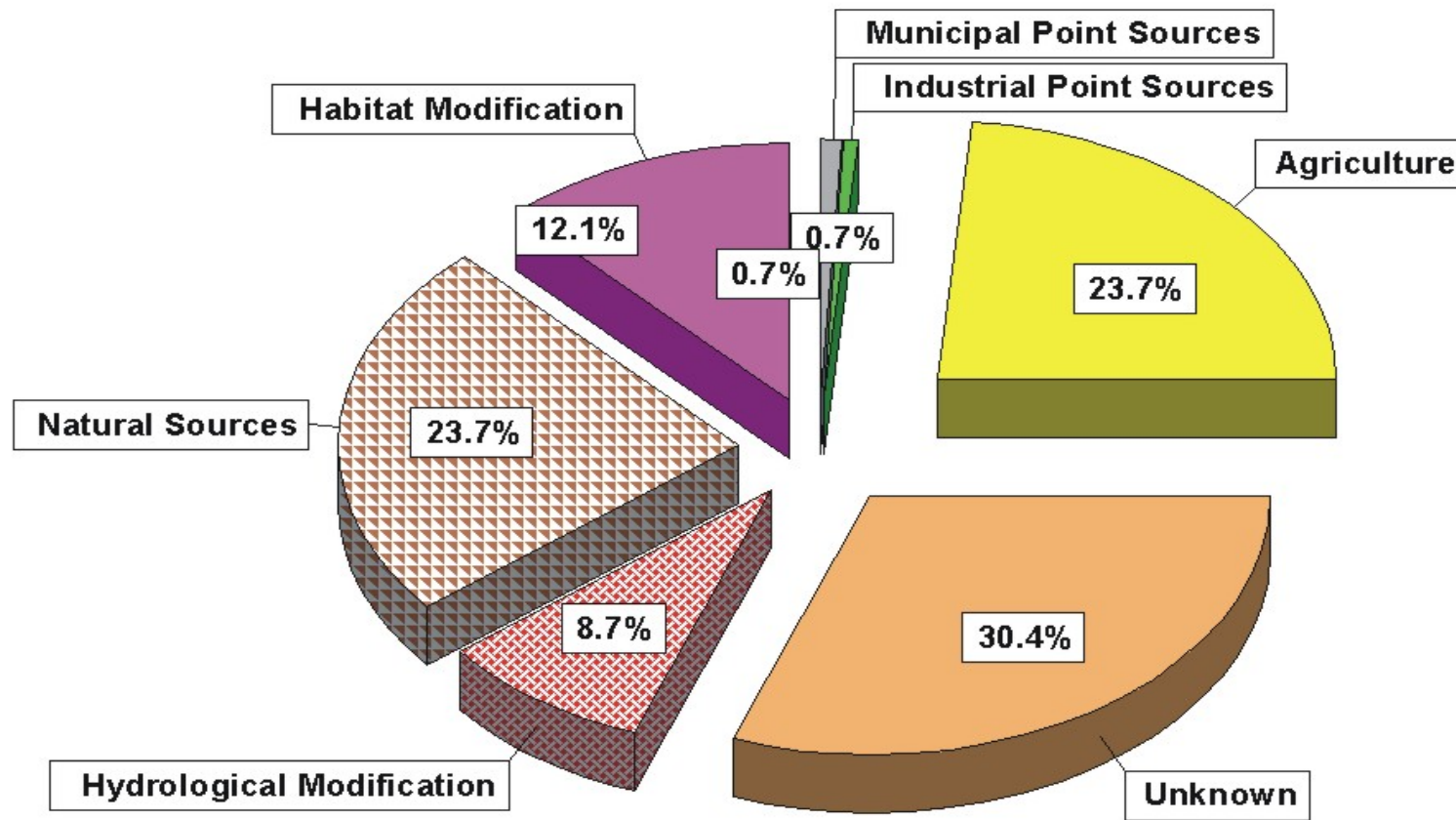


Figure 2.7-6 Relative percent contribution of sources on stream water quality – Uinta Watershed Management Unit

Table 2.7-6 Assessment Units Needing a TMDL Analysis

Watershed Management Unit	Assessment Unit ID	Assessment Unit Name	Assessment Unit Description	Beneficial Use Class Impaired	Beneficial Use Support	Support Category	Pollutant Or Pollution	Stream Miles
Uinta	UT14050007-003	Evacuation Creek	Evacuation Creek and tributaries from the confluence with White River to headwaters	4	NS	5	TDS	1.67
Uinta	UT14060002-001	Lower Ashley Creek	Ashley Creek and tributaries from Green River confluence to Vernal sewage lagoons	4	NS	5	TDS	8.1
Uinta	UT14060002-002	Middle Ashley Creek	Ashley Creek and tributaries from Vernal sewage lagoons to Dry Fork confluence	3B	NS	5	Selenium	12.28
Uinta	UT14060002-002	Middle Ashley Creek	Ashley Creek and tributaries from Vernal sewage lagoons to Dry Fork confluence	4	NS	5	TDS	12.28
Uinta	UT14060002-003	Brush Creek	Brush Creek and tributaries from confluence w/Green River to Red Fleet Dam not including Little Brush Creek	3B	NS	5	Selenium	22.74
Uinta	UT14060002-003	Brush Creek	Brush Creek and tributaries from confluence with Green River to Red Fleet Dam but excluding Little Brush Creek	4	NS	5	Selenium	22.74

Watershed Management Unit	Assessment Unit ID	Assessment Unit Name	Assessment Unit Description	Beneficial Use Class Impaired	Beneficial Use Support	Support Category	Pollutant Or Pollution	Stream Miles
Uinta	UT14060002-008	Lower Dry Fork Creek	Dry Fork and tributaries from confluence with Ashley Creek to USFS boundary	3A	NS	5	Temperature	5.77
Uinta	UT14060003-002	Duchesne River-2	Duchesne River and tributaries from Randlett to Myton	3A	NS	5	Temperature	31.59
Uinta	UT14060003-005	Antelope Creek	Antelope Creek and tributaries from Duchesne River confluence to headwaters	4	NS	5	Boron	31.57
Uinta	UT14060003-005	Antelope Creek	Antelope Creek and tributaries from Duchesne River confluence to headwaters	4	NS	5	TDS	31.57
Uinta	UT14060003-006	Duchesne River-3	Duchesne River from Myton to Strawberry River confluence	3A	NS	5	Benthic macroinvertebrate assessment impairment	39.46
Uinta	UT14060004-001	Strawberry River-1	Strawberry River from confluence Duchesne River to Starvation Dam.	4	NS	5	Boron	5.94
Uinta	UT14060004-002	Indian Canyon Creek	Indian Canyon Creek and tributaries from Strawberry River confluence to headwaters	1C	NS	5	Arsenic	44.01
Uinta	UT14060004-002	Indian Canyon Creek	Indian Canyon Creek and tributaries from Strawberry River	4	NS	5	Boron	44.01

Watershed Management Unit	Assessment Unit ID	Assessment Unit Name	Assessment Unit Description	Beneficial Use Class Impaired	Beneficial Use Support	Support Category	Pollutant Or Pollution	Stream Miles
			confluence to headwaters					
Uinta	UT14060004-002	Indian Canyon Creek	Indian Canyon Creek and tributaries from Strawberry River confluence to headwaters	4	NS	5	TDS	44.01
Uinta	UT14060004-005	Avintaquin Creek	Avintaquin Creek and tributaries from Strawberry River confluence to headwaters	1C	NS	5	Arsenic	53.84
Uinta	UT14060005-002	Pariette Draw Creek	Pariette Draw Creek and tributaries from Green River confluence to headwaters	3B	NS	5	Selenium	54.1
Uinta	UT14060005-002	Pariette Draw Creek	Pariette Draw Creek and tributaries from Green River confluence to headwaters	3D	NS	5	Selenium	54.1
Uinta	UT14060005-002	Pariette Draw Creek	Pariette Draw Creek and tributaries from Green River confluence to headwaters	4	NS	5	Boron	54.1
Uinta	UT14060005-002	Pariette Draw Creek	Pariette Draw Creek and tributaries from Green River confluence to headwaters	4	NS	5	TDS	54.1

Watershed	Assessment	Assessment	Assessment	Beneficial	Beneficial		Pollutant	
Management	Unit	Unit	Unit	Class	Use	Support	Or	Stream
Unit	ID	Name	Description	Impaired	Support	Category	Pollution	Miles
Uinta	UT14060005-003	Nine Mile	Ninemile Creek and tributaries from Green River confluence to headwaters	3A	NS	5	Temperature	119.08

Chapter 2.8 Sevier River Watershed Management Unit Assessment

2.8.1. Introduction

The Sevier River Watershed Management Unit includes all streams located in the U.S.G.S Hydrological Units (HUCs) listed in Table 2.8-1. Some of the major streams within unit are the Sevier River, San Pitch River, Otter Creek, Salina Creek, and the East Fork Sevier River.

Table 2.8-1 Hydrological Unit Codes and Names

Hydrological Unit Code	Hydrological Unit Name
14030001	Upper Sevier
14030002	East Fork Sevier
14030003	Middle Sevier
14030004	San Pitch
14030005	Lower Sevier
14030009	Sevier Lake

2.8.2. Water Quality Assessment Results

Data from samples collected from January 1, 2002 through December 31, 2006 were used in making this assessment. The data include data collected by DWQ, and Cooperators. Benthic macroinvertebrate data collected at several sites were also used to determine support of the aquatic life beneficial use (Chapter 2.15). Figure 2.8-2 is a map of the designated beneficial uses assigned to the streams in this management unit.

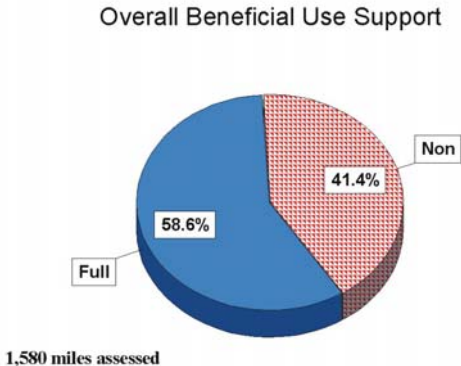


Figure 2.8-1 Overall Beneficial Use Support - Sevier

2.8.2.1 Overall Beneficial Use Support

There are an estimated 1,885 perennial stream miles within the Sevier River Watershed Management Unit. Of these, 1,580 miles were assessed. There are 948.1 stream miles (58.6%) supporting the beneficial uses that were assessed and 666.3 (41.4%) were not supporting at least one designated beneficial use. The overall beneficial use assessment is illustrated in Figure 2.8-1.

2.8.2.2 Beneficial Use Assessment By Categories

Table 2.8-2 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 of miles assessed. Figure 2.8-3 illustrates the beneficial use by categories.

Table 2.8-2 Stream Miles by Assessment Category – Sevier River Watershed Management Unit

Category	Category Definitions	Stream Miles
1	All beneficial uses fully supported.	
2	Beneficial uses assessed are fully supported.	926.18
3A	No data or insufficient data to make an assessment.	303.03
3B	Lakes that are not supported for one cycle only.	
3C	Insufficient data to assess but an assessment plan is in place.	
4A	Approved TMDL	536.27
4B	Pollution control requirements are expected to result in full beneficial use support in near future.	
4C	Impaired by pollution, no TMDL required.	205.05
5	Impaired by pollutant, TMDL required.	432.2

2.8.2.3 Individual Use Support

Of the 1,667.2 stream miles assessed for aquatic life, 1,128.2 miles (67.7%) are fully supporting and 583.99 miles (32.3%) are not supporting this beneficial use. Of the streams assessed for agricultural use, 1,608.9 miles (87.4%) are fully supporting and 202.2 miles (12.6%) as not supporting this beneficial use (Table 2.8-3). The beneficial use support categories are mapped in Figure 2.8-2.

Table 2.8-3 Individual Use Support Summary – Sevier River Watershed Management Unit

	Size	Size Fully	Size Not	
	Assessed	Supporting	Supporting	Totals
Use				
Drinking Water	0.00	0.00	0.00	0.00
Fish Consumption	0.00	0.00	0.00	0.00
Swimming	0.00	0.00	0.00	0.00
Secondary Contact	0.00			0.00
Aquatic Life	1,667.16	1,128.17	538.99	1,667.16
Agricultural	1,608.09	1,406.07	202.02	1,608.09
Drinking Water		0	0	0
Fish Consumption		0	0	0
Swimming		0	0	0
Secondary Contact		0	0	0
Aquatic Life		67.7%	32.3%	100.0%
Agricultural		87.4%	12.6%	100.0%

2.8.2.4 Total Waters Impaired by Various Causes

The causes of impairment are listed in Table 2.8-4. The causes of impairment are siltation, nutrients (total phosphorus), thermal modifications, total dissolved solids, habitat alterations, unknown causes, and metals (boron). The percent of stream miles impaired is illustrated Figure 2.8-4. The relative impact of these causes is shown in Figure 2.8-5.

2.8.2.5. Total Waters Impaired by Various Sources

The sources of impairment are agriculture, hydromodification, unknown sources, natural sources, aquaculture, and habitat modification (Table 2.8-5). The percent of impact by sources is illustrated in Figure 2.8-6. The relative percent of impairment by sources is shown in Figure 2.8-7.

2.8.2.6 Impaired Assessment Units

Table 2.8-6 is a list of the impaired waters in the Sevier River Watershed Management Unit.

Sevier River Management Unit

Beneficial Use Classification and Monitoring Sites

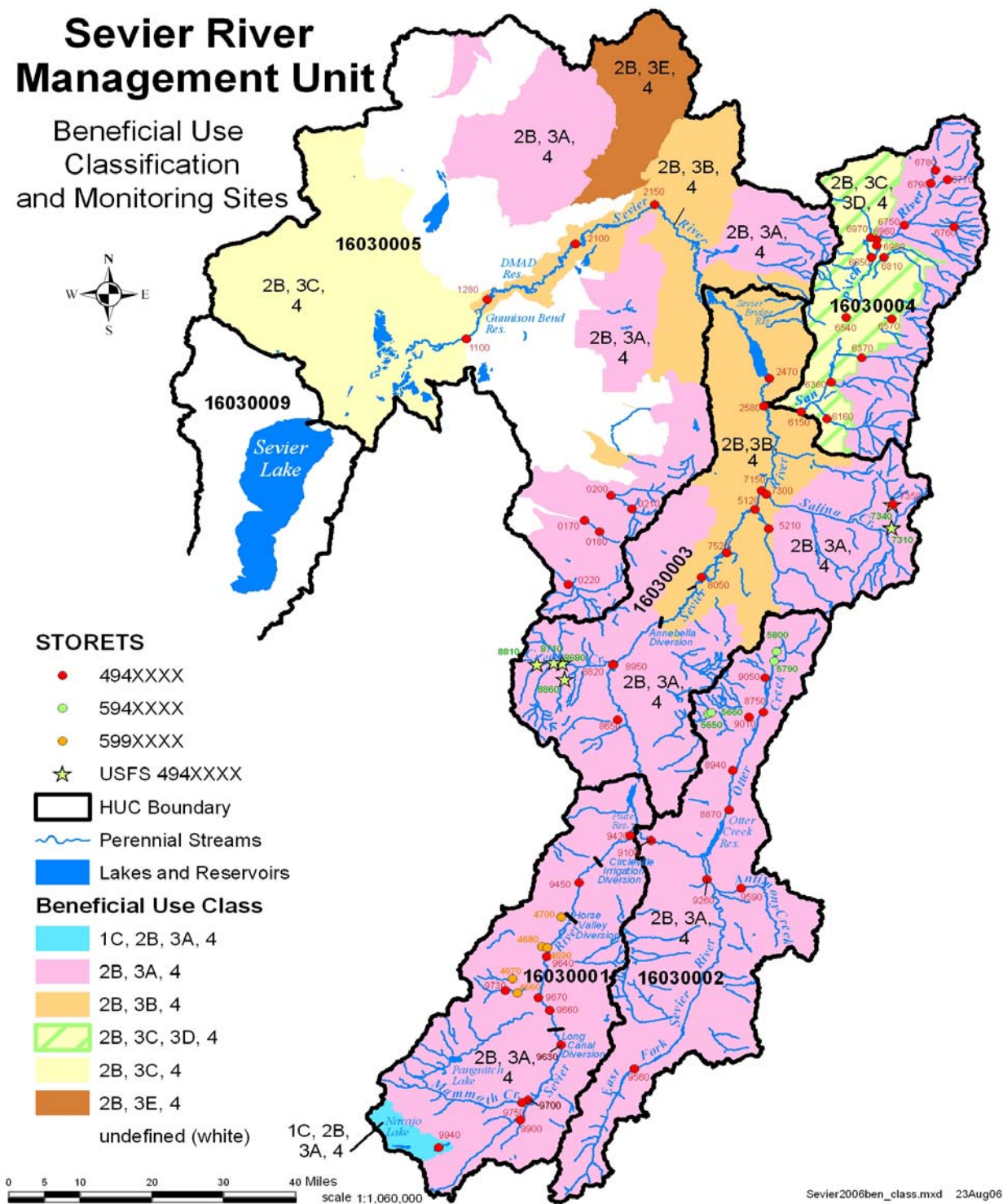


Figure 2.8-2 Beneficial use classifications – Sevier Watershed Management Unit

Sevier River Management Unit

Assessment Categories 2008

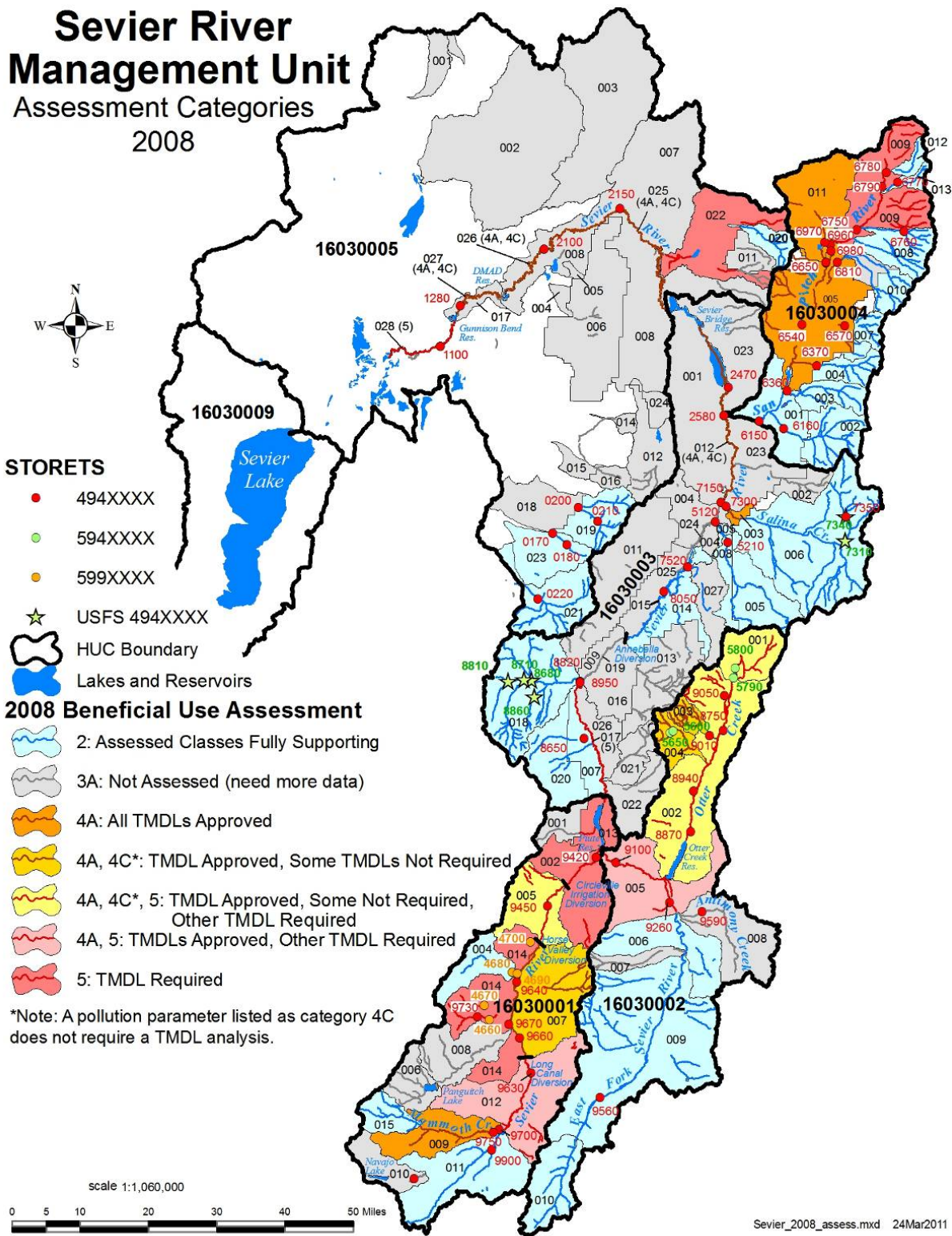


Figure 2.8-3 Beneficial use assessment by category – Sevier River Watershed Management Unit

Table 2.8-4 Total Waters Impaired by Various Cause Categories (Stream Miles) - Sevier Watershed Management Unit

Table 2.8-4 Total Waters Impaired by Various Cause Categories (Stream Miles) – Sevier Watershed Management Unit	
Cause Category	Stream Miles
Benthic macroinvertebrate assessment impairment	69.7
E. coli	
Flow Alteration	
Metals	18.7
Organic Enrichment/Low DO	
Other Habitat Alterations	185.6
pH	
Radiation	
TDS	183.4
Siltation	319.1
Temperature	217.5
Total Phosphorus	385.6
Unionized Ammonia	

Table 2.8-5 Total Waters Impaired by Various Source Categories (Stream Miles) – Sevier Watershed Management Unit

Table 2.8-5. Total Waters Impaired by Various Source Categories (Stream Miles) – Sevier Watershed Management Unit.	
Source Category	Stream Miles
Agriculture	475.6
Aquaculture	75.5
Construction	
Drought	59.8
Habitat Modification (other than Hydromodification)	205.5
Hydromodification	453.0
Industrial Point Sources	
Land Development	
Municipal Point Sources	
Natural Sources	236.5
Resource Extraction	
Septic	
Source Unknown	249.5
Sources outside State Jurisdiction or Borders	
Urban Runoff/Storm Sewers	

Percent of Stream Miles Affected By Causes

2008 Integrated Report Assessment - Sevier River Management Unit

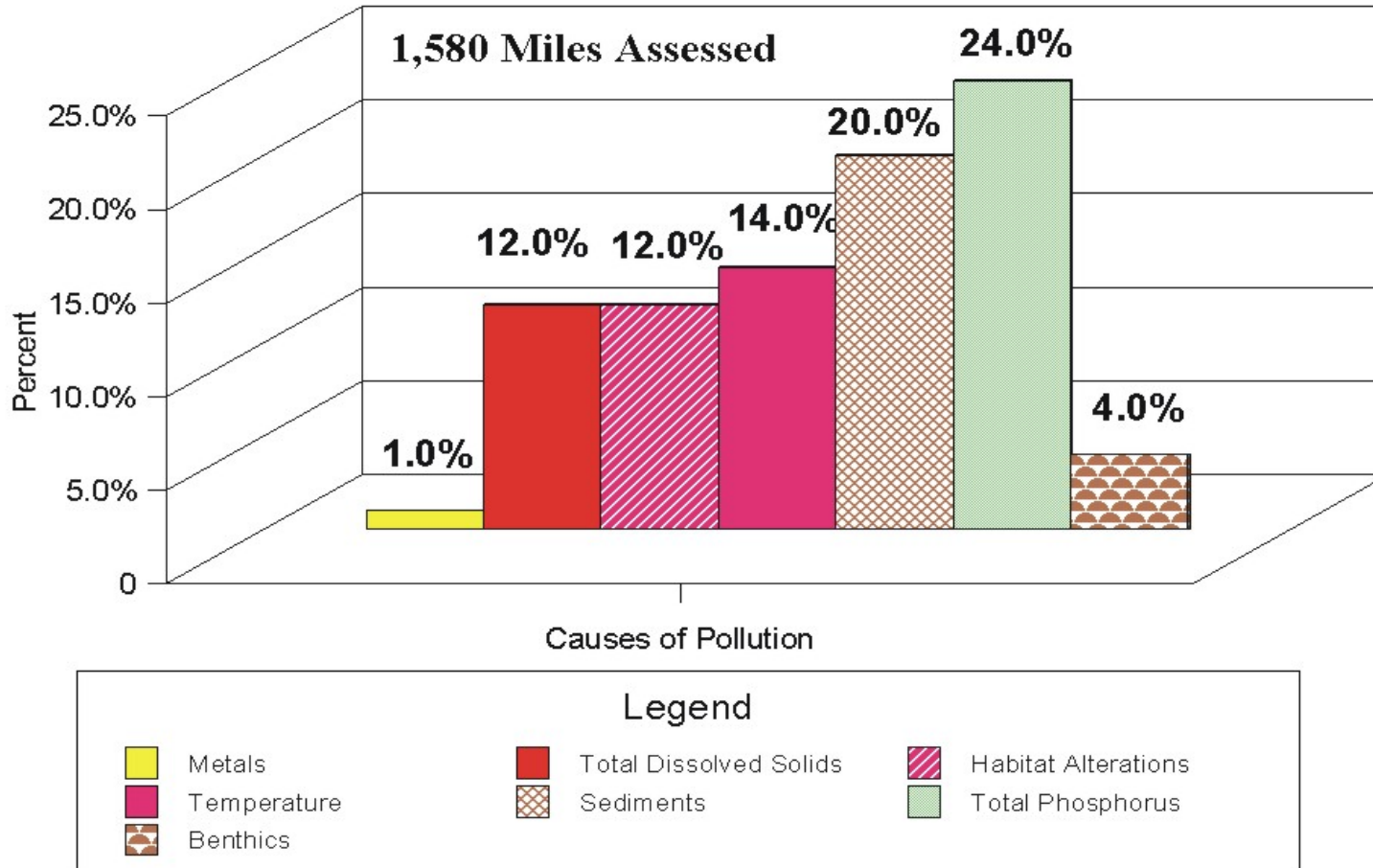


Figure 2.8-4 Percent impact by causes on stream water quality – Sevier Watershed Management Unit

Causes of Stream Water Quality Impairments

2008 Integrated Report Assessment - Sevier River Watershed Management Unit

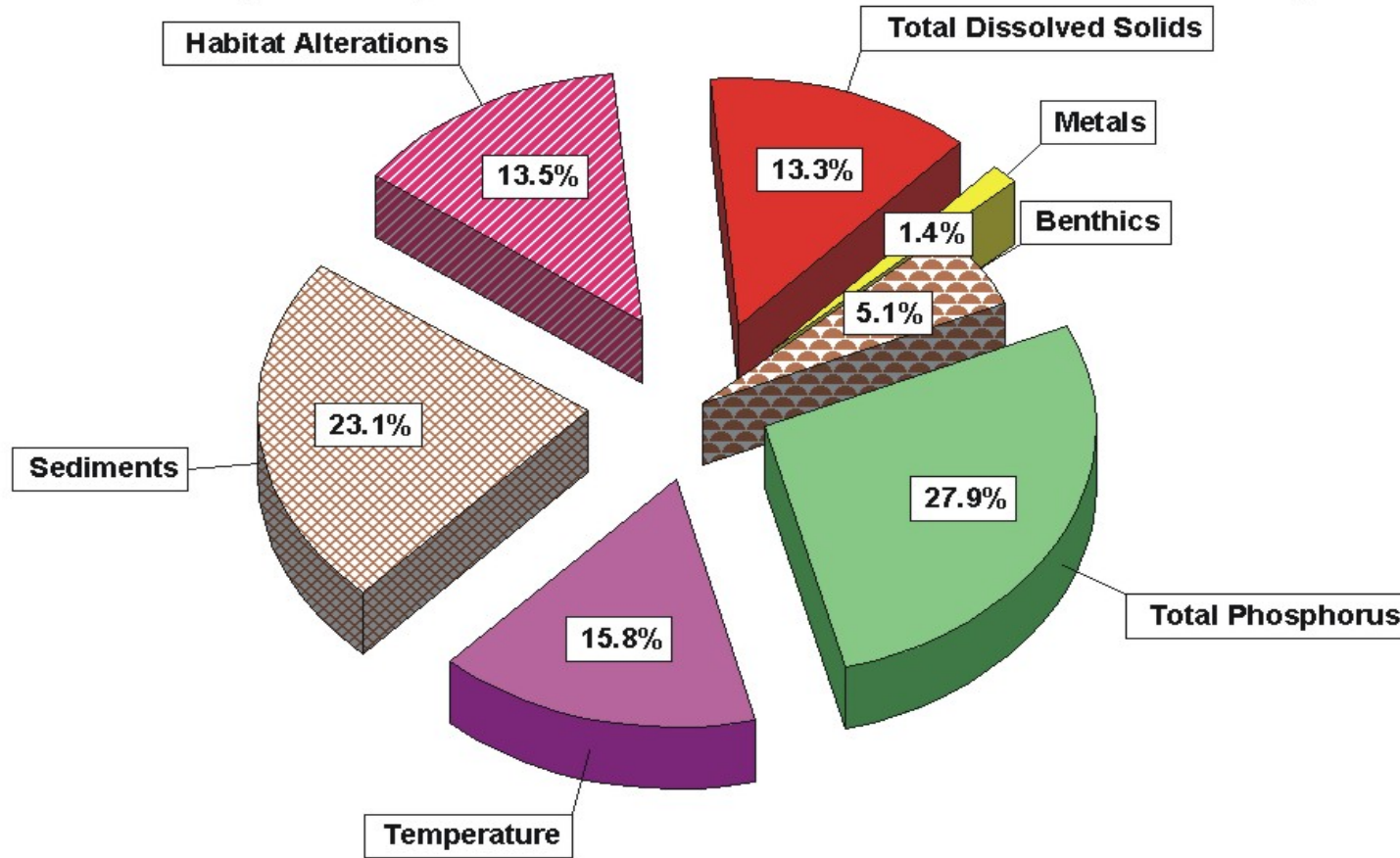


Figure 2.8-5 Relative percent contribution of causes on stream water quality – Sevier River Watershed Management Unit

Percent of Stream Miles Affected By Sources

2008 Integrated Report Assessment - Sevier River Watershed Mangement Unit

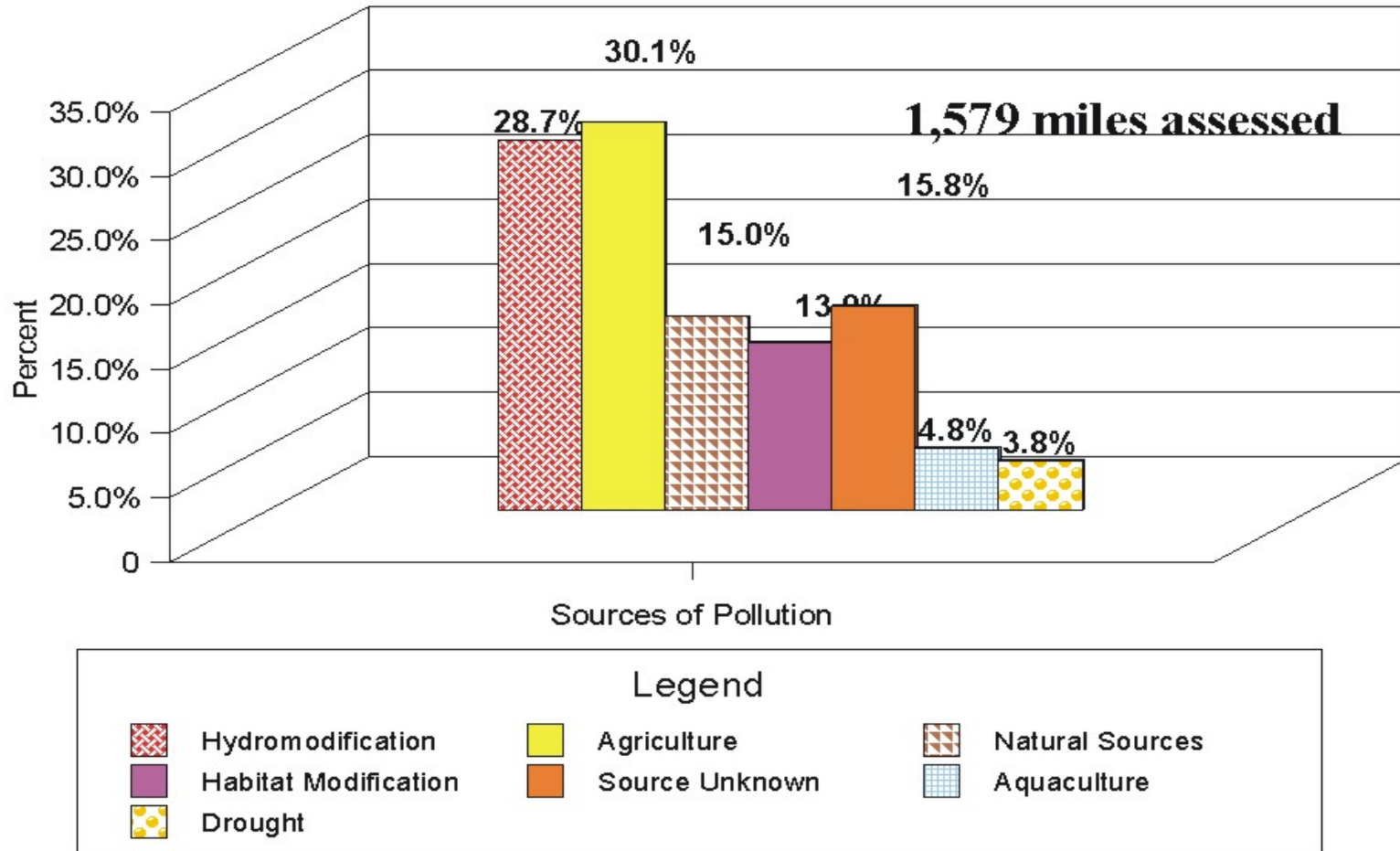


Figure 2.8-6 Percent impact by sources on stream water quality – Sevier River Watershed Management Unit

Causes of Stream Water Quality Impairments

2008 Integrated Report Assessment - Sevier River Waterdhed Mangement Unit

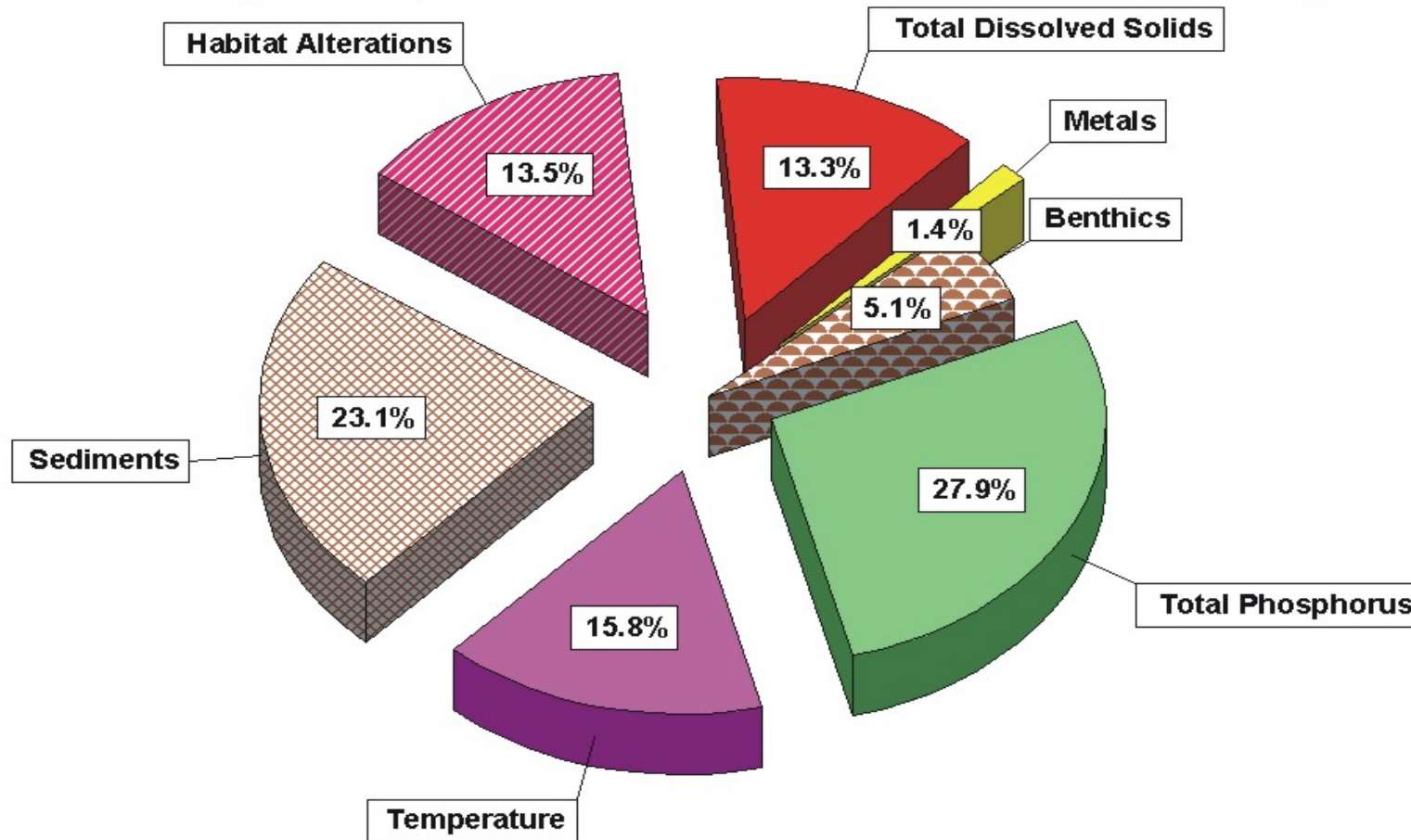


Figure 2.8-7 Relative percent contribution of sources on stream water quality – Sevier Watershed Management Unit

Table 2.8-6 Impaired Waters Located in the Sevier Watershed Management Unit

Assessment Unit ID	Assessment Unit Name	Assessment Unit Description	Beneficial Use Class	Beneficial Use Support	Support Category	Pollutant Or Pollution Cause	Stream Miles
AU_ID	AU_NAME	AU_DESCR	CLASS	SUPPORT	CATEGORY	CAUSE	MILES
UT16030003-003	Salina Creek-1	Salina Creek and tributaries from confluence with Sevier River to USFS boundary	4	NS	4A	TDS	4.71
UT16030003-005	Lost Creek-1	Lost Creek and tributaries from confluence with Sevier River upstream approximately 6 miles	4	NS	4A	TDS	4.11
UT16030003-012	Sevier River-17	Sevier River from Yuba Dam upstream to confluence with Salina Creek	4	NS	4A	TDS	45.24
UT16030003-027	Peterson Creek	Petersen Creek and tributaries from confluence with Sevier River to USFS boundary	4	NS	4A	TDS	8.7
UT16030004-005	San Pitch-2	San Pitch River and tributaries from Gunnison Reservoir to U132 crossing below USFS boundary	4	NS	4A	TDS	55.79
UT16030004-011	San Pitch-4	Silver Creek and tributaries from confluence with San Pitch to headwaters	4	NS	4A	TDS	10.84
UT16030005-026	Sevier River-22	Sevier River from DMAD Reservoir upstream to U-132 crossing at the northern most point of the Sevier River (near Dog Valley Wash)	4	NS	4A	TDS	42.27
UT16030005-027	Sevier River-24	Sevier River from Gunnison Bend Reservoir to DMAD Reservoir	4	NS	4A	TDS	17.45
UT16030001-005	Sevier River-3	Sevier River and tributaries from Circleville Irrigation Diversion to Horse Valley Diversion	3A	NS	4A	Siltation	20.66
UT16030001-007	Sevier River-2	Sevier River and east side tributaries from Horse Valley Bridge Diversion upstream to Long Canal	3A	NS	4A	Siltation	46.98
UT16030001-012	Sevier River-1	Sevier River and tributaries from Long Canal to Mammoth Creek confluence	3A	NS	4A	Siltation	28.48
UT16030002-001	Otter Creek-4	Otter Creek and tributaries from Koosharem Reservoir to headwaters	3A	NS	4A	Siltation	18.58
UT16030002-002	Otter Creek-1	Otter Creek and tributaries from Otter Creek Reservoir to Koosharem Reservoir, except Box and Greenwich Creeks	3A	NS	4A	Siltation	59.82

Assessment Unit ID	Assessment Unit Name	Assessment Unit Description	Beneficial Use Class	Beneficial Use Support	Beneficial Use Category	Pollutant Or Pollution Cause	Stream Miles
UT16030002-003	Otter Creek-3	Greenwich Creek and tributaries from confluence with Otter Creek to headwaters	3A	NS	4A	Siltation	23.77
UT16030002-004	Otter Creek-2	Box Creek and tributaries from confluence with Otter Creek to headwaters	3A	NS	4A	Siltation	19.49
UT16030001-005	Sevier River-3	Sevier River and tributaries from Circleville Irrigation Diversion to Horse Valley Diversion	3A	NS	4A	Total Phosphorus	20.66
UT16030001-007	Sevier River-2	Sevier River and east side tributaries from Horse Valley Bridge Diversion upstream to Long Canal	3A	NS	4A	Total Phosphorus	46.98
UT16030001-009	Mammoth Creek Lower	Mammoth Creek and tributaries from confluence with Sevier River to Mammoth Spring confluence	3A	NS	4A	Total Phosphorus	22.2
UT16030001-012	Sevier River-1	Sevier River and tributaries from Long Canal to Mammoth Creek confluence	3A	NS	4A	Total Phosphorus	28.48
UT16030002-001	Otter Creek-4	Otter Creek and tributaries from Koosharem Reservoir to headwaters	3A	NS	4A	Total Phosphorus	18.58
UT16030002-002	Otter Creek-1	Otter Creek and tributaries from Otter Creek Reservoir to Koosharem Reservoir, except Box and Greenwich Creeks	3A	NS	4A	Total Phosphorus	59.82
UT16030002-003	Otter Creek-3	Greenwich Creek and tributaries from confluence with Otter Creek to headwaters	3A	NS	4A	Total Phosphorus	23.77
UT16030002-005	East Fork Sevier River-4	East Fork Sevier River and tributaries from confluence with Sevier River upstream to Antimony Creek confluence, excluding Otter Creek and tributaries	3A	NS	4A	Total Phosphorus	25.74
UT16030001-005	Sevier River-3	Sevier River and tributaries from Circleville Irrigation Diversion to Horse Valley Diversion	3A	NS	4C	Other Habitat Alterations	20.66
UT16030001-007	Sevier River-2	Sevier River and east side tributaries from Horse Valley Bridge Diversion upstream to Long Canal	3A	NS	4C	Other Habitat Alterations	46.98
UT16030002-003	Otter Creek-3	Greenwich Creek and tributaries from confluence with Otter Creek to headwaters	3A	NS	4C	Other Habitat Alterations	23.77

Assessment Unit ID	Assessment Unit Name	Assessment Unit Description	Beneficial Use Class	Beneficial Use Support	Beneficial Use Category	Pollutant Or Pollution Cause	Stream Miles
AU_ID	AU_NAME	AU_DESCR	CLASS	SUPPORT	CATEGORY	CAUSE	MILES
UT16030001-013	Piute	Piute Reservoir tributaries below USFS boundary and excluding Sevier River inlet	3A	NS	5	Benthic Macroinvertebrate Assessment Impairment	4.04
UT16030004-009	San Pitch-5	San Pitch River and tributaries from U-132 to Pleasant Creek confluence, excluding Cedar Creek, Oak Creek, Pleasant Creek and Cottonwood Creek	3A	NS	5	Benthic Macroinvertebrate Assessment Impairment	65.66
UT16030004-009	San Pitch-5	San Pitch River and tributaries from U-132 to Pleasant Creek confluence, excluding Cedar Creek, Oak Creek, Pleasant Creek and Cottonwood Creek	3A	NS	5	Temperature	65.66
UT16030005-028	Sevier River-25	Sevier River from Crafts Lake to Gunnison Bend Reservoir	4	NS	5	Boron	18.66
UT16030005-022	Chicken Creek-2	Chicken Creek and tributaries from confluence with Sevier River to Levan	4	NS	5	TDS	24.51
UT16030001-002	Sevier River-4	Sevier River and tributaries from Piute Reservoir to Circleville Irrigation Diversion, excluding East Fork Sevier River and tributaries	3A	NS	5	Temperature	16.21
UT16030001-005	Sevier River-3	Sevier River and tributaries from Circleville Irrigation Diversion to Horse Valley Diversion	3A	NS	5	Temperature	20.66
UT16030001-012	Sevier River-1	Sevier River and tributaries from Long Canal to Mammoth Creek confluence	3A	NS	5	Temperature	28.48
UT16030001-014	Threemile Creek	Threemile Creek and other Sevier River west side tributaries from Horse Valley Diversion upstream to Long Canal, excluding Panquitch and Bear Creeks	3A	NS	5	Temperature	19.91
UT16030002-001	Otter Creek-4	Otter Creek and tributaries from Koosharem Reservoir to headwaters	3A	NS	5	Temperature	18.58
UT16030002-002	Otter Creek-1	Otter Creek and tributaries from Otter Creek Reservoir to Koosharem Reservoir, except Box and Greenwich Creeks	3A	NS	5	Temperature	59.82
UT16030002-002	Otter Creek-1	Otter Creek and tributaries from Otter Creek Reservoir to Koosharem Reservoir, except Box and Greenwich Creeks	3A	NS	5	Benthic Macroinvertebrate Impairment	59.82

Assessment	Assessment	Assessment	Beneficial Use	Beneficial		Pollutant	
Unit	Unit	Unit	Class	Use	Support	Or	Stream
ID	Name	Description	Impaired	Support	Category	Pollution	Miles
AU_ID	AU_NAME	AU_DESCR	CLASS	SUPPORT	CATEGORY	CAUSE	MILES
UT16030002-005	East Fork Sevier River-4	East Fork Sevier River and tributaries from confluence with Sevier River upstream to Antimony Creek confluence, excluding Otter Creek and tributaries	3A	NS	5	Temperature	25.74
UT16030003-017	Sevier River-6	Sevier River from Clear Creek confluence to HUC unit 1603003-1603001 boundary	3A	NS	5	Temperature	28.06

Chapter 2.9 Cedar/Beaver Watershed Management Unit Assessment

2.9.1. Introduction

The Cedar / Beaver Watershed Management Unit includes all streams located in the U.S.G.S Hydrological Units (HUCs) listed in Table 2.9-1. There are not many streams within this unit with the major streams being the Beaver River, Coal Creek, Shoal Creek and Pinto Creek.

Table 2.9-1 U.S.G.S. Hydrological Units in the Cedar/Beaver Watershed Management Unit

Hydrological Unit Code	Hydrological Unit Name
16030006	Escalante Desert
16030007	Beaver Bottoms-Upper Beaver
16030008	Lower Beaver

2.9.2. Water Quality Assessment Results

2.9.2.1. Overall Beneficial Use Support

Data collected between January 1, 2002 and December 31, 2006, including the intensive survey were used to determine beneficial use support. Benthic macroinvertebrate data were used for the first time in making beneficial use assessments (Chapter 2.15).

Beneficial use support assessments are made by comparing data against numeric standards established for each beneficial use. Figure 2.9-2 is a map of the designated beneficial uses assigned to the stream and river Assessment Units. Assessments using benthic macroinvertebrate data are based upon the State's narrative standard.

Of the stream segments assessed, 195.9 (69.5%) are fully supporting, and all the beneficial uses assessed and (30.4%) are not supporting at least one designated beneficial use. The overall beneficial use assessment is shown in Figure 2.9-1.

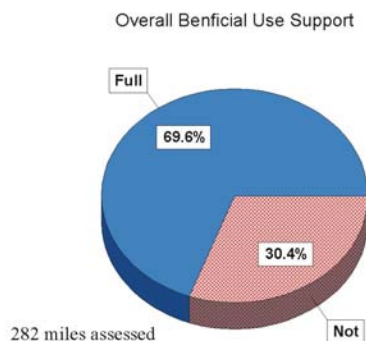


Figure 2.9-1 Overall beneficial use support

2.9.2.2. Beneficial Use Assessment by Categories

The number of stream miles assessed by categories is listed in Table 2.9-2. Figure 2.9-3 is a map of the assessment categories that rivers and streams were assigned to after the beneficial uses were evaluated. An Assessment Unit (AU) can be in more than one category.

Table 2.9-2 Stream Miles by Assessment Category – Cedar/Beaver

Category	Category Definition	Stream Miles
1	All beneficial uses fully supported.	
2	Beneficial uses assessed are fully supported.	195.91
3A	No data or insufficient data to make an assessment.	35.12
3B	Lakes that are not supported for one cycle only.	
3C	Insufficient data to assess but an assessment plan is in place.	
4A	Approved TMDL	57.57
4B	Other pollution control requirements are reasonably expected to result in attainment of the water quality standard in the near future.	
4C	Impaired by pollution, no TMDL required.	57.57
5	Impaired by pollutant, TMDL required.	

2.9.2.3. Individual Beneficial Use Support






Individual beneficial use support is listed in Table 2.9-3. For aquatic life use support, 195.1 miles (77.4%) are fully supporting and 57.6 miles (22.6%) are not supporting this beneficial use. Of the stream miles assessed for agricultural use, 182.4 (77.4%) were assessed as fully supporting and 57.6 miles as (22.6 %) not supporting this designated beneficial use. The 57.6 miles assessed for swimming and secondary contact are not supporting this beneficial use because of pH.

Table 2.9-3 Individual Beneficial Use Support – Cedar/Beaver Watershed Management Unit (Stream Miles) Classification - 2008

	Size	Size Fully	Size Not	
	Assessed	Supporting	Supporting	Totals
Use				
Drinking Water	0	0	0	0
Fish Consumption	0	0	57.57	57.57
Swimming	57.57	0	57.57	57.57
Secondary Contact	57.57	0	57.57	57.57
Aquatic Life	253.48	195.91	57.57	253.48
Agricultural	239.98	182.41	57.57	239.98
Use				
Drinking Water				
Fish Consumption		0	100.0%	100.0%
Swimming		0	100.0%	100.0%
Secondary Contact		0	100.0%	100.0%
Aquatic Life		77.4%	22.6%	100.0%
Agricultural		94.3%	5.7%	100.0%

Cedar / Beaver Unit

Beneficial Use Classes

-  8 Digit HUC Boundary
 -  Perennial Streams
 -  Lakes and Reservoirs
- Beneficial Use Classification
-  2B, 3A, 4
 -  2B, 3C, 4
 - undefined (white)

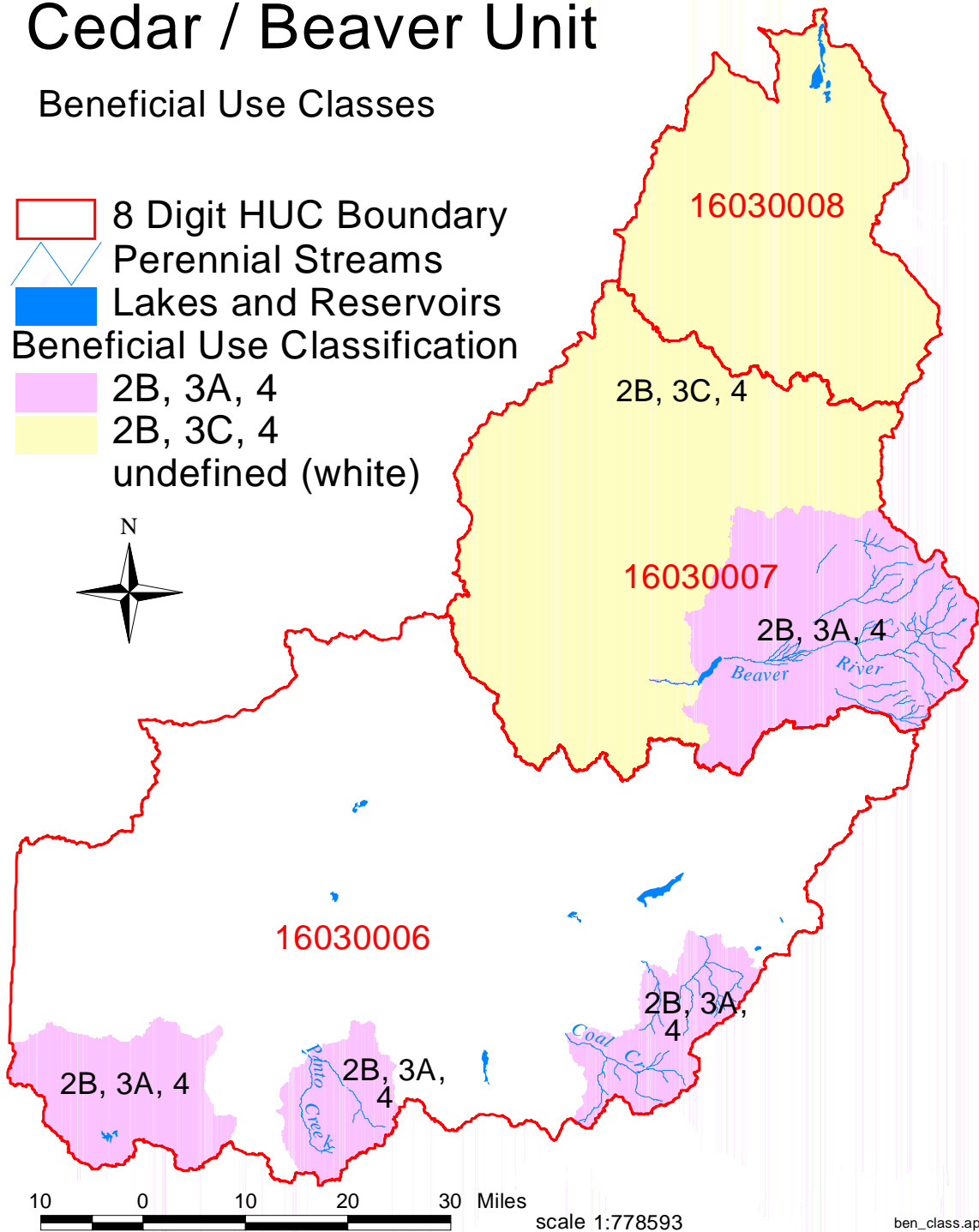


Figure 2.9-2 River and stream designated beneficial use classes – Cedar/Beaver Watershed Management Unit

Cedar / Beaver Management Unit Assessment Categories 2008

STORET Sites

● 494(XXXX)

★ 495(XXXX)

🌊 Lakes and Reservoirs

🗺️ 8-digit HUC Boundary

2008 Beneficial Use Assessment

🌊 2: Assessed Classes Fully Supporting

🌫️ 3A: Not Assessed (need more data)

🟡 4A, *4C, 5: TMDLs Approved, *Some Not Required, Other TMDL Required

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

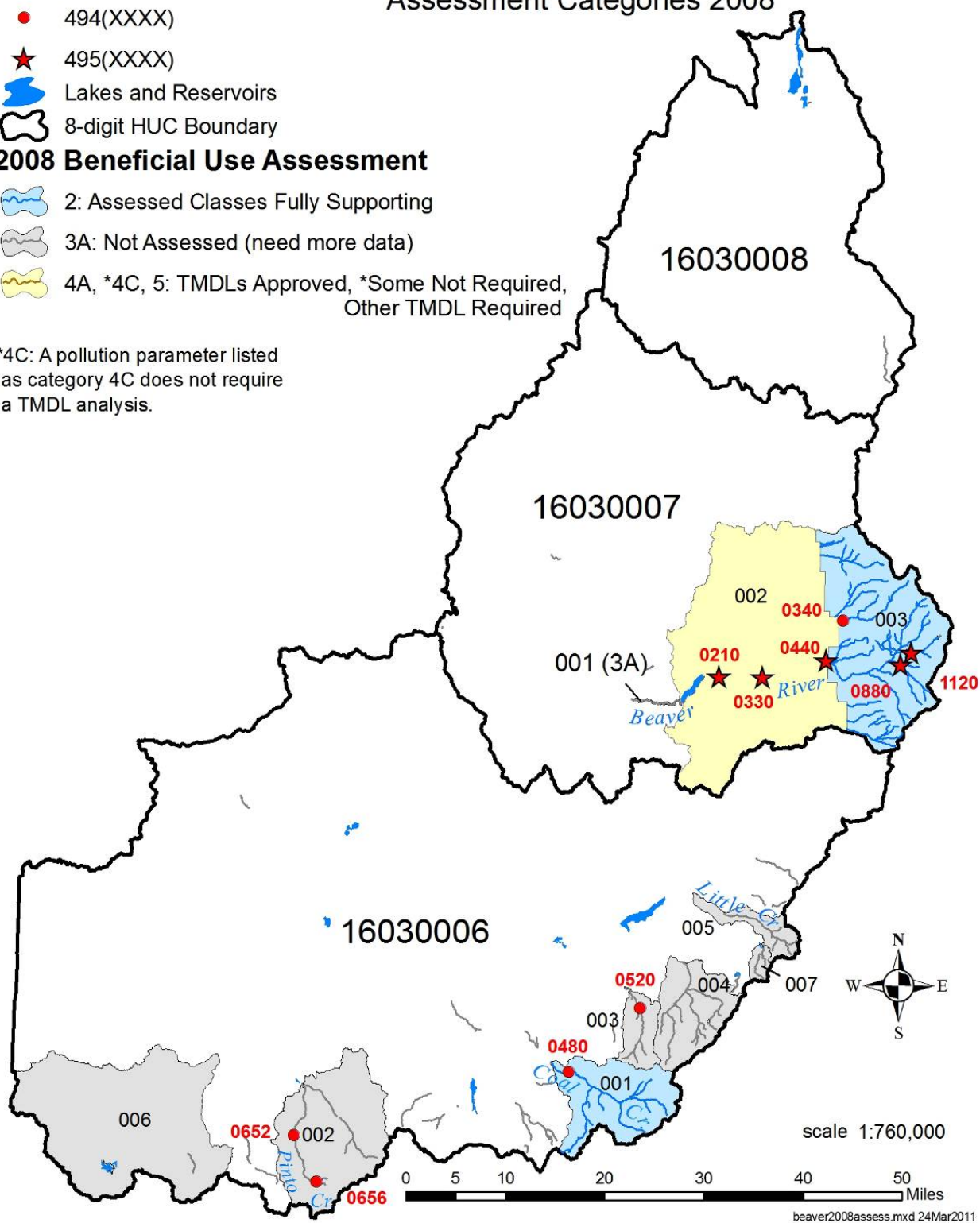


Figure 2.9-3 Beneficial use assessment by category – Cedar / Beaver Watershed Management Unit

2.9.2.4. Total Waters Impaired by Various Causes

The causes of impairment are listed in Table 2.9-4. The causes of impairment are nutrients (total phosphorus), thermal modification, pH and habitat alterations. The percent of miles impacted by various causes is illustrated in Figure 2.9-4. The relative impact of these causes is shown in Figure 2.9-5.

2.9.2.5. Total Waters Impaired by Various Sources

The number of stream miles impacted by sources are listed in Table 2.9-5. The sources of impairment are agricultural activities, hydromodification, habitat modification, and unknown sources as shown in Figure 2.9-6. The relative percent impairment by sources is illustrated in Figure 2.9-7.

2.9.2.6 Impaired Assessment Units

AUs in the Cedar/Beaver Watershed Management Unit listed as impaired for the 2008 Integrated Report Cycle are shown in Table 2.9-4.

Table 2.9-4 Impaired AUs in the Cedar Beaver Watershed

Assessment	Assessment	Assessment	Beneficial Use	Beneficial		Pollutant	
Unit	Unit	Unit	Class	Use	Support	Or	Stream
ID	Name	Description	Impaired	Support	Category	Pollution	Miles
AU_ID	AU_NAME	AU_DESCR	CLASS	SUPPORT	CATEGORY	CAUSE	MILES
UT16030006-002	Pinto Creek	Pinto Creek, Middle Pinto Creek, and tributaries	3A	NS	5	Benthic Macroinvertebrate Assessment Impairment	28.1
UT16030007-002	Beaver River-2	Beaver River and tributaries from Minersville Reservoir to USFS boundary	3A	NS	5	Benthic Macroinvertebrate Assessment Impairment	57.57

Table 2.9-5 Total Waters Impaired by Various Cause Categories - Cedar/Beaver Watershed Management Unit

Cause Category	Stream Miles
Benthic macroinvertebrate assessment	
E. coli	
Flow Alteration	
Netals	
Organic Enrichment/Low DO	
Other Habitat Alterations	57.57
pH	57.57
Radiation	
Salinity/TDS/Chlorides	
Siltation	
Temperature	57.57
Total Phosphorus	57.57
Unionized Ammonia	

Table 2.9-6 Total Waters Impaired by Various Source Categories - Cedar/Beaver Watershed Management Unit

Source Category	Stream Miles
Agriculture	57.57
Aquaculture	
Construction	
Drought	
Habitat Modification (other than Hydromodification)	57.57
Hydromodification	57.57
Industrial Point Sources	
Land Development	
Major Municipal Point Source	
Municipal Point Sources	
Natural Sources	
Resource Extraction	
Septic	
Source Unknown	57.57
Sources outside State Jurisdiction or Borders	
Urban Runoff/Storm Sewers	

Percent of Stream Miles Affected By Causes

2008 Integrated Report Assessment - Cedar / Beaver Management Unit

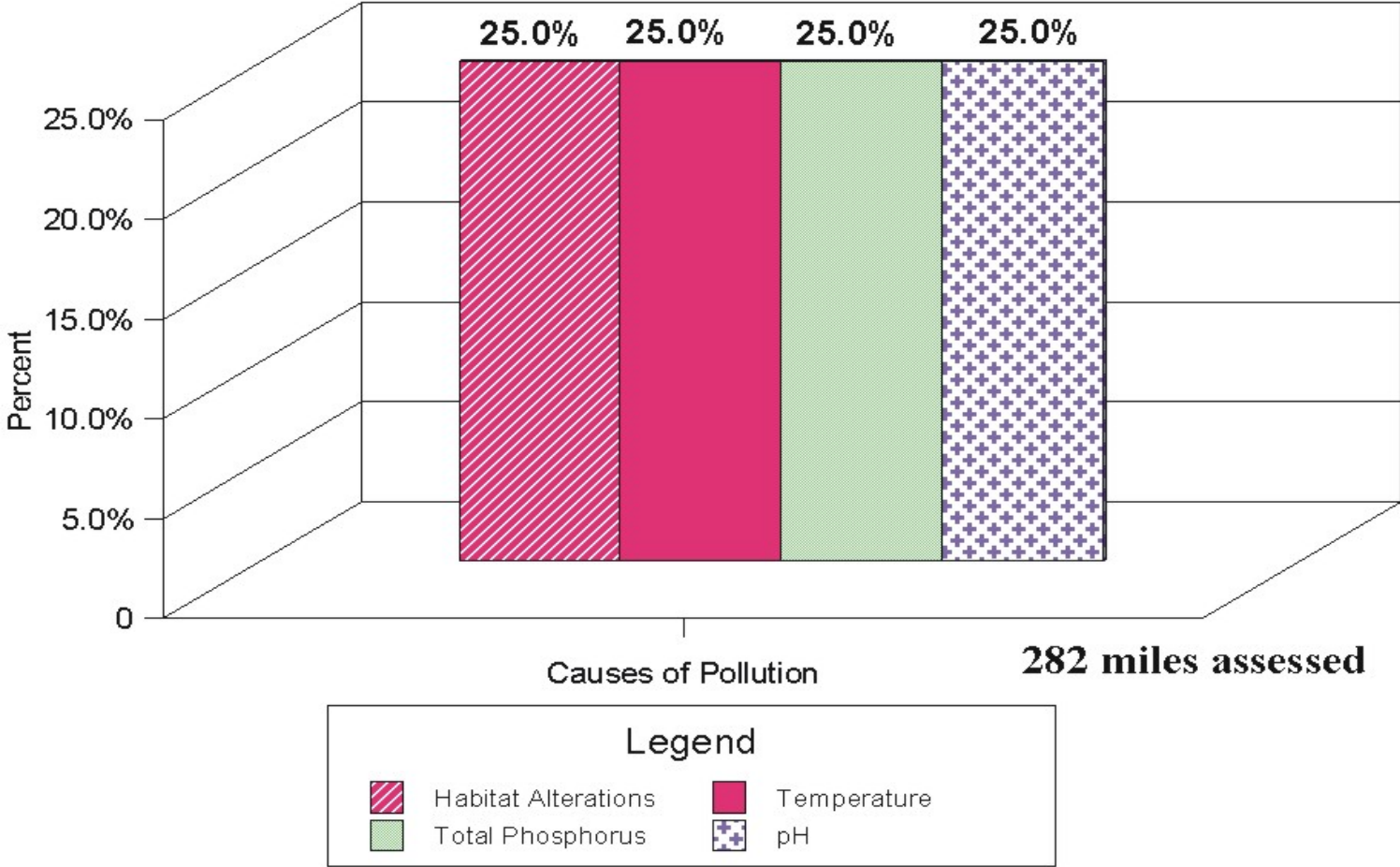


Figure 2.9-4 Percent of assessed stream miles impacted by various causes – Cedar/Beaver Watershed Management Unit

Causes of Stream Water Quality Impairments

2008 Integrated Report Assessment - Cedar / Beaver Mangement Unit

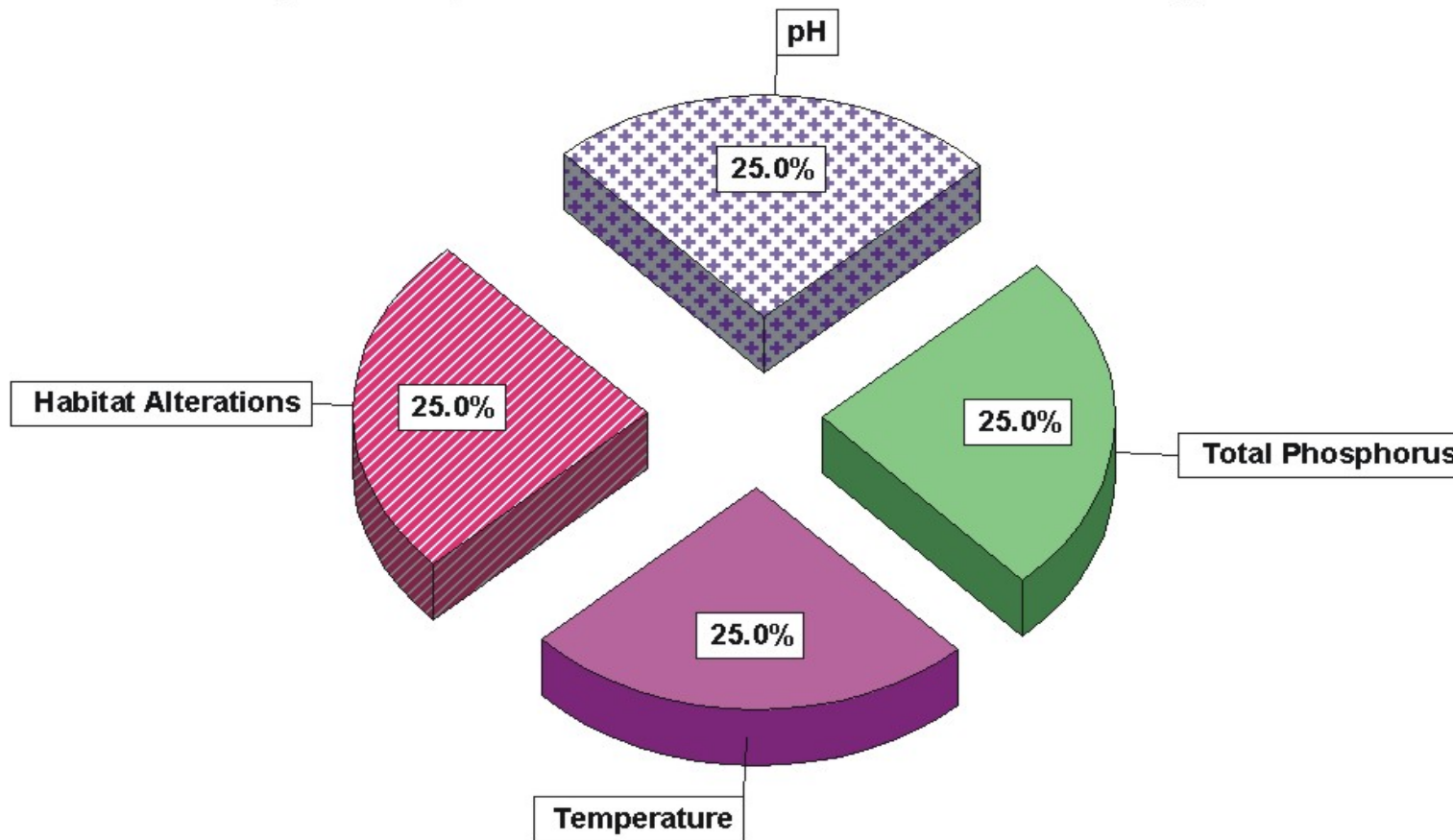


Figure 2.9-5 Relative percent impact by causes on water quality – Cedar/Beaver Watershed Management Unit

Percent of Stream Miles Affected By Sources

2008 Integrated Report Assessement - Cedar / Beaver Watershed Management Unit

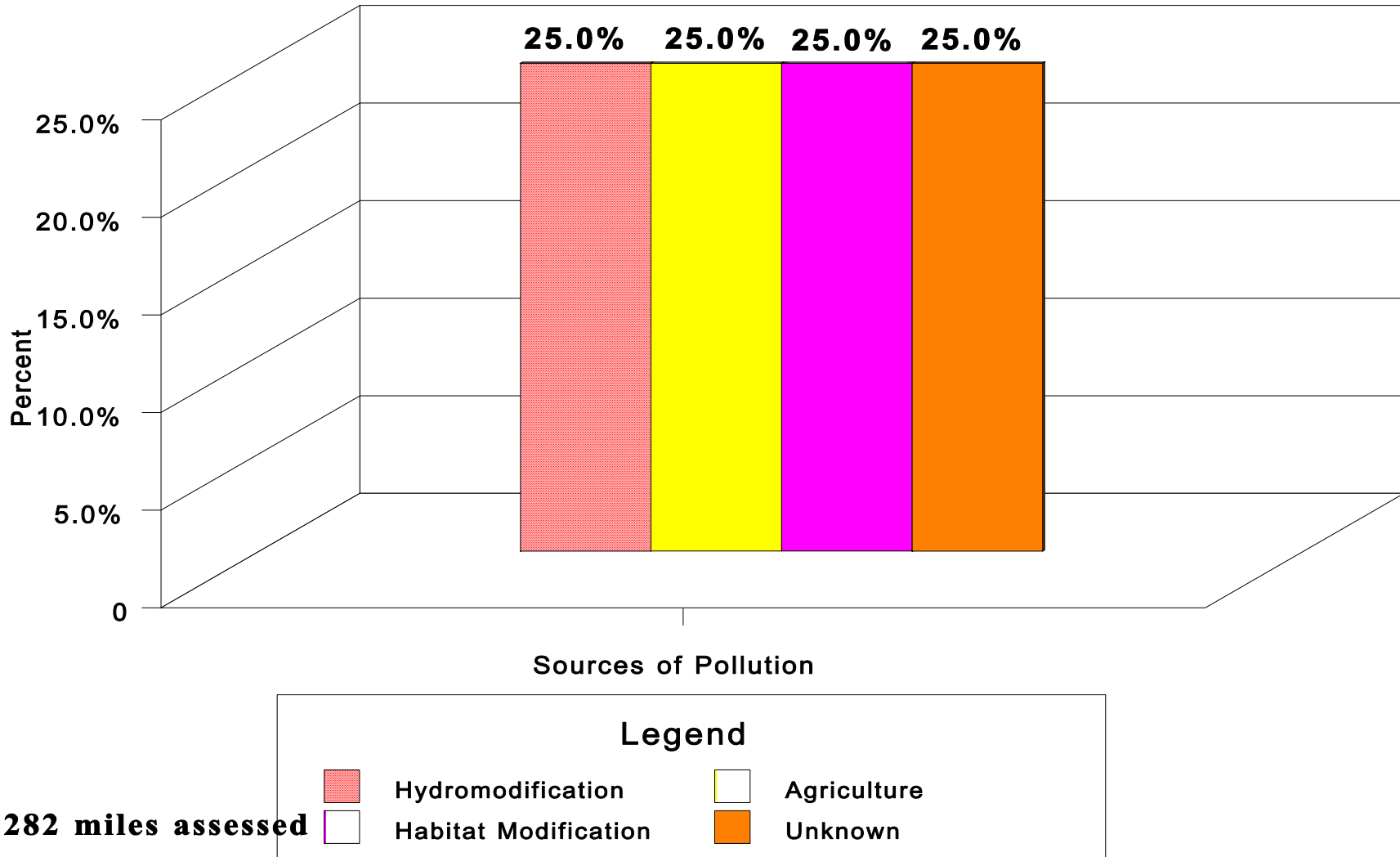


Figure 2.9-6 Percent of assessed stream miles impacted by various sources – Cedar/Beaver Watershed Management Unit

Percent of Stream Miles Affected By Sources

2008 Integrated Report Assessment - Cedar / Beaver Watershed Management Unit

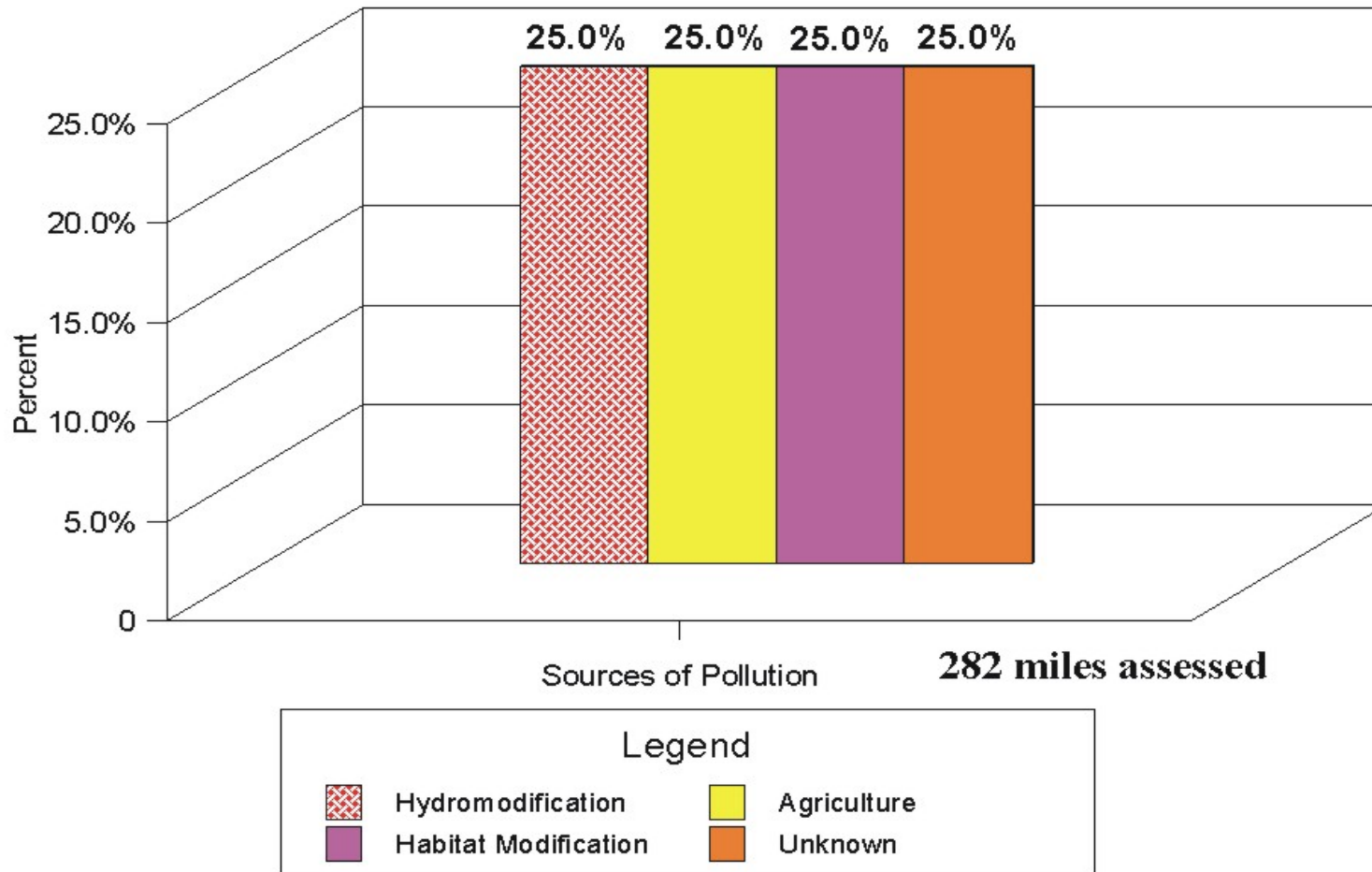


Figure 2.9-7 Relative percent contribution of causes on stream water quality – Cedar/Beaver Watershed Management Unit

Chapter 2.10 Lower Colorado River Watershed Management Unit Assessment

2.10.1. Introduction

The Lower Colorado River Watershed Management Unit includes all streams located in the U.S.G.S. Hydrological Units (HUCs) listed in Table 2.10-1. Some of the major streams are the Santa Clara River, Virgin River, East Fork of the Virgin River, North Fork of the Virgin River, North Creek, Kanab Creek and Laverken Creek.

Table 2.10-1 U.S.G.S. Hydrological Units in the Lower Colorado Watershed Management Unit

Hydrological Unit Code	Hydrological Unit Name
15010003	Kanab
15010008	Upper Virgin
15010009	Fort Pierce Wash
15010010	Lower Virgin

2.10.2. Water Quality Assessment Results

Results of the 2006 Integrated Report were used to assess the waters. Data collected since the intensive survey was included in the assessment. Water chemistry and field data are compared against State standards to do the assessment. In addition, benthic macroinvertebrate data were used to assess aquatic life beneficial use support under the narrative standard (Chapter 2.15).

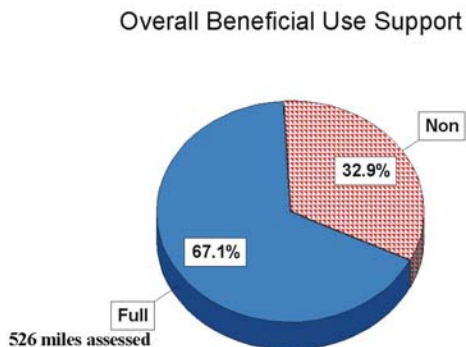


Figure 2.10-1 Overall Beneficial Use Support

2.10.2.1 Overall Beneficial Use Support

Figure 2.10-2 is a map of the designated beneficial uses assigned to streams in this watershed management unit. An assessment of support for at least one beneficial use was made for 526.2 stream miles. Of those assessed, 353.3 miles (67.1%) were assessed as

fully supporting all the beneficial uses assessed and 172.9 (32.9%) were assessed as not supporting at least one designated beneficial use. The overall beneficial use support is shown in Figure 2.10-1.

2.10.2.2 Beneficial Use Assessment By Categories

The beneficial uses assigned to streams in unit are illustrated in Figure 2.10-2. The number of stream miles assessed by categories is listed in Table 2.10-2. Figure 2.8-3 is a map of the beneficial use assessment results by categories.

Table 2.10-2 Stream Miles by Assessment Category – Lower Colorado Watershed Management Unit

Category	Category Definition	Stream Miles
1	All beneficial uses fully supported.	
2	Beneficial uses assessed are fully supported.	353.31
3A	No data or insufficient data to make an assessment.	86.05
3B	Lakes that are not supported for one cycle only.	
3C	Insufficient data to assess but an assessment plan is in place.	
4A	Approved TMDL	23.67
4B	Pollution control requirements are expected to result in full beneficial use support in near future.	
4C	Impaired by pollution, no TMDL required.	
5	Impaired by pollutant, TMDL required.	172.9

2.10.2.3--Individual Beneficial Use Support

Individual beneficial use assessments are listed in Table 2.10-3. These include aquatic life use, agriculture and drinking water.

Table 2.10-3 Stream Miles by Assessment Category – Lower Colorado Watershed Management Unit

	Size	Size Fully	Size Not	
Use	Assessed	Supporting	Supporting	Totals
Drinking Water	210.25	210.25		210.25
Fish Consumption	0	0	0	0
Swimming	0	0	0	0
Secondary Contact	0	0	0	0
Aquatic Life	522.87	417.89	104.98	522.87
Agricultural	424.49	314.87	109.62	424.49
Drinking Water		100.0%	0	100/0
Fish Consumption		0	0	0
Swimming		0	0	0
Secondary Contact		0	0	0
Aquatic Life		79.9%	20.1%	100.0%
Agricultural		74.2%	25.8%	100.0%

2.10.2.4--Total Waters Impaired by Various Causes

The causes of impairment are listed in Table 2.10-4. The causes of impairment are metals, temperature, total dissolved solids. The relative impact of these causes is shown in Figure 2.10-5.

2.10.2.5--Total Waters Impaired by Various Sources

The number of stream miles impacted by sources are listed in Table 2.10-5. The major sources of impairment were agricultural activities, hydromodification, drought, natural sources and urban runoff as shown in Figure 2.10-6. The relative percent impairment by sources is illustrated in Figure 2.10-7.

2.10.2.6 Impaired Assessment Units

Table 2.10-6 is a list of the impaired waters in the Lower Colorado Watershed Management Unit.

Lower Colorado River Management Unit

Beneficial Use Classification and Monitoring Sites

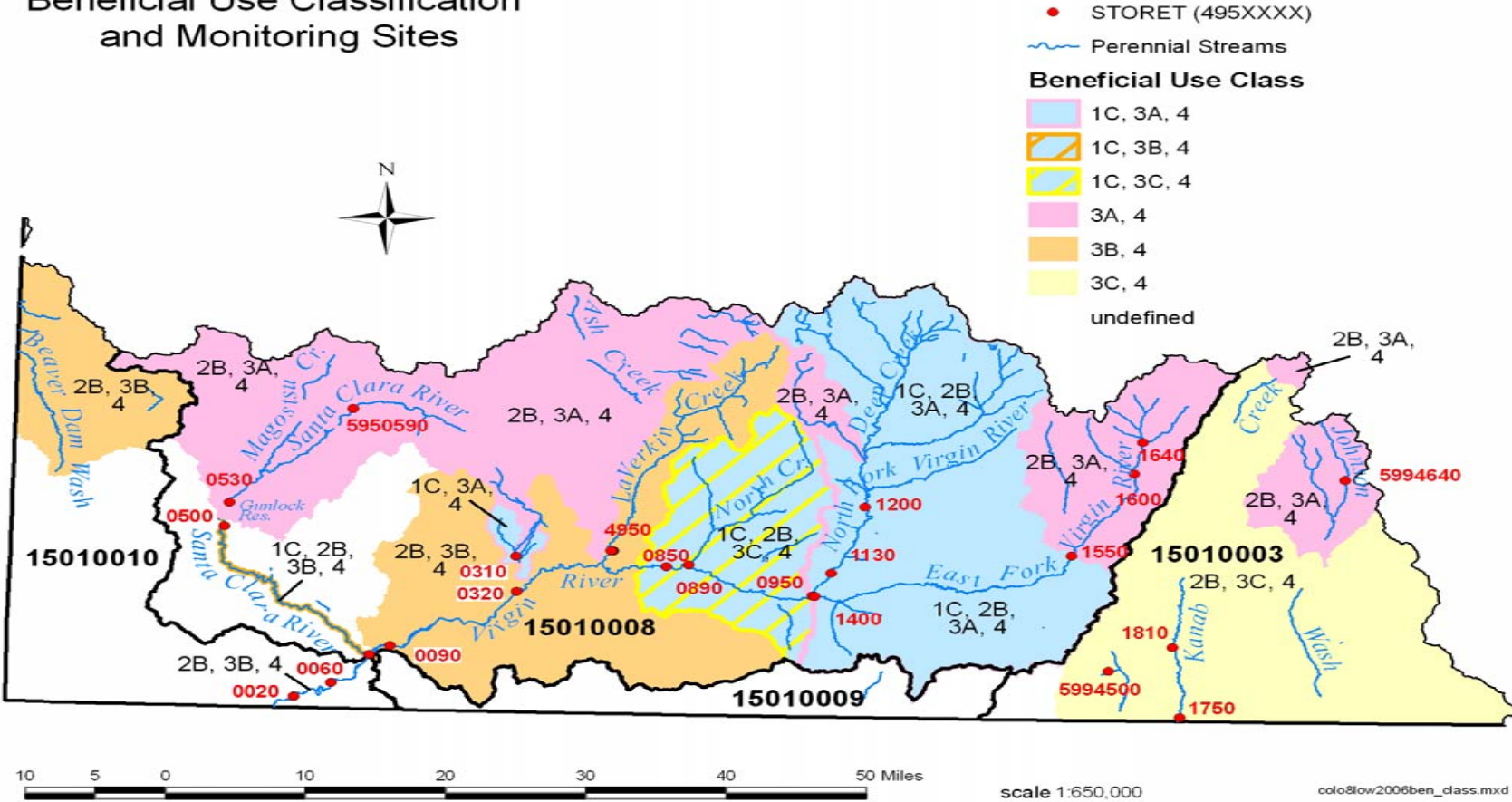


Figure 2.10-2 River and stream designated beneficial use classes – Lower Colorado Watershed Management Unit

Lower Colorado River Management Unit

Assessment Categories 2008

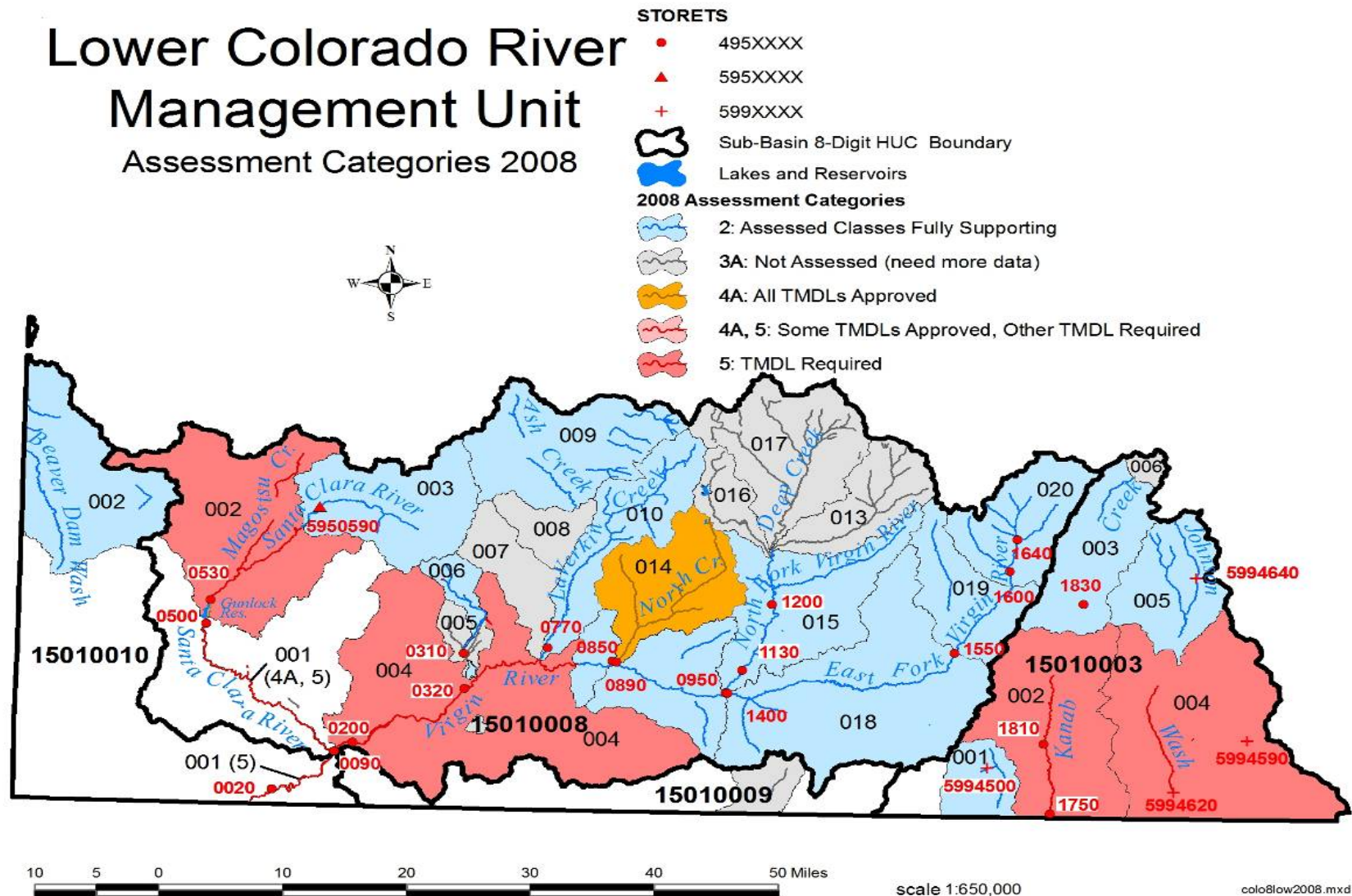


Figure 2.10-3 River and stream assessment by category – Lower Colorado Watershed Management Unit

Table 2.10-4 Total Waters Impaired by Various Cause Categories - Lower Colorado Watershed Management Unit

Cause Category	Stream Miles
Benthic macroinvertebrate assessment impairment	
E. coli	
Flow Alteration	
Metals	80.02
Organic Enrichment/Low DO	
Other Habitat Alterations	
pH	
Radiation	
TDS	53.27
Siltation	
Temperature	104.98
Total Phosphorus	
Unionized Ammonia	

Table 2.10-5 Total Waters Impaired by Various Source Categories - Lower Colorado Watershed Management Unit

Source Category	Stream Miles
Agriculture	109.62
Aquaculture	
Construction	
Drought	104.98
Habitat Modification (other than Hydromodification)	
Hydromodification	23.67
Industrial Point Sources	
Land Development	
Municipal Point Sources	
Natural Sources	97.66
Resource Extraction	
Septic	
Source Unknown	
Sources outside State Jurisdiction or Borders	
Urban Runoff/Storm Sewers	23.67

Percent of Stream Miles Affected By Causes 2008 Lower Colorado 305(b) Assessment

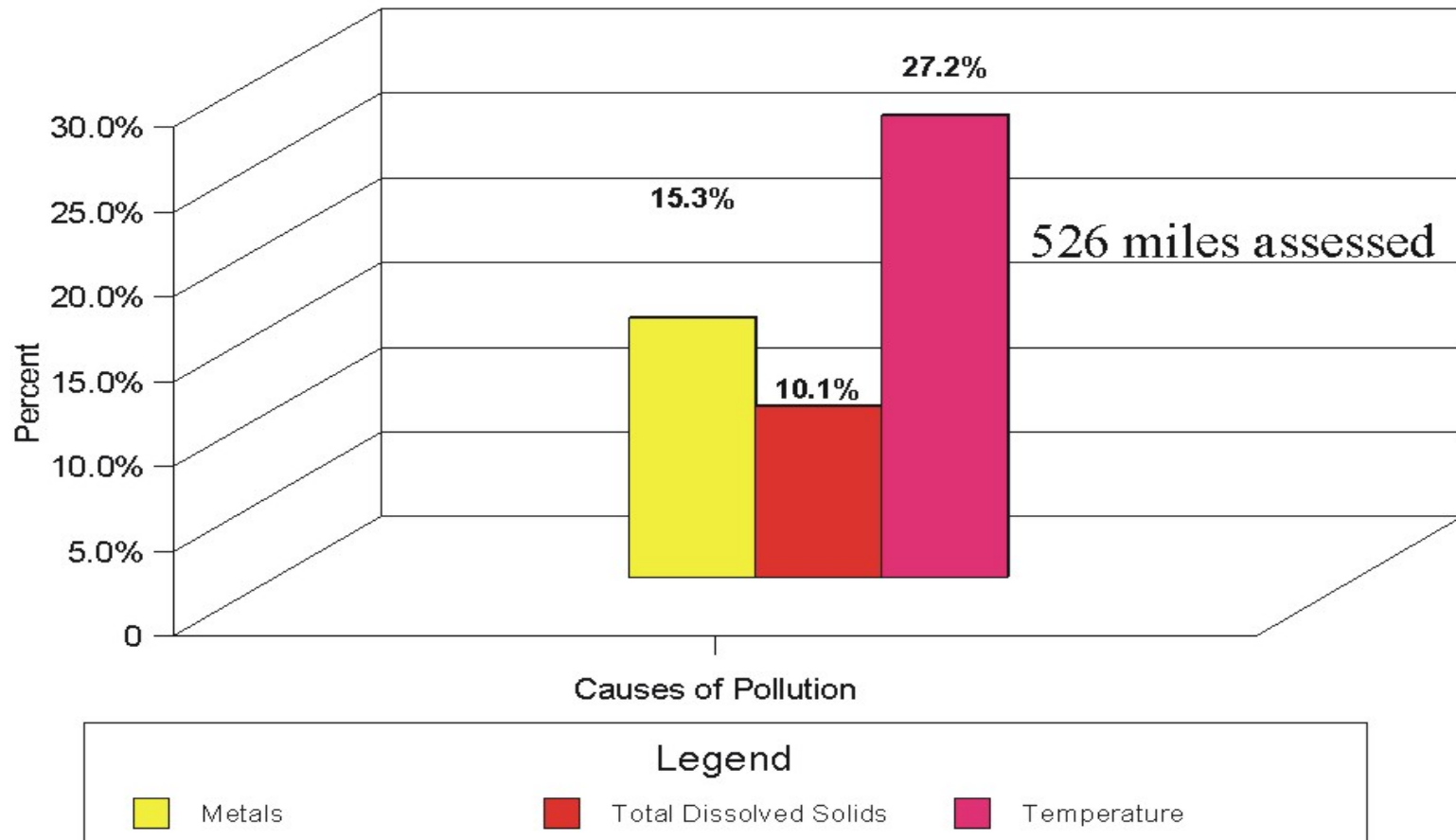


Figure 2.10-4 Percent of assessed stream miles impacted by various causes – Lower Colorado Watershed Management Unit

Causes of Stream Water Quality Impairments

2008 Assessment Lower Colorado River

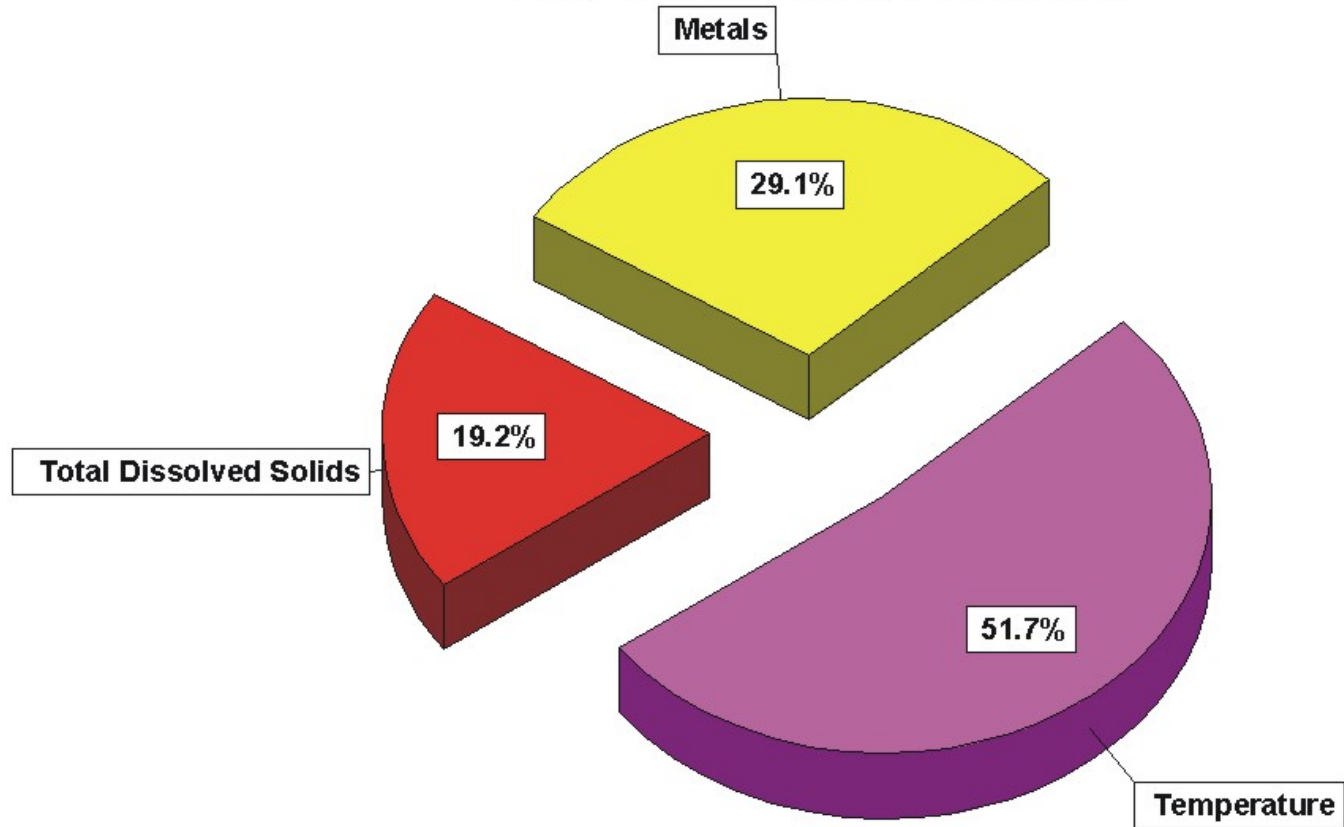


Figure 2.10-5 Relative percent impact by causes on water quality – Lower Colorado Watershed Management Unit

Percent of Stream Miles Affected By Causes 2008 Lower Colorado 305(b) Assessment

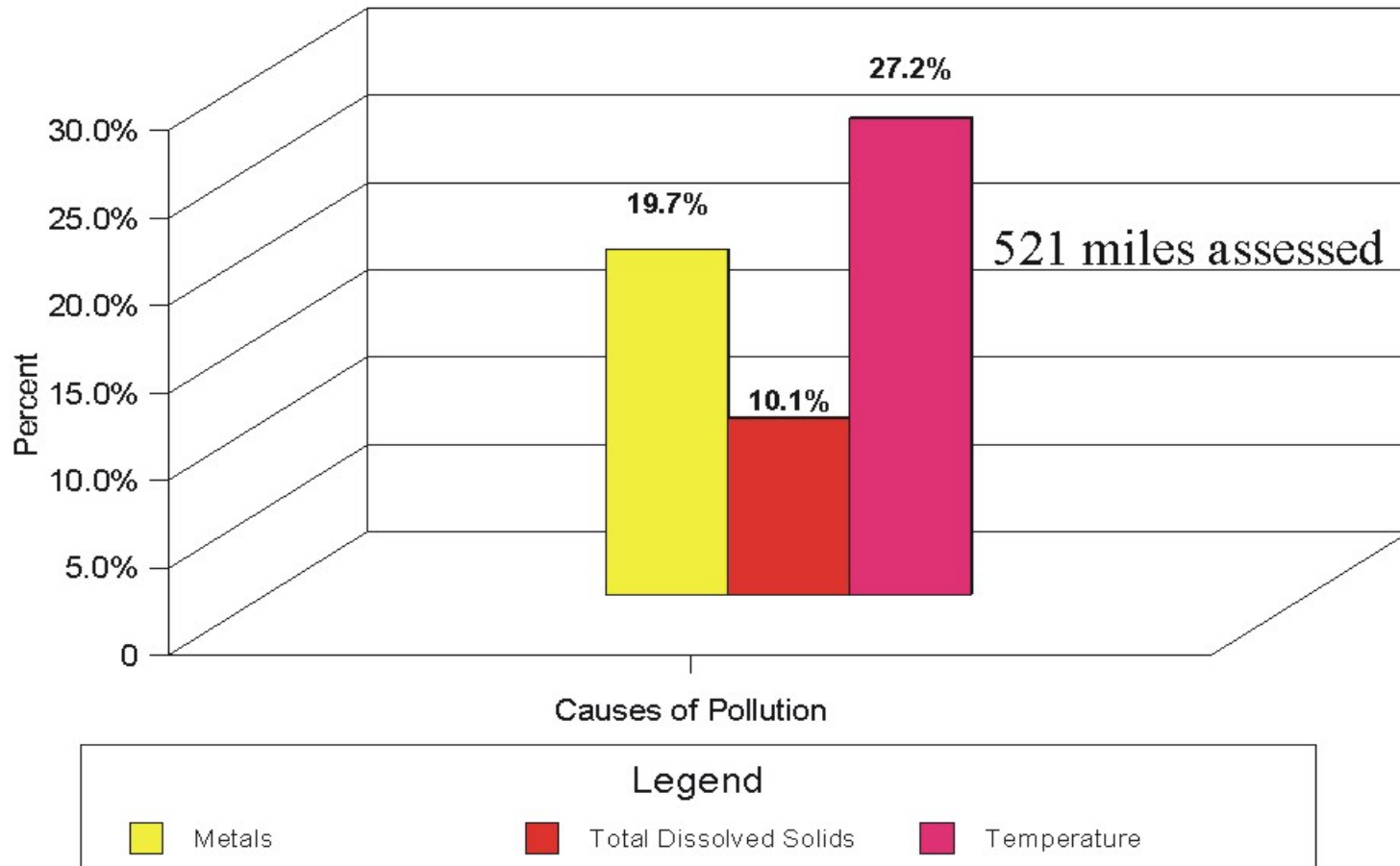


Figure 2.10-6 Percent of assessed stream miles impacted by various sources – Lower Colorado Watershed Management Unit

Sources of Stream Water Quality Impairment 2008 305(b) Assessment - Lower Colorado

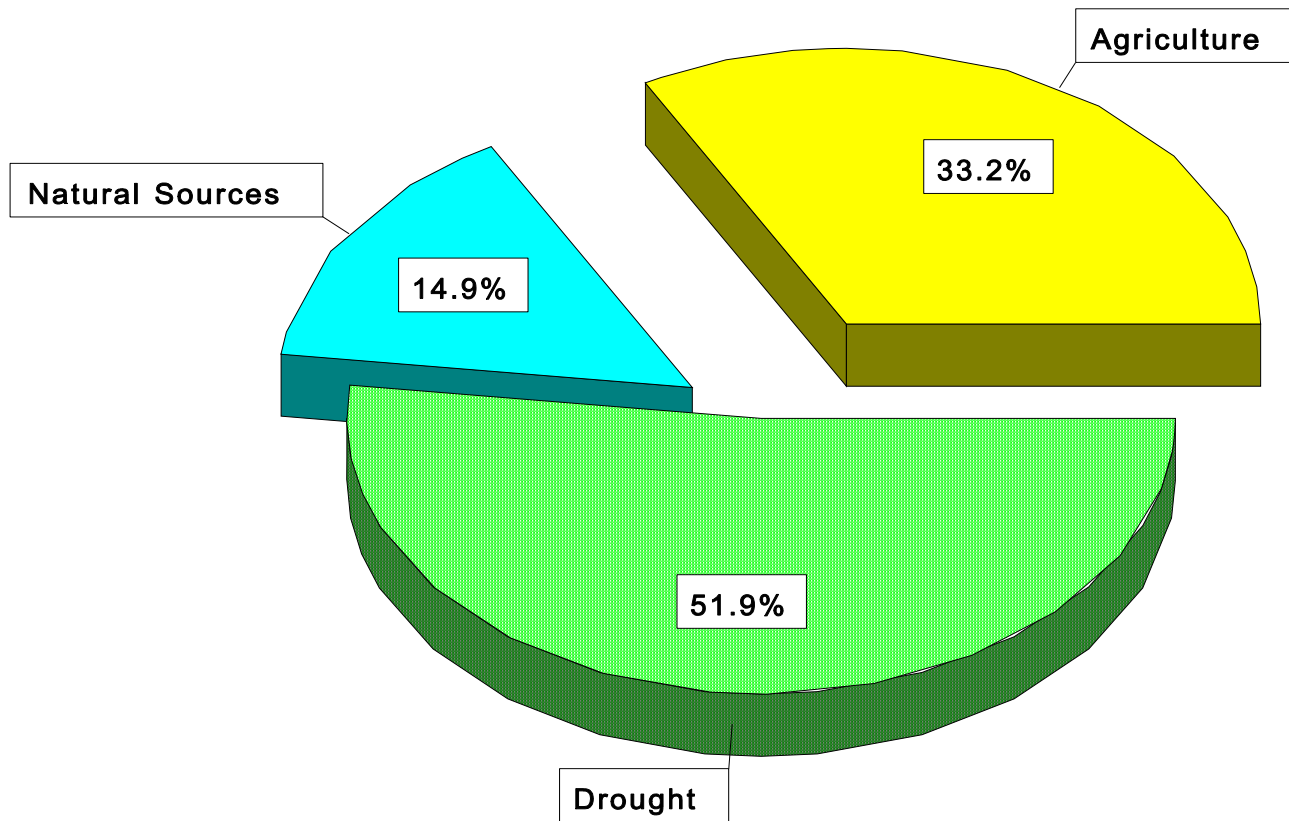


Figure 2.10-7 Relative percent impact by sources on stream water quality – Lower Colorado Watershed Management Unit

Table 2.10-6 Impaired Assessment Units in the Lower Colorado 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
Lower Colorado River	UT15010003-002	Kanab Creek-1	Kanab Creek and tributaries from state line to the confluence with Fourmile Hollow near the White Cliffs	4	NS	5	TDS	23.67
Lower Colorado River	UT15010003-004	Johnson Wash-1	Johnson Wash and tributaries from Utah-Arizona state line to Skutumpah Canyon confluence	4	NS	5	TDS	23.67
Lower Colorado River	UT15010008-001	Santa Clara-1	Santa Clara River from confluence with Virgin River to Gunlock Reservoir	3B	NS	5	Temperature	17.64
Lower Colorado River	UT15010008-001	Santa Clara-1	Santa Clara River from confluence with Virgin River to Gunlock Reservoir	4	NS	5	Boron	11.96
Lower Colorado River	UT15010008-002	Santa Clara-2	Santa Clara River and tributaries from Gunlock Reservoir to Baker Dam Reservoir (includes Magotsu Creek)	3A	NS	5	Temperature	23.67
Lower Colorado River	UT15010008-004	Virgin River-2	Virgin River and tributaries from Santa Clara River confluence to Quail Creek diversion, excluding Quail, Ash, and La Verkin Creeks	3B	NS	5	Temperature	23.67
Lower Colorado River	UT15010008-004	Virgin River-2	Virgin River and tributaries from Santa Clara River confluence to Quail Creek diversion, excluding Quail, Ash, and La Verkin Creeks	4	NS	5	Boron	24.96
Lower Colorado River	UT15010010-001	Virgin River-1	Virgin River from state line to Santa Clara River confluence	3B	NS	5	Temperature	15.242
Lower Colorado River	UT15010010-001	Virgin River-1	Virgin River from state line to Santa Clara River confluence	4	NS	5	Boron	15.242
Lower Colorado River	UT15010003-002	Kanab Creek-1	Kanab Creek and tributaries from state line to the confluence with Fourmile Hollow near the White Cliffs	4	NS	5	TDS	38.32
Lower Colorado River	UT15010003-004	Johnson Wash-1	Johnson Wash and tributaries from Utah-Arizona state line to Skutumpah Canyon confluence	4	NS	5	TDS	15.24
Lower Colorado River	UT15010008-001	Santa Clara-1	Santa Clara River from confluence with Virgin River to Gunlock Reservoir	3B	NS	5	Temperature	15.24
Lower Colorado River	UT15010008-001	Santa Clara-1	Santa Clara River from confluence with Virgin River to Gunlock Reservoir	4	NS	5	Boron	15.24

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 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).

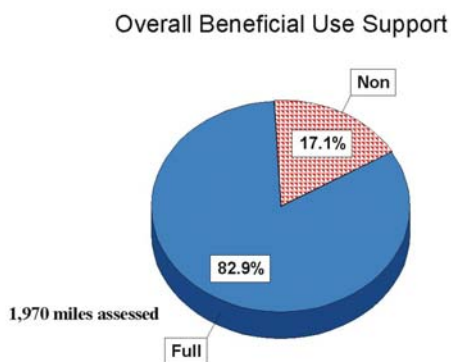


Figure 2.11-1 Overall Beneficial Use Support

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.	
2	Beneficial uses assessed are fully supported.	1680.4
3A	No data or insufficient data to make an assessment.	424.8
3B	Lakes that are not supported for one cycle only.	
3C	Insufficient data to assess but an assessment plan is in place.	
4A	Approved TMDL	88.2
4B	Pollution control requirements are expected to result in full beneficial use support in near future.	
4C	Impaired by pollution, no TMDL required.	
5	Impaired by pollutant, TMDL required.	201.5

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, 840.7 miles 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, 1,636.7 miles assessed for agricultural use, 1,551.8 miles (94.8 %) were are supported and 84.9 (5.2%) are not supported.

2.11.2.4 Total 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) (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)

Use	Size Assessed	Size Fully Supporting	Size Not Supporting	Totals
Aquatic Life	1,970.1	1,775.3	194.8	1,970.1
Fish Consumption	0.0	0.0	0.0	0.0
Swimming	118.0	96.9	21.1	118.0
Secondary Contact	118.0	96.9	21.1	118.0
Drinking Water	840.4	840.4		840.4
Agricultural	1,636.7	1,551.8	84.9	1,636.7
Use				
Aquatic Life		88.3%	11.7%	100.0%
Fish Consumption		0.0%	0.0%	100.0%
Swimming		82.1%	17.9%	100.0%
Secondary Contact		82.1%	17.9%	100.0%
Drinking Water		100.0%	0.0%	100.0%
Agricultural		94.8%	5.2%	100.0%

2.11.2.6 Impaired Assessment Units

Table 2.11-6 is a list of the impaired waters in the Colorado River West Watershed Management Unit.

Colorado River West Management Unit

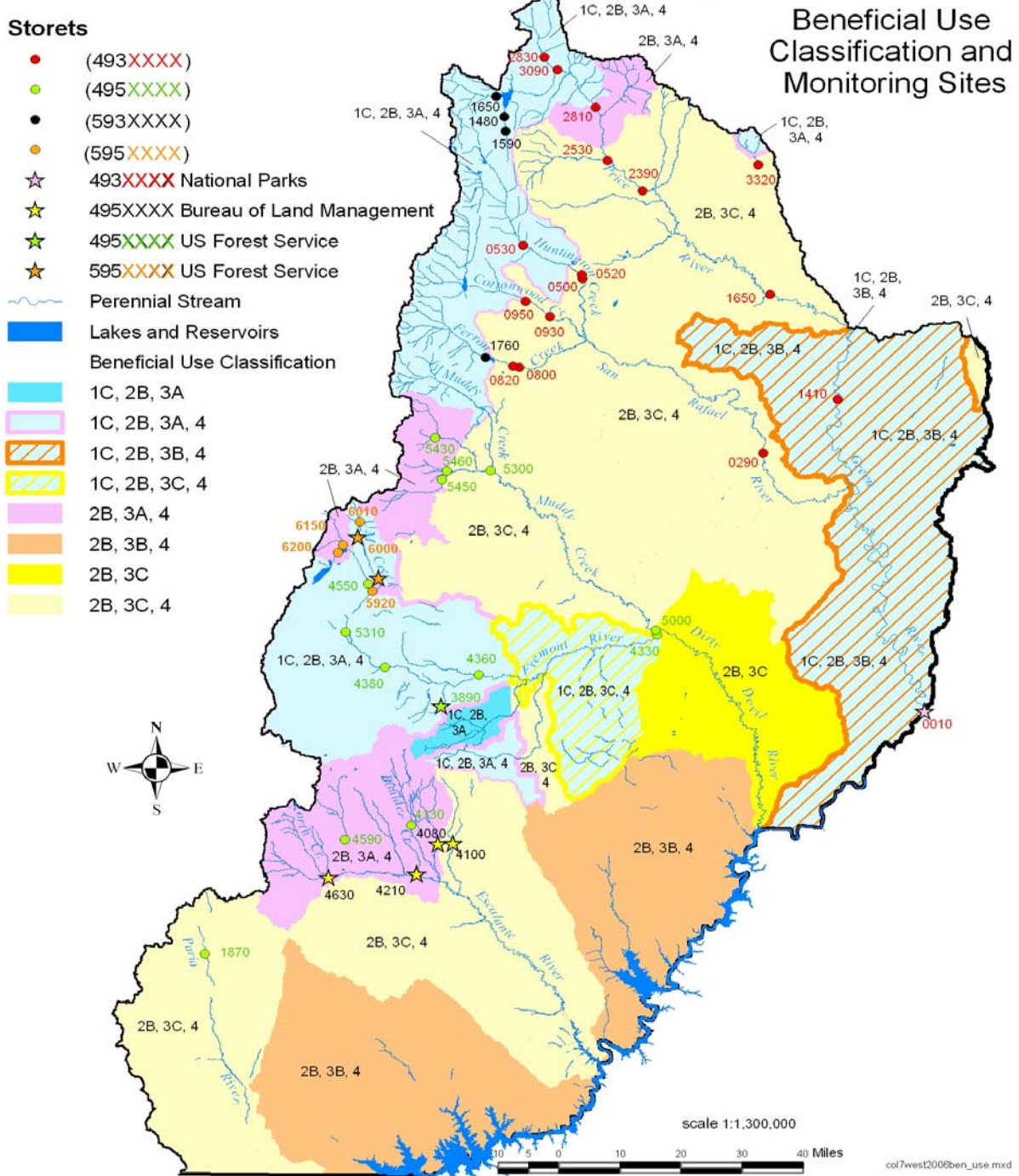


Figure 2.11-2 Beneficial use classifications – Colorado River West Watershed Management Unit

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 Fully Supporting
- 🌫️ 3A: Not Assessed (need more data)
- 🟡 4A: All TMDLs Approved
- 🔴 5: TMDL Required

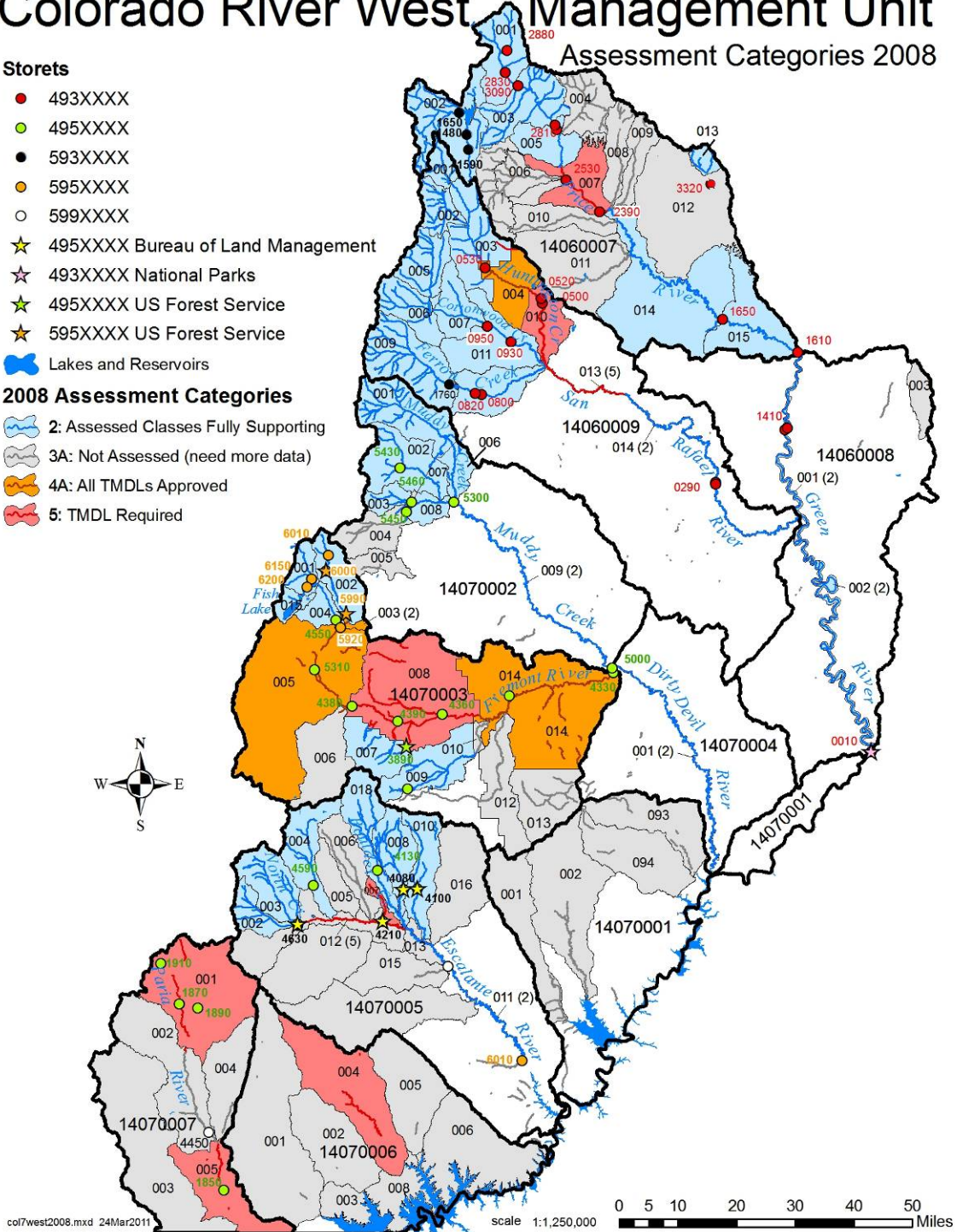


Figure 2.11-3 Beneficial use assessment by category – Colorado River West Watershed Management Unit

Table 2.11-4 Total Waters Impaired by Various Cause Categories (Stream Miles) - Colorado River West Watershed Management Unit

Cause Category	Stream Miles
Benthic macroinvertebrate assessment impairment	132.13
E. coli	
Flow Alteration	
Netals	25.79
Organic Enrichment/Low DO	29.34
Other Habitat Alterations	
pH	
Radiation	
Salinity/TDS/Chlorides	84.89
Siltation	
Temperature	16.77
Total Phosphorus	29.34
Unionized Ammonia	

Table 2.11-5 Total Waters Impaired by Various Source Categories (Stream Miles) – Colorado River West Watershed Management Unit

Source Category	Stream Miles
Agriculture	140.02
Aquaculture	
Construction	
Drought	16.77
Habitat Modification (other than Hydromodification)	
Hydromodification	
Industrial Point Sources	
Municipal Point Sources	
Natural Sources	110.68
Resource Extraction	
Septic	
Source Unknown	161.47
Sources outside State Jurisdiction or Borders	
Urban Runoff/Storm Sewers	

Percent of Stream Miles Affected By Causes

2008 Integrated Report Assessment - Colorado River West Management Unit

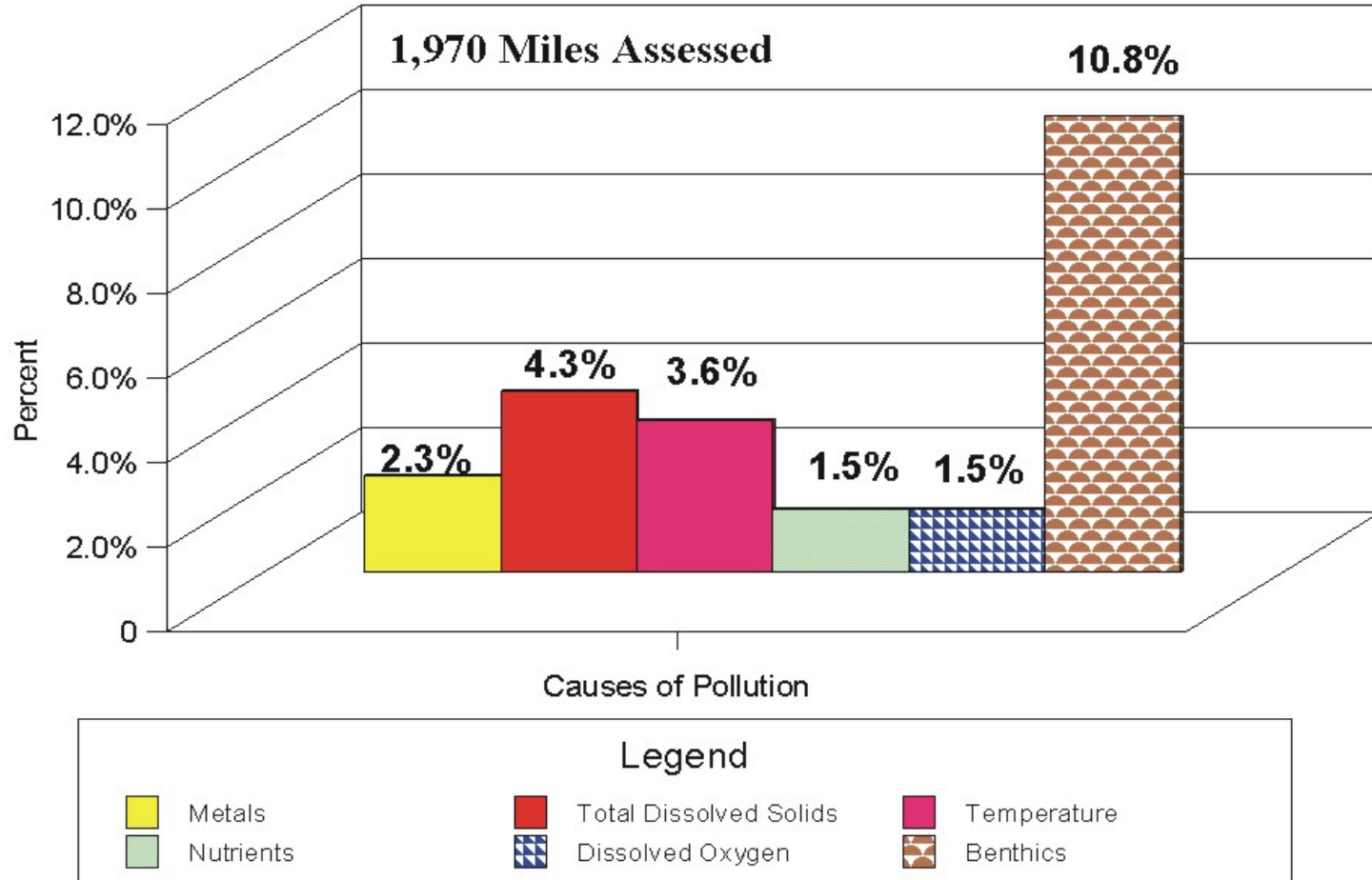


Figure 2.11-4 Percent impact by causes on stream water quality – Colorado River West Watershed Management Unit

Causes of Stream Water Quality Impairments

2008 Integrated Report Assessment - Colorado River West Watershed Management Unit

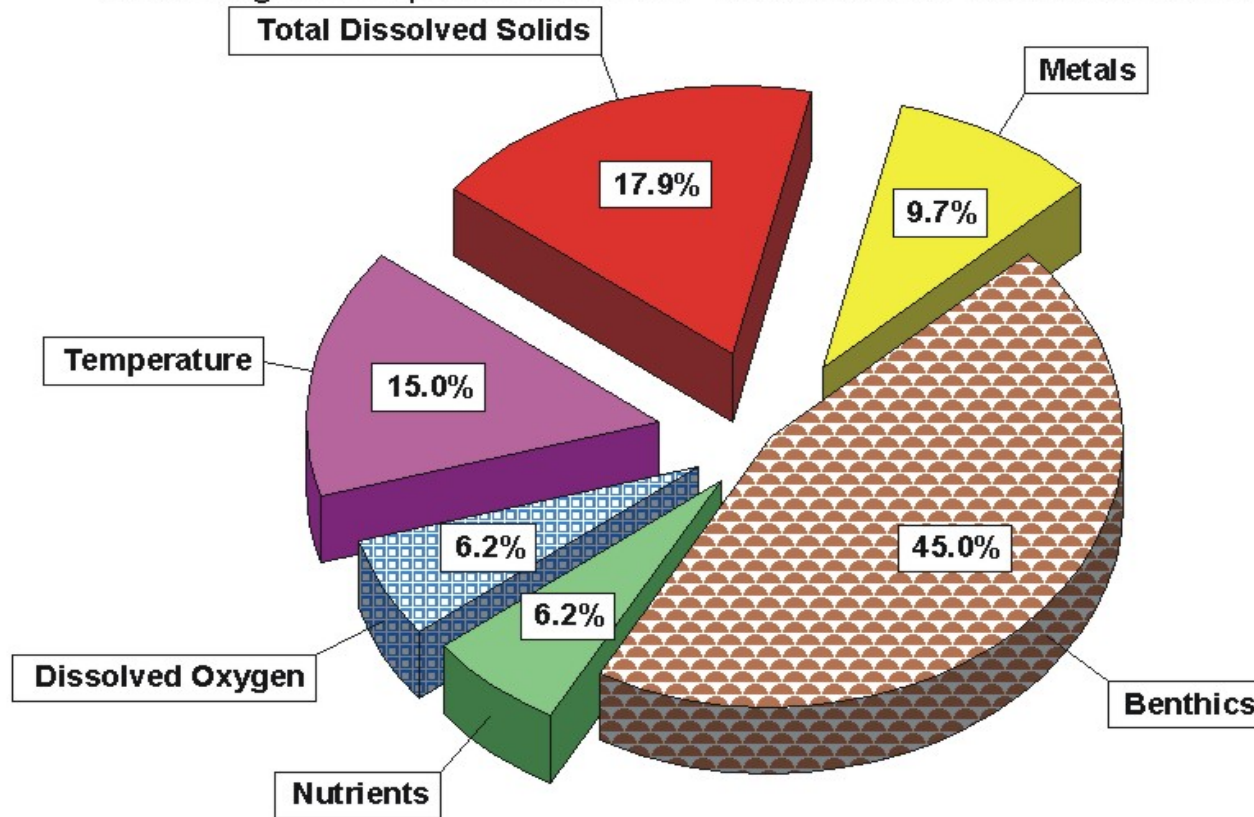


Figure 2.11-5 Relative percent contribution of causes on stream water quality – Colorado River West Watershed Management Unit

Percent of Stream Miles Affected By Sources

2008 Integrated Report Assessment - Colorado River West Mangement Unit

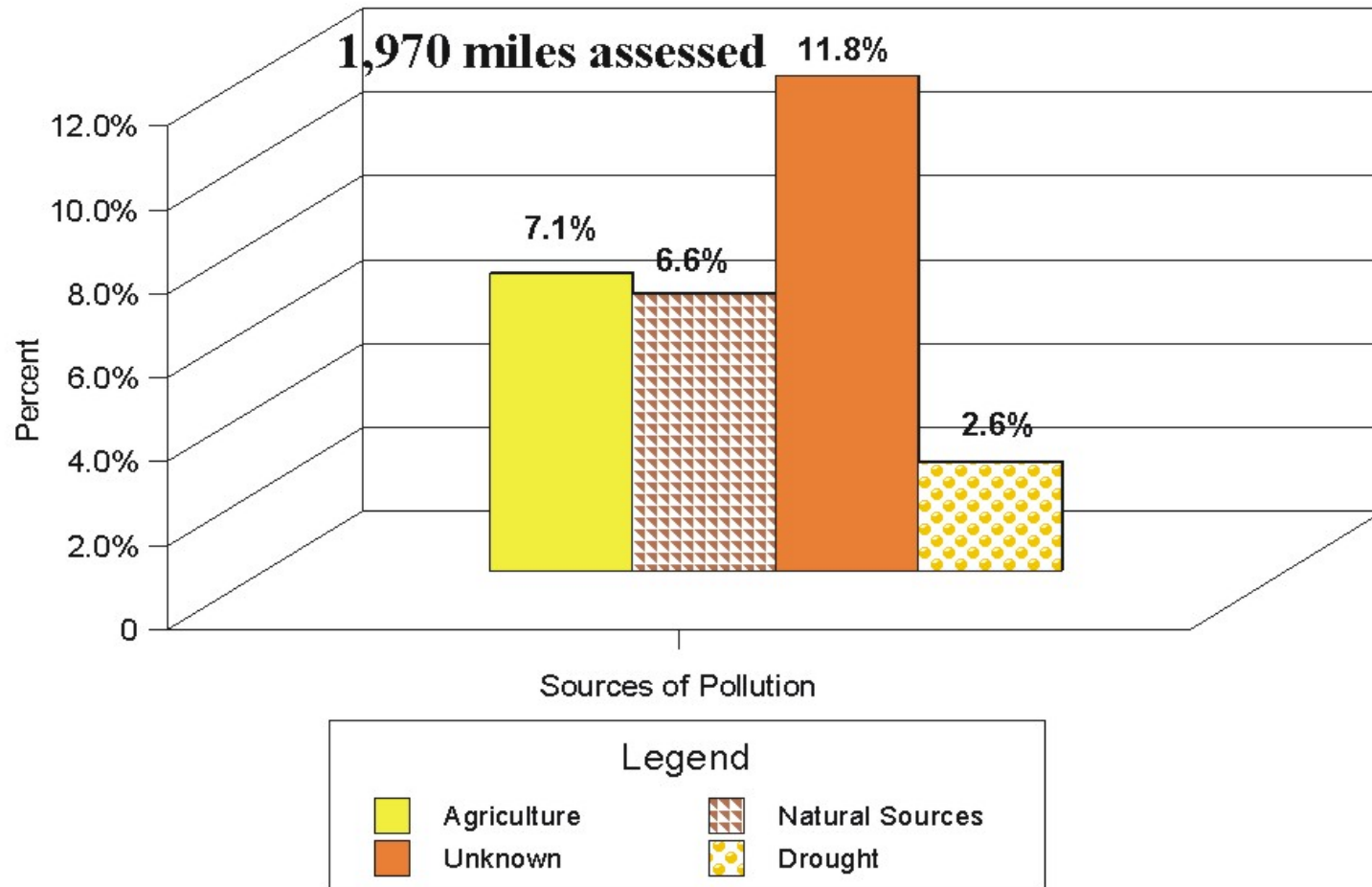


Figure 2.11-6 Percent impact by sources on stream water quality – Colorado River West Watershed Management Unit

Sources of Stream Water Quality Impairment

2008 Integrated Report Assessment - Colorado River West

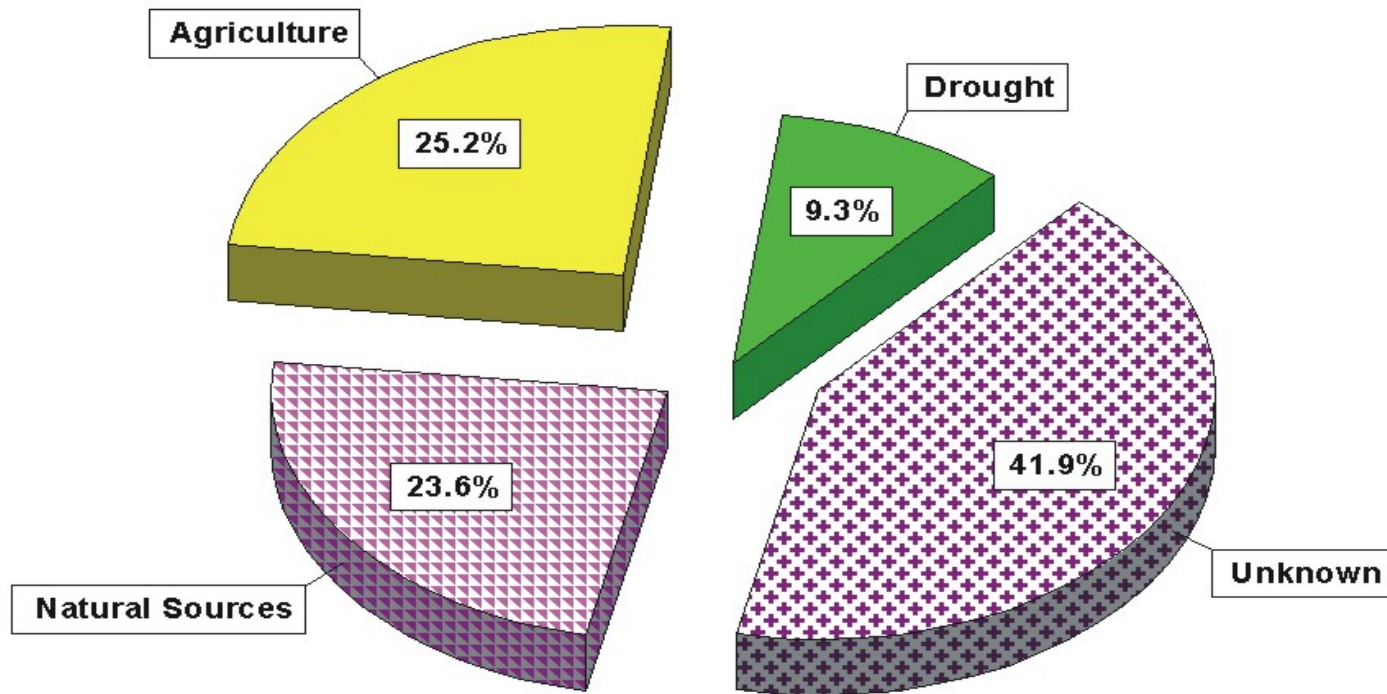


Figure 2.11-7 Relative percent contribution of sources on stream water quality – Colorado River West Watershed Management Unit

Table 2.11-6 Impaired Waters Located in the Colorado River West Watershed Management Unit

Watershed	Assessment	Assessment	Assessment	Beneficia l Use	Beneficial		Pollutant	
Management	Unit	Unit	Unit	Class	Use	Support	Or	Stream
Unit	ID	Name	Description	Impaired	Support	Category	Pollution	Miles
Colorado River West	UT14060009-010	Huntington Creek-1	Huntington Creek and tributaries from confluence with Cottonwood Creek to Highway 10	3C	NS	5	Selenium	25.79
Colorado River West	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
Colorado River West	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
Colorado River West	UT14070005-007	Calf Creek	Calf Creek and tributaries from confluence with Escalante River to headwaters	3A	NS	5	Temperature	8.13
Colorado River West	UT14070005-012	Upper Escalante	Escalante River from Boulder Creek confluence to Birch Creek confluence	3B	NS	5	Benthic macroinvertebrate assessment impairment	26.78
Colorado River West	UT14070006-004	Chance Creek	Chance Creek and tributaries from Lake Powell to headwaters	3A	NS	5	Benthic macroinvertebrate assessment impairment	16.72
Colorado River West	UT14070007-001	Paria River-1	Paria River from start of Paria River Gorge to headwaters	3C	NS	5	Temperature	16.77
Colorado River West	UT14070007-001	Paria River-1	Paria River from start of Paria River Gorge to headwaters	3C	NS	5	Benthic macroinvertebrate assessment impairment	16.77
Colorado River West	UT14070007-001	Paria River-1	Paria River from start of Paria River Gorge to headwaters	4	NS	5	TDS	16.77
Colorado River West	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
Colorado River West	UT14070007-005	Paria River-3	Paria River and tributaries from Arizona-Utah state line to Cottonwood Creek confluence	4	NS	5	TDS	9.23

Chapter 2.12 Colorado River Southeast Watershed Management Unit

2.12.1 Introduction

The Colorado River Southeast Watershed Management Unit includes all streams located in the U.S.G.S. Hydrological Units (HUCs) listed in Table 2.12-1. Some of the major streams are the San Juan River, Dolores River, Mill Creek, Montezuma Creek, La Sal River, Geyser Creek and part of the Colorado River.

Table 2.12-1 U.S.G.S. Hydrological Units in the Colorado River Southeast Watershed Management Unit

Hydrological Unit Code	Hydrological Unit Name
14010005	Colorado Headwaters/Plateau Utah
14030001	Westwater Canyon
14030002	Upper Delores
14030004	Lower Delores
14030005	Upper Colorado-Kane Springs
14070006	Lower Lake Powell
14070007	Paria
14080201	Lower San Juan-Four Corners Southeast
14080202	McElmo
14080203	Montezuma
14080204	Chinle
14080205	Lower San Juan

2.12.2 Water Quality Assessment Results

Data for this assessment was collected from January 1, 2002 through December 31, 2006 including the intensive survey (2003-2004). Benthic macroinvertebrate data were also used in making beneficial use assessments based upon State narrative criteria (Chapter 2.15). Figure 2.12-2 is a map of the designated beneficial uses assigned to the rivers and streams in this management unit.

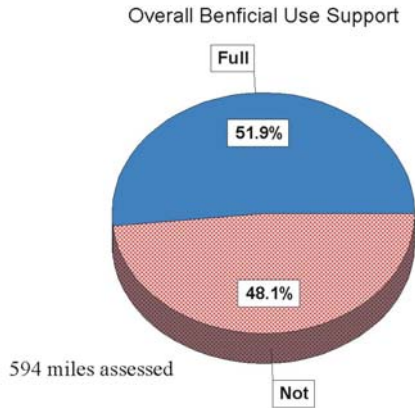


Figure 2.12-1 Overall Beneficial Use Support

2.12.2.1 Overall Beneficial Use Support

An assessment for at least one beneficial use was made for 594.3 miles. Of those assessed, 285.9 miles (51.9%) are fully supporting all the beneficial uses assessed. Two-hundred eighty-five (48.1%) miles are not supporting at least one beneficial use. Figure 2.12-1 displays the beneficial use percentage assessment.

2.12.2.2 Beneficial Use Assessment by Category

A list of the categories and the stream miles included in each of the assessment categories is in Table 2.12-2

Table 2.12-2 Stream Miles by Assessment Category - Colorado River Southeast Watershed Management Unit

Category	Category Definition	Stream Miles
1	All beneficial uses fully supported.	
2	Beneficial uses assessed are fully supported.	308.3
3A	No data or insufficient data to make an assessment.	206.19
3B	Lakes that are not supported for one cycle only.	
3C	Insufficient data to assess but an assessment plan is in place.	
4A	Approved TMDL	78.94
4B	Pollution control requirements are expected to result in full beneficial use support in near future.	
4C	Impaired by pollution, no TMDL required.	
5	Impaired by pollutant, TMDL required.	222.24

2.12.2.3 Individual Use Support

Table 2.12-3 lists the beneficial use support by individual beneficial use class. Of the 594 stream miles assessed for aquatic life, 308.3 miles (51.9%) are fully supporting and 285.97 miles (48.1%) are not supporting this beneficial use. Of the stream miles assessed for agricultural use, 435.7 miles (78.6%) are fully supporting, and 118.88 miles (21.4%) are not supporting this beneficial use. There are 365.89 stream miles (94.4%) fully supporting the drinking water beneficial use and 21.79 miles not supporting it.

Table 2.12-3 Individual Use Support Summary - Colorado River Southeast Watershed Management Unit

	Size	Size Fully	Size Not	
	Assessed	Supporting	Supporting	Totals
Use				
Drinking Water	387.68	365.89	21.79	387.68
Fish Consumption				
Swimming				0
Secondary Contact				0
Aquatic Life	594.27	391.82	202.45	594.27
Agricultural	554.58	435.7	118.88	554.58
Overall	594.27	308.3	285.97	594.27
Drinking Water		94.4%	0.0%	100.0%
Fish Consumption				
Swimming				
Secondary Contact				
Aquatic Life		65.9%	34.1%	100.0%
Agricultural		78.6%	21.4%	100.0%
Overall		51.9%	48.1%	100.0%

2.12.2.4 Total Waters Impaired by Various Causes

Table 2.12-4 lists the miles of streams affected by the various causes identified as generally affecting water quality. Figure 2.12-4 illustrates the percent of stream miles affected by various causes of pollution. The causes of impairment include metals (selenium), total dissolved solids, thermal modification, and radiation (gross alpha). Figure 2.12-5 illustrates the relative percent of stream miles affected by various causes of water quality impairment.

2.12.2.5 Total Waters Impaired by Various Sources

Table 2.12-5 is a list of the various sources that impacted water quality. The percent of stream miles affected by various sources is shown in Figure 2.12-6. The relative impact of each source is shown in Figure 2.12-7. The sources of impairment are agricultural activities and natural sources. Resource extraction from uranium mining is the source of gross alpha contamination.

2.12.2.6 Impaired Assessment Units

Table 2.12-6 is a list of the impaired waters in the Colorado River Southeast Watershed Management Unit.

Colorado River Southeast Management Unit

Beneficial Use Classification and Monitoring Sites

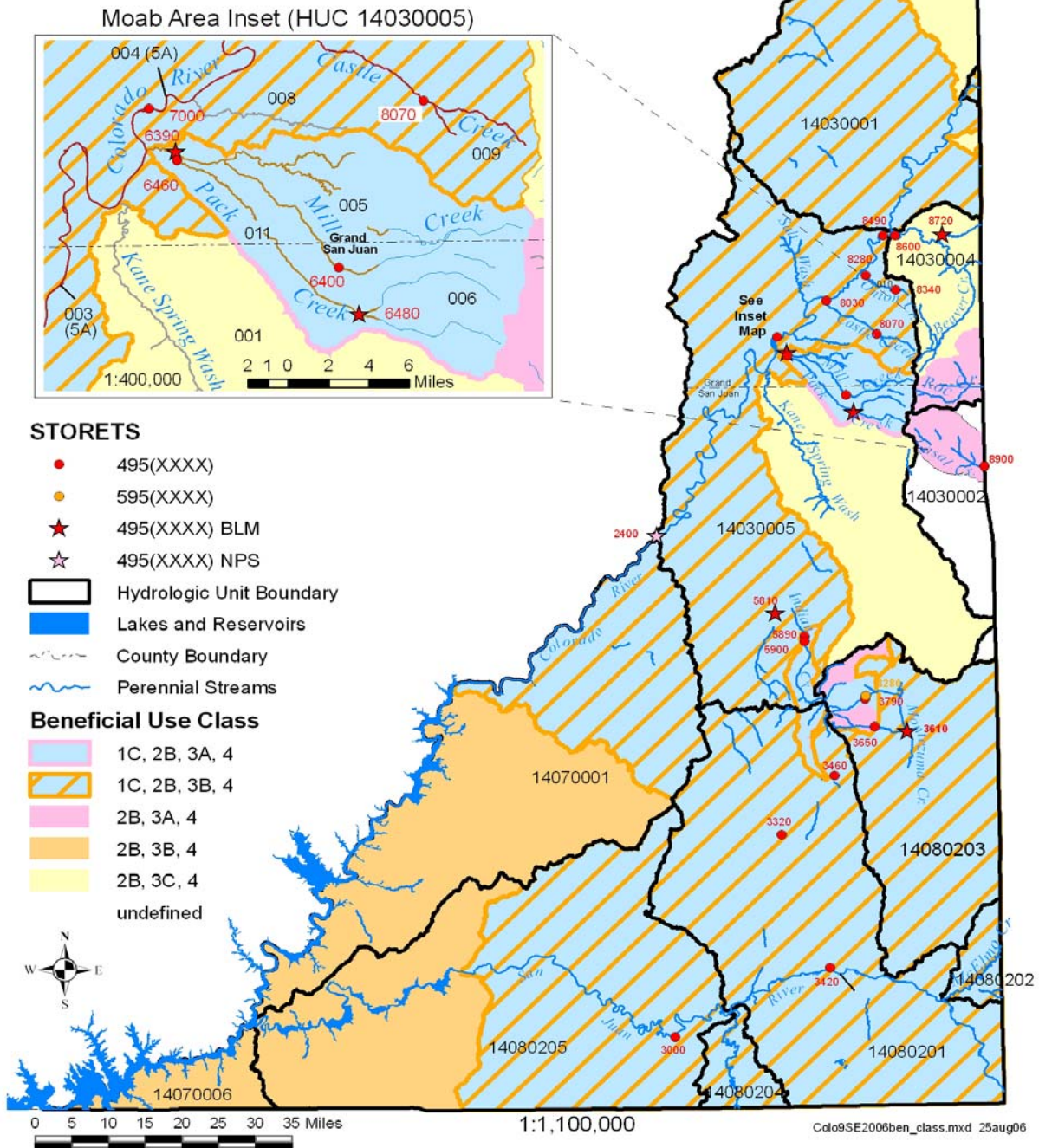


Figure 2.12-2 Beneficial use classifications – Colorado River Southeast Watershed Management Unit

Colorado River Southeast Management Unit Assessment Categories 2008

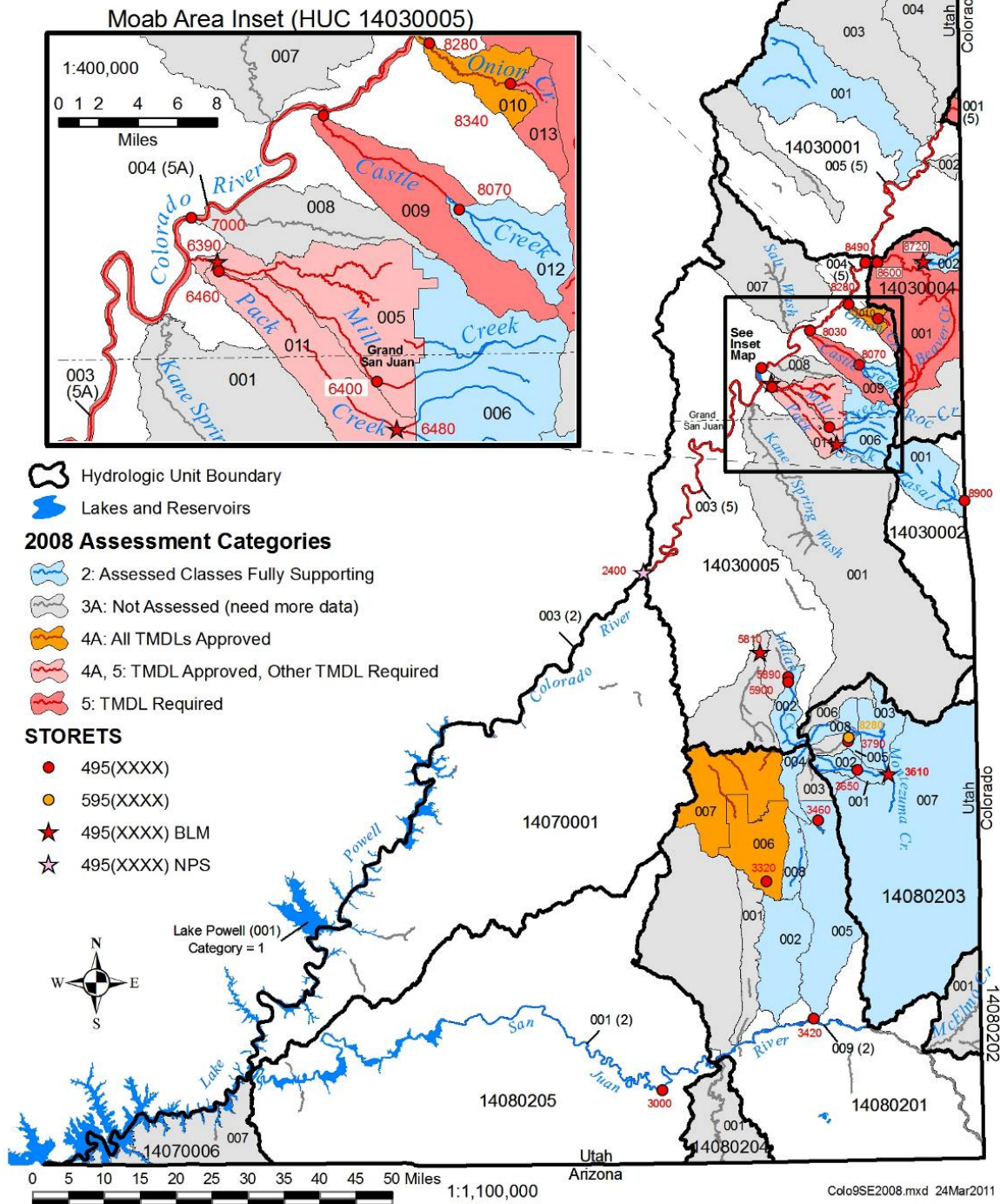


Figure 2.12-3 Beneficial use assessment by category – Colorado River Southeast Watershed Management Unit

Table 2.12-4 Total Waters Impaired by Various Cause Categories (Stream Miles) - Colorado River Southeast Watershed Management Unit

Cause Category	Stream Miles
Benthic macroinvertebrate assessment impairment	9.1
E. coli	
Flow Alteration	
Metals	136.2
Organic Enrichment/Low DO	
Other Habitat Alterations	
pH	
Radiation	21.79
TDS	118.88
Siltation	
Temperature	57.15
Total Phosphorus	
Unionized Ammonia	

Table 2.12-5 Total Waters Impaired by Various Source Categories (Stream Miles) – Colorado River Southeast Watershed Management Unit

Source Category	Stream Miles
Agriculture	57.15
Aquaculture	
Construction	
Drought	57.15
Habitat Modification (other than Hydromodification)	
Hydromodification	
Industrial Point Sources	
Land Development	
Municipal Point Sources	
Natural Sources	57.15
Resource Extraction	21.79
Septic	
Source Unknown	70.83
Sources outside State Jurisdiction or Borders	136.2
Urban Runoff/Storm Sewers	

Percent of Stream Miles Affected By Causes

2008 Integrated Report Assessment - Colorado River Southeast Management Unit

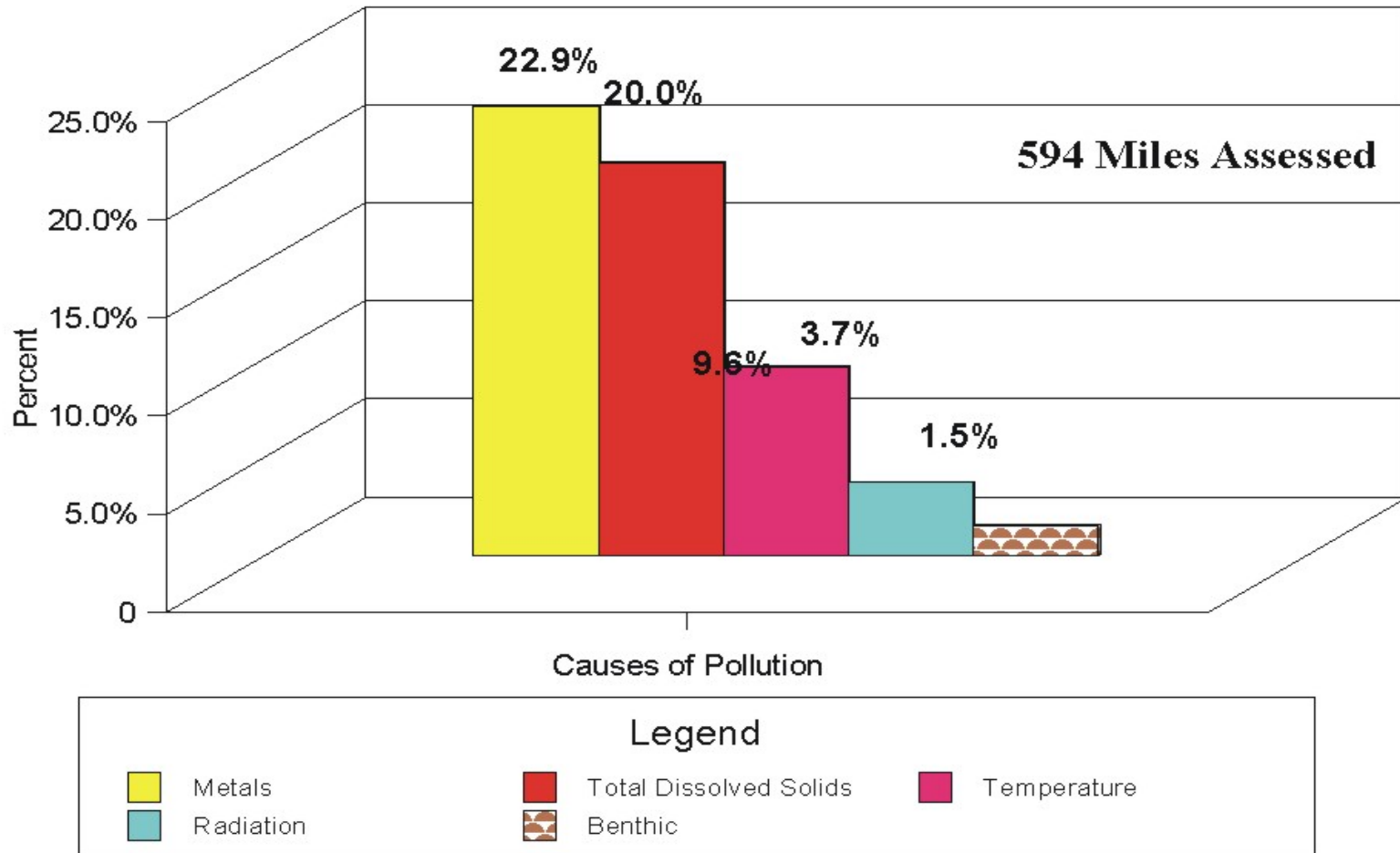


Figure 2.12-4 Percent impact by causes on stream water quality – Colorado River Southeast Watershed Management Unit

Causes of Stream Water Quality Impairments

2008 Integrated Report Assessment - Colorado River Southeast Watershed Unit

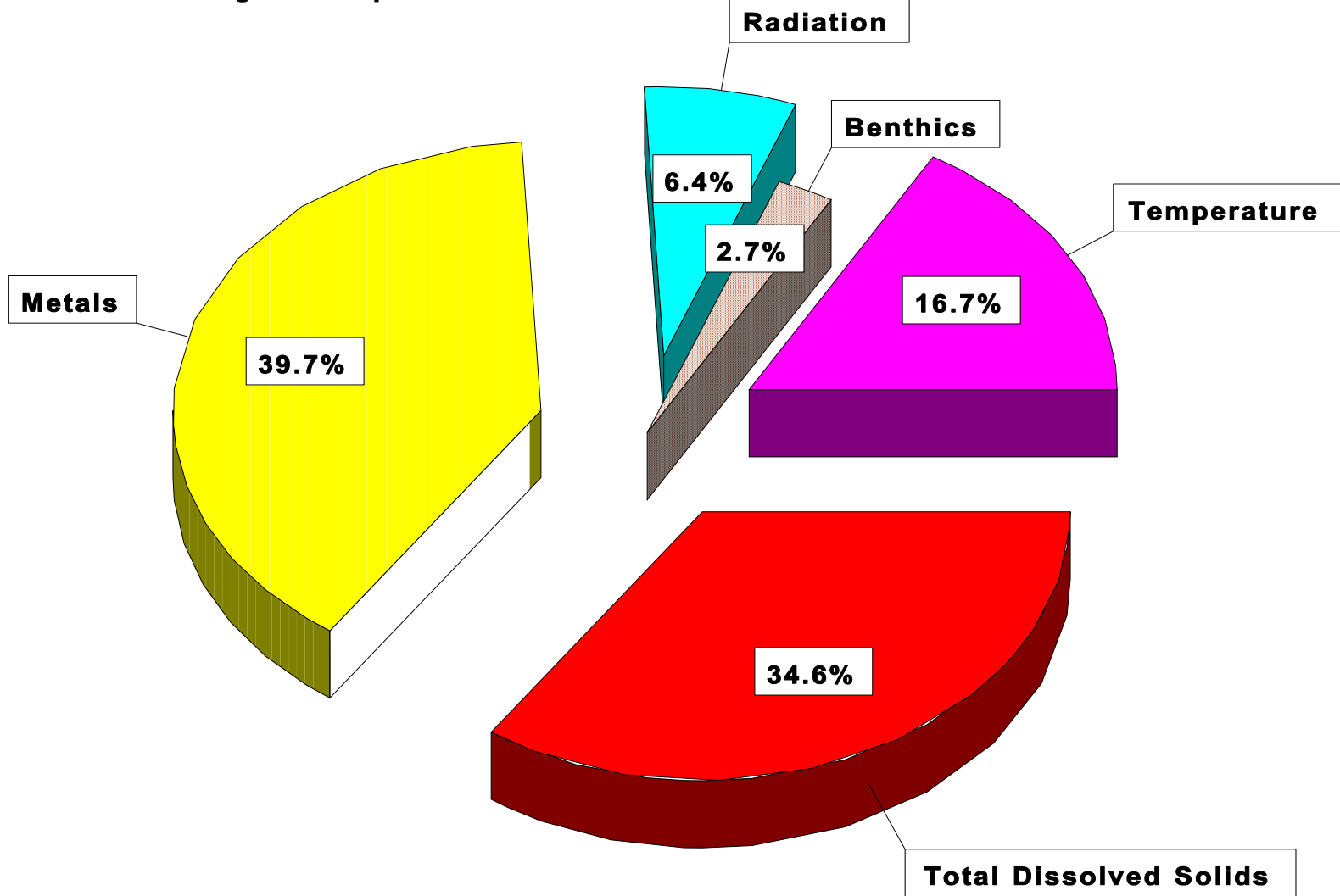


Figure 2.12-5 Relative percent contribution of causes on stream water quality – Colorado River Southeast Watershed Management Unit

Percent of Stream Miles Affected By Sources

2008 Integrated Report Assessment - Colorado River West Watershed Unit

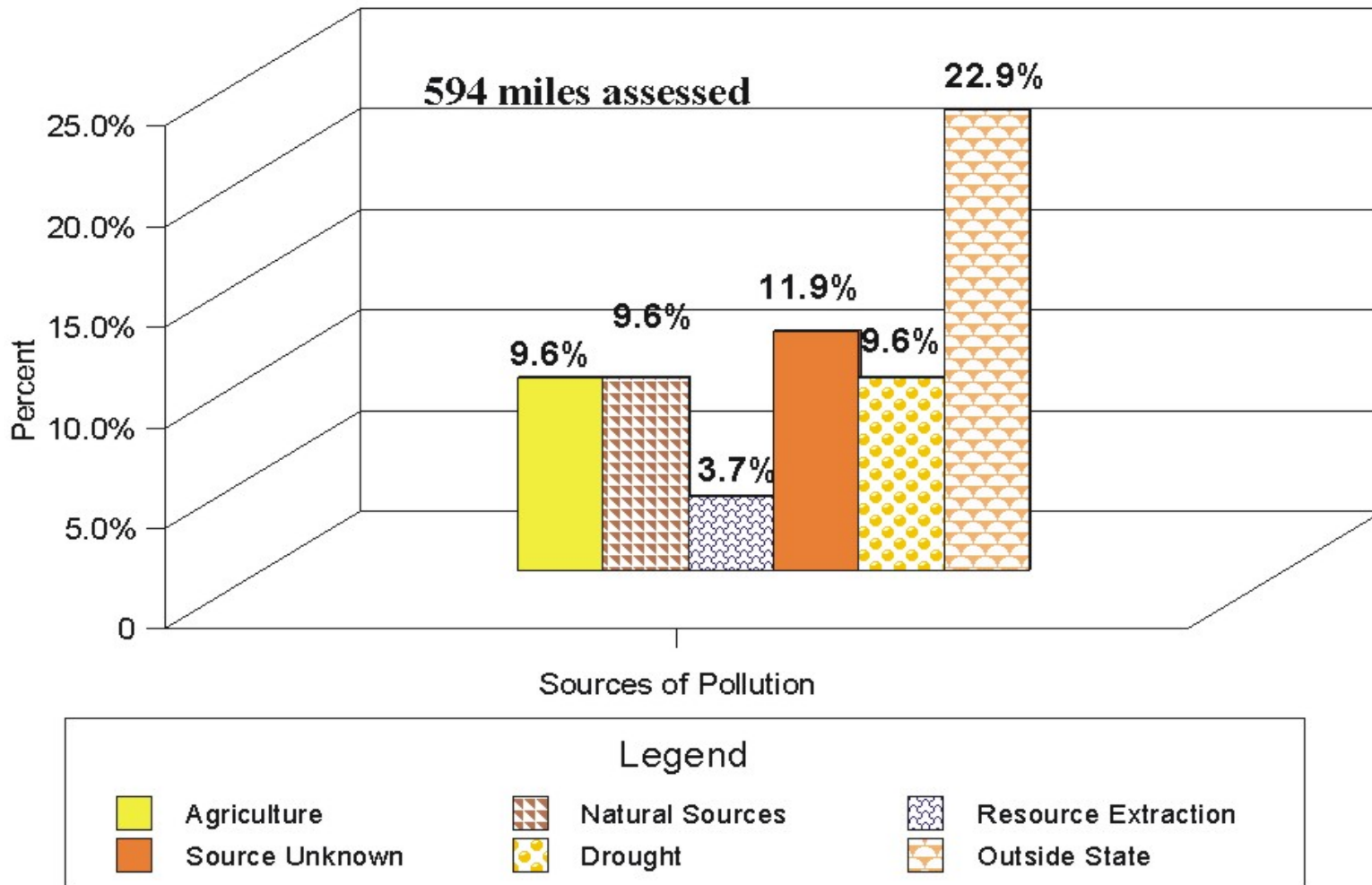


Figure 2.12-6 Percent impact by sources on stream water quality – Colorado River Southeast Watershed Management Unit

Sources of Stream Water Quality Impairment

2008 Integrated Report Assessment - Colorado River Southeast Watershed Unit

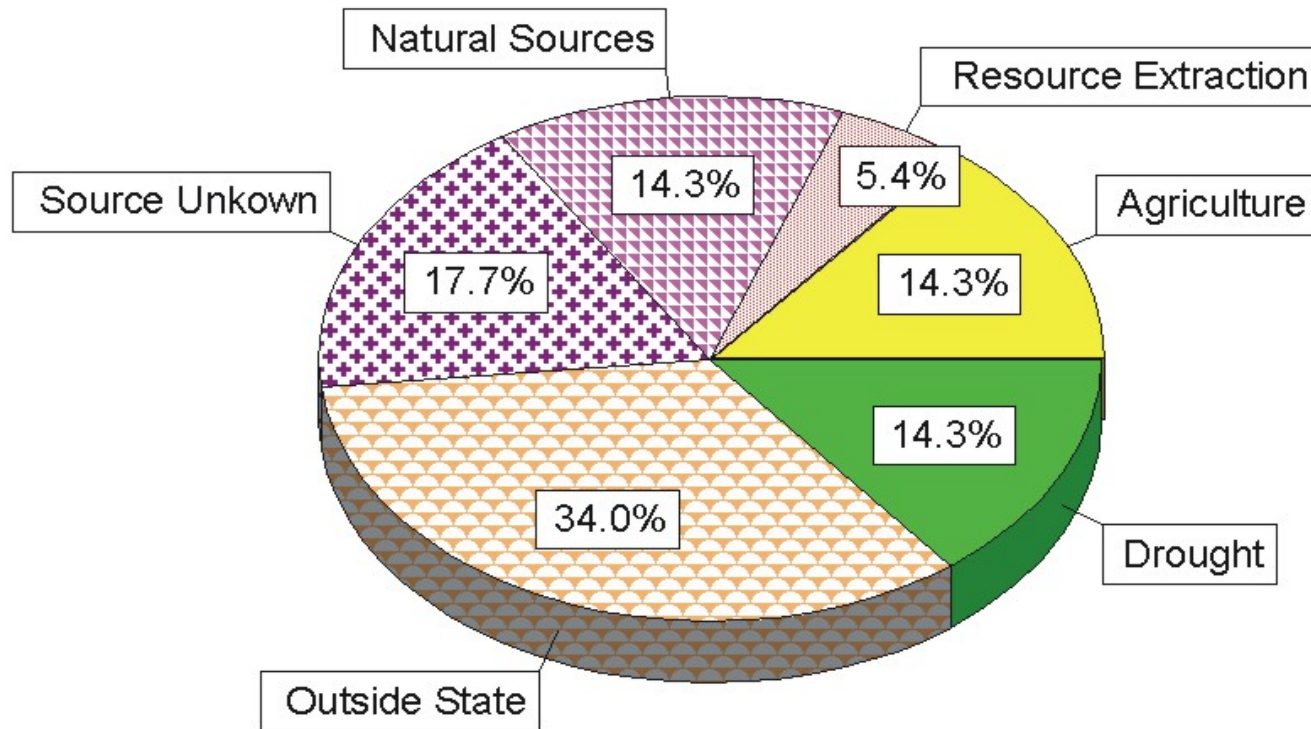


Figure 2.12-7 Relative percent contribution of sources on stream water quality – Colorado River Southeast Watershed Management Unit

Table 2.12-6 Impaired Waters Located in the Colorado River Southeast Watershed Management Unit

Watershed	Assessment	Assessment	Assessment	Beneficial Use	Beneficial		Pollutant	
Management	Unit	Unit	Unit	Class	Use	Support	Or	Stream
Unit	ID	Name	Description	Impaired	Support	Category	Pollution	Miles
Colorado River Southeast	UT14010005-001	Colorado River-6	Colorado River from HUC 14010005-14030001 boundary to Colorado State Line	3B	NS	5	Selenium	3.84
Colorado River Southeast	UT14030001-005	Colorado River-5	Colorado River from Dolores River confluence to HUC 14010005 boundary	3B	NS	5	Selenium	33.9
Colorado River Southeast	UT14030004-001	Dolores River	Dolores River and tributaries (except Granite Creek) from confluence with Colorado River to headwaters or Utah-Colorado state line	4	NS	5	TDS	61.73
Colorado River Southeast	UT14030005-003	Colorado River-3	Colorado River from Green River confluence to Moab	3B	NS	5	Selenium	62.69
Colorado River Southeast	UT14030005-004	Colorado River-4	Colorado River from Moab to HUC unit (14030005) boundary	3B	NS	5	Selenium	35.77
Colorado River Southeast	UT14030005-009	Castle Creek-1	Castle Creek and tributaries from confluence with Colorado River to Seventh-Day Adventist diversion	3B	NS	5	Benthic macroinvertebrate assessment impairment	9.1
Colorado River Southeast	UT14030005-011	Pack Creek	Pack Creek and tributaries from the confluence with Mill Creek to USFS boundary	3A	NS	5	Temperature	15.21
Colorado River Southeast	UT14030005-005	Mill Creek-1	Mill Creek and tributaries, except Pack Creek, from the confluence with Colorado River to USFS boundary	4	NS	5	Total Dissolved Solids	31.77
Colorado River Southeast	UT14030005-013	Onion Creek Upper	Onion Creek and tributaries from road crossing above Stinking Springs to headwaters	4	NS	5	TDS	2.2

Chapter 2.13. Great Basin Watershed Management Unit Assessment

2.13.1. Introduction

The West Desert Watershed Management Unit includes all streams located in the U.S.G.S Hydrological Units (HUCs) listed in Table 2.13-1. This management unit stretches from the north western portion of the state south to almost Cedar/Beaver Management Unit. There are many small streams within this unit. The larger streams are Deep Creek, Trout Creek, Grouse Creek, Pine Creek, Pole Creek, and South Junction Creek. These streams flow from the various mountain ranges into the West Desert and disappear. Some of them are diverted at the canyon mouths to be used for irrigation. Those streams in the Hydrologic Unit 17040210 flow north into the Snake River.

Table 2.13-1 U.S.G.S. Hydrological Units in the West Desert Watershed Management Unit

Hydrological Unit Code	Hydrological Unit Name
17040210	Raft
17040211	Goose
16020301	Hamlin-Snake Valleys
16020302	Pine Valley
16020303	Tule Valley
16020304	Rush-Tooele Valleys
16020305	Skull Valley
16020306	Southern Great Salt Lake Desert
16020307	Pilot - Thousand Springs
16020308	Northern Great Salt Lake Desert
16020309	Curlew Valley
16020310	Great Salt Lake

2.13.2. Water Quality Assessment Results

This region of the state is remote, with rugged mountain ranges, and desert. Only two streams were assessed and they were assessed using benthic macroinvertebrates collected. Trout Creek and Thomas Creek were assessed as supporting the Class 3A, cold water game fish beneficial use. Pole Creek was not assessed because the benthic macroinvertebrate data were not sufficient to make a determination of beneficial use under the narrative standard.

The Division of Water Quality is planning to survey this area within the next two years to identify reference sites that can be used to assess more of the streams. This will allow the field crews to monitor the streams once a year which will make it feasible to obtain data and make assessments for this unit.

Table 2.13-2 Stream Miles by Assessment Category – Lower Colorado Watershed Management Unit

	Size	Size Fully	Size Not	
	Assessed	Supporting	Supporting	Totals
Use				
Drinking Water	0.0	0.0	0.0	0.0
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
Aquatic Life	30.7	30.7	0.0	30.7
Agricultural	0.0	0.0	0.0	0.0
		0.0	0.0	0.0
Drinking Water		0.0	0.0	0.0
Fish Consumption		0.0	0.0	0.0
Swimming		0.0	0.0	0.0
Secondary Contact		0.0	0.0	0.0
Aquatic Life		100.0%	0.0	100.0%
Agricultural		0.0	0.0	0.0

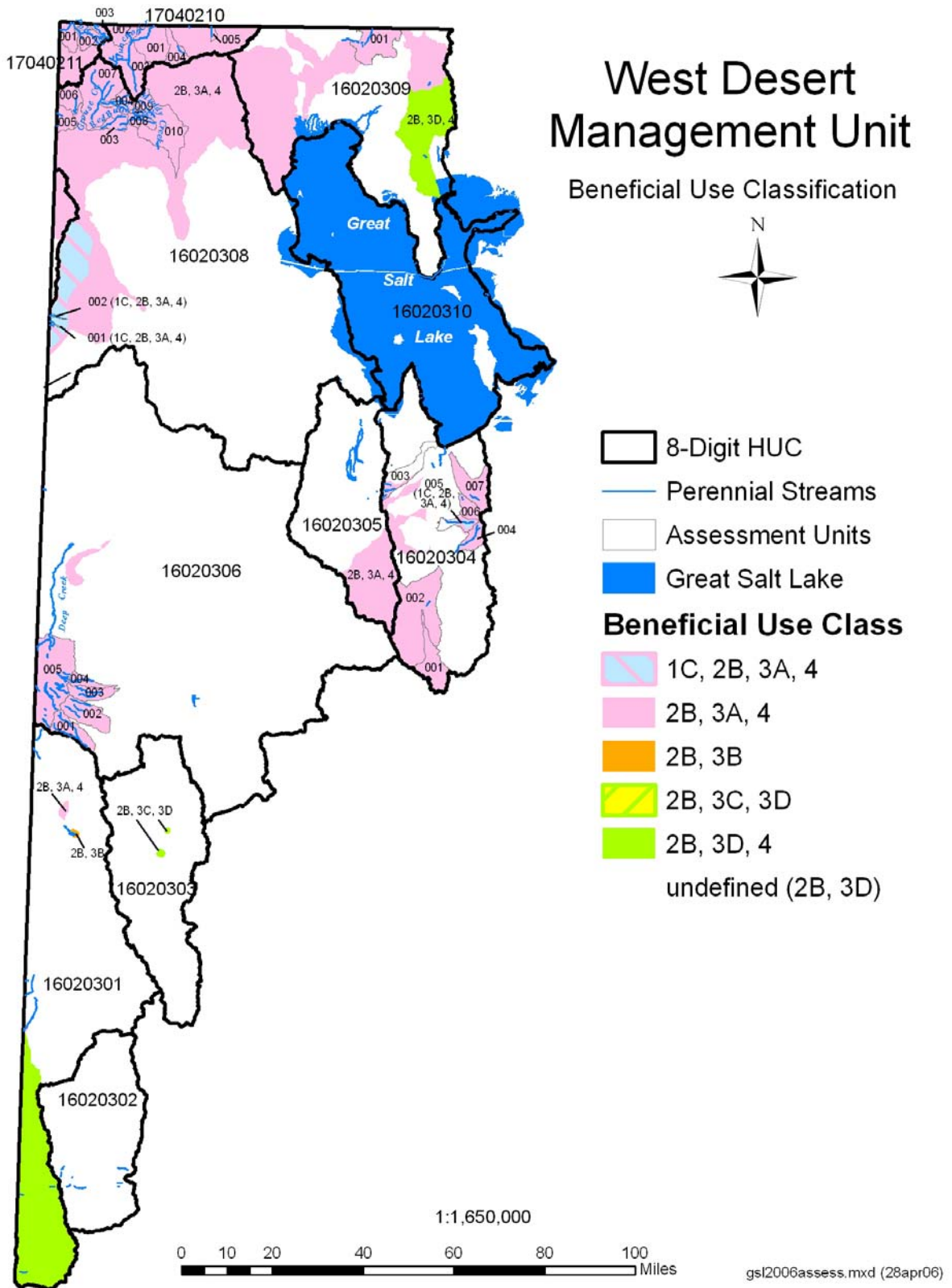


Figure 2.13-1 River and stream designated beneficial use classes - West Desert Watershed Management Unit

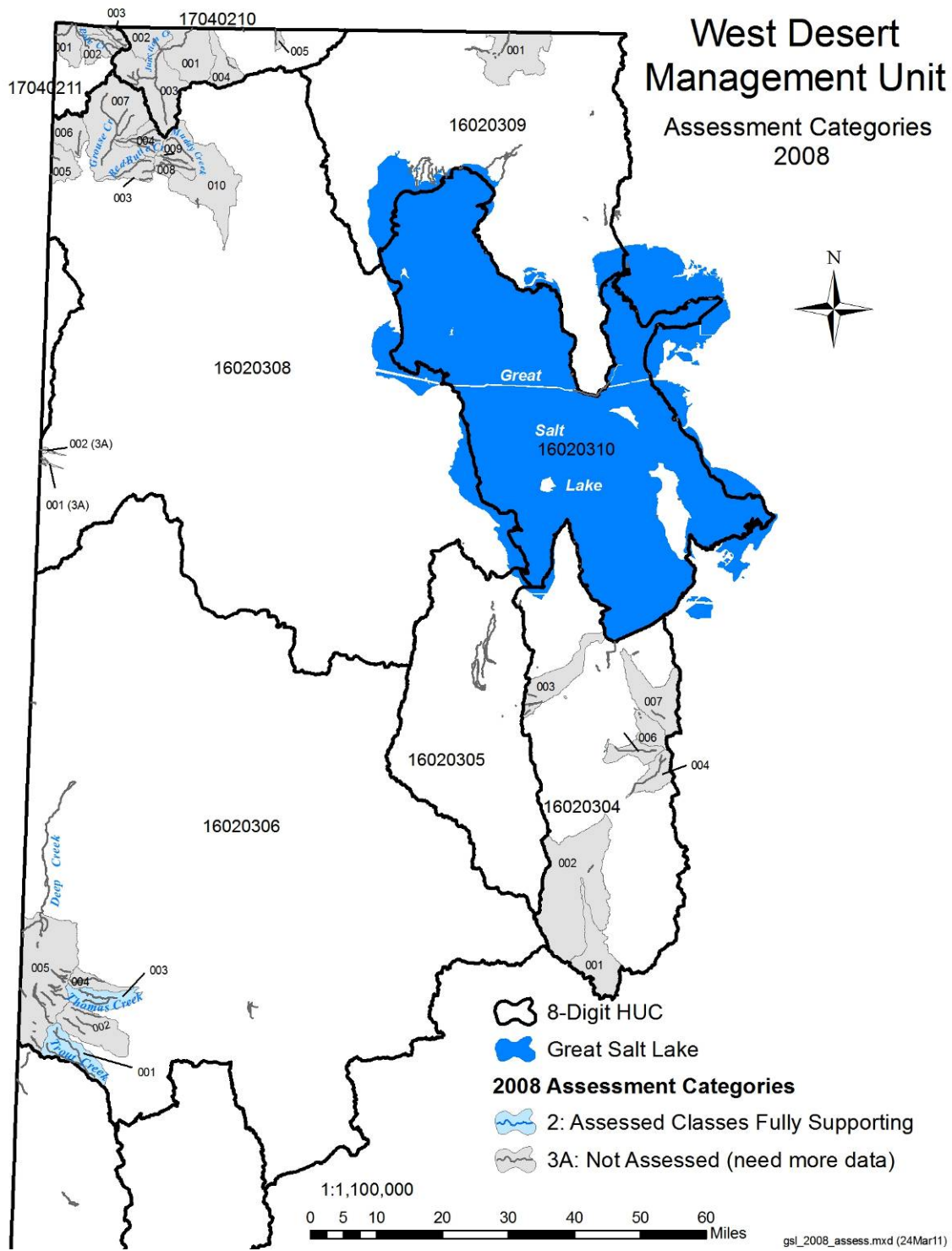


Figure 2.13-2 Beneficial use assessment by category – West Desert Water Quality Management Unit

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