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

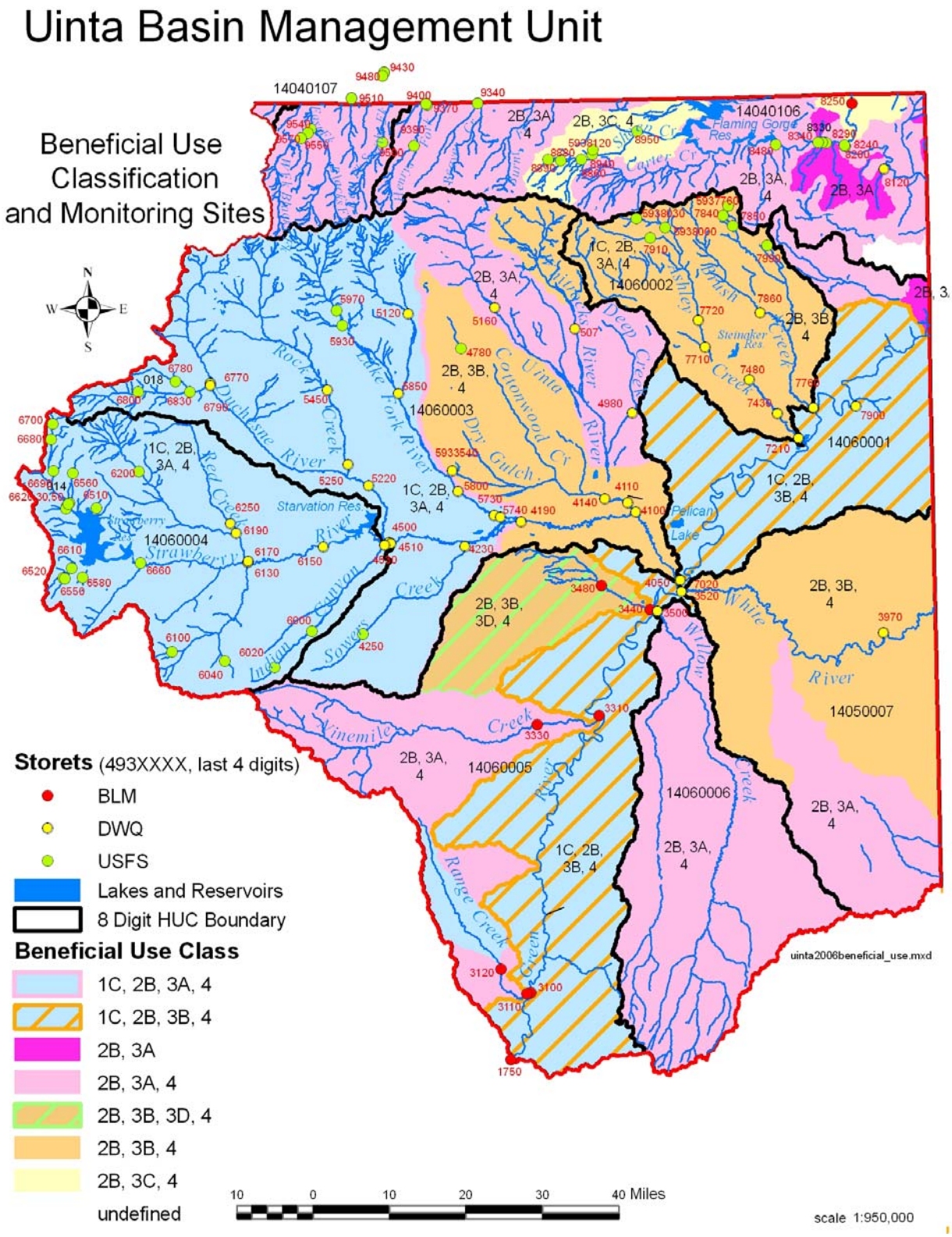

Figure 2.7-1 Beneficial use classifications – Uinta Watershed Management Unit

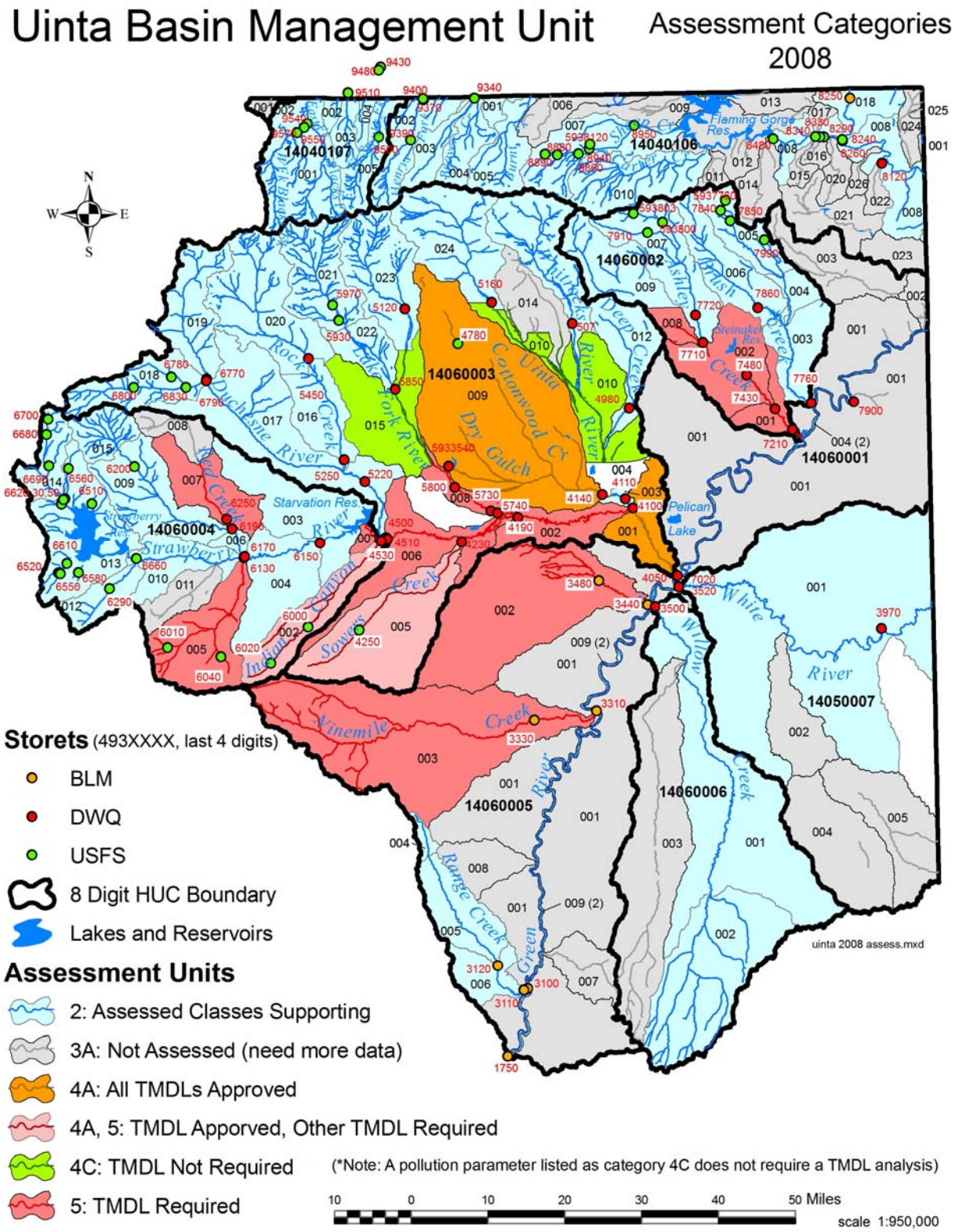

Figure 2.7-2 Beneficial use assessment by categories – Uinta Watershed Management Unit

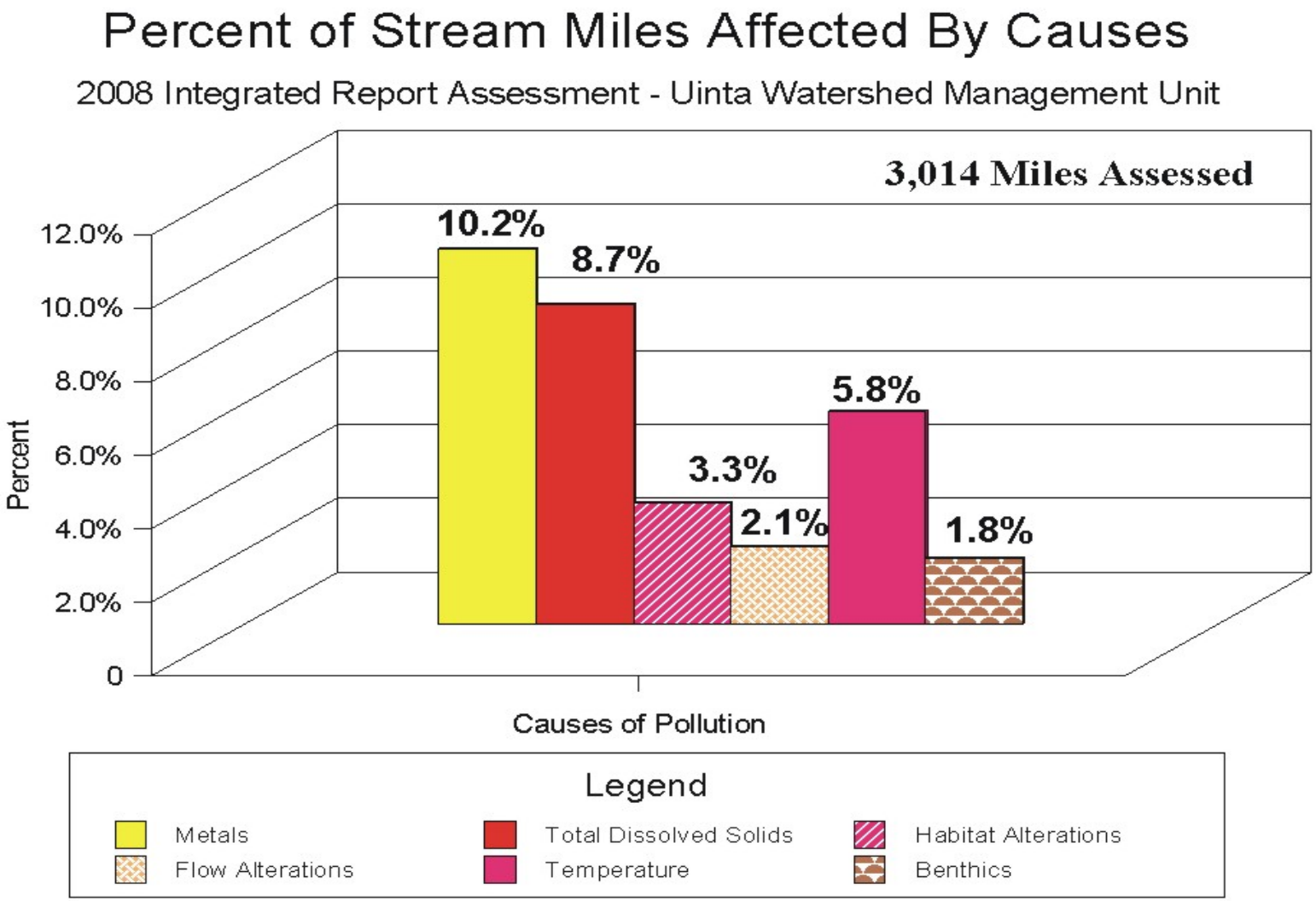

Figure 2.7-3 Percent impact by causes on stream water quality – Uinta Watershed Management Unit

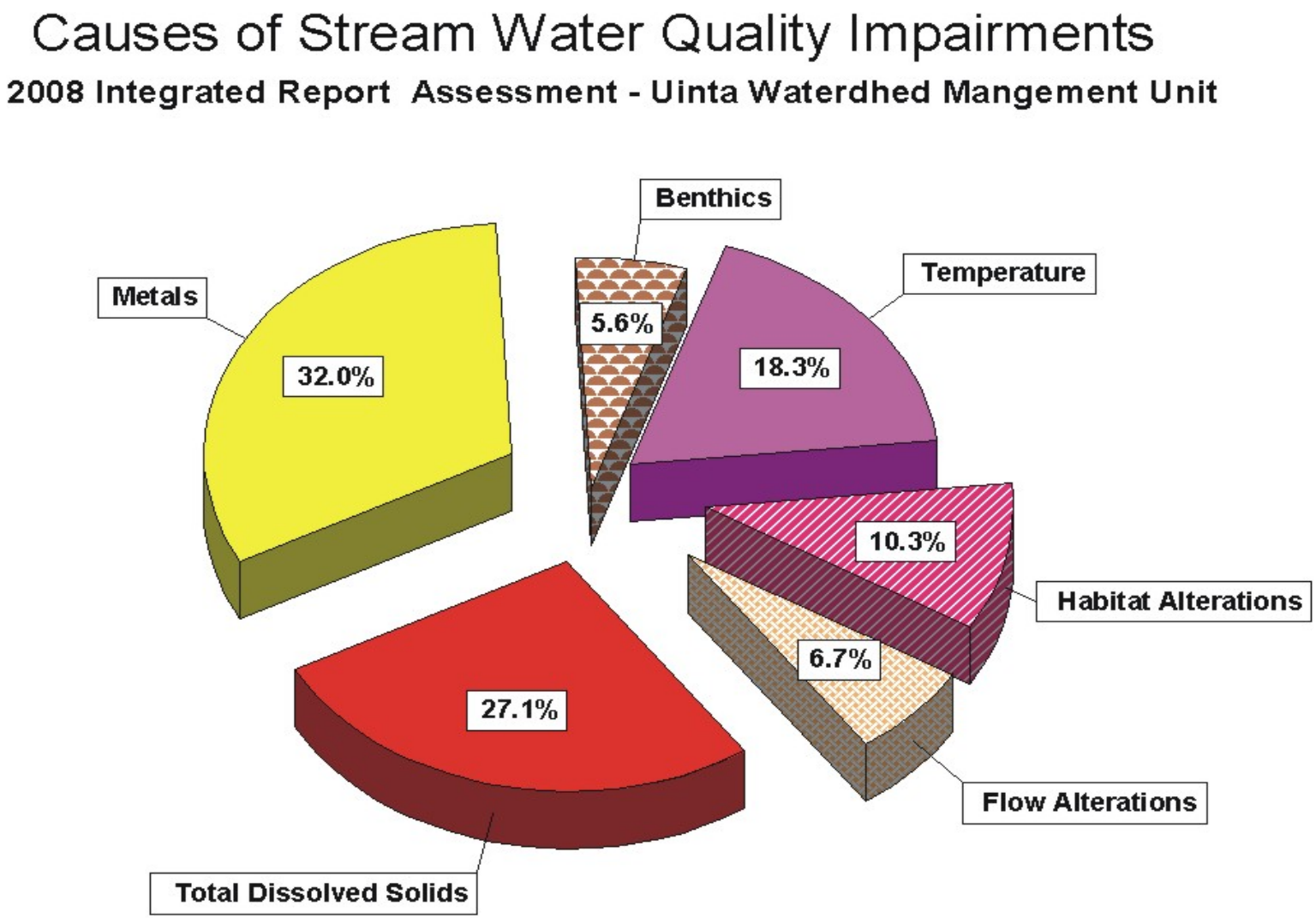

Figure 2.7-4 Relative percent contribution of causes on stream water quality – Uinta Watershed Management Unit

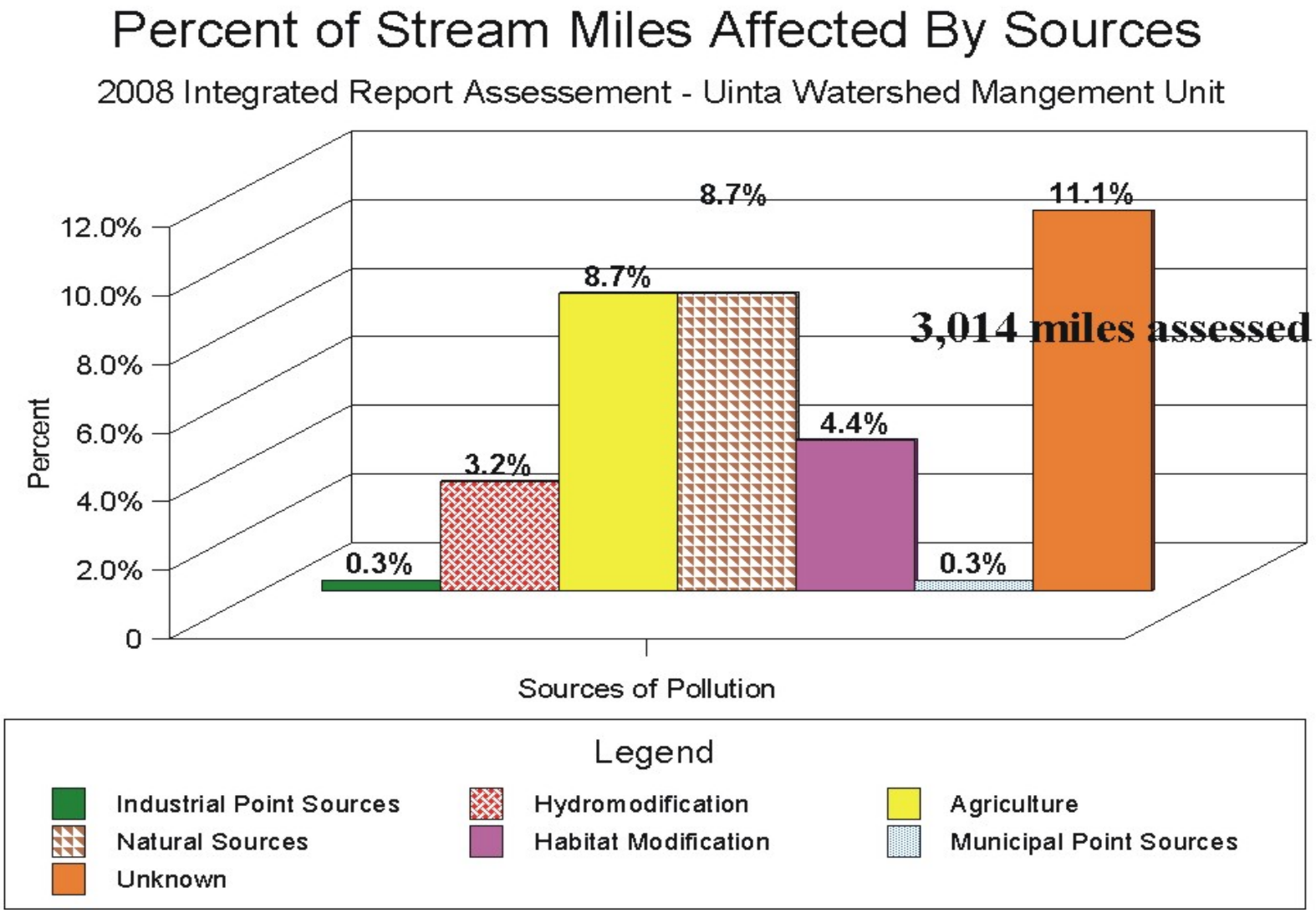

Figure 2.7-5 Percent impact by sources on stream water quality – Uinta Watershed Management Unit

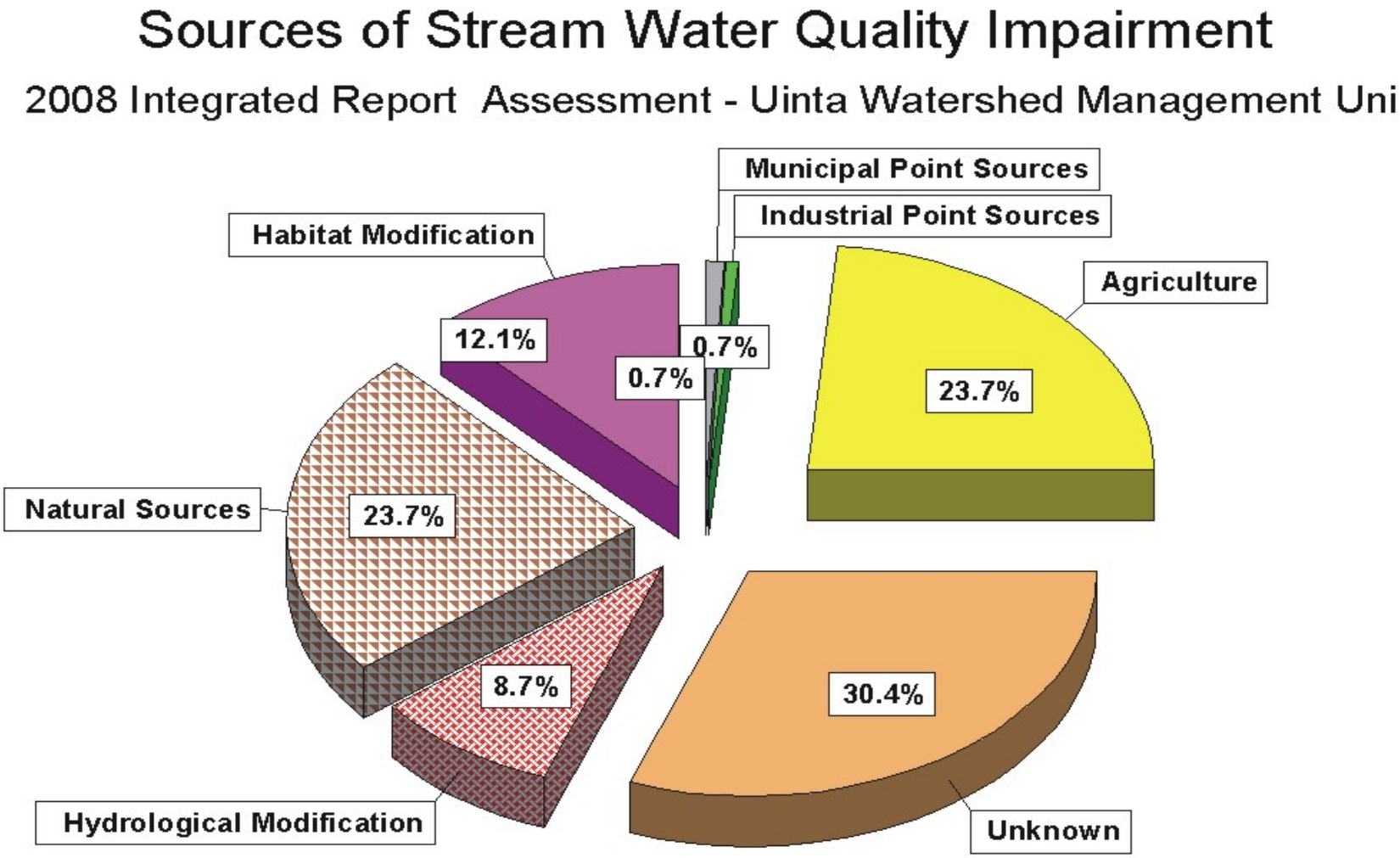

Figure 2.7-6 Relative percent contribution of sources on stream water quality – Uinta Watershed Management Unit

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	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
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

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	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 confluence to headwaters	4	NS	5	Boron	44.01
Uinta	UT14060004-002	Indian Canyon Creek	Indian Canyon Creek and	4	NS	5	TDS	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
			tributaries from Strawberry River confluence to headwaters					
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
Uinta	UT14060005-003	Nine Mile	Ninemile Creek and tributaries from Green River	3A	NS	5	Temperature	119.08

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					