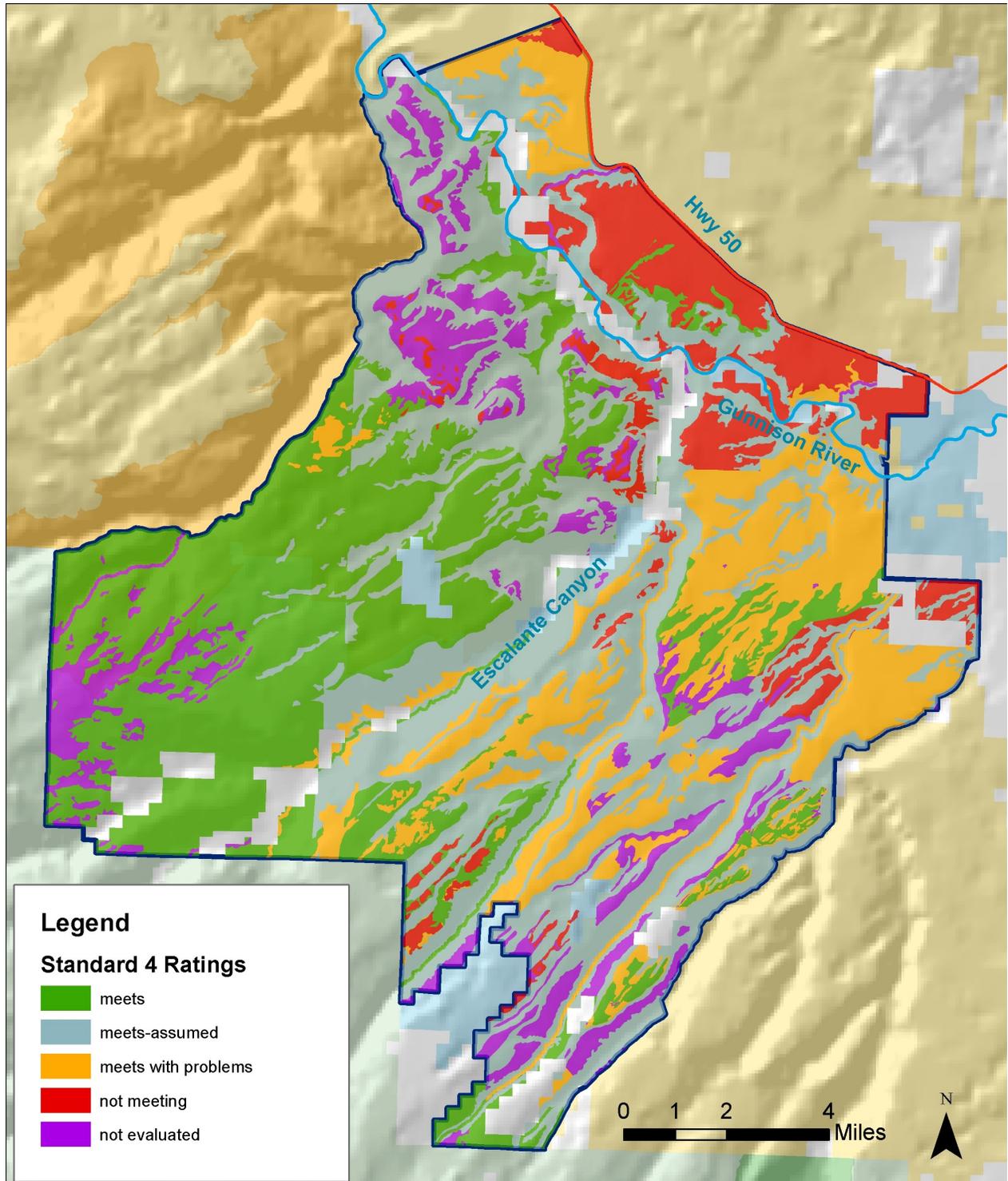


LAND HEALTH DETERMINATIONS FOR STANDARD 4



Land Health Determinations

	Standard 4 Determinations (acres-percentage of unit)					
	Meets	Meets-Assumed	Meets with Problems	Not Meeting	Not Evaluated	Not TES Habitat
Overall Rating	33,802-28%	43,734-37%	20,313-17%	10,704-9%	11,101-9%	0-0%
TES Trend Up	8%	unknown	7%	0%	unknown	NA
TES Trend Static	81%	unknown	26%	3%	unknown	NA
TES Trend Down	9%	unknown	55%	87%	unknown	NA
Undetermined	2%	unknown	12%	10%	unknown	NA

STANDARD 5 WATER QUALITY—SUCCESSSES, PROBLEMS, AND TRENDS

Definition: To meet Standard 5, the water quality of all water bodies, including ground water where applicable, located on or influenced by BLM lands will achieve or exceed the Water Quality Standards established by the State of Colorado

Note: the following conclusions are drawn from detailed land health tables in Appendix A

Successes and Positive Trends*

- Water quality data for perennial streams and the Gunnison River meets all Colorado Water Quality Control standards, except for Selenium.
- Macroinvertebrate data indicates acceptable to above average populations reflecting no apparent water quality problems.
- Sediment inputs from BLM uplands appear minimal (see Standard 1): Soil is more stable (fewer flowpaths and pedestals) across landscape than typically found in other areas of the UFO; and most areas do not have as much bare soil as elsewhere in UFO. Additionally, bare soil is decreasing across nearly all allotments, vegetation types, land treatments, special areas and land health ratings; Active gullies are absent on undeveloped ground.
- Sediment inputs to streams and rivers from the road network is estimated to be lower than in most other areas of UFO based on lower road densities.
- See trends under Standard 1 for changes in upland soil conditions which contribute sediment into waterways.

*Trend information on water chemistry, macroinvertebrates, other contaminants is unavailable until more consistent water quality sampling is under way.

Problems and Negative Trends*

- The mainstem of the Gunnison River in the unit is listed as impaired on Colorado 303(d) list for selenium due to adjacent Mancos shale geologic unit. A Total Maximum Daily Load (TMDL) assessment was completed November, 2009.
- The mainstem of the Gunnison River is on the Colorado Monitoring and Evaluation list as suspect for sediment impairment .
- Bare soil, plant basal and cryptogam problems with Standard 1 increase sediment production.
- Some stream channels are laterally and vertically unstable, or have inadequate riparian vegetation to prevent bank erosion. This is a problem along lower Cottonwood Creek and the Gunnison River in Antelope Allotment. These conditions cause excess sediment in streams and rivers.

Development Analysis

- The majority of development types do not influence nearby water quality indicators in the Escalante unit.
- The railroad ROW (grease, Selenium-laced riprap) and some developed springs (livestock manure) are a minor source of pollutants into localized areas of Cottonwood Creek and the Gunnison River in the Escalante unit.
- The following types of development sometimes increase sediment production in some areas of the Escalante unit: powerline ROWs (mainly from access roads), road ROWs, stock and truck trails, developed springs, BLM roads, livestock reservoirs (contain excess sediment which could carry downstream once breached), and campsites.
- None of the developments appear to be contributing to algae problems in waterways.
- The cumulative effect of many developments, particularly linear disturbances, alters drainage patterns and increases erosion and sediment production across the landscape (see Standard 1.)

INDICATORS:

Macroinvertebrates: appropriate populations are present; low diversity or absence of some types indicates water quality or quantity problems

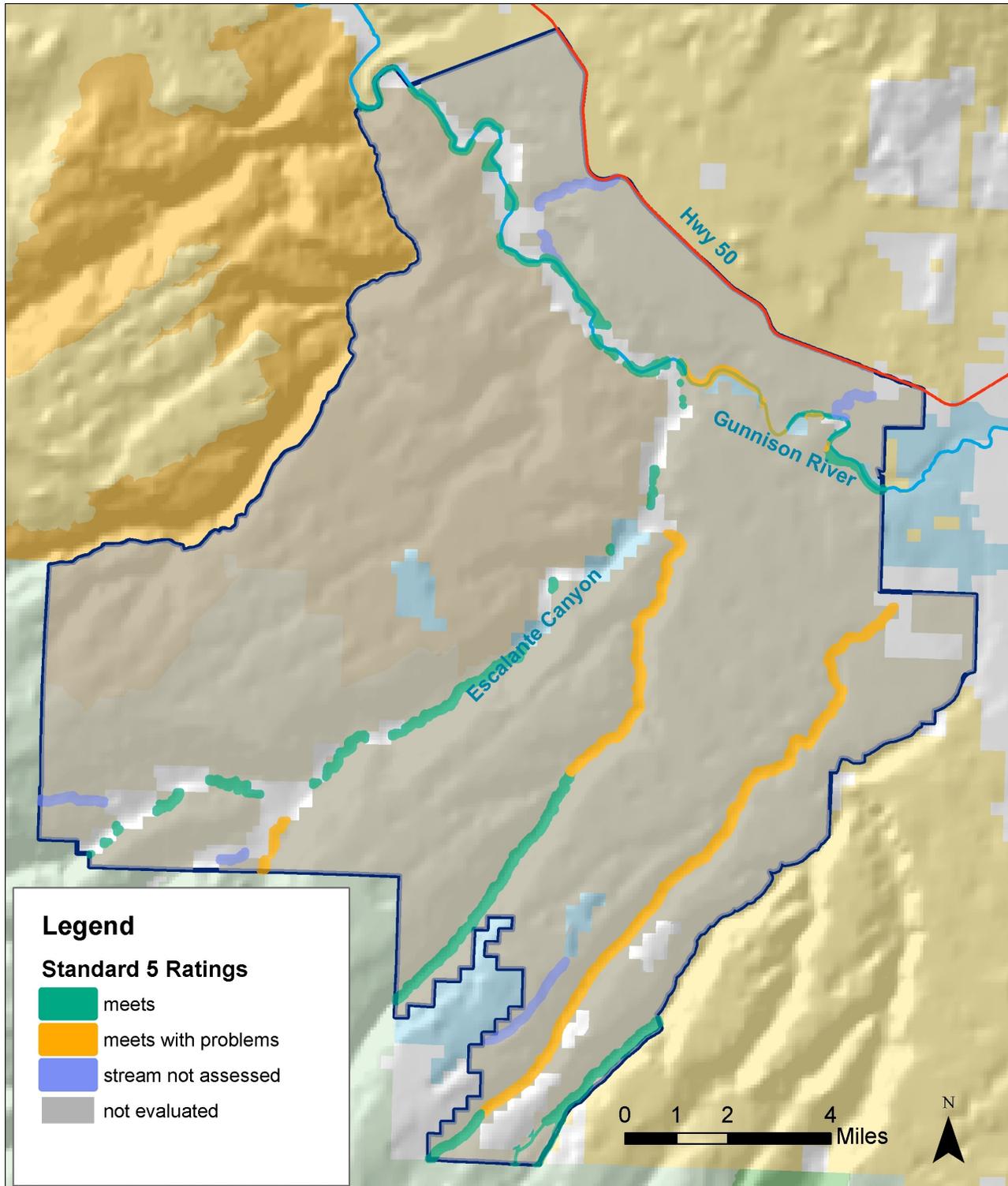
Algae: appropriate levels are present; excess levels indicate water quality problems

Sediment: human attributable levels should be within the amounts directed by Colorado

Pollutants (Selenium, salts): human attributable levels should be within the amounts directed by Colorado

Contaminants (E. coli bacteria): human attributable levels should be within the amounts directed by Colorado; excess levels may pose a health hazard

LAND HEALTH DETERMINATIONS FOR STANDARD 5



	Standard 5 Determinations (acres-percentage of unit)				
	Meets	Meets with Problems	Not Meeting	Not Evaluated	Upland
Overall Rating	1,229 -45%	1,060 -39%	0 -0%	457 -17%	116,909
Trend Up	0%	0%	0%	unknown	N/A
Trend Static	0%	0%	0%	unknown	N/A
Trend Down	0%	0%	0%	unknown	N/A
Undetermined	100%	100%	100%	unknown	N/A

Escalante Land Health Assessment 2009-2010

Land Health Determinations



CAUSAL FACTORS—OVERVIEW

Definition: Causal factors are the contributing activities, land uses, or natural phenomena which are responsible for land health problems. These can occur singly or more often in combination with one another. Analysis of developments identifies permitted activities and other uses which may directly or indirectly cause problems through inadequate reclamation or enforcement of stipulations.

Explanation of Approach: An understanding of the factors which are causing land health problems is important for developing effective remedies. Causal factors are the activities, land uses and environmental conditions which are often associated with land health problems in the Escalante Unit. These are determined from an analysis of evidence observed at “undeveloped” areas where land health data was collected. A separate development analysis provides additional understanding of the degree to which developments, localized use authorizations and user-created sites affect land health at the site level. It also provides information on condition and compliance. This dual approach provides the foundation for identifying remedies at specific locations on the landscape, as well as remedies that relate to UFO’s broader processes, authorizations, and workload priorities. This page includes general findings about causal factors across all Standards, as well as information about developments and their status in the Escalante unit. The following pages detail causal factors for each Standard.

Development Analysis

The following types of developments are likely influencing land health in the Escalante unit because of their extent and incidence of land health indicator problems associated with them:

- BLM roads and trails
- Road ROWs
- Livestock reservoirs
- Railroad ROW

The development types listed below don’t affect land health in the Escalante unit because of their limited occurrence and extent, but occasionally cause problems with health indicators at the site level:

- Telephone and fiber optic ROWs
- Powerline ROWs
- Water pipeline and water facility ROWs
- Gas pipeline ROW
- Mineral development (gravel pit)
- Livestock and truck trails
- Catchments, guzzlers and developed springs
- Cattleguards
- Corrals

Leading Causal Factors for Land Health Problems in the Escalante Landscape

The following factors were commonly observed in the unit at higher levels where there are land health problems and at lower levels at sites with no health problems.

- Drought effects
- Historic grazing
- Noxious/invasive species
- BLM roads
- Upstream water diversions
- Flow regulation-upstream dams
- Livestock grazing in riparian areas

Possible Secondary Factors

The following factors were observed in areas having land health problems, but not at higher levels than elsewhere

- Nearby private agricultural land
- Linear ROWs (except for roads)
- Road encroachment into riparian areas
- Livestock grazing in uplands
- Vegetation seral stage
- New vegetation treatments
- Old vegetation treatments
- Stream channelization
- Drought and intermittent streamflow
- Flood deposition
- Upstream water quality
- Irrigation tailwater

Development Analysis: Condition and Compliance:

The following development types in the Escalante Landscape are occasionally associated with impacts to land health indicators. The percentage of each type found to have issues with condition or compliance at sampled sites is shown in parentheses.

BLM roads and trails (43%)

Road ROWs (20%)

Livestock reservoirs (85%)

Railroad ROW (100%)

Telephone and fiber optic ROWs (33%)

Powerline ROWs (60%)

Water pipeline/ditch ROWs (67%)

Gas pipeline ROWs (50%)

Mineral development (0%)

Livestock and truck trails (60%)

Catchments, guzzlers, springs (83%)

Corrals and cattleguards (60%)

Special recreation sites (50%)

STANDARD 1 SOILS: CAUSES

Definition: Primary factors are identified as those activities, land uses, and environmental factors observable at moderate or higher levels at LHA study sites with soil health problems, while secondary factors occur at low levels. Likely causes are the primary factors which causal analysis suggests are more frequent at sites with health problems (See Appendix A.) Neutral or positive factors are those which analysis suggests do not occur more frequently at sites with health problems. Development analysis provides information about which types of developments may be contributing to soil health problems at a site specific level (for more than 10% of each development type sampled) and in larger areas which have soil health problems. Information is taken from detailed summary tables in Appendix A.

Causal Factors on Undeveloped Areas:

Primary Factors Found at Problem Sites

- Drought
- Historic grazing
- Noxious and invasive weeds
- BLM roads
- Linear ROWs (except for roads)
- Deer and elk use
- Pinyon-juniper invasion
- Vegetation seral (structural) stage
- Historic deer use
- Fire
- Current livestock grazing
- Old vegetation treatments
- Woodcuts
- Prairie dogs and anthills

Secondary Factors Observed at Problem Sites

- Mining
- Nearby agricultural or residential land
- Recent vegetation treatments

Development Analysis:

Types Associated with Soil Health Indicator Problems at the Site Level

- | | |
|-----------------------------|------------------------------|
| • BLM roads | • Spring developments |
| • Road ROWs | • Livestock fences |
| • Stock and truck trails | • Exclosures |
| • Powerline ROWs | • Developed recreation sites |
| • Railroad ROW | |
| • Gas Pipeline ROW | |
| • Telephone/Fiber Optic ROW | |
| • Water pipeline/facility | |
| • Livestock reservoirs | |
| • Catchments | |
| • Campsites | |
| • Cattleguards | |

Likely Causes and Contributing Factors

- Drought
- Historic Grazing
- Noxious and invasive weeds
- BLM roads
- Linear ROWs (except for roads)

Likely Neutral or Positive Factors

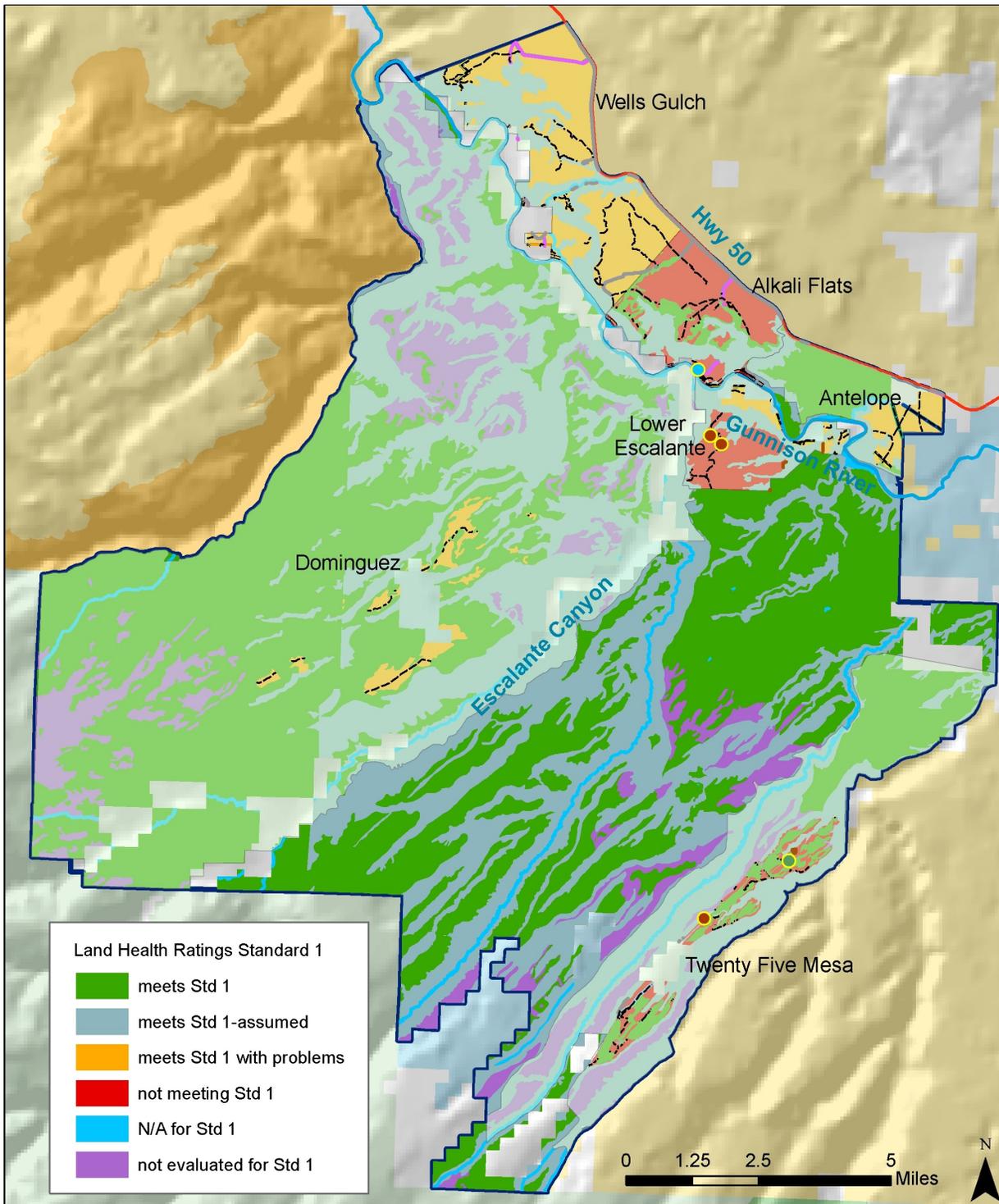
- Deer and elk use
- Pinyon-juniper invasion
- Vegetation seral (structural) stage
- Historic deer use
- Fire
- Current livestock grazing
- Old vegetation treatments (>15 years old)
- Woodcuts
- Prairie dogs and anthills

Types Which May Be Contributing to Soil Health Problems in Escalante Unit

- BLM roads (38 miles in problem areas)
- Road ROWs (21 miles in problem areas)
- Powerline ROWs (4 miles in problem areas)
- Railroad ROW (2 miles in problem areas)
- Gas Pipeline ROW (1 mile in problem areas)
- Telephone/Fiber Optic ROW (4 miles in problem areas)
- Water pipeline/facility (1 mile in problem areas)
- Livestock reservoirs (3 in problem areas)
- Catchments (1 in problem areas)
- Developed recreation site (1 boat launch in problem areas)

STANDARD 1 DETERMINATIONS AND DEVELOPMENTS

The map below shows those developments and uses in the Escalante unit which sometimes cause problems with soil indicators, and which also occur in lands determined to have soil health problems.



Causal Factors

Developments and uses which are associated with soil health indicator problems. Grazing allotments are shown with pale shading and labeled by allotment name.

STANDARD 2 RIPARIAN: CAUSES

Definition: Primary factors are identified as those activities, land uses, and environmental factors observable at moderate or higher levels at LHA study sites with riparian health problems, while secondary factors occur at low levels. Likely causes are the primary factors which causal analysis suggests are more frequent at sites with health problems (See Appendix A.) Neutral or positive factors are those which analysis suggests do not occur more frequently at sites with health problems. Development analysis provides information about which types of developments may be contributing to riparian health problems at a site specific level (for more than 10% of each development type sampled), and in larger areas which have riparian health problems. Information is taken from detailed summary tables in Appendix A.

Causal Factors

Causal Factors on Undeveloped Areas: Likely Causes and Contributing Factors

Primary Factors Observed at Problem Sites

- Water diversions
- Flow regulation from dams
- Livestock grazing in riparian area
- Noxious/invasive weeds
- Channelization
- Historic cultivation of floodplain
- Fire
- Flood deposition
- Intermittent streamflow
- Irrigation tailwater
- Nearby agricultural land
- Railroad ROW
- Road encroachment into riparian area
- Poor upstream water quality
- Wildlife use
- Tamarisk beetle

Secondary Factors Observed at Problem Sites

- Drought
- Augmented streamflows
- Mining (along Gunnison River)
- OHV use
- Recreation impacts
- Road crossings of streams
- Watershed condition

Development Analysis:

Types Associated with Riparian Health Indicator Problems at the Site Level

- Road ROWs
- Railroad ROW
- Spring developments

- Water diversions (on all streams but Dry Fork of Escalante Creek)
- Flow regulation from dams (Aspinall Complex)
- Livestock grazing in riparian area
- Noxious/invasive weeds

Likely Neutral or Positive Factors

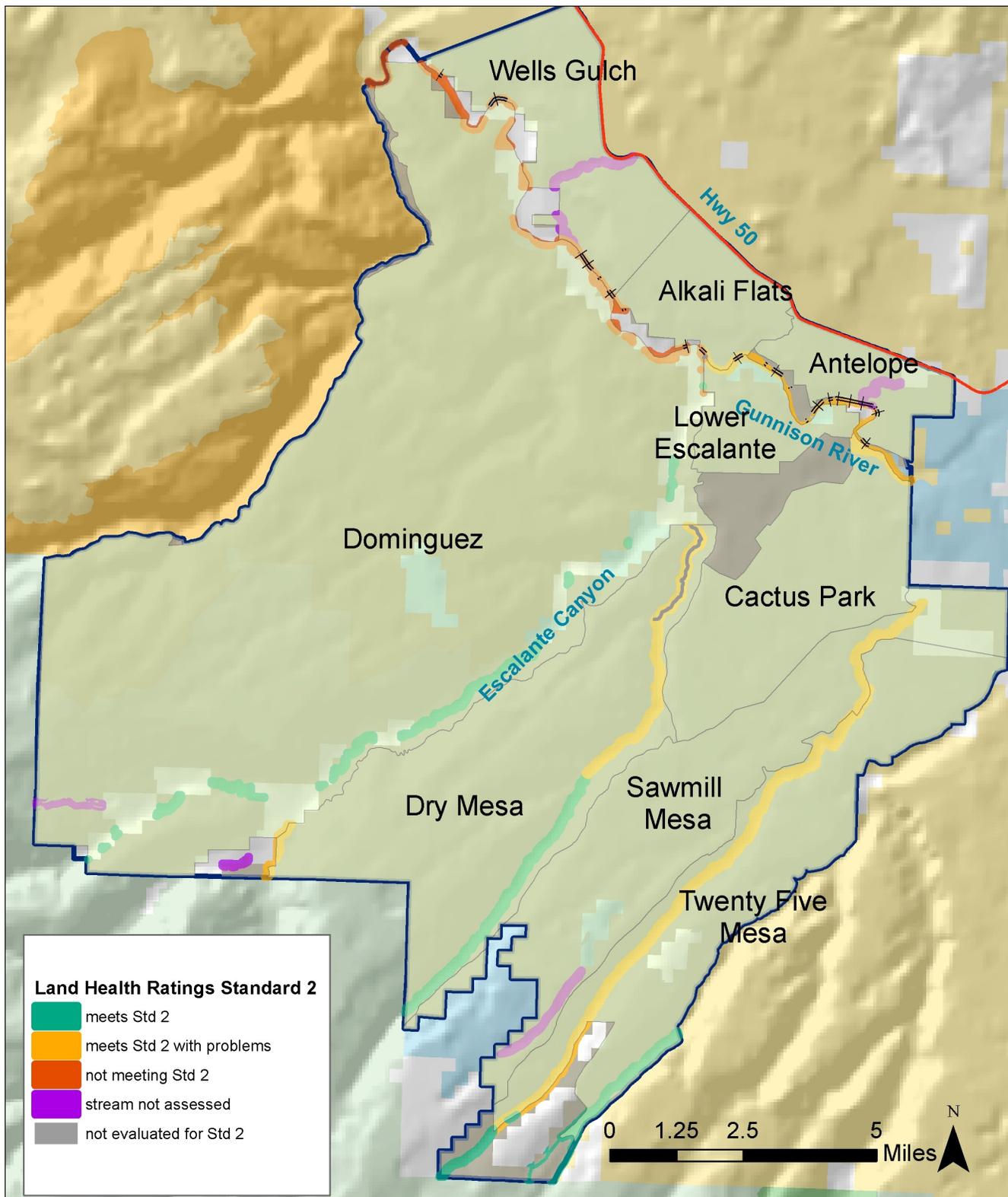
- Channelization
- Historic cultivation of floodplain
- Fire
- Flood deposition
- Intermittent streamflow
- Irrigation tailwater
- Poor upstream water quality
- Wildlife use
- Tamarisk beetle
- Nearby agricultural land
- Railroad ROW
- Road encroachment into riparian area

Types Which May Be Contributing to Riparian Health Problems in Escalante Unit

- Road ROWs (2.8 miles)
- Railroad ROW (3.3 miles)

STANDARD 2 DETERMINATIONS AND DEVELOPMENTS

The map below shows those developments and uses in the Escalante unit which sometimes cause problems with riparian indicators, and which also occur in lands determined to have riparian health problems.



Causal Factors

Developments and uses which are associated with riparian health indicator problems. Grazing allotments are shown with pale shading and labeled by allotment name.

STANDARD 3 PLANT AND ANIMAL COMMUNITIES: CAUSES

Definition: Primary factors are identified as those activities, land uses, and environmental factors observable at moderate or higher levels at LHA study sites with community health problems, while secondary factors occur at low levels. Likely causes are the primary factors which causal analysis suggests are more frequent at sites with health problems (See Appendix A.) Neutral or positive factors are those which analysis suggests do not occur more frequently at sites with health problems. Development analysis provides information about which types of developments may be contributing to community health problems, both at a site specific level (more than 10% of the time), and in larger areas which have community health problems. Information is taken from detailed summary tables in Appendix A.

Causal Factors on Undeveloped Areas: Likely Causes and Contributing Factors

Primary Factors Observed at Problem Sites

- Drought
- Noxious and invasive weeds
- BLM roads
- Linear ROWs (except for roads)
- Deer and elk use— current and historic
- Old vegetation treatments
- Historic livestock grazing
- Vegetation seral (structural) stage
- Recent vegetation treatment
- Pinyon-juniper invasion
- Fire
- Current livestock grazing-uplands
- Prairie dogs and anthills
- Nearby livestock reservoir
- Woodcuts

Secondary Factors Observed at Problem Sites

- Nearby agricultural or residential land
- OHV use
- Dumping
- Erosion from uplands
- Mining (gravel pit)

Development Analysis:

Types Associated with Standard 3 Health Indicator Problems at the Site Level

- | | |
|------------------------------|---|
| • BLM roads | • Spring development |
| • Road ROWs | • Corrals |
| • Stock, truck trails | • Developed recreation site (boat launch) |
| • Powerline ROWs | • Gravel pit |
| • Telephone/fiber optic ROWs | |
| • Gas pipeline ROW | |
| • Railroad ROW | |
| • Water pipeline/facilities | |
| • Livestock reservoirs | |
| • Catchments | |
| • Cattleguards | |
| • Guzzlers | |
| • Corrals | |

- Drought
- Noxious and invasive weeds
- BLM roads
- Linear ROWs (except for roads)

Likely Neutral or Positive Factors

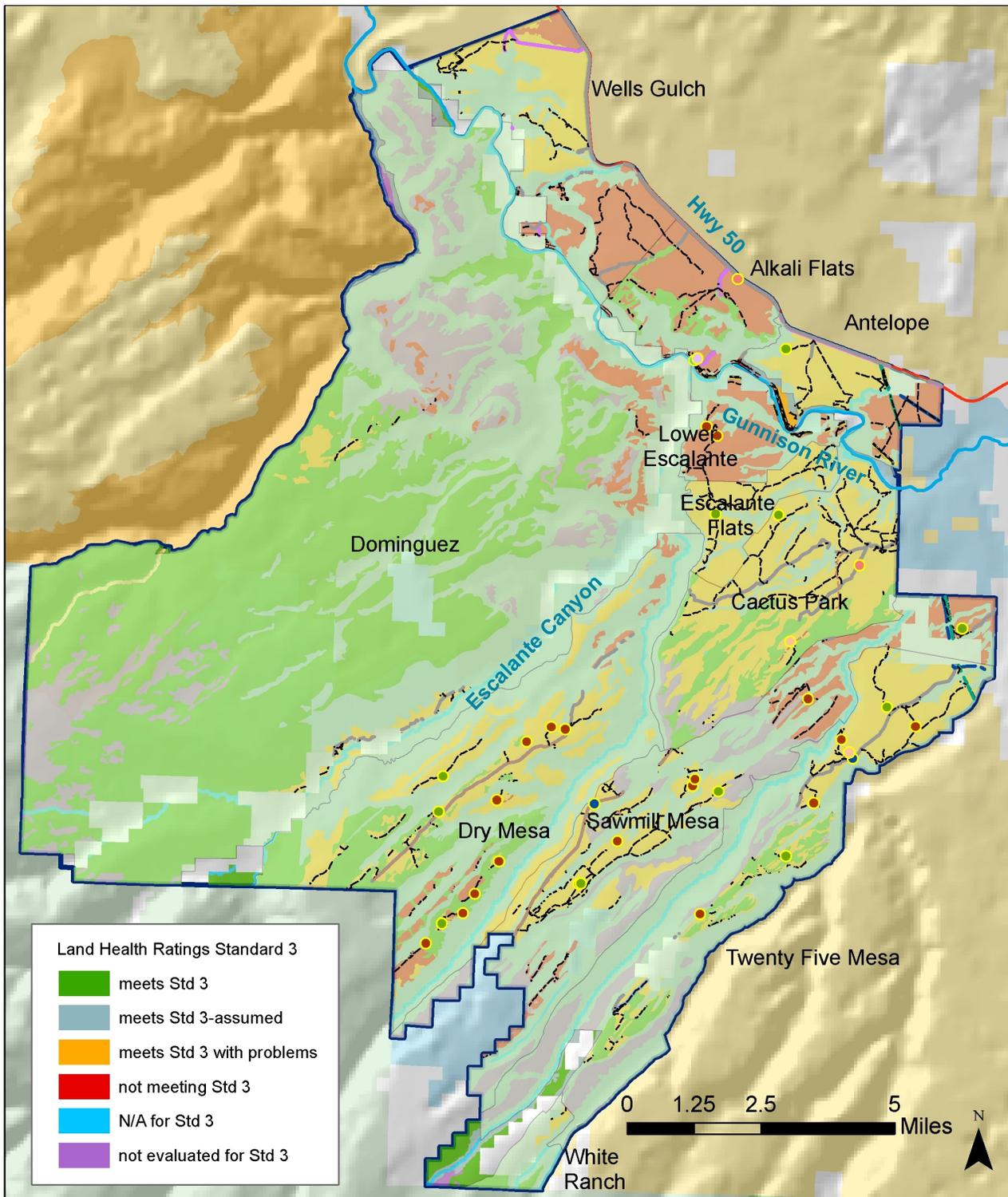
- Deer and elk use— current and historic
- Old vegetation treatments
- Historic livestock grazing
- Vegetation seral (structural) stage
- Recent vegetation treatment
- Pinyon-juniper invasion
- Fire
- Current livestock grazing-uplands
- Prairie dogs and anthills
- Nearby livestock reservoir
- Woodcuts

Types Which May Be Contributing to Standard 3 Health Problems in Escalante Unit

- BLM roads (119 miles)
- Road ROWs (50 miles)
- Stock, truck trails (12 miles)
- Powerline ROWs (8 miles)
- Telephone/fiber optic ROWs (8 miles)
- Gas pipeline ROW (3 miles)
- Railroad ROW (3 miles)
- Water pipeline/facilities (1 mile)
- Livestock reservoirs (18)
- Catchments (10)
- Cattleguards (2)
- Guzzlers (2)
- Corrals (2)
- Developed recreation site (boat launch-1)
- Gravel pit (1)

STANDARD 3 DETERMINATIONS AND DEVELOPMENTS

The map below shows those developments and uses in the Escalante unit which sometimes cause problems with plant and animal community indicators, and which also occur in lands determined to have health problems. Grazing allotments are shown with pale shading and labeled by name.



Land Health Ratings Standard 3

- meets Std 3
- meets Std 3-assumed
- meets Std 3 with problems
- not meeting Std 3
- N/A for Std 3
- not evaluated for Std 3

Development Type	● Reservoir	--- stock or truck trail	--- Roads ROW
● Catchment	● cattleguard	--- Gas pipeline ROW	--- Fiber optic ROW
● Developed Rec Site	● corral	--- BLM roads and trails	--- Telephone ROW
● Gravel Pit	● corrals	--- Power ROW	--- Water pipeline/ditch ROW
● Guzzler	● enclosure	--- Railroads ROW	

Causal Factors

STANDARD 4 SPECIAL STATUS SPECIES: CAUSES

Definition: Primary factors are identified as those activities, land uses, and environmental factors observable at moderate or higher levels at LHA study sites with TES indicator problems, while secondary factors occur at low levels. Likely causes are the primary factors which causal analysis suggests are more frequent at sites with health problems (See Appendix A.) Neutral or positive factors are those which analysis suggests do not occur more frequently at sites with health problems. Development analysis provides information about which types of developments may be contributing to TES Species health problems, both at a site specific level (more than 10% of the time), and in larger areas which have Standard 4 health problems. Information is taken from detailed summary tables in Appendix A.

Causal Factors on Undeveloped Areas:

Primary Factors Observed at Problem Sites

- Drought
- Noxious/invasive weeds
- Historic livestock grazing
- BLM roads
- Livestock grazing-riparian areas
- Water diversions
- Flow regulation from dams
- Livestock grazing-uplands
- Current and historic deer and elk use
- Old vegetation treatments
- Seral stage issues
- New vegetation treatment
- Prairie dogs and anthills
- Nearby livestock reservoir
- Channelization
- Historic cultivation
- Flood deposition
- Intermittent stream-flow
- Irrigation tailwater
- Nearby agricultural land
- Road encroachment
- Poor upstream water quality
- Tamarisk beetle
- Pinyon-juniper invasion
- Fire

Secondary Factors Observed at Problem Sites

- OHV use
- Dumping
- Erosion from uplands
- Mining
- Augmented streamflows
- Recreation impacts
- Road crossings of streams
- Watershed condition

Development Analysis:

Types Associated with Standard 4 Health Indicator Problems at the Site Level

- Road ROWs
- Gravel pit
- Gas pipeline ROW
- Power ROWs
- Fiber optic ROWs

Likely Causes and Contributing Factors

- Disease (i.e., plague)
 - Predation (insect herbivory on cactus)
 - Pollinator declines (TES plants)
 - Invasive species (i.e., rainbow trout)
 - Lower elevation, arid, poor recovery sites
 - Drought
 - Noxious/invasive weeds
 - Historic livestock grazing
 - BLM roads
 - Livestock grazing-riparian areas
 - Water diversions
 - Flow regulation from dams (Aspinall Unit)
 - Livestock grazing-uplands
- Italics* show causes which are known to be important but were not detectable during site visits

Likely Neutral or Positive Factors

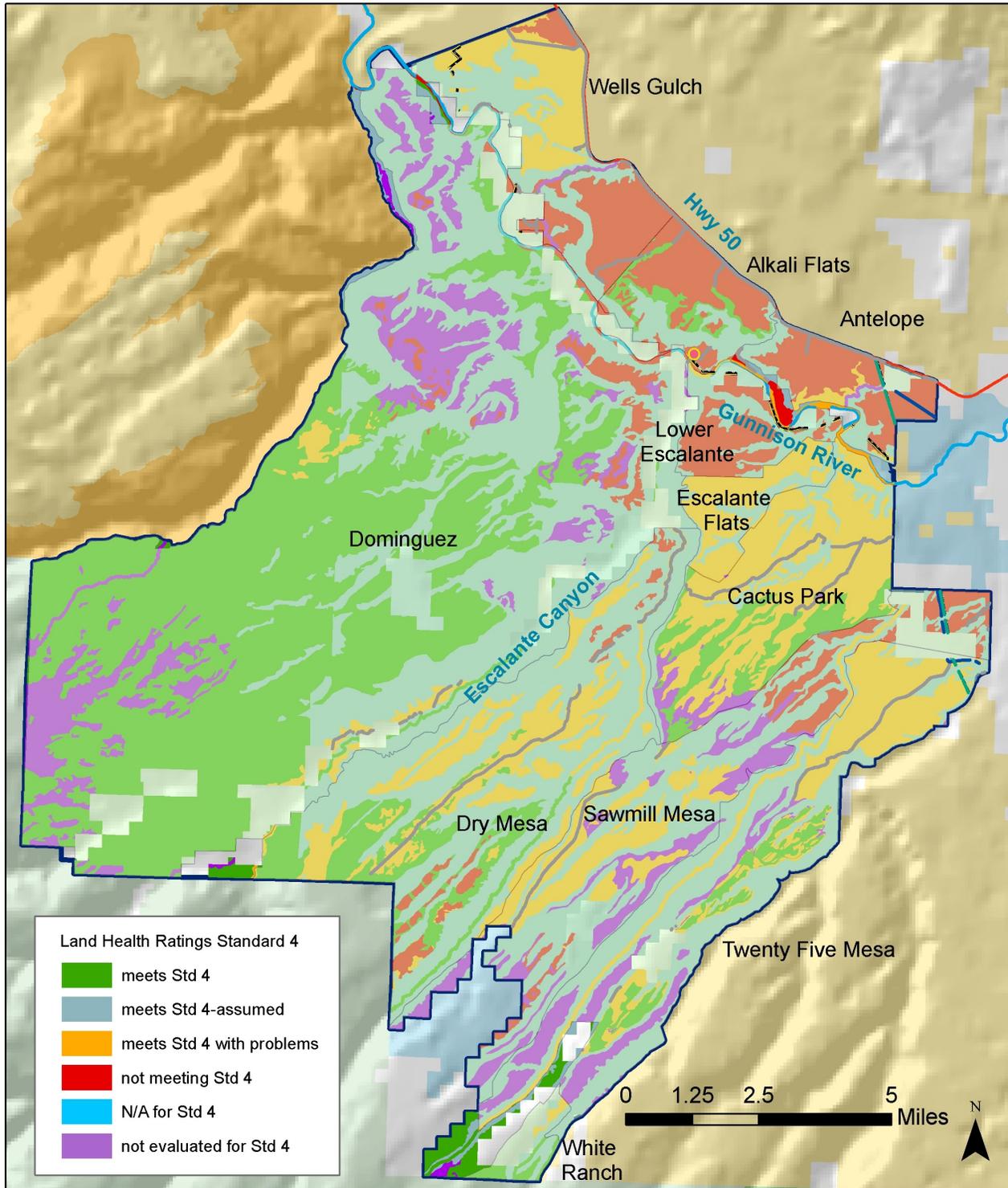
The remaining primary factors not listed above as likely causes.

Types Which May Be Contributing to Standard 4 Health Problems in Escalante Unit

- Road ROWs (52 miles)
- Gravel pit (1)
- Gas pipeline ROW (2.5 miles)
- Power ROWs (8.4 miles)
- Fiber optic ROWs (2.3 miles-on powerline)

STANDARD 4 DETERMINATIONS AND DEVELOPMENTS

The map below shows those developments and uses in the Escalante unit which sometimes cause problems with TES species indicators, and which also occur in lands determined to have TES health problems.



Developments and uses which are associated with TES species health indicator problems. Grazing allotments are shown with pale shading, and labeled by name.

STANDARD 5 WATER QUALITY: CAUSES

Definition: Primary Factors Causes are identified as those activities, land uses, and environmental factors observable at moderate or higher levels on or around sites having water quality problems. Activities, land uses and environmental factors which occur at low levels are considered to be additional contributing factors. Development analysis provides cause information about which types of developments are likely to negatively affect soil indicators at a site specific level. Causes for water quality problems are taken from Standard 1 and Standard 2 and Standard 5 tables in Appendix A.

Causal Factors on Undeveloped Areas:

Primary Factors Observed at Problem Sites

- Drought
- Historic grazing
- Noxious/invasive weeds
- BLM roads
- Current livestock grazing-riparian areas
- Linear ROWs (except for roads)
- Water diversions
- Flow regulation from dams
- Wildlife use
- Pinyon-juniper invasion
- Vegetation seral stage
- Historic deer use
- Fire
- Old vegetation treatments
- Woodcuts
- Prairie dogs and ant-hills
- Channelization
- Historic cultivation
- Flood deposition
- Intermittent stream flow
- Irrigation tailwater
- Nearby agricultural land
- Road encroachment into riparian area
- Poor upstream water quality
- Tamarisk beetle

Secondary Factors Observed at Problem Sites

- Current livestock grazing-uplands
- Nearby agricultural or residential land
- New vegetation treatment
- Drought
- Augmented streamflows
- Mining along Gunnison River
- OHV use
- Recreation impacts
- Road crossings of streams
- Watershed condition

Development Analysis:

Types Associated with Soil Health Indicator Problems at the Site Level

- BLM roads and trails
- Power ROWs
- Railroad ROW
- Road and highway ROWs
- Livestock and truck trails
- Developed springs
- Campsites
- Livestock reservoirs

Likely Causes and Contributing Factors

- Drought
- Historic grazing
- Noxious/invasive weeds
- BLM roads
- Current livestock grazing-riparian areas
- Linear ROWs (except for roads)
- Water diversions
- Flow regulation from dams (Aspinall unit)

Likely Neutral or Positive Factors

- Wildlife use
- Pinyon-juniper invasion
- Seral stage issues
- Historic deer use
- Old vegetation treatments
- Fire
- Channelization
- Historic cultivation
- Flood deposition
- Intermittent stream flow
- Irrigation tailwater
- Nearby agricultural land
- Road encroachment into riparian area
- Poor upstream water quality
- Tamarisk beetle
- Woodcuts
- Prairie dogs and anthills

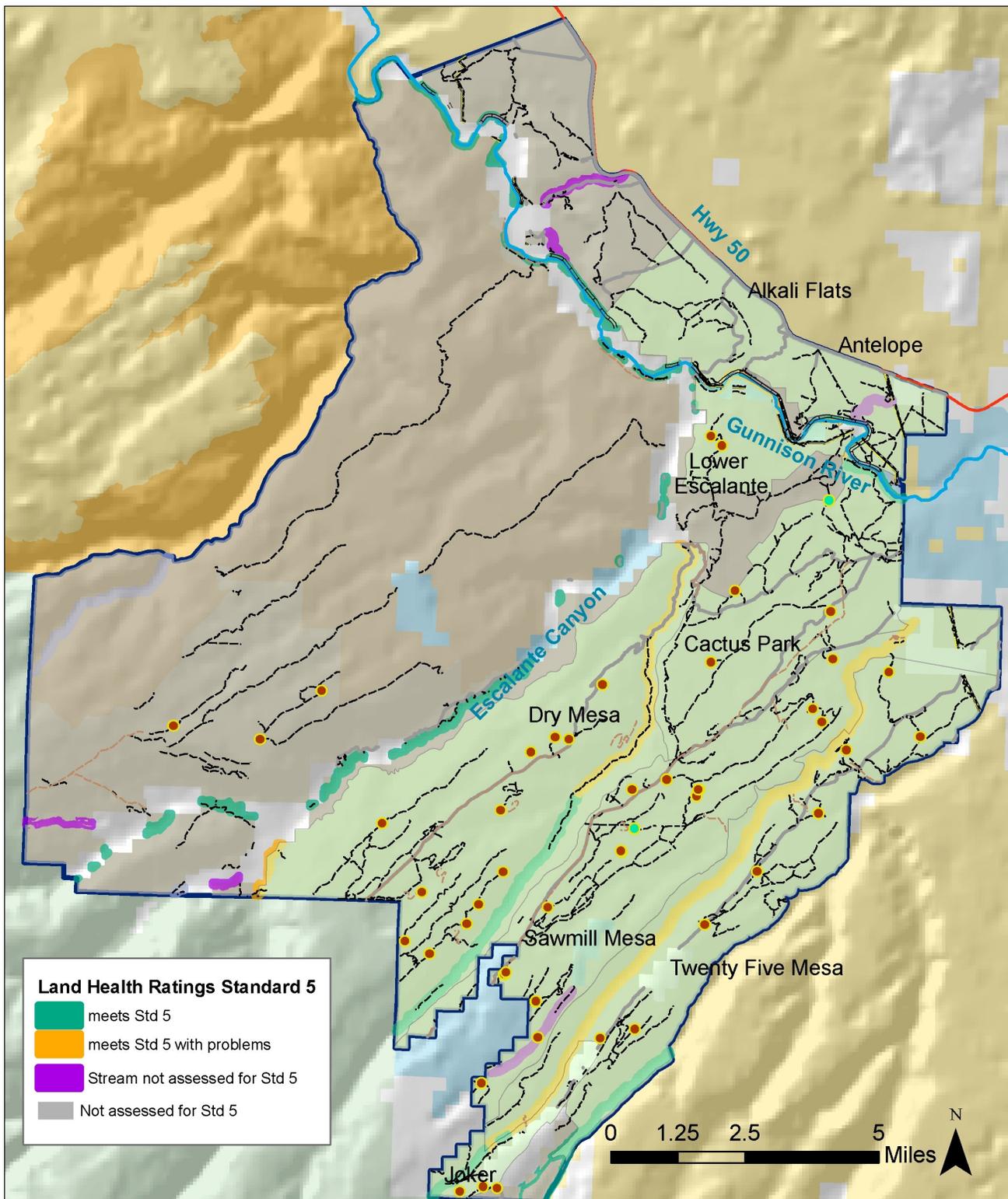
Types Which May Be Contributing to Soil Health Problems in Escalante Unit

- BLM roads and trails (5.4 miles)
- Power ROWs (0.5 miles)
- Railroad ROW (0.7 miles)
- Road and highway ROWs (2.4 miles)
- Livestock and truck trails (0.2 miles)
- Livestock reservoirs*
- Developed springs*

* While not located within the stream segments, many are within watersheds which feed into stream segments which have land health problems for Standard 5

STANDARD 5 DETERMINATIONS AND DEVELOPMENTS

The map below shows those developments and uses in the Escalante unit which sometimes cause problems with water quality indicators, and which also occur in lands determined to have water quality problems.



Developments and uses which are associated with water quality indicator problems. Grazing allotments are shown with pale shading and labeled by allotment name.

Causal Factors



REMEDIES—OVERVIEW

Definition: Remedies are the management actions which are needed to fix the land health problems that have been identified. They may directly address causal factors, or may simply repair damage on the ground. Remedies may take the form of revised stipulations or terms in permitted activities, proposed projects along with necessary budget requests and Proposed Action statements, or updated best management practices. Remedies may also take the form of monitoring, research, or enforcement, maintenance and compliance activities added to the Annual Work Plan (AWP), or daily work activities.

Explanation of Approach:

This Land Health Assessment is designed to promote improvement of land health conditions in the Escalante Unit. A systematic approach was followed to identify both general and specific remedies for the observed health problems. The approach started with identification of the types and locations of land health problems, then causal factors for these problems were evaluated. Next, recommended actions for each specific problem were developed. Tight linkage between problem, cause and remedy provides justification for taking management action, and provides information for establishing priorities.

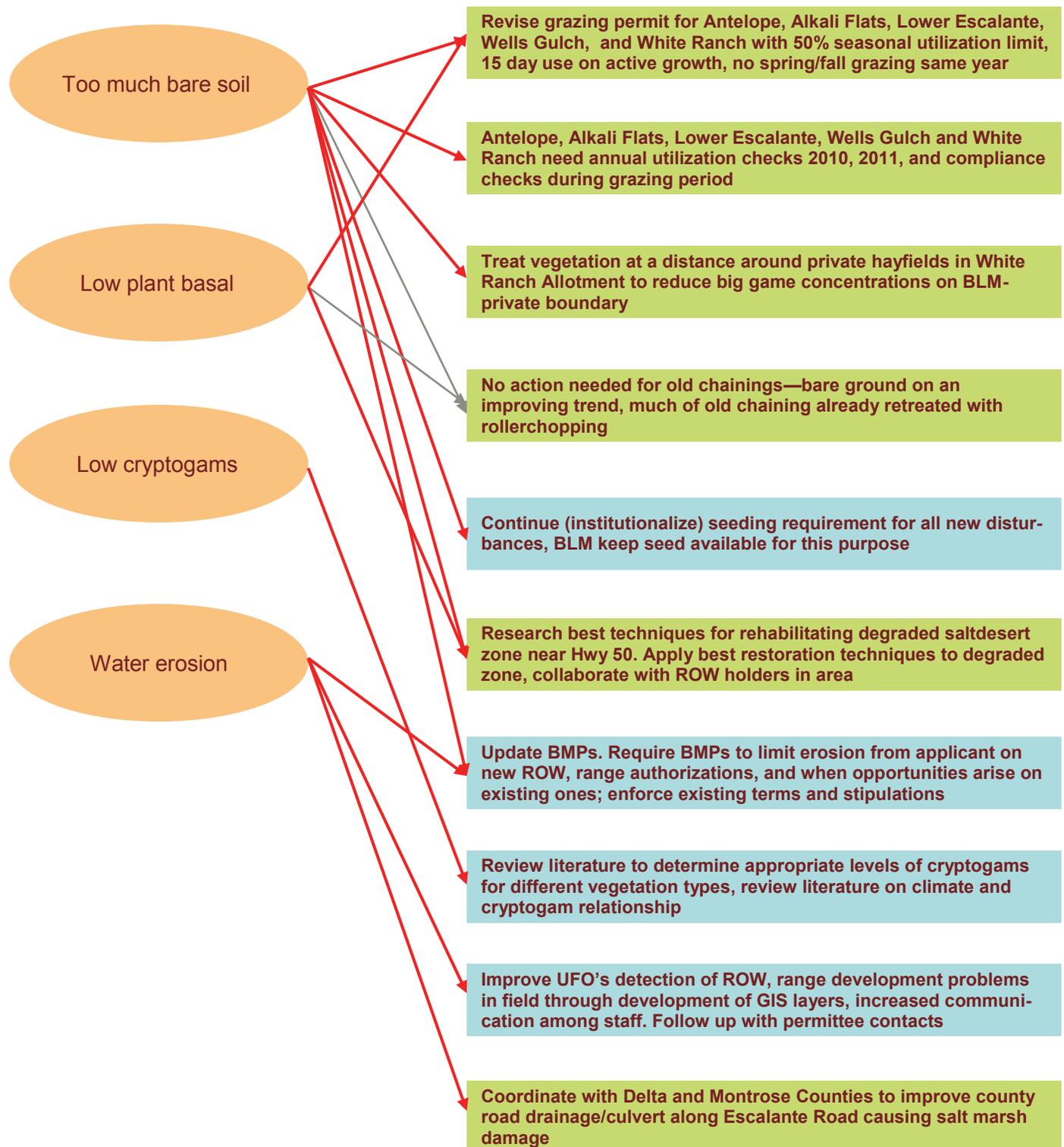
This page contains an overview of all recommended actions, classified by type. The following pages contain actions specific to each standard, and illustrate the link between problem and remedy.

Action	Type
Revise Escalante Grazing Permits with terms that protect soil, plants, and riparian areas.	Revised permit terms
Monitor land health problem allotments for utilization and compliance.	Monitoring and compliance
Treat vegetation for numerous benefits: interseeding, crested wheatgrass diversity improvements, spot thinning of woodland, shrub reinvigoration, fire, slashing of whips in rollerchops.	Proposed project
Institutionalize seeding requirement for soil disturbances, including maintenance projects and keep store of seed available for this.	Develop Standard Operating Procedure
Research salt desert restoration, apply successful techniques to damaged areas south of Hwy 50.	Proposed project
Update BMPs for soil erosion (including runoff and drainage), standard seed mixes, reclamation. Include in new authorizations and as opportunities such as reauthorizations.	Best Management Practice development, monitoring and compliance
Review literature to identify appropriate level of cryptogams for Escalante systems, climate's influence on cryptogams, woodlands, and understory.	Proposed project, monitoring
Facilitate field staff's observation and reporting of compliance issues to appropriate specialist.	Develop Standard Operating Procedure, improved maps
Enforce authorizations or cooperative solutions for specific problems identified in LHA-e.g. county road drainage,	Compliance
Inventory likely contributing developments in problem areas, enforce terms, maintain or repair as needed.	Monitoring and compliance
Maintain, repair or reclaim problem developments identified in this LHA including reservoirs, campsites, boat launch, spring developments, fences, etc, through enforcement of permits or direct action.	Compliance, proposed project
Coordinate with railroad on riparian-friendly weed control, bank stabilization.	Compliance
Monitor effects of new Gunnison River flows, climate change, tamarisk beetles on land health.	Monitoring
Priorities for weed treatment are the Gunnison River, BLM roads, water sources, and the gravel pit reclamation, in land health problem areas.	Weed program implementation
Add protective stipulations to fuelwood harvest.	Revised permit terms
Build weed program capacity and develop approaches to consistent approaches to cover weeds across all programs.	Develop Standard Operating Procedure
Participate in Selenium Management Group.	AWP
Reduce road density through travel management planning.	Proposed project, Resource Management Plan

STANDARD 1 SOILS: REMEDIES

Explanation: Remedies developed by the interdisciplinary teams are shown in the boxes below. The link between remedies and soil problems (shown in tan ovals) is illustrated by the red arrows. Green boxes show site specific actions which are needed to address soil health problems. Blue boxes show more generalized actions which are important to prevent further soil health problems from occurring and to better detect and address problems in this unit as they arise. Gray lines show the relationship between a problem and a recommendation that no action is needed. Additional specific developments needing action are derived from Standard 1 Cause map and listed at right.

Remedies



STANDARD 1 SOILS: REMEDIES

The following developments should be inspected for condition and compliance, because they belong to development types associated with soil health problems, and they occur in lands determined to have health problems:

- Tatum retention dam, the nearby unnamed reservoir to the northwest, and Reservoir B699 in 25 Mesa allotment
- North chaining catchment in 25 Mesa allotment
- BLM roads on accessible terrain in Wells Gulch, Alkali Flats, the eastern portion of Antelope allotments, as well as Lower Escalante allotment. Roads in the old chaining on 25 Mesa allotment, and BLM trails on Camp and Tatum Ridges in Dominguez allotment
- The following ROWs: Roads COC 42671, COC 42672, COC 0-128397, Hwy 50 COC 0-10477, and COC 53296, water facility COC 0-26571, powerline COC 0-61163, COC 57740, COC 29423, COC 38389, railroad COC 0-93947, COC 35388, gas pipeline COC 51280, telephone COC 52823, COC 53004, COC 53622, and fiber optic COC 63427.

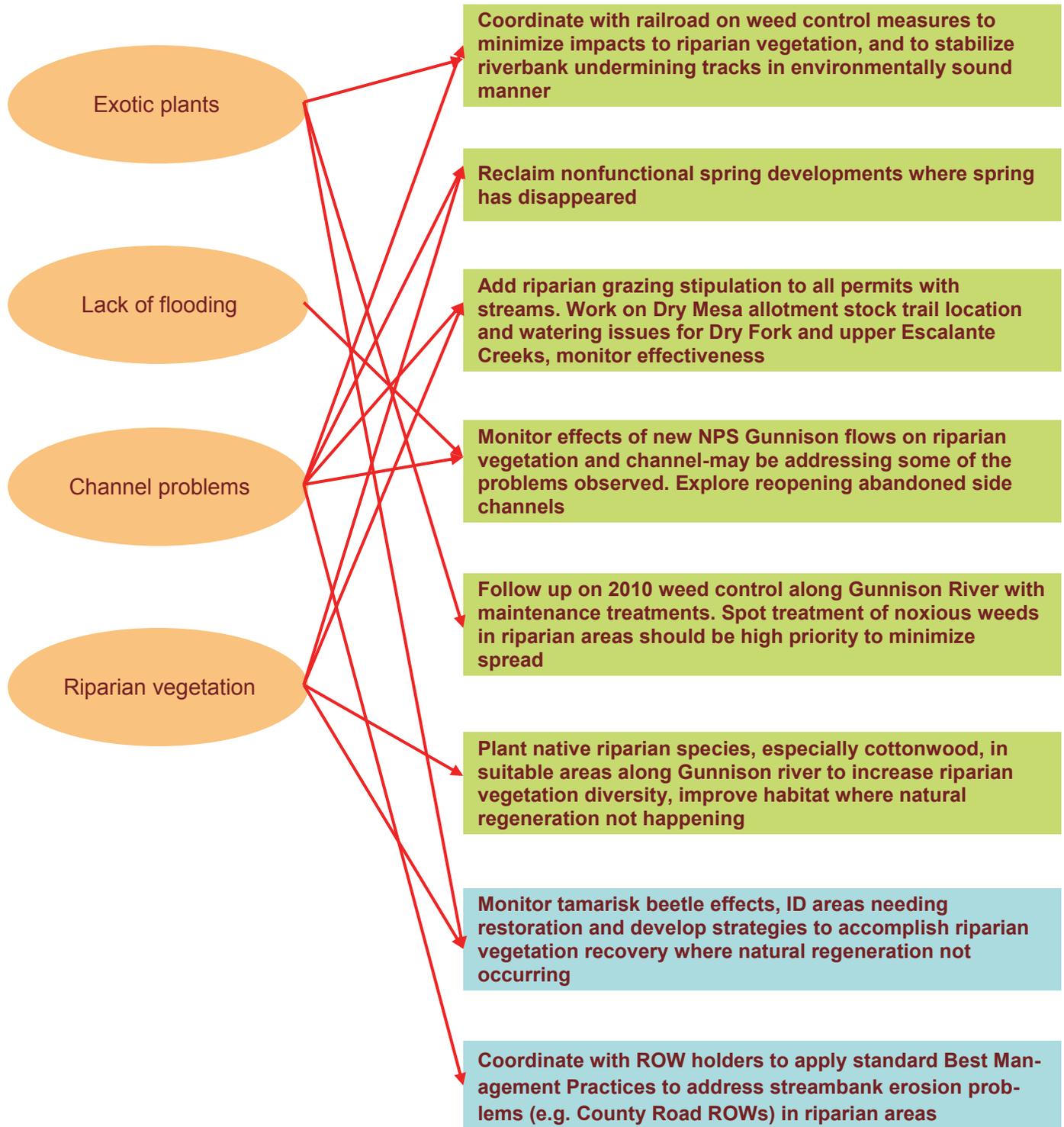
The following developments which occur in soil health problem areas were inspected during the LHA and found to have problems. They are listed together with specific actions needed to address the health problems

- Antelope Rest Area (CDOT ROW) needs to be more effectively rehabilitated and closed, use still occurring and bare soil problems.

STANDARD 2 RIPARIAN: REMEDIES

Explanation: Remedies developed by the interdisciplinary teams are shown in the boxes below. The link between remedies and riparian problems (shown in tan ovals) is illustrated by the red arrows. Green boxes show site specific actions which are needed to address riparian health problems. Blue boxes show more generalized actions which are important to prevent further riparian health problems from occurring and to better detect and address problems in this unit as they arise. Additional actions are derived from the Standard 2 cause map and listed at right.

Remedies



STANDARD 2 RIPARIAN: REMEDIES

The following developments should be more completely inspected for condition and compliance along their lengths, because they belong to development types associated with riparian health problems, and they occur in lands determined to have health problems:

- Delta county road ROW along Gunnison River and Dry Fork of Escalante Creek

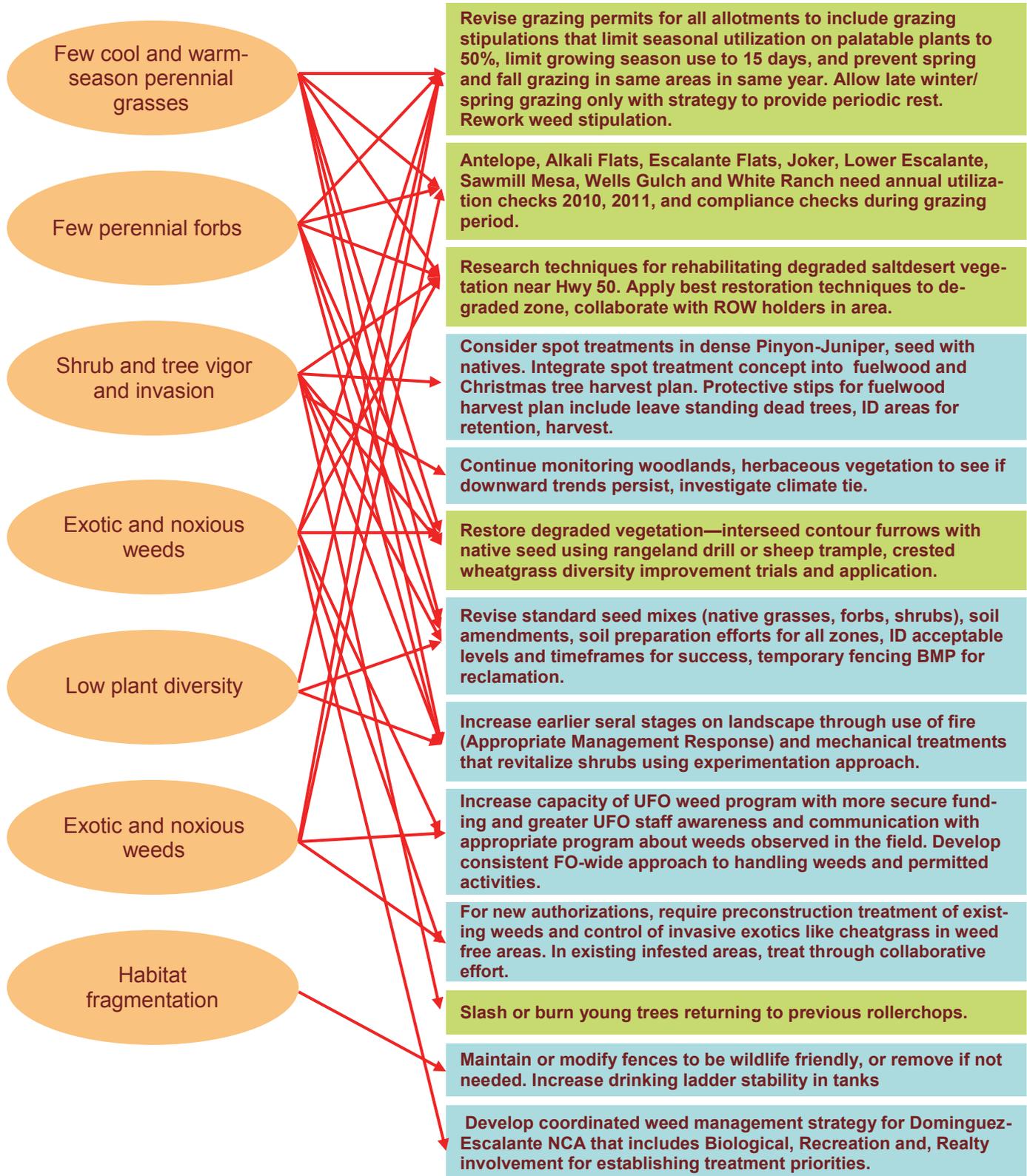
The following developments which occur in riparian health problem areas were inspected during the LHA and found to cause problems with riparian indicators. They are listed together with specific actions needed to address the health problems:

- Boater camp (sample point 33) shows no sign of use and poorly set up, lacks good landing area, sleeping areas, and filled with tall sagebrush. Has conflicts with cattle
- The Escalante Boat Launch needs to have parking areas and the actual put-in redefined to prevent further expansion and destruction of riparian vegetation. Regular weed control is needed at this site, particularly in areas where people, boats and vehicles and other equipment are passing through weeds and could be a vector for transmission. Recommend rehabilitating much of existing site and moving river access across road upstream
- Railroad ROW along the Gunnison River-observed problems with weed spraying killing non-target riparian species, also tracks are threatened by unstable riverbank. Railroad has used some inappropriate rip-rap material. This needs collaborative effort with BLM to minimize riparian damage.

STANDARD 3 PLANT & ANIMAL COMMUNITIES: REMEDIES

Explanation: Remedies developed by the interdisciplinary teams are shown in the boxes below. The link between remedies and plant and animal community problems (shown in tan ovals) is illustrated by the red arrows. Green boxes show site specific actions which are needed to address community health problems. Blue boxes show more generalized actions which are important to prevent further community health problems from occurring and to better detect and address problems in this unit as they arise. Additional actions are derived from the Standard 3 cause map and listed at right.

Remedies



STANDARD 3 PLANT & ANIMAL COMMUNITIES: REMEDIES

The following developments should be inspected for condition and compliance, because they belong to development types which cause problems with Standard 3 indicators, and they occur in lands determined to have plant and animal community health problems:

- BLM roads in the southeast half of the Escalante unit, and between the highway and the river should be compared with the weed inventory map, Noxious weed infestations should be treated regularly
- Livestock trails in 25 Mesa, Sawmill Mesa, Cactus Park and Dry Mesa should be compared with the weed inventory map, and infestations treated
- The following ROWs should be evaluated against the weed inventory map for compliance with noxious weed stipulations: Gas pipeline COC 51280; Powerline COC 38389, COC 57740, COC 061163, and COC 29423; Railroad COC 093947, COC 35388; Roads COC 42671, COC 0128397, COC 30979, COC 42672, COC 48612, COC 53296, COC 015543; Telephone and fiber optic COC 52823, COC 53004, COC 53633, COC 35417; and Water Facilities COC 26571
- 12 catchments and guzzlers located in Dry Mesa, 25 Mesa, Sawmill Mesa and Escalante Flats allotments should be inspected and treated for weeds, and stable wildlife escape ladders should be installed in the tanks
- 2 cattleguards on Sawmill Mesa and 25 Mesa road should be inspected and treated for weeds
- 2 corrals on Cactus Park and 25 Mesa allotments should be inspected and treated for weeds and loose wires. All loose wires which are a wildlife hazard should be repaired
- The Delta and Escalante turnoff exclosures should be inspected for loose wire, and if found they should be repaired to eliminate a wildlife hazard
- The Escalante gravel pit needs to be reclaimed
- 18 livestock reservoirs in 25 Mesa, Sawmill Mesa, Dry Mesa and Lower Escalante should be regularly treated for weeds, and those that are not needed for livestock or wildlife should be reclaimed to prevent weed problems from reoccurring

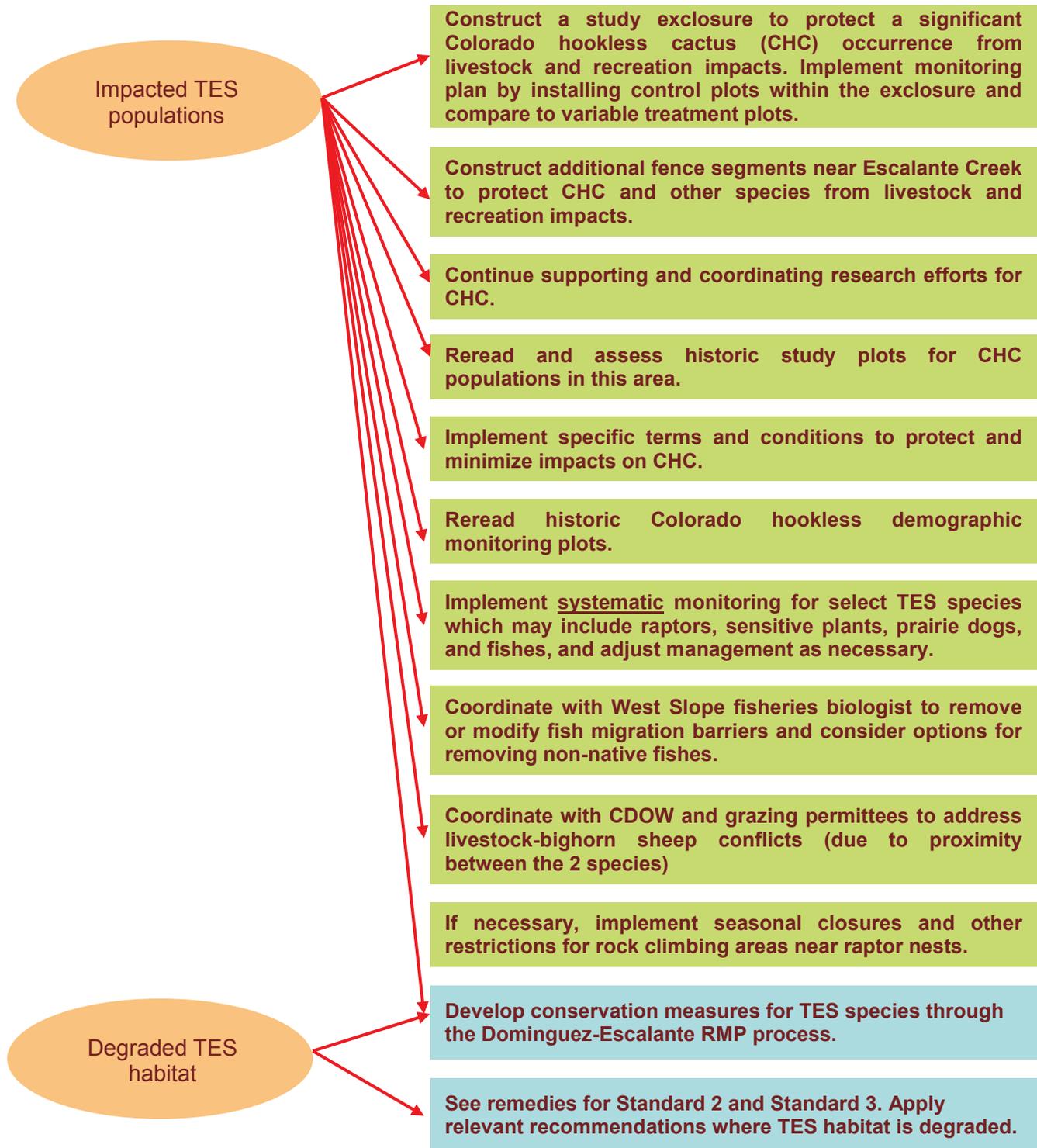
The following developments which occur in plant and animal communities with problems were inspected during the LHA and found to cause problems with Standard 3 indicators. They are listed together with specific actions needed to address the health problems:

- Club Gulch reservoir in Cactus Park allotment needs weed control to prevent further spread
- The Narrows catchment in 25 Mesa allotment needs weed control to prevent further spread, installation of a stable wildlife escape ladder
- The B Davis Corral in 25 Mesa allotment needs to be removed if abandoned as appears. Loose wires are a wildlife hazard
- Dry Mesa Reservoir #1 in Dry Mesa allotment has a spillway failure, needs to be cleaned and repaired or removed to prevent damage to soils, plants up and down stream
- Campsite #3 uphill of the Potholes Rec Site, the access road has water erosion occurring on it
- Antelope Rest Area (CDOT ROW) needs to be more effectively closed and rehabilitated with native species. Existing rehab has not adequately revegetated area.

STANDARD 4 SPECIAL STATUS SPECIES: REMEDIES

Explanation: Remedies developed by the interdisciplinary teams are shown in the boxes below. The link between remedies and TES species problems (shown in tan ovals) is illustrated by the red arrows. Green boxes show site specific actions which are needed to address TES species health problems. Blue boxes show more generalized actions which are important to prevent further TES species health problems from occurring and to better detect and address problems in this unit as they arise. Additional actions are derived from the Standard 4 cause map and listed at right.

Remedies



STANDARD 4: REMEDIES

The following developments should be inspected for condition and compliance, because they belong to development types which cause problems with plant and animal community indicators, and they occur in lands determined to have health problems:

*Note that these are the same remedies shown under Standard 2 and Standard 3.

- Delta county road ROW along Gunnison River and Dry Fork of Escalante Creek
- BLM roads in the southeast half of the Escalante unit, and between the highway and the river should be compared with the weed inventory map, Noxious weed infestations should be treated regularly
- Livestock trails in 25 Mesa, Sawmill Mesa, Cactus Park and Dry Mesa should be compared with the weed inventory map, and infestations treated
- The following ROWs should be evaluated against the weed inventory map for compliance with noxious weed stipulations: Gas pipeline COC 51280; Powerline COC 38389, COC 57740, COC 061163, and COC 29423; Railroad COC 093947, COC 35388; Roads COC 42671, COC 0128397, COC 30979, COC 42672, COC 48612, COC 53296, COC 015543; Telephone and fiber optic COC 52823, COC 53004, COC 53633, COC 35417; and Water Facilities COC 26571
- 12 catchments and guzzlers located in Dry Mesa, 25 Mesa, Sawmill Mesa and Escalante Flats allotments should be inspected and treated for weeds, and stable wildlife escape ladders should be installed in the tanks
- 2 cattleguards on Sawmill Mesa and 25 Mesa road should be inspected and treated for weeds
- 2 corrals on Cactus Park and 25 Mesa allotments should be inspected and treated for weeds and loose wires.
- All loose wires which are a wildlife hazard should be repaired
- The Delta and Escalante turnoff exclosures should be inspected for loose wire, and if found they should be repaired to eliminate a wildlife hazard
- The Escalante gravel pit needs regular weed inspection and treatment during reclamation
- 18 reservoirs in 25 Mesa, Sawmill Mesa, Dry Mesa and Lower Escalante should be regularly treated for weeds, and those that are not needed for livestock or wildlife should be reclaimed to prevent weed problems from reoccurring.

The following developments which occur in TES habitat with problems were inspected during the LHA and found to have problems. They are listed together with specific actions needed to address the health problems:

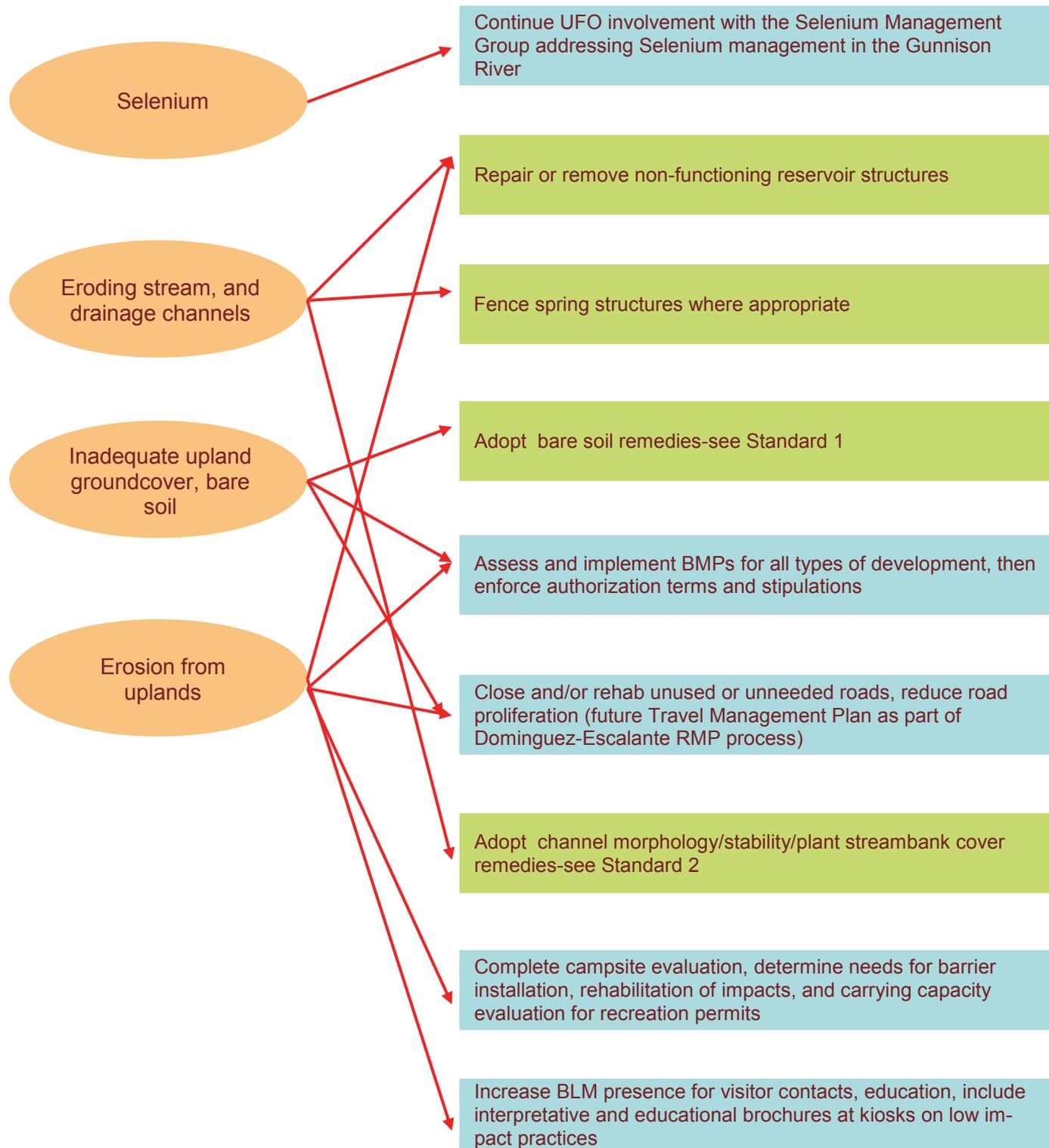
*Note that these are the same remedies shown under Standard 2 and Standard 3.

- Boater camp (sample point 33) shows no sign of use and poorly set up, lacks good landing area, sleeping areas, and filled with tall sagebrush. Has conflicts with cattle
- The Escalante Boat Launch needs to have parking areas and the actual put-in redefined to prevent further expansion and destruction of riparian vegetation. Regular weed control is needed at this site, particularly in areas where people, boats and vehicles and other equipment are passing through weeds and could be a vector for transmission. Recommend rehabilitating much of existing site and moving river access across road upstream
- Railroad ROW along the Gunnison River-observed problems with weed spraying killing non-target riparian species, also tracks are threatened by unstable riverbank. Railroad has used some inappropriate rip-rap material. This needs collaborative effort with BLM to minimize riparian damage
- Club Gulch reservoir in Cactus Park allotment needs weed control to prevent further spread
- The Narrows catchment in 25 Mesa allotment needs weed control to prevent further spread, installation of a stable wildlife escape ladder
- The B Davis Corral in 25 Mesa allotment needs to be removed if abandoned as appears. Loose wires are a wildlife hazard
- Dry Mesa Reservoir #1 in Dry Mesa allotment has a spillway failure, needs to be cleaned and repaired or removed to prevent damage to soils, plants up and down stream
- Campsite #3 uphill of the Potholes Rec Site, the access road has water erosion occurring on it
- Antelope Rest Area (CDOT ROW) needs to be more effectively closed and rehabilitated with native species.

STANDARD 5 WATER QUALITY: REMEDIES

Explanation: Remedies developed by the interdisciplinary teams are shown in the boxes below. The link between remedies and water quality problems (shown in tan ovals) is illustrated by the red arrows. Green boxes show site specific actions which are needed to address water quality problems. Blue boxes show more generalized actions which are important to prevent further water quality problems from occurring and to better detect and address problems in this unit as they arise. Additional actions are derived from the Standard 5 cause map and listed at right.

Remedies



STANDARD 5 WATER QUALITY: REMEDIES

The following developments should be inspected for condition and compliance, because they belong to development types which cause problems with Standard 5 indicators, and they occur in lands determined to have water quality problems:

- Livestock trails going into the bottom of Cottonwood Creek should be evaluated for erosion, and water-barred if necessary
- BLM roads along Dry Fork of Escalante and the Gunnison River floodplain should be evaluated for erosion, and water-barred if necessary
- The following ROWs should be checked for compliance with erosion control measures: road ROWs COC 42671, and COC 31631; power line COC 57740, telephone COC 52823, and railroad COC 0-93947 and COC 35388

The following developments which occur in areas with water quality problems were inspected during the LHA and found to cause problems with Standard 5 indicators. They are listed together with specific actions needed to address the health problems:

- The railroad ROW had been stabilized with boulders that appeared to be raw Mancos shale. These should either be removed, or if not, BLM needs to work with the railroad to select appropriate rip-rap material and channel stabilization approaches
- Negro Spring development needs maintenance or removal to prevent erosion
- The Escalante Boat Launch needs to have parking areas and the actual put-in redefined to prevent further expansion and destruction of riparian vegetation. Regular weed control is needed at this site, particularly in areas where people, boats and vehicles and other equipment are passing through weeds and could be a vector for transmission. Recommend rehabilitating much of existing site and moving river access across road upstream
- The following reservoirs need sediment removal, repair, or reclamation if no longer needed for livestock management: Club Gulch Reservoir, Sawmill Mesa Reservoir #3, Little Mesa Reservoir #1, Lockhart Reservoir #1, Davis Dam #3, Dry Mesa Reservoir #1, Stone Basin Reservoir and gabion structures, Boyce Gulch Reservoir, Monitor Mesa Reservoir #7
- The Narrows catchment needs repair of the float valve to prevent tank from spilling over and eroding site
- The campsites (ID#38, 40) near Potholes Rec Site need water bars or other sediment controls to stop excessive erosion along the access road and camping area itself
- The Montrose County portion of the Escalante Canyon road needs improved drainage, bar ditches, improved cross drainage, possibly hardened water crossings and/or larger culverts
- The road used by the Negro Gulch truck trail needs cross drainage from upslope runoff
- The road used by Palmer Gulch truck trail is deeply rutted and needs drainage improvements
- The road along the North Fork of Escalante Creek had drainage and sediment issues, needs cross drainage.