

WESTERN SLOPE
CONSERVATION
CENTER 

Forest Planning Team
GMUG National Forest
2250 Highway 50
Delta, CO 81416

December 8, 2017

Re: Comments on Draft Assessment Report

Dear GMUG Planning Team,

Please accept the following comments for consideration and incorporation in the Grand Mesa, Uncompahgre and Gunnison (GMUG) National Forest Land and Resource Management Plan revision from the Western Slope Conservation Center (WSSC). The WSSC is a grassroots non-profit with 600 members who live in the North Fork Valley and Western Slope of Colorado. The WSSC has a 40-year legacy of conservation environmental resources in the North Fork Valley, and we are dedicated to the mission of building an active and aware community to protect and enhance the lands, air, water and wildlife of the Lower Gunnison Watershed.

This submission, on behalf of WSSC's Watershed Stewardship Subcommittee, addresses the Draft Assessments on *Watersheds*, *Water*, *Soil Resources* and *Aquatic and Riparian Ecosystems* dated November 2017. We appreciate the tremendous time and effort put forth in these assessment, as well as the opportunity to comment on these very important chapters.

WSSC's Watershed Stewardship Subcommittee is comprised of environmental scientists, engineers, biologists, farmers, recreationists, and other volunteers who are passionate about our water resources. Water - including surface water, irrigation water, domestic water, and groundwater - is the lifeblood of the Western Slope of Colorado. The Grand Mesa, Uncompahgre, and Gunnison National Forests are the headwaters for rivers and streams. Protecting our water at its source, as well as maintaining intact aquatic and riparian ecosystems, is critical for the health of our forests and the wildlife and communities they support.

The attached spreadsheet outlines specific concerns, deficiencies, or information gaps in the aforementioned Draft Assessments. Please feel free to contact us with any questions about information in these comments. Thank you for your consideration.

Sincerely,



Patrick Dooling
Associate Director, Western Slope Conservation Center

| GMUG Assesment Document / and reference | Topic | Brief Summary | Concern | Substantive Comment |
|--|---|---|--|--|
| Watersheds, Water, Soil Resources / Chapter 1, pg 2, first paragraph | climate change effects | States climate change effects unknown at this time,and research would be beneficial | Information is readily available on this matter | Suggest using U.S. Geological Survey National Climate Change Viewer to obtain climate change information specific to counties of interest |
| Watersheds, Water, Soil Resources / Chapter 2, pg 3, first paragraph | maps | SNOTEL stations | Where are the 5 SNOTEL stations for which precipitation data are provided in Figure !? | It would be helpful to provide a map showing the locations of the SNOTEL sites. In general, other maps in this report would also be helpful for the reader. |
| Watersheds, Water, Soil Resources / Chapter 2, pg 3, last paragraph | baseflow | Statement about reaching baseflow levels in late August to early September | Late summer streamflows may also be from irrigation return flows, such as at USGS gage 09132500 | In some GMUG streams, irrigation return flows are also a source of flow to streams in late summer and fall, not just groundwater, so suggest discussing in this paragraph. |
| Watersheds, Water, Soil Resources / Chapter 2, pg 3, last paragraph | hydrographs | Description of streamflow hydrograph | Using only one flow gage and one year of data to describe streamflow hydrograph for all of GMUG area is not adequate | Suggest using gage data for the past 10-20 years at half a dozen locations at varying altitudes and watersheds to describe and illustrate the variability in streamflow hydrographs within the GMUG area for the past 10-20 years. |
| Watersheds, Water, Soil Resources / Chapter 2, pg 5, first paragraph | 2010 assessment of watershed conditions | Defining areas of needed restoration | Changes may have occurred to some watersheds over the past 7 years | Should this assessment of watershed conditions and defining areas of needed restoration be updated to 2017 conditions, at least in areas known to have changed since 2010? |

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|---|--|--|---|--|
| Watersheds, Water, Soil Resources / Chapter 2, pg 9, Table 5 | list of watersheds that could degrade | list of watershed names and HUICS | Crawford Reservoir is not in the North Fork Gunnison River basin and is not a watershed | Does this refer to all of the watershed that supplies water to Crawford Reservoir? If so, please make clear. Also, Crawford Reservoir is in the Smith Fork basin, which is tributary to the mainstem Gunnison River. |
| Watersheds, Water, Soil Resources / Chapter 2, pg 11, first paragraph and Table 6 | Miller et al reference | Miller et al reference used in first paragraph and Table 6 | In first paragraph, reference is to Miller et al 2016, and in Table 6 it is Miller et al 2014. Are these two different references? There are no Miller et al references in the report's reference list at the end (page 29). | Fix Miller et al references if they are indeed the same (2014 or 2016) and include the reference in the references section. Make sure all references in the report are provided in the references section. |
| Watersheds, Water, Soil Resources / Chapter 2, pg 12, last paragraph | paragraph on unpaved roads as sediment sources | This discussion is within the Stream Connectivity section | The issue with unpaved roads is that they are sources of fine sediment to streams, and it is unclear how this is related to stream connectivity. Sediment movement from unpaved roads to streams is a very important issue on National Forest land that warrants its own section. | Either explain why this section belongs under stream connectivity, or put this paragraph in a new section called something like "Unpaved Roads as Sediment Sources to Streams." |
| Watersheds, Water, Soil Resources / Chapter 2, pg 13, third paragraph in Stream Density section | ranges of stream density in the GMUG area | Lists entire GMUG range of 0 to 8.9 mi/sq. mi and 97% range of 1.8 to 5.4 mi/sq. mi. | Don't understand what this range means in terms of what is described in the first two paragraphs of this section. | Put the ranges in context. For example, is 5.4 mi/sq. mi a high stream density, medium stream density, or what? In general, how do stream densities in different parts of the GMUG area compare? Are there some areas of concern due to high stream density? |
| Watersheds, Water, Soil Resources / Chapter 2, pg 13, last paragraph | water yield in the GMUG area | GMUG area produces approximately 2.8 million acre-feet of runoff | It is unclear what this volume represents. | If this is an average annual yield for the entire GMUG area, please state so. Also, if a range of lowest to highest yield is available, that would be very useful information to provide. |

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|---|--|---|--|---|
| Watersheds, Water, Soil Resources / Chapter 2, pg 14, fourth paragraph | range and average watershed yields in inches | Yield ranges from 1.5 to 36.9 inches in GMUG sub-watersheds, and averages 10.9 inches. | This is a very wide range in yield, and is not very informative without more information. | It would be helpful to provide the yields, as well as average elevation, of all 235 sub-watersheds in the GMUG area. A map of the 235 watersheds (or a website reference showing such a map) would be very helpful. |
| Watersheds, Water, Soil Resources / Chapter 2, pg 14, first paragraph in Water Quality section | CO WQCC Regulation No. 35 | Regulation No. 35 has been updated several times by the WQCC since 2015 | Need to refer to the most recent version of this regulation. Are there any changes or new sections that are relevant to this report? | Update reference to most recent version of Regulation 35. |
| Watersheds, Water, Soil Resources / Chapter 2, pg 14, second paragraph in Water Quality section, and page 15, Table 8 | Outstanding Waters list | discussion of Outstanding Waters and listing of stream segments in TAbLe 8 | What is the source of the outstanding segments? Is this list up-to-date as of 2017? | Add reference to the CO WQCC regulation that lists these Outstndng Waters segments. |
| Watersheds, Water, Soil Resources / Chapter 2, pages 16-17, Table 9 | Impaired Streams list | Table 9 list of impaired stream segments and reasons for impairment | What is the source of the impaired segments and the information provided in Table 9? Is this list and information up-to-date as of 2017? | Add reference to the CO WQCC regulation that lists Impaired stream segments (Regulation No. 93, November 2016). |
| Watersheds, Water, Soil Resources / Chapter 2, page 18, first paragraph | Water supplies | First sentence states that a number of communities rely on surface water and groundwater for their public drinking water supplies | A number of the providers listed in Table 10 are not public entities, nor do they provide water to communities. | Clarify that some of the providers are private water companies that provide water for domestic use to residences outside of municipalities |
| Watersheds, Water, Soil Resources / Chapter 2, page 18, first paragraph | Water supplies | Paragraph states that there are numerous groundwater based water providers | Table 10 provides very useful information about surface water dependent water providers (note that the Provider is missing for 140200-012) , but there is no similar table for the groundwater dependent water providers | Provide a similar table for groundwater dependent providers in GMUG area with geographic area, ID, spring or well, type of use (e.g. campground, domestic use for homes, etc.) |

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|--|-------------------------------------|---|---|---|
| Watersheds, Water, Soil Resources / Chapter 2, page 20, Mass Failure paragraph | Water use and development | Last sentence in paragraph states that of the 235 subwatersheds, about 70% have some level of water development | Is it correct that 30% of the subwatersheds do not have any diversions of surface water or use of groundwater from springs or wells? That seems unlikely in Colorado. The last paragraph on page 20 states that new diversions are not expected on GMUG lands, but isn't there any interest in using surface water or groundwater in these undeveloped subwatersheds? | Provide more information on subwatersheds that do not contain any water development, and why. In Chapter 5, explain how currently undeveloped subwatersheds will be protected in the future to prevent adverse environmental impacts. |
| Watersheds, Water, Soil Resources / Chapter 2, page 24, first and last paragraph | Mass failure areas in the GMUG area | Last sentence mentions the rock avalanche near Collbran | The GMUG area contains many unstable slopes where mass failure can and does occur, but only one location is mentioned. What about areas considerable sediment to surface water bodies? Do GMUG staff monitor other potential mass failure locations? Are GMUG staff implementing any practices to prevent or reduce mass failure in the GMUG area? | Provide information on other areas of concern in the GMUG area with regards to possible mass failure. Include sites that provide large sediment input to surface water. Provide information on monitoring of unstable areas and any practices being used or planning to be used to prevent or reduce mass failure in the GMUG area. |
| Watersheds, Water, Soil Resources / Chapter 5, page 27, first full paragraph | Water yield | Sentence states that precipitation is fairly constant in the long term | This may no longer be true with climate change effects | Need to consider climate change effects in forest plan direction for the "best optimum long-term water yield, water quality, magnitude and timing of flows, and healthy aquatic and terrestrial ecosystems." |
| Watersheds, Water, Soil Resources / Chapter 5, page 27, first full paragraph | Water yield | Discussion about the basal area of a watershed | What is the basal area of a watershed? | Please define this term. |
| Watersheds, Water, Soil Resources / Chapter 5, page 27, second to last paragraph | Instream flows | Sentence states that the federal government cannot hold instream flow rights [in Colorado] | The CWCB holds all instream flow rights; the GMUG NF could provide recommendations for instream flow rights within the GMUG area. | Add discussion about working with CWCB to create instream flow water rights on streams of concern in the GMUG area (for protection of aquatic life/habitat, etc). |

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| Watersheds, Water, Soil Resources / Chapter 5, page 28, last paragraph before References Cited | Soil resources | Potential need for plan changes for soil resources | Chapter 5 has very little discussion about soil resources except for mention of steep slopes in the last paragraph. Are there not more concerns regarding sensitive soils, erosion, mass failure, organic soils, climate change, etc? | Add discussion to Chapter 5 about forest plan changes needed to protect soil resources, or explain why changes are not needed to protect soil resources in the future (other than use/restrictions on steep slopes). |
| Aquatic and Riparian Ecosystems, Chapter 1, page 1, first paragraph | Groundwater dependency | Sentence states that given the GMUG's climate, it is likely that most of the aquatic, riparian and wetland ecosystems are groundwater-dependent except for some intermittent and ephemeral streams | It seems unlikely that most of these ecosystems in the GMUG area are groundwater dependent. For example, it is stated on page 11 of the report that montane-subalpine riparian shrublands are most often associated with streams. Cottonwood riparian woodlands are also usually associated with streams, and as stated on page 13, depend on flooding to reproduce. Not all wetlands are supported by groundwater; some are formed from water that originates exclusively from precipitation and associated surface runoff. Such ecosystems would likely not survive without an adjacent stream and/or surface runoff, but do not necessarily require the presence of a shallow groundwater table within their root zone. | Consider changing the statement in the first paragraph on page 1 and in the Information Gap first paragraph to more correctly state that some of the aquatic, riparian and wetland ecosystems are surface water dependent and some are groundwater dependent. |
| Aquatic and Riparian Ecosystems, Chapter 1, page 1, first paragraph | Groundwater dependency | Stroope reference | Who is T. Stroope? There is no information in the reference citation about this person's expertise or occupation, or what the personal communication with the GMUG staff person was about. | Provide information in the cited reference regarding Stroope and why this person was used as a reference on the subject discussed in the paragraph. |

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|---|--|--|--|---|
| Aquatic and Riparian Ecosystems, Chapter 2, page 5, last paragraph | Aquatic macroinvertebrates | macroinvertebrate sampling between 1992 and 2007 | No macroinvertebrate samples have been collected in last 10 years. Are these older samples adequate to describe existing conditions? | Acknowledge that the aquatic macroinvertebrate assessment is not current, and explain where and why it is or is not representative of current conditions on the GMUG. |
| Aquatic and Riparian Ecosystems, Chapter 2, page 7, second paragraph | Stream and habitat conditions | 2006 GMUG broad-scale assessment | This assessment was completed over 10 years ago. Have stream and habitat conditions changed at some locations since 2006? | Acknowledge that the assessment is not current, and explain where and why it is or is not representative of current conditions on the GMUG. |
| Aquatic and Riparian Ecosystems, Chapter 2, page 9, Table 2 | Riparian/wetland ecosystems by geographic area | "North Fork Valley" is separate from "Gunnison Basin" | Does "North Fork Valley" mean the watershed of the North Fork Gunnison River? If so, this is within the Gunnison Basin, so why is it listed as if it is not in the Gunnison Basin? | Consider combining North Fork Valley numbers in the table with Gunnison Basin numbers, or explain why this watershed was separated in the table from the rest of the Gunnison basin. |
| Aquatic and Riparian Ecosystems, Chapter 2, page 14, Table 3 | Ecosystem functional conditions | Two-thirds of cottonwood riparian ecosystems are functioning at risk or are impaired | Why is such a large percentage of the cottonwood riparian ecosystem in the GMUG area at risk or impaired? | The stressors for cottonwood riparian areas are touched upon in the report, but the causes of this ecosystem functioning at risk or impaired merits further discussion in Chapter 2, and in Chapter 5, the need for plan changes to protect and improve cottonwood riparian ecosystems should be discussed. |
| Aquatic and Riparian Ecosystems, Chapter 2, page 15, second paragraph | Effects to natural hydrographs | Sentence states that sub-watersheds with impaired function contain dams and diversions that do not mimic natural hydrographs or depart from typical seasonal changes | This statement is not correct. Dams and diversions do not have hydrographs and do not depart from typical seasonal changes. | Suggest rephrasing this sentence to make it clear that dams and diversions on streams can have the effect of altering the natural hydrograph of the stream. |

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| Aquatic and Riparian Ecosystems, Chapter 3, page 20, first paragraph | Perennial and intermittent streams | May streams on the Uncompahgre Plateau and some on the western end of Grand Mesa are perennial at higher elevations, and intermittent at lower elevations | It is not explained why this is the case. The paragraph seems to imply that this is because there is more snowpack at higher elevations. However, where does the streamflow go as the streams move down in elevation? | Suggest further discussion on this matter. It may be due to increased alluvium in the stream channels at lower elevations and loss of stream water to the alluvium, stream diversions, etc. |
| Aquatic and Riparian Ecosystems, Chapter 3, page 20, third paragraph | Groundwater | First sentence in groundwater section says that groundwater is an integral part of watershed function and supports an array of GDEs, including all of the relevant aquatic and riparian systems identified in this assessment | It is not the case that all of the aquatic and riparian systems identified in this assessment are GDEs. For example, it is stated on page 11 of the report that montane-subalpine riparian shrublands are most often associated with streams. Cottonwood riparian woodlands are also usually associated with streams, and as stated on page 13, depend on flooding to reproduce. Not all wetlands are supported by groundwater; some are formed from water that originates exclusively from precipitation and associated surface runoff. Such ecosystems would likely not survive without an adjacent stream and/or surface runoff, but do not necessarily require the presence of a shallow groundwater table within their root zone. | Consider changing the first sentence to more correctly state that some of the aquatic, riparian and wetland ecosystems are surface water dependent and some are groundwater dependent. The second sentence in the paragraph could be changed to state that freshwater GDEs include discharge GDEs such as springs, peatlands (including fens), other wetlands, groundwater-supported lakes, and baseflow-supported streams and riparian areas, and other GDEs include shallow water table GDEs (phreatophytic), and subsurface GDEs (caves/karst and aquifers). These GDE types are from USDA Forest Service General Technical Report WO-86a, March 2012: Groundwater-Dependent Ecosystems: Level I Inventory Field Guide. |
| Aquatic and Riparian Ecosystems, Chapter 3, page 22, Table 10 | Diversion volumes from subwatersheds | Table 10 provides a list of the highest volumes of water diverted from 8 subwatersheds | Very helpful table - should be added to the Watersheds, Water and Soil Resources water yield section. | Add table to Water Quantity/Water Yield section to Water and Soil Resources Assessment. |

| GMUG Assesment Document / and reference | Topic | Brief Summary | Concern | Substantive Comment |
|---|------------------------|---|---|---|
| Aquatic and Riparian Ecosystems, Chapter 3, page 3 | Native fish | On page 3, the text says there are 24 populations of green-lineage cutthroat trout and that they are aboriginal. On page 4 it says there are 11 populations and that they are not native to the forest. | Inconsistency | |
| Aquatic and Riparian Ecosystems, Chapter 3, page 6 | Aquatic macroinvertebr | Page 6, line 19, assumes that streams & invertebrates have not experienced broad level changes due to surrounding human activities. This is a broad assumption. | Erroneous assumption | |
| Aquatic and Riparian Ecosystems, Chapter 3, page 19 | Climate change | Page 19, under Climate change, para. 3: "attenuated base flows". Readers may not know what the significance of this is. Suggest rephrasing to something like "lower summer flows for a longer period of time" | climate change effects should be clear | |
| Aquatic and Riparian Ecosystems / Chapter 2, pg 8, second paragraph | In stream barriers | Instream barriers are likely contributing to persistence of native Cuttthroat Trout. | Need to diferentiate between human made structures and natural structures | Please clarify in what instances leaving instream barriers present is beneficial to native fish populations |