

*Resource Needs Assessment
Lincoln County, NV.
2019*



Acknowledgements:

Lincoln County Conservation District – Board of Supervisors:

Kelly Miller, Chair
Maggie Orr, Vice-Chair
Susan Hansen, Treasurer
Justin Frehner, Supervisor
John Sanders, Supervisor
Jason Twitchell, Supervisor
Jessica Mathews, Secretary

Author:

Richard Orr; Consultant;
Certified Professional in Range Management

Credits:

Lincoln County Conservation District with the:

Nevada Association of Conservation Districts
National Association of Conservation Districts
Nevada Department of Conservation and
National Resources

In Partnership With:

USDI Bureau of Land Management
US Fish and Wildlife Service
USDA Natural Resources Conservation Service
Nevada Cooperative Extension
Nevada Division of Forestry
Nevada Department of Wildlife
Nevada Department of Environmental
Protection
Nevada State Water Engineer
Nevada Division of State Parks
Nevada Department of Transportation
City of Caliente
Lincoln Co. Commissioners
Lincoln Co. Power District
Lincoln County Game Management Board
Union Pacific Railroad Co.
Meadow Valley Wildlife Unlimited
And 40 different individuals representing
business, farming, sportsmen, OHV, ranching,
outdoor enthusiasts, and various recreation and
user interest groups

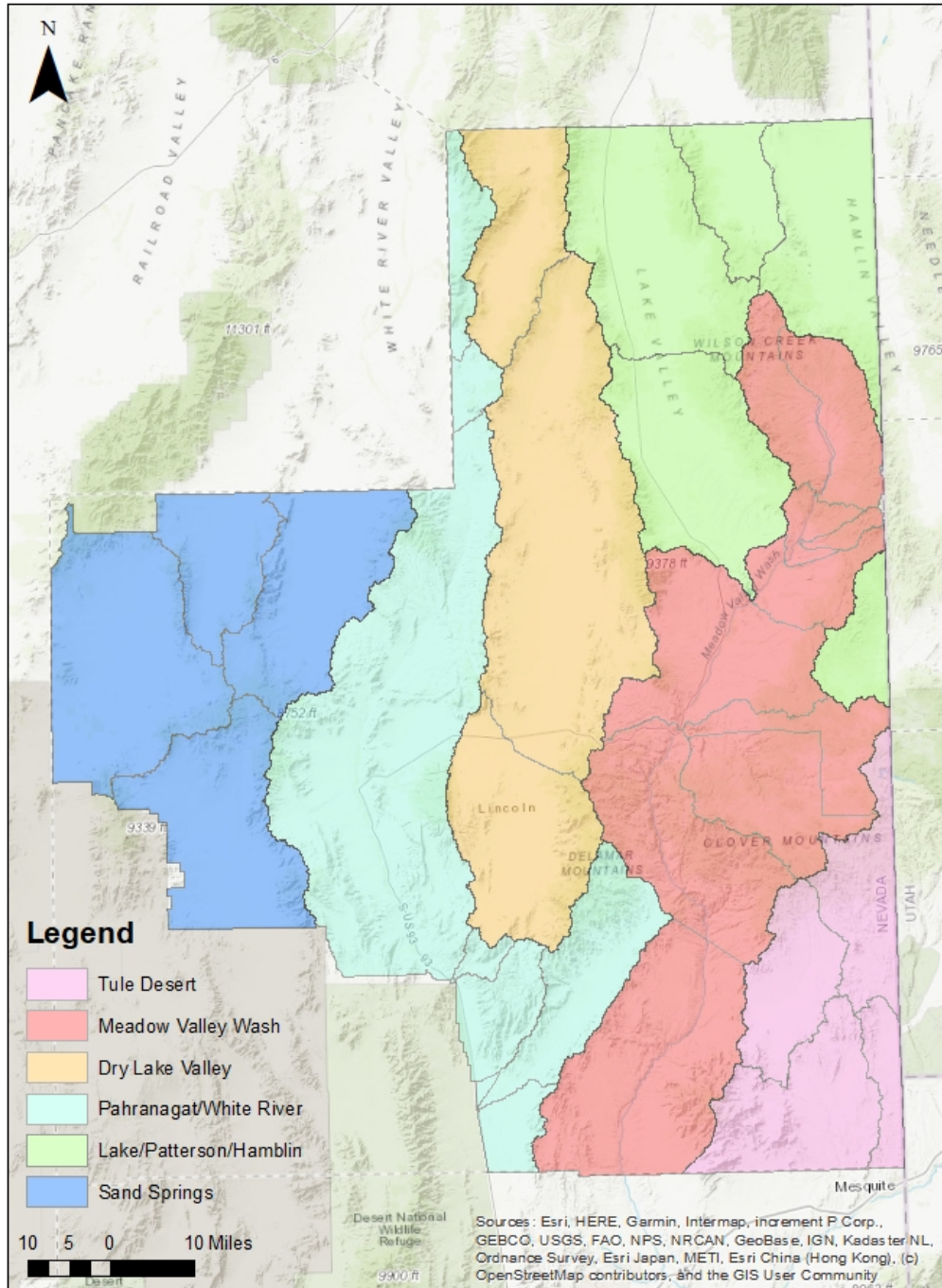
TABLE OF CONTENTS:

• <u>INTRODUCTION</u>	12
Purpose of the Resource Needs Assessment, Conservation District History and Outreach	
• <u>LINCOLN COUNTY OVERVIEW</u>	14
Geography – History – Population – Economy	
• <u>NATURAL RESOURCE CONCERNS AND PRIORITIES BY EACH OF THE SIX WATERSHED GROUPINGS AND COLLECTIVE GROUPINGS FOR THE COUNTY</u>	16
• <u>COUNTY-WIDE COMBINATIONS OF RESOURCE CONCERN PRIORITIES AND THEIR POTENTIAL CAUSES:</u>	32
• <u>GENERAL RESOURCE SUMMARY AND POTENTIAL MANAGEMENT AND CONSERVATION ACTIONS TO ADDRESS THESE CONCERNS:</u>	37
Conservation Practice Physical Effects Discussion of Soil Water Air Plant Animal + Energy and Human – (SWAPA or SWAPA+E+H)	
Number One Concern	39
Number Two Concern	42
Number Three Concern	45
Number Four Concern	48
Number Five Concern	50
• <u>CONCLUSIONS:</u>	56
• <u>REFERENCES AND APPENDICES</u>	59
• <u>GLOSSARY</u>	101

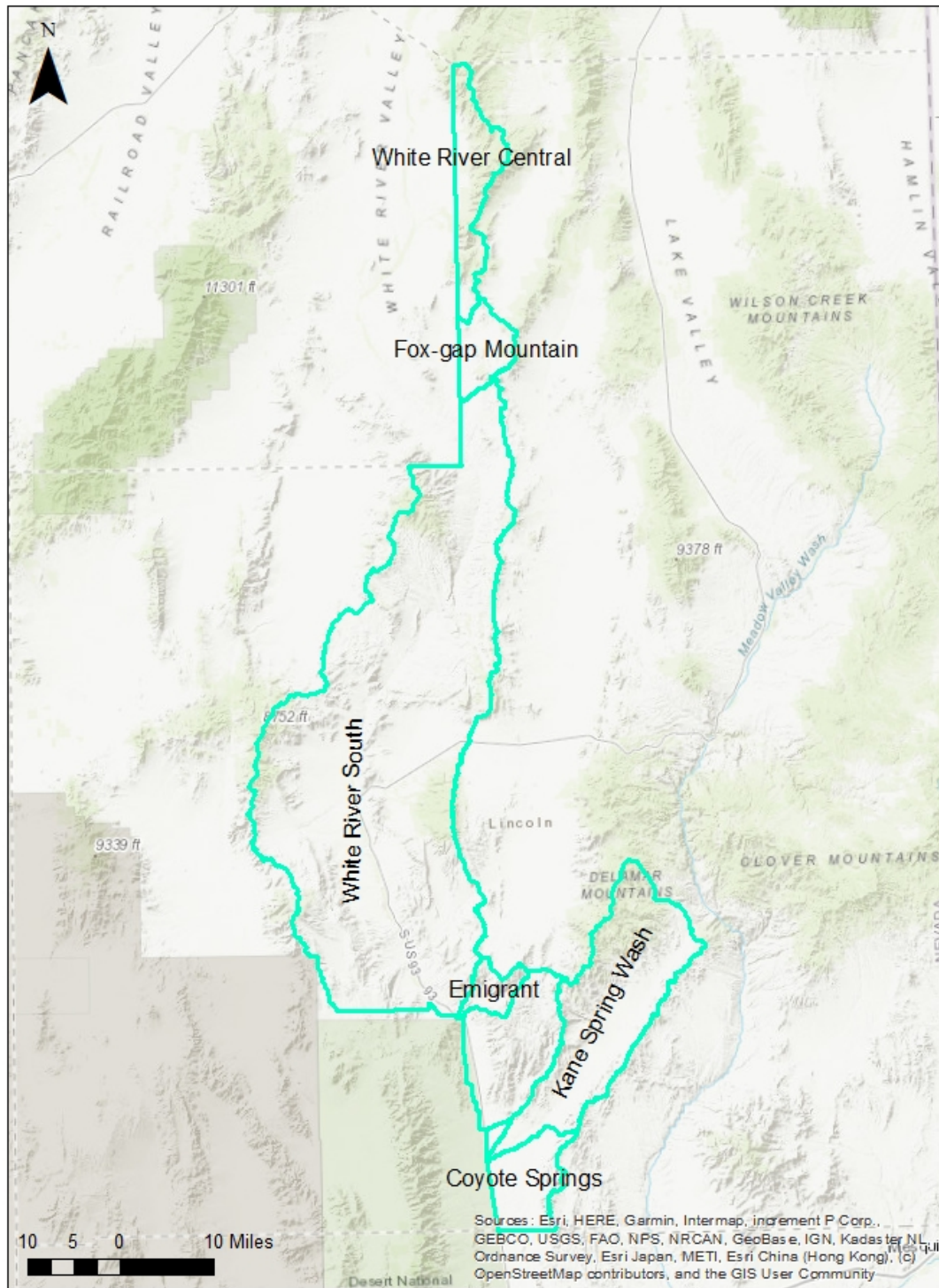
• <u>MAPS</u>	<u>Page</u>
<u>Combined watersheds in Lincoln County</u>	<u>5</u>
<u>Small groupings of watersheds</u>	<u>6 - 11</u>
<u>Waters in the County</u>	<u>102</u>
<u>Small groupings of watersheds' waters</u>	<u>103 - 108</u>
<u>Fire History</u>	<u>109</u>
<u>Wild Horse Herd Management Areas</u>	<u>110</u>
<u>Wildlife Habitats and Ranges</u>	<u>111 - 114</u>
<u>Bighorn Sheep, Elk, Deer, Antelope</u>	
<u>Greater Sage Grouse</u>	<u>115</u>
<u>Important T and E Species</u>	<u>116 - 118</u>
<u>Desert Tortoise, Hiko White River Springfish, SW Willow Flycatcher</u>	
<u>Air Quality</u>	<u>119</u>
<u>Water Quality</u>	<u>120</u>
<u>Pinyon/Juniper Distribution</u>	<u>121 - 122</u>
<u>Noxious Weeds List</u>	<u>123 - 124</u>
<u>Note: This list changes annually as does range of plants and treatment areas. Tri-County Weeds should be consulted as each conservation action plan is developed for the most current information.</u>	

MAPS OF WATERSHEDS IN LINCOLN COUNTY AND THE SIX SMALLER GROUPINGS OF WATERSHEDS:

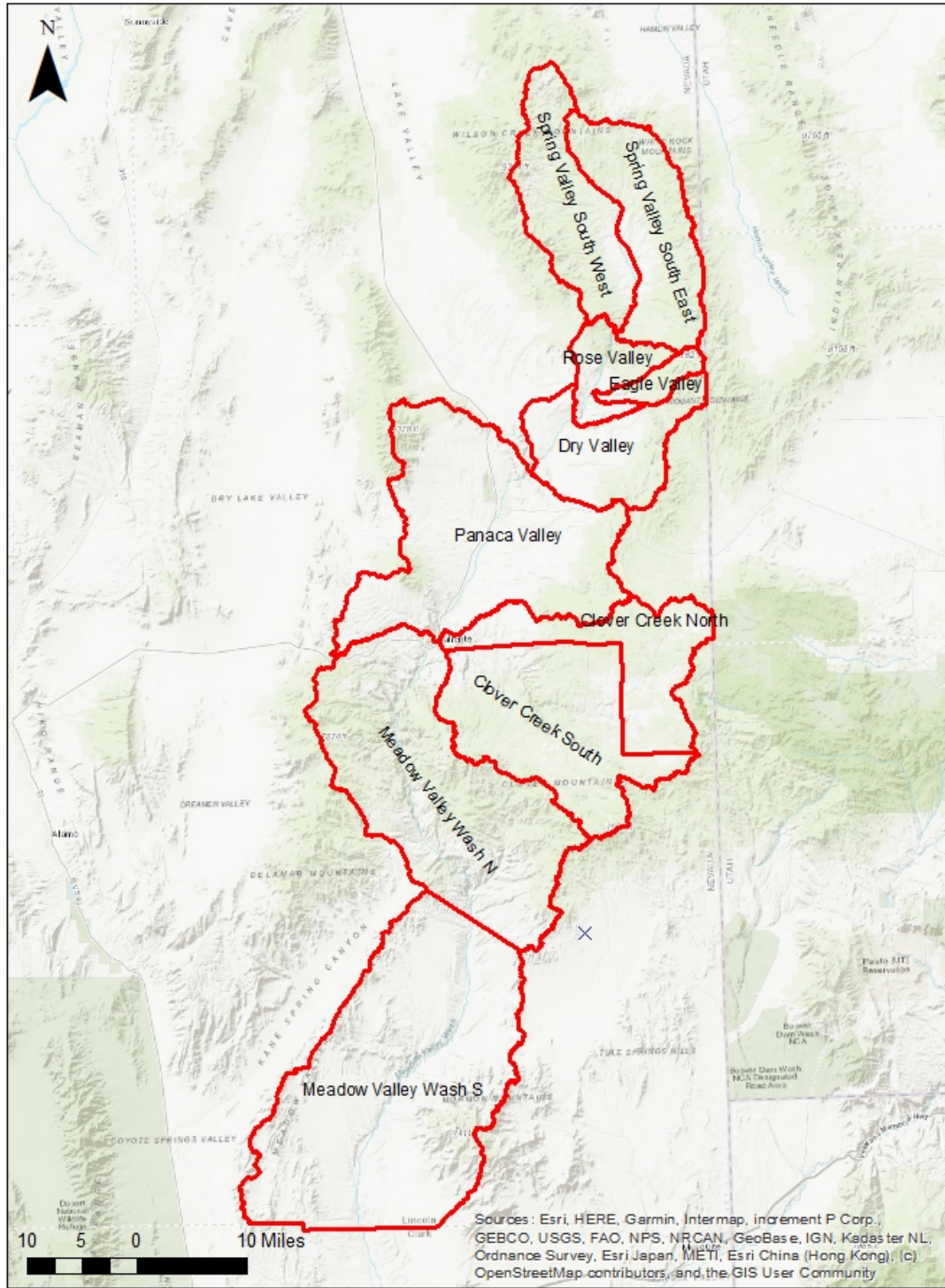
Lincoln County RNA Watershed Groupings



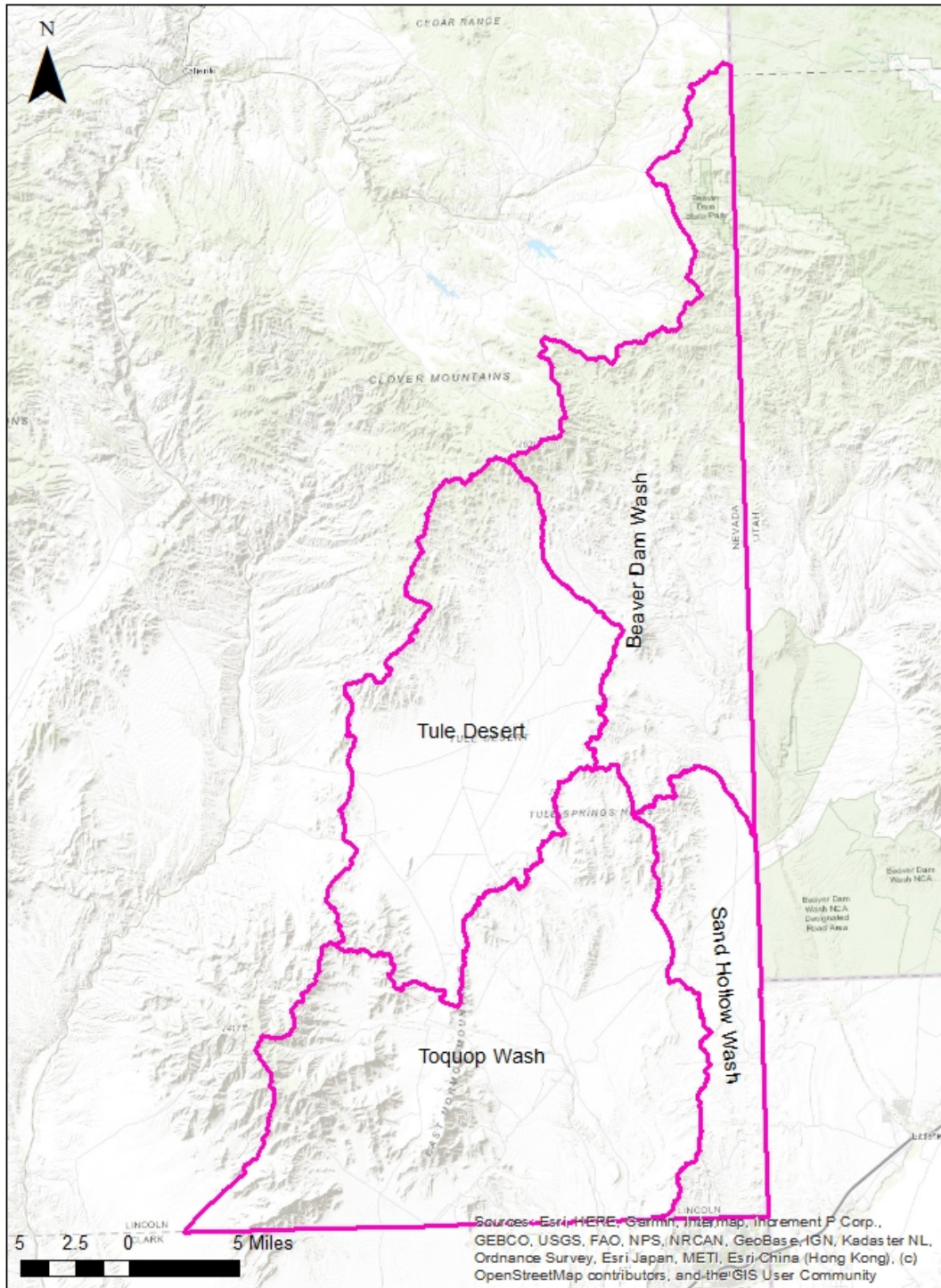
Pahrnagat/White River Valley



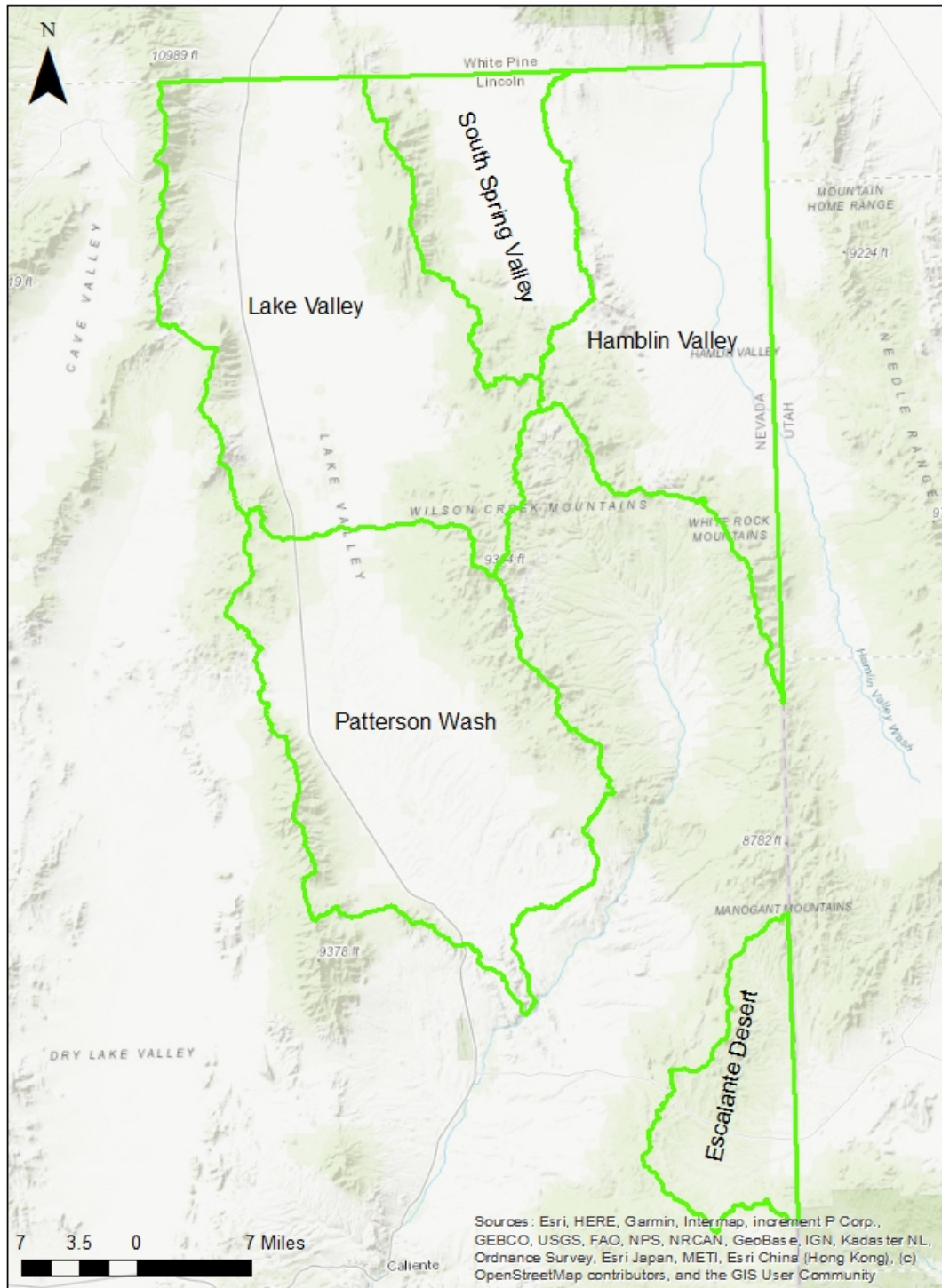
Meadow Valley Wash



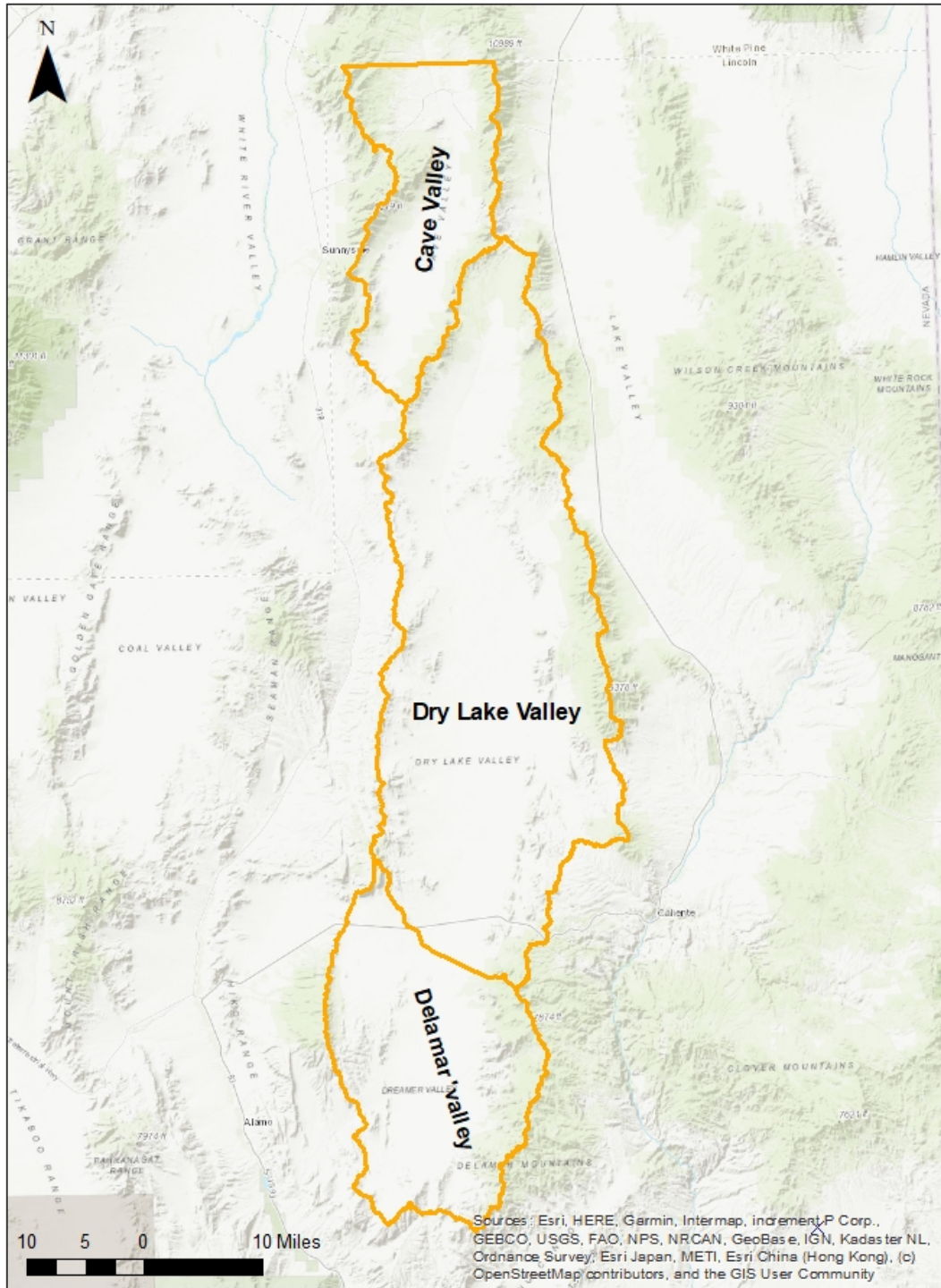
Tule Desert



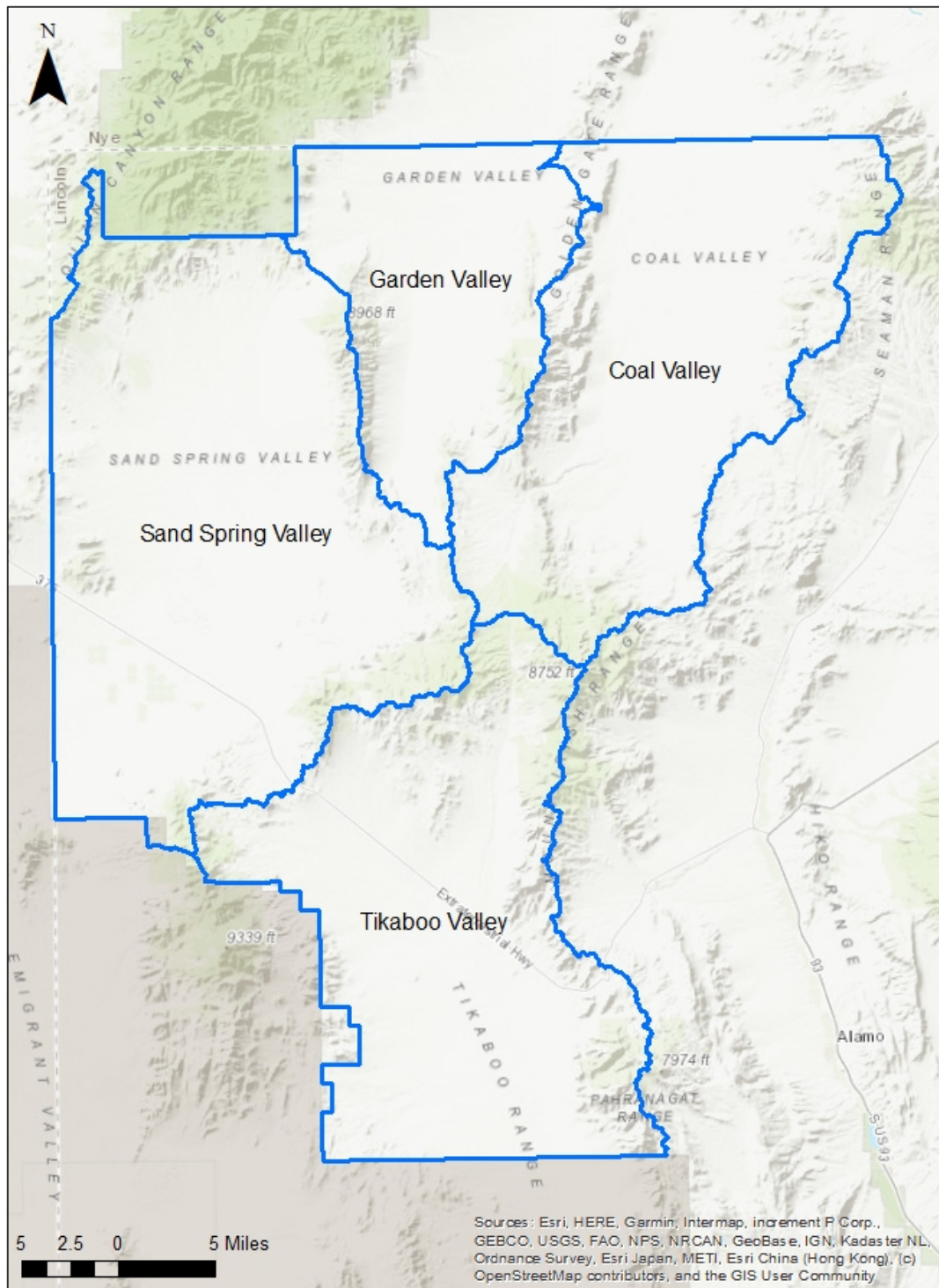
Lake/Patterson/Hamblin



Dry Lake Valley Grouping



Sand Springs



INTRODUCTION:

The purpose for this Resource Needs Assessment is to provide the Lincoln County Conservation District with the information they need to effectively address resource concerns within their area of responsibility, and to provide program and technical direction to local users and producers for practices to implement management actions needed to resolve resource problems. Additionally, this knowledge will allow the CD to provide logical, information-based, documented input to the Local Work Group and then to the State Technical Advisory Committee for development of resource priorities to seek funding from Natural Resources Conservation Service (NRCS) programs to address the identified priority concerns. This knowledge will also aid the CD to work with other federal and state agency partners and any other potential funding sources in addition to NRCS.

The Pahrnagat Valley and Meadow Valley Wash CD's formed in 1938; they joined in the mid to late 60's to form the Lincoln County Conservation District (LCCD), making them and subsequently LCCD among the first CD's in the state of Nevada. In the past, the CD was very active in water conservation efforts assisting in converting earthen ditches for irrigation to concrete-lined ditches and buried pipelines which greatly improved irrigation water conveyance efficiency and irrigation water management in the county. They also addressed erosion and flooding issues. This work continued into the last decade with many low drop, low pressure pivot systems and drip irrigation systems being installed and management practices applied. As projects were implemented, activity by the District started to diminish. Lincoln County's current needs for rangeland management due to unregulated numbers and season of use by wild horses, increasing demands and impacts on resources, increased recreation demand on public lands and water in the county, and Threatened or Endangered species and/or species with a strong potential for listing such as Sage grouse, have heightened the need for a strong conservation district presence in conversations on these issues. This assessment, and the information it provides to improve management and the writing of any subsequent Conservation Action Plans, will position the CD to recapture and maintain their role as the leader of conservation of resources in their area.

Outreach for this assessment in 2018 and 2019 include, focus groups discussing resource concerns in each of the 6 watershed groupings listed, personal interviews with a group of local leaders and businesses, and a soon to be completed public survey tailored to Lincoln County conducted by the University of Nevada Reno.

This final report will also be reviewed with the Lincoln County Commission and ultimately with the full Lincoln County Conservation District Board of Supervisors as they will be the party developing Conservation Action Plans for addressing the identified concerns.



LINCOLN COUNTY OVERVIEW:

Lincoln County sets on the east side of the state of Nevada. Pioche, the county seat, is 175 Miles north of Las Vegas and is situated along US Highway 93. The county is approximately 100 miles wide east to west and approximately 110 miles tall north to south. It is the 7th largest county in the nation comprising 10,633.20⁽¹⁾ sq. mi. or roughly 6,805,248 acres (*Note: This acreage figure is disputed and has been found in other sources to vary from 6.75 million acres to 6.93 million acres*). The most recent population estimate is 5,223 people⁽¹⁾ making it one of the most sparsely populated counties in the nation. Over 97% of the county is federally managed⁽²⁾. The largest acreage is managed by the USDI Bureau of Land Management. A large portion of the southwest corner of the county is administered by the Department of Defense and is off limits to public access.

The geography of the county is highly varied with elevations ranging from approximately 10,660⁽³⁾ feet near the summit of Mt. Grafton along the north border of the County to just under 1760⁽³⁾ feet elevation in Abbott Wash just north of Mesquite along the southern county line. Highly varied elevation coupled with the fact that the county transitions from Great Basin cold desert plant communities through salt desert shrub plant communities and into Mojave Desert plant communities as you travel from north to south in the county results in varied and complex ecosystems.

In addition, there are three drainage systems that flow into the watershed of the Colorado River; the White River system, the Meadow Valley Wash system and the Toquop Wash/Beaver Dam drainages. The White River system runs completely through the county from north to south. The Meadow Valley Wash system originates in the northeast portion of Lincoln County and exits the southern boarder due north of Moapa. The Toquop/Beaver Dam drainages exit the County west of Bunkerville and empty into the Virgin River which also flows into Lake Mead. All three major systems have year-round flow sections and intermittently dry sections with the White River system having the longest portions that are dry and which only flow during extreme flood events.

In Lincoln County, employment is comprised of several sources. These are:

- Federal, State, County, and City or Township Government
- School District
- Union Pacific Railroad
- Retail

- Food and Service
- Agriculture
- Mining
- Medical
- Other

Median Household Income in Lincoln county is estimated to range from \$49,406.00 ⁽⁴⁾ to \$52,971.00 ⁽¹⁾. These are projected values from the last US census. The civilian workforce for 16 years of age and older is projected to be at 45.1% ⁽¹⁾.





NATURAL RESOURCE CONCERNS AND PRIORITIES BY EACH OF THE SIX WATERSHED GROUPINGS AND COLLECTIVELY FOR THE COUNTY:

Methods:

Methods used for identifying priority resource concerns are based on the Natural Resources Conservation Service Planning process ⁽⁶⁾. One of the key tools for accomplishing this is the NRCS Resource Concerns Checklist ⁽⁸⁾ and Resource Concerns Descriptions ⁽⁹⁾ (A hot link to each of these documents is found under reference 8. and 9. in the appendices). Using this planning tool allows a systematic review of 45 primary resource concerns at a minimum from the categories of soil, water, air, plant and animal related topics of concern. This system is based on first identification of resource (existing on the ground) concerns followed secondly by identification of energy related concerns associated with the main resource concerns, and thirdly by human related concerns. This is also known as SWAPA+E+H. (Also see reference 12 for current soils and ecological site information.)

It is very important to proceed in this order while reviewing the checklist of concerns as targeting human related topics too soon in the process allows bias and positional posturing to dominate the conversation and overshadow the actual resource concern and its causes. This is a very important point, a full knowledge of the concern, the drivers behind the potential causes of the concern, and possible solutions to alleviate the concern are essential to understand before a solution that will address the political and emotional biases that drive people to be concerned about that resource in the first place may be found.

The method used for prioritizing concerns followed the nominal group process technique. Each meeting participant was provided stickers having two different point values. They were asked to utilize five stickers worth two weighting points to be placed on the five resource concerns discussed that they individually felt needed to be addressed **immediately**. They were then asked to utilize five stickers worth one weighting point to be placed on the five resource concerns discussed that they felt were important but could be addressed after the immediate-need resource concerns. All stickers placed on a resource concern were totaled resulting in the priority order of resource concerns as selected by those participants with a close working knowledge of that particular area. The results of this prioritization process are seen in the spreadsheets attached to each set of watershed groups Minutes in appendices 1 through 6.

An example to stress why it is so important to review concerns in SWAPA +E +H ⁽⁶⁾ categories in the proper order of resource concerns followed by energy followed by human concerns; at our last watershed grouping meeting circumstances resulted in an extensive conversation of human-related factors being discussed prior to any review of resource concerns. The nominal group prioritization process for concerns resulted in the human concerns being selected as the top priority by an impossible margin given the process the group was intended to use to select their priorities. These human factors ARE important but discussing the human topics first significantly overshadowed the root factors causing the concern for any resource issue discussed.

Results:

Lincoln County Conservation District conducted eight focus group meetings analyzing a total of six different groupings of watersheds that are in whole or part within their administrative boundaries. These groupings were determined by combining US Geological Services Hydrologic Unit Code Areas (HUC Areas)

having similar concerns or management factors. To easily utilize information from the major land management agency in this area (BLM) these HUC areas have been combined or altered slightly to reflect different information, data sets or planning documents used by BLM. This resulted in a map used for the Ely BLM Resource Management Plan called HU-11 Scale RMP watersheds. As a result of combining these sub-sheds, the Meadow Valley Wash (a HUC-8 scale region) happens by coincidence to contain eleven HU-11 sub-shed units.

There were some deviations from this as the Patterson Wash sub-shed was included in a different grouping because its management and ecology more closely fit with the Lake Valley group. The groupings of watersheds and The TOP FIVE priority concerns from each grouping along with more detailed explanatory discussion from the focus group are under the 6 individual watershed grouping discussions later in this section. (See pages 5 through 11 for maps and Appendices 1 through 6 for detailed minutes and priority ranking spreadsheets for each of the 6 groupings)

As will be described in the following discussion, there were many similar concerns common to all of the watershed groupings and there were some concerns that related only to that particular grouping of watersheds. Results are displayed for the top five resource concerns for each watershed grouping.

A county wide summary compiling the top resource concerns from all six watershed groupings combined is included in a separate section following the discussions for the six smaller groupings of watersheds. It must be remembered that the majority of individuals involved in these focus groups live, work and recreate in this area and tend to see a concern in a more far-ranging, broader light than just affecting one thing or one species of animal or one possible contributing factor to the concern.

For example, when the topic of plant condition and health is discussed, concerns may have been stated for livestock because the individual making the statement raises livestock. They also hunt here and recognize fully the need for healthy plant communities for wildlife, erosion prevention, watershed and water quality concerns and that wild horses use the area and need healthy plant communities as well to thrive.

A concern stated during these discussions regarding unregulated wild horse numbers IS IN NO WAY saying get rid of all the horses, IT IS saying that livestock have a regulated permitted number and a season of use and wildlife

numbers are regulated by NDOW through hunting quotas. The concern of “unregulated” wild horses is related to the management impacts of uncontrolled numbers of animals being there year-round and attempts to maintain the herds within required and determined appropriate management levels are thwarted regularly by political and or litigative intervention. Many wild horse Herd Management Areas in Lincoln County are 200 to 400 percent over the already determined appropriate management levels ^(2 and Ely Wildhorse AML EA). One example area covering parts of the Dry Lake Group and parts of the Patterson/Lake Valley group of watersheds had 996 head of wild horses removed in a roundup conducted in 2018. This left approximately 228 head on the range which is still 178% of the high end of the Appropriate Management Level for that HMA (60 to 128 head ⁽⁷⁾).

The following examples are offered to better explain what constitutes a resource concern as identified on the resource concerns checklist used by NRCS.

EXAMPLE 1 – LIVESTOCK PRODUCTION LIMITATION – Inadequate livestock water: This is the official title for this concern but it may be described in the following discussions in several ways including - limited spring sources, lack of water, a need for pipelines, scarce water holes, insufficient water for the forage present and many others. These statements all refer to two situations. Either there is not enough water produced by available sources to meet the needs of the animals present or there are not enough natural and/or man-made sources such as troughs, wells, spring developments, spring outflows, undeveloped springs, pipelines, reservoirs or catchments to provide water to properly distribute or alleviate concentrations of animals. The concern focuses around the need to develop more accessible water to improve management of the plants and especially the health of the animal.

EXAMPLE 2 – DEGRADED PLANT CONDITION – Inadequate structure and composition: Again, the official title seems straight forward but it may arise out of many varied causes. The general meaning is asking the question of do I have the right plants for the site growing in the right places for the right reasons. To explain this better, say I have a site that should be a willow-lined stream channel area but due to excessing trampling from repeated use in the spring I have lost much of the willow needed to hold the stream banks together. Another example is a fire has burned the site and I am missing both the Sagebrush and much of the perennial grass that should be there due to cheatgrass invasion. A third example could be that we have a perennial bunchgrass area that lost all its Sagebrush component due to an Aroga moth infestation so we are now missing a vital component for Sage

grouse habitat. All these varied causes could result in the same condition of not having the right plants on the site in the right amounts, i.e. we have inadequate structure and composition.

Wording for or the name of the resource concern and the discussion surrounding that concern were lifted from the Minutes of the focus group discussions pertaining to that topic (all Minutes are attached in Appendices 1 through 6 located at the end of this document). There will be some variation in wording as a result of how each focus group related to and described these items.

Pahranagat/White River Valley Grouping (see map page 6): Includes the following watersheds: White River Central; Fox-Gap Mountain; White River South; Emmigrant; Kane Spring Wash; Coyote Springs.

Priorities were:

Number 1 tie between:

- Insufficient water - inefficient irrigation water use.
- Inadequate Livestock water distribution.

Number 3 Tie Between

- Gully erosion.
- Invasive Annual Grasses.

Number 5 Tie Between

- Water Quality, a variety of causes from water only available in earth tanks to salts or arsenic in ground water.
- Limited Water for Wildlife especially in the southern half of the watershed system.
- Human issues related to changing quality of life, changing culture of the area, change to a more urban/recreation nature, land ownership and use patterns.

This grouping includes all areas that drain into the White River system. The watersheds are mostly comprised of salt desert shrub plant communities to the north, some sagebrush plant communities and Mojave Desert plant communities in the south. The bulk of discussion points in this watershed grouping centered on water related topics from efficient water use to distribution to quality. The most

oft repeated issue occurring in several resource concern discussions was lack of water distribution for wildlife and/or livestock. Several related side discussions included statements such as “most forage related issues are due to lack of water to distribute cattle...” and “wildlife habitat, it’s all about water, no water no habitat...”.

Water issues were also front and center in the secondary five items with discussions on soil gully erosion. Not only did statements arise concerning the size of gullies caused by cloudbursts but also the effects of water flows impacting roads, and irrigation systems. Invasive annuals were of great concern primarily since they have greatly expanded due to more recent fires, their change of the fire cycle and loss of forage for any grazing users, either livestock or wildlife. Human issues were of concern in the Valley. There has been a shift from farm/family lifestyle to a much more small-scale ranch/ranchette culture. This is changing the nature of the community and the uses within the Valley and is a great concern for loss of lifestyle.

Water was even mentioned when discussing some of the secondary but not immediately important issues that Pahrnagat Valley experiences; problems with seasonal high-water tables which is unique in the county. Elk in the Seaman Range, wildfire and wild horses were a concern due to vegetative trampling around water, loss of organic matter from plant damage, and impact on plants and composition when animals are not regulated by seasons, grazing permits and/or removal through hunting or grazing season dates. Unregulated wild horse use was a major discussion concern.

Meadow Valley Wash Grouping (see map page 7): Includes the following watersheds: Spring Valley South West; Spring Valley South East; Rose Valley; Eagle Valley; Dry Valley; Panaca Valley; Clover Creek North; Clover Creek South; Meadow Valley Wash North; Meadow Valley Wash South.

Priorities were:

Number 1 tie between

- Excess plant pests, weeds especially cheatgrass and encroaching pinyon/juniper, Russian olive, and salt cedar and select other noxious weeds:
- Concentrated flow, gully erosion.

- Insufficient water, primarily availability of irrigation water and closed basin issues as well as observed decline in spring outflow (possible P/J encroachment related).
- Undesirable plant production and health, primarily from cheatgrass invaded areas after fire, pinyon/juniper encroachment and unregulated wild horse numbers.

Number 5:

- Inadequate habitat for wildlife – water availability for drinking and fish, wallowing, trampling around waters from wild horses, elk, livestock, loss of brush from P/J encroachment, large fires, etc.

This grouping of watersheds covers the entire Meadow Valley Wash from where it heads in the Mount Wilson area in the northeast part of the county to where it exits at the southern county line. Patterson Wash watershed was grouped with the Lake Valley/Hamblin grouping as management and issues more closely tie to that area than to Meadow Valley Wash. Not surprisingly, the Meadow Valley Wash watershed grouping and the preceding Pahrnagat/White River grouping had the most concerns identified as these two groupings contain the major areas of flowing water in the county. As a result, they have the highest concentrations of human population.

Four resource concerns were tied as top priority in this watershed. Excess plant pests, concentrated flow gully erosion, insufficient water, and undesirable plant production and health. The Meadow Valley Watershed grouping has had a significant number of flooding events in the last 50 years. Most major flooding events take place when rain events occur on top of snow and are most likely to occur during December, January or February when monthly precipitation has exceeded two inches of total precipitation. This has occurred at the Caliente recording station in 1979, 1980, 1981, 1982, 1993, 1998, 2005, and 2019⁽⁵⁾. The most significant of these occurred in December 2004 through January of 2005 and caused extensive damage throughout the entire Meadow Valley Wash system with estimates by USGS of this being a “150 year +” flood event. During this event, the Union Pacific Railroad had thirteen track washouts on their mainline from Crestline siding above Caliente down through Rox siding with most damage (nine washouts) occurring from Caliente south through Rainbow Canyon. As can be expected, flood control projects and their maintenance and condition of uplands is important to mitigating the resulting gully erosion from these types of events.

Invasive weeds are a significant issue throughout Meadow Valley Wash, whether it be salt cedar in Southwest Willow flycatcher habitat to cheatgrass on many of the recent fire scars or aquatic weeds in state park reservoirs. Other plant pests include crop pests such as alfalfa aphids and occasional grasshoppers and Mormon crickets. Insufficient irrigation water is of concern and contrasts with a lesser isolated secondary concern of large meadow bog areas in Spring Valley.

Undesirable plant productivity and health was of major concern. This was especially true where large acreages of encroaching pinyon/juniper have resulted in expanses of Phase II and Phase III P/J with an almost total loss of understory. This affects the wildlife and livestock forage base as well as other users such as wild horses. Several thoughts on causes include P/J encroachment, uncontrolled wild horse numbers (as much as 400% above appropriate management levels ⁽²⁾), extended drought, lack of and too much fire with both not enough targeted and managed grazing after fire to control cheatgrass or too much unregulated year-round grazing by horses after seeding. Range weeds like knapweed and white top are also an issue. There was also discussion of concentrated elk use in a few areas with unfenced water and wallowing effects.

The last critical issue for this grouping of watersheds was inadequate wildlife habitat. Many of the possible causes listed above for plant production and health apply as well to their effects on wildlife habitat.

Other concerns identified included soil health, compaction, livestock water distribution, water quality, organic matter depletion, inadequate feed, undesirable composition and others. The possible causal factors mentioned for these are the same as those listed above.

Tule Desert Grouping (see map page 8): Includes the following watersheds: Beaver Dam Wash; Tule Desert; Sand Hollow Wash; Toquop Wash.

Priorities were:

Number 1

- Organic matter depletion – principally from fire and shift to annual plant community and significantly increasing unregulated wild horse use.

Number 2:

- Human concerns – Potential effects of Southern Nevada Water Authority (SNWA) and Vidler water demands on critical water availability and the shift in number and type of casual users all affect way of life.

Number 3:

- Degraded plant condition production and health from past fire and rapidly increasing unregulated wild horse use.

Number 4:

- Livestock production limitations – amount and distribution of water is severely limiting (also severely affects wildlife).

Number 5:

- Livestock production – inadequate feed due to plus or minus 400,000 acres of past fire changing vegetation type to predominantly annual grass.

This watershed grouping identified five distinct concerns without any ties in priority. The highest priority concern was loss of organic matter. The Tule watersheds are on the transition from Great Basin Cold Desert to Mojave Desert vegetative communities and are very limited in organic matter content to begin with. Identified concerns affecting organic matter were tied to roughly 400,000 acres of fire across the Tule Desert in 2005 that changed the vegetative community from perennial shrubs and grass to annual grasses which are far more variable in production and litter accumulation. Wild horses are moving into the Tule from the Clover Mountain area and are a big concern. They are present in a herd management area with an appropriate management level of zero due to limited forage and water availability as approved in the Ely RMP⁽²⁾.

The second concern was human related and primarily focused on increased potential to disrupt a way of life, management of livestock, and potential impacts to wildlife due to disturbance. Increased visitor use is part of this concern. This area has critical habitat and habitat classifications for desert tortoise, a listed endangered species. Part of this concern for way of life was centered around water rights. Vidler Water and the joint partnership with the county to provide domestic water to the new development areas north of Mesquite as well as the SNWA settlement agreement leave all livestock water holdings in a tenuous place and only subject to mitigation when a problem affecting these prior rights has already occurred. An “after the fact” mitigation when your well or spring is going dry is too late to solve the problem. Individuals present also identified concerns of radiation possibilities from past nuclear testing fallout.

The third concern was plant condition production and health. These problems were again related to extensive fire with a resulting change in vegetative composition creating competition with unregulated wild horse use.

Amount and distribution of water was a critical concern in this area. This applied to both livestock and wildlife. The area has a limited number of springs, a few wells and pipelines to distribute water. Water hauls have been extensively used in the past but are extremely costly and time consuming. Permanent water distribution through pipelines is critical to properly manage this area.

Inadequate feed and forage ties again back to the extensive fires in 2005 and unregulated wild horse use in as area that has a zero appropriate management level.

Other issues in the area included some salts in soils, changing types of OHV use, current users are ok but trail rides or competitive events would be bad for water systems due to vandalism; current well depths are significant; ranchers are pumping at 300 to 500 feet right now, but Vidler Water has a well 1200 to 1500 feet deep.

Lake/Patterson/Hamblin Grouping (see map page 9): Includes the following watersheds: Escalante Desert; Hamblin Valley; South Spring Valley; Lake Valley; Patterson Wash.

Priorities were:

Number 1:

- Undesirable plant production and health – loss of winterfat due to flooding in Hamblin Valley, encroaching P/J, and fires that have changed vegetative communities to cheatgrass.

Number 2:

- Invasive species – patches of several species of noxious weeds.

Number 3 Tie Between:

- Inadequate plant structure and composition from encroaching P/J, cheatgrass and loss of diversity from uncontrolled wild horse use, elk wallowing, and animal trampling especially around water.

- Habitat loss from flood effects, fires, encroachment of P/J, uncontrolled horse and concentrated elk grazing on the east side of Hamblin Valley, ravens and raptors in encroaching P/J.

Number 5:

- Human concerns – increasing recreational activity by unprepared people vandalizing livestock water leading to lack of water distribution, SNWA potential, increased OHV activity bringing in weeds and altering fences, shed hunting in the immediate past (reduced due to new law).

The first priority concern in this grouping is plant production and health. Several thoughts were provided for this and included elk concentrating seasonally in small areas and wallowing near meadows and unfenced springs, unregulated wild horse numbers present year-round, transition of P/J to Phase II and Phase III reducing understory, flooding in Hamblin Valley choking out winterfat stands and monoculture cheatgrass in old burn areas

Invasive species such as halogeton in all valley bottoms, cheatgrass in burned areas, toadflax around Pioche and along US 93, Scotch and musk thistle around any wet area, salt cedar patches around waters and Russian knapweed along roadways were all identified as concerns. P/J encroachment was also brought forward again. All these invasive species increase impacts to factors affecting plant production and health listed above. Ravens, though native, are a concern for Sage grouse, especially in the numbers they are seen in the area. Plant pests such as weevils and grasshoppers are a problem in localized areas.

Inadequate structure and composition of plant communities and habitat loss were ties for 3rd in this area. These relate to the same causal factors identified in the top two priorities listed above.

The 5th priority in this area were human related, again addressing lifestyle changes and human activity impacts. OHV use is a particular concern on the west side due to heavier use there potentially bringing in weeds and vandalism of fences or waters. These watersheds are included in water filings for the SNWA water withdrawal. Permanent water for livestock and wildlife is critical to management. Pit reservoirs work but quality of water is an issue. Water hauls work but are not cost effective. Participants felt that permanent waters such as wells or pipelines were the only effective solution.

Several other concerns were discussed including irrigation water management; Raven numbers for Sage grouse; soil compaction around water sources; wildfire frequency and extent; sheet, rill and wind erosion in the bottoms of Hamblin and Lake Valleys and Patterson Wash, especially if the area is disturbed; organic matter depletion from excessive fire, unregulated wild horse numbers and P/J encroachment.

Dry Lake Valley Grouping (see map page 10): Includes the following watersheds: Cave Valley; Dry Lake Valley; Delamar Valley.

Priorities were:

Number 1 tie between:

- Undesirable plant productivity and health from encroaching P/J in sagebrush communities and cheatgrass due to fires. winterfat areas effected by Russian thistle near Gregerson Basin.
- Uncontrolled wild horse grazing affecting habitat year-round. Extensive cheatgrass due to fire, encroaching P/J affecting springs in most mountain ranges but not on the west side. Major concern on loss or reduction of flow from water sources.

Number 3:

- Soil compaction – Those areas around water that have direct access by grazing animals, especially with the year-round addition of uncontrolled wild horse use or elk such as around Deadman Sp. get hit pretty hard. Also, human activity from OHV trails and power line tower sites.

Number 4:

- Human – activity from increased utility corridors and increasing use by OHV could change way of life due to greatly increased numbers of lines and recreation users. SNWA water withdrawal. Limited water for all these uses.

Number 5:

- Organic matter depletion – Areas around springs that are impacted by constant use, areas like Gregerson Basin that have had repeated fire, P/J encroached areas that have lost understory.

The tie for top priority concerns in this watershed grouping are undesirable plant condition and health and wildlife habitat degradation. They are very closely related and have most of the same contributing factors. Cheatgrass taking over large burn areas is of major concern as is P/J encroachment especially when it has progressed to Phase II and Phase III infestation levels where there is virtually no remaining understory. Winterfat flats in north Dry Lake and near Gregerson Basin have been affected by insect and short-term ponding after a drought period and by extensive Russian thistle infestations close to Gregerson Basin after repeated fires in that area. Unregulated year-round wild horse use is also a concern.

Soil compaction is the third priority concern and is prevalent around water sources, especially along the west side of the Bristol and Fairview ranges where springs or outflow areas are unfenced. This is particularly true around Bailey Spring, and the outflow stream from Littlefield Spring.

The fourth priority concern in this grouping was Human related concerns. The major point was that several additional utility lines are identified along the current power line ROW. If they are built, it could severely impact winterfat stands from lower Muleshoe area to the south end of Delamar Valley. SNWA water extraction and their pipeline route could affect both winterfat stands and spring flows.

The fifth concern is organic matter depletion. Participants cited all the same contributing factors as those identified for other concerns in this grouping of watersheds with the addition of wildfire affecting organic matter and vegetative community change as a result of fire. They also added sheet erosion in the flats in Delamar and Dry Lake Valleys as a potential contributor.

Sand Springs Grouping (see map page 11): Includes the following watersheds: Coal Valley; Garden Valley; Sands Springs Valley; Tikaboo Valley.

Priorities were:

Number 1:

- Excess plant pests – insect issues in crops, gophers in crops, weeds in crops and along roads, ravens immediately after planting, unregulated wild horses and cheatgrass in burn areas.

Number 2 Tie Between:

- Insufficient water for irrigation, all irrigation comes from wells in this area, they are very efficient now but there is no margin for error.
- Livestock water is distributed by reservoirs, wells and pipelines, limited water even though Sand Springs allotment has 100 miles of pipeline.

Number 4:

- Excessive plant biomass (wildfire) – cheatgrass is excessive in Coal and Garden Valleys from old fires, there is thick tansy mustard areas in White River and it is spreading along roads in Coal Valley.

Number 5:

- Inadequate Habitat – Lack of distribution of water, water hauls help but they are expensive and temporary. Pine Creek almost dries up at times but some trout survive in protected pools. Water always limiting. The area is losing some sagebrush due to fire which affects Sage grouse.

The meeting for this watershed grouping was different than all the others because two of the individuals attending were extremely concerned about human-affected resource concerns and wished to address the group about the human effects or potential effects at the beginning of the meeting. As these individuals were key to this process, they were accommodated. The majority of the concerns they presented were human driven and so were the potential consequences. As a result, when participants made their selections of critical concerns and next priority concerns at the end of the discussion, the priority tally for human concerns exceeded the potential number of points available, based on the number of people present, by approximately double because several people selected the human concern twice or more when placing their two-point value and one-point value stickers. To rectify this, human concerns were not listed as the top priority as it would have so overshadowed the contributing factors to on the ground resource concerns as to render them totally insignificant. These human concerns became thoroughly apparent in the second and third priority concerns for this grouping during discussion of irrigation water and inadequate livestock water.

The top resource concern in this watershed grouping was excessive plant pests. This was widely encompassing in that it included weeds, insects, animals, and birds. The weed concern were invasive and noxious weeds like halogeton, Russian thistle and others being spread along roads. This is especially true with the designation of the Basin and Range National Monument in Coal and Garden Valleys causing increased traffic in the area. Sand Springs Valley does not have a

major issue with cheatgrass, but that could change with increased traffic to the Monument. Gophers are a problem in Sand Springs Valley where 90%+ of the agriculture in this watershed grouping occurs. Unregulated wild horse numbers is a concern mostly in Coal Valley. Ravens are a concern because of their effect on Sage grouse populations, the fact that they will harvest seed from newly planted ag fields, and they have been seen attacking newborn calves.

The second and third priorities in this grouping was a tie between livestock production inadequate water and insufficient water – use of irrigation water. The discussion was interesting partially because, for irrigation, producers are using irrigation water management, low pressure systems with low drop and modified pumps and bowl systems, and have limited amounts of lowering water table concerns at this time. The principal concern expressed was due to the potential for future SNWA water extraction to take place. This human concern also bled over to discussions of inadequate livestock water. Water is scarce in these valleys and individuals have installed many miles of pipelines, when allowed by federal agencies, to try to fix this situation. Sand Springs has over 100 miles of water pipeline for this purpose. The concern expressed was the need for even more distribution and the effect of potential SNWA extraction on availability or maintenance of what currently exists. Garden, Tikaboo and Coal Valleys have water distribution concerns and very few sources to develop. Pipelines and permanent water are seen as the only real solution and additional large extractions such as have been proposed for the SNWA project would be very damaging.

Excessive plant biomass and potential wildfire came in as the fourth priority concern. This concern is cyclic when rainfall is high. Sand Springs and Tikaboo do not have much of a concern with cheatgrass because of the condition and type of vegetative communities present. It is present in limited amounts but is currently restricted to isolated patches. Garden, and more so Coal Valleys, have large areas of cheatgrass on old fires that become a fire hazard in high production years. Tansy mustard is also a concern along roadways and on flats near reservoirs.

The fifth concern for this watershed grouping was inadequate habitat for fish and wildlife – water. Water distribution concerns are the same for all wildlife but especially so for fish. Cherry Creek, Pine Creek and Cottonwood Creek all have trout in them in spots. Pine Creek is known to almost dry up at times but fish survive in isolated protected pockets or in the headwaters area higher on the mountain. The same statement as was made for the Pahrnagat grouping came up again, “It’s all about water in the desert”. Pine Creek also seems to have crusts

form along the edges of the stream indicating there may be some water quality concerns.



COUNTY-WIDE COMBINATIONS OF RESOURCE CONCERN PRIORITIES AND THEIR CAUSES:

The concerns identified in the small groupings of watersheds show a definitive pattern within the county. Even though there are differing critical resource concerns within each of the groupings of watersheds, the majority of these concerns are focused within only 14 major themes. To see this relationship, the five top concerns from the six different watershed groupings have been combined into the top priority concerns county-wide using the same nominal group process of totaling priority points for that concern listed from all six of the watershed groupings listed in appendices 1 through 6. The other county-wide combinations of resource concerns are also listed but will not have their contributing factors summarized here. This information can be found in reviewing the minutes of focus group meetings found in appendix 1 through 6. The totals and cited contributing factors for the TOP FIVE COUNTY-WIDE RESOURCE CONCERNS are as follows in numerical order:

The NUMBER ONE resource concern in the County was determined to be PLANT CONDITION AND HEALTH with a total of 55 priority points. Many contributing factors for this concern were cited including:

- too much wildfire
- unregulated year-round wild horse grazing
- drought
- cheatgrass invasion on old burn areas
- invasive species
- overflowing on plant communities
- P/J encroachment
- animal concentrations due to lack of necessary management facilities to improve distribution
- limited water availability which concentrates all animals and causes compaction and impacts to vegetation

The NUMBER TWO resource concern in the County was determined to be LIVESTOCK WATER AVAILABILITY – INADEQUATE DISTRIBUTION with a total of 53 priority points. Contributing factors cited for this concern included:

- large areas have no natural water sources
- reservoirs are often unreliable and much too intermittent or seasonal
- water hauls are extremely time consuming and costly

- reservoirs can cause water quality concerns for animals depending on soils in the area
- government water policies make it difficult to install improvements dependent on who holds the water rights
- the very dry nature of Lincoln County due to climate, affects any type of management for any animal or humans and makes concerns expressed in NUMBER ONE above even worse

(Many of these same concerns were expressed for NUMBER ELEVEN WILDLIFE WATER DISTRIBUTION (13 priority points) on this list of county-wide priorities. Because of the similarities of the concern and the contributing factors cited these two priorities could be considered together. If this were to be done, this county wide priority would total 66 priority points making them jointly the NUMBER ONE resource concern by a total of 10 priority points. This could collectively be considered the top resource concern and one which could be addressed through programs, projects, management and especially through cooperation concerning federal agencies policies for water developments.)

The NUMBER THREE resource concern in the county was determined to be INVASIVE SPECIES INCLUDING PLANT PESTS, WEEDS, and AQUATICS with a total of 48 priority points. Contributing factors cited for this concern included

- cheatgrass invasion after fire
- P/J encroachment, noxious weeds in crops and along roadways and waterways
- OHV activity spreading weeds
- aphids and grasshoppers in crops and on rangelands
- ravens taking seed after planting and their effect on Sage grouse
- zebra and quagga mussels and milfoil either existing or threatened in state parks reservoirs and in livestock reservoirs
- salt cedar especially in the White River and Meadow Valley Wash watershed groupings
- Russian olive along waterways

The NUMBER FOUR resource concern in the county was HUMAN CONCERNS with a total of 42 priority points. Information collected in this category are highly varied and also very interesting. The focus group meetings concentrated very purposely on Resource Concerns first and then discussed human-related issues as the last topic after reviewing all the resource concerns. As a result, the majority of the human concerns expressed in the first seven meetings felt to the facilitator like they were directed toward how the contributing factor of human involvement or

use would affect a resource. This is an interesting contrast to the last focus group meeting where due to circumstances, the human concerns were discussed first. The different approach and feel of responses during the last focus group, in my opinion, was seen in a more obvious concern or bias of how to manage the people because of the resource, in contrast to the earlier focus group meetings seemed more directed to how do the people and their activities affect the resource and consequently how should we manage the resource. That being said, this difference in feel of the discussions is strong evidence that the system used and the discussion of resource concern first sets the stage to find solutions. Or to use an old saying; Its always better to get to the root cause and cure the disease and not simply treat the symptom of the disease.

Contributing factors cited for this concern included:

- increased vandalism of fences and waters
- heavy OHV use effecting roads and stirring up dust
- loss of way of life
- changes in the nature of the community due to changes in land use,
- camping near water affects all grazing animals
- potential water extraction from SNWA, Vidler and others affecting already declining water tables
- desire to just be left alone
- unprepared people on an outing breaking down or get stranded
- change to or loss of green or agricultural nature of the area
- current residents choose to be/stay here and increased users present change that dynamic
- attitudes of those who live/work here by choice and those who are recreational/pass-through users significantly affects local economy
- shift from ag to urban/recreational strongly affects way of life
- increased proposed utility corridors could alter land use
- duplicate roads to the same place and/or shed hunters traveling by OHV cross country (this situation is better now due to new shed hunting restriction)
- change in land use due to breakup of previously large landholdings into ranchette-type properties
- a big country is continually getting smaller and more restricted

The NUMBER FIVE (tied) resource concerns in the county was determined to be HABITAT DEPGREDATION AND LOSS and ORGANIC MATTER DEPLETION each with a total of 36 priority points. Contributing factors cited for this concern include

- excessive wildfire for both concerns
- P/J encroachment for both concerns
- invasive plants for both concerns
- plant communities converted to cheatgrass monocultures for both concerns
- excessive trampling around unfenced waters for OM depletion
- lack of wildfire or managed fire to reinvigorate vegetative communities for both concerns

The remaining combined resource concerns for the County as a whole taken from the top five concerns identified in each of the six small watershed groupings are in continuing numerical order:

NUMBER SEVEN (tied) – INADEQUATE LIVESTOCK FEED; and INSUFICIENT WATER FOR IRRIGATION each with a priority points total of 23.

Number NINE (tied) SOIL COMPACTION; and CONCENTRATED FLOW GULLY EROSION each with a priority points total of 19.

NUMBER ELEVEN – WILDLIFE WATER DISTRIBUTION with a priority points total of 13.

NUMBER TWELVE – WILDFIRE with a priority points total of 9.

NUMBER THIRTEEN (tied) – INADEQUATE PLANT STRUCTURE AND COMPOSITION; and WATER QUALITY each with a priority points total of 8.

The top six (due to a tie) county-wide combined resource concerns from the total of all six watershed groupings will be analyzed in the next section discussing potential management practices to consider in addressing these concerns.



GENERAL RESOURCE SUMMARY, POTENTIAL MANAGEMENT AND CONSERVATION ACTIONS TO ADDRESS THESE CONCERNS:

The Natural Resources Conservation Service planning process includes an analysis tool to target which conservation practices ⁽¹⁰⁾ will best address a particular resource concern. First, we must define what a conservation practice is. A conservation practice is simply a set of directions to develop and apply different types of management treatments and/or structures to improve, repair or fix a resource problem. For example, converting an earthen ditch to a buried pipeline practice will have a description of engineering design standards that need to be met to install a pipeline capable of safely and efficiently handling the volume of water needed to irrigate a particular field or fields.

A practice for a prescribed grazing system may be more complex as there is no one management system, rotation pattern, or treatment that will address all the possible on the ground situations due to slope, aspect, soils, climate, soil chemistry, nutrient levels, variety of grazing animals or current and desired plant communities. The practice description in this case lists an extensive variety of factors that need to be taken into account to develop a grazing system to meet the needs of that particular pasture, allotment, or area.

The analysis tool used to identify useful practices is called the Conservation Practice Physical Effects Matrix (CPPE) ⁽¹¹⁾. Some resource concerns can be very complex and far ranging in nature and affect multiple land uses such as rangeland, cropland, homestead, pasture, wetland and many others land uses. Though the CPPE looks at all resource concerns, all conservation practices and all land uses in one table, to simplify the analysis for this report, any potential practices or management actions identified here will relate to those that have direct applicability to the nature of the concern(s) brought out during our focus group meetings. For example, if the concern discussed was occurring on rangelands and no discussion points from any other land uses were brought forward or identified, the conservation and/or management practices selected will be those most appropriate to or implementable on rangelands.

The hot link found in references #10. on page 59 will take you to a web page where you can see Definitions and Standards for any particular conservation

practice. The hot link found in reference #11 will allow you to use the Conservation Physical Effects Matrix to find a list of all the conservation practices and a ranking for potential for any given practice to improve that particular resource concern across the whole variety of land uses.

The CPPE is a tool that allows you to compare and select conservation practices have been tested and their effectiveness in addressing a resource concern documented from a wide variety of research and information sources. Research information on each practice is retained in the National Agricultural Library located in Beltsville, MD. Each practice is listed in the CPPE Matrix with a ranking ranging from -5 points to a +5 points. This ranking indicates, based on documented findings, whether that practice has negative effects that could occur regarding that resource concern if implemented or positive effects that would improve conditions related to that resource concern if implemented. In all cases, the conservation practices listed below by priority concern have been selected because they relate to the **particular land use** discussed by the focus groups. The following listed practices have also been selected **predominately** if they ranged from neutral, or 0 ranking to +5 ranking in relation to addressing the particular resource concern identified by the focus groups. In the few instances a resource concern is included but has a negative effect, for example with a practice such as a Dam, Diversion. This practice could be essential to improving water distribution for livestock but doing this practice could have a negative effect on some habitats for certain wildlife species like fish. In these cases, a balance has to be made or other practices chosen to address the concern without too many potential negative effects. Individual practices having negative rankings may still be essential to making other practices effective. You will see practices with a negative ranking in Priority Concerns NUMBER 2, NUMBER 3, and NUMBER 5. An example would be that even though a fire break could be a site for invasives to get started, reducing the potential for large scale fire which could lead to vegetative type conversion to cheatgrass may outweigh that risk.

Definitions for these ranking values for conservation practices as analyzed through the CPPE process are as follows:

- 5 - Substantial Worsening
- 4 – Moderate to Substantial Worsening
- 3 – Moderate Worsening
- 2 – Slight to Moderate Worsening
- 1 – Slight Worsening
- 0 – No Effect
- +1 – Slight Improvement

- +2 – Slight to Moderate Improvement
- +3 – Moderate Improvement
- +4 – Moderate to Substantial Improvement
- +5 – Substantial Improvement

Potential actions and strategies listed below with each priority concern are for information and to generate thought; though they may be highly applicable to addressing a particular resource concern, the opportunities are much more extensive than just the examples listed. A more thorough analysis of actions and strategies and any site-specific actions and strategies will be developed in any Conservation Action Plans for Key Resource Concerns completed by the Conservation District. The who, what, when, where, and why needs to be defined in the conservation action plan.

This section will be organized in the following sequence:

1. Each county wide resource concern and its principal causal factors as identified in the previous section starting on page 32 will be listed.
2. This will be followed by a listing with supplemental explanatory information and ranking value of conservation practices the CPPE recommends to address some or all the possible solutions to the particular resource concern in question.
3. The follow up section includes management options, or actions and strategies the CD can pursue or consider while developing Conservation Action Plans to address that particular resource concern.

NUMBER 1 Resource Concern

RESOURCE CONCERN

The NUMBER ONE resource concern in the County was determined to be **DEGRADED PLANT CONDITION – UNDESIREABLE PRODUCTIVITY AND HEALTH** with a total of 55 priority points. Many contributing factors for this concern were cited including:

- too much wildfire,

- unregulated year-round wild horse grazing,
- drought,
- Cheatgrass invasion on old burn areas,
- Invasive species,
- overflowing on plant communities,
- P/J encroachment,
- animal concentrations due to lack of necessary management facilities,
- limited water availability concentrated all types of animals causing compaction and impacts of vegetation.

PRACTICES

The NUMBER ONE identified priority resource concern for the Lincoln County Conservation District area was: DEGRADED PLANT CONDITION – UNDESIRABLE PRODUCTIVITY AND HEALTH. This resource concern was almost exclusively tied to rangeland situations. As a result, some practices that may address this issue in a cropland setting were not included in the following practices list as that was not an identified concern by the focus group discussions. Virtually all areas of concern discussed are managed by the Bureau of Land Management in Lincoln County. Though this presents a logistical situation and additional coordination for clearances and permits to implement actions, this is still within the authorities and responsibilities of the conservation district to assess, coordinate, and provide direction and leadership on conservation activities, practices and management. In that light, the identified conservation practices which could be beneficial in addressing this concern on rangelands in Lincoln County are:

Practice Name	Practice #	Rank
● *Brush Management	314	+2
● *Conservation Cover	327	+4
● *Critical area planting	342	+5
● Early Successional Habitat Development/Mgmt.	647	+4
● Fence	382	+2
● *Firebreak	394	+3
● *Forest Stand Improvement	666	+5
● *Fuel Break	383	+1
● *Grazing Land Mechanical Treatment	548	+4
● *Herbaceous Weed Control	315	+2
● Herbaceous Wind Barriers	603	+2
● *Integrated Pest Management	595	0

• Land Reclamation Abandoned Mine Land	543	+4
• *Livestock Pipeline	516	+2
• *Pond	378	+2
• *Prescribed Burning	338	+5
• *Prescribed Grazing	528	+5
• *Range Planting	550	+5
• Restoration of Rare and Declining Habitats	643	+4
• Riparian Herbaceous Cover	390	+5
• Road/Trail/Landing Closure and Treatment	654	+1
• *Spring Development	574	+2
• Streambank and Shoreline Protection	580	+4
• Stream Habitat and Improvement and Management	395	+4
• Tree and Shrub Establishment	612	+5
• *Upland Wildlife Habitat Management	645	+4
• *Water Harvesting Catchment	636	0
• *Watering Facility	614	+2
• *Water Well	642	+1
• Wetland Enhancement	659	+4
• *Wetland Restoration	657	+4
• *Wetland Wildlife Habitat Management	644	+4
• Woody Residue Treatment	384	+5

Practices listed with an Asterix (*) are those most likely to be applicable in Lincoln County due to climate, ecology, vegetative community structure and soil types. Additionally, virtually all rangeland in the county occurs on BLM administered lands requiring coordination and cooperation on funding, environmental clearances and planned objectives.

**ACTIONS AND STRATEGIES
MANAGEMENT ACTIONS AND STRATEGIES TO CONSIDER TO
ADDRESS THIS RESOURCE CONCERN:**

- A. Due to land ownership patterns and extent, implementing actions and strategies will require close coordination and involvement of the public land management agency responsible for the particular rangeland in question. The CD itself can be a cooperating and coordinating entity accomplish this.
- B. Increase CD involvement with federal land use planning and NEPA processes.

- C. Investigate alternative funding sources such as wildlife organizations, grant funds and foundations.
- D. Increase participation with state agencies in funding and planning projects.
- E. Increase input to the STAC process to utilize and fund range plantings where improved production on rangelands can also provide a benefit to improve management of related private properties.
- F. Increase partnering with NGO's, agencies, and private groups and individuals to address improve post fire rehabilitation efforts.
- G. Encourage producers to implement planed grazing systems on their operations and work with agencies to ensure coordination and compatibility of grazing systems they develop within the constraints and limitations of the overall operation and economic viability of a ranching enterprise. The Taylor Grazing Act charged the Grazing Service, now the Bureau of Land Management with "Stabilizing the Livestock Industry".
- H. Encourage agencies and individuals to implement range improvements to distribute use and thus improve growing and recovery potential for rangeland plants.
- I. Of great importance to consider is that water distribution is essential and must be in place before many of the practices identified in this resource concern can be implemented.
- J. Support development of and increase participation in both the Local Work Group and the Local Area Work Group to increase cooperation among all parties having an interest rangeland management improvement.

NUMBER 2 Resource Concern

RESOURCE CONCERN

The NUMBER TWO resource concern in the County was determined to be LIVESTOCK WATER AVAILABILITY – INADEQUATE DISTRIBUTION with a total of 53 priority points. Contributing factors cited for this concern included:

- large areas have no natural water sources,
- reservoirs are often unreliable and much too intermittent or seasonal,
- water hauls are extremely time consuming and costly,
- reservoirs are subject to water quality concerns for animals depending on soils in the area,

- government water policies make it difficult to install improvements dependent on who holds the water rights,
- the very dry nature of Lincoln County due to climate affects any type of management for any animal or humans and makes concerns expressed in NUMBER ONE PRIORITY above even worse.

(Many of these same concerns were expressed for NUMBER ELEVEN-WILDLIFE-WATER DISTRIBUTION (13 priority points) on this list of county-wide priorities. Because of the similarities of the concern and the contributing factors cited these two priorities could be considered together. If this were to be done, this county wide priority would total 66 priority points making them jointly the NUMBER ONE resource concern by a total of 10 priority points. This could collectively be considered the top resource concern and one which could be addressed through programs, projects, management and especially through cooperation concerning federal agencies policies for water developments. Of great importance to consider is that water distribution is essential and must be in place before many of the practices identified in the Number 1 resource concern can be implemented.)

PRACTICES

The NUMBER TWO identified priority resource concern for the Lincoln County Conservation District area was: LIVESTOCK WATER AVAILABILITY – INADEQUATE DISTRIBUTION.

Practice Name	Practice #	Rank
● #Aquatic Organism Passage	396	+1
● #Channel Bed Stabilization	584	+1
● Dam	402	+4
● #Dam, Diversion	348	+4/-2
● #Fish Pond Management	399	+2
● Integrated Pest Management	595	+2
● Livestock Pipeline	516	+5
● Pond	378	+5
● Pumping Plant	533	+5
● #Roof Runoff Structure	558	+2
● Spring Development	574	+5
● Stream Crossing	578	+2
● Structure for Water Control	587	+1
● Trails and Walkways	575	+1
● Water Harvesting Catchment	636	+5
● Watering Facility	614	+5

Practices shown with a (#) are principally tied to benefiting wildlife and are generally not considered large scale enough to meet the needs for livestock water or are for a specific habitat need for wildlife. All the livestock water practices will benefit wildlife to a greater or lesser extent.

This concern is widespread within Lincoln County as the county straddles the Sagebrush Cold Desert, the Salt Desert Shrub and the Mojave Desert ecosystems. There are fewer concerns with water distribution in the Mt. Grafton and Wilson Creek areas (north and northeast portions of the county) which have more permanent natural water sources. This concern rapidly increases as you move south and west in the county. For example, it has taken many years and substantial public and private investment to distribute water in the Sand Springs Valley which now operates and maintains as much as 100+ miles of pipelines to distribute water. Even this is marginally adequate to properly distribute livestock. In addition, many natural sources could be better managed if they were fenced to reduce trampling, wallowing, soil compaction and bank break down. Options such as water hauling or earthen reservoirs could be used but are far less reliable and can be extremely costly. One ranching business within the Tule Desert region operated for years relying on water hauling. This required a high-volume water tender operating between 3 to 6 days a week to supply adequate water for their livestock. Costs of this in time and labor as well as maintenance are tremendous.

ACTIONS AND STRATEGIES

MANAGEMENT ACTIONS AND STRATEGIES TO CONSIDER TO ADDRESS THIS RESOURCE CONCERN:

- A. Due to land ownership patterns and extent, implementing actions and strategies will require close coordination and involvement of the public land management agency responsible for the particular rangeland in question. The CD itself can be a cooperating and coordinating entity to accomplish this.
- B. Increase CD involvement with federal land use planning and NEPA processes.
- C. Investigate alternative funding sources such as wildlife organizations, grant funds and foundations.
- D. Increase participation with various state agencies in funding and planning projects.

- E. Increase input to the STAC process to utilize permanent water developments where improved animal distribution on rangelands can also provide a benefit to improve management of private and public rangelands.
- F. Increase partnering with NGO's, agencies, and private groups and individuals to address limited water availability through permanent water development.
- G. Encourage agencies and individuals to implement rangeland water improvements to distribute use and thus improve growing and recovery potential for rangeland plants.
- H. Support development of and increase participation in both the Local Work Group and the Local Area Work Group to increase cooperation among all parties having an interest rangeland management improvement.
- I. Of great importance to consider is that water distribution is essential and must be in place before many of the practices identified in the Number 1 resource concern can be implemented.

NUMBER 3 Resource Concern

RESOURCE CONCERN

The NUMBER THREE resource concern in the County was determined to be INVASIVE SPECIES INCLUDING PLANT PESTS, WEEDS, and AQUATICS with a total of 48 priority points. Contributing factors cited for this concern included

- Cheatgrass invasion after fire,
- P/J encroachment, noxious weeds in crops and along roadways and waterways,
- OHV activity spreading weeds,
- Aphids and grasshoppers in crops and on rangelands,
- ravens taking seed after planting and their effect on Sage grouse,
- zebra and quagga mussels and milfoil either existing or threatened in state parks reservoirs and in livestock reservoirs,
- Salt Cedar especially in the White River and Meadow Valley watershed groupings,
- Russian olive along waterways.

PRACTICES

The NUMBER THREE identified priority resource concern for the Lincoln County Conservation District area was: INVASIVE SPECIES INCLUDING PLANT PESTS, WEEDS, AND AQUATICS. This concern was identified as occurring on public and private lands regardless of the type of management or land use occurring on the ground.

Practice Name	Practice #	Rank
• Access Control	472	+5
• Ally Cropping	311	+3
• Brush Management	314	+4
• Channel Bed Stabilization	584	+4
• Clearing and Snagging	326	+1
• Conservation Cover	327	+4
• Conservation Crop Rotation	328	+2
• Contour Buffer Strips	332	+4
• Cover Crop	340	+4
• Critical Area Planting	342	+4
• Early Successional Habitat Development/Management	647	+4
• Fire Break	394	-1
• Fish Pond Management	399	+4
• Forest Stand Improvement	666	+3
• Forest Trails and Landings	655	+1
• Fuel Break	383	-1
• Grassed Waterway	412	+4
• Herbaceous Weed Control	315	+4
• Herbaceous weed Barriers	603	+4
• Irrigation Water Management	449	+1
• Land Clearing	640	-2
• Land Reclamation Abandoned Mine Land	543	+4
• Land Reclamation Current Mine Land	544	+4
• Land Reclamation Landslide Treatment	453	+4
• Land Reclamation Toxic Discharge Control	455	+4
• Mulching	484	+2
• Livestock Pipeline	516	+5
• Pond	378	+5
• Pumping Plant	533	+5
• Roof Runoff Structure	558	+2
• Spring Development	574	+5

• Prescribed Burning	338	+4
• Prescribed Grazing	528	+1
• Range Planting	550	+4
• Recreation Area Improvement	562	+3
• Recreation Land Grading and Shaping	566	+4
• Restoration and Mgmt. of Rare or Declining Habitats	643	+4
• Sprinkler System	442	+1
• Streambank and Shoreline Protection	580	+4
• Tree/Shrub Establishment	612	+5
• Tree/Shrub Site Preparation	490	+5
• Upland Wildlife Habitat Management	645	+4
• Vegetative Treatment Area	635	+4
• Wetland Creation	658	+4
• Wetland Enhancement	659	+4
• Wetland Restoration	657	+4
• Wetland Wildlife Habitat Management	644	+4
• Windbreak/Shelterbelt Establishment	380	+1
• Windbreak/Shelterbelt Renovation	650	+1
• Water Harvesting Catchment	636	0
• Watering Facility	614	+2
• Water Well	642	+1
• Woody Residue Treatment	384	+3

Many of the identified practices above tie closely with those listed for improving plant production and health. The principal idea is to improve management of plant communities to reduce the potential for fire, reduce encroachment of undesirable plants either native or invasive, and reduce concentrations of any variety of uses that open up bare ground and provide the vectors for undesirable plants or pests to become established. These considerations are just as important for long term management as actual direct treatment of weeds and/or pests.

ACTIONS AND STRATEGIES

MANAGEMENT ACTIONS AND STRATEGIES TO CONSIDER TO ADDRESS THIS RESOURCE CONCERN:

- A. Increase participation with Tri County Weeds and any Weed Management Areas that may be formed in the county.
- B. Increase funding for public outreach on noxious weeds and their negative effects.

- C. Increase public education for identifying weeds.
- D. Increase coordination between agencies and private citizens to improve county inventory of noxious weeds and pests.
- E. Develop a local plant and or pest identification cadre to improve detection and rapid response for new and/or small infestations.
- F. Coordinate with state agencies to address and identify all plant pests; insect, soil, animal, avian, plant, etc.; and develop treatment options.
- G. Continue treatment of weeds and pursue increased funding and capacity for these efforts.
- H. Support targeted grazing to treat weeds and reduce fuels, especially invasive annual grasses.
- I. Encourage and coordinate on fire rehabilitation efforts to reduce weed invasions and type conversion to monoculture plant communities.
- J. Encourage the use of prevention techniques such as wash stations for boats, vehicles and heavy construction equipment to limit the spread of weeds.
- K. Look for funding opportunities to target specific species of weeds or invasive pests. For example, salt cedar or Quagga mussel specific funding opportunities.
- L. Encourage removal of P/J for secondary products uses such as bio char, fire wood, wood chip products for fuels and for wood products as markets become available.
- M. Support development of and increase participation in both the Local Work Group and the Local Area Work Group to increase cooperation among all parties having an interest rangeland management improvement.

NUMBER 4 Resource Concern

RESOURCE CONCERN

The NUMBER FOUR resource concern in the county was HUMAN CONCERNS with a total of 42 priority points. Information collected in this category are highly varied and also very interesting. The focus group meetings concentrated very purposely on Resource Concerns first and then discussed human-related issues as the last topic after reviewing all the resource concerns. As a result, the majority of the human concerns expressed in the first seven meetings felt to the facilitator, like they were directed toward how the contributing factor of human involvement or use would affect a resource. This is an interesting contrast to the last focus group

meeting where due to circumstances, the human concerns were discussed first. The different approach and feel of responses during the last focus group, in my opinion, was seen in a more obvious concern or bias of how to manage the people because of the resource, in contrast to the earlier focus group meetings seemed more directed to how do the people and their activities affect the resource and consequently how should we manage the resource. That being said, this difference in feel of the discussions is strong evidence that the system used and the discussion of resource concerns first sets the stage to find solutions. Or to use an old saying; Its always better to get to the root cause and cure the disease and not simply treat the symptom of the disease.

PRACTICES

The NUMBER FOUR identified priority Resource Concern for the Lincoln County Conservation District area was: HUMAN CONCERNS.

There are no specific practices that can be identified for the human related concerns presented. Virtually all the identified concerns and their contributing factors cited for this concern included:

- increased vandalism of fences and waters
- heavy OHV use affecting roads and stirring up dust
- loss of way of life
- changes in the nature of the community due to changes in land use
- camping near water affects all grazing animals
- potential water extraction from SNWA, Vidler and others affecting already declining water tables
- desire to just be left alone
- unprepared people on an outing breaking down or getting stranded
- change to or loss of green or agricultural nature of the area
- current residents choose to be/stay here and increased users present change that dynamic
- attitudes of those who live/work here by choice and those who are recreational/pass-through users significantly affects local economy
- shift from ag to urban/recreational strongly affects way of life
- increased proposed utility corridors could alter land use
- duplicate roads to the same place and/or shed hunters traveling by OHV cross country (this situation is better now due to new shed hunting restriction)
- change in land use due to breakup of previously large landholdings into ranchette-type properties
- big country is continually getting smaller and more restricted

These concerns could have an on the ground effect where they are actually taking place. Since the concerns discussed were possible in the future and may have an effect when and/or if it occurs, the only action available to address these concerns is to be both politically and legislatively active and involved at the local, county, state and federal level to try to establish procedures and mitigations for these potential effects in advance. Should these future potential concerns come to fruition, many, but certainly not all, of their effects could be covered by implementing practices identified in NUMBERS ONE, TWO, THREE, and FIVE/SIX Priority Concerns described in this section

ACTIONS AND STRATEGIES

MANAGEMENT ACTIONS AND STRATEGIES TO CONSIDER TO ADDRESS THIS RESOURCE CONCERN:

- A. Increase public awareness of potential resource concerns that may occur in their area should certain actions or decisions take place.
- B. Increase public awareness of processes and procedures for being involved in public meetings and in commenting or providing data and alternatives to government planning documents.
- C. Initiate Conservation Action Plans addressing documented resource concerns occurring in the county.
- D. Initiate a regular review and update procedure for identifying new or changing resource concerns and undertake a revision process to this model outlined in this document.
- E. Encourage all partners to provide public education and outreach concerning remote country or desert driving preparedness, the value and purpose of rangeland improvements, the dangers of activities that spread weeds, etc.
- F. Support development of and increase participation in both the Local Work Group and the Local Area Work Group to increase cooperation among all parties having an interest rangeland management improvement.

NUMBER 5 Resource Concern

RESOURCE CONCERN

The NUMBER FIVE (tie) resource concern in the County was determined to be HABITAT DEGRADATION AND LOSS and ORGANIC MATTER

DEPLETION each with a total of 36 priority points. Contributing factors cited for this concern include

- excessive wildfire for both concerns,
- P/J encroachment for both concerns,
- invasive plants for both concerns,
- plant communities converted to cheatgrass monocultures for both concerns,
- excessive trampling around unfenced waters for OM depletion,
- lack of wildfire or managed fire to reinvigorate vegetative communities for both concerns.

PRACTICES

The NUMBER FIVE identified priority resource concern for the Lincoln County Conservation District area was a tie between: HABITAT DEGRADATION AND LOSS and ORGANIC MATTER DEPLETION.

Practice Name	Practice #	Rank
• Access Control	472	+5
• ~Ally Cropping	311	+3
• Brush Management	314	+4
• Channel Bed Stabilization	584	+4
• Clearing and Snagging	326	+1
• ~Conservation Cover	327	+4
• ~Conservation Crop Rotation	328	+2
• Contour Buffer Strips	332	+4
• Cover Crop	340	+4
• ~Critical Area Planting	342	+4
• Early Successional Habitat Development/Management	647	+4
• Fire Break	394	-1
• Fish Pond Management	399	+4
• Forest Stand Improvement	666	+3
• Forest Trails and Landings	655	+1
• Fuel Break	383	-1
• ~Grassed Waterway	412	+4
• Herbaceous Weed Control	315	+4
• Herbaceous Weed Barriers	603	+4
• ~Irrigation Water Management	449	+1
• Integrated Pest Management	595	+2
• Land Clearing	640	-2

• Land Reclamation Abandoned Mine Land	543	+4
• Land Reclamation Current Mine Land	544	+4
• Land Reclamation Landslide Treatment	453	+4
• Land Reclamation Toxic Discharge Control	455	+4
• Mulching	484	+2
• Prescribed Burning	338	+4
• Prescribed Grazing	528	+1
• Range Planting	550	+4
• Recreation Area Improvement	562	+3
• Recreation Land Grading and Shaping	566	+4
• Restoration and Mgmt. of Rare or Declining Habitats	643	+4
• ~Sprinkler System	442	+1
• Streambank and Shoreline Protection	580	+4
• Tree/Shrub Establishment	612	+5
• Tree/Shrub Site Preparation	490	+5
• Upland Wildlife Habitat Management	645	+4
• Vegetative Treatment Area	635	+4
• Water Harvesting Catchment	636	+5
• Watering Facility	614	+5
• Water Well	642	+5
• Wetland Creation	658	+4
• Wetland Enhancement	659	+4
• Wetland Restoration	657	+4
• Wetland Wildlife Habitat Management	644	+4
• Windbreak/Shelterbelt Establishment	380	+1
• Windbreak/Shelterbelt Renovation	650	+1
• ~Woody Residue Treatment	384	+3

All the focus group discussion points surrounding this concern for both Habitat Degradation and Depleted Organic Matter were tied to:

- excessive wildfire,
- P/J encroachment,
- invasive plants,
- plant communities converted to cheatgrass monocultures,
- excessive trampling around unfenced waters

and are covered in the identified Practices shown above and in practices listed for addressing the NUMBER ONE, NUMBER TWO AND NUMBER THREE priority concerns.)

One exception to this discussion of Depleted Organic Matter occurs in the Pahranaagat Valley on heavily flood irrigated pasture that has a high seasonal water table. Additional Practices to address the Pahranaagat Valley situation not mentioned above include:

Practice Name	Practice #	Rank
• Drainage Water Management	554	+2
• Field Boarder	386	+4
• Filter Strip	393	+5
• Subsurface Drain	606	-2

Practices that also address this exception in the Pahranaagat Valley are identified in the full list above with an (~) symbol.

**ACTIONS AND STRATEGIES
MANAGEMENT ACTIONS AND STRATEGIES TO CONSIDER TO
ADDRESS THIS RESOURCE CONCERN:**

- A. Due to land ownership patterns and extent, implementing actions and strategies will require close coordination and involvement of the public land management agency responsible for the particular rangeland in question. The CD itself can be a cooperating and coordinating entity to accomplish this.
- B. Increase CD involvement with federal land use planning and NEPA processes.
- C. Investigate alternative funding sources such as wildlife organizations, grant funds and foundations.
- D. Increase participation with state agencies in funding and planning projects.
- E. Increase input to the STAC process to utilize and fund rangeland plantings and wildlife habitat improvements where improved production on rangelands can also provide a benefit to correspondingly improving management of private and public properties.
- F. Increase partnering with NGO's, agencies, and private groups and individuals to address post fire rehabilitation efforts.
- G. Encourage producers to implement planed grazing systems on their operations and work with agencies to ensure coordination and compatibility of grazing systems they develop within the constraints and limitations of the overall operation and economic viability of a ranching enterprise. The Taylor Grazing Act charged the Grazing Service, now the Bureau of Land Management with "Stabilizing the Livestock Industry".

- H. Encourage agencies and individuals to implement range improvements to distribute use and thus improve growing and recovery potential for rangeland plants.
- I. Encourage education programs on irrigation water management to reduce excessive soil leaching.
- J. Investigate alternative crops and crop rotations that can build soils and organics as well as be less nutrient demanding.
- K. Support development of and increase participation in both the Local Work Group and the Local Area Work Group to increase cooperation among all parties having an interest rangeland management improvement.

As can be seen from looking at the number of Conservation Practices that re-occur when addressing the PRIORITY RESOURCE CONCERNS listed above, many conservation practices can provide benefits in addressing the causes of multiple resource concerns to a greater or lesser extent.



CONCLUSIONS:

When reviewing the recommended conservation practices identified above to address the resource concerns identified by the focus groups, it is important to note that many of the same recommended practices and potential actions and strategies repeat for several of the County-Wide Resource Concerns. The reason this occurs is because most of the possible causal factors identified for many of the identified resource concerns are similar.

This does not limit the CD in finding varied methods, actions, strategies, funding sources, partners or programs to address these concerns. Instead, this focuses the recognition of what the concern is exactly, but allows you to choose any direction needed to address these concerns through a Conservation Action Plan prepared by the CD. It is critically important to keep in mind that this report is a process guide and not a cookbook answer to identifying various ways to address a resource concern.

This document provides a stepwise progression of analysis to allow the CD to repeat this process again in the future.

To summarize this report:

1. This report lays out and documents a completed public input process for assessing resource concerns through the use of the resource concerns checklist to focus the gathering of information regardless of the source of that information.
2. The report contains a defined method for determining through discussions, the severity of, and amount of public interest to determine the priority of a resource concern through use of the nominal group process.
3. This report includes links to important analysis and planning tools, specifications and definitions to identify applicable conservation practices that can be employed to address resource concerns with a positive or negative ranking on how effective that practice is in resolving an identified concern.
4. Actions or strategies listed here are applicable to the scale and level of intensity of this assessment process. This can be scaled up or down in intensity all the way to who, what, when, where, and why when a Conservation Action Plan is completed on a smaller, intensively planned site.

5. Every resource needs assessment must be followed up with a Conservation Action Plan which addresses one or more of the identified priority resource concerns. If this is not included as a step, then the time and expense of preparing any similar document is for not.
6. A schedule to review and update this needs assessment is critical to constantly see changing issues in the county and to allow a shift in process and approach to address new or emerging resource concerns. This review may be conducted on one issue or expanded to look at any level up to and including a county wide approach as did this document. Its recommended that a review occur **at a minimum of every 3 to 5 years.**

The majority of resource concerns identified through the six watershed groupings and in the County-wide combined priorities and the causes/problems of those concerns were centered around applying practices related to:

- Permanent water development and distribution
- Management of current available water
- Grazing systems and management of them
- Treatment and management of invasives
- Rehabilitation post fire
- Rehabilitation of degraded sites
- Removal of encroaching species
- Management of **all** grazing animals
- Habitat improvement and restoration

Applying the types of practices identified through this process will have many benefits for improving resource conditions in Lincoln County. Because of the size of some of the concerns presented and how they interconnect, it would be best to choose only one or two priority concerns and work to address those as a first step. Priority concern NUMBER ONE and priority concern NUMBER TWO are very closely interrelated and are best approached by addressing them together. However, the NUMBER ONE priority **CANNOT** be fully implemented without completing priority NUMBER TWO first.

The last phase of this resource needs assessment process is to develop a Conservation Action Plan(s). This process may be designed to address one or more of the identified priority concerns at the same time. Important steps to include in a Conservation Action Plan are:

- Develop a list of pros and cons for each thing you can do or how you can best assist to address each priority resource concern.
- From this list, and considering public input on what is the top priority, select the resource concern(s) that will be included in the Conservation Action Plan (note: There may be more than one Conservation Action Plan developed.).
- Evaluate the general actions and strategies from the resource needs assessment and determine if there are additional actions or strategies to consider or include.
- Select the scale at which you feel you can implement actions, assistance, strategies, funding pools, or partnerships to help individuals install or manage conservation practices to alleviate a priority resource concern.
- Develop a who, what, when, where, why and how list of what actions each participant will undertake in applying conservation practices on the ground considering their particular situation or status or authorities. This includes NEPA, funding, design, installation, development, marketing, and evaluation and monitoring.
- Ensure there is a plan to evaluate success or failure of the actions in addressing the stated resource concern.
- Re-evaluate the process for this Conservation Action Plan, amend this plan if needed, and initiate the next plan as needed or priorities dictate.

Respectfully submitted.

Richard A. Orr

Certified Professional in Range Management

REFERENCES:

- (1) US Census Bureau Quick View Census Statistics Lincoln County
- (2) USDI Bureau of Land Management Ely RMP
- (3) US Geological Survey Topographic Maps
- (4) Data USA (summary estimates of US Census Data)
- (5) Western Regional Climate Center Monthly Precipitation Records
- (6) Natural Resources Conservation Service National Planning Manual
- (7) USDI Bureau of Land Management Wildhorse and Burro Program Statistics
- (8) NRCS Resource Concerns Checklist <http://nvacd.org/wp-content/uploads/2018/09/Resource-Concerns-Checklist-national.pdf>
- (9) NRCS Descriptions of Resource Concerns <http://nvacd.org/wp-content/uploads/2018/09/Resource-Concerns-descriptions-by-NRCS.pdf>
- (10) NRCS National Conservation Practice Standards https://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/technical/cp/neps/?cid=nrcs143_026849 This link allows you to see the definition of the conservation practice and the standards to be met to properly implement that practice.
- (11) NRCS Conservation Practice Physical Effects Matrix https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/technical/econ/data/?cid=nrcs143_009740 then select the hyper link in the middle of the page for the Conservation Practice Physical Effects spreadsheet(it is a Protected view file.)
- (12) NRCS Web Soil Survey <https://websoilsurvey.nrcs.usda.gov/app/> The most current soils information and updates to soil surveys in Lincoln County are available on this hot link. This also contains reference information to the Range site descriptions for older surveys that are not yet updated and the newer state and transition model-based Ecological site descriptions for soil surveys that have recently been updated. It is recommended that this web site be consulted to prepare localized project or area specific maps for each individual Conservation Action Plan.



APPENDICES:

APPENDIX 1: Minutes; Pahranagat/White River Valley Grouping

May 29, 2018 at Noon

Alamo Ambulance Barn

12:05- Start meeting- Rick Orr introduced himself and the project. Our task is to gather as much information about the resources of Lincoln County. We will begin going through the “resource concerns checklist” that is from the NRCS. It will be used to gauge the concerns of the area. Pahranagat Valley is the first area that will be assessed in Lincoln County. Rick assures us that this process is not agency-specific. We are only analyzing and determining the issues. The agencies and government can choose how to use this information down the road. We are strictly developing a database.

Present: Rick Orr, Maggie Orr, Vaughn Higbee, Rob Vinson, Janel Meldrum, John Hiatt, Eddie Stewart, Steve Meldrum, Jessica Mathews and Christiana Manville

General Concerns

Pipeline

- Causes flood control issues
- Lose of ditches cause more water to run directly into drain – more sediment

Wildlife

- Water for wildlife – Guzzlers or drinkers are best but are inefficient
- Wildlife safety hazards
 - o Deer on highway
 - o Racoons transmitting parasites
 - o Deer in Richardville – no crops, grapes or gardens

Soil Erosion

Sheet

- Upper Narrows to Lower Narrows – Fire – Tumbleweeds replaced White Sage
- Now eroding due to flood
- Addition of highway system change landscape and plant life – not as productive

Rill

- Normally goes from sheet to gully quickly
- Roads are culprit due to not used BMPs
- Places – airport – fields entrance during refurbishing – run in and out of the drain
- Drain is filling with sediment – most of which is in wash from rain
- Years ago, there were many dairies with rotating crops, now about 90% of land is pasture

Gully

- Dramatic increase in gullies over the years
- Old earth irrigation ditches have become large gullies on the refuge
- Going into drain
- Canyons/Narrows
- West side much worse than east side
- Safety Issue from Ferguson Wash – Gabions are washing out
- Weather patterns have changed – no large storms of late

Shoreline

- Minor to Small due to very few flowing streams
- Eroding due to farming too close to the shoreline
- Most concentrated flow is from storms
- Some areas of drain are washed, cement ditch does not carry water anymore

Soil Quality

Subsidence

- Not aware of any in the Pahrangat water system

Compaction

- Still water
 - o North Cannon farm – tight clay, top sinks
 - o Channel water
 - o Ash Spring Creek on Whipple, center of field stays wet due to seeps in area
 - o Crystal and Ash Junction – a lot of water without any bank structure
- Livestock
 - o Water (water hauls, springs, reservoirs, wells, etc.)
 - o Pasture
 - o Shade trees
- Vehicle
 - o Recreational
 - o Farm Management Use
 - o Cultivation Practices – limited since most of the valley is pasture

Organic Matter Depletion

- THIS IS A MAJOR PROBLEM - Cow cannot support calf in summer
- This problem gets worse further south in the valley
- Cow cannot support calf in summer
- Leads to compaction and water runoff instead of absorption
- Nutrients are leaving the pasture with the hay and animals
- Areas with manure cause algae in water (not a problem)
- Alluvial fans
- Soil test were requested

Concentrated Salts and Chemicals

- Soil surveys show valley has weak to strong saline soils
- Around any standing water or playa
- Springs have lower concentration of salts compared to seeps and well water
- DATA GAP IN THIS WATER/SOIL QUALITY INFORMATION

Water Quantity

Excess Water

- No drifted snow issues
- High water tables in winter
 - o No irrigation
 - o Less evapotranspiration
 - o Limits crops
- 3 springs and 6 seeps at Gear Ranch
- Springs piped to drain across Sharp Lane
- Seeps are high in Salt Concentration
- Seeps Provide Habitat for Wildlife
- About 12 seeps have had drainage installed
 - o 1 by Cleo Connell
 - o North of Ash
 - o 4 on Whipple's edge of the valley
 - o 6-8 connected wet wells on refuge
 - o East of Ash
 - o 2 by Schofield
 - o 2 on edge of Cannon
- NOTE Seeps generally have no or low outflow and may not qualify for beneficial use

Insufficient Water

- Rangeland water shortage, both availability and distribution
- There should be water hauled or in pipelines to troughs every three miles
- Have areas with adequate water and no distribution
- North of farms in Hiko, both availability and distribution are an issue
- Have a highly faulted system
- NOTE Ground Water is not continuous under the surface. This affects well water for culinary use
- South part of valley to Minard lake, adequate water, management and irrigation issues
- Uplands lack availability and distribution
- From Minard Lake South, lacks availability and distribution
- NOTE Wildlife require water away from valley. This is a drawback to closed pipelines
- NOTE Pah. Valley irrigation req. is 4-acre feet per acre per year
- Water is over allocated. Irrigation water management is needed. Different soil types change irrigation demand. The irrigated valley portion has a dual problem because

of high volume springs running 365 days of the year. There is a water abundance during winter and a water shortage for crops during summer.

Water Quality

Excess Nutrients

- Not identified, little to no fertilization in the valley
- Some fertilization at the North end of cannon ranch
- Nitrate Concentrations occur around springs with livestock congregation
- NOTE commercial hemp operations required fertilization unknow impact at this time
- Selenium and arsenic requirements, applied to drinking water, not irrigation
- All drinking water is from wells, meets state standards with mixing
- Continuing to meet state drinkning water standards is a concern
- There are 3 irrigation wells, 2 North of Hiko
 - o This water is corrosive but less so as you go south
 - o Water gets used multiple times as it moves through the valley
 - o Salts go up as you move south
 - o Livestock drink out of the drain or ditches
 - o But they prefer not to drink out the drain
 - o By the time water moves past the swamp mid-valley, cattle do not want to drink it due to alkali
 - o NOTE the Refuge has water quality info on Frenchie and the refuge lakes but NOT on the drain
- DATA GAP on water quality information in the valley

Pesticides transported to surface and ground waters

- Well head protections in place
- Most abandoned wells were capped 25 years ago
- Don't know of any open or pit-dug cisterns
- Spraying near the drain for weeds
- Most don't use pesticides
- NOTE potential for significant herbicide use for coming hemp operations
- Commercial spraying for weeds on the North side of Cannon ranch by intermountain farmers

Excess pathogens, chemicals, manure, etc.

- Little to no manure spreading
- Some use of old pig manure
- Refuge spring on lower east side is open to range cattle, manure is an issue
- Issues near some livestock wells – manure
- Whipple and Cannon have a few feed lots, against the hill and out of the green belt. Used for about 5 months in the winter.
- No confined animal feeding operations

- Human feces in Ash Springs due to uncontrolled recreation

Heavy Metals, Petroleum, other Pollutants

- Old Gas stations leaking issues. R-place is above ground. IS THE STORE ABOVE GROUND?????
- Some truck transportation along highway but no train or aircraft
- Most all irrigation wells have been converted to submersibles, so no oil drip.
 - o There is one just below crystal but it is not regularly pumped

Excessive sediments in surface water

- The upper drain where fish live is an issue when irrigation flows over the fields.
- The sediment continues to build up as it moves south.
- Keeping ditches on grade helps lessen this
- Lots of side-inflow during heavy rain events
- Wetlands in the valley were originally created due to 4 big alluvial fans

Elevated water temperature

- Potential problem for fish
 - o Specially in the upper ash springs outflow
 - o Crystal didn't use to mix with ash
 - o Crystal (27 degrees) is colder than ash at (31-36 degrees)
 - o Canopy cover is good in the fish habitat area (90% coverage)
 - o Frenchie lake water used to run under the road and mix with crystal
 - o Management of mixture of the water sources is the only way to control water temperature
- Carp in the system stir up sediment which increases water temp
- Whipple Ranch dug wells so cattle wouldn't have to drink hot water in the 6-mile valley area

Degraded Plant Condition, Plant Productivity, and Health

Poor Production

- Soil nutrients
- Compaction
- Lack of drainage on pastures
- Are certain plants matched with correct soil types?
- NOTE Production affects from excess animals using range lands have occurred at times mostly related to livestock within this water shed???? Oreana Springs????

Plant Structure and Composition

- Is there anything more drought tolerant than what we have? Rangeland and pasture land
- It seems dryer and hotter
- Winterfat areas are a concern, a species change away from this plant

- This change has caused an increase in wind erosion
- Winterfat is difficult to grow back
- Salt grass has come in where alkali sacaton is supposed to grow
- When kochia is established, in disturbances it shades other plants out
- Russian neck-weed is allelopathic
- Rabbit brush is moving into bunch grass areas
- Biggest changes in rangeland have been in sage brush communities
- Valleys have more shrubs where they used to be more grass
- Janice Beatty photos show an increase in creosote even with no grazing
- Rob Vinnick has some information on pre-settlement plants and has 1930, 50 and 60 aerial photos of the valley
- 1970s and 80s were a wet period in Nevada

Plant pest pressure

- Crows and ravens have increased as much as 10 times
- Small grains are now only a cover crop so birds are not as big a crop pest
- Deer throughout the valley - alfalfa
- Geese around Hiko – alfalfa
- Afids – alfalfa

Invasive Species

- Cheatgrass – management needs to change – have to utilize management, recognize it exists – need to focus fire-fighting resources – burned areas such as Seaman range, black horse well, and seaman summit are mostly cheatgrass and coming into white river of thistles
- Red-brome
- Major influence on plant community conversion
- Other invasives include Russian olive, salt cedar scattered in valley, Low white top (hoary cress) though out the valley and getting worse, Russian nap weed on range and private lands, halogeton on rangelands and the refuge spread by vehicles, Phragmites, common cocklebur along waterways, spiny cocklebur, Russian thistle, hair and fox-tail barley, goat-head, little blue mustard, Sierra mustard from south end on Minard lake and south, common carp, black bullhead, bull frog, cyprinids, Johnson grass along the drain, five-hook bassia, and more
- The drains and ditches spread weeds

Wildfire

- Excessive bio-mass accumulation
- During wet years, cheatgrass and red-brome build up to fine fuels
- Pinon Pine or Juniper exist on the Seaman range – timber mountain area – mt. Irish – sheep range – mostly very high elevation
- About 600 acres of ponderosa pine on the Seaman range that have been affected by fire

- Cotton wood trees along the drain from Vaughn's to JFDI would be a safety hazard if burned
- Most fires spread due to fine fuels build up

June 26, 2018, 12PM

Pahranagat National Wildlife Refuge

12:19—Begin Meeting

Rick explains how the process will go from here. The notes will be consolidated and capsulated into the top 5 issues of primary concern and the 5 issues of secondary concern. He will have a list of issues that need more data. He will also make a list of partners. He will have some possible management solutions.

Revisited items:

Nutrients in surface, ground, and well water—**Need to talk to Nevada Environmental Protection**

Steve offered to talk to local water district about water quality

Christiana has several water quality data reports. **Need to have them sent for RNA data compilation.**

(clarification) **Ferguson Wash** is the gravel pit area

Janel started some interviews:

- John Sanders: ATV trails became washes, resulting in dust
- Mike Prince
- Kelly Miller— half way down
- Ken Maxwell (utilities) : Energy concerns, air quality, soil quality in town
- Wade Poulsen: need phone number

Other possible interviews: Gary Wade, and maybe a Whipple

Native American Ruins—maybe contact BLM Archeologist

General Concerns Meeting 2

Habitat for Fish and Wildlife

- Listed T&E species
 - o Pahranagat Round Tail Chub
 - o White River Springfish in Ash Sp
 - o Hiko/White River Springfish in Crystal and Hiko sp
 - o South West Willow Flycatcher
 - o Ridgeway Rail
 - o Yellow billed Cockoo
 - o Desert Tortoise

(INSERT LIST and ACQUIRE SHP. FILES FROM CHRISTIANA for OTHER CANDIDATE and SPECIES of CONCERN. PLANTS INFO NEEDS TO BE ACQUIRED BUT there is a CONCERN that the NATIVE PLANT SOCIETY LIST CONTAINES MANY MORE SPECIES THAN ANY UNIT OF GOVT HAS RECOGNIZED.)

- John thinks deer numbers up in town are up due to wild horse pressure and causing compaction at springs; wild horses are most likely to be present in the extreme northern part of the watershed; limited to fewer numbers in the southern part (Kane Springs Valley)
- Christiana asked about depredation tags; some ranchers get them but must meet requirements to get them
- Mountain lion populations could be up, need to ask NDOW
- A lot of non-native wildlife affecting aquatic
 - o Carp, affects water quality
 - o Healthy vegetation in Key Pittman but carp significantly affecting vegetation in Pahranaagat
 - o Bullfrogs, eat many things including some small birds and native frogs
 - o Mosquito fish
 - o Mollys
 - o Convict cyclids
 - o Feral cats
 - o Crayfish
 - o Raccoons
 - o Melenoides (spelling?) snails that leave tracks in the river
- Native species but some problem/some important
 - o Ravens, population significantly increasing, negative affect on desert tortoise and sage grouse
 - o Sage grouse, possibly some in Coal Valley in northern part of watershed; all listed as Other habitat from GIS layer, need to confirm with NDOW
 - o Big horn sheep; Emigrant area, Hiko area, both sides of Coyote Springs and Pahranaagat Valley
 - o Lower Kane Springs valley is best habitat for Desert tortoise
- Any wetland habitat is a priority, springs, emergent marshes, riparian corridors, alkali lakes, zone of influence needs to be considered, if you protect the wetland of any size, the water will be there for runoff from a water development. Soil Compaction is a major concern for all water sources
- Limited water availability is a major factor for wildlife
 - o Need to manage based on natural water sources, water hauls or seasonal waters like reservoirs are undependable and not economic
 - o Permitting restrictions add difficulty to putting in adequate water sources; this is a political issue between state and feds
 - o Many management issues can be alleviated through proper distribution of water

- From previous discussions – changes in duck hunter habits and changes in past management from cropping, dairies, row crops, etc has changed waterfowl habits
- Elk pioneering into some areas is a potential, have been seen in Seaman Range and on the refuge, probably coming from Egans and South Delamars
- Old grazing plan on the Refuge was directed to benefit Alkali sacaton with a late fall pasturage which after a late irrigation would regrow lush green shoots which geese loved
- Greater Sandhill cranes now common, up to 200 on the Refuge, some row cropping would greatly benefit; can't do on Refuge, but would like to work with landowners to do some
- Need to focus on habitat because birds are a way to help economy by hunting, tourism. Most mallards hunted or present in the valley are local birds, nesting in Nevada at Pahranaagat
- Birds generally nest in hay fields
- Birds not commonly known to transport weed seeds
- NDOW moving nuisance geese from Reno to Hiko hoping increase mortality and increase hunter satisfaction

Livestock Production Limitations – Inadequate forage

- Inadequate forage should be capable of meeting your need but is not; this is a low production issue not a stocking rate issue. Multiple things could be involved such as soil condition, salts, alkali, water management, irrigation efficiencies or inefficiencies
 - Flood irrigation can be very inefficient or with flooded level basin and surge gates very efficient and is generally good for birds/wildlife because of water
 - Soil condition can be affected by overwatering which leaches nutrients, kills soil bugs.
 - There is a change in soils from sides of the valley to the bottom, sandy on the sides with rapid infiltration, heavier silts and clays in the bottom, slower infiltration. Inadequate field leveling and a weed problem (Note: slopes determine how much leveling can be accomplished without totally destructing soil fertility and structure; many places in the valley have too much fall to achieve proper leveling)

Livestock Production – Shelter/Shade

- Shade increases maintenance and increase weaning weight of calves; are there possibilities for mobile shade structures?

- Could be a permitting issue from VRM
- Becomes concentration area

Livestock Production Limitations – Water Distribution

- From water quality standpoint, wells or springs are best
- Overall distribution is a significant problem
- Affects wildlife as well
- Guzzlers can work if maintenance cycles are not too long; still unreliable
- Need wildlife escape on troughs, BLM has requirements, unknown on private

Air Quality (Note: we live in a desert, there will be dust!)

- Sources
 - o ATV trails
 - o Dirt roads
 - o Playas especially when disturbed
 - o Animal trails, livestock and wildlife
 - o Around water sources
 - o Fencelines
 - o Fence corners
 - o After large fires
 - o Touch and go activities on lake beds
 - o Alkali meadows such as Lone Tree Spring to Maynard
 - o Landfill in Coyote Springs valley
 - o US 93 – I 15 junction with all the new industry
 - o Most major smoke issues from large fires are south, south west of the area. Major need is to revegetate after fires, smoke is transient, dust due to lack of rehab
-
- Air Quality – Greenhouse Gases
 - o Minimum tillage
 - o Disagreement on amount of trucking through Valley; need to check with NDOT
 - o Lots of long distance tourism on US 93
 - o Limited potential from fertilization or CAFO
-
- Air Quality Ozone Precursors
 - o Hydrocarbons less likely to occur; limited mining which was hardrock and/or underground which are small and shallow and have collapsed openings
-
- Air Quality – Objectionable Odors
 - o Most occurrences are short term such as when Lower Pahranaagat Lake dries up from decaying vegetation or invertebrates / fish

- Talk of oil-grade hemp production in valley could be odor issues at harvest time (don't know extent to come)

Energy

- Technology based irrigation management can reduce equipment operation, improved insulation on building needed, multi-tillage could be reduced, more efficient pumping units when sprinkling, use of solar on small scale application such as livestock wells, possible portable solar could be employed to reduce costs even more; Greatest potential savings would be in highly efficient staged pumping instead of large horse power motors

Human – Satisfaction/ Economic Stability

- People in area tend to want this lifestyle; tradition of the major communities is LDS, families that live here are willing to pay the cost of property values, they are here by an active choice. Many do not want to live in LV any longer and are willing to commute if necessary to work
- Assets include: tourism, recreation, ag/ranching is the heart and soul but not the total economic base. Hunting, hiking, fishing and ATV available.
- Ag has very high multiplier effect in economy, is the major stable one but has limited jobs
- Whipples, Cannon's, LDS Church have been buying land and becoming bigger; potential development in Coyote Springs will probably increase population of construction workers and employees.
- School population is increasing, Alamo is already changing
- Community is aging, some land is being handed down; many cannot afford to buy a farm. There are many farms where the children don't want to stay in Ag.
- Janel – confusing that Alamo is growing but Ag is not growing, kids will drive or work on line because they want to live here but don't want to work in Ag
- John – small towns in whole country are drying up. Probably as many workers at Ash Springs are there are in Ag in the valley
- Worry that ag land will be sold for development
- Lack of zoning is a problem; zone to build on sides of valley to preserve ag land/meadow land/ habitat

History and Archaeology

- Have a good site steward program in the valley
- John mentioned historic and prehistoric ag use in the valley
- Historic records indicate almost no mountain lions, deer came when grasslands became shrublands and lions followed deer

- Big horn sheep were original major large ungulate
- First whites in valley in 1864
- Arche sites have BLM protection except Box Canyon which is on USFWS
- Arche easier to protect on fed lands than private
- How do we preserve the things we need to properly manage resources, cultural, traditional, natural, historical, archaeological?
- Janel said USFWS is actually a benefit in that endangered fish protect water from being acquired by LV
- A key factor, it has always been about water!

RESOURCE CONCERN White River watershed	SCORE	GROUP TOTAL	Rank Red = critical; Green = next priority
### Water General ###	2-1-1-1-1	6	Tie for 1 & 2 critical
Insufficient water	1-1	2	" " "
inefficient irrigation h2o use		2	" " "
		tot. 10	" " "
### Livestock Prod. Inadeq. H2O and distro ###	2-2-2-2-1-1	10	Tie 1 and 2 Critical
### Gully erosion ###	2 2 2 2 1	9	Tie 3rd critical
### Invasive annual grasses ###	2-2-2-2-1	9	Tie 3rd critical
### Water quality ###	2-2-2-2	8	Tie for 5, 6, 7 critical
### Habitat for Fish & Wildlife (general) ###	1-2-2-2	7	
Limited water	1	1	
		tot. 8	Tie for 5, 6, 7 Critical
### Human General; qual of life, culture, change ###	2-2-1-1-1-1	8	Tie 5, 6, 7 next priority
Wild fire	2-2-1-1-1	7	1 next priority
Deg plant Cond structure and comp	2-1-1-1	5	2nd next priority
Soil Compaction	2-1-1	4	Tie 3, 4 next priority
OM Deplition	2-2	4	Tie 3, 4 next priority
Concentrated salts and chemicals	2	2	Tie 5, 6 next priority
Deg plant cond excessice pests press.	1	1	
Livestock Prod. Limited inadeq. forage	1	1	
Livestock Prod. Inadeq. Shelter	1	1	
Air quality Dust PM - 10, PM - 2.5	1	1	
20 Resource concerns Identified through the weighted ranking process (eg.); 5 most critical issues - 2 pts. Ea.			
5 important issues but not immediately critical - 1 pt. Ea.			

APPENDIX 2: Minutes; Meadow Valley Wash Grouping

8 August 2018

Start at 4:04

Maggie introduces program and explains purpose of meeting and ricks job.

Rick describes the resource concerns checklist; compares it to Farm Plan. The plan is to take Lincoln apart by watershed. We will find the top 10 concerns of the **Meadow Valley Watershed**, Rose Valley, Eagle Valley, clover creeks while ignoring politics. On each concern we will start at the north end of this area. We are taking an inventory of problems that the county and other entities can use. We have also added a 'human component' to the checklist

Soil Erosion

Sheet

- Old mine dumps
- Cathedral gorge

Rill

- Most common in meadow valley wash

Wind

- Delamar and dry lake bed
- Lower Meadow valley
- On cropland, tillage too early in the season

Concentrated Flow

- Gullies Take away the capacity of the soil to hold water
- Starts up near "Big jack's" – depends on canyon shape and slope but severe gullies – the whole way through the valley
- White wash, cob creek, condor canyon - there are roads in all of these areas
- Mathews drop structure(1) and others – rose valley(3) and eagle valley(2) ones
- Ditches and culverts under the road at Whipples, Cathedral
- Dike across the highway
- Bennet and red wash from Caselton/Taylor area
- Washes by Raymond Thompson's – he built up a dike too
- Antelope, meadow, clover flood and all three meet in caliente – 4 washes come into town
- Kershaw is always a concern for flooding and erosion
- Flooding and washes around Mormon mtns. – all across the area south of town, side canyons: Acklin, Sawmill, Rock, Willow, PA, Cottonwood, Leith, Hackberry, Breedlove, Vigo – all have gully or heavy washing in flood events

Shorelines

- none

Soil Quality Degradation

Subsidence

- Dry lake valley due to fault lines
- Clover had major work to fix this
- 93 south of Panaca
- Railroad – by elgin

Compaction

- Around every spring w/o enclosure, caused by wild horses
- Livestock water
- ATVs

- Meadow valley range has trailing – and throughout the uplands from horses – everywhere
- Elk wallows
- (from second meeting) elk wallows, Lion Springs, springs on east side of White Rock have wild horses and elk, PA Canyon, Fife and Sheep wild horse use excessive, wild cow herds in Riggs and Fife Spring areas, burros at Rox gone

Organic Matter Depletion

- Low to start with
- Losing a lot due to loss of grass and movement to shrubs and pj
- Wildfire takes some away

Conc. Of Salts or other Chemicals

- Around mines – Carp Rox Panaca
- Tammerisk can concentrate salts
- Strong saline soils just north of caliente
- Mercury near Pioche by ore mines and at Castleton

Excess Water

Ponding and Flooding

Seasonally High Water Tables

- Down by carp
- By rodeo grounds in Caliente
- Basements in town without drains

Seeps

Insufficient Water

Management

- ‘Use or lose’ your water system is not good
- Problem up above spring valley is a concern for state parks – parks wants to reestablish a flowing stream into the lake so there is a channel through the marsh and decrease temp. of water going into lake, cattails part of problem

Irrigation

- Sprinkler irrigation efficiency
- People water earlier then they need to
- Little bit of flood irrigation
- Springs have decreased in water flow
- Power district has programs for efficiency and credits, a lot of systems like Atlanta Farms are renozzling, an issue is NV use or lose policy,

Water Quality Degradation

Excess nutrients

- Nitrates is the biggest problem
- Not much fertilizer use, except corn
- Underground sewers cause low quality town water(this is an addition from the second meeting)

Pesticides

- Lake valley has aphids that they spray for – pointing to isolated incidents, hard time with bugs, Lake Valley sometimes spray between each crop, especially in mild winters
- Farm in tight valleys, less bug problems

Pathogens and chemicals

- Feed lots – only two in area

Excessive salts

- Panaca water is extremely corrosive

Petroleum Heavy Metals and other Pollutants

- All the mines
- Leaking fuel tanks years ago

Excessive sediment

- Drains and washes related to flooding

Elevated Temperature

- Throughout meadow valley because of stagnant water from overgrowth, beavers, etc

Degraded Plant Condition

Un. Plant productivity and health

- Wild horses and elk
- Pj encroachment

Insufficient/inadequate. structure and composition

- Lacking grass in uplands
- Extended drought
- Lack of and too much fire
- Tamarisk changing water flow patterns in lower drainage

Excessive plant pests

- Tamarisk, number one problem railroad has
- KNap weed, Russian olive, aphids, grasshoppers, mormon crickets, Russian knap weed, white top, puncture vine, tamarisk, cocklebur
- There is a new weed too
- Winterfat die offs in some areas, what is causing it
- TNC is doing a good job on tamarisk control in Condor Canyon
- Caliente and Pioche have a lot of Russian knapweed along roads and streets
- Aquatic weed issues for state park reservoirs

Wildfire hazard

- Aggressive fire suppression
- Not crossing state line in fire situations has become a problem (6 mile rule)
- Adequate review on rehab needs to happen – to fight cheat grass invasion
- Fires carry further due to cheat grass
- Year round grazing of burn areas by wild horses
- Grazing management after burns affecting cheatgrass abundance
- Need a fire history map
- Phase 3 woodlands are a big fire problem

Inadequate Conditions for Fish and Wildlife

Food

- Sage grouse and deer concern from loss of sage brush

Water

- Drought is bad for fish
- Beaver dams are huge
- Elk wallows but not as bad as horses (cow and deer are not nearly as bad)

Cover/shelter

Continuity/space

- Too dense Pj
- Dirt bikers

- Lack of water availability, all animals concentrate, shed hunters, still a problem but has improved since the law, fences cut is biggest problem with any recreation use
- Shed hunters strung a wire to knock antlers off, didn't take it down
- Wild horse social domination of springs affects mule deer
- T& E species – cattails and crawdads a problem for T&E fish by raising water temps and are predatory
- Antelope out of Utah in the Lien Draw area, habitat improved when trees were removed; elk now moving in too
- Southwest willow flycatcher, desert tortoise, yellow billed cuckoo, coordinate with Ronda Hornbeck
- Need to need revisions to migratory bird act- RAVENS
- Galt area, water at surface should have black willow and baccahris, but is salt cedar which makes issue for SW willow flycatcher and cuckoo
- Wild horse and sheep trails are super highways in the Galt area, also Hackberry Canyon and every ridge that has a way down to the wash due to limited water in Mormons and Meadow Valley Mtns.

Livestock Production Limitation

Feed and forage

- Loss of sage brush
- Sheep flat, cotton wood allotment – horses take everything
- Where have control of water, have plenty of food, where not have control of water situation bad for cattle and wildlife because of unregulated horses
- Kane Spr Valley, cattle have to trail around some waters because 1-2 miles affected by horse numbers, Kane Springs and Meadow Valley Range – cheatgrass due to fires

Shelter

- Shade from PJ but then there is no food

water

- Kane springs valley water shortage is causing trailing
- horses are taking it
- guzzlers artificially expand range of wildlife, if permittees are not out there, how many waters are there that they maintain and who is going to maintain them?
- Have adequate water, OK when have control. Permittee pumps for livestock, who pumps for wildlife?

Inefficient Energy Use

Equipment and facilities

- replace with solar
- farmers can't afford new tractors
- new pumps – two stage – solar
- better pivots

Farming and ranching practices

- too many passes across fields
- put in offsets

7:28 Rick says we should close the meeting

We decide the next meeting should be at 6:00 PM on August 20. The next meeting will finish the checklist. We will then go through the top issues. There will be a public survey from UNR coming later. The meeting ended at 7:36.

20 August 2018

Meeting starts at 6:08

Rick reviews the last meeting by going through each item.

Additions

Underground sewers cause low quality town water

- elk (lion springs), deer, horse, sheep, and livestock, burros, just animal concentrations in general
 - o east side of White Rock springs horse and elk
 - o around Pennsylvania Canyon horse and wild cow herds
- Russian Napweed along all roads in county
- Get aquatic weed info
- Habitat for Fish and Wildlife
 - o Antelope in Lion County
 - o Southwest willow fly catcher, yellow bellied ackor and desert tortoise
 - o Ravens
- Salt Cedar is a problem – South of Carp in Meadow Valley Wash near Galt
- Bighorn sheep – Galt area and off of Mormon Mt.

Air Quality

Particulate Matter

- Smoke from Wildfires
- Blowing Dust from improper care of soil (unnecessary/poorly timed cultivation)
- Dust from ATVs and races Kane Springs and Tule Desert but everywhere

Greenhouse Gases and Ozone

- Wood stoves but not as much in modern times
- UNR MEASURED OZONE LEVELS – GET THAT INFORMATION

Odors

- Pig farm occasionally, smell it by Newcastle
- Feedlot
- New Hemp farms might smell
- Waste water disposal areas
- When the cover at the dump is torn by birds
- Humans with no waste disposal systems
- Algae blooms around lakes

Human Factor

Infrastructure

- GET LIST OF DANGEROUS BUILDINGS FROM COUNTY (Hazard Mitigation Plan)

Recreation

- ATVs and races
- petroglyphs

Culture and Employment

- Nice small-town environment and outdoor activities
- Mormon Church/community
- Traditions – agricultural, tie to land that is unheard of in urban/suburban areas
 - o There is a change of attitude – losing this tradition
 - o State Parks has had to change a bunch/add a bunch of modern stuff

Resource Concerns affecting humans

- Sedimentation affects city water
- Air/water quality affects human health
- Las Vegas water pipe was shut down by state water engineer
- Highway accidents from animals
- Water rights
- Land sales impact water rights
- If less water, less in Wash, less in parks for rec, less irrigation, PJ??
- People have more connection to their environment here than in the city, 20 years ago teenage activity was to go out in hills all the time, now can't get kids to leave town; State parks have to include wifi now

Rick ends conversations at 7:30 to begin rating concerns on posters.

The posters are rated with a 2/1 point system.

Next meeting for next watershed is set for September.

Meeting ended at 8:00

RESOURCE CONCERN Meadow Valley watershed	SCORE	GROUP TOTAL	Rank Red = critical; Green = next priority
### Excess Plant Pests - Weeds ###	2-2-2-2-2	10	tie 1-2-3-4 Critical
### Concentrated flow Gully erosion ###	2-2-2-2-2	10	tie 1-2-3-4 Critical
### Insufficient Water ###	2-2-2-2-2	10	tie 1-2-3-4 Critical
### Undesireable plant Production and Health ###	2-2-2-2-1-1	10	tie 1-2-3-4 Critical
### Inadequate Habitat - Wildlife ###	2-2-2-2	8	5 critical
Inadequate undesirable composition	2-2-1-1-1	7	Tie 1-2-3 next Priority
Wildfire	2-1-1-1-1-1	7	Tie 1-2-3 next Priority
Livestock Production - Inadequate Feed	2-2-1-1-1	7	Tie 1-2-3 next Priority
Soil Quality - OM Depletion	2 1 1 1	5	Tie 4-5 next priority
Livestock Production - Inadequate Livestock Water	2-1-1-1	5	Tie 4-5 next priority
Soil quality - Compaction	1 1 1	3	
Water Quality - Excess Nutrients	1-1	2	
Water Quality - Excessive salts	2	2	
Degradation of Wildlife Habitat	1-1	2	
Human	1-1	2	
Air Quality - PM 2.5 & 10	1	1	
Erosion Sheet Rill Wind	1	1	
17 Resource concerns Identified through the weighted ranking process (eg.); 5 most critical issues - 2 pts. Ea.			
5 important issues but not immediately critical - 1 pt. Ea.			

APPENDIX 3: Minutes; Tule Desert Grouping

RNA Work Session

February 6, 2019

Caliente, NV

Present: Maggie Orr (LCCD), Cory Lytle (NRCS), Teri Knight (NRCS), Rick Orr (contractor), Steve Rowe (local), Ken Newby (Tule Cattle), Jeff Newby (Newby Cattle), Cameron Boyce (BLM), Jerrett Decorte (UNCE, by video chat)

Begin: 10:09

Rick explains the process of going through the resource concerns checklist. We will be discussing Beaver Dam Wash, Tule Desert, Sand Hollow Wash, Toquop Wash

SOIL EROSION:

Sheet: possibly around the Tule Desert well, Cannon Well has some flooding on rare occasions. Ken describes the flooding that takes place in the Cannon Corral area. One time specifically, the water came down and washed out the area with dirt and rocks. Most erosion will turn quickly to rill.

Wind: There are some areas (the flatter areas) that have severe wind erosion. Especially when the cattle trail down. The wind erosion is frequent.

After fires, grass does grow back (red brome, cheat, fillaree)

Gully: Toquop wash has gully erosion. Bull Valley wash. Sand Hollow wash has some down towards mesquite. Some fires in the area have been helpful.

Excessive Bank Erosion: There are not any live streams, lakes, ponds, or irrigation in the area.

SOIL QUALITY DEGRADATION:

Subsidence: We are not aware of any faults in the area

Compaction: Cameron says there isn't much cattle trailing in the area. Rick states that the roads have been set for a while, no new roads or trails have been established recently.

Organic Matter Depletion: Gourd Springs has mustangs that have been taking a lot of vegetation off the area

Fire will deplete the organic matter in the soil. Nutrient cycling is disturbed. Rick says we don't have a good understanding of perennial longevity; we don't know if perennials can take back a community. Cameron asks if there is a chance of too much organic matter. The general consensus is that the soil could not sustain too much.

Excessive Salts: No areas that come to mind.

Ponding: No issues

WATER:

Insufficient water- moisture management/use of irrigation water: These issues are not present in this area. It is important to mention large scale water pipeline possibilities. Ken described how someone described to him that the large-scale water pumping wouldn't affect his shorter depth wells. He was very skeptical of this thinking.

Excess nutrients in surface and ground waters: Not an issue

Pesticides: tri-county has been working in the area. Salt cedar was treated around springs. Brown stripping: spraying around the roads, will be done soon. All pesticide applicators are licensed.

Excess Pathogens: Box/garden spring- open for 75 yards, it is fenced, but could use some repair

Sams camp spring- no horses, it is fenced

Excessive salts: The mines in the area were small, and did not have an outflow (one old mine at mud springs, private land)

Petroleum, Heavy metals: Not present

Excessive Sediment in Surface Waters: Most sediment issues would be a result of post fire run off (middle ridge fire near Beaver Dam). Gourd Spring wash after 2005 fire

Elevated Water Temperature: Not an issue because there aren't any flowing waters outside of the small Beaver Dam Wash area

PLANTS:

Degraded Plant Condition: horses and elk moving down to Tule Desert is a new issue.

Undesirable plant productivity: invasive annual grasses. Tule is supposed to be a desert grassland.

Weeds: Sahara mustard, purple mustard, red brome, salt cedar, scotch thistle (Bull Valley wash, by mesquite), Russian thistle, halogeton,

Inadequate structure and composition: Cheat grass took over after the 2005 fires. The area lost native perennial grasses. Rick states that we must manage the annual grasses. He suggests fuel breaks, utilize grazing time frame of cheat grasses, kochia forage

Excessive plant pest pressure: blue fungus can affect sagebrush (not sure if it is present in this area) it is present in damp conditions. Gourd (burn area), the isolated areas that have vegetation are being damaged by the rodents. Annual grass invasion is putting pressure on the fire regime. The three-awn plants are present, they can be used for forage at times.

Wildfire hazard: red brome and cheat grass contribute to hazard. Rick suggests grazing patches to create fire breaks.

WILDLIFE

Desert Tortoise, Desert Bighorn Sheep, deer, elk, horses, coyotes, rabbits, burrowing owls, possible wild boars, one bear a few years ago, no fish, possibly spring snails

Habitat degradation:

Desert tortoise: Loss of thermal cover, and forage

Water developments: guzzlers? Distribution and availability of water is always an issue.

Allotments have been closed, restricted management due to desert tortoise

Lunch Break 11:41- 12:14

LIVESTOCK

This area has always had small fires, but after the 2005 fires, the area has not been the same

Inadequate feed and forage: conversion to cheatgrass due to fires, management of livestock is key. Newby started hauling water throughout the Tule desert to disperse animal pressure

Inadequate livestock shelter: there are things that can be used as shade ; this would be a luxury here

Inadequate livestock water: distribution of water was an issue historically. Some allotments are managed better than others. Water dictates where animals are. Newby's have solar panels on their wells to pump waters 500-300 ft. The solar panels have been very successful. Ken described how expensive it was to manage water before his solar wells. He talked about how helpful the NRCS was. Teri talked about how we need to bridge the gap between NRCS and BLM to have more projects done like the Newby's.

Vidler wells are projected to be 1200-1500 feet deep

ENERGY:

Inefficient energy use- Equipment and facilities: previously addressed

Farming/ranching practices- Not applicable

Use solar instead of diesel pumps for water

AIR QUALITY:

Emissions of PM: Not applicable- limited travel through the area, dust is an issue for some parts of the year (spring time)

Emission of GHG: Not applicable

Emissions of Ozone precursors: Not applicable

Objectionable odors: Waste from wild horses

HUMAN:

Ken mentioned the radiation left over from the bomb testing in that area. He was worried about the radiation in the dust ingested. The amount of radiation in the soil hasn't actually been tested. Steve described how the radiation was very high around the railroad in Meadow Valley Wash and the Tule when the testing was being done.

The classification of endangered species has directly impacted operations in the area (desert bighorn and tortoise).

Teri was worried about vandalism involving the solar pumps, they have been okay so far. Ken described how they used to have some drunk guys come and shoot their cows and water tanks.

Way of life is a concern for rural areas. The Tule desert is public land, subdividing and urbanizing isn't necessarily a concern.

Ken describes that OHV use has gone up, but luckily the vandalism and litter has gone down.

Large-scale water pumping would change the way of life for ranchers who use the water in Tule. Vidler has a contract to provide water from Tule to the newer developments in Mesquite. More info would be useful.

Ken talks about how the future of the ranching will change because people would rather have money than the life style. It is financially too challenging to sustain a ranch in this day.

People making decisions don't understand the reality of the situation on the ground, the distances, the cost to do work, etc. There is no address in the Tule

End discussion at 1:22

RESOURCE CONCERN Tule and Beaver Dam watershed	SCORE	GROUP TOTAL	Rank Red = critical; Green = next priority
###Soil - OM Depletion (fire and WH& B related) ###	2-2-2-2-2-2-2-2-2-2-1-1	22	1 Critical
### Human - (Way of Life, SNWA, Vidler,) ###	2-2-2-2-2-1-1-1-1-1-1-1-1-1	21	2 Critical
### Degraded Plant Condition Prod and Health ### (issues related to past fire and excessive horse use.)	2-2-2-2-2-2-1-1	14	3 Critical
### Livestock Production limited- Amt and Distro H2O ###	2-2-2-2-2-1-1	11	4 Critical
### Livestock Prod - Inadequate Feed/forage ###	2-2-2-2-2	10	5 Critical
Inadequate Habitat for F and W - Habitate Degredation (hab. Degredation, distro and available of h2o)	1-1-1-1-1-1-1-1-1-1	9	1 next Priority
Energy - Solar vs. Diesel motors for h2o pumping	2-1-1-1-1	6	2 next Priority
Plant Degridation - Inadequate structure and comp (related to fire and annual grasses)	2-2-1	5	3 next Priority
Excessive pest pressure	2-2	4	4 next Priority
Soil Compaction	1-1-1	3	Tie 5-6 next Priority
Wildfire	1-1-1	3	Tie 5-6 next Priority
Sheet Rill and Wind Erosion	2	2	
Invasive Plants	2	2	
Livestock - Inadequate shelter	1	1	
Air Quality particulite matter - dust	1	1	
15 Resource concerns Identified through the weighted ranking process (eg.); 5 most critical issues - 2 pts. Ea. 5 important issues but not immediately critical - 1 pt. Ea.			

APPENDIX 4: Minutes; Lake/Patterson/Hamblin Grouping

Resource Needs Assessment Work Session

October 24, 2018, 4 PM

LCCD Building

Begin: 4:05 PM

Present: Steve Rowe, Cameron Boyce, Maggie Orr, Jessica Mathews, Rick Orr, and Terri Knight

Rick began with brief review of process

North and South of Panaca

Patterson Wash, Lake Valley, South Spring Valley, Hamblin Valley, Spring Valley South West/East, Escalante Desert

SOIL:

Sheet/rill/wind erosion: Isolated thunderstorms cause small rill erosion. Normal.

Concentrated flow/gully: Every wash will have gully erosion with flooding events. Rain on snow causes some flooding. Smaller washes were less affected than the larger washes. This is not abnormal after fires.

Very little stream diversion in these areas. Most irrigation is sprinkler.

Subsidence: Not an issue in these areas

Compaction: Miller Canyon, Cobb Creek, all water features compacted by animals and vehicles. Geysers Ranch has a lot of elk and horses. Horn hunting trails turn into new roads.

Organic Matter Depletion: Same as compaction. Lake Valley is growing potatoes. Potatoes can be damaging to organic matter depletion.

Concentration of salts or other chemicals: Grease wood flats in Hamblin Valley and Lake Valley- Saline soils

WATER

Excess water: Ponding in Lake Valley and some places in Hamblin Valley- natural events. Heavy snowfall in Lake Valley. Geysers Ranch has pothole lakes.

Insufficient Water: Inefficient moisture management- Hamlin and spring Valley could be affected by southern Nevada water authority deep wells. Look for info from water engineer.

Insufficient water- irrigation use: Not a major issue in this area. Can always be more efficient, Geysers not using pivots any more. Note to talk to Bevan.

Water Quality Degradation: Fecal coliform issues in surface water when livestock and/or wildlife are present.

ASK BEVAN ABOUT WATER QUALITY ISSUES

Pesticides: not a major issue in this area because most pesticide applications are controlled. Don't know what is being used on potatoes

Pathogens – no CAFOs in the area

Manure, bio-solids, or compost: No feeding operations exist in this area. Any issue with this would be present around springs and other watering sites.

Excessive salts: CHECK NDEP- ask Bevan. There may be some issues at the bottom of Geyser.

Petroleum, heavy metals, and other pollutants: Mining? Railroad? Highways? Spraying pesticides around the roadways. Trains carrying hazardous materials.

Excessive Sediment: Check with Simkins about Mt. Wilson areas. This isn't a major issue in the area because there is very little open flowing water in the area.

Elevated Water Temperature: Not an issue, no open flowing water that would travel far enough for temperature change.

PLANTS:

Undesirable plant productivity and health: Winterfat in Hamblin. Elk and horses an issue in all areas. Increase PJ reduce grass. Phase 2 PJ advancing to phase 3. Cheatgrass esp. on fire areas, fire hazard from dense PJ. Pete Tony talked about flooding in Hamlin 4 years ago that overflowed winterfat areas; he doesn't expect them to come back

Inadequate Structure:

Excess horses year around are damaging vegetation

Winterfat was removed when there was a large flood 4 years ago in Hamblin Valley. The flood covered the plants with sediment and boulders.

Elk are bad on the east side of Hamblin Valley. Horses trampled winterfat. Pete Tony said he repaired the state line fence in hopes to control the horses.

Excessive Plant Pest Pressure: Weevil and larva in production vegetation. Roads and railroad are surrounded by knapweed, thistle. Grasshoppers in the area may be caused by dryness (easier to hatch without the moisture). Crickets north of Pony Springs.

Possible beetles in Mt. Wilson (ADD TO MEADOW VALLEY WASH). Some areas in the burn have beetles.

MAP FROM TRICOUNTY

Wildfire, hazard, excessive biomass accumulation: Excessive cheat grass vegetation down south of Meadow Valley Wash. PJ is a concern for excessive biomass accumulation.

WILDLIFE

Deer, antelope, elk, Sage Grouse, maybe Spring Snails, rabbits, turkeys, ravens, coyotes, birds (nesting) when dealing fuel projects, geese, hawks, pygmy rabbits

Trout in North Creek and Geyser Creek and north of Spring Valley- not Winz creek or Wilson Creek

Habitat Degradation:

Displacement by horses; horses damaging improvement projects

PJ encroachment – hurting wet meadow

Habitat changing from deer to Elk

Hawk roosting takes place on power poles and cliffs depending on the species

Major flood can change habitat

Major fire (>1000 acres) can change habitat

Fences can alter sage grouse habitat

Spring Snail habitat degradation- check with NDOW

Ask Christiana about candidate species and other species of concern

LIVESTOCK:

Inadequate feed and forage: Cheat Grass has a forage value. Successful rehab after a fire- wait 3 years to graze.

Inadequate livestock water (permanent water): Water source impacts from year around grazing by horses, permits are seasonal. Water is limited. Lack of distribution. Dirt ponds- can work sometimes

Inadequate shelter: many trees around the area, not an issue

INVASIVE SPECIES:

GET TRICOUNTY WEED LIST

Halogeton, Dalmation toadflax, tall white top, little white top (hoary cress), cheat grass, Russian knapweed, thistle (scotch and musk) , scattered salt cedar (Hollinger debris basin), milfoil in reservoirs, New Zealand and quagga mussels concern, dogbane

FIND LIST

ENERGY:

Equipment and facilities: Can be improved

Farming/ranching practices: Can be improved

AIR QUALITY:

Emission/ PM 10/PM 2.5: Crestline Road dust hazard

Why are road sides being bladed, not mowed?

No gravel pits

Caselton gets some dust off the settling ponds

Short time during field preparation some dust may be present

No confined feeding

GHG: no concern

Ozone precursors: pozlan in North Cathedral Gorge, anything similar to what going on grinding pozlan

Objectionable odors: no concerns

HUMAN:

OHV- transporting weeds, damaging/altering fenceline,

Impact of horses change human connection to the land, horse advocates

Land use classification becomes an issue

Land sales impacting producers and lifestyle

Water rights, Vegas piping water, most areas are closed basin

Addressing policy on livestock water improvements on the range. Water hauls are not cost effective or efficient. If it is good enough to need a water haul, it is good enough to need a pipeline for a permanent solution

Safety on highways from wild horses and elk

RESOURCE CONCERN Lake, Patterson, Cave, Hamblin water	SCORE	GROUP TOTAL	Rank Red = critical; Green = next priority
### UNDESIREABLE Plant Production and Health ###	2-2-2-2-1	11	1 Critical
### Invasive Species (includes plants, birds, aquatics) ###	2-2-2-1-1	9	2 Critical
### Inadequate Structure and Composition ###	2-2-2-2	8	Tie 3-4 Critical
### Habitat Loss ###	2-2-2-2	8	Tie 3-4 Critical
### Human (Water distro and amt, PJ, OHV, ETC) ###	2-1-1-1-1	6	5 Critical
Inficient Water and Moisture Mgmt	2-2-1	5	Tie 1-2-3 next Priority
Wildfire	2-1-1-1	5	Tie 1-2-3 next Priority
Livestock Production - Inadequate Livestock Water	2-1-1-1	5	Tie 1,-2-3 next priority
Plant Pest Pressure	2-1-1	4	Tie 4-5 next Priority
Livestock Production - Inadequate Feed and Forage	2-2	4	Tie 4-5 next priority
Wildlife Raven issue	1-1-1	3	
Soil Compaction	1-1	2	
Erosion sheet wind rill		1	1
Soil - Organic matter depletion		1	1
Air Quality - PM 10, PM 2.5		1	1
Energy		1	1
16 Resource concerns Identified through the weighted ranking			
5 important issues but not immediately critical - 1 pt. Ea.			

APPENDIX 5: Minutes; Dry Lake Valley Grouping

RNA Work Session

January 9, 2019

Dry Lake Valley, Cave Valley, and Delamar Valley

Begin: 10:04—Rick explained the RNA process

Present: NRCS Cory Lytle, Maggie Orr, Lincoln County Planner Cory Lytle, Jeff Weeks, Jim Evans, Steve Rowe, Joe Noyes, Jessica Mathews, Rick Orr, Pete Tony, Kena Gloeckner, Neil Cheeny

Rick asks if there are any questions regarding terminology on Resource Concerns Checklist. He clarified erosion questions. All three of these watersheds are closed basins.

WATER

Sheet and rill erosion-:

Most likely do not have significant impact in this area. Wind erosion from dry lake beds. Jim Evans asked if there is any cropland in these areas. There is one area of cropland (Ely Springs), but has not be farmed in several years. There is one area of seeded meadow that is flood irrigated (Haggety).

Concentrated Flow:

Cory Lytle (NRCS), states that there has not been very much change in drainages (in Cave Valley- Peter Station). Cory Lytle (County) mentioned Mule Shoe Valley wash- side hill pass, cut banks are getting bigger. Jim Evans says that it is important to note that we are talking about NEW changes.

Pete Tony named an area that may have erosion- Barry Perryman and Charlie Clements test (where Russian thistle is)

Repeated road use for water hauls

Bank Erosion- NONE

SOIL QUALITY

Subsidence: (the cracks) Starts north of Ely Springs, these are geologically caused. The early 60's is when the fault area opened up. Pete Tony said it opened up twice (60's and 90's)

Compaction: around water sources- This area has wild horses, cattle, and wildlife. Compaction of powerline sites. Cory Lytle (county) says the power company has done some rehab on the roads and power pole sites. It has been somewhat effective. Soil compaction near Dead Man springs due to elk use. Rattle Snake spring has some compaction issues, but it is isolated. Horse concentration is north Dry Lake Valley (1000 horses were taken off recently). Iron Tanks, Ely Springs, Simpson (fenced). Baylee springs get hammered. Lloyd is fenced. Little field is fenced, but the stream gets hammered. Mule Shoe has severe compaction from animal use.

Organic matter depletion:

All spring sources will have organic matter depletion. Sheet erosion has large effects on organic matter depletion (does not occur in this area). Fires can affect organic matter. Gregerson Basin has burned several times. PJ encroachment could be affecting organic matter. Pete Tony says there is a lot of livestock in Dry Lake Valley. Late 1950's west of 93 winter, east summer. The area has been grazed similarly for 80-100 years. Increase of horses has caused an imbalance of grazing.

Concentration of salts:

Greasewood in valley bottoms that may increase salt.

Excess water: Rick explained ponding incident in Delamar.

INSUFFICIENT WATER

Inefficient moisture management: Stock water is an issue. Water is limited. Animals use natural sources. Need more stockwater and wildlife water, water is deep 800-1500 feet, spring developments for better distribution. Irrigation water limited to Ely Springs and Haggarty area

Inefficient use of irrigation water: The pivots in Ely Springs stopped pumping due to high cost. Haggarty springs and Cave Valley have okay moisture for what they are doing.

Cory (county) asks what category do we put the issues of water distribution. Rick explains that it is a combination of categories and effects.

Jim Evans asked if solar wells were an option. Wells are limited by depth. Storage would a good option, but water rights and water policy have always hindered the success of water improvements. Pete Tony says they have wells, but they don't use them. They are all in the valley bottom; they need to be more spread out, but the cost and success is unknown. Cory (NRCS) says they have put in solar wells over 500 ft. Deeper wells need bigger panels (more wattage.)

WATER QUALITY DEGRADATION:

Excess nutrients and pesticides: Excess nutrients in surface and ground waters: only from livestock opening spring, fecal concentration

Pesticides transported to surface and ground waters: Pesticides would be applied under state or federal supervision. Only if there is weed control done

Excess pathogens and chemicals: no documentation on this

Excess salts in surface water and ground water: no water quality data

Petroleum, heavy metals, and other pollutants: old tailings in the mines in Delamar several years ago would flood and kill cattle who drank the water

Excessive sediment in surface waters: Grafton area, cotton wood –Not in this area

Elevated water temperature: No issues

DEGRADED PLANT CONDITION:

Undesirable plant productivity and health: Sagebrush communities affected by PJ encroachment. Fires near the Pahrocs cause excessive cheat grass. Pete Tony says there are several places where cheat grass is difficult to deal with. Winterfat areas have been disrupted by Russian thistle in Delamar coming out of Gregerson.

Inadequate structure and composition: Cheat grass can have an effect on this. PJ encroachment on sagebrush. Bristol bench, Fairview, south end of Shell Creek, south of Big Mud springs, west side of Shell creek, Egans (all wilderness), south Egans outside of wilderness. Delamar: Blythe, west face down to Gregerson. Delamar valley: Joshua trees have increased in amount and thickness. (Not necessarily a resource concern, but worthy to note)

Excessive plant pest pressure: PJ encroachment, maybe Joshua tree encroachment, halogeton, Russian thistle, cheat grass, knapweed in cave valley. Insects: grasshoppers in seedings, ants in east bench of dry lake valley

Wildfire hazard, excessive biomass accumulation: PJ concentrations and extensive cheatgrass

INADEQUATE HABITAT FOR FISH AND WILDLIFE:

Habitat degradation: sage brush for sage grouse, less vegetation due to wild horse grazing, weed invasion in south area (cheat grass), thistle in meadows (Cave Valley area). Fairview Range have lost waters, only three springs functions, blaming PJ. PJ likely to not even allow water to get to the ground. Troughs don't all have bird ladders. PJ-Blythe, Iron, both sides of every mountain range, west side of the valley, PJ is not as much an issue. General discussion is related to loss of water sources.

LIVESTOCK PRODUCTION

Inadequate feed and forage: OHV (and other human activities) can cause damage, PJ. Silver State trail damage isn't a concern here, but in other places it may be of a concern. Trampling is not a problem.

Any time there is fire is an issue, PJ encroachment. Human use such as camping on meadows, racers destroying roads, support traffic for racers, competitive events, fences cut. Haven't heard of problems of people on private lands or damage to fences during hunting season.

Amount of feed is a problem.

Inadequate livestock water: Elk use on spring south of dead man spring effects the amount of feed. Kena says there is a pipeline that distributes water throughout Dry Lake Valley, but the horses are pounding the source (Scottie spring). Age of watering infrastructure can affect livestock water. Maintenance is difficult. Distribution of water in north east area. South end of Cave Valley needs it. There are issues concerning both inadequate water with inadequate distribution and adequate water with inadequate distribution.

Inadequate livestock shelter: Shade isn't applicable for this area. There are plenty of trees and canyons.

Invasive species: - Unknown at this time

INEFFICIENT ENERGY USE:

Equipment and facilities: Any well that has a gas pump is inefficient. Older tractors can be considered inefficient.

AIR QUALITY IMPACTS:

Emission of PM and PM precursors: Dust storms off dry lake beds. This is usually an urban issue.

Smoke from fires an intermittent problem when fires occur

Emissions of GHG's: Increase vehicular use, especially with water hauls (Southern Nevada Water Authority)

Emissions of Ozone Precursors: Not an issue

Objectionable odors: Not an issue

HUMAN

Utility corridor is a concern for this area. It would destroy all the winterfat. Kena and Pete Tony both said it would change their way of life. Pete Tony is worried about destruction of resources.

Recreationists value the open spaces of this area.

Cheatgrass – BLM doesn't list it as forage, it is valuable at certain time, might be an option that is currently being denied and current policy limits management of cheatgrass

END MEETING: 1:36 PM

*** ASK SHANE MATHEWS ABOUT ELY SPRINGS WELLS

RESOURCE CONCERN DryLake, Delamar, Cave. watershed	SCORE	GROUP TOTAL	Rank Red = critical; Green = next priority
### UNDESIREABLE Plant Condition and Health ###	2-2-2-2-2-2-2-2-2	20	Tie 1 and 2 Critical
### Habitat Degredation ###	2-2-2-2-2-2-2-2-1-1	20	Tie 1 and 2 Critical
###Soil Compaction###	2-2-2-2-2-2-2-1-1-1	19	3 Critical
### Human (Utility Corr, SNWA H2O, ###	2-2-2-2-1-1-1-1-1-1-1	15	4 Critical
###Soil - Organic matter depletion###	2-2-2-2-2-1-1-1	14	Tie 5 Critical
Livestock Production - Inad. Feed and Forage	2-2-2-2-2-1-1-1	13	Tie 1 and 2 next priority
Livestock Production - Inadequate Livestock Water	2-2-2-2-2-1-1-1	13	Tie 1 and 2 Next Priority
Energy	2-2-2-1-1-1-1-1	10	2 next Priority
Wildfire	1-1-1-1-1-1-1-1-1	8	3 next Priority
Livestock Production - Inadequate Livestock Water	1-1-1-1-1-1	6	Tie 4-5 next priority
Degraded Plant Cond, Structure and Comp	1-1-1-1-1-1	6	Tie 4-5 next priority
Degraded Plant Condition - Plant pest	1	1	
Livestock Production - Invasive Species	1	1	
13 Resource concerns Identified through the weighted ranking process (eg.); 5 most critical issues - 2 pts. Ea.			
5 important issues but not immediately critical - 1 pt. Ea.			

APPENDIX 6: Minutes; Sand Springs Grouping

March 8, 2019

RNA Work Session Minutes

Sand Springs Valley, Coal Valley, Garden Valley, and Tickaboo Valley

Begin: 12:03 PM

Present: Cory Lytle (county), Rick Orr (contractor), Maggie Orr (LCCD), Jessica Mathews (RNA Staff), Jeramiah Johnson (BLM), Brad Hardenbrook (NDOW), Susan and Travis Agee (ranch), Jason Twitchell (LCCD), Susan Hansen (LCCD), Vaughn Higbee (rancher)

Rick began the meeting by describing the process of the RNA to the attendees that have not participated thus far. He emphasized that this meeting's purpose is to identify the resource concerns, not to identify perceived issues.

Susan brought up her concerns: 1- She made her own resource concern list, but her concerns are not on the Resource Concern Checklist. Rick addresses this by saying that most likely there will be an appropriate category. 2- She is concerned about the LWG meeting that is planned for the future. She is concerned about the feds being involved and the farmers "being on the table."

Her concerns: ravens, being left alone (worried about Southern Nevada Water Authority), more concerns will be addresses throughout our meeting.

SOIL- erosion

Wind: spring wind erosion will occur when fields are being cultivated

Sheet and rill: No sheet erosion reported. White River and Coal Valley have rill erosion, the gullies are about 5 feet deep (Vaughn). Erosion around water sources (Agee's)

(Sprinkler irrigation in Sand Springs and Garden Valley)

Concentrated flow erosion: Gully erosion on public lands, but not on private land.

Excessive bank erosion: The gully in Coal Valley was initially a water conveyance channel. It does have excessive bank erosion and bank breaking.

Murphy Gap, Irish Mountain both have large amounts of erosion (Rick, Vaughn) , the wash parallel to the high way washed out the highway a few years ago (Agee's). The Agee's reported they do not have any concentrated water flow that wash out their fields.

The highway caused an interruption in flood channels. Before the highway, the water would flow down and irrigate the sagebrush, but now it flows down over the road.

SOIL- Degradation

Subsidence: There is a fault in the bottom of Coal Valley, but it is old (Vaughn). No new issues.

Compaction: Maggie asks about edges of Dry lakes, no compaction is known there. Compaction will always occur with concentrated livestock. Antelope use the livestock water troughs. Wild horses use Seaman Range waters

Organic matter depletion: Agee's reported organic matter depletion is not present on their fields. Cory talked about how nutrient cycling from livestock grazing can be beneficial for organic matter.

Concentrations of salt: Dry lake beds have grease wood, four wing salt brush on the edge of the lake beds. Agee's reported no salt problems present in their water. Hiko had such bad problems with salt that they had to change out their pivots to have plastic linings. The salt was eating up the metal. It was only on one well in the north part of the valley. Arsenic is a problem in every county in Nevada. (Varlin and Jason). Varlin talked about how it may be encouraged in the future to install a water treatment centers to treat the arsenic.

WATER

Excess, ponding, flooding, seasonal high water table, seeps, and drifted snow: Rick talked about how there is a lot of snow in some parts of this area. There are no problems with excess ponding or flooding.

Inefficient moisture management- Hizer has done a great job using the water from Cherry Creek and Pine Creek. Castleton's did well testing. Agee's going to LDNs.

Inefficient use of irrigation water: All producers have efficient water irrigation.

Excess nutrients in water: Agee's water test came out ok. Steels well has manganese, it was an old oil well. Not much surface water. Cherry Creek, Pine Creek, Cottonwood. Varlin mentions Pine Creek has a crust of minerals on the top of it.

Pesticides transported: No reported issues.

Excess pathogens and chemicals: Rick talked about old wells using a drip control system. The new systems are much more effective. He says most wells have a layer of oil on top.

We do not have confined animal feeding operations in this area.

Excessive salts: Streams are good (except maybe Pine Creek- check on that), standing water on dry lake beds will have salt.

Petroleum, heavy metals: Tempiute Mine—not being mined anymore, no other issues mentioned with mines. Varlin said there over 2000 active mines in Lincoln County.

Excessive sediment: This would be tied to extreme weather events. (Varlin mentioned that "water of the US" policy is being rewritten.)

Elevated water temperature: Pine, Cottonwood, and Cherry Creek are the only flowing water; they do not have issues with water temp. All three creeks have trout in the top. Pine Creek dries up sometimes but fish still manage to survive in pockets

PLANTS

Undesirable plant productivity and health: Sand springs does not have wild horses. Vaughn has seen grasshopper infestations in all of these valleys. White river, south Coal Valley used to have white sage. It has died off and has not recovered. The soil is sandy. Rick wondered if there is a chemical issue. Varlin said there are some areas that were affected by fire and flood. Seaman Range also has an issue with white sage dying off.

Inadequate structure and composition: Winterfat is not where it should be possibly due to windblown sand. The current flooding situation in LC is a concern for lasting standing water damaging plants.

Excessive plant pest pressure: Insects, blue rot, blue fungus can impact plant structure and health. Invasive weeds: cheat grass, halogeton, Russian thistle (Vaughn). Rick asked about Squarose Knapweed Yellow Star Thistle Knapweed, none reported. Sand Springs valley does not have a major problem with cheat grass. The Agee's report that weed issues are primarily near the road. Rick asked about Medusa Head- it is mechanically poisonous for animals and difficult to treat. Gophers, wild (feral horses), ravens are invasive pests. Ravens will eat the planted seed and hay stacks. They will also attack newborn calves. There has been quite a bit more traffic in recent times.

Wildfire hazard, excessive biomass: Cheatgrass, although it hasn't been a big problem for the last 3 years. Winterfat does not come back well after fire. Tanzy mustard in white river gets so thick that you cannot ride a horse through it. Wildfire has not been a concern in these areas.

WILDLIFE

Habitat degradation:

Cattle, antelope, sage grouse, horses, some fish (trout), elk (cottonwood, north grands, Pahroc), mule deer, sage-grouse, chucker and quail (Vaughn says numbers have gone down, others disagree), geese, coyotes, ravens, rabbits. No reported habitation issues for these species.

Lack of distribution of water? Water hauls water livestock and wildlife. It is always a big issue. Cover and shelter? Loss of sagebrush for sage grouse. Water is always limiting

Vaughn brings up the issue of fencing. Less cattle would be killed if the road was fenced. It may also have an impact on wildlife. Fencing can be cut by vandalizers, a lot of cuts in fencing on Hwy 318.

Cover and shelter, space: could use them

LIVESTOCK

Inadequate feed and forage: No major issues with forage on these rangelands. Antelope in Tickaboo? Maybe in north end. Vaughn reported seeing 200 in Penoyer.

Vaughn brings up that drought years will always have inadequate feed and forage.

Inadequate shelter: Vaughn mentioned that when the temp is 115 + his cows suffer. Because this is a sagebrush ecosystem, shade can be hard to find.

Inadequate livestock water: Agee's have 100 miles of pipeline. Water distribution is not great in Garden and Coal Valley. Permanent water distribution is what will help the resource issue. Vaughn talks about how important it is to have an NRCS person in Caliente.

ENERGY

Inefficient equipment and facilities: No reported concerns.

Inefficient farming practices: No reported concerns.

AIR QUALITY:

Emissions of PM and PM pre-cursors: Smoke management would fall under this category when wildfires are occurring. Increased traffic would be an issue, especially with the Monument designation.

GHG: Traffic related- not a big problem at this time.

Ozone: No reported concerns

Objectionable odors: No reported concerns.

HUMAN:

Varlin fixed 36 cuts in the fence on HWY 318. There are no tracks, or any apparent reason why fence is being cut.

Uncompleted projects (Vaughn). SNWA. Railroad construction. OHV races. Shift of recreation locations and ideals encroaching on these areas. Social attitudes. Vandalism. Listening to locals. The people traveling to the monument are out of their element, which puts pressure on law enforcement. Lack of education of people who travel here. Susan Agee recommended installing a billboard or something to educate and warn people to have the appropriate resources to survive the terrain. She also voiced the concern of leaving us alone.

Discussion end: 3:31

RESOURCE CONCERN	SANDSPRINGS TICKABOO COAL GARDEN	SCORE	GROUP TO	RANK	Red = critical; Green = next priority
###	<u>Excess Plant Pests - Weeds Animals and other</u> ###	2-2-2-2-2-2-2-2-2-1-1		20	1 Critical
###	<u>Insufficient Water - Use of Irrigation H2O</u> ###	2-2-2-2-2-1		11	Tie 2-3 Critical
###	<u>Livestock Production Inadequate Water</u> ###	2-2-2-2-2-1		11	Tie 2-3 Critical
###	<u>Plant Wildfire Excessive Biomass</u> ###	2-2-2-1-1-1		9	4 Critical
###	<u>Inadequate Habitat Fish and Wildlife Water</u> ###	1-1-1-1-1-1		6	5 Critical
	Excess Water Ponding Flooding Snow and Playas	2-2-1		5	Tie 1-2 next Priority
	Degraded plant cond Productivity and health(Die off)	2-1-1-1		5	Tie 1-2 next Priority
	Erosion - Concentrated flow gullies	2-1-1		4	Tie 3-4-5-6 next Priority
	Insufficient water - Inefficient moisture management	2-1-1		4	Tie 3-4-5-6 next Priority
	Plant Inadequate structure and comp (aolian effects seaman wash)	2-2		4	Tie 3-4-5-6 next Priority
	Livestock Inadequate Feer/Forage (Playa areas drought)	2-1-1		4	Tie 3-4-5-6 next Priority
	Soil quality OM depletion	2-1-1		3	
	Erosion Sheet Rill Wind	2		2	
	Water Quality- Excess Surface water (on Playas)	1		1	
14 Resource concerns Identified through the weighted ranking process (eg.); 5 most critical issues - 2 pts. Ea.					
5 important issues but not immediately critical - 1 pt. Ea.					

GLOSSARY:

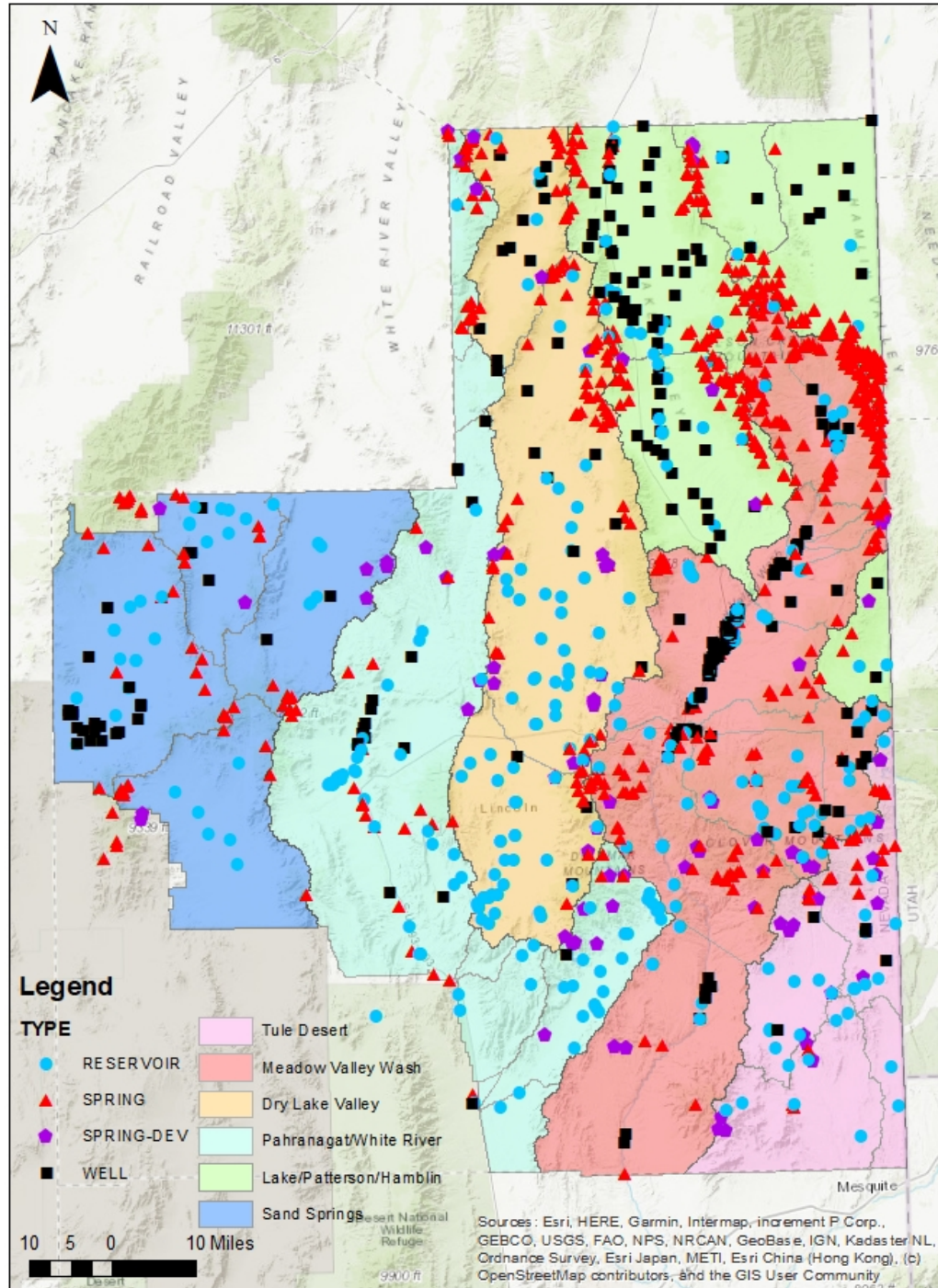
Conservation Practice. A specific treatment, such as a structural or vegetative measure or management technique commonly used to meet specific needs in planning and conservation, for which standards and specifications have been developed. Conservation practices are in the NRCS Field Office Technical Guide, Section IV, which is based on the National Handbook of Conservation Practices.

Conservation Practice Physical Effects CPPE. The Conservation Practices Physical Effects (CPPE) matrix, and associated planning tools, describe how NRCS's [conservation practices](#) effect the Natural Resource and Human-Economic Environments. The Excel spreadsheets can be used to describe the environmental and economic effects of each conservation practice. A qualitative statement describes the conservation practice's impact on Soil, Water, Air, Plants, Animals, Energy and Land, Labor, Capital and Risk.

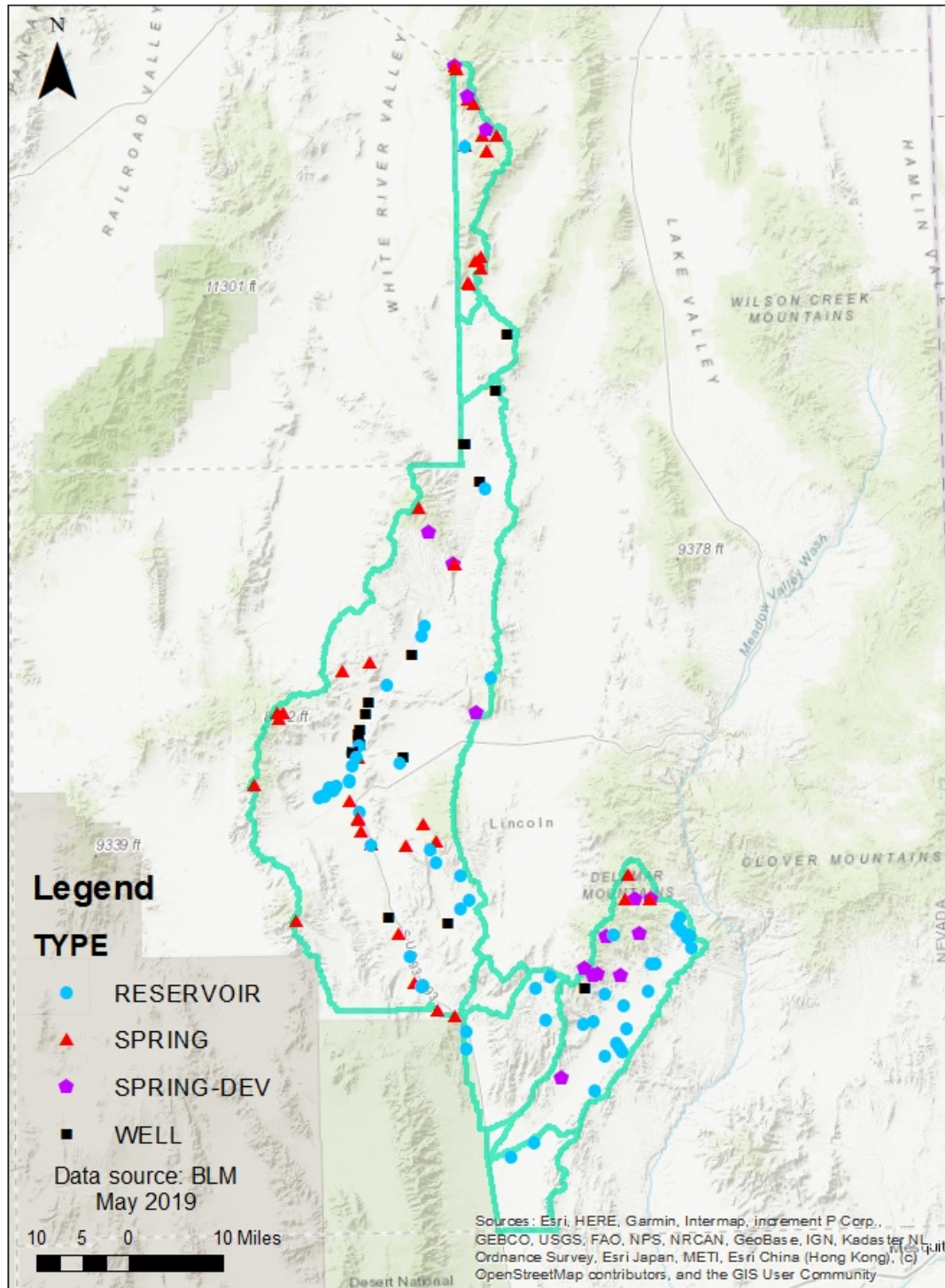
Conservation Practice Standard. The conservation practice standard contains information on why and where the practice is applied, and it sets forth the minimum quality criteria that must be met during the application of that practice in order for it to achieve its intended purpose(s). State conservation practice standards are available through the Field Office Technical Guide (FOTG). If no state conservation practice standard is available in the FOTG, you should contact the appropriate [State Office](#) or your local [USDA Service Center](#).

MAPS:

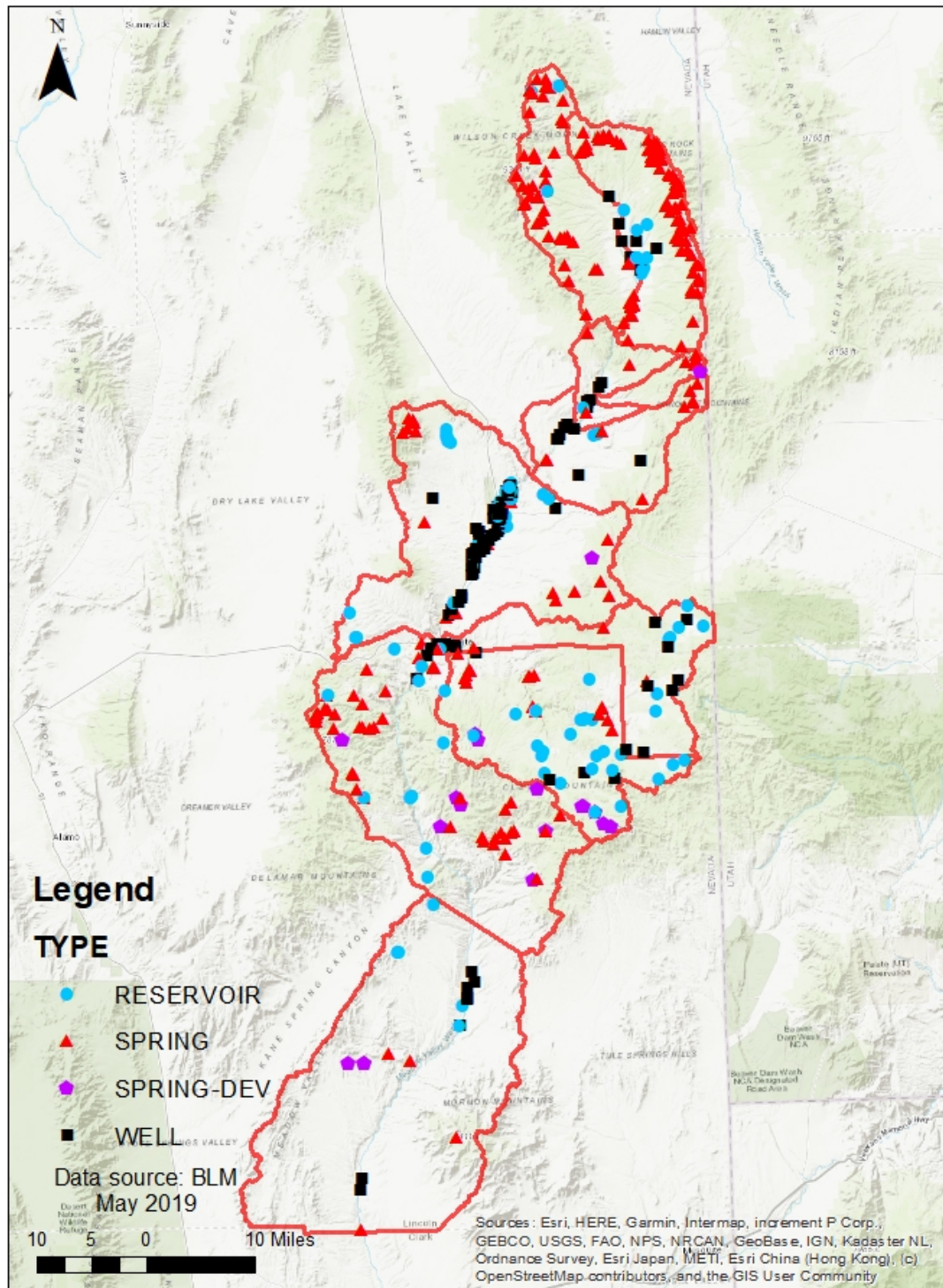
Lincoln County Water Sources



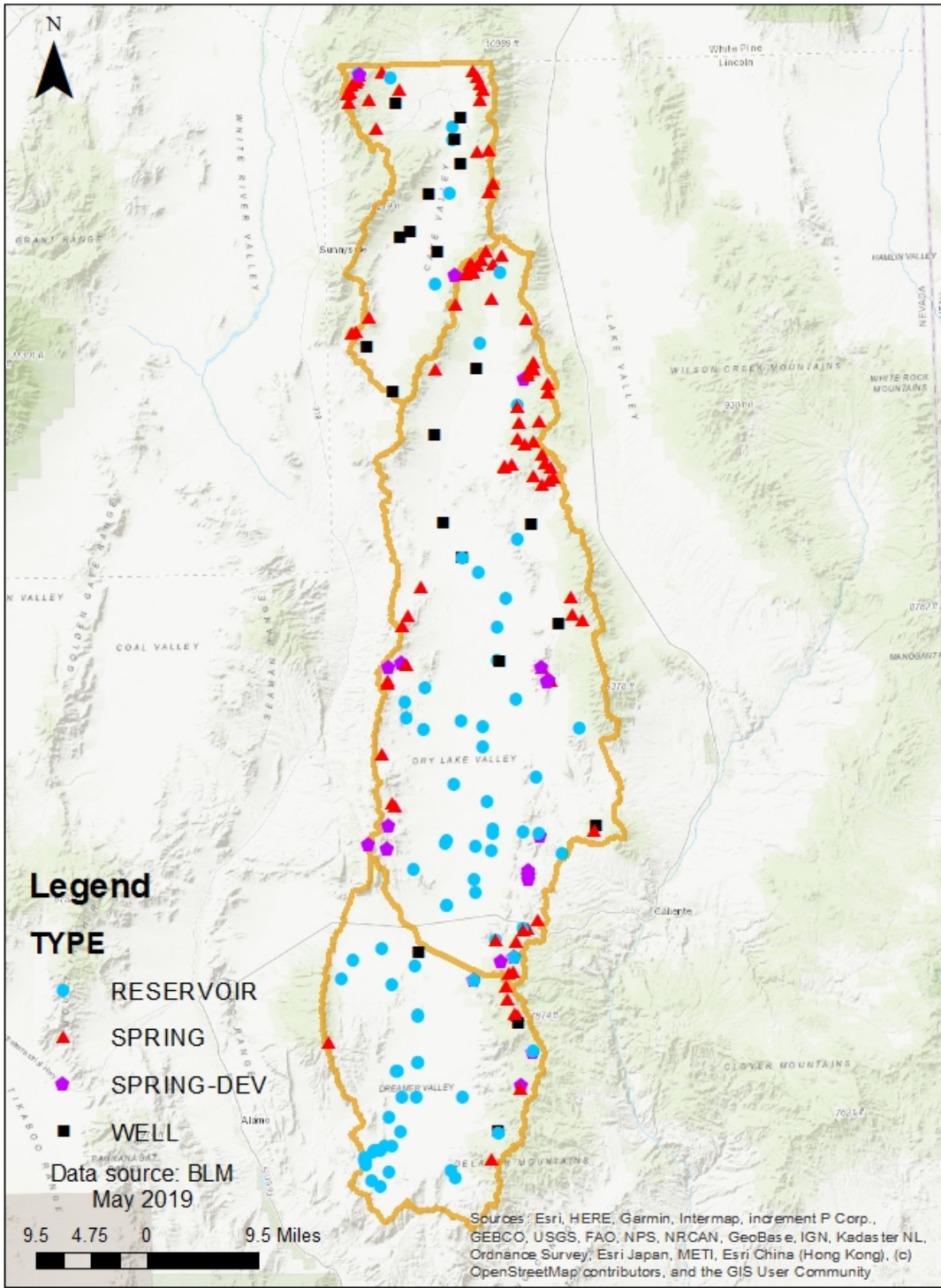
Pahrnanagat/White River Water Sources



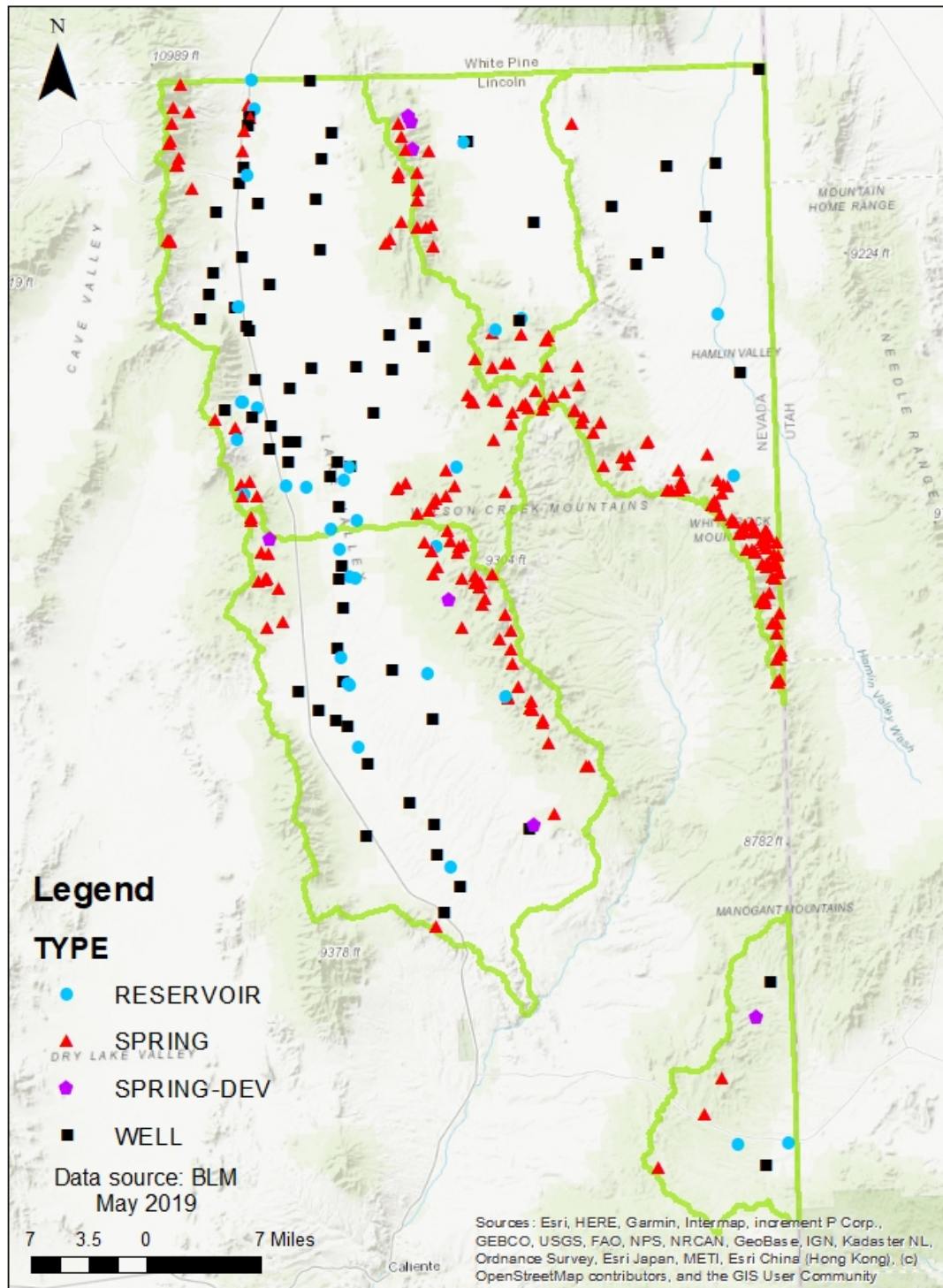
Meadow Valley Wash Water Sources



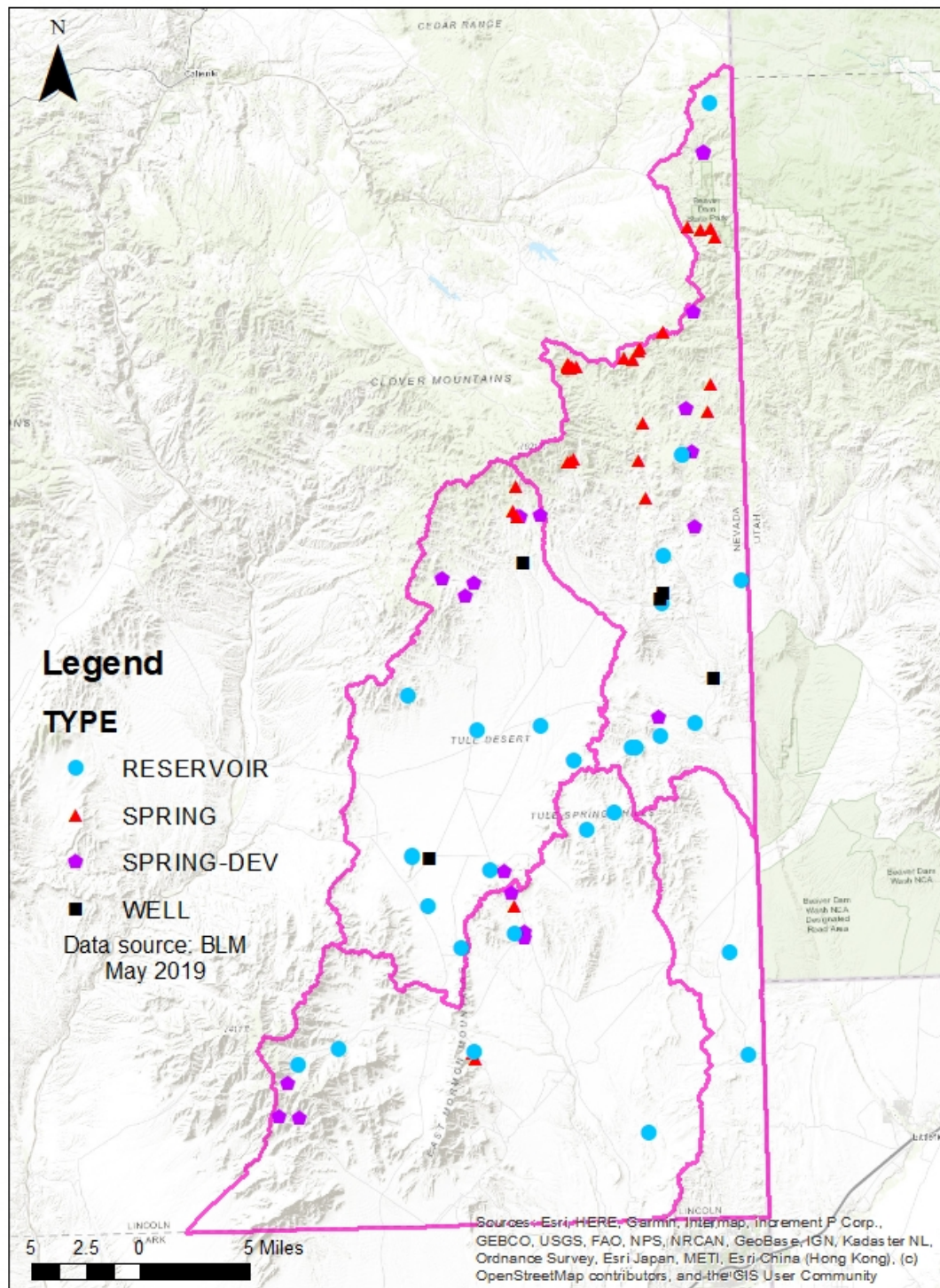
Dry Lake Valley Water Sources



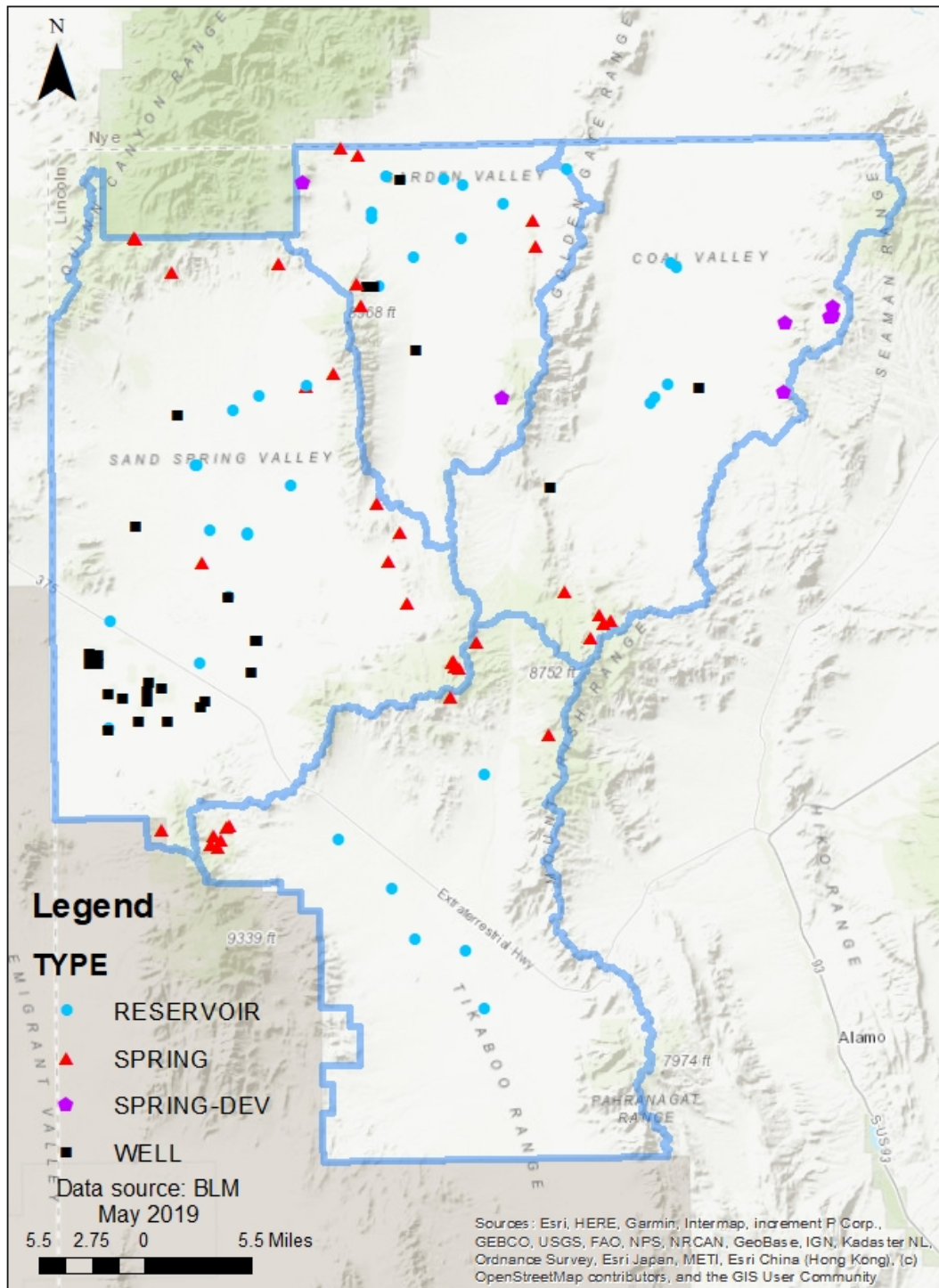
Lake/Patterson/Hamblin Water Sources



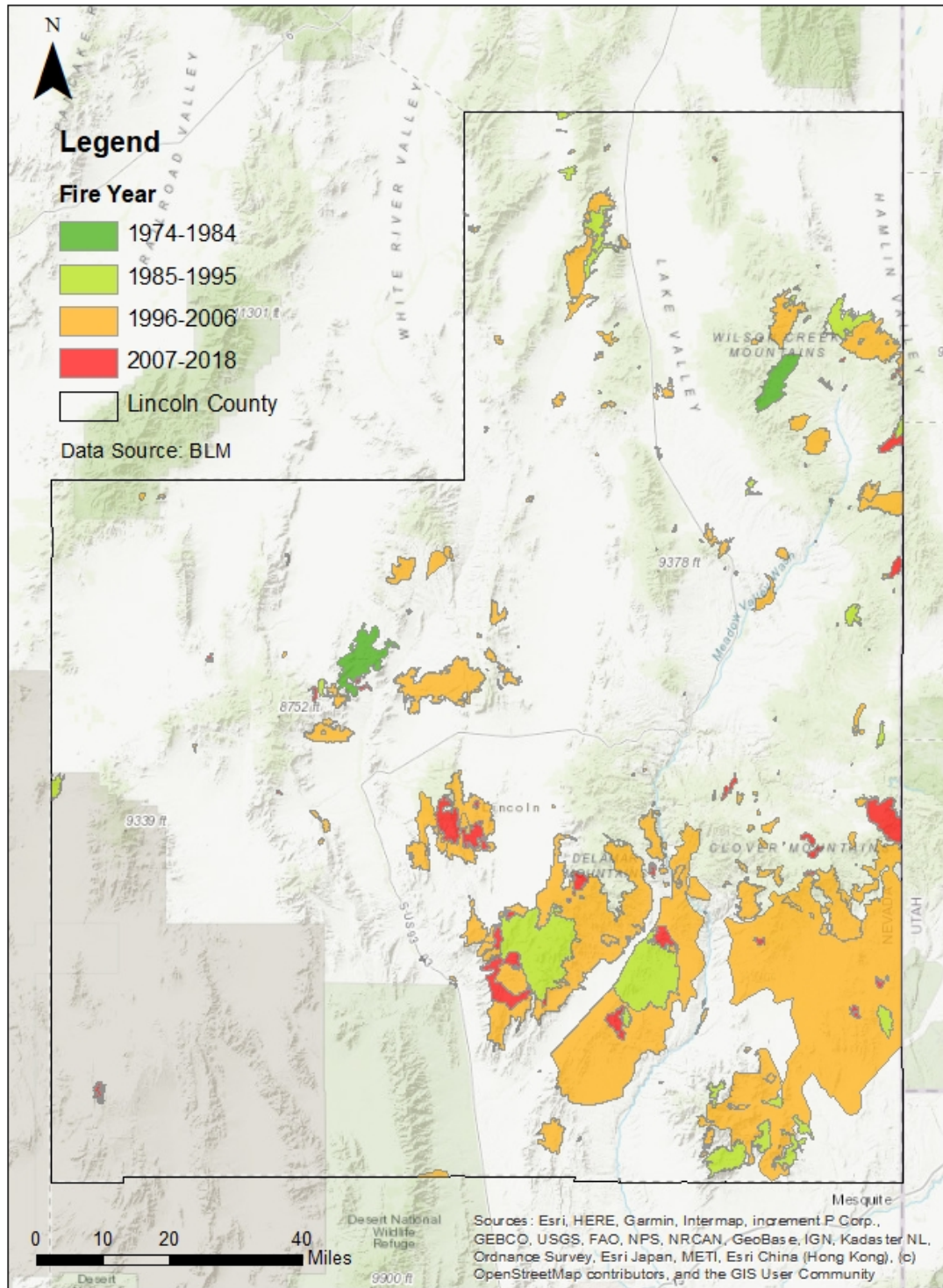
Tule Desert Water Sources



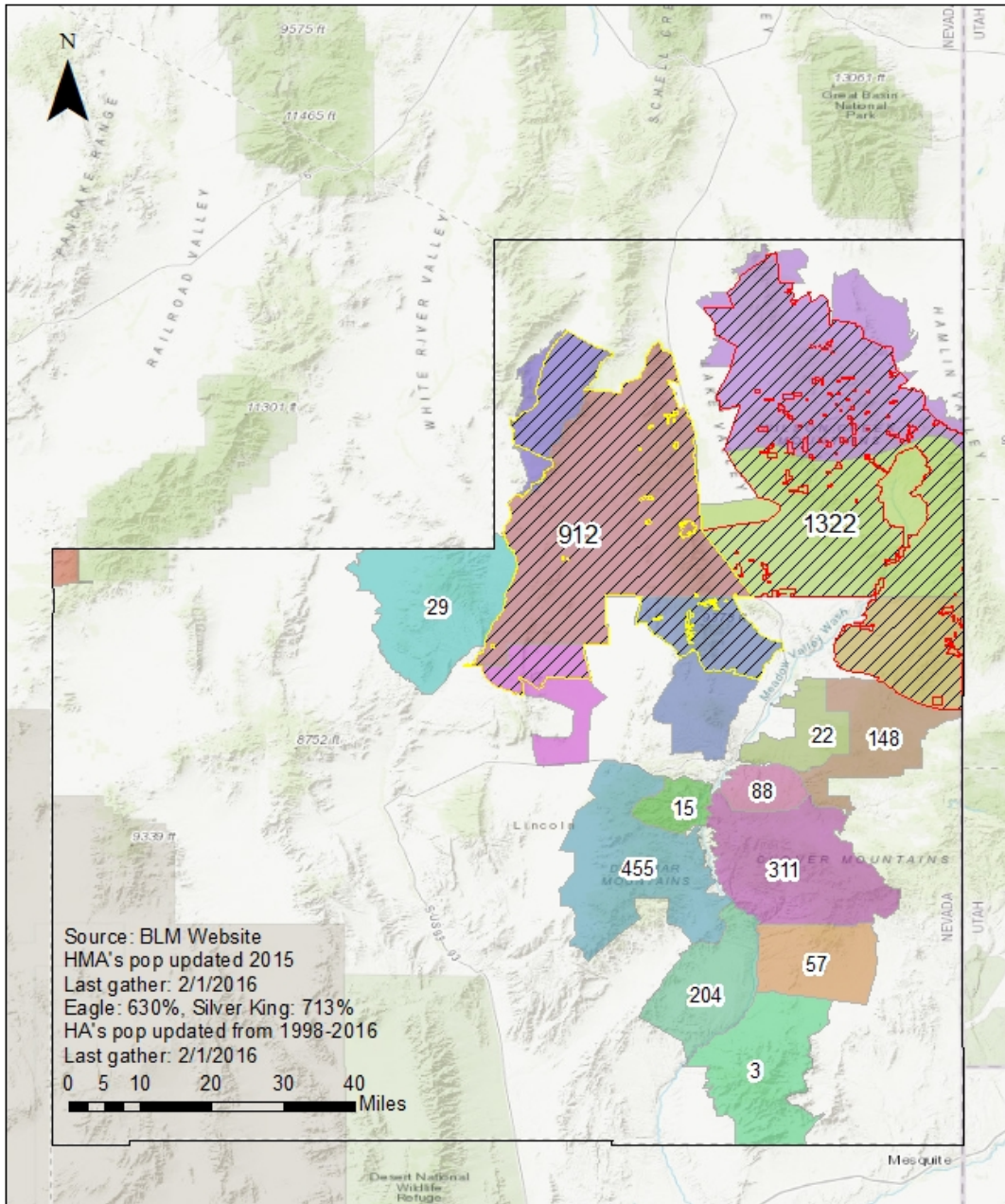
Sand Springs Water Sources



Lincoln County Large Fire History

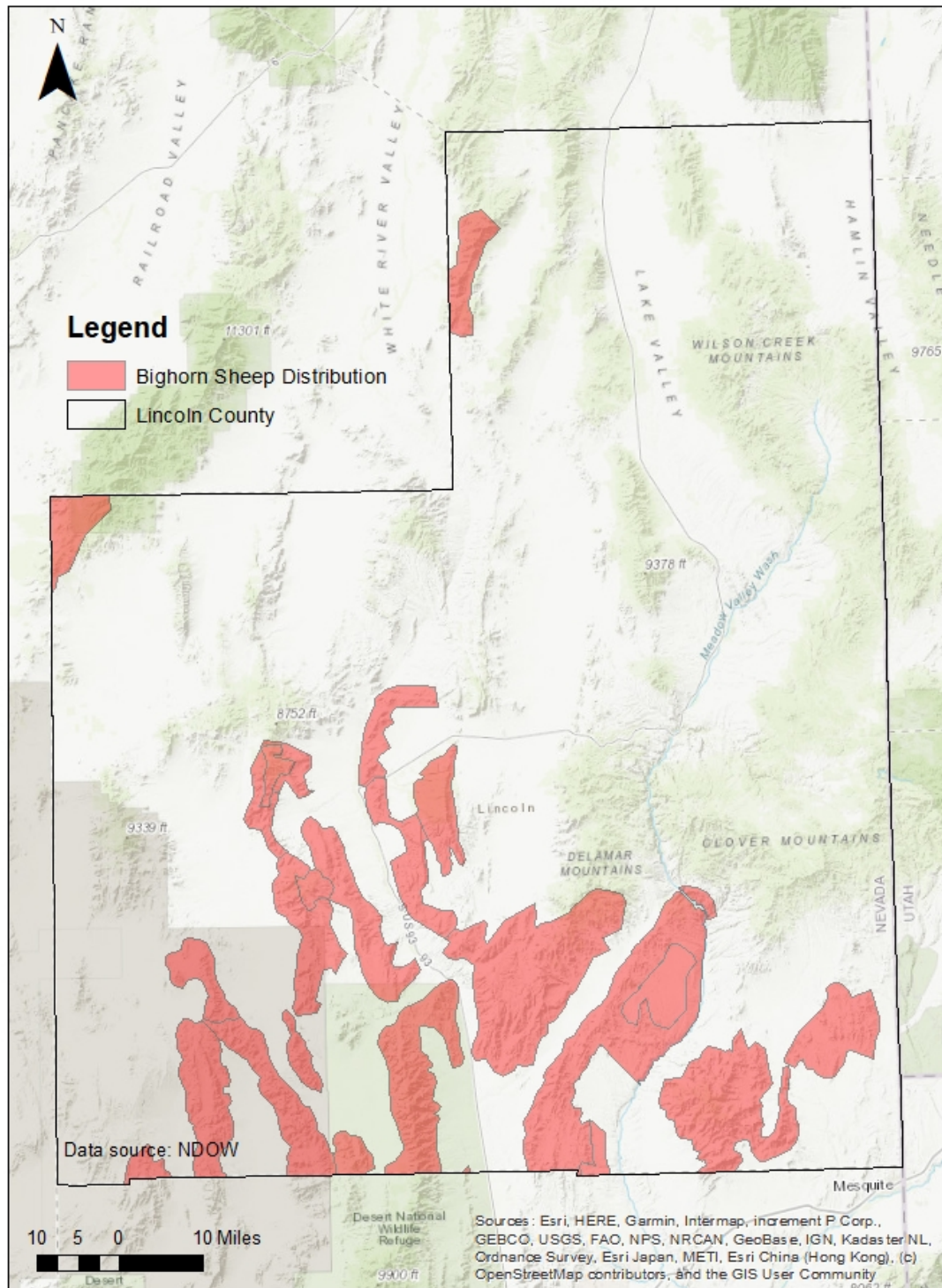


Lincoln County HMA and HA Population

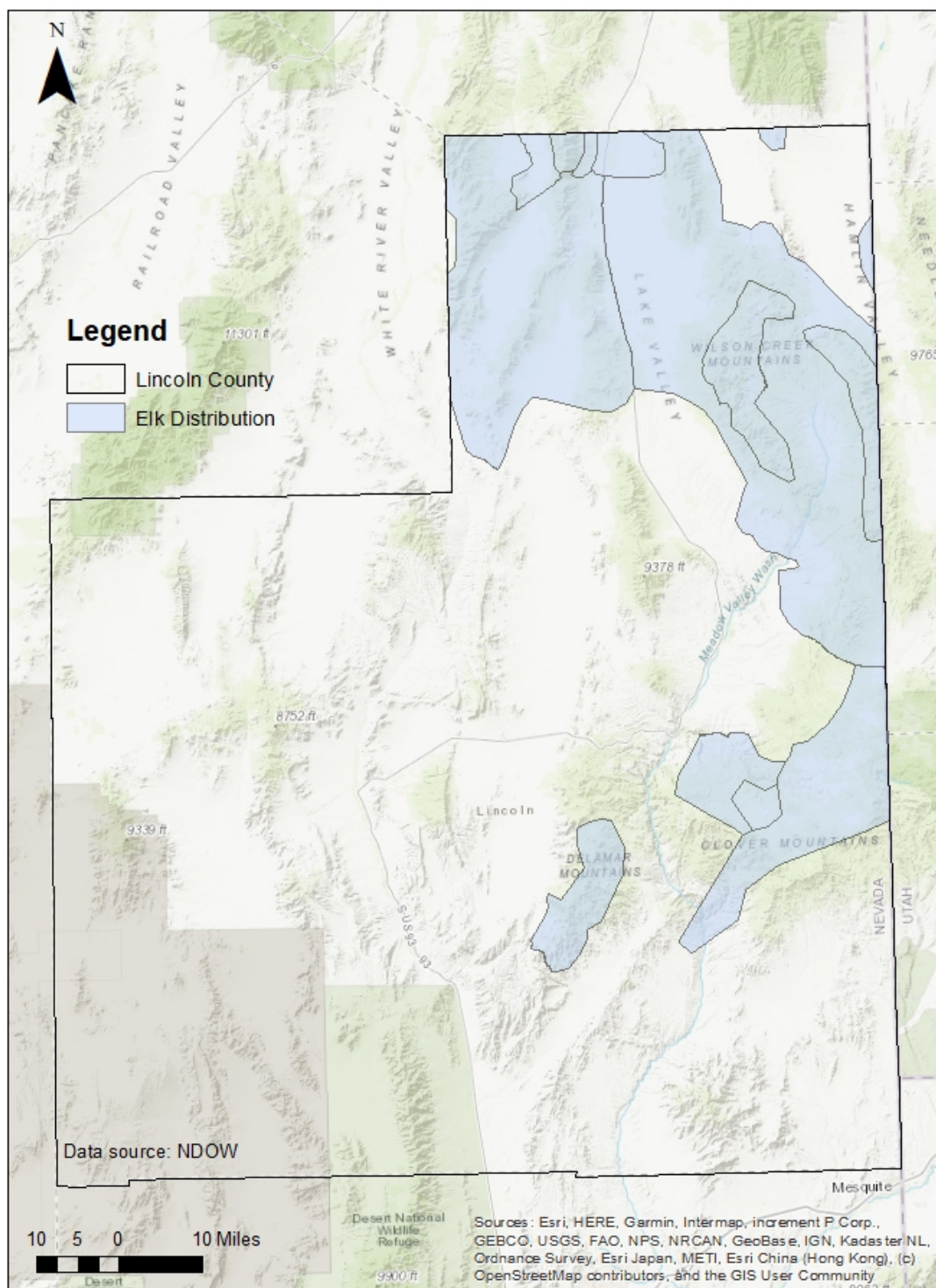


Legend	
	Lincoln County
HMA NAME	HA NAME
	Eagle
	Silver King
	Applewhite
	Blue Nose Peak
	Cave Valley
	Clover Creek
	Clover Mountains
	Deer Lodge Canyon
	Delamar Mountains
	Dry Lake
	Fortification
	Highland Peak
	Little Mountain
	Meadow Valley Mountains
	Miller Flat
	Mormon Mountains
	Patterson-Eagle
	Quinn
	Rattlesnake
	Seaman Range

Lincoln County Bighorn Sheep Distribution



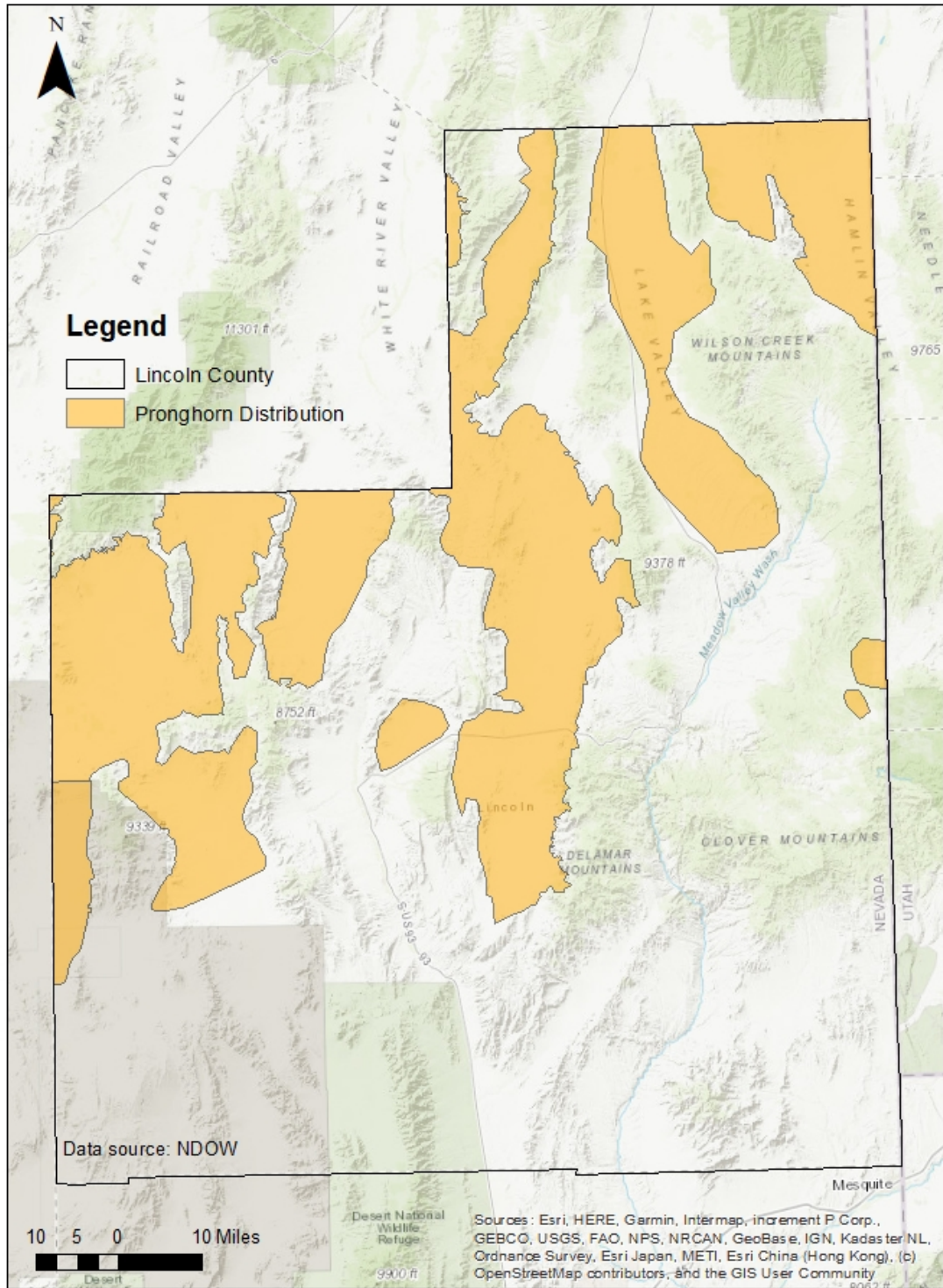
Lincoln County Elk Distribution



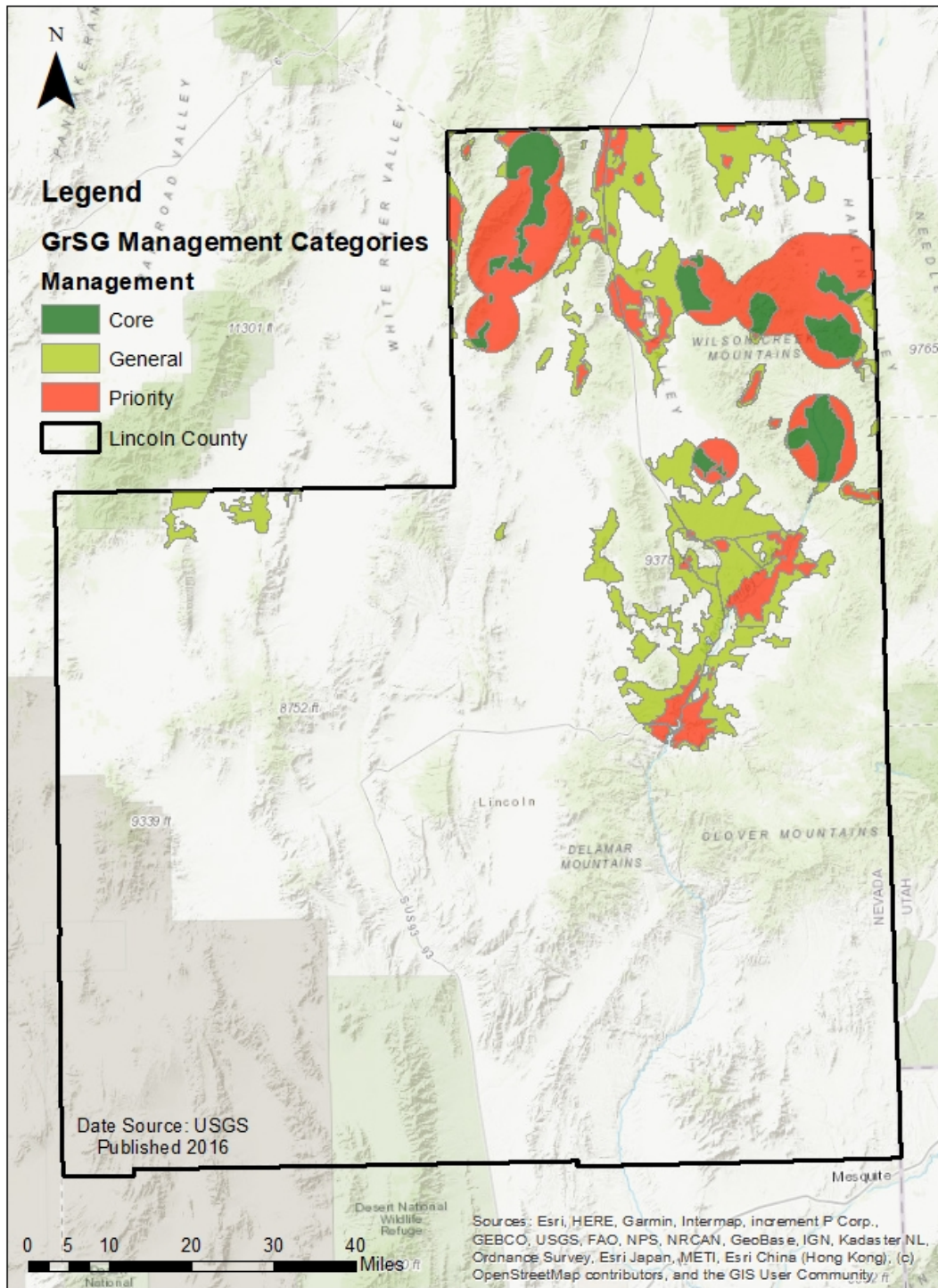
Lincoln County Mule Deer Distribution



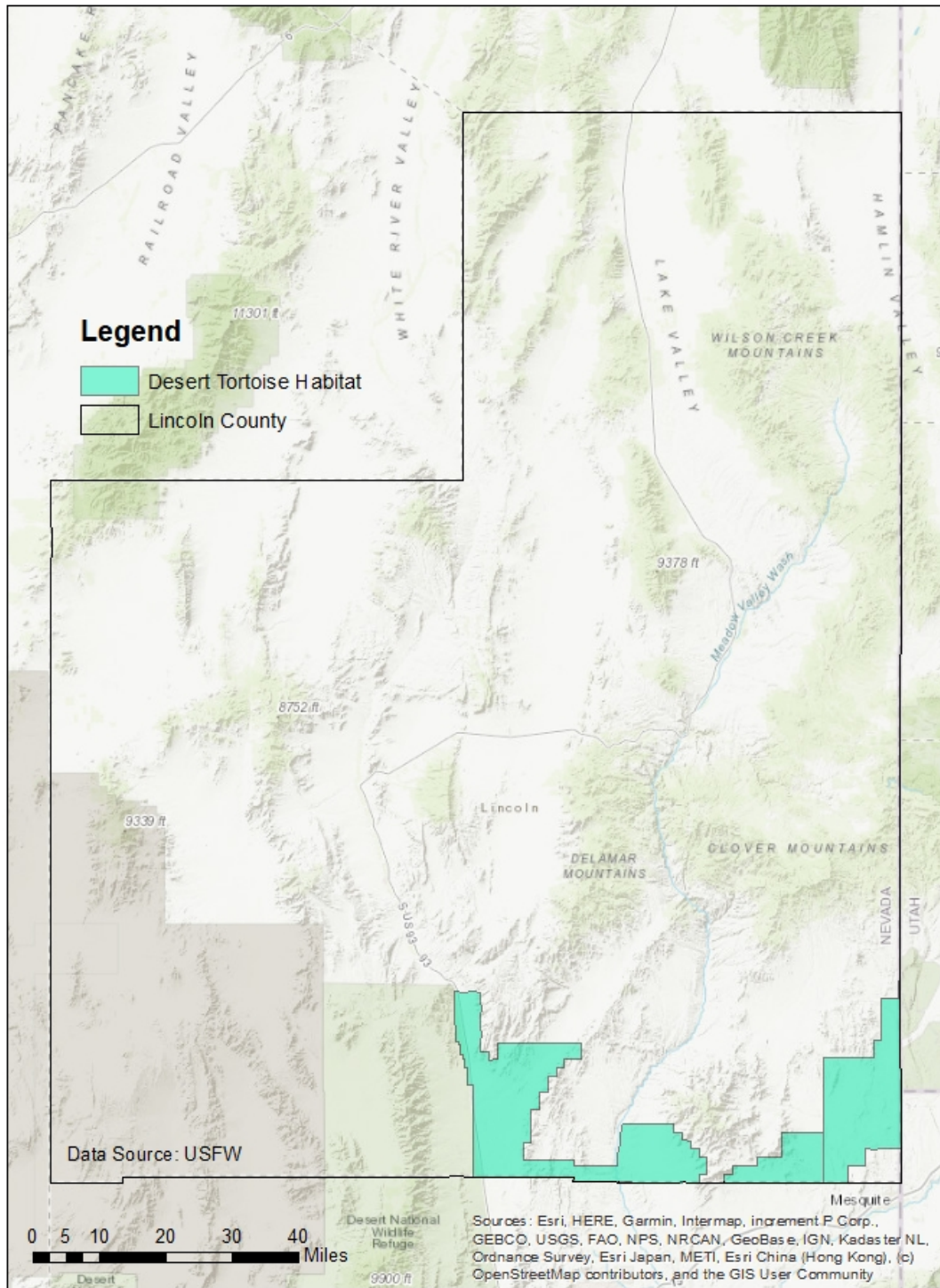
Lincoln County Pronghorn Distribution



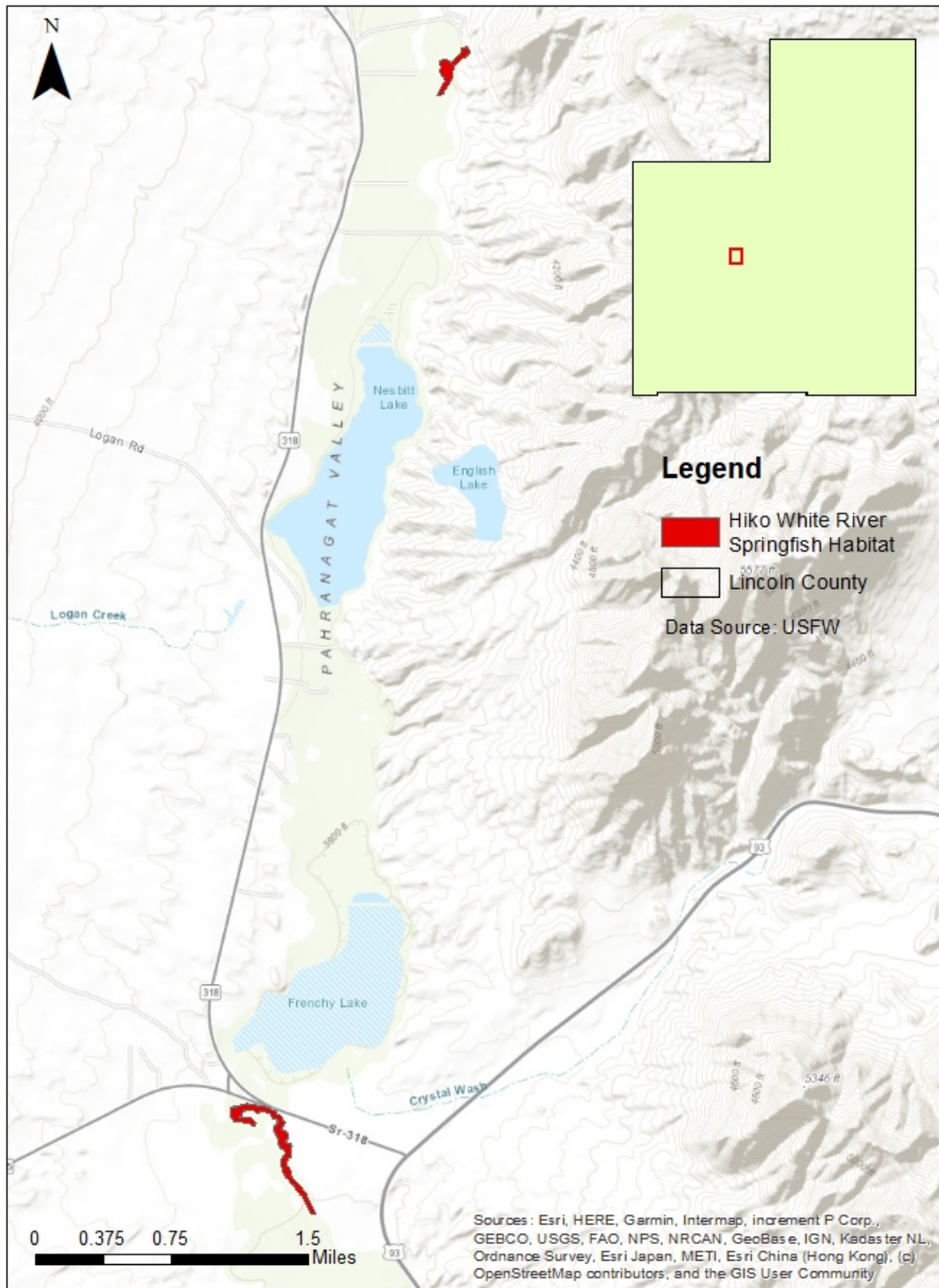
Greater Sage-grouse Management Categories



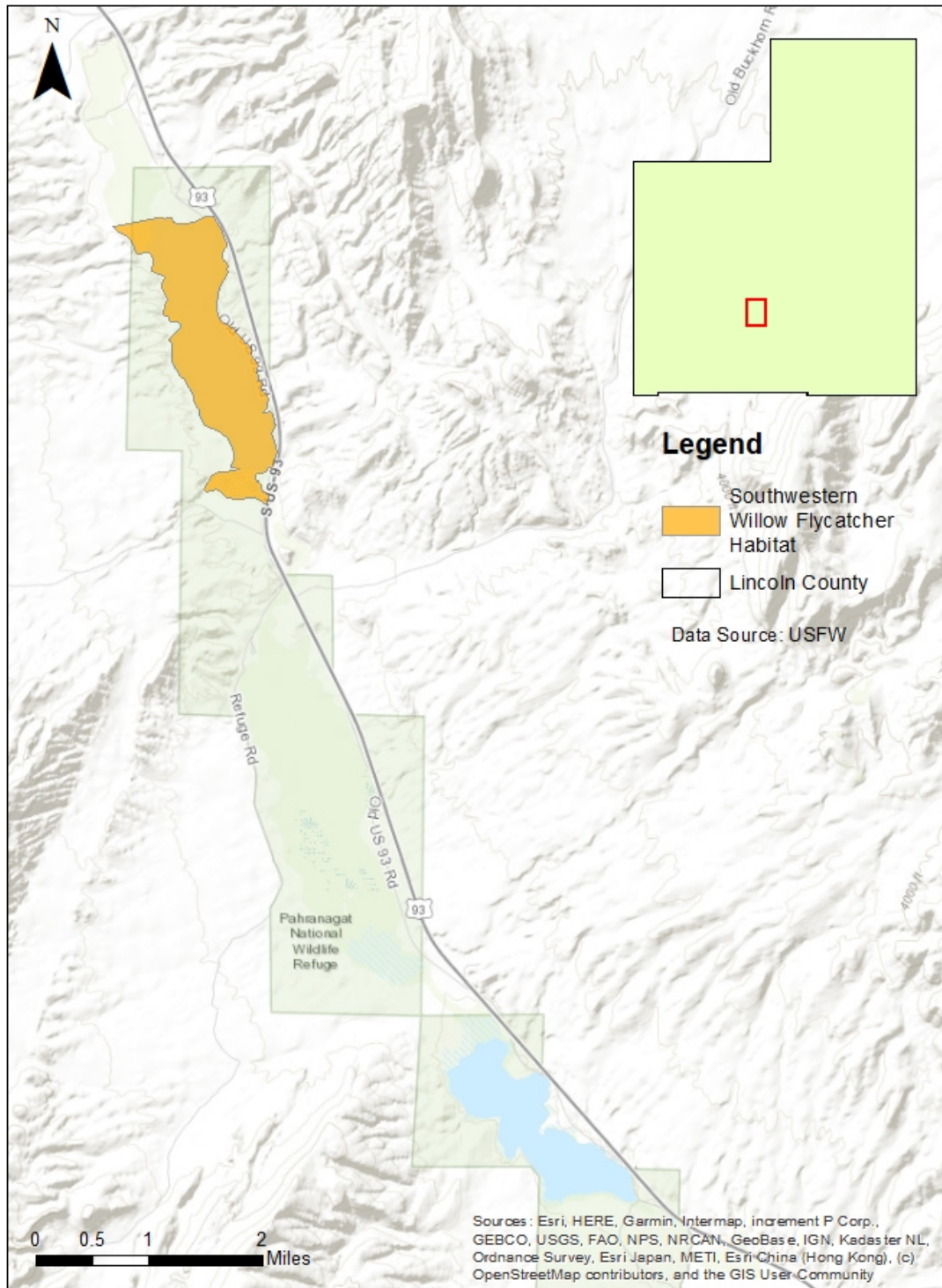
Desert Tortoise Critical Habitat



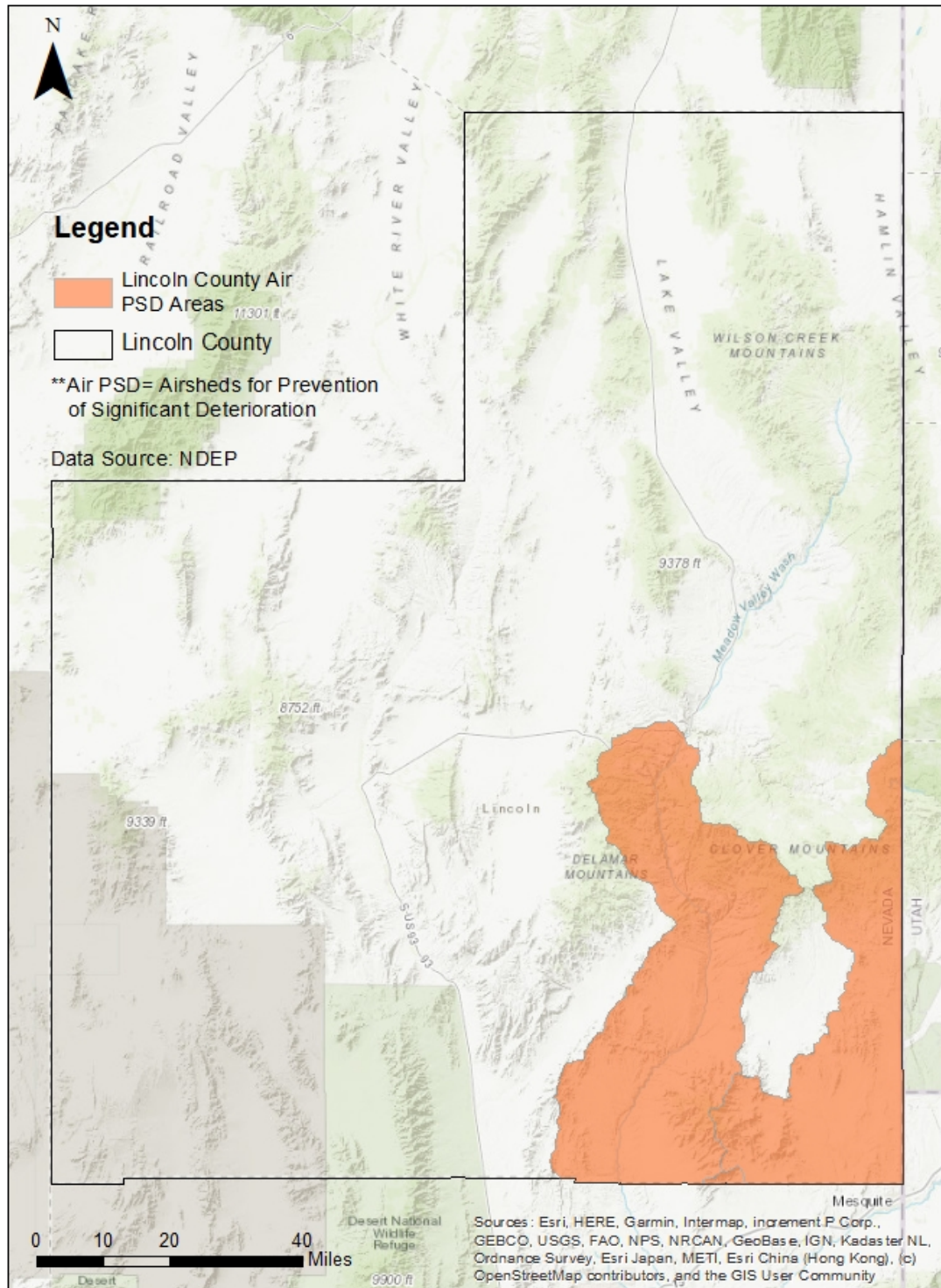
Hiko White River Springfish Critical Habitat



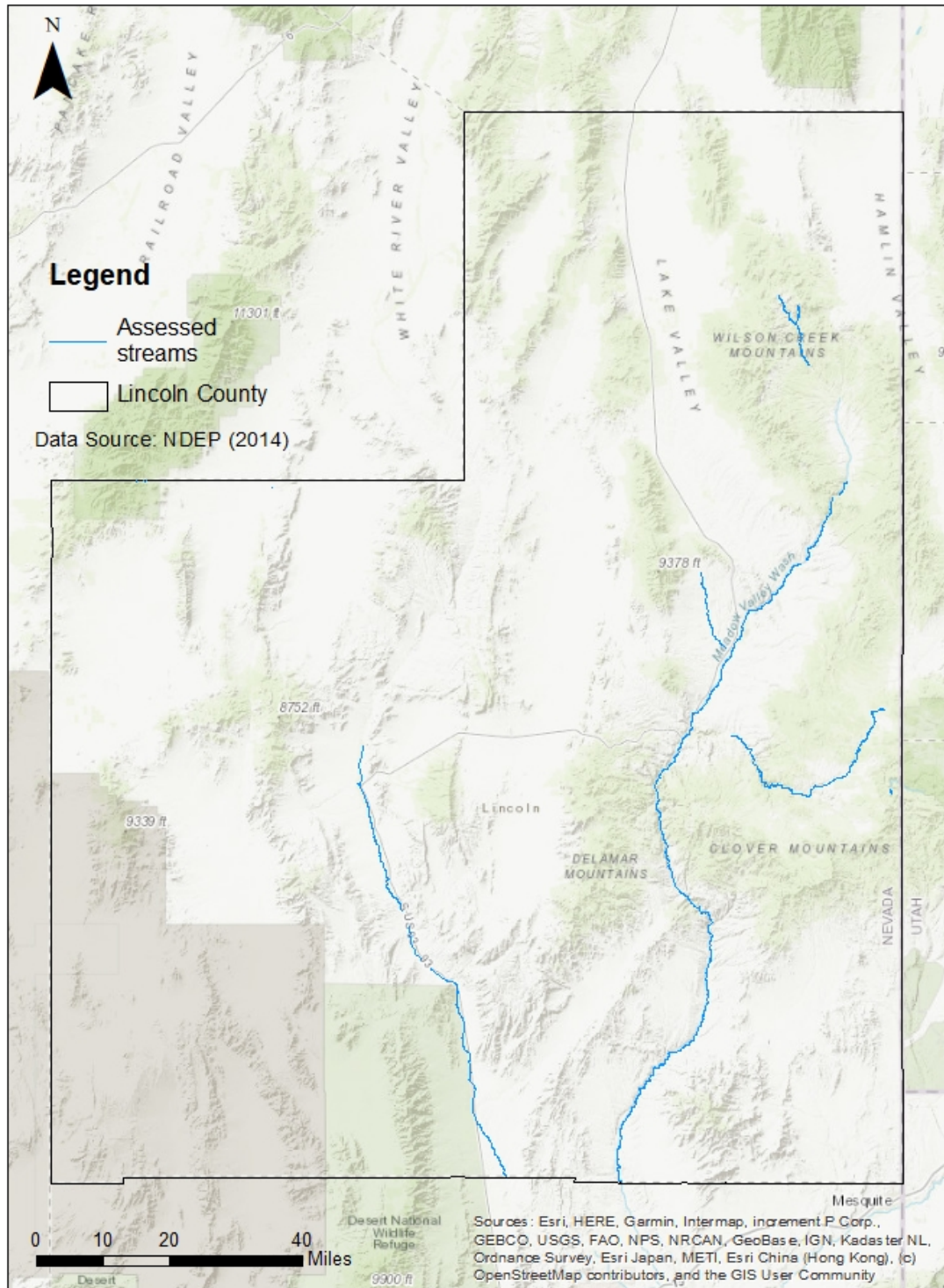
Southwestern Willow Fly Catcher Critical Habitat



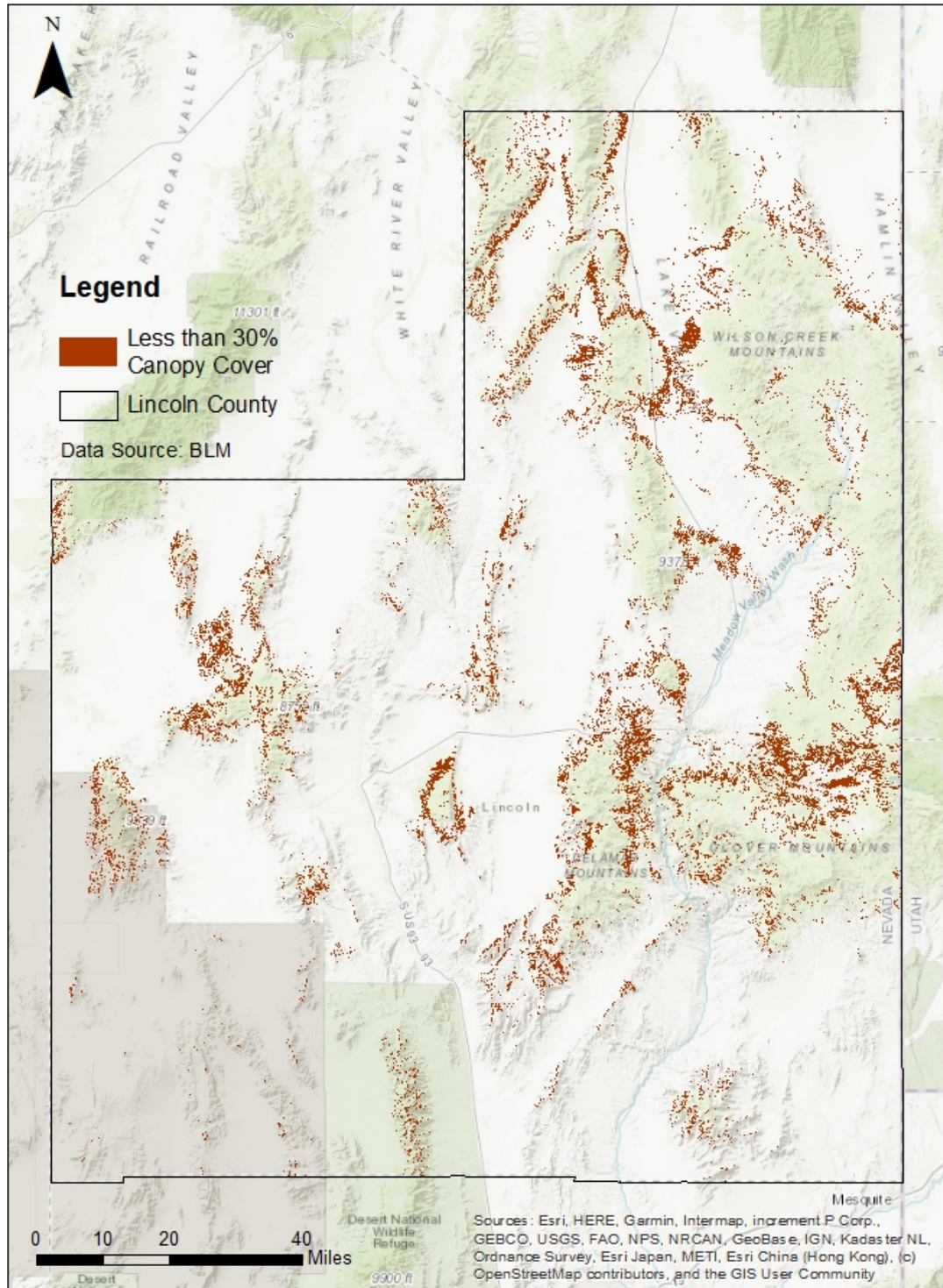
Lincoln County Air PSD Areas



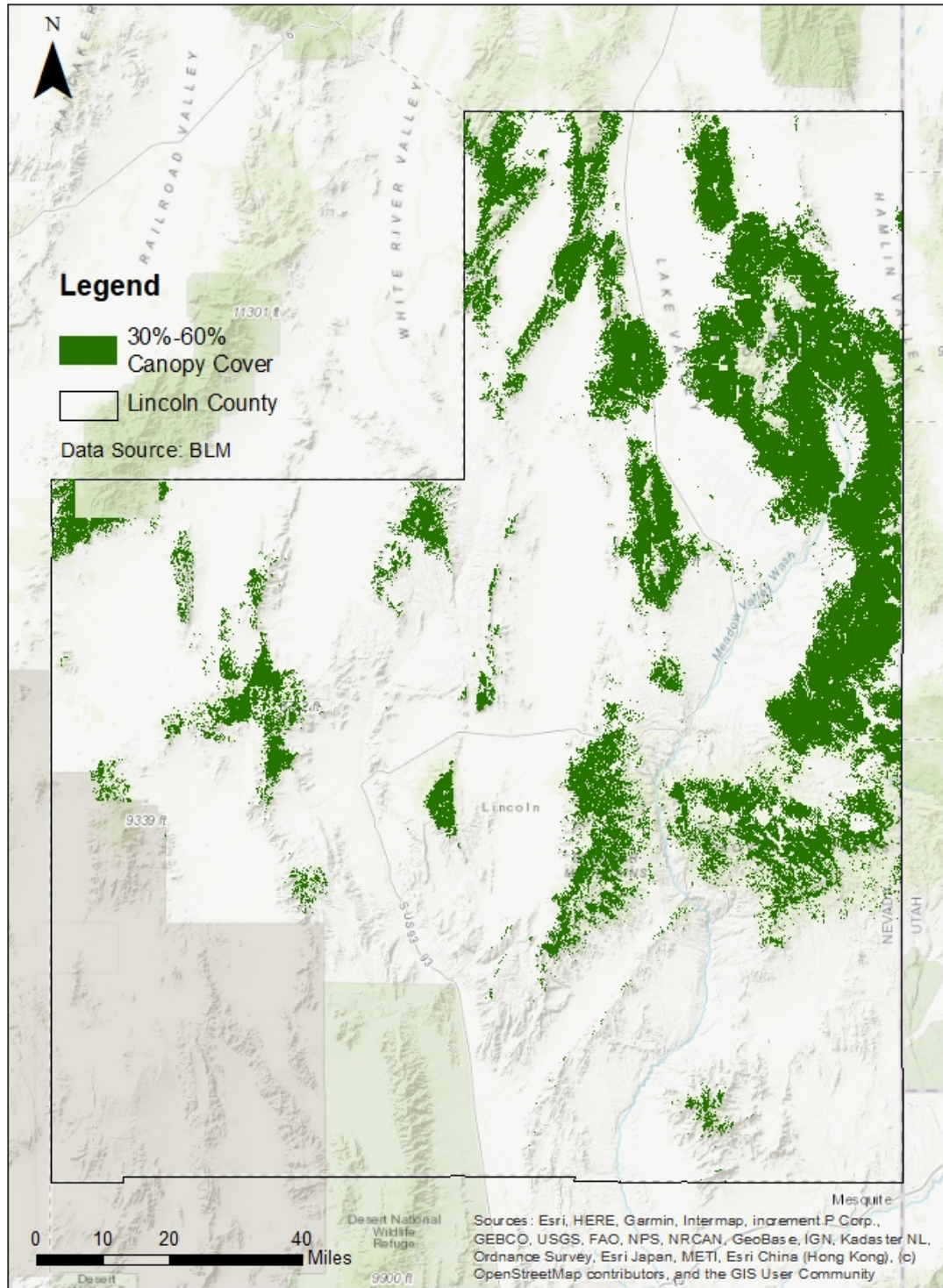
Lincoln County Assessed Streams For Water Quality



Lincoln County Pinyon-Juniper <30% Canopy Cover



Lincoln County Pinyon-Juniper 30%-60% Canopy Cover



NEVADA NOXIOUS WEED LIST BY CATEGORY

(NAC 555.010)

Category A Weeds:

Category A noxious weeds are weeds that are generally not found or that are limited in distribution throughout the State.

African rue (*Peganum harmala*)
Austrian fieldcress (*Rorippa austriaca*)
Swainsonpea (*Sphaerophysa salsula*)
Black henbane (*Hyoscyamus niger*)
Camelthorn (*Alhagi maurorum*)
Common crupina (*Crupina vulgaris*)
Dalmatian toadflax (*Linaria dalmatica*)
Dyer's woad (*Isatis tinctoria*)
Eurasian water-milfoil (*Myriophyllum spicatum*)
Giant reed (*Arundo donax*)
Giant salvinia (*Salvinia molesta*)
Goatsrue (*Galega officinalis*)
Crimson fountain grass (*Pennisetum setaceum*)
Houndstongue (*Cynoglossum officinale*)
Hydrilla (*Hydrilla verticillata*)
Iberian starthistle (*Centaurea iberica*)
Common St. Johnswort (*Hypericum perforatum*)
Malta starthistle (*Centaurea melitensis*)
Mayweed chamomile (*Anthemis cotula*)
Mediterranean sage (*Salvia aethiopsis*)
Purple loosestrife (*Lythrum salicaria*, *L. virgatum* & cultivars)
Purple starthistle (*Centaurea calcitrapa*)
Rush skeletonweed (*Chondrilla juncea*)
Sow thistle (*Sonchus arvensis*)
Spotted knapweed (*Centaurea maculosa*)
Squarrose knapweed (*Centaurea virgata*)
Sulfur cinquefoil (*Potentilla recta*)
Syrian bean caper (*Zygophyllum fabago*)
Yellow starthistle (*Centaurea solstitialis*)
Yellow toadflax (*Linaria vulgaris*)

Category B Weeds:

Category B listed noxious weeds are weeds that are generally established in scattered populations in some counties of the State.

Horsenettle (*Solanum carolinense*)
Diffuse knapweed (*Centaurea diffusa*)
Leafy spurge (*Euphorbia esula*)
Medusahead (*Taeniatherum caput-medusae*)
Musk thistle (*Carduus nutans*)
Russian knapweed (*Acroptilon repens*)
African mustard (*Brassica tournefortii*)
Scotch thistle (*Onopordum acanthium*)
Silverleaf nightshade (*Solanum elaeagnifolium*)

Category C Weeds:

Category C listed noxious weeds are weeds that are generally established and generally widespread in many counties of the State.

Canada thistle (*Cirsium arvense*)
Hoary cress (*Cardaria draba*)
Johnsongrass (*Sorghum halepense*)
Perennial pepperweed (*Lepidium latifolium*)
Poison-hemlock (*Conium maculatum*)
Puncture vine (*Tribulus terrestris*)
Salt cedar (tamarisk) (*Tamarix* spp.)
Spotted water hemlock (*Cicuta maculata*)

