State of Nevada
Conservation Credit System

2016 Findings & Improvement Recommendations Report

February 27, 2017

STATE OF NEVADA

CONSERVATION CREDIT SYSTEM

The *Findings & Improvement Recommendations Report* is an annual product of the Nevada Conservation Credit System. The Sagebrush Ecosystem Technical Team of the Nevada Division of State Land's Sagebrush Ecosystem Program produces the report.

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INTRODUCTION

Key to the long-term success of the Nevada Conservation Credit System (Credit System) is the adoption of well-supported improvements to the Credit System. Improvements ensure Credit System policies, procedures, and tools continue to support achievement of the Credit System's goal: for impacts from anthropogenic disturbances to be offset through restoration, enhancement, and protection that results in net conservation gain for sage-grouse habitat in the State of Nevada. Well-supported improvements depend on: (1) a process that identifies findings from both the operation of the Credit System and new science, and (2) thoroughly analyzed and documented recommendations that stakeholders can review before adoption.

This report contains improvement recommendations for the Credit System Oversight Committee - the Sagebrush Ecosystem Council (SEC) - to consider as part of the 2016 continual improvement process. The findings and improvement recommendations described in this report were identified and formatted through the annual process outlined below. The initial versions - version 1.0 - of the Credit System Manual and Habitat Quantification Tool (HQT) Methods Document were adopted by the SEC in December 2014. In December 2015, the SEC adopted improvements I1 through I8, and I10 through I12 described in the *2015 Credit System Findings & Improvement Recommendations Report*, which were implemented in version 1.1 of the Credit System Manual and HQT Methods Document.

Annual Process

Each year the Sagebrush Ecosystem Technical Team (SETT) synthesizes findings related to Credit System operations, achievements and challenges, along with any new science relevant to the Credit System. This process of synthesizing findings enables the SETT to identify implementation and policy issues, opportunities for program improvement, and emerging information needs. The SETT develops improvement recommendations for the Credit System that are based on the findings and are considered for adoption by the SEC at the annual *Credit System Improvement Meeting* each December. The findings and improvement recommendations are documented in an annual *Findings & Improvement Recommendations Report* to enable the SEC to make informed decisions and valuable improvements to the Credit System.

The process for producing this report is summarized in Section 3.3: Adaptively Managing the Credit System in the Credit System Manual. During the implementation of the first continual improvement cycle in 2015, the SETT defined a slightly revised five-step annual process, which is illustrated in Figure 1 below. The red circle indicates the steps in the continual improvement cycle during which this report is produced and the SEC considers adoption of the improvement recommendations in this report.

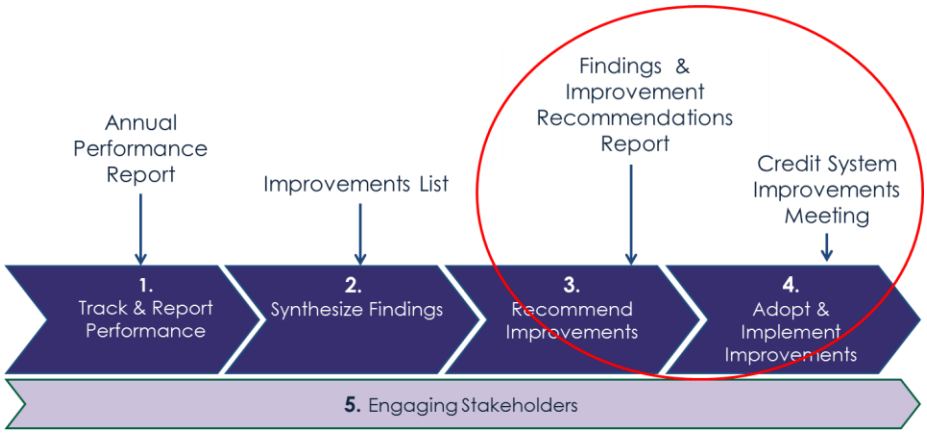

Figure 1: Credit System continual improvement process

Report Structure

The organization of this report is as follows:

Part I: Findings
The section contains a synthesis of findings identified by the SETT and reflect information deemed most important to Credit System management and implementation. Findings are categorized as either Operational Findings or Research & Monitoring Findings.

Part II: Improvement Recommendations
This section is a distillation of actionable recommendations proposed by the SETT to improve the Credit System, ranging from management strategies and policies to operational procedures and tools. The SETT creates the improvement recommendations based on the findings and thorough analysis of potential improvements identified.

Improvement recommendations are grouped into three categories of significance - Major Significance, Moderate Significance or Minor Significance - based on the magnitude of change to the Credit System and the level of interest by stakeholders associated with the improvement.

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PART I: FINDINGS

This section contains a synthesis of key findings identified by the SETT, many of which are directly relevant to potential or recommended improvements to the Credit System. Findings not directly linked to improvement recommendations either support existing policy, require actions beyond the SETT's purview, are not currently actionable due to incomplete information, or lack of implementation resources.

The findings are categorized as "Operational Findings" or "Research & Monitoring Findings." Operational findings are derived from stakeholder feedback and from on-the-ground learning associated with testing and implementation of Credit System policies, procedures and tools. Research and monitoring findings are associated with new science or drawn from the results of monitoring data.

Improvements List

All potential Credit System improvements are captured in the *Credit System Improvements List*. The SETT uses the list to track and respond to stakeholder feedback – including suggested Credit System improvements and new findings – in an organized and transparent manner. The SETT uses the list to define work plan priorities with the SEC each year.

Operational Findings

F1. Effective credit and debit project minimization measures that reduce indirect impacts to greater sage-grouse are not incorporated into the assessment of anthropogenic feature impacts by the Credit System.

F2. Application of the HQT requires many manual steps that are described in tremendous detail; however, unintentional and intentional erroneous application of the HQT by users can cause inaccurate results.

F3. Assisting Credit Developers and Credit Buyers, and ensuring credit and debit projects fulfill the requirements of the Credit System, requires meaningful SETT resources.

F4. There is significant interest by Credit Developers and Credit Buyers to participate in the Credit System considering the significant regulatory and emerging market uncertainty related to the Credit System.

F5. Current verification processes for credit and debit projects need to be more clearly defined, and there are opportunities to make them more practical.

F6. Developing credits on public lands is expected to be necessary to fulfill expected mitigation obligations and more effectively contribute to the conservation of greater sage-grouse, and BLM and USFS are committed to working with the State of Nevada to enable generation of credits on public lands.

F7. Long-term management and monitoring financial assurance obligations and verification fees for each credit project must be correctly determined early in the credit generation process.

F8. BLM's draft Sage-Grouse Mitigation Framework appears to be thoroughly supportive of state-developed mitigation programs, and consistent with the policies and HQT underlying the Credit System.

Research and Monitoring Findings

F9. The habitat function for credit and debit projects, and thus credit estimates, credit obligations, and performance verification, are significantly influenced by inter-annual variability associated with climatic conditions and the timing of grazing relative to field data collection.

F10. The method for incorporating the HSI into assessment of local-scale habitat function by the HQT does not accurately reflect local-scale habitat quality.

F11. The effects of the presence of conifer and the removal of conifer are not adequately captured by the current HQT framework.

F12. The current shape of the distance decay curves used to assess the indirect effects from anthropogenic features does not reflect the best available science.

F13. The HQT excessively reduces the value of meadow habitat at significant distances from sagebrush and this creates perverse incentives for Credit Developers.

F14. The current methods for data collection on debit sites requires an extensive area (up to 8km surrounding the site) where vegetative field data collection is required. Alternative methods could reduce the need to survey the entire area and thereby increase efficiencies and reduce costs.

F15. Provide an objective and transparent process for assessing anthropogenic features and their associated indirect effects relating to ancillary features associated with proposed anthropogenic features not defined in the current table.

2016 Key Findings

OPERATIONAL FINDINGS

F1. Effective credit and debit project minimization measures that reduce indirect impacts to greater sage-grouse are not incorporated into the assessment of anthropogenic feature impacts by the Credit System.

- Effective and durable minimization measures provide meaningful impact reductions to greater sage-grouse.
- Examples of minimization measures that can reduce impacts to greater sage-grouse populations include timing and seasonal stipulations for traffic and noise reduction (Patricelli et al., 2013).
- The Credit System does not currently reduce the indirect impacts from anthropogenic features when effective minimization measures are implemented, and thus does not create an incentive for debit projects to implement effective and durable minimization actions.
- Improvement recommendation I6 provides a resolution to this finding.

F2. Application of the HQT requires many manual steps that are described in tremendous detail; however, unintentional and intentional erroneous application of the HQT by users can cause inaccurate results.

- The Desktop Analysis portion of version 1.1 of the Credit System User's Guide contains detailed steps to ensure the Administrator (SETT) and Technical Service Providers consistently and efficiently apply the HQT. However, the many detailed steps can be intentionally or unintentionally performed incorrectly. For example, the user could skip a step accidentally and not realize it.
- The Desktop Analysis portion of User's Guide contains GIS steps that can be performed using different ArcGIS functions which produce different results. The User's Guide describes the specific ArcGIS functions to perform; however, some users may use a different function that they believe will produce the same result and not realize the result will be different.
- Improvement recommendation I12 provides resolution to this finding.

F3. Assisting Credit Developers and Credit Buyers, and ensuring credit and debit projects fulfill the requirements of the Credit System, requires meaningful SETT resources.

- An important role of the Administrator (SETT) is to provide consultation to potential Credit Developers and Credit Buyers, primarily during the design and enrollment phases of a project, and also throughout the entire term of the project.
- It is critical that the Administrator ensures all requirements of the Credit System are followed and documented. This includes:
  - Coordinating and finalizing the project Management Plan.

- Reviewing annual monitoring reports.
- Conducting Quality Assurance (QA) on credit and debit projects.
- Confirming annual monitoring and periodic verification are consistently performed over the term of each project.
- Maintaining and tracking sellable credits and debit obligations.

- Improvement recommendation I2 provides resolution to this finding.

F4. There is significant interest by Credit Developers and Credit Buyers to participate in the Credit System considering the significant regulatory and emerging market uncertainty related to the Credit System.

- Demand for mitigation offsets through the Credit System depends on many factors, including when mitigation will be required and what mitigation will be accepted by BLM and USFWS to fulfill permit requirements.
- The Credit System was adopted just two years ago, and is an innovative, science-based and landscape-scale approach to compensatory mitigation with minimal track record. Mitigation requirements in a permit have not been fulfilled using the Credit System as of January 2017.
- However, there is significant interest in participating in the Credit System, as demonstrated by:
  - The State of Nevada announced up to $1,200,000 to seed-fund projects in December 2016, and 10 landowners applied to receive funding.
  - The State of Nevada announced $1,000,000 to seed-fund credit projects in December 2015 and 21 landowners applied to receive funding.
  - In August 2016, a ROD for the expansion of the Bald Mountain mine included the Credit System as an option to mitigate impacts of the project.
  - In August 2016, Newmont Mining signed an agreement with the Department of Interior to generate credits to potentially compensate for future residual impacts from Newmont operations using the Credit System or an alternative method.
  - As of January 2017, a total of 6 credit projects and 5 debit projects were seriously evaluating the use of the Credit System.

F5. Current verification processes for credit and debit projects need to be more clearly defined, and there are opportunities to make them more practical.

- The initial assessment of a site to determine the credits generated or the credit obligation for credit and debit projects, respectively, and the periodic verification of project performance are different processes; however, they are not clearly differentiated in the Manual.
- Allowing Credit Developers and Credit Buyers (project proponents) to directly hire a certified verifier to conduct the initial assessment of habitat quality creates significant efficiencies and reduces costs for project proponents and the Administrator (SETT). This is because project proponents will likely hire a certified verifier to assist with development of the management plan and other technical assistance, and project proponents will often have an existing relationship with a certified verifier who is already familiar with the project site and project details.
- Clear and detailed periodic verification processes will produce more reliable outcomes and reduce costs for project proponents and the Administrator.
- Improvement recommendation I7 provides resolution to this finding.

F6. Developing credits on public lands is expected to be necessary to fulfill expected mitigation obligations and more effectively contribute to the

conservation of greater sage-grouse, and BLM and USFS are committed to working with the State of Nevada to enable generation of credits on public lands.

- Approximately 87% of sage-grouse habitat in the State of Nevada is on public lands, including a significant portion of the priority habitat to conserve.
- Private property containing sage-grouse habitat is often surrounded by public lands containing important sage-grouse habitat. Conserving private property and surrounding public lands is necessary to conserve large, connected areas of priority sage-grouse habitat.
- The MOU between BLM, USFS, and the State of Nevada clearly defines BLM and USFS intent, and BLM and USFS have consistently made statements during SEC meetings that they are committed to generating credits on public lands.
- Improvement recommendation I14 provides resolution to this finding.

F7. Long-term management and monitoring financial assurance obligations and verification fees for each credit project must be correctly determined early in the credit generation process.

- Appropriately determining the amount of funds necessary for long-term management & monitoring and periodic verification is critical to ensuring stewardship funds are available to meet performance standards over the term of a credit project and to ensure the Administrator (SETT) has access to funds to verify each project meets performance standards over the term of a project.
- Credit Developers, Credit Buyers, and the Administrator are currently uncertain about how to accurately determine the amount of funds required to fulfill long-term management & monitoring financial assurance obligations and verification fees based on guidance in the Manual.
- Improvement recommendations I10 and I11 provide resolution to this finding.

F8. BLM's Greater Sage-Grouse Mitigation Framework appears to be thoroughly supportive of state-developed mitigation programs, and consistent with the policies and HQT underlying the Credit System.

- The SETT has participated in BLM's effort to develop regional mitigation strategies over the past year to ensure insights from designing and pilot testing the Credit System are incorporated in BLM's effort.
- The August 2016 draft product of BLM's effort contains habitat assessment, additionality, and durability requirements consistent with those defined by the Credit System.
- There are no improvement recommendations related to this finding at this time; rather this finding is to inform the SEC that the SETT has been involved in BLM's effort and that BLM's Mitigation Framework is consistent with the Credit System.

RESEARCH & MONITORING FINDINGS

F9. The habitat function of credit and debit projects, and thus credit estimates, credit obligations, and performance verification, are significantly influenced by inter-annual variability associated with climatic conditions and the timing of grazing relative to field data collection.

- HQT field parameters like grass height and forb canopy cover are sensitive to climatic conditions, such as drought, which are outside the control of landowners, as well as the timing of grazing relative to data collection.
- Site-scale HQT parameter variability directly influence habitat function calculations and the outcome of periodic site performance verification.
- Improvement recommendations I5 and I8 provide resolution to this finding.

F10. The method for incorporating the HSI into assessment of local-scale habitat function by the HQT does not accurately reflect local-scale habitat quality.

- The reclassified Habitat Suitability Index (HSI) is used to evaluate local-scale habitat quality for projects in the Credit System, and includes environmental variables such as sagebrush cover and distance to water.
- The HSI was revised, reclassified, and adopted by the SEC in December of 2015. The new HSI included layers for each seasonal habitat type - breeding, late brood-rearing and winter - while original HSI only included one layer. The revised HSI was reclassified and combined into a single layer for use by participants in the Credit System as part of publishing version 1.1 of the User's Guide in March 2016.
- Multiple projects were evaluated using the revised and reclassified HSI layer during the 2016 field season and the reclassified HSI did not accurately reflect local-scale habitat quality or conifer cover.
- Improvement recommendation I4 provides resolution to this finding.

F11. The effects of the presence of conifer and the removal of conifer are not adequately captured by the current HQT framework.

- Comparing reclassified HSI values to actual conifer cover (using field data and/or aerial photography) reveals that habitat values are currently overvalued where conifer cover is present and the impact of conifer cover and benefits of conifer cover removal are not accurately captured.
- An accurate, uniformly-applied conifer cover evaluation procedure will allow for more complete assessment of a project's habitat value and allow project developers to determine whether a site is located in an area where conifer removal is valuable.
- Improvement recommendation I4 provides resolution to this finding.

F12. The current shape of the distance decay curves used to assess the indirect effects from anthropogenic features does not reflect the best available science.

- The current sigmoidal shape of the indirect effects curve does not accurately capture the indirect effects associated with anthropogenic features.

- The distance decay curves incorporate many factors including probability of impact, magnitude of impact, and topographic features unique to each project site.
- There are no scientific data or findings that incorporate all of the factors incorporated into the distance decay curves; however, the available scientific data and findings related to specific factors reflect a more rapid reduction of indirect effectives from the edge of anthropogenic features than represented by the current distance decay curve shape.
- Improvement recommendation I3 provides resolution to this finding.

F13. The HQT excessively reduces the value of meadow habitat at significant distances from sagebrush and this creates perverse incentives for Credit Developers.

- The HQT currently applies a distance decay curve to reduce the habitat function of meadow habitat greater than 60m from sagebrush, and awards no habitat function to meadow habitat greater than 300m from sagebrush.
- The Technical Review Group unanimously suggests not reducing meadow habitat function at any distance from sagebrush for natural meadows, and a majority suggests awarding some habitat function to meadow habitat greater than 300m from sagebrush.
- A potential Credit Developer suggested restoring sagebrush in the middle of an irrigated meadow in order to increase the habitat function of meadow habitat at significant distances from sagebrush; however, the restoration is unlikely to benefit sage-grouse and is expected to be costly.
- Improvement recommendation I9 provides resolution to this finding.

F14. The current methods for data collection on debit sites requires an extensive area (up to 8km surrounding the site) where vegetative field data collection is required. Alternative methods could reduce the need to survey the entire area and thereby increase efficiencies and reduce costs.

- SETT staff has met with a Science Work Group to formulate guidance on how to develop consistent map unit delineations, transect locations, and data collection methods to more efficiently collect data on these large landscapes.
- The intent is to make the field sampling effort more reasonable for debit projects while still adequately accounting for site conditions and maintaining data collection integrity.
- Improvement recommendations related to this finding are currently being considered and developed.

F15. Provide an objective and transparent process for assessing anthropogenic features and their indirect effects relating to ancillary features associated with proposed anthropogenic features not defined in the current table.

- Lumping anthropogenic disturbances into broad categories may not be representative of the actual impacts and at times may result in an overestimate of the indirect impacts of those anthropogenic features by a significant margin.
- We intend to define a process to assess these anthropogenic disturbance categories over time and indoctrinate them into the CCS.
- Improvement recommendations related to this finding are currently being considered and developed.

PART II: IMPROVEMENT RECOMMENDATIONS

This section is a distillation of recommended improvements to the Credit System proposed by the SETT. The SETT presents these recommendations to the SEC for discussion and approval.

Improvement recommendations are grouped into three categories of significance – Major Significance, Moderate Significance or Minor Significance – based on the magnitude of change to the Credit System and the level of interest by stakeholders associated with the improvement. The following are descriptions of each category of significance:

- **Major Significance.** Improvements that will affect the goal or scope of the Credit System, related policies and plans, state or federal agency partnerships, administrative responsibilities, or administrative liability. Further, improvements that will have a meaningful impact on credits and debits generated from future projects, or a meaningful impact on program operations. Major improvement recommendations are expected be individually discussed and adopted or declined by the SEC. Following any further approval process mandated by state laws and regulations, they will be implemented by the SETT.

- **Moderate Significance.** Improvements that will have an impact on credits and debits generated from future projects or program operations; however, the impact will not be significant. Members of the SEC should review each individual moderate improvement recommendation and discuss individual improvement recommendations of concern at the annual Credit System Improvement Meeting.

- **Minor Significance.** Improvements that have minimal impact to Credit System operations and participants. Minor improvement recommendations are expected to be adopted as a package without discussion, but are documented to ensure all improvements to the Credit system are explicit and transparent.

Within each category, the recommendation includes:

- Title of improvement
- Summary of improvement
- Specific improvement recommendation
- Need for improvement
- Reasoning to support recommendation details

Potential improvements that the SETT does not currently recommend implementing, or that are not yet completely developed and ready for adoption, are tracked in the *Improvements List*.

Summary of Improvement Recommendations

IMPROVEMENT RECOMMENDATIONS		
	Major Significance	**Associated Finding(s)**
I1.	Designate areas within SFAs as Preferred Conservation Areas and revise the Proximity Ratio in order to incentivize enhancement and protection of both greater sage-grouse populations in close proximity to the debit project and greater sage-grouse strongholds in the State.	--
I2.	Establish administrative fees that fully or partially recover SETT administrative costs.	**F3**
I3.	Revise the shape of the distance decay curves used to assess indirect effects from anthropogenic features from a sigmoidal curve to an exponential decay curve, and increase the distance decay curve weights and distances for towers and power lines.	**F12**
I4.	Revise HSI scoring approach to appropriately score HSI values associated to credit and debit projects.	**F10**
	Moderate Significance	**Associated Finding(s)**
I5.	Evaluate credit invalidation or remediation based on site-specific, objective-based performance measures as opposed to aggregate HQT scores for the site.	**F9**
I6.	Provide an objective, science-based and transparent process for assessing and adopting reductions in indirect effects from anthropogenic features with effective and durable minimization measures that reduce impacts to greater sage-grouse.	**F1**
I7.	Revise credit and debit project assessment and verification policy to increase clarity, reduce project proponent and administrator costs, and produce quality results.	**F5**
I8.	Incorporate timing of grazing restrictions into the permissible window for field data collection guidelines.	**F9**
I9.	Eliminate distance decay curve for natural meadows and provide partial habitat function for irrigated meadow habitat greater than 300m from sagebrush.	**F13**
	Minor Significance	**Associated Finding(s)**
I10.	Incorporate editorial corrections and improvements to Manual and HQT Methods Documents that increase the understandability and clarify the original intent of the documents.	**F7**
I11.	Use new and revised forms and templates, protocols and tools developed in order to facilitate generation, acquisition, and transfer of credits.	**F7**
I12.	Automate portions of the HQT GIS process in order to reduce inaccurate HQT results, increase efficiency of applying the HQT, and reduce administrative quality assurance costs.	**F2**
I13.	Invest SETT and contractor effort to collaborate with federal and state agencies and other partners to evaluate opportunities to improve site-scale habitat function quantification.	--
I14.	Invest SETT and contractor effort to collaborate with credit developers, BLM, and USFS to define improvements to the Credit System necessary to generate credits on public lands.	**F6**

MAJOR SIGNIFICANCE

I1. Designate Preferred Conservation Areas (PCAs) and revise the Proximity Ratio in order to incentivize enhancement and protection of both greater sage-grouse populations in close proximity to the debit project and greater sage-grouse strongholds in the State.

Summary

Preferred Conservation Areas were previously defined but not designated in the Credit System Manual. We recommend designating PCAs where PHMA and Sagebrush Focal Areas (SFAs) overlap, and revising the proximity ratio in order to incentivize enhancement and protection of both greater sage-grouse habitat in close proximity to new anthropogenic disturbances and greater sage-grouse strongholds in the State of Nevada. The revisions to the proximity ratio, which is determined by the proximity between the debit site and offsetting credit site, will continue to incentivize debit projects to offset their credit obligation in close proximity to debit sites, but will also establish incentives for enhancement and protection of greater sage-grouse habitat of landscape scale significance.

Specific Improvement Recommendation

We recommend revising the paragraph in Section 2.2.2 of the Credit System Manual describing the expectation to define Preferred Conservation Areas, and to adjust the proximity ratio for credit offsets from Preferred Conservation Areas. The revisions will describe the landscape-scale value of PCAs and why they are incorporated into Table 8 as described below.

We recommend revising Table 8 in Section 2.2.2 of the Credit System Manual to include the new proximity ratio categories and factor values highlighted in yellow:

CATEGORY	FACTOR VALUE
No population connection between credit and debit sites (different WAFWA Management Zone)	1.15
Credit site within a PCA but no population connection between credit and debit sites (different WAFWA Management Zone)	1.10
Credit and debit sites connected through population dispersal (same WAFWA Management Zone)	1.10
Credit site within a PCAand credit and debit sites connected through population dispersal (same WAFWA Management Zone) but credit site in different BSU as the debit site	1.05
Credit and debit sites located within a regional population (same BSU, even if in different WAFWA Management Zones)	1.05
Credit site within a PCA and in the same BSU but different PMU as the debit site	1.00
Credit and debit sites located within a single population (same PMU, even if in different WAFWA Management Zones)	1.00

Additional minor edits to text introducing the proximity ratio will be made to reflect the changes indicated in the table above.

Contiguous credit project sites on private lands that have greater than 50% of their acreage within the PCAs, designated where PHMA and SFAs overlap, would be eligible to receive the proximity ratio incentive. Contiguous credit sites on private lands with greater than 50% of their acreage in PHMA within Sheldon National Wildlife Refuge, with similar landscape-scale greater sage-grouse habitat and reduced anthropogenic impacts, may similarly be valued and considered for this incentive.

Need for Improvement

Preferred Conservation Areas were identified by the Sagebrush Ecosystem Program (SEP) in 2014 as a mechanism to incentivize enhancement and protection of landscape-scale habitat priorities. However, PCAs were not defined at the time and a placeholder was included in the Credit System Manual so that PCAs would be defined at a later time.

Incentivizing the enhancement and protection of areas that best serve greater sage-grouse at the landscape-scale prevents fragmentation and disturbance of the highest priority habitat.

Rationale Supporting Recommendation Details

PCAs contain high breeding population densities of greater sage-grouse, high quality sagebrush habitat, and high proportions of either Federal landownership or protected areas. The proposed changes maintain the incentives for investment in local-scale mitigation while also establishing incentives to pursue landscape-scale mitigation. The recommended changes also result in added incentives for mitigation on private lands in these areas along a proximity gradient while maintaining incentives for local mitigation.

I2. Establish administrative fees that fully or partially recover SETT administrative costs.

Summary

We recommend establishing methods in 2017 for determining and collecting appropriate administrative fees that fully or partially recover expenses related to the SETT's responsibilities to facilitate credit and debit projects. Utilizing fees to recover SETT costs has been planned since the origination of the Credit System. Fees were intentionally waived until now to prevent fees from deterring potential participants from participating in the Credit System. As of January 2017, there is significant interest from Credit Buyers and Credit Developers to participate in the Credit System, suggesting participation in the Credit System is unlikely to decline with the implementation of appropriate administration fees. We recommend working with the SEC to establish administrative fees in 2017.

Specific Improvement Recommendation

This improvement recommendation directs the SETT to evaluate and propose administrative fee structures to the SEC with the goal of approving an administrative fee structure by the end of 2017. Administrative fee structures will be based on credit demand and supply scenarios, administrative cost projections, and the ability to recover all, or portions, of the total cost of administering the Credit System. Significant effort will be required to evaluate, propose, and work with the SEC to approve an administrative fee structure; therefore, it is important that the SEC agrees that it is timely to invest resources to establish an administrative fee structure in 2017.

Need for Improvement

Assisting Credit Developers and Credit Buyers throughout the credit generation and credit acquisition processes, and ensuring all requirements of the Credit System are followed and thoroughly documented, requires meaningful SETT resources. This effort includes upfront consultation to potential Credit Developers and Credit Buyers as well as confirming annual monitoring and facilitating periodic

verification of project sites over the term of each project. Further, recovering the expenses related to SETT efforts and expenses has been the plan since origination of the Credit System.

Rationale Supporting Recommendation Details

Not applicable, as potential administrative fee structures are not yet proposed.

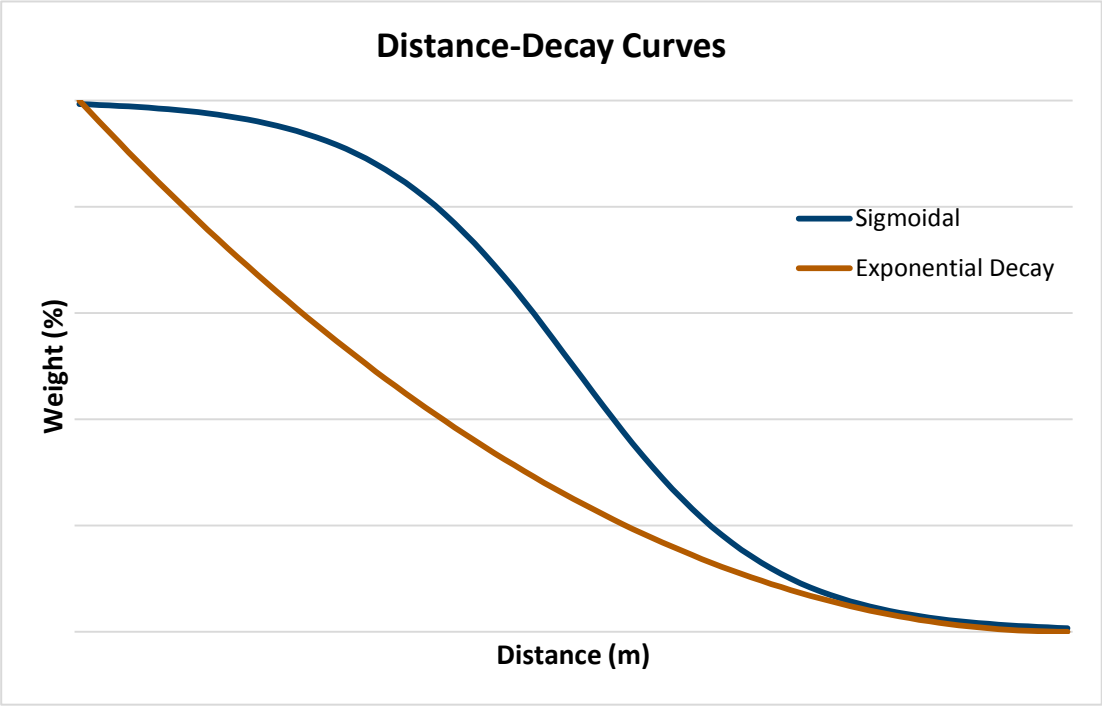
I3. Revise the shape of the distance decay curves used to assess indirect effects from anthropogenic features from a sigmoidal curve to an exponential decay curve, and increase the distance decay curve weights and distances for towers and power lines.

Summary

We recommend modifying the shape of the distance decay curve associated with anthropogenic disturbances in order to accurately capture indirect effects. Previously, a sigmoidal curve was applied, and now an exponential decay curve is recommended for all disturbance types. We also recommend increasing the weights and distances associated with towers and powerlines to more accurately align with scientific literature and expert opinion.

Specific Improvement Recommendation

We recommend changing the shape of the distance decay curve from a sigmoidal curve to an exponential decay curve, as illustrated below:



We also recommend revising *Table 2: Anthropogenic features considered by the Credit System with assigned weights and distances* in the Credit System's HQT Methods Document to include the new weights and distances for towers and powerlines highlighted in yellow (current weights and distances in parentheses):

DISTURBANCE TYPE	SUBTYPE*	WEIGHT (%)	DISTANCE (Kilometers)
Towers (cell, etc.)	n/a	75% (25%)	8 km (6 km)
Power Lines	n/a	75% (25%)	8 km (6 km)
Mines	Active – Large (≥ 60 acres)	100%	6 km
	Active - Med or small (< 60 acres)	100%	3 km
	Inactive – Large (≥ 60 acres)	50%	1 km
	Inactive - Med or small (< 60 acres)	10%	1 km
Oil & Gas Wells	Producing	100%	3 km
	Non-producing	0%	0 km
Urban, Suburban & Ex-urban Development	Med-High	100%	6 km
	Low	75%	3 km
Roads	Interstate/4-lane	100%	6 km
	2-lane Paved & High-use Improved Gravel	100%	3 km
	Low-use Improved Gravel	25%	1 km
Renewable	Solar	25%	1 km
	Geothermal	100%	6 km
	Wind	25%	6 km

Need for Improvement

The shape of the distance decay curve for anthropogenic features as well as the weights and distances of indirect effects have a significant effect on the calculation of credits and debits. The current sigmoidal curve shape and weights and distances are highly conservative and are not aligned with expert opinion or the available scientific literature. Thoroughly incorporating the best available scientific literature and expert opinion enables more accurate quantification of the indirect effects associated with anthropogenic disturbances.

Rationale Supporting Recommendation Details

The proposed improvements result in more accurate quantification of the impact of anthropogenic disturbances on greater sage-grouse populations and habitat. Changing the shape of the distance decay curve from a sigmoidal curve to an exponential decay curve more accurately represents the shape of observed greater sage-grouse responses to anthropogenic disturbances: scientific literature reports greater sage-grouse population response (lek attendance, nest selection, summer use) to anthropogenic disturbances is exponential in nature. Examples from recent scientific literature that support using an exponential decay curve to characterize greater sage-grouse response to anthropogenic disturbances include:

- Coates et al. (2014b) determined the probability of raven occurrence in relation to transmission lines is also expressed as an exponential decay function, with the most significant effect on raven occurrence occurring within approximately 2km of transmission lines.

- LeBeau (2012) found that nest site selection and summer use by females near wind energy development in Wyoming increased by 16.4% and 17%, respectively, with every 1 km increase in distance from a major road.
- Holloran (2005) observed a decline in lek attendance of approximately 75% within 1 km of major haul roads and found that main haul roads within 3 km of leks negatively influenced lek attendance compared to control leks within natural gas development in Wyoming.
- Blickley et al. (2012) found that lek attendance declined by 73% within 400m of simulated, intermittent traffic noise.

Changing the weight and distance of the distance decay curve to capture indirect effects of towers and power lines more accurately reflects the indirect effects of these structures. Coates et al. (2014a) found that the probability of a raven nesting on anthropogenic structures was 80%, which consisted of transmission lines (53%), cooling towers, single radio-communication and cell towers (16.5%), and nesting platforms (4.1%). This research suggests that the previous weight of 25% for powerlines and towers was underestimated. An 80% probability of territorial ravens nesting on transmission lines or towers, as well as expert opinion, supports our recommendation to increase the weight of 25% to 75% for both powerlines and towers. Further, research has found effects of ravens from 10 km (Gibson, 2015) to 27 km (Coates et al. 2014b). There was strong support among the TRG for an increase in distance to at least 8 km for both powerlines and towers, and the SETT and TRG suggest an 8 km distance due to the high variability in distance of impact for each unique tall structure depending on topography and other factors, and the significant cost to collect field data for the area indirectly effected by anthropogenic features.

Literature

Blickley, J.L., Blackwood, D., and Patricelli, G.L. 2012. Experimental evidence for the effects of chronic anthropogenic noise on abundance of greater sage-grouse at leks. Conservation Biology 26: 461-471.

Coates, P.S., Howe, K.B., Casazza, M.L., and Delehanty, D.J. 2014a. Landscape alterations influence differential habitat use of nesting buteos and ravnes within sagebrush ecosystem: Implications for transmission line development. The Condor 116: 341-356.

Coates, P.S., Howe, K.B., Casazza, M.L., and Delehanty, D.J. 2014b. Common raven occurrence in relation to energy transmission line corridors transiting human-altered sagebrush steppe. Journal of Arid Environments 111: 68-78.

Gibson, D. 2015. The role of environmental stochasticity on population demography of greater sage-grouse in central Nevada. PhD, Department of Ecology, Evolution, and Conservation Biology, August, 2015.

Holloran, M.J. 2005. Greater sage-grouse (*Centrocercus urophasianus*) population response to natural gas field development in Western Wyoming. PhD, Department of Zoology and Physiology, December, 2005.

LeBeau, C.W. 2012. Evaluation of greater sage-grouse reproductive habitat and response to wind energy development in south-central Wyoming. MS, Department of Ecosystem Science and Management, August, 2012.

I4. Revise HSI scoring approach to appropriately incorporate HSI values associated to credit and debit projects.

Summary

We recommend replacing the current scoring curve used to incorporate the HSI into the HQT with the three seasonal HSI maps with no reclassification or alteration applied to each index.. The scoring curve

that is currently used to reclassify HSI habitat values reduces the ability to fully differentiate habitat quality and accurately incorporate the impact of conifer cover.

Specific Improvement Recommendation

We recommend using the spring, summer and winter seasonal HSI maps in place of the annual composite HSI map when incorporating the HSI into the HQT. We recommend using the original index values for each season as the scoring curve; therefore no reclassification or scaling would be applied.

Need for Improvement

Multiple projects were evaluated using the reclassified HSI layer during the 2016 field season and the reclassified HSI did not accurately reflect the expected local-scale habitat quality and in particular did not consistently incorporate the impact of phase 1 conifer cover.

Rationale Supporting Recommendation Details

Maintaining the habitat values identified in the spring, summer and winter seasonal HSI layers will result in habitat values that more accurately represent actual local-scale habitat quality and incorporate the impact of conifer cover. The recommended changes to the HSI scoring approach were developed with USGS and tested on multiple sites.

MODERATE SIGNIFICANCE

I5. Evaluate credit invalidation or remediation based on site-specific, objective-based performance measures as opposed to aggregate HQT scores for the site.

Summary

We recommend developing site-specific, objective-based performance measures as opposed to HQT scores for each project that will serve as the basis for evaluating ongoing project performance after each verification.

For example, a credit project focused on controlling invasive annual grass may define an objective to maintain invasive annual grass cover below 5% cover. Once invasive annual grass cover is controlled, and after credits have been released for the project, the Credit Developer is held accountable to maintain invasive annual grass cover below the established threshold.

Sample size requirements will be based on detecting, with reasonable statistical certainty, violation of the set threshold. Decisions on credit invalidations will also take into account all available data, as well as environmental factors outside of the Credit Developer's control that may have contributed to the decline, such as drought. In years with atypical conditions, the Administrator (SETT) may recommend waiting for more typical conditions.

Performance measures should be defined based on the site-scale indicators measured by the HQT, including (1) sagebrush canopy cover, (2) total shrub canopy cover, (3) perennial forb canopy cover, (4), forb species richness, (5) perennial grass canopy cover, and (5) invasive annual grass canopy cover.

Specific Improvement Recommendation

Recommended changes to the Manual v1.1, section 2.4.5 under heading Credit Variability & Verification Results, paragraph 2 is provided below:

> Upon each credit release, third-party verification must substantiate that the site meets or exceeds the habitat function defined in the credit release schedule of the project's Management Plan. The Administrator, in coordination with the Credit Developer, will establish site-specific performance measures after each credit release against which subsequent verifications will be evaluated. The performance measures must be documented in the Management Plan after each credit release. Credit project verifications that demonstrate satisfactory achievement of the performance measures are considered as meeting performance standards defined in the Management Plan, and therefore do not require a reduction in credits, or trigger the use of Financial Assurances for the site. In years of extreme drought, or other atypical conditions, the Administrator may recommend waiting for more typical conditions.

Need for Improvement

Credit values, while a powerful tool for comparing projects, aggregating multiple credit project outcomes, and communicating program performance to the public, can mask important site-scale changes in vegetation composition, structure, and function that are important for the management of the site. Basing site-scale management decisions, including decisions on remediation and credit invalidation, on variation in credit values alone is inappropriate.

Site-specific, objective-based performance measures ensure transparency and accountability while increasing confidence of Credit Developers that decisions on remediation and credit invalidation will be based on clearly-defined and objective measures of site performance.

Rationale Supporting Recommendation Details

The Administrator (SETT) is responsible for verifying that habitat function on each credit project is commensurate with the number of credits awarded. The Credit System Manual requires that remedial action be considered whenever the credit estimate declines by a specified percentage, determined at the time of signing the Participant Contract and Management Plan. However, a certain percentage change in the score of a credit site does not necessarily constitute credit project failure, and further, ecological thresholds could be surpassed before the specified change in credits is detected, rendering the site difficult or impossible to recover.

Site-specific, objective-based performance measures are better suited to ensure every credit project is providing the benefits commensurate with the number of credits awarded, inform ongoing management decisions including remediation actions if necessary, and avoid unreasonable credit invalidations.

I6. Provide an objective, science-based and transparent process for assessing and adopting reductions in indirect effects from anthropogenic features with effective and durable minimization measures that reduce impacts to greater sage-grouse.

Summary

We recommend establishing a framework to assess and approve reductions in indirect effects from anthropogenic features with effective and durable minimization measures that reduce impacts to greater sage-grouse. Effective and durable minimization measures can meaningfully reduce impacts to greater sage-grouse; however, the Credit System does not currently provide a method for incorporating minimization measures into the assessment of the indirect effects from anthropogenic features. A process for rigorously assessing minimization measures will incentivize effective and durable minimization, and increase the accuracy of measuring the indirect effects from anthropogenic features for both credit and debit projects.

We propose using an objective process to establish spatially explicit recommendations for specific minimization measures as they are requested by project proponents. Recommended changes to indirect effects must fulfill several requirements, including assurance of durability, and be approved through a transparent process. In addition, approved adjustments will be publicly available and used to inform adjustments to indirect effects for similar minimization actions in the future.

Specific Improvement Recommendation

This recommendation requires a new section in the Manual to describe the proposed minimization measures assessment and approval process. The new section is provided below.

2.2.4 MINIMIZATION MEASURES ASSESSMENT & APPROVAL PROCESS

Effective and durable minimization measures can reduce impacts to greater sage-grouse. Credit Developers and Credit Buyers with existing and/or proposed anthropogenic features that are implementing effective and durable minimization measures that reduce impacts to greater sage-grouse may apply for a reduction the indirect effects from the specific anthropogenic feature. The project proponent is responsible for submitting a complete minimization measure assessment form, which will contain the minimum eligibility criteria (provided below), including the need to delineate and declare the functional-acres affected by the minimization measure. This requirement will objectively and consistently define the functional-acres affected by the minimization measure to greatly narrow the scope of impact from the minimization measure. The assessment of the proposal is completed by Administrator (SETT) with potential consultation from the

Technical Review Group, and approval is provided by the SEC following the process outlined below.

Minimum Eligibility Criteria

The following minimum eligibility criteria must be fulfilled for a minimization measure to be considered for assessment.

- ☐ Requested reduction in indirect effects due to minimization measure will change the credits or debits associated to the anthropogenic feature by more than 5% compared to without the reduction.
- ☐ Spatial and temporal extent of the habitat effected by the minimization measure is defined using the HQT; the functional-acres effected by the minimization measure must be delineated and declared.
- ☐ Peer reviewed literature supporting the reduction in indirect effects is available.
- ☐ Financial Assurances are or will be in place to ensure the minimization measure will be effective through the entire life of the project.

Assessment & Approval Process

The following process must be completed to gain approval of an adjustment to indirect effects from an anthropogenic feature.

1) **Submit Minimization Measure Assessment Form** – The project proponent must submit a complete minimization measure assessment form. The form includes the minimum eligibility criteria as well as the proposed reduction in indirect effects from the minimization measure.
2) **Assess Proposed Reduction in Indirect Effects** – If the proposed minimization measure meets minimum eligibility criteria, the Administrator will assess the spatial and temporal analysis and review any supporting evidence. The Administrator may consult with the Technical Review Group to ensure the best available science and scientific opinion is considered. If the Administrator proposes an adjustment to the proposed reduction to indirect effects, the Administrator will work with the project proponent to come to a mutually agreed on outcome.
3) **Approve Reduction in Indirect Effects** – If the Administrator and project proponent mutually agree on a reduction in indirect effects for the specific anthropogenic feature, then the project proponent can incorporate the adjustment in their credit or debit score, and the Administrator will publish the adjustment in the Minimization Measure Adjustments List on the Credit System website. If the Administrator and project proponent do not mutually agree on a reduction, then both parties will present their proposals to the Oversight Committee (SEC), which will make the final determination.

A short description of the need to appropriately include effective and durable minimization measures into the calculation of indirect effects will also be added to Section 3.3.1 Anthropogenic Disturbance of the HQT Methods Document.

Need for Improvement

Effective and durable minimization measures can reduce impacts to greater sage-grouse; however, the Credit System does not currently incentivize implementation of minimization measures or accurately reflect the indirect effects of anthropogenic features that implement minimization measures. A spatially and temporally explicit framework for assessing reductions in indirect effects from anthropogenic features with existing or proposed minimization measures will facilitate equitable and efficient evaluation of minimization measures. Tracking and utilizing the results of previous assessments to inform future, similar projects will enable the Credit System to develop a full suite of recommendations for calculating the impact of common minimization measures.

Rationale Supporting Recommendation Details

The proposed minimization measures assessment process creates an objective, science-based and transparent process for assessing and incorporating the reduction of indirect effects from minimization measures into credit and debit projects. This process allows minimization measures to initially be assessed on a project-by-project basis, which enables the development of thorough and rigorous adjustments. These individual outcomes are expected to ultimately be used to inform programmatic minimization policies.

I7. Revise credit and debit project verification policy to increase clarity, reduce project proponent and administrator costs, and produce quality results.

Summary

We recommend improving verification policies and protocols to ensure consistent and efficient implementation. These improvements (1) clarify purposes of and differences between site assessment, verification, and self-monitoring, (2) allow Credit Developers and Credit Buyers to directly hire verifiers familiar with their property and project to perform site assessments, (3) require verifiers to complete a Conflict of Interest Disclosure Form, and (4) adjust the debit verification schedule to avoid unnecessary costs.

Specific Improvement Recommendation

Descriptions of and specific adjustments to Sections 2.4.5 and 2.5.6 of the Credit System Manual are provided below. A description of new appendices added to the User's Guide will be developed to provide Site Assessment and Verification Protocols.

Sections 2.4.5 and 2.5.6 will be revised to differentiate and define self-monitoring, site assessment, and verification according to the following definitions:

> **Self-monitoring** – An evaluation of the site using a checklist defined in the site-specific management plan. Self-monitoring is conducted annually by Credit Developers.
>
> **Site Assessment** – An evaluation of the site using a complete implementation of the HQT. A site assessment is required prior to each credit release and must be completed by a certified verifier.
>
> **Verification** – An evaluation of the site using an abbreviated implementation of the HQT, which is provided in the User's Guide. Verification is conducted as part of the periodic verification process to ensure project performance standards are being met, and must be completed by a certified verifier.

The following will replace the existing Verifier Selection subsection of Section 2.4.5 – Credit Site Verification of the Credit System Manual:

> **Verifier Selection & Contracting**
>
> Site assessments
>
> The Credit Developer directly contracts with a certified verifier to perform site assessments. A Conflict of Interest Disclosure Form must be submitted to and approved by the Administrator before the contract can be finalized.
>
> Standard verification
>
> The Administrator will contract with a certified verifier to perform periodic verifications. When credits are awarded and transferred from the credit site, the

Administrator receives a verification payment and a signed verification contract with the Credit Developer allowing site access.

Audits and periodic spot checks

The Administrator hires and pays a certified verifier to perform audits and periodic spot checks.

The following will replace the existing Verifier Selection subsection of Section 2.5.6 – Debit Site Verification of the Credit System Manual:

Verifier Selection

Site assessments

The Credit Buyer directly contracts with a certified verifier to perform site assessments. A Conflict of Interest Disclosure Form must be submitted to and approved by the Administrator before the contract can be finalized.

Audits and periodic spot checks

The Administrator hires and pays a certifier verifier to perform audits and periodic spot checks.

Section 2.5.6 of the Credit System Manual contains the debit verification schedule, which will be revised to remove verification of the site during project implementation. Verification of the site during project implementation is not necessary because the initial site assessment is based on the full extent of the current permit application with the permitting agency. Any revisions to that permit will trigger another full assessment of the project.

Detailed site assessment and verification guidelines are not currently available and will be added as appendices to the User's Guide. The appendices will include:

- Purpose of site assessment and verification processes
- Verifier certification and training requirements
- Assessment and verification protocols
- Assessment and verification forms

Need for Improvement

Site assessment, verification and self-monitoring are not clearly defined. Verifying debit projects during project implementation is not necessary due to the existing permit enforcement processes performed by permitting agencies. Lastly, clear and specific verifier expectations, protocols and forms are critical to ensuring reliable, high-quality results. The proposed policies and protocols provide Credit Developers, Credit Buyers, and the Administrator with additional guidance in order to support accurate and consistent verification.

Rationale Supporting Recommendation Details

The recommended revisions to policies and protocols refine and improve procedures previously required by the Credit System. The improvements add additional specificity in order to minimize uncertainty and enable consistent implementation of high-quality site assessment, verification and self-monitoring.

I8. Incorporate timing of grazing restrictions into the permissible window for field data collection guidelines.

Summary

We recommend incorporating timing restrictions related to grazing activities and field data collection to minimize the potential influence of grazing activities on site-scale habitat function quantification. This

improvement will increase the accuracy of site-scale habitat quantification during the field data collection window of April 15th-June 30th.

Specific Improvement Recommendation

The Field Data Collection Timing subsection of Section 2.2.1 of the Credit System Manual will be updated with the following language.

> #### Timing of Grazing: Credit Projects
>
> We recommend that credit project proponents avoid livestock grazing during the field data collection window of April 15th – June 30th unless field data collection is complete for specific map units. If livestock grazing occurs prior to April 15th, or once green-up of perennial forbs and grasses has begun, we recommend a minimum 14-day recovery period prior to collecting field data.
>
> Historical and current livestock grazing management operations will be included in the project's Management Plan and documented under Section 3.4 Conservation Issues Addressed-Livestock Management.
>
> #### Timing of Grazing: Debit Projects
>
> We recommend that debit project proponents work with permittees to avoid livestock grazing during the field data collection window of April 15th – June 30th unless field data collection is complete for specific map units within the allotment. If livestock grazing occurs prior to April 15th, or once green-up of perennial forbs and grasses has begun, we recommend a minimum 14-day recovery period, prior to collecting field data.
>
> Livestock grazing management operations occurring in the debit project area will be submitted to the SETT during the initial stage of the verification process. If the debit project proponent is unable to participate in a collaborative effort with the allotment permittee and/or land management agency to minimize grazing effects prior to data collection, then an adjustment to the credits based on ecological site descriptions or relevant data collected nearest to the project in similar habitats may be used.

Need for Improvement

Grazing activities influence HQT field parameters like plant height and composition, canopy cover, and species richness. Calculations of habitat function, which determine the number of credits or debits generated, should minimize the effect grazing activities on credit and debit scores.

Rationale

The level of influence that livestock grazing has on each ecological site is inherently different. It is not our intention to remove the effects of livestock grazing all together, but to minimize those effects on debit and credit generation during the field data collection process.

Studies of how livestock can influence vegetation are abundant; however, there are few studies which provide specific recovery periods needed to reduce the effects of grazing on vegetation measurements for each ecological site. Based on the literature for upland and riparian ecosystems, we developed a conservative approach, which is adaptable as further science emerges.

Several studies researched by Briske (1991, 1995) examined the development and morphological responses of plants to defoliation. In these studies, stunted root growth in perennial grasses were observed 6-18 days after 50% of shoot volume was defoliated. A single defoliation removing 80% and 90% of the shoot volume stopped root growth for 12 and 17 days, respectively. The National Range and Pasture Handbook (NRPH) references recovery periods being as short as 10 days and as long as 60 days or more to reflect a desired forage amount, noting that plants will have variable recovery periods that are dependent on individual growth rates. Steffens (2013) showed that on average, less than 45 days dispersed over a 180-day growing season provided most of the growth in semi-arid grass environments, longer periods in drought, and noted adequate recovery often requires most of the growing season.

Below are figures pulled directly from the NRPH which display relationships between grazing and root growth, leaf growth rates as a result of grazing heights, and variable recovery periods.

Literature

- Briske, D. D. 1991. Developmental morphology and physiology of grasses. In: R. K. Heitschmidt and J. W. Stuth [eds.]. Grazing management: an ecological perspective. Portland, OR, USA: Timber Press, Inc. p. 85-108.
- Briske, D.D. and J.H. Richards. 1995. Plant responses to defoliation: A physiological, morphological, and demographic evaluation of individual plants to grazing: current status and ecological significance. p. 635-710. In: Wildland Plants: Physiological ecology and developmental morphology. D.J. Bedunah and R.E. Sosebee (eds.) Society for Range Management, Denver, Colorado.
- Steffens, T., Grissom, G., Barnes, M., Provenza, F., Roath, R. 2013. Adaptive Grazing Management for Recovery. Rangelands 2013, 35 (5), 28-34.
- USDA – USFS, USDA – NRCS, USDI – BLM, Univ. of Nevada Cooperative Extension. 2006. Nevada Rangeland Monitoring Handbook (Second Edition).
- USDA – NRCS. 1997. National Range and Pasture Handbook.

I9. Eliminate the distance decay curve for natural meadows and provide partial habitat function for irrigated meadow habitat greater than 300m from sagebrush.

Summary

We recommend differentiating natural and irrigated meadow habitat in the HQT, not decreasing the habitat function of natural meadows at any distance from sagebrush, and providing some residual habitat function to irrigated meadow habitat greater than 300m from sagebrush.

Specific Improvement Recommendation

We recommend categorizing meadow habitat as either natural meadow or irrigated meadow/pasture. Natural meadows will be defined as naturally occurring wetland complexes dominated by wetland vegetation and soils (e.g. stringer meadows, springs, seeps, etc.), where the hydrology has been minimally altered or is currently not being managed. Irrigated meadow/pasture will be defined as receiving controlled irrigation to manage for agricultural production.

We recommend updating the distance to sagebrush modifier scoring curve that the HQT uses to estimate late brood-rearing habitat function. Natural meadows are considered a limited habitat in Nevada and are extremely important to brood-rearing habitat and a decay curve will not be applied to natural meadows. We propose adjusting the existing decay curve for irrigated meadow/pasture so that it levels off at 20% habitat function for distances greater than 300m from sagebrush.

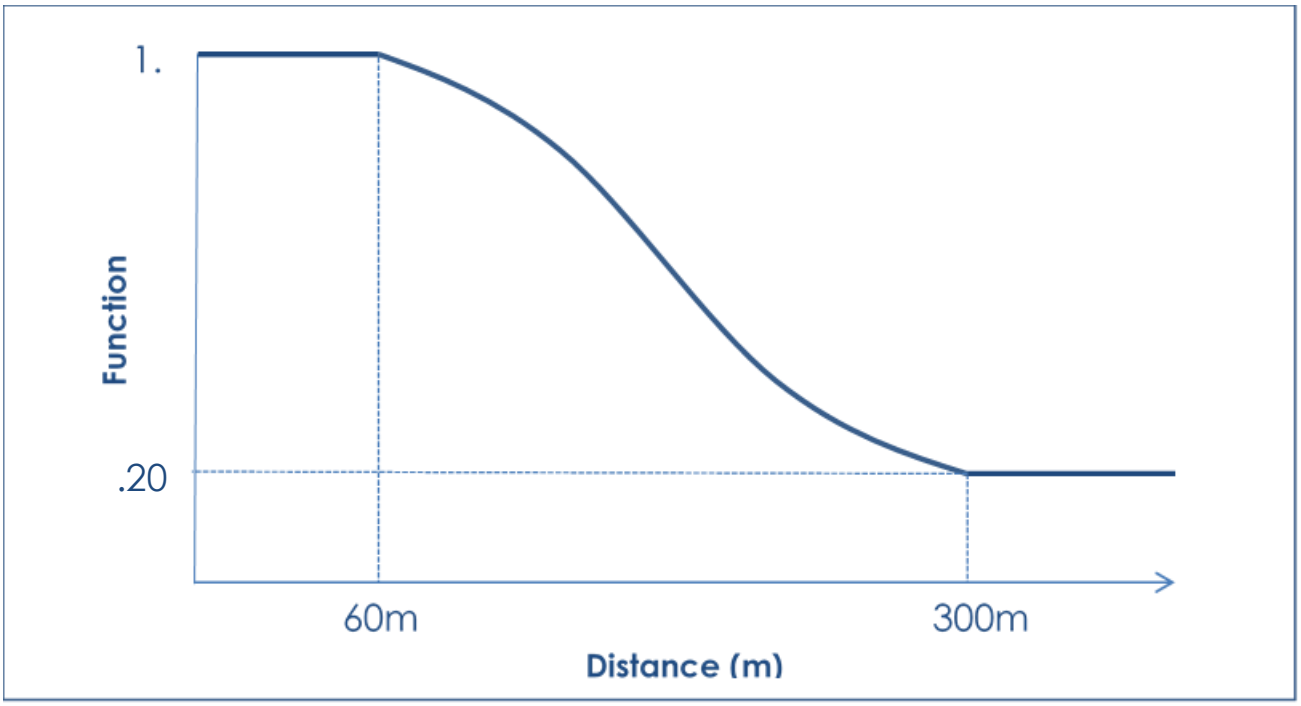
We recommend revising Section 3.4.5.2 of the Scientific Methods Document describing the distance to sagebrush cover as a modifier of late brood-rearing habitat to include the following text and new curve:

> Distance to sagebrush cover for irrigated meadow/pasture is a modifier of late brood-rearing habitat function as follows: map units within 196.9 feet (60 meter) of cover (defined as 10% cover and 11.8 inches (30 centimeters) height minimum over 98.4 feet (30 meter) x 98.4 feet (30 meter) area) of sagebrush or sagebrush mixed-shrub community (e.g., sagebrush, bitterbrush, rabbitbrush, serviceberry, broom snakeweed) receive a score of 1.0 followed by a decline between 196.8 feet (60 meter) and 984.3 feet (300 meter) to sagebrush or sagebrush mixed-shrub cover, map units farther than 984.3 feet (300 meter) from sagebrush or sagebrush mixed-shrub cover receive a score of 0.20. Distance to

sagebrush or sagebrush mixed-shrub cover is measured from the 98.4 feet (30 meter) mark of every transect. Distance to sagebrush cover for natural meadows is a modifier of late brood-rearing habitat function that receives a score of 1.0 for any distance to sagebrush cover.

The interface between the sagebrush and meadow edge is the most highly forb-productive area for sage-grouse and provides immediate available escape cover (Connelly et al. 2000). Based on the expert opinion of the TRG, sage-grouse may use specific areas (e.g. wet meadows) during the late brood-rearing season that do not have sagebrush within the perimeter of the meadow itself, as long as sagebrush is accessible to them. Scientific research also finds evidence for selection of riparian and grass cover by brood-rearing females at an 800m spatial extent (Westover el. al 2016). Meadows, riparian areas, other moist areas adjacent to sagebrush habitat and higher elevation sagebrush communities that maintain rich forb component later in summer can provide foraging areas during this season (Fischer et al. 1996a, Fischer et al. 1996b, Connelly et al. 2000, Connelly et al. 2011c).

Late Brood-Rearing| Distance to Sagebrush – Irrigated Meadow/Pasture



Distance (m)	<60	60 – <100	100 – <140	140 – <180	180 – <220	220 – <260	260 – <300	≥300
Score	1.00	.93	.80	.67	.54	.40	.27	.20

Need for Improvement

Meadow habitat at any distance from sagebrush is an important component of maintaining proper function and health of the system. The Credit System does not currently award any habitat function to meadow habitat greater than 300m from sagebrush and applies a distance decay curve to reduce the habitat function of meadow habitat greater than 60m from sagebrush. Lastly, the complete reduction in

habitat function at distances greater than 300m has caused potential Credit Developers to propose raising land and planting sagebrush in the middle of meadows to increase their credit scores, which is problematic for a few reasons.

Rationale Supporting Recommendation Details

The Technical Review Group (TRG) unanimously suggests not reducing meadow habitat function at any distance from sagebrush for natural meadows. The TRG had a range of opinions on the habitat function reduction relative to the distance from sagebrush, ranging from agreement with the existing curve to agreement with this recommendation. The SETT believes that leveling off at 20% is appropriate because it will create some value for all meadow habitat, however very little after the decay curve is applied to the other parameters used to assess habitat function (multiplying 20% by the residual habitat function percentage will result in a very low habitat score regardless of how high the other parameters are). Providing credit for meadow habitat greater than 300m from sagebrush will incentivize management of adjacent late brood-rearing habitat that contributes to the function of the entire riparian system. Scientific research also finds evidence for selection of riparian and grass cover by brood-rearing females at an 800m spatial extent (Westover el. al 2016).

MINOR SIGNIFICANCE

I10. Incorporate editorial corrections and improvements to Manual and HQT Methods Documents that increase the understandability and clarify the original intent of the documents.

Summary

We recommend incorporating editorial corrections and improvements identified by the SETT and other stakeholders in order to improve usability and clarify the intent of the concepts in the Manual and HQT Methods Document. The editorial corrections and improvements do not change the meaning of the documents, and are similar in nature to the editorial corrections and improvements approved by the SEC as part of the 2015 Improvements Report.

Specific Improvement Recommendation

Examples of editorial corrections and improvements include:

- Updating the Acknowledgements section with new contributors on page i of the Manual
- Updating the Implementation Timeline and Status section with milestones accomplished in 2016 on page ii of the Manual.
- Updating section 2.1.3 Federal Regulatory Predictability with the MOU between BLM, USFS, and the State of Nevada in April 2016.

Need for Improvement

Increase understandability and clarify the intent of the concepts in the Manual and HQT Methods Document.

Rationale Supporting Recommendation Details

The Manual, User's Guide and HQT Methods Document have now been in use by the SETT and verifiers for over a year. The recommended changes are based on feedback from each of these user groups.

I11. Use new and revised forms and templates, protocols and tools developed in order to facilitate generation, acquisition, and transfer of credits.

Summary

During the use of existing forms, templates, protocols, and tools, the SETT compiled a series of revisions that improved usability and function. The SETT also identified new processes and tools for development. These revisions and additions contribute to the effective implementation of the Credit System.

Specific Improvement Recommendation:

The following forms, templates, protocols, or tools were refined or developed in 2016:

- Project Quality Control/Quality Assurance Process
- Project Quality Control/Quality Assurance Form
- Verification Protocol
- Management & Monitoring Financial Assurance Guidance
- Management & Monitoring and Verification Cost Calculator Tool

Need for Improvement

Over the last year of using the existing forms, templates, protocols, and tools of the Credit System, the SETT identified revisions to existing forms and the need for new forms, templates, protocols and tools that will improve the usability of the Credit System by facilitating consistent and clear implementation.

Rationale Supporting Recommendation Details

The recommended improvements have been or will be tested and revised through facilitation of credit and debit projects.

I12. Automate portions of the HQT GIS process in order to reduce inaccurate HQT results, increase efficiency of applying the HQT, and reduce administrative quality assurance costs.

Summary

We recommend developing a partially-automated process for assessing credit and debit projects that will allow for more efficient application of the HQT GIS process and produce more accurate results.

Specific Improvement Recommendation

Partial automation of the HQT GIS process will involve creating a number of ArcGIS models that utilize an initial input from the user to execute a series of analyses, using the output of one analysis as the input to the next analysis. At minimum, the following steps in the Desktop Analysis will be simplified via partial automation. More steps may be added to the automation process as resources allow:

- 1.3 – Existing & Proposed Surface Disturbance
  - Description: Surface disturbance associated with anthropogenic features (e.g. roads, powerlines, mines) are digitized as polygon features.
- 1.6 – Transect Locations
  - Description: Locations of random, spatially distributed transects are generated within each map unit.
- 1.7 – Management Importance Factor
  - Description: Calculates the number of acres of each management category within each map unit.
- 1.8 – Indirect Impacts from Existing Anthropogenic Features
  - Description: Calculates the indirect impacts on habitat value associated with each type and/or subtype of anthropogenic feature (e.g. high use roads, active small mines, inactive oil well pads).
- 1.13 – Current Local-Scale Habitat Function
  - Description: Calculates the habitat function associated with each seasonal habitat type.
- 1.15 – Export Data
  - Description: Calculates the habitat function of each seasonal habitat type for each map unit, then transfers relevant habitat function data from ArcGIS to Excel format.

Need for Improvement

Version 1.1 of the Credit System User's Guide requires users to perform a series of detailed ArcGIS tasks in order to complete the Desktop Analysis portion of the HQT. This process can be time-consuming for users and allows multiple opportunities for users to unintentionally or intentionally perform ArcGIS tasks incorrectly.

Rationale Supporting Recommendation Details

The partial automation of the HQT described above was compared to manual execution of the HQT on several credit and debit projects currently under review by the SETT to ensure accuracy of results.

I13. Invest SETT and contractor effort to collaborate with federal and state agencies and other partners to evaluate opportunities to improve site-scale habitat function quantification.

Summary

We recommend investing SETT and contractor efforts to collaborate with federal agencies and other partners to evaluate opportunities to improve site-scale data collection methods. The existing site-scale habitat function, which is largely based on vegetation measurements, is significantly influenced by inter-annual variability. Further, the existing site-scale habitat function quantification method is similar but not the same as the method used by federal agencies to assess range health which has created concerns among federal agencies.

Specific Improvement Recommendation

This improvement recommendation directs the SETT to collaborate with federal agencies, academics and other partners to evaluate opportunities to improve site-scale data collection methods.

Need for Improvement

The existing site-scale habitat function quantification method is significantly influenced by inter-annual variability, which is outside the control of landowners. The method is similar but not the same as the method used by federal agencies to assess range health which has created concerns among federal agencies. Lastly, there are several current efforts to evaluate and develop new site-scale habitat function quantification methods that should be explored for the Credit System.

Rationale Supporting Recommendation Details

Not applicable as specific improvements to site-scale habitat function quantification are not yet proposed.

I14. Invest SETT and contractor effort to collaborate with Credit Developers, BLM, and USFS to define improvements to the Credit System necessary to generate credits on public lands.

Summary

We recommend prioritizing collaboration with Credit Developer(s), BLM, and USFS to identify and define improvements to the Credit System necessary to generate credits on public lands in 2017. Generating credits on public lands is expected to be necessary to fulfill expected mitigation obligations and for the Credit System to more effectively contribute to the conservation of greater sage-grouse. However, generating credits on public lands includes considerations such as existing habitat standards and multiple use mandates that are unique to public lands, in which detailed guidance has not yet been flushed out.

Specific Improvement Recommendation

This improvement recommendation directs the SETT to collaborate with Credit Developer(s), BLM and USFS to identify and define improvements to the Credit System with the goal of proposing improvements for accommodating credit projects on public lands to the SEC in 2017. The significant policy guiding public land management will have a range of impacts on how credits are generated. Therefore, the SETT intends to seek Credit Developer(s) interested in generating credit projects on public lands, and will work with those Credit Developer(s) and federal land managers to define Credit System improvements that enable the approval of specific credit projects and facilitate future credit projects on public lands.

Need for Improvement

Developing credits on public lands is expected to be necessary to fulfill expected mitigation obligations and for the Credit System to more effectively contribute to the conservation of sage-grouse. Further, BLM and USFS have demonstrated commitment to working with the State of Nevada to enable generation of credits on public lands.

Rationale Supporting Recommendation Details

Not applicable as specific improvements to facilitate credit projects on public lands are not yet proposed.