

RECLAMATION

Managing Water in the West

Draft FINDING OF NO SIGNIFICANT IMPACT

Grazing Authorization for Retired Lands in Fresno County

FONSI-12-075



U.S. Department of the Interior
Bureau of Reclamation

December 2015

Mission Statements

The mission of the Department of the Interior is to protect and manage the Nation's natural resources and cultural heritage; provide scientific and other information about those resources; and honor its trust responsibilities or special commitments to American Indians, Alaska Natives, and affiliated island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

BUREAU OF RECLAMATION
South-Central California Area Office, Fresno, California

FONSI-12-075

Title

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Introduction

In accordance with section 102(2)(c) of the National Environmental Policy Act of 1969, as amended, the South-Central California Area Office of the Bureau of Reclamation (Reclamation), has determined that allowing managed grazing on the Tranquillity Demonstration Project Site and Atwell Island Determination Site is not a major federal action that will significantly affect the quality of the human environment and an environmental impact statement is not required. This Finding of No Significant Impact (FONSI) is supported by Reclamation's Environmental Assessment (EA) Number EA-12-075, *Grazing Authorization for Retired Lands in Fresno County*, and is hereby incorporated by reference.

Background

Under the Land Retirement Program, Reclamation established the Central Valley Project Improvement Act Land Retirement Demonstration Project, to reduce agricultural drainage and demonstrate upland wildlife habitat restoration on drainage-impaired lands in the San Joaquin Valley. These lands are characterized by low agricultural productivity, poor drainage and high selenium concentrations in shallow groundwater. The Land Retirement Demonstration Project was evaluated under Environmental Assessment/Finding of No Significant Impact (EA/FONSI) 99-12-MP (Reclamation 1999), and authorized the retirement of 7000 acres in Westlands Water District (Tranquillity Demonstration Project Site) and 8000 acres in Atwell Island Water District (Atwell Island Demonstration Project Site). Approximately 2,000 and 7,000 acres respectively, have been retired at the Tranquillity and Atwell Island sites to date.

A local rancher has requested permission to manage vegetation on the Tranquillity site (see Figure 1-1) through controlled grazing by domestic livestock. Managed grazing can achieve desirable plant community structure, decrease fuel loads to reduce wildfire risks, increase capacity to sequester carbon, increase and regulate nutrient cycling in the ecosystem, improve wildlife habitat and enhance biodiversity.

Proposed Action

Reclamation proposes to issue a land use authorization that would provide access to and allow for grazing of approximately 2,190 acres of land near the cities of Mendota and Tranquillity in Fresno County, California (Figure 1-1). The land use authorization would provide access to approximately 2,190 acres located in the Westlands Demonstration Project, south of the City of Mendota and west of the City of Tranquillity in Fresno County, California (Figure 1-1) for grazing animals.

The length of land use authorization would be a maximum of 10 years, with storage/grazing periods, locations and stocking rates varying over that time. Sheep and goats would be moved in

and out, depending on forage available and availability of other grazing opportunities in the area. Typically, grazing would take place in 1 to 3 months in the spring and 1 to 2 months in the fall.

Each band of animals (a combination of ewes and lambs, totaling approximately 600 animals) would be assigned to a site 120 acres in area. The 120-acre site would be broken up into 20-acre plots with portable fencing, and the band would be rotated among the feeding plots in order to prevent overgrazing in any one area. Grazing units would be alternately grazed and rested in a planned sequence throughout the growing season to increase production and quality of forage, as well as to meet Reclamation's need for weed control and fire suppression.

Portable water troughs would be placed in the area maintained by resident goat- and sheep-herders. Salt blocks may be used, depending on the forage and vegetative condition of the range.

Environmental Commitments

The proponent shall implement the environmental protection measures listed in Table 2-1 of EA-12-075 to reduce environmental consequences associated with the Proposed Action.

Environmental consequences for resource areas assume the measures specified would be fully implemented.

Findings

Reclamation's finding that implementation of the Proposed Action will result in no significant impact to the quality of the human environment is supported by the following findings:

Resources Eliminated from Detailed Analysis

As described in Table 2 of EA-12-075, Reclamation analyzed the affected environment and determined that the Proposed Action does not have the potential to cause direct, indirect, or cumulative adverse effects to the following resources: Indian Sacred Sites, Indian Trust Assets, environmental justice, air quality, global climate, or water resources.

Land Use

As an important agricultural region for both California and the United States, the Central Valley is predominantly rural, and agriculture is the primary land use. The lands considered for the Proposed Action consist of 2,090 acres in Fresno County south of Mendota and west of Tranquillity. The land is not currently under irrigated agricultural production, as it has been retired under the Land Retirement Program provisions of the CVPIA. The predominant soil type is Panoche Clay Loam, and it is considered alkali with poor infiltration.

Biological Resources

Reclamation proposes to issue a land use authorization to allow managed grazing on 2,090 acres of land in Fresno County that were retired from agricultural production under the Land Retirement Demonstration Project. The Land Retirement Demonstration Project was approved under EA/FONSI 99-12-MP on November 10, 1999 (Reclamation, 1999), and on September 21, 1999 the United States Fish and Wildlife Service (Service) issued a Biological Opinion (1-1-99-

F-0125) that provided coverage for the retirement of these lands under Section 7 of the Endangered Species Act (16 U.S.C. §1531 et seq.).

The *Reclamation Manual Directives and Standards* require that a grazing management plan be developed prior to the issuance of any land use authorization for grazing on Reclamation lands (LND 08-01 Release 150; 2002). Furthermore, one of the conservation measures in the Biological Opinion for the Land Retirement Demonstration Project requires that:

“Management Plans and Contingency Plans developed for the on-site management of all LRDP Demo Project Lands will be drafted in coordination with the Service’s SFWO Endangered Species Division and will be forwarded to them for review and approval prior to implementation. Management Plans and Contingency Plans will incorporate implementation of all standard avoidance and minimization/compensation measures and will be consistent with the recovery plans for the species listed in this opinion.”

In accordance with the requirements of the *Reclamation Manual Directives and Standards* regarding grazing permits, and the requirements of the Biological Opinion for the Land Retirement Demonstration Project, Reclamation developed a Grazing Management Plan for the 2,090 acres of retired lands currently proposed to be grazed. The draft Grazing Management Plan was submitted to the Service via e-mail on February 11, 2015 and the Service provided their feedback and approval of the plan on February 18, 2015.

With the implementation of the *Grazing Management Plan for the CVPIA Land Retirement Demonstration Project Lands in Tranquillity California* (Appendix B), Reclamation has determined that the effects to proposed or listed species or critical habitat under the Endangered Species Act of 1973, as amended (16 U.S.C. §1531 et seq.), and birds protected under the Migratory Bird Treaty Act (16 U.S.C. §703 et seq.), have been covered.

Cultural Resources

Cultural resources is a broad term that includes prehistoric, historic, architectural, and traditional cultural properties. The National Historic Preservation Act (NHPA) of 1966 is the primary Federal legislation that outlines the Federal Government’s responsibility to cultural resources. Section 106 of the NHPA requires the Federal Government to take into consideration the effects of an undertaking on cultural resources listed on or eligible for inclusion in the National Register of Historic Places (National Register). Those resources that are on or eligible for inclusion in the National Register are referred to as historic properties.

The Section 106 process is outlined in the Federal regulations at 36 CFR Part 800. These regulations describe the process that the Federal agency (Reclamation) takes to identify cultural resources and the level of effect that the proposed undertaking will have on historic properties. In summary, Reclamation must first determine if the action is the type of action that has the potential to affect historic properties. If the action is the type of action to affect historic properties, Reclamation must identify the area of potential effects (APE), determine if historic properties are present within that APE, determine the effect that the undertaking will have on historic properties, and consult with the State Historic Preservation Office (SHPO), to seek concurrence on Reclamation’s findings. In addition, Reclamation is required through the Section

106 process to consult with Indian Tribes concerning the identification of sites of religious or cultural significance, and consult with individuals or groups who are entitled to be consulting parties or have requested to be consulting parties.

Cumulative Impacts

Cumulative impacts result from incremental impacts of the Proposed Action or No Action alternative when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. To determine whether cumulatively significant impacts are anticipated from the Proposed Action or the No Action alternative, the incremental effect of both alternatives were examined together with impacts from past, present, and reasonably foreseeable future actions in the same geographic area.

Land Use

Controlling invasive weeds and reducing a fuel source for wildfires provides a benefit to surrounding properties as well as to the Proposed Action area. The Proposed Action, in combination with other fire suppression and invasive species control efforts, is anticipated to provide a cumulative benefit to land uses in the area.

Biological Resources

The Proposed Action would have no direct or indirect impacts to federally protected biological resources and therefore would not contribute cumulatively to any impacts.

Cultural Resources

The Proposed Action would have no direct or indirect impacts historical properties and therefore would not contribute cumulatively to any impacts.

RECLAMATION

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Draft Environmental Assessment

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EA-12-075



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Section 1 Introduction

1.1 Background

The Central Valley Project Improvement Act (CVPIA) was enacted by Congress on October 30, 1992, as Public Law 102-575. Section 3408(h), Title XXXIV of the CVPIA authorized the Department of Interior's Land Retirement Program. The goal of land retirement is to reduce irrigation drainage problems by permanently taking lands out of irrigated agricultural production. The Land Retirement Program is operated cooperatively by Department of Interior agencies (Bureau of Reclamation [Reclamation], U.S. Fish and Wildlife Service [USFWS], and the Bureau of Land Management) with the California Department of Water Resources. The Secretary of the Department of the Interior appointed Reclamation as the lead federal agency for the program.

Under the Land Retirement Program, Reclamation established the CVPIA Land Retirement Demonstration Project, to reduce agricultural drainage and demonstrate upland wildlife habitat restoration on drainage-impaired lands in the San Joaquin Valley. These lands are characterized by low agricultural productivity, poor drainage and high selenium concentrations in shallow groundwater. The Land Retirement Demonstration Project was evaluated under Environmental Assessment/Finding of No Significant Impact (EA/FONSI) 99-12-MP (Reclamation 1999), and authorized the retirement of 7000 acres in Westlands Water District (Tranquillity Demonstration Project Site) and 8000 acres in Atwell Island Water District (Atwell Island Demonstration Project Site). Approximately 2,000 and 7,000 acres respectively, have been retired at the Tranquillity and Atwell Island sites to date.

A local rancher has requested permission to manage vegetation on the Tranquillity site (see Figure 1) through controlled grazing by domestic livestock. Managed grazing can achieve desirable plant community structure, decrease fuel loads to reduce wildfire risks, increase capacity to sequester carbon, increase and regulate nutrient cycling in the ecosystem, improve wildlife habitat and enhance biodiversity.

1.2 Need for the Proposed Action

There is a need to maintain and improve wildlife habitat within the Land Retirement Demonstration Project area. Invasive plant species often outcompete native plant species, which are vital to healthy wildlife habitat. Uncontrolled vegetation can also present a fire risk in dry years.

The purpose of the Proposed Action is to reduce fire hazard and the spread of invasive plant species through managed grazing.

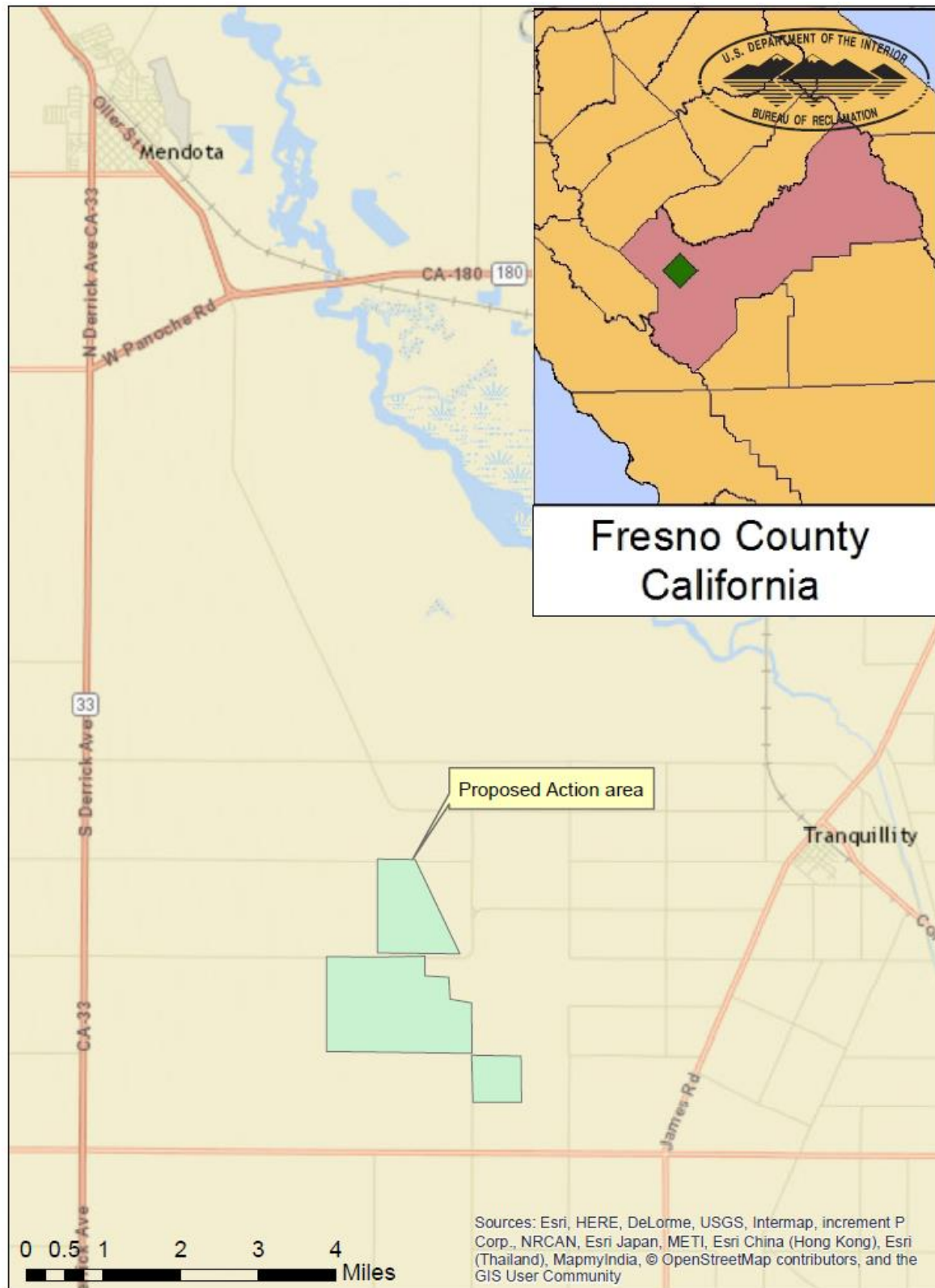


Figure 1 Proposed Action Area

Section 2 Alternatives Including the Proposed Action

This Environmental Assessment considers two possible actions: the No Action Alternative and the Proposed Action. The No Action Alternative reflects future conditions without the Proposed Action and serves as a basis of comparison for determining potential effects to the human environment.

2.1 No Action Alternative

Under the No Action Alternative, Reclamation would not issue a grazing authorization to the applicant. The area would not receive the weed control and fire suppression benefits provided by grazing, and the applicant would need to find other land for their livestock. The land would remain in and be managed in its current state.

2.2 Proposed Action

Reclamation proposes to issue a land use authorization that would provide access to and allow for grazing of approximately 2,190 acres of land near the cities of Mendota and Tranquillity in Fresno County, California (Figure 1). The land use authorization would provide access to approximately 2,190 acres located in the Westlands Demonstration Project, south of the City of Mendota and west of the City of Tranquillity in Fresno County, California (Figure 1) for grazing animals.

The length of land use authorization would be a maximum of 10 years, with storage/grazing periods, locations and stocking rates varying over that time. Sheep and goats would be moved in and out, depending on forage available and availability of other grazing opportunities in the area. Typically, grazing would take place in 1 to 3 months in the spring and 1 to 2 months in the fall.

Each band of animals (a combination of ewes and lambs, totaling approximately 600 animals) would be assigned to a site 120 acres in area. The 120-acre site would be broken up into 20-acre plots with portable fencing, and the band would be rotated among the feeding plots in order to prevent overgrazing in any one area. Grazing units would be alternately grazed and rested in a planned sequence throughout the growing season to increase production and quality of forage, as well as to meet Reclamation's need for weed control and fire suppression. After each six week period, each band will be assigned to a new 120 acre site.

Portable water troughs would be placed in the area maintained by resident goat- and sheep-herders. Salt blocks may be used, depending on the forage and vegetative condition of the range.

2.2.1 Environmental Commitments

The applicant shall implement the following environmental protection measures to reduce environmental consequences associated with the Proposed Action (Table 1). Environmental consequences for resource areas assume the measures specified would be fully implemented. Copies of all reports and monitoring shall be submitted to Reclamation.

Table 1 Environmental Protection Measures and Commitments

Resource	Protection Measure
Hazardous Materials	No hazardous materials/hazardous or solid waste/trash shall be disposed of on public lands. If a release does occur, it shall immediately be reported to Reclamation at (559) 487-5116.
Multiple	The applicant shall comply with the required measures listed in the <i>Grazing Management Plan for the CVPIA Land Retirement Demonstration Project Lands in Tranquillity, CA</i> (Appendix B).
	As described in the <i>Grazing Management Plan for the CVPIA Land Retirement Demonstration Project Lands in Tranquillity, CA</i> , the applicant shall submit an Actual Use Report to Reclamation at the end of each grazing period (and at least one month before the start of the next grazing period).
Cultural Resources	The applicant shall notify Reclamation immediately upon the discovery of human remains, archaeological artifacts or paleontological deposits. Grazing in the vicinity of such discoveries shall immediately cease until permission is granted to resume.
Soil and Erosion	Animals shall be rotated between feeding blocks, in order to avoid overgrazing any one area. Salt and/or other mineral supplements shall be placed in such a manner as to promote even livestock distribution in the allotment or pasture. Fences shall be used to contain animals and keep them away from rights of way.

Section 3 Affected Environment and Environmental Consequences

This section identifies the potentially affected environment and the environmental consequences involved with the Proposed Action and the No Action Alternative, in addition to environmental trends and conditions that currently exist.

3.1 Resources Eliminated from Further Analysis

Reclamation analyzed the affected environment and determined that the Proposed Action did not have the potential to cause direct, indirect, or cumulative adverse effects to the resources listed in Table 2.

Table 2 Resources Eliminated from Further Analysis

Resource	Reason Eliminated
Air Quality	The Proposed Action would not generate any new air emissions, or interfere with any existing air quality plan. No conformity determination is necessary.
Global Climate Change	The Proposed Action would not generate any new greenhouse gas emissions, and is not anticipated to have any impact on global climate trends.
Environmental Justice	The Proposed Action does not propose any features that would result in adverse human health or environmental effects, have any physical effects on minority or low-income populations, and/or alter socioeconomic conditions of populations that reside or work in the vicinity of the Proposed Action.
Indian Sacred Sites	The Proposed Action would not limit access to or ceremonial use of Indian sacred sites on federal lands by Indian religious practitioners or adversely affect the physical integrity of such sacred sites.
Indian Trust Assets	The Proposed Action would not impact Indian Trust Assets, as there are none in the Proposed Action area. The nearest Indian Trust Asset is the Santa Rosa Rancheria approximately 42 miles southeast of the project location.
Water Resources	There are no natural watercourses in the Proposed Action area. No new areas would be irrigated, and no new groundwater wells are proposed. Temporary containers would be used to provide water to livestock, but this would not impact water supplies or water quality.

3.2 Land Use

3.2.1 Affected Environment

As an important agricultural region for both California and the United States, the Central Valley is predominantly rural, and agriculture is the primary land use. The lands considered for the Proposed Action consist of 2,190 acres in Fresno County south of Mendota and west of Tranquillity. The land is not currently under irrigated agricultural production, as it has been

retired under the Land Retirement Program provisions of the CVPIA. The predominant soil type is Panoche Clay Loam, and it is considered alkali with poor infiltration.

3.2.2 Environmental Consequences

No Action

If no action were taken, there would be no change in land use.

Proposed Action

Under the Proposed Action, livestock would be permitted to graze on the property as described in Section 2.2. The grazing would provide benefits in terms of weed control and fire suppression.

Cumulative Impacts

Controlling invasive weeds and reducing a fuel source for wildfires provides a benefit to surrounding properties as well as to the Proposed Action area. The Proposed Action, in combination with other fire suppression and invasive species control efforts, is anticipated to provide a cumulative benefit to land uses in the area.

3.3 Biological Resources

3.3.1 Affected Environment

Reclamation proposes to issue a land use authorization to allow managed grazing on 2,190 acres of land in Fresno County that were retired from agricultural production under the Land Retirement Demonstration Project. The Land Retirement Demonstration Project was approved under EA/FONSI 99-12-MP on November 10, 1999 (Reclamation, 1999), and on September 21, 1999 the United States Fish and Wildlife Service (Service) issued a Biological Opinion (1-1-99-F-0125) that provided coverage for the retirement of these lands under Section 7 of the Endangered Species Act (16 U.S.C. §1531 et seq.).

The *Reclamation Manual Directives and Standards* require that a grazing management plan be developed prior to the issuance of any land use authorization for grazing on Reclamation lands (LND 08-01 Release 150; 2002). Furthermore, one of the conservation measures in the Biological Opinion for the Land Retirement Demonstration Project requires that:

“Management Plans and Contingency Plans developed for the on-site management of all LRDP Demo Project Lands will be drafted in coordination with the Service’s SFWO Endangered Species Division and will be forwarded to them for review and approval prior to implementation. Management Plans and Contingency Plans will incorporate implementation of all standard avoidance and minimization/compensation measures and will be consistent with the recovery plans for the species listed in this opinion.”

In accordance with the requirements of the *Reclamation Manual Directives and Standards* regarding grazing permits, and the requirements of the Biological Opinion for the Land Retirement Demonstration Project, Reclamation developed a Grazing Management Plan for the 2,190 acres of retired lands currently proposed to be grazed. The draft Grazing Management Plan

was submitted to the Service via e-mail on February 11, 2015 and the Service provided their feedback and approval of the plan on February 18, 2015.

With the implementation of the *Grazing Management Plan for the CVPIA Land Retirement Demonstration Project Lands in Tranquillity California* (Appendix B), Reclamation has determined that the effects to proposed or listed species or critical habitat under the Endangered Species Act of 1973, as amended (16 U.S.C. §1531 et seq.), and birds protected under the Migratory Bird Treaty Act (16 U.S.C. §703 et seq.), have been covered.

3.3.2 Environmental Consequences

No Action

Under the No Action Alternative, illegal trespass grazing would likely continue to occur as it has in the past. This could result in overgrazing which may reduce small mammal populations and increase the prevalence of certain types of invasive plant species. Currently no federally listed species are present in the Proposed Action Area, so none would be affected.

Proposed Action

Under the Proposed Action, the grazing of the retired lands would be managed to better control weedy invasive vegetation. No special-status species are currently present on the retired lands, so none would be affected.

Cumulative Impacts

The Proposed Action would have no direct or indirect impacts to federally protected biological resources and therefore would not contribute cumulatively to any impacts.

3.4 Cultural Resources

Cultural resources is a broad term that includes prehistoric, historic, architectural, and traditional cultural properties. The National Historic Preservation Act of 1966 is the primary Federal legislation that outlines the Federal Government's responsibility to cultural resources. Section 106 of the National Historic Preservation Act requires the Federal Government to take into consideration the effects of an undertaking on cultural resources listed on or eligible for inclusion in the National Register of Historic Places (National Register). Those resources that are on or eligible for inclusion in the National Register are referred to as historic properties.

The Section 106 process is outlined in the Federal regulations at 36 CFR Part 800. These regulations describe the process that the Federal agency (Reclamation) takes to identify cultural resources and the level of effect that the proposed undertaking will have on historic properties. In summary, Reclamation must first determine if the action is the type of action that has the potential to affect historic properties. If the action is the type of action to affect historic properties, Reclamation must identify the area of potential effects, determine if historic properties are present within that area of potential effects, determine the effect that the undertaking will have on historic properties, and consult with the State Historic Preservation Office (SHPO), to seek concurrence on Reclamation's findings. In addition, Reclamation is required through the Section 106 process to consult with Indian Tribes concerning the

identification of sites of religious or cultural significance, and consult with individuals or groups who are entitled to be consulting parties or have requested to be consulting parties.

3.4.1 Affected Environment

In an effort to identify historic properties, Reclamation conducted records reviews internally and with the California Historical Research Information System of the California State University, Bakersfield. Additionally, Reclamation conducted field inventories of all five parcels. No historic properties were identified within the proposed project boundary.

Pursuant to the regulations at 36 CFR § 800.3(f)(2), Reclamation identified the Santa Rosa Rancheria as an Indian tribe who might attach religious and cultural significance to historic properties within the APE. Reclamation initiated coordination with this Indian tribe on September 4, 2014, invited their participation in the Section 106 process, and requested their assistance in the identification of sites of religious and cultural significance or historic properties that may be affected by the proposed undertaking pursuant to 36 CFR § 800.4(a)(4). No responses were received.

Reclamation initiated consultation with the California State Preservation Office (SHPO) by letter dated March 25, 2015 requesting concurrence with a finding of no historic properties affected for the proposed project. Pursuant to the regulations at 36 CFR §800.5(c), SHPO has 30 days from receipt to review an agency finding. The SHPO has yet to respond to Reclamation's finding of effect. If after 30 days the SHPO has not responded, the regulations state that "...the agency official shall then carry out the undertaking in accordance with paragraph (d)(1) of this section" [§800.5(c)(1)]. SHPO did not comment on Reclamation's finding within the period of time provided to them pursuant to the Section 106 regulations, Reclamation then moved on to the next step of the Section 106 process and made a determination of No Historic Properties for the proposed project pursuant to 36 CFR § 800.4(d)(1).

3.4.2 Environmental Consequences

No Action

Under the No Action Alternative, existing conditions would persist and the proposed project would not be implemented. As a result, the No Action alternative would result in no impacts to cultural resources.

Proposed Action

The proposed action is to grant issue a grazing lease to grazing by up to 600 ewes and their lambs (one band) on Reclamation acquired lands. Temporary fencing will be set up to contain the sheep, which may involve pounding T-posts into the ground and attaching hot-wire fencing. As the grazing on each parcel becomes less productive, the fencing will be removed and set up at locations that are more productive. Watering tanks will be placed throughout the parcels and moved with the sheep as needed. Large and medium duty trucks and other vehicles may need to access the parcels on occasion.

Reclamation has made the determination under NHPA of no historic properties affected for the proposed project. Should the Proposed Action be implemented, the resulting activity will have no impact on properties listed, or eligible for listing, on the National Register of Historic Places.

Cumulative Impacts

The Proposed Action would have no direct or indirect impacts historical properties and therefore would not contribute cumulatively to any impacts.

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Section 4 Consultation and Coordination

4.1 Public Review Period

Reclamation intends to provide the public with an opportunity to comment on the Draft Finding of No Significant Impact and Draft Environmental Assessment during a 30-day public review period.

4.2 Endangered Species Act (16 U.S.C. § 1531 et seq.)

Section 7 of the Endangered Species Act requires Federal agencies, in consultation with the Secretary of the Interior and/or Commerce, to ensure that their actions do not jeopardize the continued existence of endangered or threatened species, or result in the destruction or adverse modification of the critical habitat of these species.

Section 7 coverage for the effects of the Proposed Action was provided in the 1999 Biological Opinion (1-1-99-F-0125) for the Land Retirement Demonstration Project.

4.3 National Historic Preservation Act (16 U.S.C. § 470 et seq.)

The National Historic Preservation Act of 1966, as amended (16 U.S.C. 470 et seq.), requires that federal agencies give the Advisory Council on Historic Preservation an opportunity to comment on the effects of an undertaking on historic properties, properties that are eligible for inclusion in the National Register. The 36 CFR Part 800 regulations implement Section 106 of the National Historic Preservation Act.

Section 106 of the National Historic Preservation Act requires federal agencies to consider the effects of federal undertakings on historic properties, properties determined eligible for inclusion in the National Register. Compliance with Section 106 follows a series of steps that are designed to identify interested parties, determine the area of potential effects, conduct cultural resource inventories, determine if historic properties are present within the area of potential effects, and assess effects on any identified historic properties.

Reclamation finds that this action would not have significant impacts on historic properties, or eligible for listing, on the National Register of Historic Places.

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Section 5 Preparers and Reviewers

Kelly Baker, Natural Resources Specialist, SCCAO

Lisa Carlson, Wildlife Biology Technician, SCCAO

Mark Carper, Archaeologist/Architectural Historian, MP-153

Patricia Rivera, ITA, MP-400

Rain Emerson, Supervisory Natural Resources Specialist, SCCAO – reviewer

David E. Hyatt, Resource Management Division Chief, SCCAO – reviewer

Jason Kirby, Land Resource Specialist, SCCAO – reviewer

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Section 6 References

Bureau of Reclamation. 1999. *Finding of No Significant Impact and Decision Record for CVPIA Land Retirement Demonstration Project; FONSI No. 99-12-MP*. November 10, 1999.

U.S. Fish and Wildlife Service. 1990. Biological Opinion (document No. 1-1-99-F-0125).
Section 7 of the Endangered Species Act (16 U.S.C. §1531 et seq.).

Appendix A

Cultural Resources Determination

CULTURAL RESOURCE COMPLIANCE
Mid-Pacific Region
Division of Environmental Affairs
Cultural Resources Branch

MP-153 Tracking Number: 13-SCAO-074

Project Name: 2,190-acre Sheep Grazing Lease, Fresno County, California

MP 153 Cultural Resources Reviewer: Mark Carper

NEPA Doc: EA-12-075

NEPA Contact: Kelly Baker

Determination: No Historic Properties Affected

This proposed undertaking by Reclamation to issue a grazing lease east of the town of Tranquility in Fresno County, California. The proposed project will involve the issuance of a grazing lease to a local sheepherder on five separate parcels totaling 2,190 acres. The issuance of this lease constitutes an undertaking pursuant to 36 CFR §800.16(y) and is the type of activity that has the potential to cause effects on historic properties under 36 CFR § 800.3(a).

The proposed action will allow grazing by up to 600 ewes and their lambs (one band) on Reclamation acquired lands. Temporary fencing will be set up to contain the sheep, which may involve pounding T-posts into the ground and attaching hot-wire fencing. As the grazing on each parcel becomes less productive, the fencing will be removed and set up at locations that are more productive. Watering tanks will be placed throughout the parcels and moved with the sheep as needed. Large and medium duty trucks and other vehicles may need to access the parcels on occasion.

In an effort to identify historic properties, Reclamation conducted records reviews internally and with the California Historical Research Information System of the California State University, Bakersfield. Additionally, Reclamation conducted field inventories of all five parcels. A total of six cultural resources were identified through this process including one previously recorded and one newly recorded prehistoric site, three isolates, and one decommissioned drain. Only archaeological site 13-SC-074-1 was determined to be a historic property based on its potential to yield important information regarding prehistoric marsh utilization in the area (Criterion D). Site CA-FRE-2222, a previously recorded site, was relocated and determined to lack integrity due to loss of previously

CULTURAL RESOURCE COMPLIANCE
Mid-Pacific Region
Division of Environmental Affairs
Cultural Resources Branch

collected artifacts and the current poor site condition. The San Luis Drain is less than 50 years old and does not meet any eligibility criteria.

Pursuant to the regulations at 36 CFR § 800.3(f)(2), Reclamation identified the Santa Rosa Rancheria as an Indian tribe who might attach religious and cultural significance to historic properties within the APE. Reclamation initiated coordination with this Indian tribe on September 4, 2014, invited their participation in the Section 106 process, and requested their assistance in the identification of sites of religious and cultural significance or historic properties that may be affected by the proposed undertaking pursuant to 36 CFR § 800.4(a)(4). No responses were received.

Reclamation initiated consultation with the California State Preservation Office (SHPO) by letter dated March 25, 2015 requesting concurrence with a finding of no historic properties affected for the proposed project. Pursuant to the regulations at 36 CFR §800.5(c), SHPO has 30 days from receipt to review an agency finding. The SHPO has yet to respond to Reclamation's finding of effect. If after 30 days the SHPO has not responded, the regulations state that "...the agency official shall then carry out the undertaking in accordance with paragraph (d)(1) of this section" [§800.5(c)(1)]. Because the SHPO has failed to comment on Reclamation's finding within the period of time provided to them pursuant to the Section 106 regulations, Reclamation may move on to the next step of the Section 106 process.

Reclamation has concluded the NHPA Section 106 process for this undertaking. After reviewing the EA for the proposed project Reclamation finds that this action would not have significant impacts on properties listed, or eligible for listing, on the National Register of Historic Places

This memorandum is intended to convey the completion of the NHPA Section 106 process for this undertaking. Please retain a copy in the administrative record for this action. Should changes be made to this project, additional NHPA Section 106 review, possibly including consultation with the State Historic Preservation Officer, may be necessary. Thank you for providing the opportunity to comment.

Appendix B

Grazing Management Plan for the CVPIA Land Retirement Demonstration Project Lands in Tranquillity, California

**GRAZING MANAGEMENT PLAN
FOR THE CVPIA LAND RETIREMENT
DEMONSTRATION PROJECT LANDS IN
TRANQUILLITY, CA**

Bureau of Reclamation
South-Central California Area Office
February 2015

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I. Introduction

The San Joaquin Valley Drainage Program was established in 1984 to investigate drainage-related problems in California's San Joaquin Valley and to identify potential solutions to address those problems. One solution proposed in the San Joaquin Valley Drainage Program Final Report, published in 1990, was the retirement of irrigated lands on the western side of the San Joaquin Valley that were characterized by low productivity, poor drainage, and high selenium concentrations in shallow groundwater.

In 1992, the Central Valley Improvement Project Act (CVPIA) was enacted into public law (102-575 Title 34, Section 3408(h)) and authorized the Department of the Interior's Land Retirement Program (LRP), as recommended in the San Joaquin Valley Drainage Program Final Report. The LRP authorized the purchase of land, water, and other property interests from willing sellers in order to permanently retire lands from irrigated agriculture. The retirement of these lands was intended to reduce drainage, enhance fish and wildlife resources, and make water available for CVPIA purposes.

The Land Retirement Demonstration Project (LRDP) was initiated in 1999 to study the impacts of land retirement on groundwater levels, water quality, soil chemistry and wildlife in order to determine the benefits and impacts of land retirement in the Central Valley (Interior, 1999). In addition to these studies, the 1999 United States Fish and Wildlife Service (Service) Biological Opinion for the LRDP required a five-year research and resource monitoring study which included contaminant monitoring and upland habitat restoration studies (Service, 1999). The LRDP consisted of two study sites: the Tranquillity Site in western Fresno County and the Atwell Site in Kings and Tulare Counties.

The full five-year study was conducted on the Tranquillity site between 1999 and 2005. The research found that land retirement in Tranquillity had several beneficial effects including declines in groundwater levels, and declines in salinity and selenium concentrations in soils. Contaminant monitoring found that the selenium levels in biota from the retired lands were generally low and proved that the contamination risk to wildlife on the retired lands was limited. At the end of the Habitat Restoration Study, native plant restoration had proven largely unsuccessful and the Tranquillity parcels were dominated by non-native annual grasses and weedy species (Interior, 2005; Interior, 2007). Competition from invasive non-native species proved to be the main factor limiting the successful establishment of native plants on the Tranquillity parcels, and weed management was deemed essential for long-term habitat restoration on the site. Numerous techniques were used to control weeds at the site including herbicides, cover crops, flaming, mowing, disking, pre-irrigation, solarization, and manual weeding, but none provided effective long-term results (Interior, 2005; Interior, 2007.).

Currently, there is a need to maintain and improve upland wildlife habitat on the LRDP Tranquillity parcels in western Fresno County. Invasive plant species on these lands out-compete desirable native plant species and create dense stands of vegetation that decrease the suitability of habitat for federally listed upland species. In order to control the density of introduced forbes and grasses on the LRDP Tranquillity parcels, and maintain an open habitat structure for the benefit of upland special-status wildlife species, Reclamation proposes to issue land use authorizations to allow managed sheep grazing on 2,090 acres of LRDP land in Tranquillity (Figure 1).

This grazing plan was developed in accordance with the requirements of the 1999 LRDP Biological Opinion¹ and the Bureau of Reclamation Directives and Standards regarding grazing permits (LND 08-01 Release 150; 2002).

¹ The Biological Opinion for the LRDP states that, "Management Plans and Contingency Plans developed for the on-site management of all LRDP Demo Project Lands will be drafted in coordination with the Service's SFWO Endangered Species Division and will be forwarded to them for review and approval prior to implementation. Management Plans and Contingency Plans will incorporate implementation of all standard avoidance and minimization/compensation measures and will be consistent with all of the recovery plans for the species listed in this opinion".

II. Goals and Objectives

Weed suppression was identified as the primary challenge to successful upland habitat restoration on the LRDP Tranquillity parcels. Several experimental techniques were implemented in an attempt to control weeds, but none were effective and the LRDP lands continue to be dominated by dense stands of weedy non-native vegetation (Interior, 2005; Interior, 2007). Dense weedy vegetation may reduce the establishment of native plant species and render affected areas less suitable for occupation by federally listed upland species (Seabloom et al, 2003; Lulow et al, 2006; Barry, 2011; Dickson et al, 2012). This grazing plan has one general overarching goal, which may be achieved through the completion of two specific objectives.

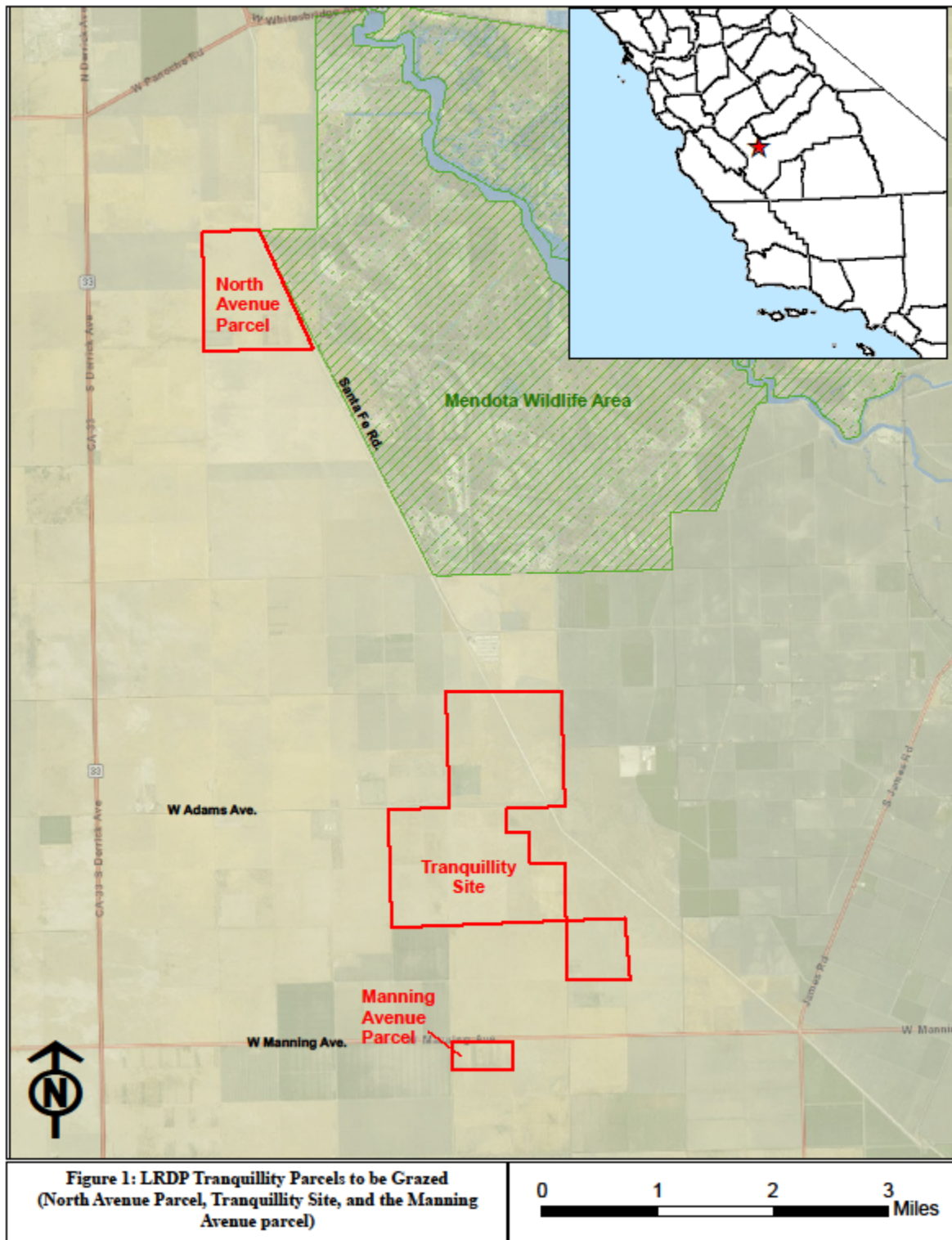
A. Goal: The grazing management goal for the LRDP Tranquillity sites is to reduce the height and density of weedy non-native vegetation.

- 1. Objective: Establish and maintain Residual Dry Matter (RDM)² levels between **250 and 400 lb./acre** on the LRDP Tranquillity parcels in order to improve the quality of upland habitat for federally protected species.** Federally protected upland species (including the blunt-nosed leopard lizard, San Joaquin kit fox, Fresno kangaroo rat, giant kangaroo rat, and the burrowing owl) all prefer habitats with an open vegetative structure and can be negatively affected by dense weedy vegetation (Barry, 2011; Barry et al, 2011; Germano et al, 2012; Bartolome et al, 2014). Maintaining RDM levels that are beneficial for these species may encourage listed upland species to colonize the retired lands.
- 2. Objective: Control invasive species reproduction and propagation through strategically timed seasonal grazing.** Many non-native weedy species emerge earlier in the growing season and mature more quickly than native plant species (Wolkovich and Cleland, 2011; Dickson et al, 2012; Wainwright et al, 2012). The reproduction of non-native weed species may be reduced if the plants are grazed before they are able to produce seed.

The reduction of early-season weed growth through grazing may lessen competition for resources and facilitate the germination of native plant species; however, it should be noted that native plant restoration is NOT an objective of this grazing plan. While the establishment of a native plant community on the LRDP lands is desirable and would provide several ecological benefits, it would be extremely challenging because decades of past intensive agriculture have changed soil characteristics, depleted the native plant seed bank, reduced the topographic relief of the site, and promoted the dominance of introduced weeds (Interior, 2005). The development of a fully restored native plant community is outside of the scope of this grazing plan and is likely not feasible without active attempts at restoration through seeding (Seabloom et al, 2003). Furthermore, the recovery of federally listed upland species is more dependent on an open vegetative structure than a highly diverse, fully native plant

² RDM is a standard measurement that is used to assess forage production, plant density, and grazing use. RDM represents the amount of herbaceous plant material left standing on the ground at the beginning or end of a growing season and can influence the next season's forage production and plant species composition.

ecosystem. An open habitat structure with reduced weed densities may be established and managed more easily than a fully restored San Joaquin Valley ecosystem (Interior, 2005).



III. Land Resources

A. Grazing Locations

Reclamation proposes to issue 10-year land use authorizations to allow sheep grazing on the LRDP Tranquillity parcels in western Fresno County. The authorizations would include 2,090 acres of retired lands located south of the City of Mendota and west of the City of Tranquillity (Figure 1).

B. Historical Land Use

Historically, the LRDP lands and surrounding areas contained native wetlands, saltbush scrub, alkali sink, native grassland, and California prairie ecosystems that provided habitat for several endemic upland plants and animals. In the 1950s, the LRDP lands were leveled and put into irrigated agricultural production. Cotton, sugar beets, alfalfa, wheat, barley, tomatoes, and melons were all commonly grown on these lands. Standard farming practices, including the application of pesticides and herbicides to control pests and weeds, were used to manage these crops (Interior, 1999; Interior, 2005).

The LRDP lands south of Adams Avenue were actively farmed and irrigated for decades until they were retired from irrigated agriculture in 1998. The lands to the north of Adams Avenue were irrigated until 1989, with the exception of a 60 acre field of safflower in the northwest corner of the Tranquillity Site which was retired sometime in the 1990s. The North Avenue parcel was acquired under the LRDP in 2001 and prior to that was fallowed and used for sheep grazing (Interior, 2005).

Decades of intensive agricultural use affected soil characteristics, depleted the native plant seed bank, and promoted the dominance of introduced weeds. These major changes resulted in the loss of native habitats, and may have contributed to the listing of some endemic upland species (Service, 1998). After retirement, the LRDP lands supported several weedy non-native plant species and provided very low quality habitat for wildlife. Animal use of the sites was quite low and natural dispersal and colonization of native species on the retired lands was obstructed due to isolation by surrounding agricultural lands (Interior, 1999).

The Biological Opinion for the LRDP required a five-year Habitat Restoration Study on the retired lands to determine wildlife responses to land retirement and restoration efforts (Service, 1999). Although the primary objectives of the LRDP did not specifically emphasize the establishment of threatened and endangered wildlife species on retired lands, it was one of the long-term goals of the program. The habitat restoration study monitored the abundance of invertebrates, birds, reptiles, and mammals for a five-year period after the lands were retired from agricultural production. Native plant restoration trials were also conducted on the parcels in an attempt to re-establish functional native plant communities. The results of the monitoring showed a slight increase in wildlife use of the sites, but no special status species besides the burrowing owl were actually observed on the retired lands (Interior, 2005). Native plant restoration proved to be largely unsuccessful and by the end of the five-year Habitat Restoration Study, the eleven most abundant plant species were non-native with three species (*Sisymbrium irio*, *Bromus madritensis*, and *Capsella bursa-pastoris*) providing 77% of all vegetative cover (Interior, 2005).

C. Current Land Use

Following the end of the five-year study in 2005, several additional acres of farmland surrounding the Tranquillity parcels have since been retired from agricultural production. Unmanaged trespass sheep grazing has occurred several times on the LRDP parcels. Trespass grazing, documented in annual monitoring reports, occurred on the Tranquillity and North Avenue parcels in 2001 and 2002. Trespass sheep grazing also occurred on the parcels between 2004 and 2006 and was noted in the final monitoring report (Interior, 2005). Most recently, trespass sheep grazing was observed during a site visit in the summer of 2013 (Stephen Lee, Personal Communication, January 12, 2015), which suggests that these activities have likely been ongoing since they were first discovered in 2001. Target shooting and illegal dumping also appear to be prevalent on the retired lands (Lisa Carlson, Personal Observation, April 4, 2014).

IV. Forage Resources

Currently, the vegetative communities on the LRDP Tranquillity parcels are comprised primarily of non-native forbes and grasses which can competitively exclude desirable native species.

Data collected during the Habitat Rehabilitation Study between 1999 and 2005 identified distinct seasonal patterns of weed species that grow on the LRDP parcels. Common early-season weeds typically germinate after the onset of winter rains, usually around November, and include: the non-native forbes London Rocket (*Sisymbrium irio*), black mustard (*Brassica nigra*), Filaree (*Erodium cicutarium*), and Groundsel (*Senecio vulgaris*), and the non-native grasses Red brome (*Bromus madritentensis*), Foxtail barley (*Hordeum murinum*), ripgut brome (*Bromus diandrus*), various species of oats (*Avena sp.*), small fescue (*Vulpia microstachys*), and soft chess (*Bromus hordeaceus*) (Interior, 2007). These species are able to germinate earlier and mature more quickly than native plant species, and can often dominate the landscape before native species germinate (Bartolome, 1979; Wolkovich and Cleland, 2011; Dickson et al, 2012; Wainwright et al, 2012).

Near the onset of the dry season, the early season weeds begin to senesce and a second wave of weeds becomes established. The dry season weeds are predominately herbaceous broadleaf forbes, but include annual grasses as well. Common plant species within this category include: tumbling saltweeds (*Atriplex rosea* and *Atriplex argentea*), Russian thistle (*Salsola tragus*), lambsquarters (*Chenopodium album*), and five-hook Bassia (*Bassia hyssopifolia*) (Interior, 2007).

Some native plant species are present on the LRDP lands, but only in small numbers. Native plant species that have been recently observed on the LRDP parcels include: Great Valley phacelia (*Phacelia ciliata*), snake's head (*Malacothrix coulteri*), and allscale saltbush (*Atriplex polycarpa*).

Studies have shown that many of the non-native plant species on the LRDP lands are palatable to sheep. London rocket, lambsquarters, filaree, red brome, and black mustard all provide suitable forage for sheep (Phillips et al. 1996; Shaheen et al. 2014). Sheep prefer to graze forbes over grasses, and the most prevalent weeds on the LRDP parcels are forbes. Sheep will graze selectively on preferred plants if given the opportunity, but will eat a greater diversity of plant species (and graze more evenly) if they are stocked in higher concentrations (Olson and Lacey, 1994; Steffens et al, 2013).

V. Sensitive Resources

A. Current Status of Federally Listed Species on LRDP Lands

Currently, no federally listed upland species are known to occur on the LRDP lands. The only federally protected species documented on the LRDP parcels is the burrowing owl, which is

protected under the Migratory Bird Treaty Act. Federally listed upland species like the San Joaquin kit fox, blunt-nosed leopard lizard, giant kangaroo rat, and the Fresno kangaroo rat likely occurred on the LRDP lands before they were converted for agriculture. Decades of intensive agriculture on the LRDP parcels and surrounding lands eliminated upland habitat and likely played a role in the extirpation of listed species from these areas.

When the LRDP lands were initially retired, they were surrounded almost entirely by actively cultivated agricultural lands and were isolated from natural areas that contained viable populations of federally listed upland species. This isolation of the retired lands made habitat restoration more challenging and may have precluded certain species from colonizing the site. During five-years of monitoring wildlife on the Tranquillity sites, no federally listed upland species were found (Interior, 2005).

In the last decade, several acres of agricultural land surrounding the LRDP parcels were retired by the Bureau of Reclamation and the Westlands Water District. These additional retired lands may provide new corridors through which federally listed species can colonize the LRDP lands. While no federally listed species currently occur on the parcels, there are some nearby areas with populations of federally listed species that may serve as source populations.

B. Impacts of Grazing on Federally Listed Species

Livestock grazing on public lands has been quite a controversial conservation issue in the past. Previously, the negative impacts of intensive grazing (like soil erosion, spread of invasive species, and trampling of habitat) led many conservationists to view livestock grazing as a significant threat to natural communities and native species; however recent research has shown that grazing can actually be quite a beneficial tool for conservation if it is managed appropriately (Germano et al. 2001; Bartolome et al, 2009; Barry, 2011; Barry et al, 2011).

Grazing is now used as a management tool on multiple wildlife refuges and natural lands managed by the Bureau of Land Management (BLM), the Service, the California Department of Fish and Wildlife, and other agencies (Germano et al, 2010; Ikenson, 2012; Hearden, 2013; BLM, 2014). The 1999 *Recovery Plan for Upland Species*, and several recent Five-Year Reviews for federally listed species, have found that properly managed grazing can be a useful tool for restoring or maintaining suitable upland habitat (Service, 1998; Barry, 2011). Recent findings regarding the impacts of grazing on federally protected animal species, which may occur on natural lands near the LRDP Tranquillity parcels, are discussed individually in more detail below.

1. San Joaquin kit fox

San Joaquin kit foxes are adapted to arid-lands and inhabit open, relatively flat, areas with short vegetative structure, sparse ground-cover, and patches of bare ground. Historically, San Joaquin kit foxes occupied valley sink scrub, valley saltbush scrub, alkali scrub/shrub, and native grassland habitats. A large portion of these natural habitat types in California have

been converted for agricultural and urban uses, which has forced kit foxes to occupy less optimal habitat types like non-native annual grasslands, oil fields, and disturbed areas adjacent to fallowed farmlands (Service 1998; Service 2010b).

In years of normal and above-normal precipitation, the retired lands support dense growths of weedy non-native species which make the habitat in these areas unsuitable for San Joaquin kit foxes (Interior, 2005; Service, 2010b). Dense vegetation makes San Joaquin kit foxes more vulnerable to predation by coyotes and can reduce prey populations (Service 1998; Service, 2010b). In annual grasslands that are dominated by non-native grasses, the reduction or cessation of grazing may result in conditions that are unsuitable for kit foxes, if rain and soil conditions allow (Service, 2010b). Managed grazing can improve the habitat quality of annual grasslands and is considered beneficial for San Joaquin kit foxes (Germano et al. 2001; Service, 2010b). Grazing that is managed to maintain RDM levels below 500 lb/acre, and vegetation heights below 8 inches, is considered to be beneficial for San Joaquin kit foxes and other upland species with similar habitat needs (Barry et al. 2011; Germano et al. 2012; Bartolome et al. 2014). One study found that San Joaquin kit foxes were present on a heavily grazed site with less than 500 lb/acre of RDM, but disappeared from the area when grazing ceased and RDM increased to more than 2,000 lb/acre (Barry et al. 2011).

In areas prone to domination by dense non-native weeds, like the Tranquillity parcels, the cessation of grazing can result in sub-optimal or unsuitable habitat conditions for San Joaquin kit foxes (Service, 2010b). Unmanaged trespass grazing has occurred on the LRDP parcels over the last twelve years, with the most recent trespass grazing reported in the summer of 2013. The complete cessation of grazing on the LRDP parcels would allow weeds to dominate the site after the onset of each rainy season, and could make the retired lands unsuitable for San Joaquin kit foxes.

Overgrazing can reduce prey populations and has a larger negative effect during times of drought when there is increased competition for limited plant resources (Service, 2010b). The LRDP lands have been exposed to unmanaged grazing, so the negative effects from overgrazing are already included in the baseline condition of area. This grazing plan would ensure that grazing on the retired lands is managed to prevent negative effects and maintain suitable habitat for San Joaquin kit foxes and other upland species.

Strategy to Improve San Joaquin kit fox habitat through Grazing:

Intensity: Graze so that RDM is less than 500 lb/acre (Bartolome et al. 2009; Barry et al. 2011).

Season-of-use: Graze to maintain a consistent level of ground-cover rather than allowing dense accumulation of vegetation.

Livestock type: All types of livestock would remove dense vegetation and are considered beneficial. Grazing with sheep may be slightly less beneficial because sheep eat more forbes than grasses and may somewhat reduce forage available for kit fox prey like kangaroo rats and ground squirrels (Barry et al. 2011).

2. Blunt-Nosed Leopard Lizard

Blunt-nosed leopard lizards inhabit open, sparsely vegetated areas of low relief on the Valley floor. They are commonly found in non-native annual grassland, valley sink scrub, *Atriplex* grassland and valley saltbush scrub habitats. Areas of dense vegetation are considered unsuitable for this species (Service 1998; Service 2010a).

In years of normal and above-normal precipitation, the retired lands support dense growths of weedy non-native species that make the habitat unsuitable for blunt-nosed leopard lizards (Interior, 2005; Service 2010a). Dense vegetation restricts blunt-nosed leopard lizard movement and makes them more vulnerable to predation (Service 2010a).

Managed livestock grazing has been shown to improve habitat for blunt-nosed leopard lizards (Germano et. al 2001; Riensche 2008; Service 2010a; Barry, 2011; Germano et. al. 2012; Bartolome et. al. 2014). A 10-year study, in which experimental plots were grazed to maintain RDM levels at or below 500 lb/acre, found that blunt-nosed leopard lizards were significantly more abundant on grazed plots than on un-grazed plots (Germano et al. 2012; Bartolome et al. 2014). Several other studies have also shown that blunt-nosed leopard lizard abundance, and the abundance of small vertebrates in general, tends to increase in response to reductions of exotic grasses via grazing (Riensch 2008; Service 2010). Similarly, many of these studies have also shown that the heavy growth of non-native grasses “depresses” populations of blunt-nosed leopard lizards and rodents. In annual grasslands that are dominated by non-native grasses, the cessation of grazing is considered to be more detrimental to blunt-nosed leopard lizards than the negative effects associated with overgrazing (Service 2010a).

Strategy to Improve blunt-nosed leopard lizard habitat through grazing:

Intensity: Graze so that RDM is less than 500 lb/acre

Season-of-use: Graze to maintain a consistent level of ground-cover rather than allowing dense accumulation of vegetation.

Livestock type: All types of livestock would remove dense vegetation and are considered beneficial (Barry et al, 2011).

3. Giant kangaroo rat

Giant kangaroo rats inhabit relatively dry, gently sloping, annual grassland habitats with few or no shrubs (Service, 2010c). The Giant Kangaroo rat is a keystone species that provides burrows for blunt-nosed leopard lizards and is a significant prey item for San Joaquin kit foxes and burrowing owls (Service, 1998).

Although livestock grazing was previously considered a threat to the Giant kangaroo rat, due to competition for food and the collapse of burrows, several recent long-term grazing studies have found that grazing is actually beneficial for the species overall, especially in wet years. A 10-year study, in which experimental plots were grazed to maintain RDM at or below 500 lb/acre, found that the abundance of giant kangaroo rats increased significantly on the grazed plots, but did not increase on the un-grazed control plots (Germano et al, 2012). Other studies have found that giant kangaroo rat abundance is higher on grazed plots in wet years, and that

giant kangaroo rat numbers do not decline as quickly on grazed plots during years of very high precipitation (Bartolome et al, 2014). Even the 1998 Recovery plan for upland species identifies grazing to control the density of vegetation on conservation lands as the highest priority for the protection of the species, and grazing on retired lands as the second highest priority (Service, 1998).

Periods of normal and above-average precipitation lead to dense growths of weedy non-native vegetation on the retired lands. Dense grass growth is considered a possible factor that contributes to declines in giant kangaroo rat numbers during wet years because it inhibits foraging, increases the risk of predation, and increases soil moisture which may lead to respiratory problems or infestation of seed caches with toxic molds (Service, 2010c). Grazing can control the dense vegetation that threatens giant kangaroo rats in wet years. While the Service acknowledges that overgrazing may still be a threat to individual giant kangaroo rat precincts, they note that a complete lack or cessation of grazing would lead to much more significant declines in giant kangaroo rat numbers, especially during years of above-average rainfall (Service, 2010c).

Strategy to Improve giant kangaroo rat habitat through grazing:

Intensity: Graze so that RDM is less than 500 lb/acre

Season-of-use: Graze to maintain a consistent level of ground-cover rather than allowing dense accumulation of vegetation.

Livestock type: All types of livestock would remove dense vegetation and are considered beneficial. Grazing by sheep is considered somewhat less beneficial for giant kangaroo rats than grazing with cattle or horses because sheep prefer to eat forbes, just like giant kangaroo rats, so there would be a lower density of forbes with sheep grazing (Olson and Lacey, 1994; Barry et al, 2011).

4. Fresno kangaroo rat

Fresno kangaroo rats inhabit flat areas of grassland and alkali plain habitat on the floor of the San Joaquin Valley (Service, 2010d). Like the giant kangaroo rat, the Fresno kangaroo rat is also considered a keystone species.

The 1998 Recovery Plan identifies the cessation of grazing on the Alkali Sink and Kerman Ecological Reserves as a potential factor that contributed to the apparent elimination of the species in those areas, and stated that well-managed seasonal grazing is likely beneficial to Fresno kangaroo rats (Service 1998). The 2010 Five-Year Review for the Fresno kangaroo rat states that both overgrazing and the elimination of grazing can have detrimental effects on Fresno kangaroo rat populations (Service, 2010d). In areas where grazing is eliminated, dense non-native grasses build up and impede Fresno kangaroo rat activities and exclude the native forbes that are preferred food items for this species (Service, 2010d). Well-managed grazing is considered beneficial to Fresno kangaroo rats.

Strategy to Improve Fresno kangaroo habitat through grazing:

Intensity: Graze so that RDM is less than 500 lb/acre

Season-of-use: Graze to maintain a consistent level of ground-cover rather than allowing dense accumulation of vegetation.

Livestock type: All types of livestock would remove dense vegetation and are considered beneficial. Grazing by sheep is considered somewhat less beneficial for giant kangaroo rats than grazing with cattle or horses because sheep, like giant kangaroo rats, prefer to eat forbes so there would be a lower density of forbes with the sheep grazing (Olson and Lacey, 1994; Barry et al, 2011)

5. Burrowing Owl

The burrowing owl inhabits grasslands, desert floors, and other open areas including golf courses, airports, and canal banks. This species requires gently sloping or level areas with sparse vegetation or bare ground and an abundance of small mammal burrows (Klute et al, 2003).

Studies have found that burrowing owls prefer grassland habitats that are moderately or heavily grazed over un-grazed grasslands. Grazing reduces dense non-native vegetation, which may attract more burrowing animals like ground squirrels (Klute et al, 2003). A shorter vegetative structure also gives burrowing owls better visibility and enables them to better hunt, capture prey, and detect predators (Barry et al, 2001). Reductions in sheep grazing in parts of North Dakota were identified as a potential factor in the decline of burrowing owl populations (Klute et al, 2003). Managed grazing is considered beneficial for this species.

Strategy to Improve Burrowing owl habitat through grazing:

Intensity: Moderate grazing is considered the most beneficial for burrowing owls. Graze so that RDM is less than 500 lb/acre

Season-of-use: Graze to maintain a consistent level of ground-cover rather than allowing dense accumulation of vegetation.

Livestock type: All types of livestock would remove dense vegetation and would beneficially improve burrowing owl habitat (Barry et al, 2011).

VI. Grazing Management

A. Initial Stocking Rates

Initial stocking rates can be determined using USDA soil surveys, knowledge of previous stocking rates, or direct measurement of RDM levels. There are no records or data documenting previous stocking rates, grazing duration, or forage production of the LRDP lands, so the grazing capacity of these lands was estimated using the scorecard method (Bush, 2006). The grazing capacity scorecard is used to estimate initial stocking rates based on precipitation, topography, canopy cover, and RDM. For this grazing plan, we used the U.C. Davis 1991 Grazing Capacity Scorecards to calculate appropriate initial stocking rates (McDougald et al, 1991).

Grazing capacity is used to quantify how much forage is available for livestock to graze and is typically expressed in Animal Unit Months per acre (AUM/acre). A standard Animal Unit (AU) is equivalent to the forage intake of one 1,000 pound cow and her calf, and can be adjusted for different classes and life stages of livestock; for example, five sheep with five lambs is equivalent to 1 AU (Lacey, 1993; Bush, 2006). AUMs express how much forage an AU consumes in one month.

The estimated grazing capacity of the LRDP lands is 0.7 AUM/acre (McDougald et al, 1991), so the grazing capacity of one 20-acre parcel would be 14 AUM ($0.7 \text{ AUM/acre} \times 20 \text{ acres}$). Sheep are grazed in large groups called bands, and one band of sheep contains 300 ewes with 300 lambs; one band of sheep is equivalent to 60 AUs ($300 \text{ ewes w/ lambs} \div 5 \text{ ewes w/ lambs}$). Theoretically, one band of sheep could graze a 20-acre parcel for 7 days before reaching the desired 200 lb/acre minimum RDM. So, a 120-acre area, divided into six 20-acre parcels, could be used to graze one band of sheep for six weeks if the sheep are rotated about once a week.

The initial stocking rate of 60 AUs for one week will provide high intensity grazing for a short duration of time. This high stocking density is intended to reduce selective grazing in order to ensure that vegetation is grazed more uniformly (Olsen and Lacey, 1994; Steffens et al, 2013).

These are only initial stocking rates, and should be adjusted adaptively in response to monitoring results and RDM levels in order to successfully achieve the goals of this grazing plan.

B. Season of Use

Many exotic invasive species are able to germinate earlier and grow more quickly than native plant species (Wolkovich et al, 2011; Dickson et al, 2012; Wainwright et al, 2012). This difference in native and non-native life cycles can create “seasonal priority effects” for the species that germinate first. Species that germinate first may gain an early advantage by shading native species and preventing their germination, or by depleting water or certain key nutrients and preventing native species from accessing those resources. Over time, these differences in the timing of emergence can significantly reduce native plant populations and can lead to the domination of invasive plant species (Bartolome, 1979; Marushia et al, 2010; Dickson et al, 2012).

Several research papers on the management of exotic species in Mediterranean and desert ecosystems suggest that the differences in native and non-native plant phenology can be used to control undesirable plant species and give native plant species an advantage (Marushia et al, 2010; Wolkovich et al, 2011; Dickson et al, 2012; Wainwright et al, 2012). If non-native species emerge after the first rains, before native species emerge, they can be grazed before they produce seed or become unpalatable to livestock. This strategically timed grazing is intended to reduce the density and reproductive rate of non-native plant species and, over the course of several years, may aid in the re-establishment of some native plant species (Marushia et al, 2010).

The LRDP lands have two waves of weedy non-native plant species: the first wave of plants emerges following the first rains of the winter rainy season, and the second wave of weeds emerges near the onset of the dry season when the early season species begin to senesce (Interior, 2007). Native plant

species on the LRDP lands tend to germinate later in the winter rainy season and go to seed near the onset of the dry season.

Based on the phenology of non-native weedy plant species, grazing should occur twice a year. The first grazing period shall occur sometime between November 1st and January 31st, after the first wave of weeds emerges and before seeds are produced. Because vegetative growth varies year to year with environmental conditions, the actual start of each grazing period will be determined by available forage instead of calendar dates (Steffens et al, 2013). The first grazing period may begin as soon as there is at least 2 inches of new growth and the RDM levels are above 250 lb/acre or when the RDM levels are at or above 400 lb/acre (BLM, 1999). After the first period of grazing thins out the early-season weeds before they go to seed, the lands will be allowed to rest until the start of the second grazing period, which will occur sometime between April 1st and June 31st. The second grazing period may begin as soon as there is at least 2-inches of green growth and RDM levels are above 250 lb/acre or when RDM levels are at or above 400 lb/acre (BLM, 1999). The late season grazing period will be used to decrease the density of dry season weeds before they are able to produce seed.

Minimum forage must be available prior to the start of each grazing period. It should be noted that minimum forage requirements may not be met in all years due to environmental factors like drought; therefore the LRDP lands may not be suitable for sheep grazing in certain seasons or years (BLM, 1999). California is currently entering the fourth year of a severe drought, which has significantly reduced forage production and has led several ranchers to reduce or eliminate their livestock herds (Larsen et al, 2014). The LRDP parcels are located in the area of California that has been most severely affected by the drought (USDA exceptional drought rating), so minimum forage requirements will likely not be met this year.

C. Monitoring for Adaptive Management

In order for this grazing plan to be successful it must be able to adapt in response to changing conditions. In order to determine if the objectives of the grazing plan are being met, certain key elements must be monitored on the parcels.

At the conclusion of each use period or grazing season, the lessee shall submit an Actual Use Report to the Bureau of Reclamation at least one month prior to the start of the next grazing season. At a minimum, this report should include:

- Which locations were grazed
- On/off dates for each location
- Actual number of livestock grazed
- Photos of Residual Dry Matter (RDM) at the beginning and end of the grazing season (See Appendix A for procedure)
- Suggested management changes to address RDM levels outside of the target range

These measurements will be sufficient for the purposes of this grazing plan. Data on plant species composition would be informative, but are not required because the primary goal of the grazing plan is the reduction of thick, weedy vegetation, not the restoration of a native upland plant community.

D. Adjustment of Stocking Rates

At the end of each grazing period, an RDM level of 250-400 lb/acre should remain on the LRDP parcels. The upper RDM limit of 400 lb/acre was chosen because studies have shown that populations of federally listed upland species tend to decline when RDM levels exceed 500 lb/acre (Barry et al, 2011; Bartolome et al, 2014). The lower RDM limit of 250 lb/acre was chosen because 200 lb/acre is the recommended minimum RDM level for Central California annual grasslands, with slopes less than 25%, which receive 4-10 inches of precipitation per year (BLM, 1999). The actual RDM level at the beginning and end of each grazing period will be photographed and submitted to Reclamation in the Actual Use Report (see Appendix B for sample Actual Use Report).

The lessee will be responsible for complying with utilization standards and tracking and reporting the RDM levels at the start and end of each grazing season. The lessee shall monitor livestock during each grazing season and move the sheep as necessary to ensure that end of season use standards are not exceeded. It is strongly suggested that the sheep be moved before the RDM standards are reached in order to prevent overgrazing.

If the end-of-season RDM levels fall below the required target levels, it will be regarded as non-compliance with the grazing permit, and may result in management changes including reductions in stocking rates and grazing duration. Suggested management changes shall be submitted by the lessee as part of the Actual Use Report for each season that RDM levels fall outside of the target levels. Reclamation will review the proposed management changes and provide additional guidance if necessary or approve the management changes to be implemented the next season. If RDM levels continue to fall outside of the required targets for two consecutive years after management changes have been implemented, the grazing lease may be terminated.

E. Required Measures for Grazing Plan

A grazing area of 120-acres will be divided into 20-acre plots using temporary fencing.

Initial Stocking rates: One band of sheep (60 AU; 300 ewes with 300 lambs) will be allowed to graze each 20-acre plot until minimum RDM levels have been met (about one week). The sheep will be rotated as appropriate until all six plots in a 120-acre grazing area have been grazed.

The lessee will be responsible for monitoring the sheep during grazing and moving the sheep as necessary to reach the desired RDM levels.

The RDM at the end of each grazing period shall be between 250 – 400 lb/acre

The fall (early) grazing use period shall occur between November 1st and January 31st. Fall season grazing may begin when: there is at least 2 inches of new growth and RDM levels are greater than 250 lb/acre or when RDM levels are greater than 400 lb/acre.

The spring (late) grazing use period shall occur between April 1st and June 31st. The spring season grazing may begin when: there is at least 2 inches of new growth and RDM levels are greater than 250 lb/acre or when RDM levels are greater than 400 lb/acre.

Sheep will be provided with portable water troughs and salt blocks

Each water trough shall contain an escape ramp to allow any trapped wildlife to escape

All salting shall be a minimum distance of 500 feet away from shorelines, streams, wetlands, riparian areas, etc.

Supplemental feeding on the LRDP parcels is strictly prohibited.

At the end of each use period, the lessee shall submit an Actual Use Report to the Bureau of Reclamation at least one month before the start of the next use period (Appendix B). At a minimum the report shall include: On/off dates for each location grazed, which locations were grazed, actual numbers of sheep grazed, photographs of the starting and ending RDM levels, and RDM estimates. If RDM levels at the end of the use period do not fall within the goal RDM levels, the lessee shall include suggestions for meeting RDM goals in the next season. These reports will be used to determine if any changes in stocking rates or rotation schedules are necessary to meet the objectives of the grazing plan.

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APPENDIX A

How to Monitor and Estimate RDM Levels for Actual Use Reports

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How to Monitor and Estimate RDM Levels for the Actual Use Reports

The lessee will be required to submit an Actual Use Report to the Bureau of Reclamation at the end of each grazing season. A key component of the Actual Use Reports is the estimation and monitoring of residual dry matter (RDM) levels at the beginning and end of each grazing season. Monitoring levels of RDM is crucial for (1) determining if the goals of the grazing plan are being met and (2) for informing adaptive management. In order for RDM estimations to be useful, they must be recorded in a consistent way. The following procedure was adapted from the *Wildland Solutions: RDM Monitoring Procedure*, and shall be used to record and report RDM levels in the Actual Use Reports (Guenther, 2007).

I. Monitoring Set-Up

A. Monitoring Requirements:

Photographs of RDM shall be taken once *before* sheep grazing begins, and once *after* sheep grazing ends for the season.

At least one monitoring location shall be established for each 120-acre area that will be grazed in a season.

The same monitoring location shall be used for the pre-grazing photos and the post-grazing photos taken in a single season; monitoring locations may change at the start of each new grazing season.

B. Choosing Monitoring Sites:

Each monitoring site should be located:

In an area that is representative of the land that is being grazed.

The site should have relatively uniform vegetation. If the site being grazed has variable vegetation densities, more monitoring sites should be established to accurately estimate RDM levels.

At least ¼ mile away from water.

The heavy-use of areas near watering sites can interfere with accurate estimations of RDM.

In an easily accessible area that is not too close to roads or fences.

In general sites should not be within 20 feet of a road, or within 50 feet of a fence.

C. Monitoring Equipment:

The following equipment will be required for monitoring and reporting RDM levels:

Robel Pole

A Robel pole can be purchased, or made using PVC or similar materials. The Robel pole should be 4 feet high, about 1.125 inches (1 1/8th) in diameter, and should have 1 inch markings with the numbering starting from the bottom of the pole.

4 Golf Balls (or similarly sized objects)

Four golf balls, Ping-Pong balls, or other objects that are similarly sized will be needed.

Tri-pod

The tri-pod will be used to generate clear and consistent photos and should have a height of five feet. A 5-foot tall pole or piece of PVC may be used if the lessee does not have a tri-pod.

Camera

The camera should be capable of taking images with a resolution of at least 1.2 megapixels. Printed photos shall be 3"x 5" or larger.

Pen and Paper

A pen and paper will be required for recording the location and date of each photograph.

II. Monitoring Procedure

1. Record the Location of the Monitoring Site

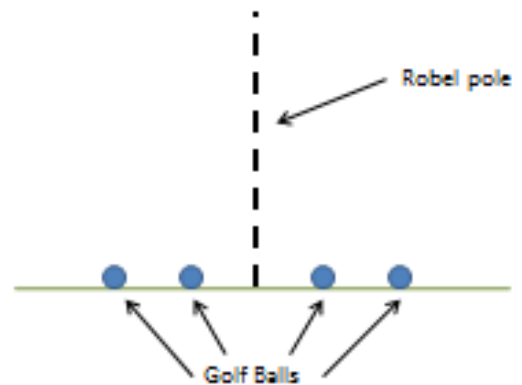
Describe the general location of the monitoring sites that are being used, or mark their location on a map.

2. Keep Track of Monitoring Locations and Corresponding Photos

Locations where photographs were taken and when photos were taken (before or after grazing) should be recorded in such a way that photographs can be easily identified and appropriately placed in the Actual Use Reports. This may be accomplished by writing down the photo number, monitoring location, and the date for each photo.

3. Set Up Robel Pole and Golf Balls

Set up the Robel pole in the chosen monitoring location.



Place 2 golf balls on either side of the Robel pole about 6 inches apart. Be sure to place the golf balls on the ground, NOT on top of the vegetation, so the photos can more accurately show the density of vegetation.

4. Take the Photos

All photos should be taken facing north to reduce glare and ensure the best lighting

A tri-pod, set to a height of 5-feet, should be used to ensure that pictures are clear

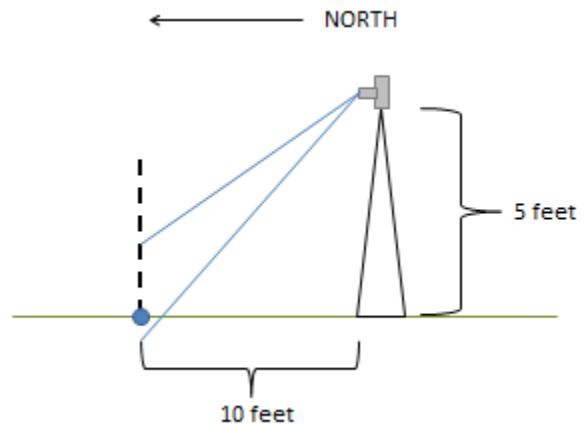
Use the date-stamp function on the camera if available

Record the photo numbers and where they were taken (monitoring location label)

Take 2 Photos at Each Monitoring Location. One Photo will be a close-up and the other will be taken from further away. (note: 2 photos should be taken at the beginning of the season and 2 photos should be taken at the end of the season; a total of 4 photos should be submitted in the Actual Use Report for each site monitored.)

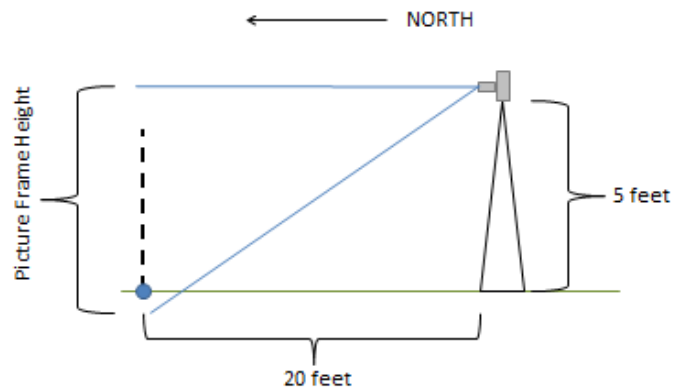
For the 10 Foot Photo:

Set the tri-pod about 10 feet from the Robel pole. Zoom in to a point that includes all 4 golf balls.



For the 20 Foot Photo:

Set the tri-pod about 20 feet from the Robel pole. Zoom in so that the height of the Robel pole takes up most of the height of the picture frame.



III. How to Estimate the RDM Class from the Photographs

Once the photos have been taken for each monitoring site, the RDM can be estimated by comparing them to the photos below (Harper). The lessee shall use the RDM classifications below to determine the starting and ending RDM level at each monitoring site for inclusion in the Actual Use Reports. There will be six RDM References classes:

RDM Range	Reference Class
> 1000 lb/acre	6
750 - 1000 lb/acre	5
500- 750 lb/ acre	4
250- 500 lb/acre	3 (Goal RDM)
125- 250 lb/ acre	2
< 125 lb/acre	1

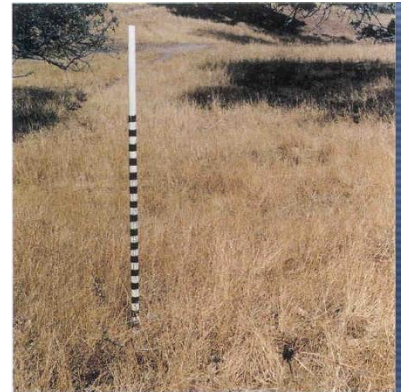
Class 6: RDM > 1000 lb/acre

Ground cover is complete with no bare spots

Robel pole is covered to height of 2-4 inches or more

Golf balls barely visible at 10 feet

Golf balls usually not visible at 20 feet



Class 5: RDM 750-1000 lb/acre

Considerable ground cover is still present; some bare soil may be apparent

Robel pole covered to a height of 1-2 inches or more

Golf balls partially visible at 10 feet

Golf balls may be barely visible at 20 feet



Class 4: RDM 500- 750 lb/acre

Residual vegetation is patchy; some bare soil is apparent

Robel pole partially covered at a height of 1-2 inches

Golf balls clearly visible at 10 feet

Golf balls mostly visible at 20 feet



Class 3: RDM 250-500 lb/acre

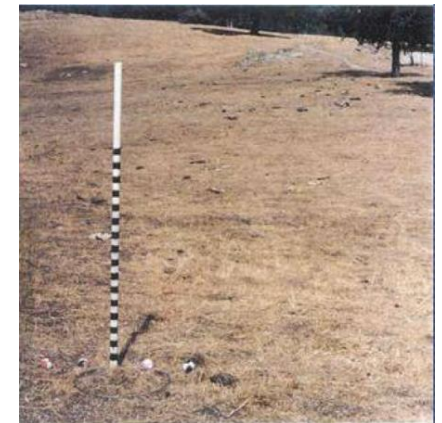
Ground cover is sparse with areas of bare soil readily apparent

Large areas of vegetation are grazed to 1 inch, with some scattered areas of vegetation 3-5 inches tall

Robel pole is fully visible

Golf balls are clearly visible at 10 feet

Golf balls are mostly visible at 20 feet



Class 2: RDM 125-250 lb/ acre

Vegetation is scarce with most areas grazed to 1 inch

Bare soil is obvious

Robel pole is fully visible

Golf balls are clearly visible from 10 feet

Golf balls are clearly visible from 20 feet



Class 1: RDM < 125 lb/acre

Vegetation is very scarce with most areas grazed to less than 1 inch

Several obvious areas of bare soil

Golf balls clearly visible at 10 feet and 20 feet

Golf balls clearly visible from more than 20 feet away



IV. Report the Findings

Two photographs (10 feet away and 20 feet away) from each monitoring location shall be taken before the site is grazed. These photographs shall be included in the Actual Use Report, and the location where the photos were taken should be noted. The estimated RDM class for the photos shall be included in the report.

Two photographs from each monitoring locations shall be taken after the site has been grazed. These photographs should be taken in the same location as the pre-grazing photos, and will also be included in the report. The estimated RDM class for the post-grazing photos should also be included in the report. (Be sure to specify which photos were taken at the beginning of the season and which were taken at the end of the season).

V. References

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Appendix B

Sample Actual Use Report

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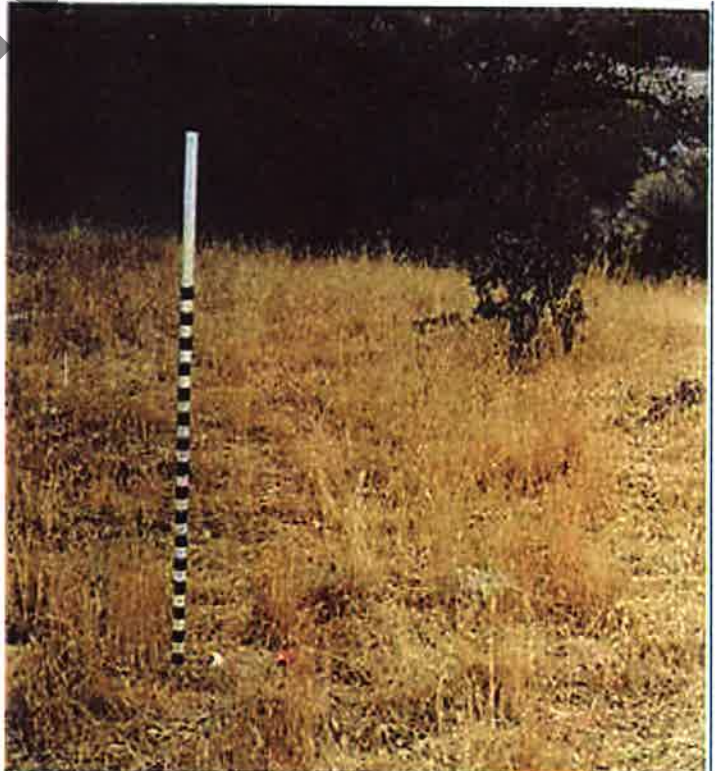
END-OF-SEASON ACTUAL USE REPORT		
ON DATE:	November 21, 2014	start of grazing; date that sheep were first placed on the land
OFF DATE:	January 2, 2015	end of grazing; date that the last sheep was taken off of the land
NUMBER OF LIVESTOCK GRAZED:	297 ewes and 295 lambs	Actual number of sheep that were allowed to graze the land
GRAZING LOCATION		
		<p>Indicate which area was grazed by marking it on the provided map. Also indicate the location(s) of sites where RDM photos were taken. Please provide any additional descriptive details in the space below:</p> <p>X monitoring site</p> <p>grazed in northern section of North Avenue parcel, just west of Santa Fe Rd.</p>
SITE PHOTOGRAPHS AND RDM ESTIMATION		
ESTIMATED RDM CLASS (BEFORE GRAZING):	Class 5	estimated according to the RDM procedure in Appendix A
Please attach both initial (pre-grazing) RDM photos (10 ft. and 20ft.) below:		

ESTIMATED RDM CLASS (BEFORE GRAZING):

Class 5

estimated according to the RDM
procedure in Appendix A

Please attach both initial (pre-grazing) RDM photos (10 ft. and 20ft.)below:



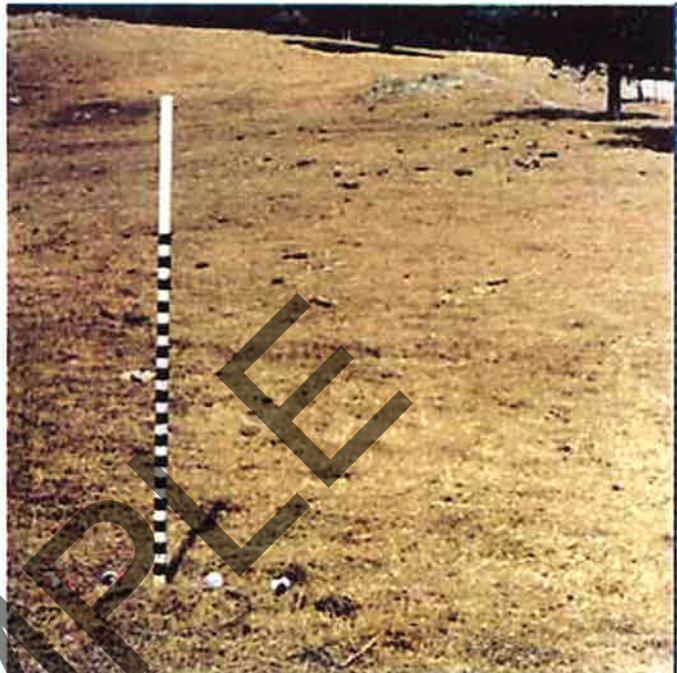
END-OF-SEASON ACTUAL USE REPORT

ESTIMATED RDM CLASS
(AT END OF GRAZING SEASON)

Class 3

estimated according to the RDM
procedure in Appendix A

Please attach both end-of-season RDM photos (10 ft. and 20ft.)below:



SUGGESTED MANAGEMENT CHANGES TO MEET RDM GOALS*

* This section only needs to be filled out if the end-of-season RDM levels fall outside of the RDM Target range [Target RDM= Class 3 (250-500 lb/acre)]

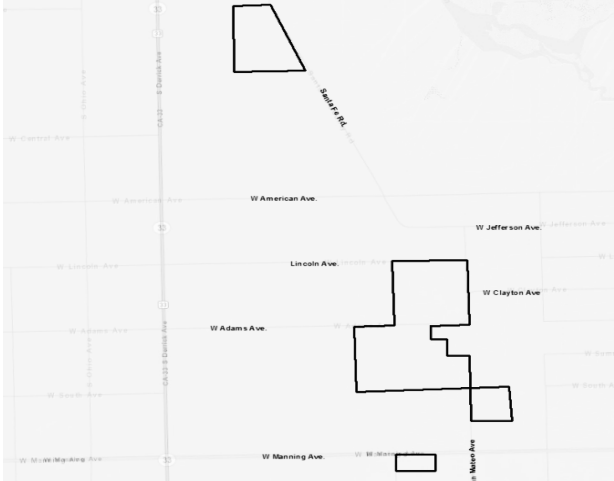
N/A

RDM Goals met.

END-OF-SEASON ACTUAL USE REPORT

ON DATE:		start of grazing; date that sheep were first placed on the land
OFF DATE:		end of grazing; date that the last sheep was taken off of the land
NUMBER OF LIVESTOCK GRAZED:		Actual number of sheep that were allowed to graze the land

GRAZING LOCATION

	<p>Indicate which area was grazed by marking it on the provided map. Also indicate the location(s) of sites where RDM photos were taken. Please provide any additional descriptive details in the space below:</p> <div style="height: 150px; border: 1px solid black;"></div>
-----------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

SITE PHOTOGRAPHS AND RDM ESTIMATION

ESTIMATED RDM CLASS (BEFORE GRAZING):		estimated according to the RDM procedure in Appendix A
----------------------------------------------	--	--------------------------------------------------------

Please attach both initial (pre-grazing) RDM photos (10 ft. and 20ft.)below:

END-OF-SEASON ACTUAL USE REPORT		
ESTIMATED RDM CLASS (AT END OF GRAZING SEASON)		estimated according to the RDM procedure in Appendix A
Please attach both end-of-season RDM photos (10 ft. and 20ft.)below:		
SUGGESTED MANAGEMENT CHANGES TO MEET RDM GOALS*		
* This section only needs to be filled out if the end-of-season RDM levels fall outside of the RDM Target range [Target RDM= Class 3 (250-500 lb/acre)]		